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Fishery Status and Socio-Economic Conditions of Fishers of Kumri Wetland in Goalpara District, Assam

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ABSTRACT

A study was carried out from January, 2018 to June, 2018 to evaluate the present fishery status and socio-economic condition of fishers of Kumri wetland in Goalpara District, Assam. Data on marital status, educational status, religion stasus, family size, sex ration, age group, monthly income, craft and gears used in fishing, fish diversity of the wetland were collected and analyzed. Out of 50 fishermen families, maximum 42% were illiterate; 52% families were found consisting of 5—7 members. Fishing is the primary occupation of 65% fishermen and 83% fishermen families were found living in Katcha house; 78% fishermen have own fishing tools and different types of fishing nets. Other 22% fisherman borrows nets or other gears from their neighbors. A total of 49 fish species were recorded from the wetland, out of which maximum 20 species were recorded under Cyprinidae family. Socio-economic condition of fishers of Kumri beel is unsatisfactory and miserable. Fishery status of the wetland is also very poor. There is a need of awareness program on scientific aquaculture management techniques for the fishermen of the wetlands.

Keywords Fishery status, Socio-economic conditions, Kumri wetland, Gears used in fishing.

INTRODUCTION

Assam is gifted with myriads of wetlands or beels, which are not only the potential source of fish production but are natural repository of valuable biodiversity of local, national and international importance. National Inventory of Wetlands listed a total of 32 wetlands of national importance in Assam, of which 23 are natural and 09 wetlands are categorized as man-made wetlands. Goalpara District of Assam has highest numbers (10 nos) of wetlands namely Chandakhal, Dalani, Dhir, Hasila, Kanara, Kumri, Medo, Sareswar, Tamranga and Urpad beel.

Fresh water capture fishery is a very important source of employment and income generation as well as a pillar of rural food security and livelihood for rural people of Assam (Sarma and Dutta 2012). Beel fishery is also an important component of the fisheries of Assam and Assam alone constitute about 1, 00,000

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ha of wetlands area (Lahon 2009). Thus, there is a great role of wetlands in offering nutrition and different benefits to the people generating economy and livelihood, which can strengthen the socio-economic condition of the fisher.

Study of socio-economic status is an important factor for sustainable management of wetlands and enhancement fish production as well as upliftment of rural economy (Bordoloi et al. 2012). For the overall planning, development and implementation in fisheries sector, it is necessary to have the sound knowledge about the livelihood pattern of the related people (Hossain et al. 2014).

Few research works have been carried out pertaining to ecology and fisheries of the wetland in Goalpara District (Sarma and Dutta 2012, Bhattacharyya and Dutta 2012, Sarma et al. 2012 and Barhai et al. 2015). But, there is little information available on fisheries of Kumri beel and nothing has been reported on the socio-economic condition of fishers engaged in the beel. The present study has therefore been carried out to evaluate the fishery status and socio-economic conditions of the fishers of Kumri wetland in Goalpara District, Assam.

MATERIALS AND METHODS

Study area

The study area i.e. Kumri beel (Figs. 1 and 2) is located near to Southern bank of the Brahmaputra River in the Goalpara District (between latitude 25° 53′ to 26° 30′ N and longitude 90° 07′ to 91° 05′E) of Assam. The wetland lies between the latitude and longitude of 26° 14′ N and 90° 13′ E respectively. It covers an area of about 200 ha. It is a natural wetland, which harbours large numbers of aquatic flora and fauna including varieties of migratory birds. There are about 200 families of fishers, who earn their daily income from the aquatic resources of the beel.

Methods of data collection

Investigation was carried out for a period of six months, commencing from January, 2018 to June, 2018. Study were done based on both primary and secondary data. The primary data were collected from the field through household survey and spot observation. The survey were based on the analyses of data regarding various socio-economic attributes

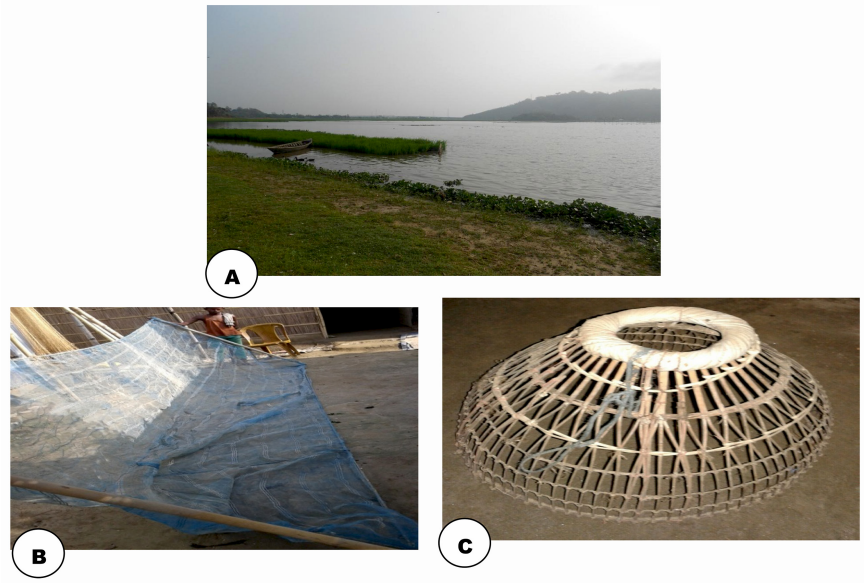

Fig. 1. A side view of Kumri beel.

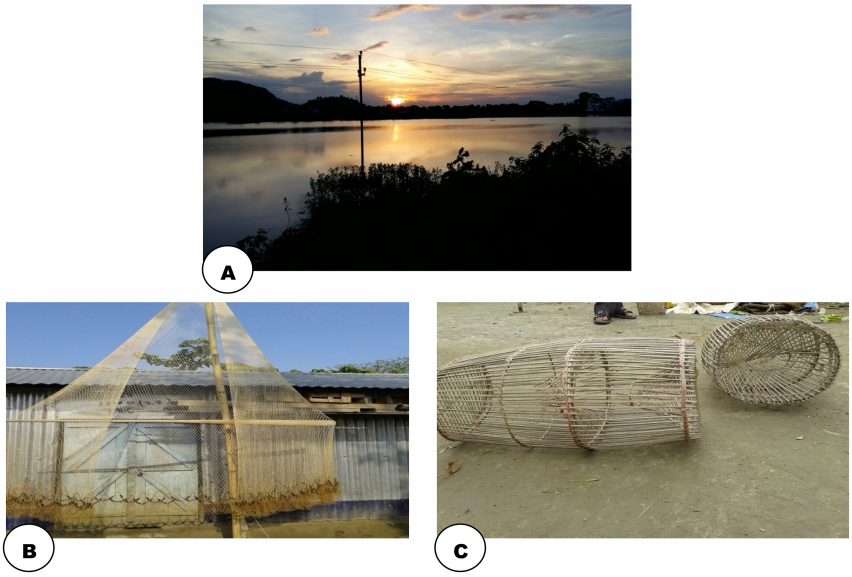

Fig. 2. View of Kumri beel during monsoon.

or parameters. The parameters include marital status, educational status, religion status, family size, sex ration, age group, monthly income, housing pattern of the fishermen, the craft and gears used in fishing and their sources, fish composition and other earning sources.

Secondary data were also collected through observation and interview with fishers using well structured questionnaire, which consist of questions relevant to the objectives of this study. A total of 50 fisherman families were selected randomly for survey and information were recorded both from the filled in questionnaire and verbal responses to the different questions (in case of illiterate persons). The head, mainly the one who earn for the whole family was interviewed. Secondary materials were also collected from the various government documents, publications, survey reports, statistical year book. The information regarding the aquatic flora and fauna were collected from the field. Diversity of fishes was determined from landing center and observing fishing (once in a week) mostly in the early morning and evening hours. Fishing gears used by the fishers in the beel were also recorded.

Data processing and analysis

The collected data were thoroughly examined and arranged carefully. All the data were converted in to tabular form for easy calculation and analysis by using MS-Excel program. Fish species were identified following after Talwar and Jhingran (1991), Vishwanath (2002). They were classified as per the IUCN red list categories (IUCN 2018). Graphical analysis was also performed using MS-Excel program to present the data of fish diversity.

RESULTS AND DISCUSSION

Socio-economic condition of fishers

In this study, socio-economic status of fishermen families of Kumri beel is presented in the Table 1 in various variables. It has been found that out of 50 fishermen maximum 42% were illiterate in the study area, while 40% were LP passed and rest 18% fishermen were ME passed. Level in education is the main way for overall development of soico-economic condition of a community. In this study, education level of the fishers was not found satisfactory. Family size of fishermen can be classified into four categories

Table 1. Demographic parameters of the fishermen in Kumri beel, Goalpara District.

Sl. No.	Variables	Frequency	Percentage
1.	**Level of education**		
	Illiterate	21	42%
	LP passed	20	40%
	ME passed	9	18%
	Total	50	100%
2.	**Family size (Nos)**		
	2 to 4	12	24%
	5 to 7	26	52%
	8 to 10	5	10%
	Above 10	7	14%
	Total	50	100%
3.	**Age (Years)**		
	20 to 30	12	24%
	31 to 40	18	36%
	41 to 50	14	28%
	51 to 60	06	12%
	Total	50	100%
4.	**Monthly income (Rs)**		
	Below 2000	15	30%
	2000 to 5000	28	56%
	Above 5000	07	14%
	Total	50	100%
5.	**Fishing hours**		
	4 to 7	24	48%
	5 to 10	12	24%
	10 to 15	14	28%
	Total	50	100%
6.	**Source of fishing gears**		
	Own	39	78%
	Borrowed	11	22%
	Total	50	100%

depending on the number of family members namely small family (2-4), medium family (5-7), large family (8-10) and very large family (above 10). The highest percentage (52%) of medium family was observed consisting of 5-7 members (Figs. 3A–3F). Bharali and Deka (2016) opined that high family sizes and non-availability of own good fishing gears leads to poverty of fishers.

The age of the fishermen ranged from 20 to 60 years. Maximum (36%) fishermen were fall in the 31 to 40 age group and minimum (12%) were in the 51 to 60 years age group. Fishing is the primary occupation (65%) for most of the fishermen. However, about 35% fishermen are secondarily engaged in fishing or fish related activities. It was found that 83% fishermen families were lived in a Katcha house made by Bamboo with mud floor. The maximum 56% fishermen were capable to earn a monthly income within the range between 2000 and 5000. The level of income was fluctuated due to banned and non-banned season for fishing; 48% fishers are engaged in fishing activities for 4-7 h in a day. All the fishermen families under our survey area were Muslim. According to Hossain et al. (2015), religion can play a very important role in socio-cultural activities of people in an area.

Improvement of their social life and economic condition is very important in context of our national economic development (Hossain et al. 2014). It has been observed that the economic condition of the fisherman was very poor. Most of the fishermen were compelled to do other job apart from fishing to sustain their livelihood. During banned season, fishermen are mostly engaged in other activities like agriculture, net or bamboo trap making. Some members are also engaged as labor in the coal industry (at Jogighopa), which is very near to the beel. It may mention that majority of the fishermen are not aware about the modern tools and techniques of fish capture. Though the males are mainly engaged in the fishing activity,

Fig. 3 (A to F) A. Dhor jal, B. Chat jal. C. A Polo, D. Kaita, E. A house of fisherman. F. A toilet of a fisherman family.

females are also accustomed with the traditional techniques of fish capture and making of bamboo traps. The level of education is very less might be due to low income of the fishermen.

Fishing tools

Apart from boat, various kinds of suitable fishing nets and traps are always necessary for higher rate of success in fish capture; 78% fishermen were having own fishing tools and different types of fishing nets of various mesh size. The main fishing nets are *Tungi jal, Jhaki jal, Langi jal, Phansi jal, Tongi jal and Chat jal. Among these. Jhaki jal, Langi jal, Tongi jal, Chat jal* were most extensively used in Kumri beel. Other bamboo traps such as *Polo, Kaita* are also used by the fishers apart from fishing hooks of various sizes. However, 22% fisherman borrows nets or other gears from their neighbors. They used mainly the traditional fishing gears made by themselves. They were not aware about the updated fishing and aquaculture techniques.

However, the fishers of the wetland are suffering from various problems such as lack of own fishing gears, insufficient knowledge of non-fisheries activities, lack of scientific expertise in fish farming, non-availability of facilities to combat fish disease, ineffective marketing system, poor transport facilities. Besides, the fish diversity of the wetland are also in declining trend might be due to pollution from coal industry, use of pesticide in the surrounding agricultural field, indiscriminate fishing in the beel, introduction of invasive fish species in the wetland, fish disease. On the other hand, extreme rainfall or flood during the rainy season and drying up of the wetland during dry season are also the reasons for unsatisfactory economic conditions of the fishers.

Fish faunal diversity of the beel

A total of 49 fish species belonging to 21 families were recorded during the studied period from the Kumri beel. The fish species recorded are enlisted in the Table 2 along with their local name and IUCN status. Highest number of fish species (20 nos) was recorded under the family Cyprinidae. As per IUCN status, there were one vulnerable species, three near

Table 2. Fish composition of Kumri beel in Goalpara District, Assam.

Sl. No.	Fish species	Local name	IUCN status
1	*Ailia coila*	Kajoli	NT
2	*Amblypharyngodon mola*	Moa	LC
3	*Anabas testudineus*	Kawoi	DD
4	*Badis badis*	Randhoni	LC
5	*Barbonymus gonionotus*	Puthi	LC
6	*Cabdio morar*	Boriola	LC
7	*Chanda nama*	Chanda	LC
8	*Channa punctata*	Goroi	LC
9	*Channa striata*	Shol	LC
10	*Chitala chitala*	Chital	NT
11	*Cirrhinus mrigala*	Mirika	LC
12	*Cirrhinus reba*	Lasim	LC
13	*Clarias batrachus*	Magur	LC
14	*Clupisoma garua*	Neria	LC
15	*Ctenopharyngodon idella*	Grass carp	NE
16	*Cyprinus carpio*	Common carp	VU
17	*Esomus danricus*	Dorikona	LC
18	*Gagata cenia*	Keyakata	LC
19	*Gibelion catla*	Bhakua	LC
20	*Glossogobius giuris*	Patimutura	LC
21	*Gudusia chapra*	Karati	LC
22	*Heteropneustes fossilis*	Singi	LC
23	*Labeo bata*	Bata	LC
24	*Labeo gonius*	Kurhi	LC
25	*Labeo rohita*	Rou	LC
26	*Laubuka laubuca*	Laupota	LC
27	*Lepidocephalichthys guntea*	Getho	LC
28	*Macrognathus aral*	Tura	LC
29	*Macrognathus pancalus*	Tura	LC
30	*Mastacembelus armatus*	Bami	LC
31	*Monopterus cuchia*	Cuchia	LC
32	*Mystus bleekeri*	Singora	LC
33	*Mystus vittatus*	Singora	LC
34	*Nandus nandus*	Gedgedi	LC
35	*Notopterus notopterus*	Kanduli	LC
36	*Parambassis ranga*	Chanda	LC
37	*Pethia conchonius*	Puthi	LC
38	*Pethia ticto*	Puthi	LC
39	*Puntius chola*	Puthi	LC
40	*Puntius sophore*	Puthi	LC
41	*Rasbora daniconius*	Darikona	LC
42	*Rasbora rasbora*	Darikona	LC
43	*Salmophasia bacaila*	Chelkona	LC
44	*Sperata aor*	Ari	LC
45	*Tetradon cutcutia*	Gangatop	LC
46	*Trichogaster fasciata*	Khalihona	LC
47	*Trichogaster lalius*	Sota kholsa	LC
48	*Wallago attu*	Barali	NT
49	*Xenentodon cancilla*	Kokila	LC

threatened species, 43 least concern species, one data deficient species and one species under not evaluated category. Barhai et al. (2015) recorded 26 fish species under 21genera from the Kumri beel of Goalpara District. Fish production of a wetland has a direct inpact on the gross economic condition of the fishers engaged in the same. According to the fishermen, the overall fish production of the beel is reducing in an alarming rate. Bhattacharyya (2016) reported the fish production of the beel in the session 2012-13 was 46,666 kg, which was decreased to 36,666 kg in the next session (2013-2014).

From the studies, it can be concluded that the soico-economic condition of fishers of Kumri beel is unsatisfactory and miserable. The fishers are facing lots of poblem to sustain their livelihood. They are with little scientific and technical expertise to make the wetland more productive. The fishery status of the wetland is also very poor because of decreasing trend of fish diversity due to various natural and anthropogenic threats. Therefore, there is an urgent need of extension or awareness program on scientific aquaculture management techniques for the fishermen of the wetlands. On the other hand, there is scope of eco-tourism development in the Kumri wetlands which will generate alternate employment opportunities not only for the fishermen but for the local youth of the region. Government also can create employment opportunity for the fishermen by establishing fish based industry or ecohatchery near to the wetland along with technical assistance to the fish farmers.

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