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Socio-Economic Condition and Occupation Migration of Fisherman of the Jamuna River under Shirajgonj District in Bangladesh

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Abstract: A field study was conducted on the socio-economic condition of the fishermen community, occupation migration and fish biodiversity in the Jamuna River at Belkuchi *char* areas under Shirajgonj district, Bangladesh. The study was conducted from November 2012 to August 2013. Data were collected from randomly selected 100 respondents of fishermen community using semi-structured questionnaire interview and Focus Group Discussion (FGD). Fish biodiversity data were also collected from four major markets. The result was calculated by collecting present data and 15 years ago data from the interviewers. The study indicated that most of the fishermen had improved their average annual income, housing condition, drinking water facility, sanitation facility, health facility etc. The fishermen are adapting to different occupations beside fishing such as fish culture, fish selling, agriculture, boat making, labor, looming, business, CNG driving and migration to town for seeking seasonal jobs. A significant amount of fishermen (30%) are adapting to these different livelihood options. Only 8% fishermen got subsidy in the study area. The main problems are extortion by the local extortionists, inadequate credit, lack of appropriate gear etc. A total of 57 species of fishes under 20 families and 9 orders were found in the Jamuna River. The study recommends that governmental and non-governmental organizations should help the fishermen in adapting their livelihood in different sector during banning season. Government should also monitor the subsidy facility carefully till reaching the true fishermen. Besides, these organizations should also help in conserving the fish diversity of the Jamuna River to reduce the vulnerability of fishermen.

Key words: Jamuna River · Fishermen · Socio-Economic Status · Occupation Migration · Biodiversity

INTRODUCTION

Bangladesh has the widest spectrum of inland water resources comprises rivers, natural depressions, floodplains, reservoirs, oxbow lakes, ponds, coastal water and marine water bodies. The Jamuna River is one of the three main rivers of Bangladesh flows from India. The river is the downstream course of the Brahmaputra which took place after the earthquake and catastrophic flood in 1787. The river is in fact a multi-channel flow and braided in nature. Within the braided belt of the Jamuna, a total of 56 large island chars with 226 small island chars is located showed by land sat image in 1992 [1]. The river contributes largely in the fisheries sector of Bangladesh. In 2011-2012, annual fish catch of the Jamuna River was 2539 metric ton (MT) while it was 807 metric ton in

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Shirajganj which was 75.35% of total fish catch of Shirajganj district [2]. Annual fish catch in flood plain of Shirajganj was highest, 22021 MT, in Rajshasi division in 2011-2012 [3].

One of the most vulnerable communities in Bangladesh is fishermen community who lives hand to mouth and are considered as the poorest among the poor [4]. It was estimated that the average per capital annual income of the fishermen families to be BDT 2442 which is about 70% lower than the per capital income of the country as a whole [5]. Being an isolated community, fishermen are deprived of many amenities of life.

Local fishermen are dependent on the Jamuna River fishery resources and its flood plain areas for their livelihood. But these resources are declining day by day due to environmental and man-made catastrophes which threaten the livelihood of the fisherman adjacent to the river. So it is important to emphasize on more study to investigate the present socio-economic status, occupation migration and fish biodiversity of the Jamuna River.

So far, socio-economic status and occupation migration of fishermen of the Jamuna River is poorly studied. This study was carried out to know the socio-economic status of the fishermen community living at Belkuchi upazila in Shirajganj district and to estimate the diversity of fish in the Jamuna River to find out the impact of fish availability on their livelihood and occupation. Data on socio-economic condition were compared through using present data and 15 years ago data from the fishermen to find whether their livelihood status improved or not.

MATERIALS AND METHODS

Study Area and Period: The study was carried out in 12 villages at Belkuchi char areas under Belkuchi upazila in Shirajganj district. For the current research, 100 respondents including fishermen, fish retailer, wholesaler and fishing boat and net maker were selected randomly from the study area. The data and information were collected from November, 2012 to August, 2013. Present and past (15 years ago) status of the fishermen was studied.

Data Collection and Species Identification: Semi-structured questionnaire interview and FGD were conducted for data collection from the fishermen, middlemen, wholesaler and retailers. Questionnaire was prepared in accordance with the objectives of the study. FGD was used to get an overview of particular issues such as, livelihood, alternative livelihood, impact of banning period, subsidy from government etc. For the justification of the collected data cross-check interviews were conducted with key person such as, Upazila Fisheries Officer (UFO), District Fisheries Officer (DFO) and relevant Non-government Organization (NGO) workers. Fish samples were collected from four major markets (Chala, Tamai, *Char* Mukimpur and Mulkandi). Samples were collected at peak time of market during auctioning.

In order to identify fish species morphometric and meristic characters were studied. These were studied in Department of Fisheries and Marine Science laboratory at Noakhali Science and Technology University, Noakhali.

Data Analysis: After collection of data, these were edited and coded. All the collected data were summarized and scrutinized carefully and recorded. Finally, relevant table and graphs were prepared in accordance with the objectives of the study.

RESULTS AND DISCUSSION

Present data and past data (15 years before) on socio-economic condition of the fishermen, lives in the study area (Belkuchi, Shirajganj) were collected and compared to fulfill the objectives of the study (Table 1).

House ownership was categorized into three types as owned, rented and free use (Table 1). It indicates that in past 87% of fishermen had their own houses but at present the amount is 61% where 25% house is rented because most of the fishermen had lost their houses due to river erosion.

Houses of fishermen were three main types in the study area as cottage, tin shed and semi-building. At present 75% houses of fishermen are tin shed. In the past 33% were tin shed and 67% houses were cottage which decreased recently to 17% (Table 1) is more or less similar with other area of Bangladesh [4, 6].

At present 83% fishermen use their own tube-well and 17% use neighbors' tube-well. In the past 61% fishermen used their own tube-well while 28% were dependent on neighbour's tube-well and 11% drank river water (Table 1). Present study is similar to Kabir *et al.* [4] and Khan *et al*. [7] where 83% use their own tube-well and 17% use neighbor's tube-well. Ali *et al.* [6] found that 88% of fish farmers use own tube-well and 12% used neighbor's tube-well.

Sanitation facilities of fishermen were very poor in past and not well developed till now. Sanitation facilities are classified into five categories: *katcha*, ring and slab, semi-building, building and no facility.

Table 1: Socio-economic status of fishermen of the Jamuna River

		No. of Respondents (100)	
	Socio-economic Parameters	Present Status (In 2014)	Past Status (In 2000)
House ownership	Own	61	87
	Rented	25	4
	Free use	14	9
Housing condition	Cottage	17	67
	Tin-shed	75	33
	Semi-building	8	-
Drinking water source	Own tube-well	83	61
	Neighbour's tube-well	17	28
	River water	-	11
Sanitation facilities	*Katcha*	46	65
	Ring and slab	14	18
	Semi-building	30	-
	Building	4	-
	No facility	6	17
Health facilities	Quacks	35	50
	Ayurvedic practitioner	-	32
	Thana Health Complex	40	17
	District hospital	25	1
Land property (decimal)	No land	28	12
	1-20	52	60
	21-40	12	16
	Above 40	8	12
Annual income (BDT)	Below 30000	12	25
	31000-50000	36	45
	51000-80000	34	24
	Above 80000	18	6

Katcha (Bamboo with leaf shelter and poor drainage) toilet was dominated in the past by about 65% while at present it is 46% and still a dominant figure. In the past ring and slab facilities were 18% but 17% got no facility (Table 1). Sanitation facility was dominated in the present study by *katcha* toilet used by the fishermen; semi-building by 30%, building by 4% and 6% had no facility for sanitation which indicates a wide variety of sanitation practices and more or less similar with other livelihood study [4, 6-8]. Besides, ring and slab facility is used by 12% fishermen. This is similar to the findings of Paul *et al*. [9].

The fishermen mainly enjoyed the health facilities according to the intensity of diseases and economic support. In the past, health facilities were dominated by quacks (50%), possess little knowledge in medical science, Thana health complex (17%) and ayurvedic practitioner (32%). At present, 40% fishermen go to Thana health complex, 35% to quack and 25% to district hospital (Table 1). Although most of the study of Kabir *et al.* [4], Khan *et al*. [7] and Paul *et al.* [9] found that most of the fishermen received health service from village doctor. No M BBS doctor facility found in the study area as Khan *et al.* [7].

Majority (52%) of the fishermen have land properties ranging from 1 to 20 decimal which was 60% in the past. In the past, 12% fishermen were landless (Table 1) but now the percent is increased (28%) due to river erosion. Average land properties of fisherman were 2.69 decimal which is much lower than the findings of Rahman *et al.* [8].

At present, annual incomes of the fishermen were varied from BDT below 30000 to above 80000. The selected fishermen were grouped into four categories based on the level of annual income and majority (36%) had an annual income BDT within 31000 to 50000. This was 45% in the past (Table 1). In the past annual income of the fishermen was lower and increased at present. Similar annual income was also found in the study of Ali *et al*. [6]. Annual income of fishermen also increased greatly especially for those having own boat and net. Thus, it is clear that socio-economic status of the fishermen is gradually improving.

Total number of 10 occupations had found in the study area. Fishing activity decreased dramatically by 30% which indicated that livelihood adaptation and occupation migration of fishermen in the study area is changing. The present study has revealed that 41% of fishermen were engaged in fishing as their main occupation, 19% in agriculture, 13% in labor, 9% in looming, 5% in fish selling, 3% in CNG driving, 3% in business, 1% in fish culture, 2% in boat making and 4% in

migration to town for seeking job which was much higher than the past 15 years in case of percentage of fishermen involved in different occupations (Fig. 1). In a study of Rahman *et al.* [8] in Nijhum dwip, found that 60% of fishermen are engaged in fishing 10% in agriculture, 10% in day laborer and 5% in business as main occupation. Many of their community are leaving their ancestral profession selling their nets, boats and other fishing gears. Though prices of fishes are higher now, it has become tough to maintain livelihood today as fishers can rarely catch fishes worth BDT 100 in a day [11]. This is significantly true for fishermen who work in others boat as a labor fisher. However, these occupations are taking place mainly during ban period because fishermen are not capable of migrating fully due to many reasons. Thus, they migrate partially. Some people were found in the study area who gave up fishing fully. But true fishermen, live beside the main river, are in most vulnerable condition as they are more prone to natural disasters and also have low income opportunity.

This description is based on primary data collected from the markets and field by personal visiting. A total of 57 species of fishes have been recorded from the study site belonging to 20 families and 9 orders. The dominant order was Siluriformes comprising 35.08% of all the number of species recorded. Next to Siluriformes other dominant orders were Cypriniformes, Perciformes and Clupeiformes consisting 33.33%, 15.79% and 5.26% of species recorded, respectively (Fig. 2). The dominant family was Cyprinidae comprising 29.82% of the total number of species collected. Other diversified families were Bagridae (14.04% species), Schilbeidae (7.02% species), Clupeidae, Siluridae, Sisoridae, Ambassidae (5.26% species each). Among the found species, 38.60% species were considered threatened which was 40.74% of the total number of threatened fish species of the country, according to IUCN Bangladesh [12]. These include 36.36 vulnerable, 40.91% endangered and 22.73% critically endangered species. All species belonging to Osteoglossiformes and Mastacembeliformes, 45% species under Siluriformes, 36.84% species under Cypriniformes and 33.33% species under Perciformes are threatened (Fig. 3). The study recorded a total of 57 species and the same problem regarding lack of previous statistics on fish fauna is also applicable here. This problem seemed not new in Bangladesh while working with fish diversity [13, 14] and indicates the need for water-body specific fish diversity study in Bangladesh. The recorded fish species was much lower than some other rivers of Bangladesh [15, 16]. However, all these researchers concluded with gradual loss of

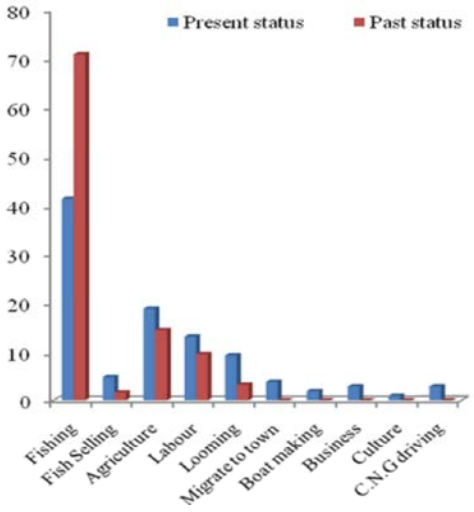

Fig. 1: Occupational status of the fisherman

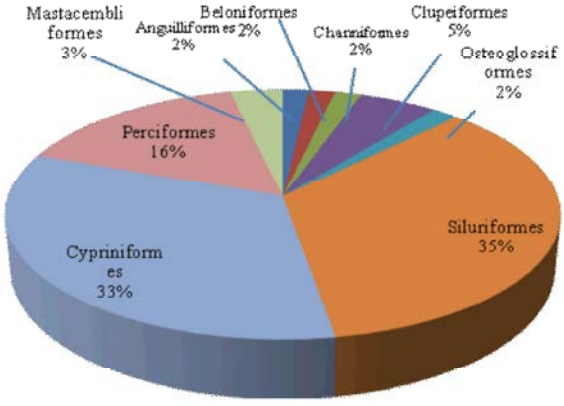

Fig. 2: Oreder-based fish species comparison in the Jamuna River

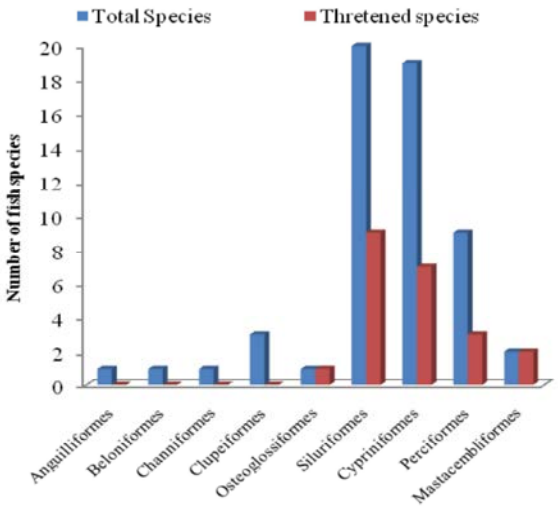

Fig. 3: Diversity of fish species including the threatened species in the Jamuna River

biodiversity in their studied rivers. In that sense, this is also true for the Jamuna River. Order Siluriformes was found to be the most diversified fish group in terms of number of species followed by Cypriniformes and Perciformes. This is because these three groups are the most dominant groups in freshwater bodies of Bangladesh [17, 18]. Most of the research works reveal that order Cypriniformes is the dominant one followed by Siluriformes and Perciformes. In this study number of species of Siluriformes is higher than Cypriniformes. At present, loss of biodiversity is an alarming threat and earliest effective management is essential to deal with this issue. According to Lakra [19] conservation of fish diversity is essential to maintain ecological/nutritional and socio-economic equilibrium. Rahman *et al.* [20] recommended that scientific management steps are warranted to protect and conserve most and least available fish species in Bangladesh. However, several reasons including lack of management, degradation of natural habitats, excess exploitation using illegal fishing gears, use of toxins in aquaculture ponds are responsible for this loss of fish diversity in Bangladesh [19-22]. However, fish species of the Jamuna River is in declining situation but surprisingly fishermen are developing their socio-economic status.

CONCLUSION

The implication of this study is that the socio-economic conditions of fishermen were not satisfactory though they are improving their socio-economic status. Fish production and fish fauna of the river was being drastically reduced due to environmental and manmade catastrophes such as over fishing, siltation, fishing in ban period, using of banned gear like current net and as a whole due to absence of management policy. In the event of decreasing in fish resources in Jamuna River, supplementary income from other than fishery is of great importance. During banning season and lower fish catch, the fisherman search for and diverts to alternative livelihoods. So necessary steps should be taken by GO and NGOs to assist the fishermen to adopt these occupations while increasing fish fauna of the Jamuna River. Based on the findings of the study, the following recommendations can be made to improve the livelihood status and to protect the fish diversity of the Jamuna River- awareness among the fishermen should increase because 36% of fishermen are directly engaged with illegal fishing in the study area. Alternative livelihood opportunity should be given to the fishermen community during ban period.

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