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STATUS AND DECLINE CAUSES OF FISHING ACTIVITIES OF THE BARAL RIVER, NATORE, BANGLADESH

[*]F. A. Flowra, M. A. Islam, S. N. Jahan, M. A. Samad, M. M. Alam

ABSTRACT

The present investigation is a humble attempt to explore fishing techniques of the River Baral from November 2010 to May 2011. Different fish capture methods, fishing gears and crafts that were usually used in the study area have been provided. Hand fishing, cloth fishing, bait fishing and fishing by dewatering were also observed. Causes of habitat degradation and changes of natural habitat and declination of fishes were also observed. Some problems of the fishing community of the study area were also identified. A few policy recommendations have been given in the concluding chapter which may have some positive implication on the life and living of the fishermen in Bangladesh in general and the Baral basin in particular.

Keywords: Gears, Crafts, Spears, Hook and lines, decline causes

INTRODUCTION

River plays an important role in the life and living of the people of a country specially the fishermen. These are also important in terms of huge fisheries resources and other purposes of navigation, irrigation and domestic uses. A single river possess different name at different places, even a five or six km segment has a different name upstream or downstream. Also a single name is used for different rivers in different locations (Alam and Chowdhury, 2006). Bangladesh has vast inland open water (4024934 ha) which is contributing 35.53% of total fish capture. Total fish production from inland water area in the year 2009-10 was 2381916 mt., as against 82.15% of the total catch. In case of marine fisheries, fish catch was 517282 mt. in 2009-10, as against 17.85% of the total catch (DoF, 2011). In the year 2007-2008 and 2008-2009 riverine fisheries contributed 136812 mt and 138160 mt of the total production. In 2009-2010 the total fish production was 138160 mt and annual production rate was 7.32% (DoF, 2011). People living in village beside the rivers and beels harvest the fish almost round the year without any prior investment except catching devices perhaps more than any other countries. The population of Bangladesh depends on wild fish for food and the generation of income. A large portion rural family are engaged in part time fish capture from the rivers and beels (Hughes *et al.* 1994). For fishing, different types of crafts, gears and traps are used. Different types of fishing method used from prehistoric times and now fishing methods had been modified. Generally gears are those equipments that are used to catch the fishes. The fishermen selected their fishing gears depending on types of water body, different operation area, depth of water and availability of target species to the caught. In Bangladesh fish and fisheries items of inland water still are caught by using traditional crafts and gears. In respects of gears, Ahmed (1962) described 116 Nets, 26 trap of inland

[*] Associate Professor, Department of Fisheries, University of Rajshahi, Rajshahi-6205, Bangladesh.
E-mail: flowrabd@yahoo.com

fishing including hooks and other devices in general way. The fishing gear, along with the vessel, auxiliary equipment and men, constitutes a “fishing unit”. The amount of catch by unit depends upon its efficiency and productivity of the fishing grounds (Naidu, 1939). Most of the fishing gears have to break off operation after certain period of activity for rest and repair work (Ahmed, 1958). So, the present study is taken to identify the existing fish capture techniques, diversified fishing gears with decline causes of fishes of the river Baral.

METHODOLOGY

Description of the location

River Baral is a branch of the river Ganga, originated from near the charghat at Rajshahi district and passes after joining with the Atrai- Gumani river through Natore and Pabna district finally mingles with the Huga sagar river after joining with the Koratoya river at the south of Shahjadpur of the Shirajgonj district. The total length, width and depth of Baral river are147 km, 125 m. and 6 m, respectively and drainage area about 230 sq. km. Some important places located on the banks of the Baral river are-Charghat, Baraigram, Bagatipara, Gurudashpur, chatmohor and Bera (Baby, 2003). Particularly about 23.8 km length of the river Baral in located Bagatipara, Natore (Fig. 1). The investigation was conducted on this particular region.

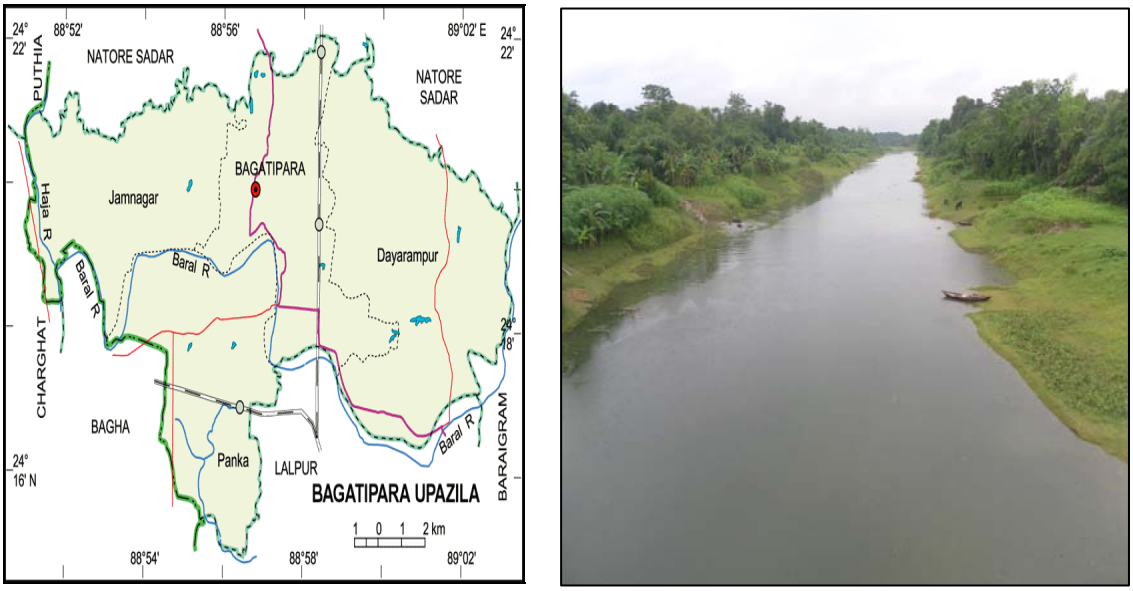

Fig. 1: Showing the study area and partial view of the Baral river

Data collection

The present study was conducted to assess the fishing activities with impact factors of fishermen of the Baral river in a total period of 7 months from November 2010 to May 2011.

In-depth interview (IDI)

A questionnaire was developed in logical sequence of information designed to include both qualitative and quantitative values of findings so that the respondents could answered easily and chronologically. The study was carried out several key issuing interviews with a total of 180 fishermen and 20 womenfolk of the Baral river at fishing sites during fishing time, at household sides during leisure time, and at local fish markets during marketing or purchasing time for individual whereas at Hat, Bazar or Shops for grouped interview. Then findings were cross-checked with the respondents as many as possible.

Eyewitness observation and photograph (EOP)

Eyewitness observation and photograph facilitated to some issues like fishing and off-fishing activity, fisheries status of the Baral river fishermen those could not be dealt or understood without this method.

RESULT AND DISCUSSION

Fishing gears:

A total of 16 types of fishing gears were observed to harvest fish in the study area (Table 1-4). Major categories of gears include nets, traps and hooks. For fishing purpose, a wide variety of nets such as gill nets, seine nets, lift nets, push nets and cast nets were usually used. The fishing traps were Polo, Hancha, kholsun, Chunga, etc. For line fishing chip barshi (hook), wheel barshi, Jiani barshi, Tagi and Daun (longline) were used. All types of gears were broadly classified into four major categories. These groups were nets, traps, hook & lines and spears.

Chong (1979) studied the fishing gears in Chandpur, Muhuri, Halda and Ichamati project area and recorded 21 different types of gears within the area. According to Dewan and Mazid (1994) the fishing techniques that are currently used amongst the fishermen of Bangladesh have been broadly categorized into netting, angling, trapping, spearing, de-watering and hand fishing. This has been found similar in the present research work.

Jhingran (1989) were reported that the big sized cat fishes *(Wallago attu)* were generally caught by hook and line. The smaller fishes were bagged by dip nets and cast nets. Beside these many researcher such as Khaled (1985), Rahman *et al.* (1993), Aosomboon (1994), Dewan and Mazid (1994), Chakraborty *et al.* (1995), Alam *et al*. (1997), Das *et al.* (2003), Alam *et al*. (2009) worked on fishing activities in beels and rivers.

Table- 1: Different types of net used for fishing and catch species in the Baral river

Types of gear	Name of gear	Size of net (Approximately)			No. of Operating person	Catch species (Scientific name)
		Length (m)	Width (m)	Mesh (mm)		
Cast net	Khepla jal	4-5	6-9	10-30	1	*Labeo rohita*, *Catla catla*, *Cirrhina mrigala*, *Channa punctatus*, *Channa striatus*, *Channa marulius*, *Colisa faciatus*, *Mastacembelus armatus*, *Puntius ticto* , *Mystus tengara*, *Chanda nama*, *Gadusia chapra*, *Glossogobius giuris*, *Cirrhina reba*, *Chela bacaila*, *Amblypharyngodon mola*, *Xenentodon cancila*, *Cancer* sp, *Tetraodon cutcutia*, *Macrobrachium rosenbergii* , *Ompok pabda*, *Eutropiichthys vacha*, *Clupisoma garua* etc.
Seine net	Ber jal	100-600	5-6	2-4	4-8	*Labeo rohita*, *Catla catla*, *Cirrhina mrigala*, *Channa punctatus*, *Channa striatus*, *Channa marulius*, *Puntius ticto* , *Mystus tengara*, *Chanda nama*, *Gadusia chapra*, *Glossogobius giuris*, *Cirrhina reba*, *Chela bacaila*, *Amblypharyngodon mola*, *Xenentodon cancila Tetraodon cutcutia*, *Macrobrachium rosenbergii*, *Channa punctatus*, *Channa striatus*, *Channa marulius*, *Mystus aor* etc.
Gill net	Current jal	70-110	5-15	10-15	1	*Puntius ticto* , *Mystus tengara*, *Gadusia chapra*, *Glossogobius giuris*, *Cirrhina reba*, *Chela bacaila*, *Xenentodon cancila*, *Ompok pabda*, *Mystus aor*, *Eutropiichthys vacha* etc.
	Fash jal	40-50	0.5-1.0	18-25	1	
Lift net	Khara jal	10-14	8-9	16-32	1	*Colisa faciatus*, *Gadusia chapra*, *Puntius ticto*, *Mystus tengara*, *Ailia coila*, *Chanda nama*, *Mastacembelus pancalus*, *Ompok pabda Anabas testudineus*, *Channa punctatus*, *Channa striatus*, *Ompok pabda*, etc.
	Dharmo jal	2-3	2-3	7-12	1	
Push net	Thela jal	3-13	1-2	4-16	1	*Puntius ticto*, *Chanda nama*, *Anabas testudineus*, *Amblypharyngodon mola*, *Mystus tengara*, *Rasbora daniconius*, *Mastacembelus armatus*, *Mastacembelus pancalus*, *Macrobrachium rosenbergii* etc.

Table-2: Different types of traps used for fishing at catch species in the Baral river.

Name of traps	Size of trap (Approximately)			Made with	Catch species Scientific name
	Height	Length	Width/ Dia.		
Kholsun	1.5-2 ft	2.5-5 ft	0.33-0.5 ft	Bamboo stick	*Puntius ticto, Chanda nama, Amblypharyngodon mola, Mystus tengara, Rasbora daniconius, Mastacembelus pancalus,* etc.
Polo	0.7-1.0 m	-	0.5-0.6 mt	Bamboo split	*Channa punctatus, Channa striatus, Channa marulius, Mastacembelus armatus, Mastacembelus pancalus, Anabas testudineus* etc.
Chunga	-	2-3 ft	-	Bamboo	*Mastacembelus armatus, Mastacembelus pancalus, Heteropneustes fossilis, Clarias batrachus* etc.
Hancha	10 ft	2-4 ft	2-2.5 ft	Bamboo split	*Rasbora daniconius, Colisa faciatus, Mastacembelus pancalus, Macrobrachium lamarrei* etc.

Table-3: Different types of hooks and lines used for fishing and catch species in the Baral river

Types of gear	Name of gear	No. of hooks	Person needed	Boat needed	Catch species
Hook and line	Chip barshi	1	1	no boat needed	*Channa punctatus, Mystus tengara, Heteropneustes fossilis, Mystus tengara, Puntius ticto, Chela bacaila, Labeo rohita, Cirrhina mrigala, Labeo calbasu* etc.
	Wheel barshi	1-4	1	no boat needed	*Heteropneustes fossilis, Clarias batrachus, Channa punctatus, Channa striatus, Labeo rohita Labeo calbasu Cirrhina mrigala Catla catla, Cirrhina reba* etc.
	Jiani barshi	1-2	1-2	no boat needed	*Wallago attu, Channa marulius, Channa striatus, Notopterus chitala, Mystus aor* etc.
	Tagi	3-7	1	no boat needed	*Heteropneustes fossilis, Clarias batrachus, Channa punctatus, Channa striatus, Anabas testudineus, Channa marulius, Mystus aor,* carp etc.

	Long line	200-500	1-2	boat needed	*Ailiichthys punctata, Eutropiichthys vacha, ,Mystus aor, Mystus bleekeri, Rita rita, Notopterus notopterus, Stipinna phasa, Wallago attu, Mystus aor* etc.

Table-4: Different types of Spears used for fishing and catch species in the Baral river

Types of gear	Name of gear	Length of handle (m)	Parson and boat needed	Catch species
Spear	Konch	2-3	1 & no	*Wallago attu*, *Channa striatus*, *Channa marulius* etc.
	Teta	2-3	1 & no	*Wallago attu*, *Channa striatus*, *Channa marulius* etc.
	Angta	2-4	1 & no	*Mastacembelus armatus, Mastacembelus pancalus, Heteropneustes fossilis* etc.

Fishing crafts:

Different types of fishing crafts like kosa boat, vedi boat, dingi boat, bhoat boat, and rafts were dominantly used for fish capture (Table 5). Commonly used crafts were of various types, sizes and designs. Ahmed (1954) and Hussain (1977) described the utilization of traditional crafts. Different types of crafts are also essential to assure a good and effective fishing. The fresh water fishing craft and gears are of traditional types, using from long times without any modifications. Same observation or results are found in the study area. Most of the fishing gears have to break off operations after a certain period of activity, for rest and repair (Khanna, 1989).

Table-5: Different types of Crafts used for fishing in the studied area

Craft name	Measurment of the craft		Gear used in craft	Man power needed
	Length (m)	Wide (m)		
Kosa boat	3-5	1-2	Khepla jal, ber jal etc.	1-6
Dinghy boat	4-10	1-2	Ber jal, fash jal, veshal jal	1-10
Bhoat boat	4-7	1.5-2	Khepla jal, current jal, barshi, fash jal	2-6
Raft	2-3	1-1.5	Khepla jal, barshi, fash jal	1-2

Other Types of Fishing:

Fishing by hand

Fishermen capture fishes by hand during the coming flood when the bank side of the river Baral was inundated with water. Fish were also caught by hands from a depth of 3 to 8 feet depth.

Cloth fishing

A large piece of cloth is used to collect small fishes, larvae etc. Two men hold the corner of the cloth, dip in water and fishes are collected. Usually children and women catch fish with the help of a "gamchha or shari".

Bait fishing

During the study baits used in capture fishes in River Baral. The baits were of animal origin, plant origin and sometimes chemicals were used with the ground baits, The anglers and fishermen prefer different types of bait for different catches. According to uses bait can be classified into various types. Rahman *et al*. (1983) done their research work and described on baits and bait fishing of the Padma river near Rajshahi.

Fishing by de-watering

De-watering by various traditional methods like plate dish or wooden container from the close water area of the bank of the rivers during post monsoon period. Sometimes the shallow water area was completely isolated by creating provisional dam with mud. Then fish and other fisheries items were caught by hands or using hand net.

Factors affecting fishing activities:

In the study area few causes were identified for this declination of fishing activities from the river Baral. These included the followings-

Degradation of fishes

The fish species that could be found years back has become rare in the study area. Many species were recorded as endangered and threatened which were available in early decades. The daily newspaper prothom alo (2012) reported that already 16 species are extincted.

Change of natural habitats

Due to natural causes like shrinkage of genetic base and manmade causes like water pollution through industrial wastage, sewerage wastage, agricultural wastage, destroyed the spawning, nursing and grazing grounds of fish species of the river Baral.

Construction of the Farrakka Barrage and water diversion

Construction of the Farrakka Barrage at the upstream caused major detrimental catastrophe for the ecosystem of the river Baral. The migratory route of Hilsa has largely been affected for this reason.

Excessive use of river water for irrigation purpose

Excessive use of river water and reclamation of land for agricultural purpose (irrigation) resulted shrinkage of spawning and feeding grounds for fish species.

Siltation due to less water flow

Siltation at the upstream of the river was a serious threat that caused reduction of water flow and as a result spawning and nursing grounds of many fishes have been drastically affected in recent years.

Construction of sluice gate

There were two sluice gates on the river Baral such as: Charghat and Atghoria sluice gate. These two constructions adversely affect on fisheries diversity and livelihood of the adjacent fishermen. The daily newspaper Prothom Alo (2012) reported that five hundreds fishermen are already are unemployed.

Due to the combination of both natural and manmade factors fisheries resources from the river Baral were depleting day by day. Huge fishing activities that could be found years back is now alarming. With the increase of use of river water for irrigation, domestic use of river water, siltation, habitat degradation and pollution, the capture fishery of the river Baral was facing a real danger now these days. Aguero (1989) described that over fishing, high population, sedimentation, flood and tidal control projects, excessive removal of surface water for irrigation, large scale reclamation of rivers, haors, beels and other depression areas for crop production caused severe problems for inland fisheries. Karim (1978) stated that in the past time inland open water was the principal source of production and about 90% fish was captured from the inland open water. To observe the fishing community of the study area it had been seen that, the stocking or richness of fish and fisheries resources of the river Baral as well as of the open waters of our country has been greatly affected. Some species were very rare at this moment those were available in few years ago eg. *Nandus nandus, Labeo gonia, Tor tor, Channa marulius, Pangasius pangasius* etc.

RECOMMENDATIONS

Recommendations on fishing activity

Cage culture, pen culture, and community based fisheries management should be adopted in this Baral during off-season when the river water dropped.

Recommendations on fishermen's livelihoods

- DoF, NGOs and other developing agencies and fisheries expert should provide appropriate knowledge or training on fishing or net weaving.
- A new micro credit service system should be installed for the Baral river fishermen during off-season to perform off-fishing and non-fishing activity.
- Local, regional, national and international NGOs should provide technical knowledge, credit support and alternative income sources available to the poor fishermen as well as womenfolk.

CONCLUSION

At present environmental degradation (erosion, siltation, Chars formation, cropland damage) where its fishermen livelihood mostly depended upon only on fishing activity performed here. If these are continue such a way, the fishermen do not able to perform a good and sustainable life portfolios in the future and they will thrown very back where from they could not improve again. That is why; some recommendations are made to mitigate these affects to improve their livelihood status potentiality. The government as well as non-government initiatives also should come forward to consider these pessimistic impacts and develop such techniques or alternatives that help at least the poor fishermen to hold present profession of fishing in the Baral river.

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