



## Fishing gears and methods in the Chalan Beel, Bangladesh

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### Abstract

Present study on fishing gears and methods in the Chalan Beel was conducted during the period of July 2011 to June 2014. The Chalan Beel is the large network of fluvial waters body that harbors rich ichthyofaunal diversity. Most of the fishing methods of the Chalan Beel are primitive, based on indigenous traditional knowledge and well suited to turbulent nature of the streams. In this study thirty fishing methods and gears have been documented and classified into five categories- fishing nets, traps, wounding gears, hooks and lines, and others. Many of these were harmful to fishes as well as aquatic biodiversity. Effective measurements are required to make proper use of the Chalan Beel.

**Keywords:** Chalan Beel; fishing methods; fishing gears; ichthyofauna

### INTRODUCTION

The Chalan Beel, the largest wetland in Bangladesh (Galib *et al.* 2009a), lies between 24.23° North latitude and 89.05 to 89.180 East longitude. The wetland is at distance of about 50 km, towards South East from Rajshahi city and is connected by Rajshahi-Bogra National Highway.

The Chalan Beel is a large drainage system and contains a vast number of rivers. This vast drainage network endows rich diversity of fishes providing livelihood for large number of people living in remote areas of the Chalan Beel. Though the Chalan Beel is the largest wetland in Bangladesh and contributes a lot to country's economy but a few researches have been documented on different aspects of this wetland which are not sufficient e.g. on fish availability (Galib *et al.* 2009a), small indigenous fish species (Galib *et al.* 2010), fish drying (Samad *et al.* 2009) and socio-economic conditions of fishermen (Kostori 2012). However, a sharp decline in the fishery resources are experienced in past few year (Shahnaz 2005; Imteazzaman and Galib 2013; Galib 2015; Galib *et al.*

2013, 2016a, 2016b; Mohsin *et al.* 2014, 2013). This decline of fishery resources in the Chalan Beel is largely by the habitat degradation and indiscriminate exploitation by the use of some traditional and destructive fishing methods and gears. The ever-increasing human population is the main cause of illegal and irrational high fishing pressure on the aquatic ecosystems. Fishing effort has been intensified without considering the size and species of fish (Watts 1981). Such activities not only degrade the target fish population by changing the population size and structure, but also affect other species linked to it in the food chain (Ahmed and Hamberey 2005). The pattern and regulation of fishing methods and gears varies depending on the target species, fishing ground, climate and water velocity. There is need to study nature of various traditional fishing methods, their mode of operation and impact on fish resources.

The fishing methods employed in Chalan Beel have been previously described by Galib *et al.* (2009b). The fishing gears and methods used in different water bodies of

Bangladesh are poorly worked out by several researchers; e.g. Chakrabarti *et al.* (1995), Ahmed (1954), Dewan and Mazid (1994), Khaleque and Islam (1985), and Doha (1965). However there is no recent study on fishing gears and methods in the Chalan Beel and thus, this study was conducted to describe different types of fishing methods in the largest wetland of the country.

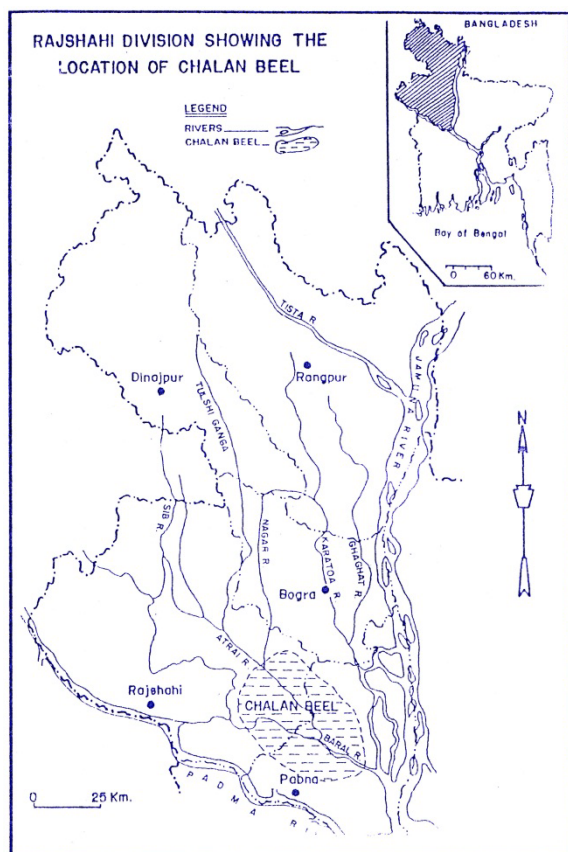


Figure 1: Map showing the location of the Chalan Beel

## METHODOLOGY

The study was focused on the fishing methods and gears of the Chalan Beel from July 2011 to June 2014. Extensive field survey was conducted during this period for collection of primary data. Information regarding the indigenous traditional fishing methods, their nature, operation and regulation, catch composition encountered with them were also collected through personal interview and detailed discussion with local fishermen as well as residents of adjacent areas.

Fish species were identified on the spot based on their morphometric and meristic characters following Bhuiyan (1964), Rahman (2005, 1989) and Talwar and Jhingran (1991). Specimen which was difficult to identify in field was brought to the laboratory for proper identification. Collected data were tabulate and subjected to simple descriptive analysis using computer software Microsoft

Excel 2007.

## RESULTS AND DISCUSSIONS

Most of the fishing methods in the study area were traditional and simple. In the present study different fishing gears and methods were observed and classified into nets (11), traps (10), wounding gears (06), and others (03). The fishing gears and methods are categorically presented in Table 1.

Galib *et al.* (2009b) reported 27 fishing gears and 2 fish aggregating devices in the Chalan Beel which indicates that the fishing activities did not change too much over the last couple of years. Hussain (1999) studied the fishing gears in the river Atrai and recorded 7 types of nets, 2 types of traps, 5 types of hook and line and 4 types of wounding fishing gears. Chakrabarti *et al.* (1995) described the structural designs of various fishing gears used in inland water of Bangladesh which have been classified into 9 major categories. In respect of gears, Ahmed (1954) described 116 nets and 26 traps of inland fishing including hooks and other devices in general way. The fresh water fishing gears of traditional types are using from long time without any modification (Parween 1982). There are 30 types of seine net were reported in our country (Ghosh 2001) but, only one, the Ber Jal, was recorded in this study.

### A. Fishing nets

**Cast net:** These were conical nets and bag like structure required only one person to operate. This net was being used throughout the year in the study area. *Khepla Jal* or *Jhaki Jal* was commonly used cast net in the study area. Mean mesh size of *Khepla Jal* was found  $1.25 \pm 0.19$  cm (1-1.5 cm). The length was varied from 10-20feet (ft) with a mean value of  $15 \pm 3.74$  ft. The breadth varied from 5-25 ft with the mean value of  $20 \pm 4.09$  ft. All types of fishes irrespective of sizes were caught by this net.

**Gill nets:** Generally this gear was used in the study area during rainy season. Paddy fields, ponds, *beels* and closed water area are suitable for using this net. A brief description of different gill nets used in the Chalan Beel is as follows:

**Koi Jal:** Mesh size varied from 1 to 2.5 cm with an average value of  $1.25 \pm 0.19$  cm. The length of *Koi Jal* varied from 20-100 ft and the mean length was  $60.16 \pm 3.84$  ft. The mean breadth was  $2.67 \pm 1.25$  ft (2.5 to 4 ft). *Koi Jal* is rectangular in shape whose upper side is attached by strong nylon coarse thread. Floats made of plastic and earthen sinkers are found at the upper and lower margin respectively. One or two persons and 1 boat (locally called *donga*) are needed to operate this fishing net.

Major catch composition was found as koi (*Anabas testudineus*), kholisa (*Trichogaster* sp.), chanda (*Chanda* sp.) etc.

**Table 1:** Fishing gears and methods used in the Chalan Beel

Fishing methods	English name	Local name of gear
Nets	Cast net	Khepla Jal
	Gill nets	Koi Jal
		Pangus Jal
		Chapila Jal
		Current Jal
	Lift nets	Khora Jal
		Dharma Jal
	Drag net	Moi Jal
Push net	Thela Jal	
Purse net	Sunti Jal	
Seine net	Ber Jal	
Traps		Kholson
		Charo
		Banay
		Hancha
		Vair
		Bitti
		Doair
		Polo
		Chunga
		Chaloon
Wounding gears		Teta
		Ek-Kata
		Konch
		Shat phala
		Aro
Hooks and lines		Danti Borsi
		Down Borsi
		Wheel Borsi
		Basha Borsi
		Chhip Borsi
		Pata Boriss
Others	De-watering	
	Hand fishing	
	Cloth fishing	

Pungus Jal: Mean mesh size was recorded as  $3.2 \pm 0.80$  cm (3.5 to 3 cm). The length of this net varied from 20 to 100 ft with the mean of  $60.16 \pm 3.84$  ft. Mean breadth was found as  $2.67 \pm 1.25$  ft (2.5-4 ft).

Pungus Jal is rectangular in shape. The upper side is attached by strong nylon coarse thread. Floats made by plastic and earthen sinkers are found at the upper and

lower margin respectively. To operate the Pungus Jal one or two persons and one boat are needed. Pungus Jal is specially designed for catching pungus (*Pangasius pangasius*).

Chapila Jal: This net is rectangular in shape. The upper side is attached by strong nylon coarse thread. Floats made by plastic and earthen sinkers are found at the upper and lower margin respectively. Mesh size varied from 1.5 to 3 cm and average mean size was found  $2.2 \pm 0.60$  cm. The length of Chapila Jal varies from 20 to 100 ft and mean length was  $60.16 \pm 3.84$  ft. The breadth varied from 2.5 to 4 ft with the average of  $2.67 \pm 1.25$  ft.

One or two persons and one boat or donga were needed to operate this net. This net is efficient for catching Chapila (*Gudusia chapra*).

Current Jal: Mesh size varied from 1 to 1.5 cm with average of  $1.25 \pm 0.19$  cm. The length of Current Jal varied from 20 to 100 ft and the mean size was  $60.16 \pm 3.84$  ft. The breadth varied from 2.5 to 4 ft and average size was found  $2.67 \pm 1.25$  ft. To operate the Current Jal one or two persons and a boat or donga are needed. Puti (*Puntius* sp.), kholisa, koi, tengra (*Mystus* sp.) etc. were caught by this net.

**Lift nets:** Lift net is framed by a bamboo handle. Only one person operates this net. In Bangladesh 16-17 types of lift nets are found but in the study area only 2 types were recorded.

Khora Jal: Mesh size of Khora jal varied from 0.5 to 1.5 cm (average  $1.02 \pm 0.37$  cm). The mean length of Khora Jal was  $20 \pm 4.09$  ft (15-25 ft). The mean breadth was  $20 \pm 4.09$  ft (15-25 ft). This net was of triangular shape with bamboo frame. Mesh size varied at different portion of net. Nylon thread was used to make this net. There was no sinker. The weight of bamboo frame helps the net to dip into the water.

Boal (*Wallago attu*), jatka-ilish (*Tenualosa ilisha*), catla (*Catla catla*), mrigal (*Cirrhinus mrigala*), silver carp (*Hypophthalmichthys molitrix*), riak (*C. reba*), pholi (*Notopterus notopterus*), chitol (*Chitala chitala*), ghaura (*Clupeosoma garua*), bacha (*Eutropichthys vacha*), bata (*Labeo bata*), ayre (*M. aor*), pabda (*Ompok* sp.), snakeheads (*Channa* sp.), kalbaus (*L. calbasu*) etc. were caught by this net.

Dharma Jal: Mesh size varied from 0.5 to 1.5 cm with an average of  $1.02 \pm 0.37$  cm. The mean length of Dharma Jal was  $15 \pm 3.74$  ft (10-20 ft). This net was of triangular shape. Frame of bamboo was used. Medium to large size fishes were caught by this net.

**Drag nets:** These nets are of rectangular shape. They were used in November-December. Different types of drag nets are used in our country such as Tana Jal, Badai Jal, Moi Jal etc. But Moi Jal was the most common drag net used in the study area.

**Moi Jal:** Mean mesh size of this gear was  $1.68 \pm 0.17$  cm (1.5 to 1.9 cm). The length of Moi Jal varied from 30 to 150 ft with an average of  $94.50 \pm 52.16$  ft. The mean breadth was  $4.91 \pm 1.17$  ft (3.75 to 7.5 ft). It was a mono filamentous rectangular net. One or two persons generally operate this net. One craft or donga is also required. Tengra, puti, ghaura, patasi (*Pseudeutropius atherinoides*), baspata (*Ailia coila*), mola, chanda, koi etc. were caught by this net.

**Dip nets:** There are different types of dip net in our country. This net was framed by a bamboo handle. Only one person can operate this net. In the study area, only one variety of dip net, the Thela Jal was found.

**Thela Jal:** Mean mesh size of Thela jal was  $1.68 \pm 0.17$  cm

(1.5 to 1.6 cm). The average length and bradth of Thela Jal were  $15 \pm 0.2$  ft and  $12 \pm 0.89$  ft respectively. Only one person can pull the net in water with low current. Puti, chanda, kholisa, chela (*Salmostoma* sp.), tengra are normally caught by this net.

**Purse nets:** These nets look like a purse or bag. Different purse nets recorded in the study area are as follows:

**Suti Jal:** A large amount of fish was caught by this net. The operating needs a large number of laborers which was costly. Almost all types of fish species (except those are very small in size) are caught in this net.

**Seine Net (Ber Jal):** Mesh size varied from 0.5-1.5 cm and average mesh size was  $0.94 \pm 0.42$  cm. The length varied between 140 and 650 ft with an average  $332.20 \pm 202.77$  ft. The breadth varied from 25-70 ft with an average of  $50.40 \pm 19.71$  ft. The net was operated by two groups of fishermen from two boats. One boat remained at a fixed position in water and other encircled a large area around the first boat. All types of fishes are caught by this net.

**Table 2:** Characteristics and some related information of different fishing nets used in the Chalan Beel

Group	Net	Mesh size (cm)	Length (ft)	Breadth (ft)	Person required	Major fish species caught
Cast net	Khepla Jal	$1.25 \pm 0.19$	$15.00 \pm 0.37$	$20.00 \pm 4.09$	1	All types of fishes
Gill net	Koi Jal	$1.25 \pm 0.19$	$60.16 \pm 3.84$	$02.67 \pm 1.25$	1 or 2	Koi, Kholisa, Chanda
	Pungus Jal	$3.20 \pm 0.80$	$60.16 \pm 3.84$	$02.67 \pm 1.25$	1 or 2	Pungus and all types of sis fishes
	Chapila Jal	$2.20 \pm 0.60$	$60.16 \pm 3.84$	$02.67 \pm 1.25$	1 or 2	Chipilla and all sis fishes
	Current Jal	$1.25 \pm 0.19$	$60.16 \pm 3.84$	$02.67 \pm 1.25$	1 or 2	All types of sis fishes and some large fish
Liftnet	Khora Jal	$1.02 \pm 0.37$	$20.00 \pm 4.09$	$20.00 \pm 4.09$	1	Boal, Catla, Bocha, Silver carp, Riak, Bata, Pholi, Ayre, Jhatka- ilish, Chitol, Ghaura, Vanga, Pabda, Gujar, Shol, Kalbaus
	Dharma Jal	$1.02 \pm 0.37$	$15.00 \pm 3.75$	$15.00 \pm 3.75$	1	Medium to large size fishes
Drag net	Moi Jal	$1.68 \pm 0.17$	$94.50 \pm 52.16$	$04.91 \pm 1.17$	2	Tengra, Puti, Gaura, Patasi, Baspata, Mola, Chela, Chanda Koi
Dip net	Thela Jal	$1.68 \pm 0.17$	$15.00 \pm 0.20$	$12.00 \pm 0.89$	1	Puti, Chanda, Chela, Kholisa, Tengra
Purse nets	Large Suti Jal	$2.97 \pm 3.58$	$1.65 \pm 5.64$	$95.03 \pm 6.89$	10-12	All types of fish and fisheries iteams
	Medium Suti Jal	$2.50 \pm 2.87$	$1.35 \pm 3.84$	$80.04 \pm 3.58$	8-10	All types of fish and fisheries iteams
	Small Suti Jal	$1.65 \pm 1.90$	$67.50 \pm 7.68$	$65.02 \pm 2.71$	4-5	Prawn and all small fishes
Seine net	Ber Jal	$0.94 \pm 0.42$	$332.20 \pm 202.77$	$50.40 \pm 19.71$	10-12	All types of fishes

## B. Fishing traps

Various traps are use in fishing in our country. During the survey the following fishing traps were found in study area:

**Kholson:** This rectangular trap was placed in the shallow

water. The length, breadth and height varied from 2-3 ft, 0.5-1.0 ft and 1.5-2.0 ft with the average of  $2.5 \pm 0.43$  ft,  $0.73 \pm 0.22$  ft and  $1.78 \pm 0.22$  ft respectively. Kholson was set at the upper water level at the depth of about 40-85 cm and fixed by 2 to 4 bamboo sticks. Aquatic vegetation like *Hydrilla* sp. was sometime used to cover this trap during operation of 6-12 hours. Patasi, guchi

(*Mastacembelus pancalus*), vacha, kholisa, bele (*Glossogobius giuris*), chela, riak, shing, tengra, puti, baluchata (*Somileptus gongota*), gorkuna (*Lepidocephalus guntea*) were commonly caught by this trap.

**Charo:** 'Charo' was placed mainly for catching of small fishes. It was a triangular shaped fishing gear with one entrance. The length, breadth and height of this gear varied from 1.5-2.5 ft, 0.5-1 ft and 1.5-2 ft with the average of  $2\pm 0.42$  ft,  $0.78\pm 0.22$  ft and  $1.8\pm 0.22$  ft respectively. Operation time was 6 to 12 hours. Kholisa, puti, guchi, chanda, baim (*Mastacembelus armatus*), small prawn, patasi, baspata, gorkuna etc. were commonly caught by this trap.

**Banay:** Bana was usually used in the deeper water of the study area. But in certain cases, this was placed in the shallow water. This rectangular shaped trap made up of narrow bamboo-splits, flat bamboo splits, coir, ropes of jute yarn, nylon thread. The length, breadth and height varied from 0.7-0.8 ft, 0.3-0.5 ft and 1.5-2 ft with the average of  $0.77\pm 0.06$  ft,  $0.4\pm 0.1$  and  $1.77\pm 0.25$  ft respectively. Koi, shing, magur (*Clarias batrachus*), chitol, pholi etc. were caught by this trap.

**Hancha:** This was a triangular trap made of bamboo split, about 2 to 3.5 ft in height with the average  $2.9\pm 0.65$  ft. The mean length and breadth were  $2.83\pm 4.08$  ft  $3.30\pm 0.68$  ft respectively. It was used for fishing of small fishes as darkina (*Esomus danricus*), kholisha, guchi, small prawns etc.

**Vair:** Vair was placed into the water depth of about 90-270 cm. Bamboo splits, coir, nylon thread were used in making this trap. The length, breadth and height were varied from 1.5-2 ft, 1-1.5 ft and 2-3.5 ft with the average of  $1.78\pm 0.22$  ft,  $1.28\pm 0.22$  ft and  $2.9\pm 0.65$  ft respectively. Mainly large fishes were caught by this trap. Common catches were rui, catal, chitol, pholi, boal, mrigal, ayre, kalibaus, magur, shing etc.

**Bitti:** Bitti was placed in shallow water and this was of square in shape with two or three trap doors. There was an opening at the top. The length, breadth, and height were varied from 0.9-1.0 ft, 0.5-0.8 ft and 0.6-1.5 ft respectively and with average of  $0.95\pm 0.06$  ft,  $0.68\pm 0.15$  ft and  $1.05\pm 0.39$  ft respectively. Bitti was placed along with barricade. This trap was set in water in the evening and kept overnight. Major catches were tengra, baim, puti, taki, pabda, shing, guchi, bele, small prawn etc.

**Doair:** Drum-shaped and cage like fishing trap made up of narrow and flat bamboo splits, nylon threads. The length, height and circumference varied from 1.5-2 ft, 0.5-0.75 ft and 2.83-4.0 ft with the average of  $1.8\pm 0.26$  ft,  $0.62\pm 0.13$

ft and  $3.30\pm 0.68$  ft respectively. Baim, tengra, catal, rui, mrigal, boal, guzza ayre (*Mystus seenghala*), ayre, baghair (*Bagarius bagarius*), snakeheads etc. were commonly caught by this trap.

**Polo:** A bell-bottom shaped fishing trap with broad opening at the bottom and a narrow opening at the top. The mean height was found  $2.22\pm 0.22$  ft (2-2.5 ft). The diameter of broad opening was  $1.48\pm 0.09$  ft (1.4-1.6 ft) and narrow opening was  $0.55\pm 0.06$  ft (0.5-0.6 ft).

**Table 3:** Characteristics and some related information of different traps in Chalan beel.

Trap name	Length (ft)	Breadth (ft)	Height (ft)	Catch/Haul (Kg)
Kholson	$2.50\pm 0.43$	$0.73\pm 0.22$	$1.78\pm 0.22$	0.5-1.5
Charo	$2.00\pm 0.42$	$0.78\pm 0.22$	$1.8\pm 0.22$	1
Banay	$0.77\pm 0.06$	$0.40\pm 0.1$	$1.77\pm 0.25$	-
Hancha	$3.30\pm 0.06$	$3.30\pm 0.68$	$2.9\pm 0.65$	0.2-0.25
Vair	$1.78\pm 0.22$	$1.28\pm 0.22$	$2.9\pm 0.65$	2-2.5
Bitti	$0.95\pm 0.06$	$0.68\pm 0.15$	$1.05\pm 0.39$	0.5-1.5
Doair	$1.80\pm 0.26$	$0.62\pm 0.13$	$3.30\pm 0.68$	1-2
Polo	$2.2\pm 0.22$	$1.48\pm 0.09$ & $0.55\pm 0.06$	-	0.25-0.5
Chunga	$3.00\pm 0.10$	$1.2\pm 0.5$	-	0.1-0.15
Chaloon	-	$0.4\pm 0.1$	-	0.1-0.15

**Table 4:** Some related information and seasonal distribution about different traps in the Chalan Beel

Trap name	Major fish species caught	Fishing period
Kholson	All types of SIS Fishes	Aug-Nov
Charo	Guchi, Bele, Tengra, Punti, Patasi, Chanda, Kalisha etc.	Jul-Dec
Banay	All types of fishes	Rainy season
Hancha	Darkina, Kholisa, Guchi, Prawn etc.	Rainy season
Vair	Tengra, bele, baliehata, taki etc.	Aug-Oct
Bitti	Boal, Shol, Ayre etc.	Jul-Dec
Doair	Baim, Guchi etc.	Jul-Oct
Polo	Sing, magur, rui, taki, punti guchi etc.	Dec-Jan
Chunga	Shing, Magur, Baim, Guchi, Taki, Chang etc.	Irregular
Chaloon	Mainly small fishes and prawn	Irregular

**Chunga:** The mean length and breadth were found  $3\pm 0.1$  and  $1.2\pm 0.5$  ft respectively. This gear was placed at the bottom mud for few days to allow fish to take shelter.

Fishes like shol, magur, baim, guchi, taki, chang (snakeheads) etc. were the target species.

**Chaloon:** This was a bowl-shaped trap made up of split bamboo sticks with the radius of about 0.3-0.5 m with the average 0.4±0.1 m. This gear was set in shallow-water area of the Chalan Beel to harvest small fishes and prawn.

### C. Wounding gears

Wounding fishing gears were made up of bamboo, wood shifts with forks or group of iron points. These devices were used when large fishes float or drift on the surface water. Different wounding fishing gears recorded in this study are as follow:

**Aro:** The aro possesses a fork with 3 simple points. The fork is attached to a long bamboo.

**Ek-Kata:** It possesses a single detachable barded point. The spear is attached to the shaft made of bamboo.

**Konch:** This gear consists of 7 to 15 split bamboo pieces firmly fixed in a bunch. Pointed ends of the bamboo pieces are covered with simple sharp iron point.

**Shat-phala:** A long bamboo is splinted in 7 pieces of bamboo stick. The phalas are barbed, pointed and sharpened.

**Teta:** Teta is pointed and sharp. It is tied by cord to the splinted pieces.

**Table 5:** Characteristics and some related information about wounding gears

Name	Length (ft)	Target Species	Period of Operation
Aro	7.5±0.35	<i>Channa sp.</i> , <i>Wallago attu</i>	Jun-Jul and Nov-Dec
Ek-kata	5.5±0.71	<i>Channa sp.</i> , carps	Jul-Nov
Konch	5.5±0.71	<i>Channa sp.</i> , <i>W. attu</i> , craps, shing, magur	Jul-Nov
Shat-phala	4.4±0.89	<i>W. attu</i> , <i>Channa sp.</i> , <i>Mystus sp.</i>	Jun-Dec

### D. Hooks and lines

Hooks and lines are locally known as Chhip or Barsi. In the study area, the following varieties of hooks and lines were found:

**Danti Borsi:** A hook and 3 to 5 ft long thread are tied with a floating stick locally called *sola*. This *sola* is about 8 to 9 inches in length. This fishing device was placed in the paddy field during rainy season. Earthworm, snail-flesh and small prawns were commonly used baits. This gear

was set in the afternoon and kept overnight. snakeheads and catfishes etc. were caught by this gear.

**Dawn Borsi:** The length of this gear sometime reached over 100 ft and the hooks are attached at every one ft interval. Bamboo poles, thread, hooks, floats etc. were used to make this fishing gear. This device was placed in the paddy field and stagnant water with earthworm, small prawn, live Taki or Puti as baits. The long line was placed in the evening and kept overnight. Snakeheads and catfishes were commonly caught fish species by this gear. There were two types of Dawn Borsi recorded in the study area, Mete Dawn and Urano Dawn. In case of Mete Dawn, baited hooks were placed in the water near bottom mud and two ends of the line were fixed with two sticks. Urano Dawn hooks were placed near the surface of water.

**Wheel Borsi:** A wheel machine is attached with a fishing rod in this gear. A float locally called *Fatna* was used usually tied close to the tip of the rod. A sinker was also used. Commercially available baits, locally called *Misti Char* and *Potcha Char*, were used during fishing by this device. Boal, chitol, pholi, rui, shol, ghaura etc. were caught by this fishing gear.

**Basha Borsi:** In this hook 3 to 5 ft long thread was attached to 8-9 inches long stick. Earthworm, prawn, small fish, and breads are commonly used baits. This device was used to harvest puti, taki, shing, pholi etc.

**Chhip Borsi:** This fishing gear is made up of split bamboo or sometimes bamboo of suitable length. A nylon or synthetic line is generally attached to the stick. A float is generally tied with the thread.

Earthworms, bread, prawn etc. were commonly used baits for this gear. Small to medium sized fishes such as puti, tengra, taki, carps etc. were the commonly caught species.

**Pata Borsi:** In case of Pata Borsi, nylon thread is fastened to the hook and the other end to a stick. A short bamboo stick, nylon thread and hook were used to make this fishing gear. This was operated in the bank of wetland.

### E. Others

There were some other fishing methods recorded in the study area which are as follows:

**De-watering:** In the month from February to April the water level in the study area became low. During this time people harvest fishes by drying up the water through draining out water of a specific place.

**Hand fishing:** During dry season children and people caught fish from the muddy water by this method. Almost all types of small to medium sized fishes were caught by this process.

**Fishing with cloth:** A large piece of cloth was used to trap small fishes and larvae. Two people, usually children and women, were being operating this type of fishing in the study area.

Several of the recorded fishing gears and methods are destructive in nature (e.g. de-watering, gill nets) and use of some of them (e.g. *Current Jal*) is illegal in Bangladesh. But fishermen were using these harmful fishing gears and methods in absence of responsible authority. All these led to an adverse situation for fish diversity as well as their abundance. Similar findings were also reported by Chaki *et al.* (2013) in the Atrai River.

## CONCLUSION

A large number of fishing gears and methods are being used in the Chalan Beel. Many of these are harmful to fishes as well as aquatic biodiversity. Effective measurements are required to make proper use of the Chalan Beel.

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