

A Preliminary Study on the Ichthyofaunal Diversity of Kankati Beel of Biswanath District, Assam

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Abstract— Beels are highly productive natural ecosystem which harbours appreciable ichthyofaunal diversity along with other animals and plants. The Kankati beel is located at Sonalibori village in Gohpur of Biswanath district. The beel is open type with an area of 97.50 ha² and connected with the Kharonijan river. The beel is a fishing hub of the area. Although most open beels are multispecies fisheries, only a few species predominate in the landings (CIFRI, 2000). The beel is an important source of living for the nearby fishing community and it is also used for other activities like agriculture, grazing etc. The study reveals about 50 no. of indigenous fish species along with one species of exotic fish species *Oreochromis mossambicus*. The beel also acts like a breeding ground for large number of major carps, minor carps, air breathing fishes and cat fishes. But growing human interference has posed a serious threat to the Ichthyofaunal diversity of the beel. Proper management of the beel is necessary to improve the present status of the Ichthyofaunal diversity.

Key words: Kankati Beel, Management, Threat, Ichthyofauna

I. INTRODUCTION

Ichthyodiversity refers to variety of fish species; depending on context and scale, it could refer to alleles or genotypes within piscian population, to species of life forms within a fish community, and to species of life forms across aquaregimes (Burton et al., 1992).

North East India is considered as one of the hot spots of freshwater fish biodiversity in the world (Kottelat and Whitten, 1996). Of approximately 930 species inhabiting freshwaters of India, the Northeastern India is represented by 267 species belonging to 114 genera under 38 families and 10 orders (Sen, 1982, 2000). Vishwanath et al, 2010, recorded 520 species of fishes from different water bodies of North-east India, whereas Bhattacharyya et al., recorded 217 fish species from the water bodies of Assam (Bhattacharjya, 2003).

The natural lentic water bodies locally known as 'Beels' representing flood plains wetlands including the marshes and swamps, which are locally known as jalah, doloni or pitoni in Assam. (Goswami, 2009). These wetlands constitute the ideal habitat of commercial fish species. These wetlands represent vast sheets of water bodies with varying shape, size and depth which directly act as the prospective spawning ground of popular Indian Major Carps namely *Labeo rohita*, *L. calbasu*, *Catla catla*, *Cirrhinus mrigala* etc.

The diversity of fishes mainly depends upon the biotic and abiotic factors and type of the ecosystem, age of the water body, mean depth, water level fluctuations, morphometric features and geomorphic feature of the of the aquatic bodies have great implications. The hydro-biological features of the collection centres also play an effective role in fisheries output to a great extent (Murugan et. al., 2012).

Presently the wetlands are suffering from encroachment as human settlement, for boro-paddy, monoculture of fishes, etc. in spite of their contribution as unique natural resource. Assam is gifted with 3,513 wetlands covering an area of 1,01,231.8 ha², around half of national wetland coverage and is capable producing 1000kg/ha/yr of fishes with moderate level of management (CIFRI., 2000). 3513 numbers of wetlands are identified in Assam by Assam Remote Sensing Application Centre, Assam (ENVIS 2016).

The Kankati beel is located at Sonalibori village in Gohpur of Biswanath district. The beel is open type with an area of 97.50 ha² and connected with the Kharonijan river. The beel is a fishing hub of the area. The Beel is surrounded by Sonalibari village, Kamalpathar village, uhitmukh village and Kakila village. The fisherman population are partially dependent on the beel but during the lean period, due to excess flood or draught, they sustain their livelihood through other profession like daily labour, cultivation, etc.

Although most open beels are multispecies fisheries, only a few species predominate in the landings (CIFRI, 2000). The study reveals about 50 numbers of indigenous fish species along with one exotic fish species *Oreochromis mossambicus*.

II. OBJECTIVE OF THE STUDY

The main objectives are:

- To study the fish diversity of the wetlands.
- To study the abundance of the fish species.
- To find out the present status (IUCN Status) of the available fish species.

III. MATERIALS AND METHODS

The present study was carried out in July 2015 - Dec 2016. Fish were collected during the fishing periods with the help of skilled fishermen. Fishing gears and devices used in fishing operation were moving nets (tonijal, dhokijal, khewalijal, ghokajal, berjal and dragnets of various mesh sizes), stationary nets (gillnets), hooks and lines (iron hooks and kos) and a variety of traps namely Polo, Juluki, Sepa, Posa, Jakoi, Darki, Sorha, Bana and Katal etc. The local fisherman were interacted about fish species in the beel and different fishing method they use. As far as possible the fish specimen are identified in the field itself. Collected specimens were preserved in 7 to 10% aqueous formaldehyde solution. Fish species have been identified following the literature of Jayaram (1981), Talwar & Jhingran (1991) and Vishwanath (2005). Status assessments of the documented species have been evaluated by IUCN Red list of threatened species (2016).

IV. RESULT AND DISCUSSION

During the present study 51 varieties fish species, belonging to 21 families and 10 orders have been reported. It was

observed that Cyprinidae family was the most dominant which include 18 species accounting 35%. Next followed Bagridae family with 05 species comprising 10% share which is followed by Channidae family with 04 species holding 08%, followed by Mastacembellidae with 03 species holding 06% and Siluridae, Notopteridae, Osphronemidae, Cobitidae with 02 species each compromising 04% and Schilbeidae, Claridae, Heteropneustidae, Belonidae, Symbranchidae, Tetraodontidae, Badidae, Nandidae, Gobiidae, Anabantidae, Ambassidae, Cichlidae and Clupeidae with one specie each with 02% share each.

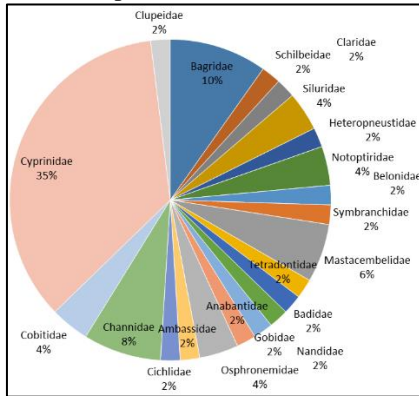


Fig. 1: Family wise distribution of fish species

The study conducted on the Kankati beel indicates a rich ichthyofaunal diversity. The rich ichthyofaunal diversity in the wetlands of assam has been reported by a number of previous workers (Goswami et al., 2009; Agarwala 1996, Goswami, 1985; Lahon, 1983; Dey, 1981) from their studies in a number of wetlands in Assam. From the study it was observed that the Cyprinidae family being the most dominant

which include 18 species. Kalita et al., 2016 has similar observation with 19 species of Cyprinidae family. The occurrence of exotic fish *Oreochromis mossambica* is may be due to their escape from the fringing ponds as a result of high inundation. Similar observation in *Oreochromis mossambica* and other exotic carps is reported by Kalita and Sarma, 2015 and Goswami and Goswami 2009. Of the recorded fish species some were abundantly found in landings viz. *Puntius sophore*, *Channa punctatus*, *Anabas testudineus*, *Esomus danrica*, *Trichogaster fasciata*, *Channa orientalis*.

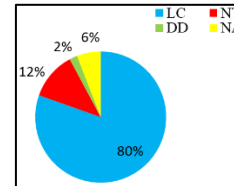


Fig. 2: Conservation status of the recorded fish species as per IUCN

The present study indicates rich ichthyofaunal diversity. The production of fishes in the beel plays a very important role in the economy of fisher man community. But the wetland is shrinking in size due to encroachment for paddy cultivation. The indiscriminate killing of brood and juvenile fishes of local and commercial species and over extraction of these fishes during breeding season greatly decreasing the fish diversity of the study area. The wetlands are very complex and fragile ecosystem (Das, 2015). Therefore there is an urgent and stringent need of conservation measures to save the fish species of the lentic ecosystem. In order to conserve these valuable resources a holistic approach combined with sustainable development and conservation measures are to be adopted.

Order	Family	Species
Siluriformes	Bagridae	Rita rita, Sperata aor, Mystus cavasius, M.tengara, M.vittatus
	Schilbeidae	Ailia coila
	Claridae	Clarias batrachus
	Siluridae	Ompok pabo, Wallago attu
	Heteropneustidae	Heteropneustes fossilis
Osteoglossiformes	Notopteridae	Chitala chitala , Notopterus notopterus
Beloniformes	Belonidae	Xenentodon cancila
Symbranchiformes	Symbranchidae	Monopterus cuchia
Mastacembeliformes	Mastacembellidae	Macrognathus aral, Macrognathus pancalus, Macrognathus aculeatus
Tetraodontiformes	Tetraodontidae	Tetraodon cutcutia
Perciformes	Badidae	Badis badis
	Nandidae	Nandus nandus
	Gobiidae	Glossogobius giuris
	Anabantidae	Anabas testudineus
	Osphronemidae	Trichogaster fasciata, Ctenops nobilis
	Ambassidae	Chanda nama
	Cichlidae	Oreochromis mossambicus
Channiformes	Channidae	Channa marulius, Channa orientalis, Channa punctata, Channa striata
Cypriniformes	Cobitidae	Acanthocobitis botia, Lepidocephalichthys guntea
	Cyprinidae	Salmophasia bacaila, Amblypharyngodon mola, Cabdio morar, Megarasbora elanga, Devario malabaricus, Devario devario, Esomus danrica, Rasbora rasbora, Gibelion catla , Cirrhinus mrigala, C. reba, L. bata, L. calbasu, L. gonius, L. rohita, Puntius chola, P. sophore , P. ticto,
Clupeiformes	Clupeidae	Gudusia chapra

Table 1: Fish species of Kankati beel

Sl. No.	Fish Species	Assamese Name	English Name	IUCN	Current population trend
1	Chitala chitala	Chital	Humped feather back	NT	Decreasing

2	<i>Notopterus notopterus</i>	Kandhuli	Feather back	LC	Decreasing
3	<i>Gudusia chapra</i>	Karoti	Indian river shed	LC	Decreasing
4	<i>Salmophasia bacaila</i>	Selkona	Large razorbelley minnow	LC	Stable
5	<i>Amblypharyngodon mola</i>	Moa	Mola/ Indian carplet/ Pale carplet	LC	Stable
6	<i>Cabdio morar</i>	Bariala/Baliara/ Boreala/	Aspodiparia	LC	Unknown
8	<i>Megarasbora elanga</i>	Elang	Bengala barb	LC	Unknown
9	<i>Devario malabaricus</i>	Saldarikana	Giant Danio	LC	Stable
10	<i>Devario devario</i>	Laupati	Devario danio	LC	Unknown
11	<i>Esomus danrica</i>	Darikana	Flying barb	LC	Stable
12	<i>Rasbora rasbora</i>	Darikana	Gangetic scissortail rasbora	LC	Unknown
13	<i>Gibelion catla</i>	Bhakua/ Bahu	Catla	LC	Unknown
14	<i>Cirrhinus mrigala</i>	Mirika	Mrigal	LC	Stable
15	<i>C. reba</i>	Lachim/ Laseem	Reba	LC	Stable
16	<i>L. bata</i>	Bhangone/ Nara/	Bata labeo	LC	Unknown
17	<i>L. calbasu</i>	Mali/ Kaliajora	Calbasu/ Black rohu	LC	Unknown
18	<i>L. gonius</i>	Kurhi/ Kuria	Kuria labeo	LC	Unknown
19	<i>L. rohita</i>	Rau/ Row	Rohu	LC	Unknown
20	<i>Puntius chola</i>	Puthi	Swam barb/ Chola barb	LC	Unknown
21	<i>P. sophore</i>	Puthi/ Phabounga	Spot fin swam barb	LC	Unknown
22	<i>P. ticto</i>	Puthi	Fire-fin Barb/ Two spot barb	LC	Unknown
23	<i>Acanthocobitis botia</i>	Balibotia	Stripped loach	LC	Decreasing
24	<i>Lepidocephalichthys guntea</i>	Botia	Guntea loach	LC	unknown
25	<i>Sperata aor</i>	Arii	Long-whiskered cat fish	LC	Stable
26	<i>Mystus cavasius</i>	Barsingorah/ Singorah	Gangetic mystus	LC	Decreasing
27	<i>M.tengara</i>	Tingorah	Tengara mystus	LC	Unknown
28	<i>M.vittatus</i>	Singorah/ Tingorah	Striped dwarf cat fish	LC	Decreasing
29	<i>Rita rita</i>	Rhitha	Rita	LC	Decreasing
30	<i>Ompok pabo</i>	Pabhoh	Pabo cat fish	NT	Decreasing
31	<i>Wallago attu</i>	Barali	Freshwater shark	NT	Decreasing
32	<i>Ailia coila</i>	Bapati/ Kajuli	Gangetic ailia	NT	Decreasing
33	<i>Clarias batrachus</i>	Magur	Magur	LC	Unknown
34	<i>Heteropneustes fossilis</i>	Singhi	Stinging cat fish	LC	Stable
35	<i>Xenentodon canchila</i>	Kokila	Freshwater gar fish	LC	Unknown
36	<i>Monopterusuchia</i>	Kuchia/ Cuchia	Cuchia/ Gangetic mudeel	LC	Unknown
37	<i>Chanda nama</i>	Chanda	Elongate glassy perchlet	LC	Decreasing
38	<i>Badis badis</i>	Randolnee	Badis/ dwarf chameleon	LC	Unknown
39	<i>Nandus nandus</i>	Gedgedi/Khaloibhangi	Mottled nandus	LC	Unknown
40	<i>Glossogobius giuris</i>	Ptimutura/Oporchakuamas	Tang gobi	LC	Unknown
41	<i>Anabas testudineus</i>	Koi/ Kawai	Climbing perch	DD	Unknown
42	<i>Trichogaster fasciata</i>	Kholihona	Banded colisa/ Striped/gourami / Giant	LC	Unknown
43	<i>Ctenops nobilis</i>	Kholihona	Indian paradise fish	NT	Decreasing
44	<i>Channa marulius</i>	Sal	Giant snake head	LC	Unknown
45	<i>Channa orientalis</i>	Chengeli	Smooth breasted snake head/ Asiatic snake head	NA	
46	<i>Channa punctata</i>	Goroi	Green snake head/Spotted snake head	LC	Unknown
47	<i>Channa striata</i>	Shol/ Sol	Striped snake head/Banded snake head	LC	Unknown
48	<i>Macragnathus aral</i>	Tora/ Tura/ Turi	One- striped spiny eel	LC	Stable
49	<i>Macragnathus pancalus</i>	Tora/ Tura/ Turi	White spotted spiny eel / Striped spiny eel	LC	Unknown
50	<i>Tetraodon cutcutia</i>	Gangatope	Ocellated puffer fish	LC	Unknown
51	<i>Macragnathus aculeatus</i>	Tora/ Tura/ Turi	Lesser spiny eel/Peacock eel	NA	
52	<i>Oreochromis mossambicus</i>	Japani koi	Tilapia	NT	Unknown

Table 2: List of fish species of Kankati Beel, Assam

NA = Not available, DD = Data deficient – NE =Not Evaluated, LC= Least concern, NT= Near threatened

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