



Ichthyo-faunal diversity and status in Barbila *Beel*, Nalbari, Assam

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Abstract

Beel fishery is an important component of fisheries of Assam. The present investigation was conducted to study the ichthyo-faunal diversity and annual fish production of the Barbila beel in Nalbari district of Assam, during the year 2010-2011. The beel covers an area of 407.0 hectare. Altogether 44 species are recorded belonging to 14 families. Based on the size and configuration of the adult, the fishes are categorized into major, intermediate and minor group comprising of 12 species, 13 species and 19 species respectfully. The fish catch is recorded 95.00 mt. during the study period.

Keywords : Barbila, beel, ichthyo-faunal diversity, fish production.

1. Introduction

India is endowed with myriads of flood plain wetlands locally called '*beels*'. Assam has 1,392 *beels* spread over more than 100,000 hectare constituting 61% water bodies of the state. They are important habitats for fishes. *Beel* fishery is an important component of the fisheries of Assam.

The wet lands serve as an important live support system and is of immense socio-economic and cultural importance to the people of the area.

The study of wetlands in India was started in the year 1970 s, but most of the work is fragmentary and very little information are available on the structure, function, ecological status and management of wetlands. In Assam, works on wetlands and *beels* have been reported by Dey (1981), Lahon (1988), Goswami (1985), Dutta *et. al.* (1993), Sarma *et. al.*, (1991), Nuvaid *et. al.*, (1993), Acharjee *et. al.*, (1998) and Sugunan *et. al.*, (2000). It appears that there is no significant reports from Nalbari District of Assam.

2. Study area

The Barbila *beel* is located in the district of Nalbari, Assam, at the intersection 26°15'10" North parallel of latitude and 91°18'30" East meridian of longitude. It is about 95 Km away from Guwahati

and about 10 km away from Tihu town. The *beel* covers an area of 407.0 hectare. The *beel* is surrounded by village with about 6000 families of SC, ST and OBC people whose livelihood mainly depend on the fish and other aquatic resources of the *beel*.

3. Methods

The latitude and longitude of the Barbila *beel* was recorded using a GPS.

In the present study, extensive field survey was conducted to study the ichthyofaunal diversity and annual fish production of the *beel* along with its economic importance. Fish species were collected during 2010-2011 with the help of skilled fisherman and fish landing centres of the *beel*. Fishes were identified, classified and listed following Talwar and Jhingran (1991), Manan (1999), Jayram (1999). Status assessments of the developed species have been evaluated by CAMP(1998). To study the fish production, fish catch were recorded daily, by spot verification at the landing centres of the *beel*.

To determine the composition of fish, the fish species were categorized into three groups based on the size and configuration of the adult fishes (i) Major groups (ii) Intermediate groups and (iii) Minor groups

All the large growing fishes were categorized as major group. The intermediate fish group includes the sizes equivalent to or less than the size of juveniles of Indian major carps and minor group fish includes all fish species with a size equivalent to or less than the finger lings of IMC.

4. Results

Fish Diversity

In the studied *beel* altogether 44 species are recorded belonging to 14 families (Table-1). The ichthyofaunal diversity of the Barbila *beel* is

explained under the three broad categories- major, intermediate and minor fish groups.

Major fish group

The major fish group is constituted by twelve (12) species belonging to four (4) families of which the most dominant one is Cyprinidae. The family *Cyprinidae* includes *Labeo rohita*, *L. gonius*, *L. calbasu*, *Catla catla*, *Cirrhinus mrigal*, *Cyprinus carpio*, *Hypopthalmichthyes molitrix* and *Ctenopharyngodon idella*. In addition another fish species belonging to different families are *Notopterus chitala* (Notopteridae), *Wallago attu* (Siluridae), *Channa striatus* and *C. marulius* (Channidae).

Table - 1 : List of fishes belonging to major group

Family	Scientific name of species	CAMP status
Cyprinidae	1. <i>Labeo rohita</i>	LRnt
	2. <i>L. gonius</i>	LRnt
	3. <i>L. calbasu</i>	LRnt
	4. <i>Catla catla</i>	Vu
	5. <i>Cirrhinus mrigal</i>	LRnt
	6. <i>Cyprinus carpio</i>	
	7. <i>Hypopthalmichthyes molitrix</i>	
	8. <i>Ctenopharyngodon idella</i>	
Notopteridae	9. <i>Notopterus chitala</i>	LRnt
Siluridae	10. <i>Wallago attu</i>	LRnt
Channidae	11. <i>Channa striatus</i>	LRnt
	12. <i>Channa marulius</i>	LRnt

Intermediate fish group

Altogether 13 species belonging to the intermediate fish group are recorded under nine (9) families. The fish species of intermediate group, recorded under the different families are *Cirrhinus reba*, *Rasbora rasbora* (Cyprinidae), *Nandus nandus*

(Nandidae), *Mastacembelus armatus* and *Macrognathus pancalus* (Mastacembolidae), *Clarias batrachus* (Claridae), *Heteropneustes fossilis* (Heteropneustidae), *Anabas testudineus* (Anabantidae), *Channa punctatus* and *C. gachua* (Channidae), *Notopterus notopterus* (Notopteridae), *Ompok pabo* (Siluridae) and *Monopterus* (Synbranchidae) *cuchia*.

Table - 2 : List of fishes belonging to intermediate fish group

Family	Scientific name of species	CAMP status
Cyprinidae	1. <i>Cirrhinus reba</i>	Vu
	2. <i>Rasbora rasbora</i>	NE
	3. <i>Macrogathus pancalus</i>	NE
	4. <i>Mastacembelus armatus</i>	NE
Nandidae	5. <i>Nandus nandus</i>	L.Rnt
Claridae	6. <i>Clarius batrachus</i>	Vu
Anabantidae	7. <i>Anabas testudineus</i>	Vu
Heteropneustidae	8. <i>Heteropneustis fossilis</i>	Vu
Channidae	9. <i>Channa punctatus</i>	LRnt
	10. <i>C. gachua</i>	Vu
Notopteridae	11. <i>Notopterus notopterus</i>	LRnt
Siluridae	12. <i>Ompok pabo</i>	NE
Synbranchidae	13. <i>Monopterusuchia</i>	LRnt

Minor fish group

Study indicates that the diversity of fish fauna of minor fish group is higher than the fish species of major and intermediate group. Minor fish group is consisting of 19 species belonging to 9 families. The family Cyprinidae includes 6 species namely *Puntius sophor*, *P. ticto*, *P. sarana*, *Ambly pharyngodon mola*, *Chela laubuca* and *Esomus dendricus*

The fish species of the minor group belonging to different families are *Gudusia chapra* (clupeidae), *Chanda nama* and *C. ranga* (Ambassidae), *Mystus tengara*, *M. vitatus* and *M. cavasius* (Bagridae), *Glossogobius giuris* (Gobiidae), *Colisa fasciatus*, *C. lalia* and *Xenontedon cancila* (Belonidae), *Botia dario* (Cobitidae), *Tetradon cutcutia* (Tetradontidae) and *Badis badis* (Nandidae).

Table - 3 : List of fishes belonging to minor group

Family	Scientific name of species	CAMP status
Clupeidae	1. <i>Gudusia chapra</i>	LRlc
Ambassidae	2. <i>Chanda nama</i>	NE
	3. <i>C. ranga</i>	NE
Cyprinidae	4. <i>Puntius sophor</i>	LRnt
	5. <i>P. ticto</i>	LRnt
	6. <i>P. sarana</i>	Vu

	7. <i>Amblypharyngodon mola</i>	LRic
	8. <i>Chela laubuca</i>	LRic
	9. <i>Esomus dendricus</i>	LRic
Bagridae	10. <i>Mystus tangeri</i>	NE
	11. <i>M. vitatus</i>	Vu
	12. <i>M. cavasius</i>	LRnt
Gobidae	13. <i>Glossogobius giuris</i>	LRnt
Belontiidae	14. <i>Colisa fasciatus (Polyacanthus f)</i>	NE
	15. <i>C. lalia (P. lalia)</i>	NE
	16. <i>Xenontedon cancila</i>	LRnt
Cobitidae	17. <i>Botia dario</i>	NE
Tetradontidae	18. <i>Tetradon cutcutia</i>	LRnt
Nandidae	19. <i>Badis badis</i>	NE

Table - 4 : Monthly fish catch statistics In Barbila *beel* (Jan 2011 to Dec 2011)

Month	Fish catch (mt.)	Fish catch (%)	Major group (%)	Intermediate group (%)	Minor group (%)
January	14.00	14.40	6.10	4.25	4.39
February	5.00	5.26	1.06	2.00	2.20
March	2.35	2.47	0.40	1.00	1.07
April	2.57	2.71	0.50	1.01	1.20
May	2.95	3.11	0.95	1.11	1.05
June	5.55	5.84	1.00	2.04	2.80
July	6.50	6.84	0.80	3.00	3.04
August	8.75	9.21	2.24	4.22	2.75
September	9.33	9.82	2.91	4.01	2.90
October	10.50	11.06	2.05	4.21	4.80
November	13.00	13.68	3.01	5.65	5.02
December	14.50	15.26	5.33	5.85	4.08
Total	95.00	100.00	26.35	38.35	35.30

Table - 5 : Annual catch statistics of different fish group in Barbila *beel* (Jan 2011 to Dec 2011)

Fish group	Fish catch (mt.)	Fish catch (%)
Major	25.03	26.35
Intermediate	36.43	38.35
Minor	33.54	35.30
Total	95.00	100.00

5. Discussion

Fourty four fishes (Table-1, 2, 3) recorded in the studied *beel* indicates rich ichthyofaunal diversity. The rich ichthyofaunal diversity in the wetland of Assam has been reported by a number of previous workers (Dey, 1981; Lahon, 1983; Goswami, 1985; Agrwala, 1996) from their studies in a number of wetlands. Their studies indicate the presence of 57 fish specimen in Chandubi (Goswami, 1985); 62 in Dora (Lahon, 1983); and 63 species in Tamranga wetland (Agrwala, 1996).

The major fish group is comprised of 12 species under 4 families which Cyprinidae is the most diversified family with 8 species. *Channa striatus* have been found most dominant species in the *beel* followed by *Wallgo attu*, *Notopterus chitala* and *Labeo rohita*. Some cat fishes namely *Wallago attu*, *Ompok pabo* and three *Mystus* species are also found which may enter into the *beel* along with seasonal flood. In the studied *beel*, three varieties of exotic fish are found viz., *Cyprinus carpio*, *Hypophthalmichthys molitrix* and *Ctenopharyngodon idella*. The three exotic species enter into the *beel* along with flood from the fringe area culture fish pond. Abundance of exotic carps in the wetlands of Assam is also reported by earlier workers (Goswami, 1996; Agrwala, 1996; Acharjee, 1997; and Deka *et. al.*, 2001). The intermediate group is comprised of 13 species belonging to 9 families of which the most dominant are Heteropneustidae, Claridae and Channidae. The minor group comprises 19 species under 9 families of which Cyprinidae is most diversified family with 8 species. Among the minor group *Puntius* spp. is the most dominant species captured in the studied *beel*. Analysis on the overall distribution of fish species in the studied *beel* reveals that the diversity of species of minor group

is higher than that of the major group and intermediate group. The present status of ichthyofaunal composition indicates that the minor fish group population dominates over the major and intermediate fish group.

The annual fish catch of the *beel* is recorded 95.00 mt.(Table-4) during the study period. The analysis revealed that the major group comprise of 25.03 mt. (26.35 %), intermediate group 36.43 mt. (38.35%) and minor group 33.54 mt.(35.30%). The monthly fish catch statistics of the studied *beel* is shown in Table-4. The maximum fish catch 14.50 mt. (15.26%) is recorded in December and minimum catch 2.35 mt. (2.47%) in March 2011 of the study period. It is revealed from the Table-4 that in intermediate fish group on an average contribute much more 38.35% than the other two groups. Next to the intermediate group, it is the minor group. The annual fish catch shows a significant sign that the production of minor group gradually decreases.

6. Conclusion

The *beels* have large potential for capture fisheries. The high productivity of these water bodies due to influx of nutrient load and there by production of fish food organism make this water bodies ideal for fish population; employment generation and several other additional sources of income. The deeper central part of core area of the *beel* may be used for captive fisheries by stocking air breathing fishes like Singi, Magur etc. Polyculture of carps can be conveniently carried out in marginal areas of *beels* by pen and cage culture. A proper schematic scientific approach towards the planning criteria and management is required to realize the huge fish production in the *beel*.

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