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Fish fauna, fishing gear and marketing channel of Morgangi *beel* under Melandah *upazilla* Jamalpur, Bangladesh

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Abstract: An investigation was conducted to assess the fish fauna, fishing gear and marketing channel of Morgangi *beel* in the Melandah *upazila* under Jamalpur district for the period of six months. Data were collected through personal interview. Participatory Rural Appraisal (PRA) tools such as Focus Group Discussion (FGD) and Crosscheck Interviews (CI) methods were used for collecting data. Forty four species of fish were identified from the catch of different gears used by the fishermen and among these, 7 species of carps, 4 species of snakeheads, 4 species of perches, 3 species of eels, 7 species of catfishes, 6 species of barbs, 3 species of khalisha, 3 species of prawn and 7 miscellaneous species were recorded during the study period. Different types of fishing gears broadly classified into three groups viz. nets, traps and wounding gear were found to be operated by the fishermen. From the survey, it was found that about 42% fishermen directly sold their fish to the consumer, while 50% of them disposed to the retailer and only 8% of the fishermen handed over their fish to the whole seller.

Key words: Fish fauna, fishing gears, marketing channel, Morgangi *beel.*

Introduction

Bangladesh is endowed with considerable marine, estuarine and inland waters, and rich of intensive fishery resources, with a wide variety of indigenous and exotic fish fauna (Rahman, 1994). A rich diversity of fish species is dependable to the ecology and sustainable productivity of the floodplains/*beel*. *Beel* is a large surface water body that accumulates surface runoff water through internal drainage channels; these depressions are mostly topographic lows produced by erosions and are seen all over Bangladesh. *Beels* are very good natural habitat for large and small fishes of different food habits (FAP- 6, 1993). Soil and water of floodplains are very productive and are abode of distinct fauna and flora. Many fish and prawn species move into inundated areas of beels from adjacent river and canals to feed and grow during monsoon (Akteruzzaman et al., 1997). Floodplain/*beel* constitutes a vital component of the agro-ecosystem of rural Bangladesh (Sadeque, 1992).

Morgangi beel in Melandah uapzila under the district of Jamalpur is one of the most important ecosystems with much aquaculture potential. This flood fishery plays a very important role in alleviation of rural poverty and supplying food to the poor. It is very important for the abundance of fish fauna and fishing activities. Different kinds of fishing gears are used for harvesting fish in the *beel* by the fishermen for their livelihoods. Fishes are harvested by the people living in surrounding the *beel* area. Self-recruiting fish are abundant in this beel. No comprehensive research programme has not been taken in this *beel*, therefore the present investigation was conducted to assess the present status of fish fauna, fishing gear and marketing channel of Morgangi *beel.*

Materials and Methods

The study was carried out to assess the present status of fish fauna, fishing gear and marketing channel of Morgangi *beel* under Melandah *upazila* of Jamalpur district for the period of six months. The study was based on collection of primary and secondary data. Before collecting the primary data a draft questionnaire was developed which was pre-tested with few fishermen. According to the experience gained in pre-testing the final questionnaire was improved, rearranged and modified. The final questionnaire included the questions on the fish fauna, fishing gear and marketing. For this study a combination of questionnaire interview, Participatory Rural Appraisal (PRA) tools such as Focus Group Discussion (FGD) and crosscheck interviews were conducted with key information. Necessary information on fish fauna and fishing gear were collected from regional *upazila* fisheries offices.

After data collection, they were sorted and coded and entered into computer for analysis. Data were presented mostly in the tabular form. For catch per unit effort (CPUE), the number of kilograms of fish caught per unit effort (kg/gear/hrs) was used following formula of King (1995): *CPUE = {Total fish catch in a particular sample gear (wt. in kg)} ÷ {No. of sampled gear × fishing hrs}.*

Results and Discussion

Fish fauna in Morgangi *beel*: During the study period 44 species of fish fauna was found in the Morgangi *beel* area. Among them, 7 species of carps, 4 species of snakeheads, 4 species of perches, 3 species of eels, 7 species of catfishes, 6 species of barbs, 3 species of khalisha, 3 species of prawn and 7 miscellaneous species were recorded (Table 1). Mahmud (2007) recorded 56 species of fish and shrimp in the catches of different gears by the fishermen in the Chalan beel area. Siddique (2001) identified 58 species of fish from Rajdhala *beel*, Netrokona. Alam *et al.* (2009) recorded a total of 45 different species, 29 genera, 19 families under 9 orders were identified from Basantapur *beel*, Natore. The present findings were also similar with the findings of Alam *et al.* (2009).

The local fishermen communities in Morgangi beel reported that abundance of fish species has been declining drastically. Thus, it would appear that like other water bodies, biodiversity of fish fauna in the Morgangi beel is on decline due to water pollution, over fishing and adverse environmental condition. A much reduction in the occurrence of various carps, minnows and barbs were reported from floodplains in Sunamgonj district (Tsai and Ali, 1987).

Table 1: List of fish fauna as recorded from Morgangi *beel* area

SL No.	Local name	Common name	Scientific name	Family	Remarks
1	Rui	Indian major carp	*Labeo rohita*	Cyprinidae	Common
2	Kalibaus	Black rohu	*Labeo calbasu*	Cyprinidae	Common
3	Mrigal	Indian major carp	*Cirrhinus cirrhosus*	Cyprinidae	Common
4	Carpio	Common carp	*Cyprinus carpio*	Cyprinidae	Common
5	Silver carp	Silver carp	*Hypophthalmichthys molitrix*	Cyprinidae	Common
6	Grass carp	Grass carp	*Ctenopharyngodon idella*	Cyprinidae	Common
7	Catla	Indian major carp	*Catla catla*	Cyprinidae	Common
8	Taki	Spotted snakehead	*Channa puntatus*	Channidae	common
9	Chang	Asiatic snakehead	*Channa orientalis*	Channidae	common
10	Gajar	Giant snakehead	*Channa marulius*	Channidae	Endangered
11	Shol	Snakehead murrel	*Channa striatus*	Channidae	common
12	Lal chanda	Indian glass perch	*Chanda ranga*	Centropomidae	Common
13	Nama chanda	Elongated glass perchlet	*Chanda nama*	Centropomidae	Common
14	Khalisha	Striped gourami	*Colisa fasciatus*	Centropomidae	Abundant
15	Koi	Climbing perch	*Anabas testudineus*	Centropomidae	Less common
16	Lal baim	Tire-tract spiny eel	*Mastacembelus armatus*	Mastacembelida	Common
17	Guchi baim	Striped spiny eel	*Macrognathus pancalus*	Mastacembelida	Less common
18	Tara baim	One striped spiny eel	*Macrognathus aculeatus*	Mastacembelida	Common
19	Tengra	Striped dwarf catfish	*Mystus vittatus*	Bagridae	Endangered
20	Bujuri	Long bled catfish	*Mystus tengara*	Bagridae	Endangered
21	Gulsha	Long whiskered catfish	*Mystus cavasius*	Bagridae	Endangered
22	Shing	Stinging catfish	*Heteropneustes fossilis*	Bagridae	Rare
23	Magur	Walking catfish	*Clarias batrachus*	Bagridae	Rare
24	Boal	Freshwater shark	*Wallago attu*	Bagridae	Less common
25	Modhu pabda	Butter catfish	*Ompok pabda*	Bagridae	Less common
26	Mola	Barb	*Amblypharyngodan mola*	Cyprinidae	Common
27	Dhela	Barb	*Rohtee cotio*	Cyprinidae	Common
28	Titputi	Fire fin barb	*Puntius ticto*	Cyprinidae	Common
29	Jatputi	Spot fin swamp barb	*Puntius sophore*	Cyprinidae	Common
30	Sharputi	Barb	*Puntius sarana*	Cyprinidae	Common
31	Darkina	Flying barb	*Rasbora dancionius*	Cyprinidae	Common
32	Khalisha	Striped gourami	*Colisa fasciatus*	Belonidae	Common
33	Kakila	Needle fish	*Xenentodon cancila*	Belonidae	Common
34	Ranga khalisha	Khalisha	*Colisa lalius*	Belontiidae	Endangered
35	Gura icha	Small prawn	*Macrobrachium lamerril*	Palemonidae	Common
36	Chatka chingri	Small prawn	*Macrobrachium malcolmsonii*	Palemonidae	Common
37	Guda icha	Guda river prawn	*Macrobrachium dolicodactylus*	Palemonidae	Endangered
38	Bailla	Bar-eyed goby	*Glossogobius giuris*	Gobiidae	Abundant
39	Foli	Bronze featherback	*Notopterus notopterus*	Notopteridae	Rare
40	Tepa	Puffer fish	*Tetraodon cutcutia*	Tetraodontidae	Rare
41	Napit koi	Perch	*Badis badis*	Pristolepidae	Endangered
42	Cuchia	Mud ell	*Monopterus cuchia*	Synbranchidae	Common
43	Kanpona	Minnow	*Salmostoma bacaila*	Cyprinodontidae	Endangered
44	Rani	Necktic loach	*Botia dario*	Cobitidae	Endangered

Table 2. Types of fishing gears used by fishermen in the Morgangi beel

Types of fishing gears	No of fishermen	% of total
	Nets	
Ber jal (seine net)	24	48
Dharma jal (lift net)	21	42
Jhaki jal (cast net)	36	72
Current jal (gill net)	31	62
Thela jal (push net)	17	34
	Traps	
Bair	27	54
Chandi bair	19	38
Darki bair	25	50
	Wounding gears	
Kotch	7	14
Dawn (long line)	17	34
Borshi (rod and hook)	12	24

Fishing gears used in Morgangi beel: It was found that on an average 100 of fishermen were engaged in fishing daily in the Morgangi *beel*. A total of 86% fishermen are professional, 10% are seasonal and rest of the fishermen subsistence. During monsoon, fishing activities are increased simultaneously for the abundance of fish. This finding indicates that number of fishermen have increased in the last ten years, this condition may arise due to poor economic condition, over growth of population, lack of employment opportunity, lack of awareness and poor education. From the present survey, it was found that 11 types of fishing gears including nets traps and wounding gears were operated by fishermen in the studied beel area (Table 2). Nets were operated more frequently due to

vastness of waterbodies. Generally, wounding gears are used by the subsistence fishermen. The fishing technique that are currently used by the fishermen of Bangladesh are netting, angling, trapping, spearing, de-watering and hand picking (Dewan and Mazid, 1994).

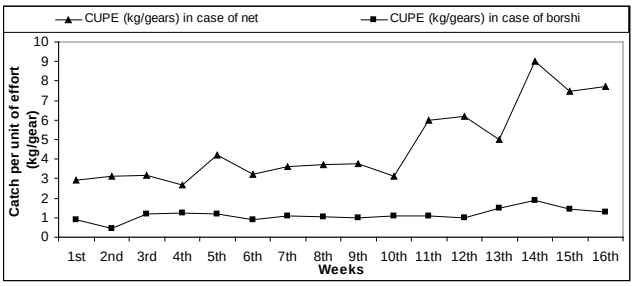

Fig. 1. Weekly comparison (July to October, 2008) of CPUE (kg/gear) of nets and borshi used in study area

Weekly variation in catch per unit of effort (CPUE) of different fishing gears: During the study period, in case of nets, the highest CPUE (9.00 kg/gear) was found in the 2nd week of October and the lowest CPUE (2.65 kg/gear) was found in the 4th week of July due to less number of gears used for catching fish in the study area. On the other hand, in case of *borshi* the highest CPUE (1.90 kg/gear) was found in the 2nd week of October and the lowest CPUE (0.45 kg/gear) was found in the 2nd week of July (Fig. 1).

The CPUE varied in different weeks in different fishing gears. Similar results was also presented by Mahmud (2007) who recorded the highest CPUE (8.71 kg/gear) in the 4th week of October, and the lowest CPUE (0.75 kg/gear) in the 2nd week of October in Chalan *beel*

Marketing of fish / fish marketing channel in the Morgangi beel area: The results of the present study indicated that the marketing channel from fishermen to consumer passes through a number of intermediaries; local traders, agent or suppliers and retailers (Fig. 2). It could be seen from the figure that three fish marketing channel exist in the surveyed area.

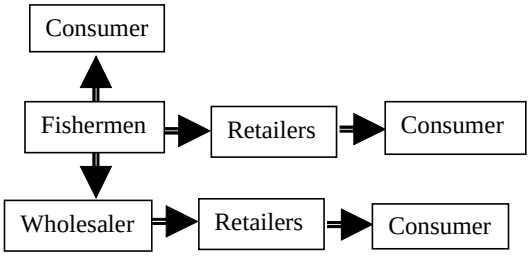

Fig. 2. Fish marketing chain from fishermen to consumers in surrounding area of Morgangi beel.

From the survey, it was found that about 42% fishermen directly sold their fish to the consumer, while 50% of them disposed to the retailer and only 8% of the fishermen handed over their fish to the whole seller.

Market price of fish: The market price of fish varied according to species, size of fish and season of the year. The price spread margin is very large (BDT 96 to 129) from fishermen to retailers' level and large numbers of intermediaries enjoy the lion share of the fish price (Table 3).

Table 3. Price of fishes from fishermen to consumer with different intermediaries

Local name	Price received by fishermen (BDT/kg)	Price (BDT/kg) at different levels		
		Arotder	Wholesaler	Retailer
Rui	62	69	78	85
Catla	60	66	75	80
Mrigal	60	66	75	80
Kalibaus	65	70	80	90
Chapila	100	108	115	125
Chela	105	110	120	130
Mola	155	165	174	180
Lal chanda	65	70	75	85
Tengra	100	108	115	120
Golsha	110	130	145	160
Khalisha	85	95	110	120
Punti	55	60	65	70
Jatiputi	55	60	65	75
Gura icha	55	65	70	80
Shoal	140	160	180	200
Taki	50	65	75	80
Boal	165	180	200	230
Bheda	135	150	165	180
Baila	50	60	70	80
Guchi baim	100	110	125	140
Gutum	110	120	130	150
Shal baim	120	130	140	150
Tara baim	110	120	130	140
Chanda	60	65	72	80
Kakila	72	80	88	100
Shing	190	210	230	250
Magur	190	210	230	250
Koi	120	130	140	160
Darkina	60	65	74	80
Total	2804	3097	3411	3750
Average price (BDT/kg)	96.69	106.79	117.62	129.31

The study was conducted to assess fish fauna, fishing gear and fish marketing channel in the Morgangi beel located in Melandah *upazilla* under Jamalpur district. From the study, three types of fishing gears namely, nets, traps and wounding gears were found to be in operation for catching fishes. Fish production in this *beel* have declined alarmingly due to the changes in habitat by siltration, abstractions of water for irrigation, use of agro-chemicals in surrounding crop fields of the *beel*, over exploitation and indiscriminate use of gears. So, some *beel* management policies should be adopted to protect the fish fauna which are at the degree of extinction and to recover sustainable production of the *beel*. For this purpose, immediate actions may be recommended such as prohibition on harvesting brood fish during breeding period, stocking of fish fry and ban on fishing by illegal gears.

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