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Research Article

ICHTHYOFAUNAL DIVERSITY OF LOWER REACHES OF THE BRAHMAPUTRA RIVER, ASSAM

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ABSTRACT: An investigation was carried out from February 2009 to January 2010 in the core fish landing centres of Goalpara district, Assam to evaluate the present status of ichthyofaunal diversity of the lower reaches of Brahmaputra River. A total of 97 species including exotic species belonging to 56 genera of 26 families were recorded from all the fish landing centres. Among these, according to IUCN status, 5 species are endangered, 21 species vulnerable, 29 species lower risk-near threatened, 7 species lower risk-less concern and other 29 species are not evaluated. The families recorded were Notopteridae, Clupeidae, Engraulidae, Cyprinidae, Psilorhynchidae, Balitoridae, Cobitidae, Bagridae, Siluridae, Schilbeidae, Sisoridae, Clariidae, Heteropneustidae, Chacidae, Mugilidae, Beloniidae, Synbranchidae, Mastacembelidae, Chandidae, Nandidae, Cichlidae, Gobiidae, Anabantidae, Belontidae, Channidae and Tetradontidae. Seasonal variations of the fishes were also noticed remarkably. The taxonomic composition of the fish fauna suggests, Cyprinidae were the most dominant family with 39 representative species (42.8%) followed by Bagridae having 7 species (7.7%). The study reveals that lower reaches of River Brahmaputra is very rich in ichthyofaunal diversity. However, strategies such as controlled harvest, checks on growth of exotic species, controlling water pollution etc. are suggested for conservation of the native and endemic fish species of the region.

Key Words: Ichthyofaunal diversity, Fish landing centre, River Brahmaputra, Assam

INTRODUCTION

Northeastern Region of India is known as a global hotspot for fish faunal diversity. The diversity of fish species in the North East India is attributed to the recent geological history, especially the Himalayan orogeny (Kottelat, 1989). The region has about 19,150 km. of rivers, 23,792 ha of reservoirs, 1, 43,740 ha of wetlands and lakes, 40,809 ha of ponds and mini barrages suitable for fisheries development and 2,780 ha of area suitable for paddy-cum-fish farming (ICAR, 2006). The mighty river Brahmaputra harbours large variety of fish fauna of both Indo-Gangetic and Indo-Malayan origin.

Assam, forming 30% of Northeastern Region of India is also very rich in ichthyofaunal diversity. So far, 185 species belonging to 98 genera under 34 families has been reported from Assam (Sinha, 1994). The diversity of fish is found to be more numerous in lower reaches of the Brahmaputra basin up to Bangladesh. Earlier, lower reaches of this river system known to be a granary for the fishes of the family Clupiidae, Bagriidae, Sisoriidae, Siluroide, Schilbeidae, Channidae etc. (Sarma, et. al., 2007). But fish germplasm diversity of this region has drastically reduced due to habitat destruction, overexploitation, siltation, pollution and use of destructive fishing method etc. (Sarma, et. al., 2007). The lower reaches of river Brahmaputra comprises Goalpara and Dhubri district, where, many important fish landing centers are found. Fish landing centre is a place, where different types of fresh fish and fisheries commodities are accumulated from different sources like river, beels, pond etc. These fishes are transferred from here to fish markets via different channel. Fish landing centre plays a vital role in quick and smooth disposal of fresh fish. Fish are transported to different parts of the country and also to other countries through landing centres (Ali, et. al., 2004). So far, little information is available on fish diversity of this region (Sarma, et. al., 2007; Saha and Bordoloi, 2009). Fish landing centers are the first site where gathering of different kind of fishes are made for marketing. Therefore, investigation was undertaken to observe the present status of ichthyofaunal diversity of lower reaches of River Brahmaputra through the main fish-landing centers of the region.

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MATERIALS AND METHODS

Study area:

Survey was conducted in the main fish landing centres of Goalpara district of Assam. The geographical location of the district is between latitude 25^0 53/ to 26^0 30/ N and longitude 90^0 07/ to 91^0 05/ E. Landing centres were located at Boro-bazar, Karbala, Goalpara town, Balbala, Balizana, Chalantapara and Krishnai in Goalpara district. The main tributaries of Brahmaputra River flowing through the district are Dudhnoi, Krishnai, Jinjiram, Jinari and Deosila. The Jinari River, which originates from Nokrek peak (Now declared as Nokrek Biosphere Reserve located about 1412 m MSL) flow through certain areas of west Garohills and East Garohills and finally meets plain of Assam at Goalpara District (Sarma, et. al., 2009). The Rivers are all perennial in nature. Riverine wetland such as Urpod beel, Hasila *beel*, Kumri *beel* and Dhamar Risan *beel* are the main lentic water resources of the district.

Data collection and analysis

In order to collect data on fish landing centres, investigation was conducted from February 2009 to January 2010 at Goalpara district on weekly basis. Seasonal variations of fish diversity were also recorded during this year. Seasons are pre-monsoon (March to May), monsoon (June to August), retreating monsoon (September to November) and winter (December to February). Survey was conducted in the early morning or evening because in these hours all the fresh fishes were brought to the centres for marketing. Secondary data were also collected through observation and interview with fishers through questionnaire. Identification of fishes was done following after Talwar & Jhingran (1991) and Vishwanath (2002). Apart from this, survey was also made at the fishing site once in a month to investigate the details of fish catching. Conservation status of all the fishes was compiled as per Molur and Walker (1998).

RESULTS AND DISCUSSION

A total of 97 species belonging to 56 genera of 26 families were recorded from various fish landing centres of the district. Among these, according to IUCN status 5 species are endangered, 21 species vulnerable, 29 species lower-risk near threatened, 7 species lower risk-less concern and other 29 species are not evaluated. The species recorded during this survey are listed in (Table 1). Sarma, et. al., (2007) reported 70 commercially important fish species from the lower reaches of Brahmaputra River. Saha and Bordoloi (2009) also reported 59 fish species belonging to 40 genera, 19 families and 8 orders from two *beels* of Goalpara district, Assam. However, seasonal variations of fishes were also noticed. Ali, et. al. (2004) reported variation of fishes in two seasons *i.e.* winter and summer in the fish landing centres. All the fishes were grouped as per the seasonal abundance noticed in the landing centers. In the study site, 19 fish species was observed each in pre-monsoon and monsoon season. While, in the retreating monsoon and winter season each was observed with 20 fish species. Again a total of 24 species were found more or less throughout the year. It has been observed that in the winter and retreating monsoon season highest number of fish species recorded compared to the other season. It might be due to receding water level of the river and *beel*, which enhance the fish-catching intensity (Ali, et. al. 2004). There are 16 exotic species reported from India (Jhingran, 1991) and many of them are cultured in the closed water body resulting availability of these fish at the open market round the year. In the study site, 6 exotic fishes were recorded (Table 2). The families recorded in the present investigation were Notopteridae, Clupeidae, Engraulidae, Cyprinidae, Psilorhynchidae, Balitoridae, Cobitidae, Bagridae, Siluridae, Schilbeidae, Sisoridae, Clariidae, Heteropneustidae, Chacidae, Mugilidae, Belonidae, Synbranchidae, Mastacembelidae, Chandidae, Nandidae, Cichlidae, Gobiidae, Anabantidae, Belontidae, Channidae and Tetradontidae. It is mentionable that some of the fishes such as *Badis badis, Sosor rhabdophorus* and *Chaca chaca* were occasionally found at the landing centres. As they are reported from certain fishing site but to its low economic value and demand harvesting was not done.

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Table 1. Fish species recorded at the fish landing centres of Goalpara district

S.No	Local name	Scientific name	Catch frequency (%)	IUCN Status
1	Chital	*Chitala chitala* (Pallas)	0.52	EN
2	Folia	*Notopterus notopterus* (Ham.-Buch.)	0.46	LRnt
3	Karoti	*Gudusia chapra* (Ham.-Buch.)	0.60	LRlc
4	Ilsha	*Hilsa ilisha* (Ham.-Buch.)	1.70	VU
5	Boriala	*Aspidoparia jaya* (Ham.-Buch.)	1.72	VU
6	Boriala	*Aspidoparia morar* (Ham.-Buch.)	1.88	LRnt
7	Moa	*Amblypharingodon mola* (Ham.-Buch.)	1.23	LRlc
8	Balisonda	*Barilius barna* (Ham.-Buch.)	0.77	LRnt
9	Korang	*Barilius bandelasis* (Ham.-Buch.)	0.66	LRnt
10	Chela	*Chela cachius* (Ham.-Buch.)	0.43	NE
11	Balikhunda	*Crossocheilus burmanicus* (Hora)	0.51	VU
12	Selkona	*Chela laubuca* (Ham.-Buch.)	0.87	LRlc
13	Keintah puthi	*Chagunius chagunius* (Ham.-Buch.)	0.44	NE
14	Mirika	*Cirrhinus mrigala* (Ham.-Buch)	1.89	LRnt
15	Lachim bhangone	*Cirrhinus reba* (Ham.-Buch.)	1.75	VU
16	Catla	*Catla catla* (Ham.-Buch.)	1.77	VU
17	Saldorikona	*Danio aequipinatus* (Mc Clelland)	0.59	LRnt
18	Dorikona	*Danio daverio* (Ham.-Buch.)	0.48	LRnt
19	Dorkina	*Esomus danricus* (Ham.-Buch.)	0.55	LRlc
20	Bhangone	*Labeo bata* (Ham.-Buch.)	1.52	LRnt
21	Koliajora	*Labeo calbasu* (Ham.-Buch.)	1.61	LRnt
22	Silgharia	*Labeo dyochilus* (McClelland)	0.71	VU
23	Kurhi	*Labeo gonius* (Ham.-Buch.)	0.57	LRnt
24	Rau	*Labeo rohita* (Ham.-Buch.)	1.86	LRnt
25	Puthi	*Puntius chola* (Ham.-Buch.)	0.52	VU
26	Puthi	*Puntius chonconius* (Ham.-Buch.)	0.45	VU
27	Puthi	*Puntius gelious* (Ham.-Buch.)	0.32	NE
28	Puthi	*Puntius javanicus* (Bleeker)	1.72	NE
29	Puthi	*Puntius phutunio* (Ham.-Buch.)	0.41	LRlc
30	Seniputhi	*Puntius sarana*(Ham.-Buch)	0.63	VU
31	Puthi	*Puntius shalynious* (Yazdani & Talukdar)	1.90	VU
32	Jati Puthi	*Puntius sophore* (Ham.-Buch.)	1.17	LRnt
33	Puthi	*Puntius terio* (Ham.-Buch.)	0.44	LRnt
34	Tit Puthi	*Puntius ticto* (Ham.-Buch.)	0.38	LRnt
35	Darikana	*Rasbora rasbora* (Ham.-Buch.)	1.54	NE
36	Darikana	*Rasbora daniconius* (Ham.-Buch.)	1.16	NE
37	Rajamas	*Raimas bola* (Ham.-Buch.)	0.59	VU
38	Korang	*Raimas guttatus* (Day)	0.45	VU
39	Selkona	*Salmophasia bacalia* (Ham.-Buch.)	1.37	LRlc
40	Balikhunda	*Psilorhynchus balitora* (Ham.-Buch.)	0.47	NE
41	Balibotia	*Acanthocobitis botia* (Ham.-Buch.)	0.58	NE
42	Rani Botia	*Botia Dario* (Ham.-Buch.)	0.53	NE
43	pathorchata	*Somileptis gongota* (Ham.-Buch.)	0.66	LRnt
44	Botia	*Lapidocephalus guntea* (Ham.-Buch.)	1.45	NE
45	Tengna	*Mystus bleekeri* (Day)	1.54	VU
46	Gulsha tengna	*Mystus cavasius* (Ham.-Buch.)	1.91	LRnt

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47	Tengena	*Mystus tengera* (Ham.-Buch.)	1.04	NE
48	Tengera	*Mystus vittatus* (Bloch)	1.16	VU
49	Ritha	*Rita rita* (Ham.-Buch.)	0.78	LRnt
50	Arii	*Aorichthys aor* (Ham.-Buch.)	0.64	NE
51	Papta	*Ompok bimaculatus* (Bloch)	0.32	EN
52	Pabda	*Ompok pabda* (Ham.-Buch.)	0.44	EN
53	Papta	*Ompok pabo* (Ham.-Buch.)	0.33	NE
54	Borali	*Wallagu attu* (Schneider)	0.55	LRnt
55	Kajoli	*Ailia coila* (Ham.-Buch.)	1.93	VU
56	Gharua	*Clupisoma garua* (Ham.-Buch.)	1.57	VU
57	Bacha	*Eutropichthys vacha* (Ham.-Buch.)	1.74	EN
58	Bagari	*Bagarius bagarius* (Ham.-Buch.)	0.69	VU
59	Tinkata	*Gagata cenia* (Ham.-Buch.)	1.88	NE
60	Keorakata	*Glyptothorax telchitta* (Ham.-Buch)	1.82	LRnt
61	Sheka	*Sisor rhabdophorus* (Ham.-Buch.)	0.32	EN
62	Magur	*Clarius batrachas* (Linnaeus)	1.93	VU
63	Singi	*Heteropneustes fossilis* (Bloch)	1.97	VU
64	Chaka	*Chaca chaca* (Ham.-Buch.)	0.43	NE
65	Khoskhosa	*Sicamugil cascasia* (Ham.-Buch.)	1.67	VU
66	Kokila	*Xenentodon cancilla* (Ham.-Buch.)	1.08	LRnt
67	Cuchia	*Monopterus cuchia* (Ham.-Buch.)	1.64	LRnt
68	Turi	*Macrognathus aral* (Bloch & Schneider)	1.62	LRnt
69	Turi	*Macrognathus puncalus* (Ham.-Buch.)	1.75	LRnt
70	Bami/Gosi	*Mastacembalus armatus* (Lacepede)	0.56	NE
71	Chanda	*Chanda nama* (Ham.-Buch.)	1.73	NE
72	Chanda	*Chanda ranga* (Ham.-Buch.)	0.24	NE
73	Dum vacheli	*Badis badis* (Ham.-Buch.)	1.51	NE
74	Bhetki/Ajoli	*Nandus nandus* (Ham.-Buch.)	1.82	LRnt
75	Patimutura	*Glossogobius giuris* (Ham.-Buch.)	1.98	LRnt
76	Patimutura	*Glossogobius gutum* (Ham.-Buch.)	1.20	NE
77	Koi	*Anabas testudinius* (Bloch)	1.21	VU
78	Kholisa	*Colisa fasciata* (Schneider)	1.44	LRnt
79	Kholsa	*Colisa sota* (Ham.-Buch.)	1.72	NE
80	Lal kholisa	*Colisa lalia* (Ham.-Buch.)	1.87	NE
81	Kholisa	*Colisa labiosus* (Schneider)	0.87	NE
82	Kholihana	*Ctenops nobilis* (McClelland)	0.54	NE
83	Sal	*Channa marulius* (Ham.-Buch.)	1.57	LRnt
84	Goroi	*Channa punctatus* (Bloch)	1.25	LRnt
85	Sol	*Channa striatus* (Bloch)	1.93	LRlc
86	Cheng	*Channa gachua* (Ham.-Buch.)	1.54	NE
87	Tepa	*Tetradon cutcutia* (Ham.-Buch.)	1.94	LRnt
88	Tengra	*Aorichthyes seenghala* (Sykes)	0.55	NE
89	Keorakata	*Glyptothorax platypogonoids* (Bleeker)	0.44	NE
90	Phasa	*Setipinna phasa* (Ham.-Buch.)	0.78	NE
91	Phasa	*Setipinna brevifilis* (Valenciennes)	0.73	NE

LR-lc=Lower risk-least concern; LR-nt = Lower risk-near threatened;
VU= Vulnerable; EN= Endangered; NE = Not Evaluated;

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Table 2. Exotic species found at the landing centres

Sl. No.	Local name	English name	Scientific name
1	Grass carp	Grass carp	*Ctenopharyngodon idella*
2	Silver carp	Silver carp	*Hypopthalmichthys molitrix*
3	Common carp	Common carp	*Cyprinus carpio*
4	Big head carp	Big head carp	*Hypopthalmichthys nobilis*
5	Thiland magur	African cat fish	*Clarias garripinius*
6	Japani kawai	Tilapia	*Oreochromis mossambica*

The fishes recorded in the district were of two types- cold water and plain water species. The former are due to fish fauna of the hills stream which are flowing through the district and ultimately reaching the River Brahmaputra. Sarma, et. al. (2009) reported a total of 75 species of 52 genera from the Jinari River, out of which 27 species were cold water variety. An analysis of the taxonomic composition of the fish fauna suggests Cyprinidae was the most dominant family with 39 representative species (42.8%) recorded in the site. Bagridae was the next dominant family comprising 7 species (7.7%) inhabiting the site followed by Sisoridae and Belontidae both with 5 representative species. Channidae and Siluridae have 4 species while Cobitidae, Schilbeidae and Mastacembelidae each having 3 species. Whereas, Notopteridae, Clupeidae, Clariidae, Chandidae, Gobiidae and Engraulidae each having 2 representative species. On the other hand Psilorhynchidae, Balitoridae, Heteropneustidae, Chacidae, Mugilidae, Belontidae, Synbranchidae, Nandidae, Anabantidae, Tetradontidae and Cichlidae each have single representative species.

CONCLUSION

The results of the study indicate that Goalpara district is still very rich in terms of fish species diversity. Though the wetlands and rivers of this district are subjected to varied pressures (anthropogenic and natural) they are still rich aquatic ecosystems of Assam. It is also noted that most of the endemic and native species are replaced with some exotic species. So, for conservation of these fish species various strategies is the need of the hour which may be halting of siltation, promoting controlled harvest, exploring checks of the growth of exotic species and control of water pollution.

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