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FISHERIES AND SOCIO-ECONOMIC CONDITION OF FISHER'S COMMUNITY OF ESHULIA BEEL AT GOURIPUR UPAZILA UNDER MYMENSINGH DISTRICT

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A B S T R A C T

The study was conducted to determine the present status of fisheries and socio-economic conditions of the fisher's community of Eshulia beel at Gouripur upazila under Mymensingh district for a period from February to November, 2013. Relevant information and pertinent data were collected by personal observation and other three participatory methods such as questionnaire interview, focus group discussion (FGD) and cross-check interview. A total of 58 fish species belong to 18 families were identified in the catches of different gears. Among them 37 species were resident, 14 species were non-resident and 7 species were exotic. Thirteen different kinds of fishing gears were identified under 5 major groups including 5 nets, 3 traps, 2 hooks, 2 spears and khata/zag in the beel. It was found that 65% of the fishermen were Muslim and 35% were Hindu. Most of the fishermen belonged to the age group of 36-50 years. In case of education, 32.5% were illiterate, 40% can sign only, 15% of the fishers had literacy up to primary level , 7.5% had literacy up to secondary level and 5% had higher secondary and above. 75% of the fishermen's houses are katcha, 17.5% are tinshed and only 7.5% are half building. About 5% of the fishermen had high (TK 100000-TK 200000) income; 42.5% had medium (TK 51000-TK 100000) income and 52.5% had low (TK 25000-TK50000) income. No fisheries management regulations were followed in the beel. Recommendations were made to improve beel fisheries management through fish stocking, habitat restoration and active community participation for sustainable catch.

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INTRODUCTION

Bangladesh is endowed with very considerable marine, estuarine and inland waters and has rich extensive fisheries resources with a wide variety of indigenous and exotic fish fauna (Rahman, 1994) Among them open water fisheries resources are very much important for fish production. There are 6.78 lakh ha close water bodies and 40.24 lakh ha open water bodies in our country. Among them 8.5 lakh ha are rivers and estuaries, 1.8 lakh ha Sundarbans, 1.14 lakh ha beel, 28.32 lakh ha floodplains and 68,800 ha Kaptai lake (DoF, 2012).

Approximately 260 species of freshwater fishes, 475 species of marine water fishes, 25 types of tortoises and turtles, 150 species of water fowls, 50 species of reptiles, 24 species of mammals and 8 species of amphibians are found in Bangladesh (Ali, 1991; World bank, 1991; MAEP, 1996). Fisheries sector contributes 4.43% to GDP and 22.21% to agricultural GDP. Fish supplements to about 60% of our daily animal protein intake. About 10% of the population is dependent directly and indirectly on the fisheries for their livelihood (DoF, 2012).Among the vast inland fisheries resources, beels are more potential. Beel is one of the best natural habitats for the indigenous fishes of different food habits of Bangladesh. Among the inland capture fisheries the beel comprises an estimated area of 114,161 ha which is 2.63% of total inland fisheries. The average rate of production from beel is 714 kg/ha which can be increased manifold (DoF, 2012).

Although production from beel fishery increasing every year with a very small amount but several natural and anthropogenic causes observed in beels which causes lower production of fish. Eshulia beel at Gouripur upazila of Mymensingh district has been purposively selected as the study area, because its richness in fisheries resources. But unfortunately the fisheries resources have been declaiming day by day. The present research programmed was conducted to understand the types of different fishing gears used in fishing, quantity and quality of fish caught by each year through catch assessment and socio economic conditions of the people in the beel area. The present study was carried out in the Eshulia beel with the fishing activities in the beel area i.e. fish catch, duration of fishing and the use of fishing gears etc; present status of fisheries resources of the beel and To determine the socio-economic conditions of the fishers in the vicinity of the beel area; and to formulate the recommendation for effective management of the beel.

MATERIALS AND METHODS

Selection of the study area

Based on the problem and potentialities, I selected Eshulia beel in Gouripur upazilla under Mymensingh district. Eshulia beel (Figure 1) is a small beel which is 25 km east from the Mymensingh town. The study was conducted for a period from February to November 2013.

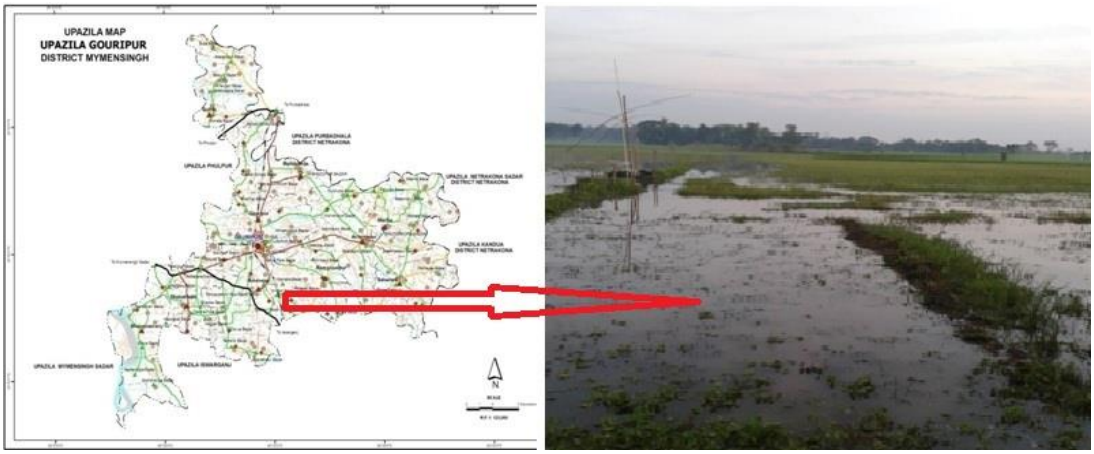

Figure 1. Location Map with the black marked indicates the study area of Eshulia beel in Gouripur upazila

Data collections

Data were collected both from primary and secondary sources To collects data with questionnaire interviews, simple random sampling method was followed in 40 fishermen in the Eshulia beel. For the present study, the PRA tool such as Focus Group discussion (FGD) was conducted with fishermen. After collecting the data through questionnaire interviews and FGDs, it was necessary to check the information by Cross-check interview for justification of the collected data.

Data processing and analysis

The collected data were coded, summarized and processed for analysis. The analysis of collected data was mainly based on tabular description technique. A number of tables were prepared on the basis of aims and objectives of the study. Finally, tabulated data were analyzed and condensed by using averages, percentages etc. to obtain the results.

RESULTS AND DISCUSSIONS

Fish diversity of the Eshulia beel

During the study period, 14 species of non-resident, 37 species of resident and 7 species of exotic fishes were found in the Eshulia beel. Once those fish which were dominant become rare in the course of time highly endangered or extinct.

Table 1. List of non-resident species recorded in Eshulia Beel during the study period

Family	Local name	Common name/English name	Scientific name
	Catla		*Catla catla*
	Rui	Indian major carp	*Labeo rohita*
	Mrigal		*Cirrhinus mrigala*
	Kal ibaus	Kalbasu/black rohu	*Labeo calbasu*
	Goinna	Kuria labeo	*Labeo gonius*
Cyprinidae	Silver carp	Chinese carp	*Hypopthalmicthys molitrix*
	Grass carp		*Ctenopharyngodon idella*
	Carpio	Common carp	*Cyprinza carpio var. communis*
	Mirror carp		*Cyprinus carpio var. specularis*
	Big head carp	Exotic carp	*Arishchthys nobilis*
	Rajputi/Thai sarputi	Minor carp/Minnows	*Puntius gonionotus*
Cichlidae	Nilotica	Cichlid fish	*Oreochromis niloticus*
	Thai pangas		*Oreochromis mossabicus*
Siluridae	Native Pangus	Thai catfish	*Pungusius sutchi*

Non-piscine diversity of the Eshulia beel

There are different non-piscine organisms were found in the Eshulia beel. Mollusks, Crustaceans, Amphibians, Reptiles, Arthropods were recorded during the study period.

Table 2. List of resident species recorded in Eshulia beel during study period

Family	Local name	Common name / English name	Scientific name
Anabantidae	Koi	Climbing perch	*Anabas testudineus*
	Chuna khailsha/Boicha	Goramy	*Colisa sota*
	Khalisha/khailsha	Goramy	*Colisa fasciatus*
	Ranga khailsha/ Patersa	Goramy	*Colisha lalius*
Anguillidae	Bamosh	Fresh water eel	*Anguilla bengalensis*
Bagridae	Guizza/Guzi	Giant river catfish	*Mystus seenghala*
	Gulsha	Catfish	*Mystus cavasius*
	Tengra	Catfish	*Mystus vittatus*
	Bajari tengra	Catfish	*Mystus tengara*
Centropomidae	Lalchanda	Glass-perch	*Chanda ranga*
Belonidae	Kakila/ kaikka	Needle fish/Gars	*Xenentodon cancila*
	Nama chanda/Lamba chanda	Elongate glass perchlet	*Chanda nama*
	Gol chanda	Glass-perch	*Chanda beculis*
Channidae	Taki/Lati	Snakehead	*Channa punctatus*
	Shoal	Snakehead murrel	*Channa striatus*
	Gajar/Gajal	Giant snakehead	*Channa marulius*
	Cheng/Raga/ Telotaki/Gachua	Asiatic snakehead	*Channa orientalis*
Clariidae	Magur	Walking catfish	*Clarias batrachus*
Clupeidae	Chapila	Shad/Herring	*Gudusia chapra*
Cobitidae	Gutum	Loach	*Lepidocephalus guntea*
Cyprinidae	Mola	Barb/Mola carplet	*Amblypharyngodon mola*
	Jatputi	Spot fin Swamp barb	*Puntius sophore*
	Kanchan punti	Rosy barb	*Puntius conchonius*
	Titputi	Barb	*Puntius ticto*
	Darkina	Barb	*Rasbora daniconius*
	Choto Darkina/Derka	Barb	*Esomus danricus*
	Narkali chela/katari	Minnow/Barb	*Salmostoma bacaila*
Cyprinodont-idea	Kanpona/Techoukka	Top-minnow	*Aplocheilus panchax*
Gobiidae	Baila/bele	Goby	*Glossogobius guiris*
Heteropneu-stidae	Shing	Stinging catfish	*Heteropneustes fossilis*
Mastacembelidae	Chirka	Striped spiny eel	*Mastacembelus pancalus*
	Bara baim/Shal baim	Tire-track spiny eel	*Mastacembelus armatus*
Siluridae	Madhu pabda	Catfish	*Ompok pabda*
Nandidae	Bheda/Meni	Mud perch/Mottled nandus	*Nandus nandus*
Notopteridae	Chital	Featherback/knife fish	*Notopterus chitala*
	Foli	Bronze feather back	*Notopterus Notopterus*

Table 3. List of extinct species in Eshulia beel

Family	Local name	English name	Scientific name
Cyprinidae	Dhela	Cotio	*Rohtee cotio*
Chacidae	Gilarchaki/Chaka/Gangeri	Indian chaca / Squre-head catfish	*Chaca chaka*
Belonidae	Ek-thota/Ektuti	Wrestling halfbeak/half beaks	*Dermogeneys pussilus*
Cyprinidae	Sarputi/Sarna puti	Olive barb	*Puntius sarana*
Bagridae	Ayre	Long-whiskered catfish	*Mystus aor*
Anabantidae	Neftani	Indian paradise fish	*Ctenops nobilis*
Cyprinidae	Kash khaira	Indian glass-barb	*Chela laubuca*

Table 4. List of non-piscine organisms recorded in Eshulia Beel, during the study period

Group	Family	Local name	English name	Scientific name
		Gura icha	Small prawns	*Macrobrachium lamerril*
		Chatka chingri	Freshwater prawn	*Macrobrachium malecolmsonii*
Prawns	Palemonidae	Golda chingri	Giant freshwater prawn	*Macrobrachium rosenbergii*
	Pelidae	Baro shamuk	Apple snail	*Pila globosa*
	Viviparidae	Choto shamuk	Small snail	*Viviparus bengalensis*
Mollusks	Melanoididae	Lamba shamuk	Long snail	*Melanoides tuberculatus*
	Eulamellibranchidae	Lamba jhinuk	Long bivalve	*Lamillidens marginalis*
	Corbiculadae	Gol jhinuk	Round bivalve	*Corbiculata sp.*
	Family	Local name	English name	Scientific name
	Patomonidae	Kakra	Crab	*Potamon sp.*
	Belostomidae	Katua poka	Giant water bug	*Belostoma sp.*
Arthropods		Choto poka	Water bug	*Abedus sp.*
	Nepidae	Lomba poka	Ranatra	*Ranatra sp.*
		Ghurni poka	Water scorpion	*Nepa sp.*
	Gerridae	Geris	Geris	*Gerris sp.*
		Sona bang	Indian bull frog	*Rana tigrina*
Amphibians		Gecho bang	Tree frog	*Rhacophorus leucomystex*
		Kuno bang	Common Toad	*Bufo melanostictus*
Reptiles		Dhura		*Naja naja*
		Gui	Lizard	*Varanus bengalensis*

Aquatic vegetation or plant biodiversity

A total of 16 species of aquatic vegetation under 5 groups recorded during the study period mostly dominant by free floating weed *Eichornia crassipes* and submerged weed *Vallineria* sp. (Table 5).

Table 5. List of aquatic vegetation in Eshulia beel recorded during the stuperiod from February to November 2013

Type	Family	Local name/English name	Scientific name
Leafly floating	Nymphaeaceae	Sada shapla	*Nymphaea nouchali*
		Lal shapla/Red waterlily	*Nymphaea rubra*
		Shaluk/waerlily	*Nymphaea lotus*
Free floating	Ponenderiaceae	Kachuripara/Water hyacinths	*Eichhonnia crassipes*
	Araceae	Topa pana/Water lettuce	*Pistia stratiotes*
	Lemnaceae	Khudipana/Duckweed	*Lemna minor*
	Salviniaceae	Kutipana/waervalvet	*Azolla pinnata*
	Nelumbonaceae	Padda	*Nelubo nucifera*
Submerged	Hydrocharitaceae	Pataseola/Eel glass	*Vallisneria spiralis*
Emergant	Convolvulaceae	Dholkalmi	*Ipomoea fistulosa*
Spreading	Araceae	Kachu	*Colocasia esculenta*
	Onagraceae	Keshordam	*Ludwigia adscondens*
	Convolvulaceae	Kalmishak	*Ipomoea aquatica*
	Compositaceae	Helencha	*Enhudra fluctuans*
	Compositaceae	Malancha	*Enhydra sp.*
	Oxalidaceae	Amrul shak	*Oxalis corniculata*

Fishing gears used in the Eshulia beel

The fishing gears found in the study area were classified into five groups namely net, trap, hook, FAD (Fish Aggregation Devices) and wounding gear or spears. Each of these types had again been classified into a number of sub-types (Table 6).

Table 6. Fishing gears used in Eshulia beel

Gear type		Gear name
Nets	Gill net	Current jal, Veshal jal, Moiya jal (onno para)
	Seine net	Ber jal
	Cast net	Jhaki jal
	Lift net	Dharma jal
	Push net	Thela jal
Traps		Unta chai
		Bitte chai
		Icha chai
Hooks		Chip borshi
		Chara borshi
Wounding gear/Spears		Teta without hook
		Teta with hook
FAD (Fish Aggregation Devices)		Khata/Zag

Socio-economic condition of fishers

Socio-economic condition of the fishers was studied following approach which comprised of human capital, physical capital, financial capital and social capital.

Human capital

Human capital represents the skill, knowledge, ability to work and good health, family size, educational level, religious status that together enable people to pursue their livelihood strategies.

In the present study, about 35% and 65% fishermen were found to be Hindus and Muslim. The family members of fishermen in the Eshulia beel were varied between 2 and 7. About 35% of the fishers had medium family, 22% with small family where 43% of fisher had large (family 9.a). In the study area, the fishermen were grouped into 3 age groups based on their age limit. These groups were young (20-35), middle aged (36-50) and old (above 51 years). Out of the total fishermen, around 75% of the fishermen related to fishing belong to the middle age group and elderly people and about 25% of fishermen belong to young age group (Figure 2.b). There was 32.5% of fishermen had no education, 40% of fishermen can sign only, 15% of fishermen were up to primary level of education, 7.5% were secondary level and 5% were higher secondary level and above was lack of awareness about education and there is no well-developed educational infrastructure in the Eshulia beel areas (Figure 2.c).

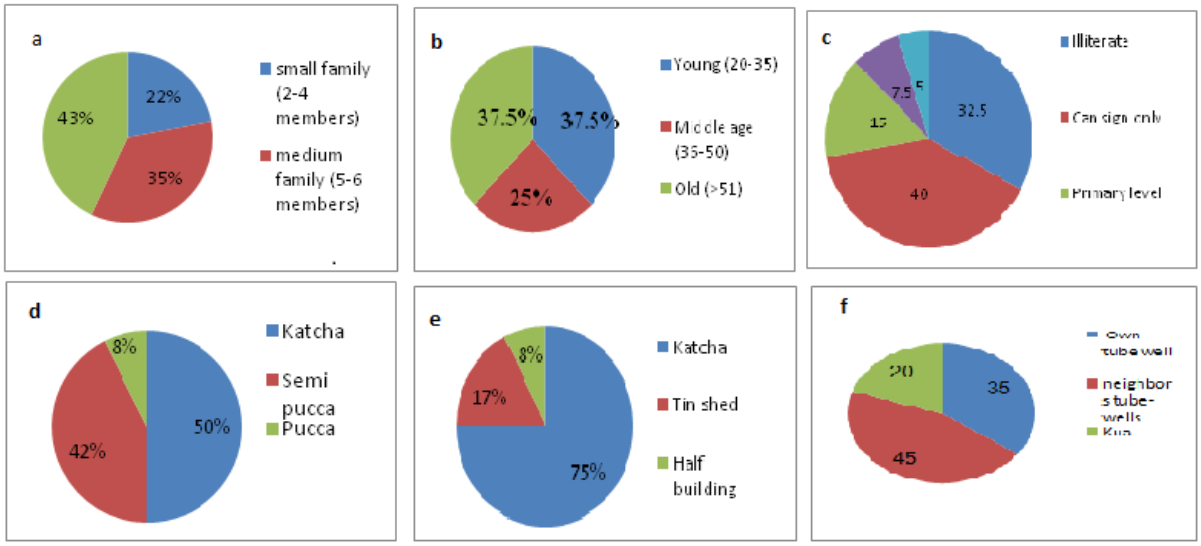

Figure 2. A graphical presentation of fishers (a) family size (b) Age distribution (c) educational level (d), (e) housing condition (f) drinking water facilities the study area

Most of the dwellers of the Eshulia beel area are very poor; In the study area it was found that 50% of toilets were katcha, while 42.5% were semi-pucca and only 7.5% were pucca (Figure 2.d). The physical capital of fishermen is transport, drinking water supply, sanitary facilities, shelter, roads, market, electricity etc (DFID, 2000). In the study area, 75% of fishermen's house was katcha, 17.5% were tinshed and only 7.5% were half building (Figure 2.e). The study showed that around 80% of the fishermen household used tube-wells for drinking water, while 20% used of kua water due to arsenic and other problems in tube-wells (Figure 2.f).

Fish marketing channel

The status of fish marketing channel around Eshulia beel is depicted exist in the study area of the total interviewed (40), most of them sold their fish by using marketing channel of Fishermen-Arotder-Wholesaler-Retailers-Consumers and 25% used marketing channel of fishermen-Consumers (Table 7).

Table 7. Socio-economic condition of the respondents in the study area

Types of Charecter	Respondents Facilities	Number of Respondents	% of respondents
Fish marketing channel	Fishers-Arotder-Wholesaler-Retailers-consumers	30	75
	Fishers-consumers	10	25
Training	Trained	22	55
	Non-trained	18	45
Loan received	Received loan	25	70
	Don't received loan	15	30
Annual income	Low income	21	52.5
	Medium income	17	42.5
	High income	2	5

Social capital

Almost all fisher community is disadvantaged in social capital such as the networks, groups, trust, access to institutions etc. In recent years, Dof, NGOs and other institutes have been providing training to the fish farmers. From the present study, it was found only 55% received formal training and 45% were non-trained (Table 7).

Financial capital

Financial capital of fishers represents the savings, credit etc. In the area of Eshulia beel the main source of income of the fishermen are fishing. From the survey, it was found that 30% of the fisher don't received loan while the 70% of the fisher received loans.

The average amount of credit received by fishers was estimated at TK 7,000 to TK 12,000 the study showed that Most of the respondents (72%) who received financial assistance were able to repay the loan and only 28% were unable to pay back the loan due to loss of agricultural production, lack of money, low catch and due to poverty such as lack of food, clothes and illness (Table 7).

Annual income

About 5% of the fishermen had high (TK 100000-TK 200000) income; 42.5% had medium (TK 51000-TK 100000) income and 52.5% had low (TK 25000-TK50000) income. The distribution of annual income of the respondents is presented in Table 7. Findings indicate that majority 52.5% of the respondents had low income and 5% of the respondents had high income.

CONCLUSION

The present investigation revealed that the diversity of fishes in the Eshulia beel at Gouripur upazilla under Mymensingh district. The study was carried out with a view to observe the natural abundance of fishes as well as the uses of fishing gear and the socio-economic condition of the fishermen of the beel. Socio-economic conditions of Eshulia beel fishermen were studied in terms of religious status, age structure, educational status, health facilities and drinking water facilities, housing condition, sanitary facilities and monthly income. Socio-economic conditions of the fisher's communities were not satisfactory. Fishermen faced several constrains. The fishermen have no access to scheduled banks for loans due to the absence or insufficient collateral security. So, some beel management policies should be adopted to protect the species which are at the degree of extinction and to recover sustainable production of the beel. For the protection of fish biodiversity of Eshulia beel the following measures are recommended.

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CONFLICT OF INTEREST

There is no conflict of interest about this manuscript.

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