

Fish diversity and livelihood status of fishermen of Teesta Barradge in Lalmonirhat district of Bangladesh

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ABSTRACT

The present study was carried out in Teesta Barradge, the largest wet land of Bangladesh situated in the northwest region. This study was conducted from July to December 2017. It was estimated that most of the fish capture and culture in the Teesta Barradge were Indian major carps (38%) and 2% were small indigenous species. Data showed that fishermen of all categories were not highly educated rather up to class 5. Among 30 fishermen maximum practiced the farming system (Crop + Livestock + Poultry + Fisheries). There were no fishermen who practiced only agro-forestry, orchard and nursery. In the study area, it was found that 56% people lives with nuclear families and 44% live with joint families. Nuclear-families were popular because of getting freedom of movement and economic opportunities, well dress, better education and authority. Majority (58%) of fishermen had only 0.002-0.045 ha land while lowest 6% fishermen had 0.083-0.123 ha land. The study showed that household (HH) of 100% fishermen used tube-well water for drinking and among them 93% HH used owned tube-well, and remaining 7% used tube-wells belonging to others. It was found that 63% fishermen received treatment from the quack and only 27% visited trained doctors for treatment of disease. Fishermen of the study area faced various types of problems on their livelihood. The main constraints in improving this living standard were the lack of input and the persistent indebtedness to the usurious traditional credit system.

Introduction

Teesta Barrage is located on Teesta River at Duani in Hatibandha upazila in Lalmonirhat district of Bangladesh. The barrage is a 615m long concrete structure fitted with 44 radial gates having a discharge capacity of 12,750 cusec of water. It is used to divert 280 cusec of water for irrigation through a canal taking off on the right bank. The construction of the barrage started in 1979 and that of the irrigation canals in 1984, and was completed in 1997-98. The Teesta Barrage has been completed in 1990 to provide irrigation water in three crop seasons from the river through canal networks in the TBIP catchment area. It is a concrete structure of 615 m long fitted with 44 radial gates having a discharge capacity at 12,750 cusec. Water is diverted by the Barrage through a canal head regulator at 110 m long with a discharge capacity of 280 cusec. There is 4,500 km long network of canal system for supply of irrigation water to the field. In order to exclude silt from entering into canal system, silt trap covering an area of 45.0 hectares has been constructed just below the head regulator.

Teesta barradge is a very good natural habitat large and small indigenous fishes of differences food habits. Many of the fish species can multiple in number in Teesta Barradge. People living in village around the barradge harvest the fish almost round the year without any prior investment except catching devices. A large portion of rural families are engaged in part time fish capture from the flood plains. Fish and fishery resources play a vital role in

improving the socio-economic condition, combating malnutrition, earning foreign-currency and creating employment opportunities in Bangladesh. Bangladesh has extensive water resources of about 4699387 ha of which 3916828 ha is inland open water and 782559 ha is closed water. Beel fisheries are covering the area of 114161 ha with an average productivity 770 kg/ha/yr. In case of culture-fisheries, especially in ponds and ditches covering the area of 371309 ha with an average productivity of 3896 kg/ha/yr, the productivity of pond and ditches are 5 times higher than that of beel fisheries (FRSS, 2012-13). Teesta Barradge can be considered as one of the ideals fish production area in Bangladesh. Teesta Barradge is suitable for indigenous fishes and culture fishes. Fisher folk are considered as one of the most backward sections in our society. Information on socio-economic framework of the fishermen forms a good base for planning and development of the economically backward sector. Lack of adequate and authentic information on socio-economic condition of the target population is one of the serious impediments in the successful implementation of developmental programme (Ellis, 2000). Aquaculture practice has become a promising and gainful methodology to attain self-sufficiency in food sector and also to alleviate poverty in developing country like Bangladesh (Ahmed, 2003). A livelihood is sustainable when it can cope with and recover from stress and shocks and maintain to enhance its capabilities and assets both now and in the future (Chambers and Conway, 1992). The social content is especially important particularly access arrangement and assessments of benefits to

livelihood (Azucena *et al.*, 2001). The aim of this study was to assess the natural resources of fishes, relative economic performance (Land holding, labour, utilization gender etc.), evaluation the social changes (nutrition, housing, mobility, group involvement etc.) also to identify the constraints associated with fish diversity and livelihood status of the fishermen.

Materials and Methods

Study area and duration

The present study has been carried out study in Teesta Barradge the largest wet land of Bangladesh situated in the northwest region (Figure 1). This study was conducted between July to December 2017.

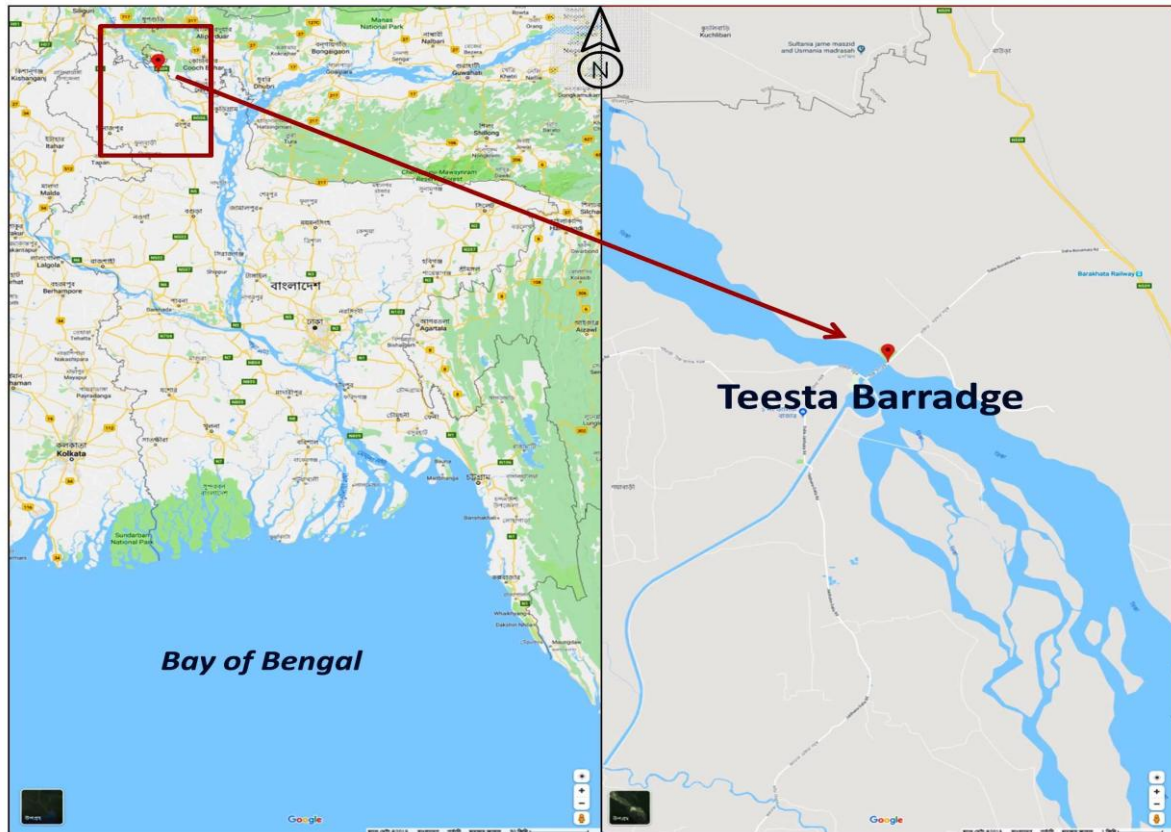


Fig 1: Study area located on the map

Data collection

Field surveys were used for the collection of primary data. For the confirmation of the secondary data, primary data were used. By using questionnaire interviews and direct observations, primary data were gathered for this survey and secondary data collected from government organizations, Department of Fisheries (DoF).

Questionnaire interviews

Thirty fishermen were carefully chosen as the most suitable in the study area through careful inspection for the questionnaire interviews. Questionnaire was examined in the field before interviews. At the market center, traders were interviewed through a formal conversation for this purpose. Information about Teesta Barradge, fish availability, trading actions, constraints of fish marketing and socio-

economic conditions of fishermen are the consequences of the interviews.

Data processing and analysis

Using Microsoft Excel software, data from different relevant sources were coded and recorded into a database system. To make certain the accuracy of the data recorded at each stage of the survey, similarity between preparatory data sheets and the original coding sheets were assessed; accuracy and quality of the data were examined up, edited and coded at the field level.

Results and Discussion

Available captured fish

It was estimated that about most of the fish capture and culture in the Teesta Barradge are Indian major carps, catfish, tilapia, exotic fish and small

indigenous species (Fig 2). Many varieties of freshwater fish (130 species) are available in Lalmonirhat district (Chandra, 2009).

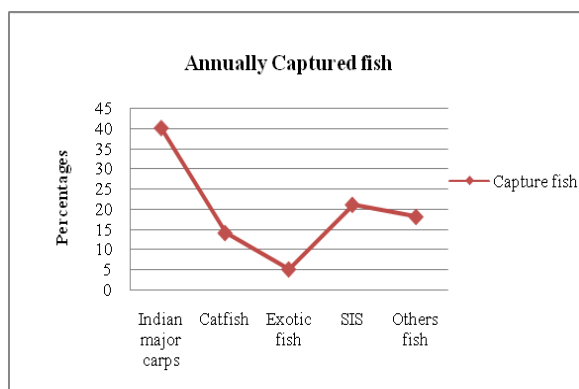


Fig 2: Group of fish species in Teesta Barradge

Table: 01 Average fish price

Fishes	Landing (Kg/year)	Farm gate price (kg/yr)	Wholesale price (Tk/Kg)	Retailer price
<i>Ctenopharyngodon idellus</i>	4000	120±10	130±10	150±10
<i>Puntius gonionotus</i>	3000	130±10	140±10	160±10
<i>Tilapia mossumbicus</i>	5000	90±10	100±10	120±10
<i>Hypophthalmichthys molitrix</i>	3000	100±20	120±20	150±20
<i>Aristichthys nobilis</i>	4500	120±15	130±15	160±15
<i>Cyprinus carpio</i>	5000	130±10	150±10	180±10
<i>Oreochromis niloticus</i>	4000	150±20	160±20	190±20
<i>Labeo calbasu</i>	4500	160±15	180±15	200±15
<i>Catla catla</i>	6000	180±10	200±10	220±10
<i>Labeo rohita</i>	5000	180±20	200±20	220±20
<i>Labeo bata</i>	4500	175±10	220±10	250±10
<i>Anabas testudineus</i>	7500	220±20	230±20	250±20
<i>Clarias batrachus</i>	4000	450±10	480±10	510±10
<i>Heteropneustes fossilis</i>	6500	300±15	320±15	350±15
<i>Ompok pabda</i>	5000	450±20	500±20	550±20
<i>Mystus vittatus</i>	2500	200±20	220±20	250±20
<i>Channa punctatus</i>	3500	160±10	180±10	200±10
Others fish	20000	250±15	280±10	300±15

Table 2: Average age, education and Family composition:

Fishermen category	Age (year)	Educational level (%)					Family size (no.)	Number of sample Fishermen
		Illiterate	Class V	S.S.C	H.S.C	>H.S.C		
Landless	57	33.33	66.67	-	-	-	6.3	3
Marginal	47	14.29	85.71	-	-	-	4.7	7
Small	44	18.18	68.18	4.55	9.09	-	4.6	22
Medium	48	-	28.58	57.14	7.14	7.14	6.3	14
Large	55	-	50.00	50.00	-	-	5.2	4

Table 3: Major farming systems of the sample Fishermen

Major Farming Systems	No. of Households	Percentage (%)
Crops	3	10
Crop + Livestock + Fisheries + Poultry	2	7
Crop + Livestock + Poultry	3	10
Crop + Livestock	2	7
Crop + Livestock + Fisheries	3	10
Crop + Fisheries + Poultry	3	10
Crop + Poultry	1	3
Crop + Fisheries	6	20
Livestock + Fisheries + Poultry	2	7
Livestock + Poultry	1	3
Fisheries + Poultry	3	10
Livestock + Fisheries	1	3
Total	30	100

Age distribution, literacy level and farm category of selected fishermen

The survey showed that the average age of landless (55 years) higher than others fishermen. Table 1 also showed that fishermen of all categories were not highly educated. Most of them were educated up to class 5. The landless and medium fishermen have comparatively higher family size than other categories of the Fishermen.

Major farming systems followed by the sample fishermen

Among 30 sampled Fishermen maximum practiced the farming system (Crop + Livestock + Poultry + Fisheries). There were no Fishermen who practiced only agro-forestry, orchard and nursery.

Family type and size

In the study area, it was found that 56% people lived in nuclear families and 44% live in joint families. Nuclear-families were popular because of getting freedom of movement and economic opportunities, well dress, better education and authority. The highest percentages (37.76%) found for 7-8 members for joint family, the lowest percentage (1.25%) was obtained for 1-2 members. Small family (members < was found in majority (48%) cases in fishermen (Abdullah-Bin-Farid et al 2013). Mahabubullah (1986) found that family size of 44% household was varied between 6 and 8 members.

Housing condition

92% people constructed their house on their owned land and 8% have no house. Majority 66% Fishermen were living in earthen house. (Ahmed, 1999) reports that the housing conditions of most of the fishermen are poor, their house made of mud and one kind of wood leaves. Most of the family constructed their house in own land.

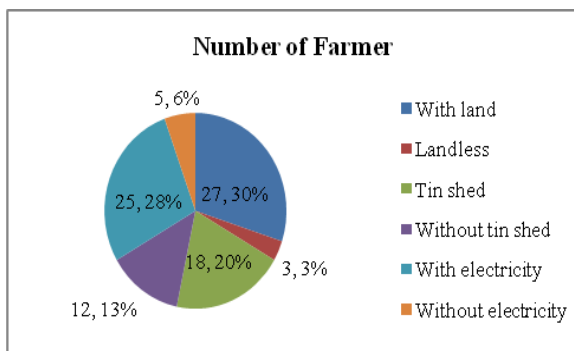


Fig.3 Housing condition in the study area

Land holding status

Majority (58%) of fishermen had only 0.002-0.045 ha land while, 22% fishermen had 0.045-0.082 ha land, 6% fishermen had 0.083-0.123 ha land, 6% fishermen had 0.124-0.164 ha land and 12% of them had above 0.164 ha land. Shahriar et al. (2010) found that the average homestead area of the fishers is 0.003 ha in Lalmonirhat district.

Drinking water facilities

The study showed that household (HH) of 100% fishermen used tube-well water for drinking and among them, 93% HH used owned tube-well, and remaining 7% used tube-wells belonging to others.

Sanitation

In the study area 36% fishermen had sanitary latrine for defecation, 10% used semi-pacca latrine and 40% used kacha latrine. However, 14% fishermen do not have any latrine and they defecated beside the bank of the River and agricultural land (Table 2).

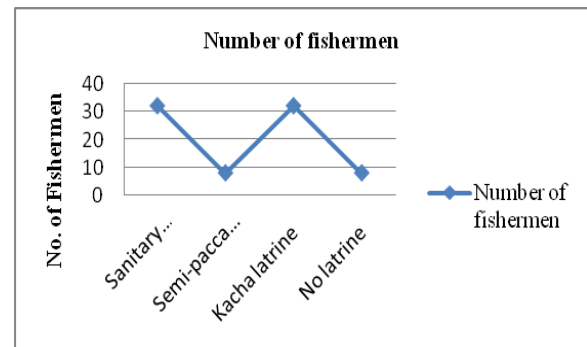


Fig. 4 Sanitation system in the study area

Health and diseases

Information was collected on the nature of treatment of the people. It was found that 63% Fishermen received treatment from the quack and only 27% visited trained doctors for treatment of disease.

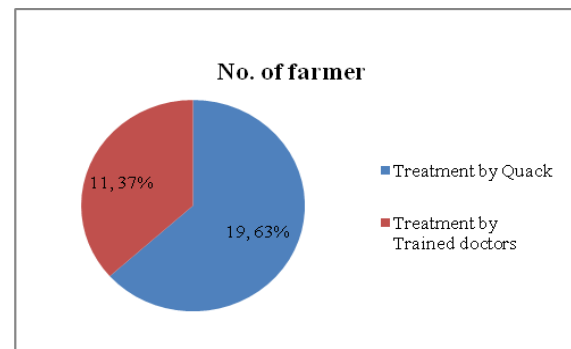


Fig. 5 Diseases Treatment system by fishermen

Problem faced by the fishermen

Fishermen of the study area faced various types of problems on their farming practices. These problems were summarized by the following table 13. Ali *et al.* (1982) and Ali & Rahman, (1986) reported that lack of scientific knowledge, attack of fish disease and non availability of good quality fish fry are a major problem in fish culture in Bangladesh. The main constraints in improving this living standard were the lack of input and the persistent indebtedness to the usurious traditional credit system. Chowdhury (1981) also reported that lack of fund for re-excavation of water bodies ranked first among all the problems faced by the fishermen of Bangladesh.

Table 4: Problems faced by the Fishermen in the study areas

Problems	% Fishermen suggested	Solution(s)
Lack of knowledge about new crop variety/technology	50	Providing Training facilities
Lack of quality seeds / fingerlings / duck links	57	supply of quality seed/fingerlings
Lack of credit facilities	48	Providing credit facilities
Lack of knowledge about fish feed and pond management	97	Providing training facilities
Lack of knowledge about homestead vegetables production	82	Providing training facilities
Lack of transportation facilities	91	should improve transportation facilities
Cultivated lands are not sufficient	35	Require Lease in, Lease out land facilities.
lack of medical facilities for livestock	88	need veterinary clinic

Conclusion

Teesta Barradge is the full sources of fisheries resources and the present socio-economic status of the fishermen of Teesta Barradge was satisfactory. Most of them were solely depended on fishing for their-livelihood. They were aware of proper sanitation system, schooling of children, balance nutrition and even their health conditions. However, some of them wanted to change their profession for better living. The fishermen should be given amenities for education so that they can be well aware of their problems and upholding prime rights. The credit system must be changed and public banks should provide low interest loan among the fishermen. All the water resources should be utilized in a sustainable way to get maximum production year after year by using suitable technology.

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