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A Study of Lift Net in The ChalanBeel, Bangladesh

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Abstract: *The present study on fishing technique using Lift netin the ChalanBeel was conducted for a period of 3 years from July 2011 to June 2014. Net description, operation details and catch composition were studied through field survey in different parts of studied wetland. Two different categories of Lift netwere recorded. Catch composition revealed that all types of aquatic organisms are being caught by this net. Lift net is a eco-friendly fishing gear.*

Keywords: *Lift net, ChalanBeel, Catch composition, Eco-friendly fishing, Bangladesh.*

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I. Introduction

The ChalanBeel in Bangladesh lies between 24.23° north latitude and 89.05 to 89.180 east longitude. It is the largest wetland in Bangladesh (Galib*et al.* 2009a). This water body is at distance of about 50 km, towards southeast from Rajshahi city. The ChalanBeel is a large drainage system. This vast drainage network endows rich diversity of fishes providing livelihood for large number of people living in remote areas of ChalanBeel. However, a sharp decline in the fishery resources are experienced in past few year (Shahnaz 2005). This decline of fishery resources in the ChalanBeel is largely by the habitat degradation and unsustainable exploitation by the use of some traditional, unscientific fishing methods and gears (Von Brandt 1962). Different kinds of nets are used for fishing in the ChalanBeel. Various types of nets used in different grounds for fishing purpose (Ahmed 1954). In Bangladesh, both professional and non-professional fishermen use nets to catch fishes in different fishing grounds. Hossain (1995) classified fishing nets into different categories: (a) special type of gear net, or fixed purse net-locally called *Kheplajal*; (b) seine net; (c) drag net; (d) dip net; (e) lift net; and (f) cast net.

ChalanBeel with its associated wetlands supports rich biodiversity. It is a major fishery resource in Bangladesh supporting a large population living along its fringes. The beel is an important habitat for migratory water birds (like geese, ducks, shorebirds, cranes etc.) and largest fisheries resource. There are 116 species of fish found in ChalanBeel. Common carp was introduced in 1959 (Qureshi*et al.* 2014). Beelvegetation includes some economically important species utilized for food, fodder and fuel by the communities. Plant species like *Trapa*and*Nelumbiumnucifera*found in the ChalanBeel have significant food value and are used either by the local communities for their own consumption or marketed to the neighbouring towns.

The use of lift net, along with other traditional gears, for catching fish has been in vogue since a long time. A typical lift net consists of a piece of net fixed on to a wooden or bamboo frame. It is kept lowered in water below the surface and raised at short intervals with the help of a wooden pole. Remesan (2009), Das and Barat (2014), Dutta*et al*. (2008), Chakravartty and Sharma (2013) studied the design and operation of lift net from different places. The present investigation deals witha study of lift net in the ChalanBeel, Bangladesh. As for today, there has been no documentation regarding the design or operational aspect of lift net from ChalanBeel, Bangladesh.

II. Methodology

2.1 Study area and duration*:* The present study has been carried out study in ChalanBeel- the largest wetland of Bangladesh situated in the northwest region (Figure 1). This research was conducted between July 2011 and June 2014.

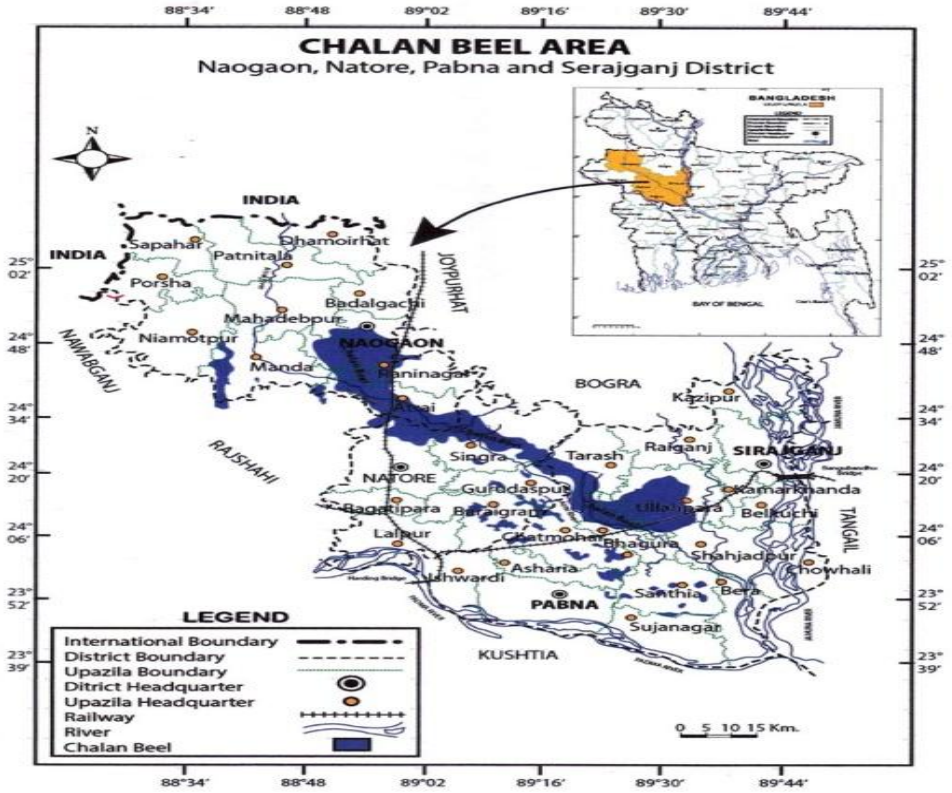

Figure 1: The location map of ChalanBeel.

2.2 Sampling framework: Extensive field surveys were made for the collection of primary data. Information regarding the gear structure, fishing technique, mode of operation and catch composition were collected through personal interview and detailed discussion with local fishermen as well as direct observation. Interviews were carried out using a prepared questionnaire which was pre-tested in field situation and updated before final use. Amount of catch was measured in kilogram (kg) and weight was determined using a pan balance. Species in the catch were identified following published literatures (Rahman 1989, 2005; Talwar and Jhingran 1991).

2.3 Data analysis*:* Collected data were accumulated, grouped and interpreted according to the objective. Data were subjected to simple descriptive analysis using computer software Microsoft Excel 2010.

III. Results And Discussion

3.1 Lift net: There are different types of framed or lift nets in our country. It is framed by a bamboo handle. Only one person operates this net. This net is placed in the silent or light current water excluding heavy current water. There are about 16-17 types of lift nets found in our country. But in my study area it found only two types. They are- (i)Khorajal and (ii) Dharma jal

IV. Khorajal

4.1Shape and construction pattern: This net has triangular shape. Frame of bamboo is used. To operate this jal a handle is attached with it. Mesh size varies from to end to base end. At the top end mesh size is comparatively bigger than the base end.

Khorajal

4.2 Mesh size: Mesh size of Khorajal varies from 0.5 to 1.5 cm and in average as 1.02±0.37 cm.
4.3 Materials used and making: Bamboo frame is made to give the structure of 'Khorajal'. Nylon thread is used. There is no sinker. The weight of bamboo frame help the net to dip into the water.
4.4 Mode of operation: At the time of fishing, this net is drown in the water and it gets up from the water and it is called haul. The net is operated from boat or bamboo made char and bank of water area.

Figure 2:Different stages for operation of Lift net (Khorajal) in study area

4.5 Uses of fish caught: From medium to large size of fish caught with this net. The common fishes are Boal, Jatka-ilish, Catla, Mrigal, Silver-carp, Riak, Pholi, Chitol, Ghaura, Vangna, Bacha, Bata, Ayre, Pabda, GajarShol, Kalbaus etc.

V. Dharmojal

5.1Shape and construction pattern

This net has triangular shape. Frame of bamboo is used. To operate this jal a handle is attached with it. Mesh size varies from to end to base end. At the top end mesh size is comparatively bigger than the base end. The length of Dharmojal is average 10′ to 25′ and breadth is average 10′ to 25′.

Dharmojal

5.2 Mesh size: It is varies from 0.5 cm to 2 cm.
5.3 Materials used and making: Bamboo frame is made to give the structure of 'Dharmojal'. Nylon thread is used. There is no sinker. The weight of bamboo frame help the net to dip into the water.
5.4 Mode of operation: At the time of fishing, this net is drown in the water and it gets up from the water and it is called haul. The net is operated from boat or bamboo made char and bank of water area.

Figure 3:Different stages of operation of Lift net (Dharmojal) in study area

5.5Uses of fish caught: From medium to large size of fish caught with this net. The common fishes are Boal, Jatka-ilish, Catla, Mrigal, Silver-carp, Riak, Pholi, Chitol, Ghaura, Vangna, Bacha, Bata, Ayre, Pabda, GajarShol, Kalbaus etc.

5.6Catch Analysis of Lift net

Mean amount of fish catch and catch composition in different types of Lift net are shown in Table 1 and 2 respectively. It was found the all types of fishes including small to large were caught by this fishing net. During daytime the highest amount of catch (4.225±1.25 kg) was obtained in November incase of Khorajal and (3.759±2.97 kg) was obtained in November incase of Dharmojal. At night, the largest catch (3.006±1.35 kg) was made in the same month incase of Khorajal and incase of Dharmojal the largest catch at night was (36.592±2.25 kg) in the same month. Like Lift net many other ecofriendly device were being operated in the different water bodies of Bangladesh. For this why over fishing occurs and for that reason fishes and fisheries items were depleting through studies undertaken by several researchers has revealed same scenario (Galib et al. 2009a, 2013; Samad et al. 2010; Chaki et al. 2014; Mohsin et al. 2013, 2014; Galib 2015; Joadder et al. 2015).
In a study by Mohsin*et al.* (2009), no conservation effort was noted in the BookbharaBaor of Jessore district of Bangladesh. There is a crying need to implement appropriate management techniques to save not only the water body but also its biodiversity. In several researches it was revealed that through there were remarkable anthropogenic activities but diversity and abundance of fishes were still high and establishment of sanctuaries can be an excellent option to save the aquatic biota.

Table 1. Mean catch amount in different months of Lift net.

Name of Lifet net	Months	Mean (±SD) catch (kg)	
		Day	Night
Khorajal	Jul.	2.572±2.39	1.567±1.68
	Aug.	2.637±1.07	1.326±1.07
	Sep.	3.621±1.98	1.729±1.98
	Oct.	3.155±2.29	2.250±1.25
	Nov.	4.225±1.25	3.006±1.35
	Dec.	3.175±2.35	1.259±2.95
	Jan.	2.587±2.02	1.251±2.02
	Feb.	1.579±2.57	1.29±2.37
Dhormojal	Jul.	3.378±2.89	2.287±0.08
	Aug.	2.252±1.08	2.212±0.91
	Sep.	3.459±2.27	2.257±1.21
	Oct.	3.167±2.93	3.359±2.23
	Nov.	3.759±2.97	3.592±2.25
	Dec.	2.257±1.07	2.291±2.02
	Jan.	1.597±0.08	3.591±1.27
	Feb.	2.223±0.58	2.228±1.92

Table 2. Catch composition of major species

Fishes and fisheries items (Group name)	Catch composition (in % kg)	
	Khorajal	Dharma jal
Major carp	2.225	3.225
Minnows and barbs	3.621	3.175
Air breathing catfish	3.155	3.254
Butter catfish	4.225	4.375
Fresh water shark	1.287	1.379
Squarehead catfish	1.009	1.092
Snake head	0.957	1.082
Tank goby	1.252	1.235
Feather back	2.228	2.507

Shad	1.008	1.257
Anchovy	1.587	1.349
Loaches	2.278	2.229
Mud perch	1.225	1.253
Glassfishes	4.634	5.417
Climbing perch	7.746	7.042
Stinging catfish	5.225	5.278
Freshwater prawn/carb	8.225	8.028

VI. Conclusion

Lift net is one of the important fishing gears used in the ChalanBeel. However, the technological and operational efficiency of the gear has not been upgraded since a long time. The documented information on the design, technical specifications and operation of Lift net in ChalanBeelin Bangladesh, would serve as a base line information for the technological modifications this gear may undergo to increase its efficiency in the coming years.

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