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Fish biodiversity of the old Brahmaputra river, Mymensingh

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ABSTRACT

The present investigation was concerned with the fish biodiversity of old Brahmaputra River under Mymensingh district of Bangladesh. Objectives of the study were to determine biodiversity and abundance of fish, and to assess seasonal abundance and variation of fish in the river. A semi-structured questionnaire was used to collect the pertinent information from 40 randomly selected fishermen from the study area. A total of 55 species of fish and shell fish were recorded from study sites. Among them, 8 species of carps, 4 species of snakeheads, 8 species of perches, 3 species of eels, 13 catfishes, 8 species of barbs, 2 species of minnows and clupeid species, 3 species of shrimp and other miscellaneous 4 species. It was found that 13 species were abundant, 19 were common, 14 species were less common, and 9 species were rare. The fishermen and other local elites reported that fish population in the old Brahmaputra River has been declining very fast over the last decades may be due to change in water current, depth of water, over fishing, temperature etc.

Key Words: Fish biodiversity, Fishing Season, Seasonal abundance and Brahmaputra River

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I. Introduction

Fisheries have a great importance in the developing of the economy of agriculture based Bangladesh. It is a good source of high quality protein and thus can make an outstanding contribution to reduce the malnutrition problem of Bangladesh. Fisheries sector also plays an important role in employment generation and poverty alleviation. About 11% of the total population are directly or indirectly depend on fisheries (DoF, 2014). The river Old Brahmaputra plays a vital role in alleviation of rural poverty and supplying food to the poor fishing community. Every year a huge amount of fish are caught from this river. Almost all portions of this river are breeding grounds of Indian major carps. Good quantities of carp fry are caught from numerous breeding grounds of this river. Fisher can earn a living by fishing in the river throughout the year and by collecting major carp fry from May to August. For many fishermen, fishing is a seasonal activity while to the traditional fishing communities it is the major and in some cases, the only occupation available (Mahmud, 2013). However, the riverine resources are

declining day by day due to lack of proper management policy; over-exploitation and unplanned establishment of Flood Control and Drainage (FCD) and Flood Control Drainage and Irrigation (FCDI) projects. Moreover, an unbalanced heavy pressure has been put on the fishery resources of the rivers over the decades due to the rapid growth of population and expansion of agricultural irrigation, domestic and industrial activities and municipal wastes (Jhingran, 1991). So fishing group is an important community to enrich the fish biodiversity and economics of Bangladesh. Since the inland fisheries play an important role to the employment opportunities therefore, immediate efforts should be taken to the proper management of these resources. The Old Brahmaputra river is an important river adjacent to Mymensingh town is one of the most important ecosystems with much aquaculture potential in Bangladesh from different perspectives; therefore, it is of paramount to know the present status of fish biodiversity for efficient and rational management of these resources. Therefore, the present study is undertaken to assess the biodiversity and abundance of fish in the vicinity of the river; and to determine the seasonal abundance and variation of fish in the study area.

II. Materials and Methods

The study was based on collection of primary data and use of available secondary data source, and was carried out in some selected areas of Brahmaputra River in the vicinity of Bangladesh Agricultural University campus in Mymensingh district for a period of six months during the months of January to June 2014. Forty fishermen were randomly selected for this study. During this study period primary data were collected from the respondents through face to face interviews. A draft interview schedule was developed before preparing the final interview schedule following the objective of study. Questionnaire was pre-tested in the study area by interviewing the fishermen by the researcher. Then it was changed, modified and rearranged according to the experience gathered from pre-test. Final questionnaire was developed in logical sequence, so that the fishermen could answer chronologically. Weekly field survey was carried out to collect the necessary information. Random selection method was employed to select fishermen in order to avoid any biasness in selection of the fishermen. A total of forty fishermen households were surveyed. Various participatory rural appraisal (PRA) tools, especially interview and focus group discussion (FGD) were employed to collect necessary data from the respondents. Interviews were taken with a well-structured questionnaire which was purposively developed and pre-tested under field situation. Data were cross-checked for ensuring the accuracy of data collected from the respondents. Data were summarized and scrutinized carefully before the actual tabulation and scrutinized carefully and analyzed by MS Excel.

III. Results and Discussion

Fish biodiversity: A variety of fishes comprising of fifty five species were recorded from Brahmaputra river. These were represented by carps, catfishes, barbs and minnows, clupeid, snakehead, perch, eels and other miscellaneous species.

Carp: During the period of investigation eight species of carps were recorded. Among them Rui was less common, Carpio, Kalibaus and Bata were common species. Rests of them were less common and rare. A list of carp species are shown in Table 01.

Table 01. Carp species as recorded during the period of study

Family	Scientific name	Remarks
Cyprinidae	<i>Labeo rohita</i>	Less common
Cyprinidae	<i>Labeo calbasu</i>	Common
Cyprinidae	<i>Labeo gonius</i>	Rare
Cyprinidae	<i>Catla catla</i>	Less common
Cyprinidae	<i>Cyprinus carpio</i>	Common
Cyprinidae	<i>Labeo bata</i>	Common
Cyprinidae	<i>Cirrhinus reba</i>	Less common
Cyprinidae	<i>Cirrhinus cirrhosus</i>	Less common

Table 02. Snakeheads as recorded during the period of study

Family	Scientific name	Remarks
Channidae	<i>Channa marulis</i>	Rare
Channidae	<i>Channa puncta</i>	Abundant
Channidae	<i>Channa orientalis</i>	Common
Channidae	<i>Channa striata</i>	Common

Table 03. Perch species as recorded during the period of study

Family	Scientific name	Remarks
Anabantidae	<i>Colisa fasciata</i>	Common
Anabantidae	<i>Anabas testudineus</i>	Less common
Centropomidae	<i>Chanda baculis</i>	Common
Nandidae	<i>Nandus nandus</i>	Less common
Centropomidae	<i>Chanda nama</i>	Abundant
Centropomidae	<i>Chanda ranga</i>	Rare
Badidae	<i>Badis badis</i>	Less common
Sciaenidae	<i>Otolithoides pama</i>	Rare

Table 04. Eels recoded during the period of present study

Family	Scientific name	Remarks
Mastacembelidae	<i>Macrognathus aculeatus</i>	Abundant
Mastacembelidae	<i>Macrognathus pancalus</i>	Abundant
Mastacembelidae	<i>Mastacembelus armatus</i>	Abundant

Table 05. Catfishes as recoded during the period of present study

Family	Scientific name	Remarks
Bagridae	<i>Mystus cavasius</i>	Abundant
Bagridae	<i>Mystus vittatus</i>	Common
Bagridae	<i>Mystus aor</i>	Less common
Bagridae	<i>Mystus tengra</i>	Common
Bagridae	<i>Rita rita</i>	Common
Schilbeidae	<i>Clupisoma garua</i>	Less common
Sisoridae	<i>Bagarius bagarius</i>	Rare
Schilbeidae	<i>Neotropius atherinoides</i>	Abundant
Schilbeidae	<i>Eutropiichthys vacha</i>	Rare
Schilbeidae	<i>Ailia coila</i>	Common
Heteropneustidae	<i>Heteropneustes fossilis</i>	Less common
Clariidae	<i>Clarius batrachus</i>	Less common
Siluridae	<i>Wallago attu</i>	Less common

Snakehead: There was four species of snakeheads were recorded during study period. Among them Taki was abundant, Cheng and Shol were common and Gojar was rare. A list of snakeheads species are shown in [Table 02](#).

Perch: There were eight species of perch were identified during period of the study. Among them Nama chanda was abundant, khalisha, kata chanda were common. Rests of them were less common and rare. A list of perch is shown in [Table 03](#).

Eel: During the study three species of eels were identified and all of them were abundant. A list of Eels is shown in [Table 04](#).

Catfish: About thirteen species of catfish were recorded in study areas during the period of investigation. Among catfishes gulsha and batashi were abundant. On the other hand, bujuri, rita, tengra kajoli were common. Aair, boal, shing, gharua were less common and bacha was rare ([Table 05](#)).

Barbs, minnows and clupeids: During study period a huge number of barbs and minnows and were found in the river old Brahmaputra. Among them eight species of barbs, two species of minnows and two species of clupeids were identified ([Table 06](#)).

Fish fauna: Nine other miscellaneous fish species were recorded ([Table 07](#)). Among them gutum, bailla were abundant.

Table 06. Barbs, minnows and clupeid as recoded during the period of study

Family	Scientific name	Remarks
Cyprinidae	<i>Chela phulo</i>	Abundant
Cyprinidae	<i>Chela laubuca</i>	Rare
Cyprinidae	<i>Chela bacaila</i>	Common
Cyprinidae	<i>Amblypharyngodon mola</i>	Abundant
Cyprinidae	<i>Rohtee cotio</i>	Less common
Cyprinidae	<i>Puntius sarana</i>	Less common
Cyprinidae	<i>Puntius ticto</i>	Abundant
Cyprinidae	<i>Puntius sophore</i>	Common
Cyprinodontidae	<i>Esomus danricus</i>	Common
Cyprinodontidae	<i>Aplocheilus panclas</i>	Rare
Clupeidae	<i>Corica soborna</i>	Abundant
Clupeidae	<i>Gaduasias chapra</i>	Common

Table 07. Miscellaneous fish species

Family	Scientific name	Remarks
Gobiidae	<i>Glossogobius giuris</i>	Abundant
Belonidae	<i>Xenentodon cancila</i>	Common
Cobitidae	<i>Lepidocephalus guntea</i>	Abundant
Cobitidae	<i>Botia Dario</i>	Rare
Palaemonidae	<i>Macrobrachium daganum</i>	Common
Palaemonidae	<i>Macrobrachium lumarre</i>	Common
Palaemonidae	<i>Macrobacium rogenbergii</i>	Common

Monthly variation in abundance of fish species: It is remarkable that abundance of fishes in the river old Brahmaputra shows pronounced seasonality in their occurrence as reflected through fish harvesting records. Trend in monthly availability of fish during the study period is shown in [Table 08](#). Fishes which were recorded in the table, they were more or less available round the year. But all the species were not available in all seasons. There were also some species which were found throughout the year. The highest numbers of species (19) were found in May and lowest numbers of species (9) were in January. Abundance of fish also varies from season to season depending on climatic conditions, reproduction and recruitment from natural stocks. However, percentages of different fish species during study were found in the [Figure 01](#).

Table 08. Monthly availability of fish in the old Brahmaputra river, Mymensingh

Species (Local Name)	January	February	March	April	May	June
Rui		←→				
Catla	←→					
Batashi		←→				
Gulsha tengra	←→					
Bujuri tengra	←					→
Magur			←→			
Gharua			←→			
Boal		←→				
Koi		←→				
Phul chela	←					→
Mola	←					→
Dhela	←		→			
Cheng			←→			
Titputi		←				→
Darkina			←			→
Baila		←				→
Taki	←					→
Tarabaim				←		→
Khalisha			←			→
Shing			←		→	
Choto itcha			←			→
Gutum			←			→
Kaikka			←	→		
Katchki		←				→

(Arrow Indicates availability of species during months)

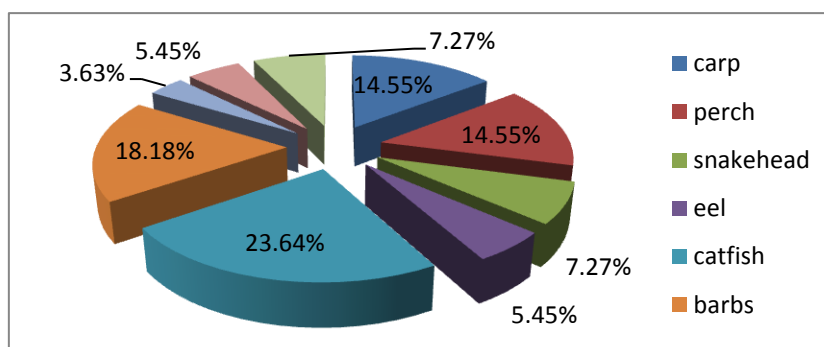


Figure 01. Types of fish group as recorded during the period of study.

IV. Conclusion

Fish population of old Brahmaputra River has been declining very fast. Fishermen and local elites reported that some species of fish were less common due to change in water current, depth of water, over fishing, temperature etc. Availability and abundance of the fish observed during the period of study were closely related to seasonal variations. There were also some species which were found throughout the year. The highest numbers of species (19) were found in May and lowest numbers of species (9) were in January. Fish and fishermen are closely related to each other, so the concerned authority should take necessary steps to improve their livelihood status aiming at raising their standard of life.

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APA (American Psychological Association)

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