

**Research Article**

Fish diversity and Livelihood status of fish farmers of Teesta barradge in Bangladesh

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ABSTRACT

A survey was conducted in Teesta barradge to determine the fish production and livelihood status of fish farmers for a period of thirty six months (July 2017-December 2017). The survey was conducted on 30 fish farmers of 6 villages under 3 Unions. Data were collected through personal visit and interviews following a detailed questionnaire. Total fish production from the Teesta barradge was 120 tons in 2017. The total fish production in the Teesta barradge declined by 45% in 2017 compared to the production in 2000. Among the fish farmers 38% was illiterate whereas 12, 29 and 21% were educated upto primary secondary and higher secondary or above level, respectively. 70% fishermen were with 0.042 hectare lands. Above 65% were lived in nuclear-family and rest 35% are joint family. 35% people lived in earthen house, constructed by grass leaves and mud. The highest percentage (38%) fish farmers earned Tk. 50,000-75,000 per year, 27% earned Tk. 75000-1,00,000 and the rest 35% earned above Tk. 100,000 annually. About 48% of them were found to be use electricity. Fish farmers were found to face various problems such as social, economic and technical problems, which were identified during the study. Necessary overcome efforts are also suggested according to the problems

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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 cumec. Water is diverted by the Barrage through a canal head regulator at 110 m long with a discharge capacity of 280 cumec. 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 fish farmers 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 culture and livelihood status of the farmers.

MATERIALS AND METHODS

The present study has been carried out study in Teesta barrage the largest wet land of Bangladesh situated in the northwest region (Figure 1). This research was conducted between July 2017-December 2017. Field surveys were used for the collection of primary data. For the confirmation of the secondary data, primary data were used. The study area was visited officially to check on standards in term of fish availability and marketing information. 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). A 30 fish farmer were carefully choose 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 fish marketing, pricing policy, trading actions, constrains of fish marketing and socio-economic conditions of traders are the consequences of the interviews. 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.

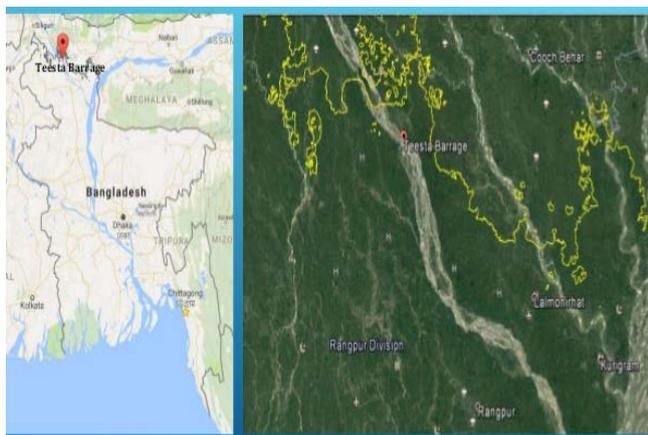


Fig. 1: Location of Teesta barrage

RESULT AND DISCUSSION

Available Fish

Many varieties of freshwater fish (130 species) are available in Lalmonirhat district (Chandra, 2009). It was estimated that about most of the fish sold in the Teesta barrage are Indian major carps, catfish, tilapia, exotic fish and small indigenous species (Table 1)

Income and living standard

The farming sources included agriculture, Crops, aquaculture and livestock. It was found that agriculture was the main profession, which accounts 51.1% and the second most common profession was aquaculture practice 18.9% which is as same as Islam & Dewan (1986). Women involvement in earning was some extent low but in some households it was at desired level. Most of the fish farmers had improved their living standard through aquaculture practices.

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 in a family, the lowest percentage (1.25%) was obtained for 1-2 members. Small family (members < was found in majority (48%) cases in fishermen of the Baluhar Baor, Jhenaidah, Bangladesh (Abdullah-Bin-Farid *et al* 2013). Mahabubullah (1986) found that family size of 44% household was varied between 6 and 8 members.

Housing condition

95% people constructed their house on their owned land and 5% have no house. Majority 66% respondents 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.

Use of electricity

It was observed in the study area that majority households (12%) had no electricity connection. DoF (1996) reported from that only 2% fishermen used electricity. Samima (2000) reported that 20% used electricity in Gollamari fishing community.

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 Jamalpur 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 status

The sanitation status found poor in most cases. The finding of the survey revealed that 46% household used closed pit latrines followed by earthen latrines (34%).

Health and diseases

Information was collected on the nature of treatment of the people. It was found that 64% respondents received treatment from the quack and only 16% visited trained doctors for treatment of disease. From the survey, it was found that 45% women suffered from skin diseases like diseases like fungal skin diseases, skin irritation.

Problem

The major problems were lack of technical knowledge about fish farming livestock and poultry farming, educational institutions like school, college, etc. as well as infrastructural facilities for the respondents, poor sanitation, credit facilities, insufficient medical. 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 fish farmers of Bangladesh.

CONCLUSION

Teesta barrage is the full sources of fisheries resources and the present socio-economic status of the fish Farmer of Teesta barrage 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 fish farmers should be given amenities for education so that they can be well aware of their problems and prime rights. All the water resources should be utilized for fish culture to get maximum production by using suitable technology.

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Table: 1 Fish production in the Teesta barrage

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 mossambicus</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>Clarias gariepinus</i>	4500	350±10	370±10	400±10
<i>Labeo calbasu</i>	4500	160±15	180±15	200±15
Indigenous Fishes				
<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
Live fishes				
<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

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