

# Studies on Some of the Fish Catching Gears in Barak and Katakhal Drainage in Barak Valley Region of Assam

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## Abstract

In the present study, approaches had been made to study the various fishing gears that are being operated in River Barak and in Katakhal basin. An attempt had been made to document the traditional methods carried out for fishing in those areas, which revealed a total of 10 different types of fishing devices in the form of traps, nets and hooks. The efficacies of the gears were also being studied and it was found that the Gill net, Lift net and Cast net were most efficacious in those two areas.

**Keywords:** Fishing gears; River Barak; Katakhal basin; Gear efficacy.

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## INTRODUCTION

Derivation of fish farming in India probably dates back to 1900 AD which had, possibly, been started initially with the fish seeds collected at the mouth of tidal inlets from the rivers and their various stockings.

Fish catching devices, popularly called "Fishing gears and crafts" are the implements to harvest fishes from a water body. These exhibit bewildering diversity globally, nationally, regionally and locally. Variations also exist according to fish type, fishermen type and season type.

North-East (NE) India is a biodiversity hotspot zone. Indigenous technical knowledge of the fishing gears of Manipur, Tripura and Arunachal Pradesh, Mizoram, Meghalaya and Assam has been reported by various workers [1-6].

The Barak valley, named after the large river Barak, undulating valleys and low-lying hills of Barak valley reveals an exclusive landscape of ridge and valley. River Barak is the biggest river in southern part of NE India flowing through the Barak Valley region of Assam.

The Katakhal basin is said to be an artificial re-suscitated old channel which now carries the main discharge of the River Dhaleswari. The Katakhal flows

along the eastern margin of the valley. River Katakhal joins Barak at the village called Katakhal.

Accordingly, the focus of the present work was to inventories the fishing gears being used by the local communities in the River Barak and in the Katakhal basin.

## MATERIALS AND METHODOLOGY

The Present Study was conducted in two areas one in Barakpar area, near Surtara, Cachar District, situated on the bank of the River Barak and another in Katakhal near Katakhal Village, Hailakandi District, Assam. All the relevant data about the fishing gears and fishing methods were collected through the field survey with the help of the local fishermen. A large number of fishermen were personally interviewed. All the description of the gears and methods of gear operations and other relevant statistics provided by the fishermen were recorded in the relevant section of the questionnaire.

## RESULTS AND DISCUSSION

A diverse range of fishing gears have been observed operated by the fishermen community in both the Rivers Barak and Katakhal basin. These gears are mostly indigenous and their construction pattern and method of operations are different.

An account of the fishing gears operated in the Barak River and Katakhal basin is briefly given below:

## Gears Operated in Katakhal Basins

**1. Dheki jal (Lift net):** it is a lift net and is rectangular in shape. All the corners of this net are been tied to a flexible bamboo (Fig-1a). The bamboo is generally used to pull up the net. A rope is tied for drag up at the top of the bamboo, where crossing point is attached. This net is used to catch all kinds of fishes in the slow flowing water.

**2. Fash Jal (Gill net):** It is rectangular in shape and has various rectangular meshes joint by two strong strings at both sides (Fig-1b). This net is operated by fixing it at one end of the river with a support (bamboo mainly) and a rope is fixed at an end of the net. Medium sized fishes are mainly caught with this net.

**3. Current jal (Gill net):** these are rectangular nets which are provided with head and foot edges (Fig-1c). These small meshed drift net are more effective in entangling the fish. Smaller bamboo sticks are used as floats while burned clay are used as sinkers. These are operated by throwing them over the water particularly from one shore to another. Sometimes these net are tied against the current and allowed to drift over-night. Fishes gets entangle in the net by their operculum.

**4. Paran (Trap):** it is fabricated in a conical form by knitting bamboo slits together with the help of cane string (Fig-1d). The bamboo slits are strengthened with thicker bamboo slits place in between. On the inner side of the trap, a V-shaped door with a narrow slit is kept. The slits at the upper free end are tied with a string in such a way that the fishes are taken out with bare hand simply by loosening it. The Paran is placed irregularly in the depth range of 0.30-1.25 m on each side of a barricade, extending 50-500 m from the shore line. Due to the miniature size of the cage, it is tied to the barricade by the upper string. Fishes enters the trap through the slit after being obstructed by any means. The fishermen takes out the catches after 8 to 10 hrs of its placement.

**5. Kupa Barshi (Hook and Line gear):** this gear consists of a hook, a nylon line of 30-50 cm in length and a bamboo stick of 1.0-1.5 m in length and 4.5-8.0 cm in width (Fig-1e). The line is attached to the hook on one end while the other end is tied by the middle of the stick. Here baits are used in the form of Earthworms or small forage fish. A single fisherman operates this hook gear. During operation, the rod remains afloat in water and the baited hook is hung from it.

## Gears operated in Barak River

**1. Gofa jal (Lift net):** it is a rectangular shaped net. It has floats but no sinker is connected with the lower portion of the net (Fig-2a). The length of the

net is about 180 m. The width of the net is 5.80m. The mesh size of the net varies from 26-112 mm (Table-1). The net is mainly used to catch the medium sized fishes like Rita rita, Labeo calbasu, Sperata aor etc.

**2. Holar jal (Purse net):** it is a semicircular purse net extensively used mostly in catching Hilsa. The net consists of an elliptical frame my tying two split bamboos on either side, and a bag shaped net attached to it (Fig-2b). The bag is formed by lashing four right-angled triangular pieces of webbing of identical dimensions, A rope which is attached to the lower to the lower lip of the net, after passing through the upper lip, goes into the right hand of the man standing in the forepart of the boat, which is drifting. This forms the haul rope. A big knot, which limits the opening of the mouth, is made at some distance on the rope. A stone or brick is attached to the middle of the lower arc to keep the net submerged. The net is also known as 'Jem jal.'

**3. Jhaki jal (Cast net):** this is the commonest types of fishing gears used in this region. It is also locally called as 'Ural jal' (Fig-2c). It is a light circular, somewhat bell-shaped net woven with cotton or nylon has a length of 4-5 m, an inside diameter of about 4.5 m, circumference of 12-14.5 m (Table-1) and weighted by 4-6 kg of iron balls around its perimeter, thus making the gear weigh 7-8 kg. During its operation, the fisherman folds the net, so that, it could be thrown over the water to land horizontally. When cast over a school of fish, the weighted edges sink rapidly. The net is retrieved by a string attached near the center.

**4. Maha jal (Encircling gear):** it is the largest type of encircling gear observed here. Its height ranges from 6-7 m in the middle and 2-3 m at the outer edges (Fig-2d). Its length however ranges from 700-750 m (Table-1). It usually consists of two distinct parts, viz., a fine meshed underwater part and a broad meshed episuface part, both the portions being joined together in operation. During operation, the underwater portion of the net is kept vertically erect through weights and floats while the episuface part of the net is maintained through poles. The net is extended above water to a good height to prevent fishes from escaping during operation.

**5. Dori (Trap):** it is a rectangular shaped box trap made of bamboo strips tied strongly with plastic threads (Fig-2e). There is a V-shaped opening at the inner side which is flexible. The traps are placed with two bamboo sticks inserted on the front side. The box trap is placed against the water current and the fishes readily enter the trap with the flow of water but cannot escape once they enter. This is especially designed to catch small fishes.

**Table-1: Showing the different measurements of the gears along with their mesh sizes and area**

Sl. No	Gear name	Gear type	Length (m)	Width (m)	Height (m)	Circumference (m)	Diameter (m)	Mesh size (mm)	Area (m)
1	Dheki jal	Lift net	5	18	-	-	-	5-10	90
2	Fash jal	Gill net	19	1.20	-	-	-	12	22.8
3	Current jal	Gill net	13	1.06	-	-	-	10	13.78
4	Paran	Bamboo trap	-	0.12-0.16	0.30-0.40	-	-	6-7	-
5	Kupa borshi	Hook and line	400-500	-	-	-	-	-	-
6	Golfa jal	Lift net	180	5.80	-	-	-	26-112	1044
7	Holar jal	Purse net	Arc length : 4-6	-	-	-	-	35-50	-
8	Jhaki jal	Cast net	3-5	-	-	12-14.5	4.5	0.70-1.25	15.9
9	Maha jal	Encircling gear	700-750	-	3.75-6.0	-	-	Epi surface: 5.0 Under water: 1.0	-
10	Dori	Bamboo trap	1.54	0.30	-	-	-	5-8	0.46

**Table-2: Showing the main catches of the gears along with their cost of fabrication and efficacies**

Sl. No.	Gear name	Gear type	Main fishes caught	No. of persons operating the gear	Cost of gear fabrication (Rs)	Time period of gear operation (hrs)	Total weight of fishes caught (kg)	CPGH	Total income from the gear (Rs)
1	Dheki jal	Lift net	All medium and small sized fishes.	2	10,000	24	20	0.416667	2000 approx
2	Fash jal	Gill net	<i>L.rohita</i> , <i>S.aor</i> , <i>Bagarius</i> spp.	2	7,000-8,000	3	5	0.833333	500-600
3	Current jal	Gill net	<i>A.mola</i> , <i>Puntius</i> spp, <i>Mystus</i> spp.	2	700-800	3	2	0.333333	300-400
4	Paran	Bamboo trap	<i>Clarias</i> , <i>H.fossilis</i> , <i>Mystus</i> spp, <i>Channa</i> spp.	1	100	12	2	0.166667	700-800 approx
5	Kupa borshi	Hook and line	<i>W.attu</i> , <i>S.aor</i> , <i>Bagarius</i> spp.	1	1,000 approx for 400-450 hooks	6 (operated at night)	5	0.333333	500-600
6	Golfa jal	Lift net	Medium sized fishes mainly <i>Labeo</i> spp.	3	12,000	2	1	0.833333	800-1000 approx
7	Holar jal	Purse net	Mainly <i>Hilsa</i> .	2	800-1,000 approx	1.5 (operated at night)	2	0.333333	700-800 approx
8	Jhaki jal	Cast net	<i>W.attu</i> , <i>Mystus</i> spp, <i>Puntius</i> spp, <i>Labeo</i> spp.	1	900-1,000	3	5-6	0.666667	800-1000
9	Maha jal	Encircling gear	All kinds of fishes.	7-10	20,000-30,000	12	40	0.333333	5000-7000 approx
10	Dori	Bamboo trap	Small fishes like <i>S. bacaila</i> , <i>Puntius</i> spp, <i>M. fasciatus</i> , <i>A.mola</i>	1	300-400	10	1.5	0.015	300-400

## DISCUSSION

The survey of the fishing gears and their method of operation have revealed there are collectively 10 different types of fishing gears operated in both the Barak river and the Katakhal basin. The topography of the water body and availability of fishes plays a significant role on the types of fishing gears used in the fishing process.

As obtained from the discussions with the local fishermen, it is evident that Fash jal, Current jal and Jhaki jal are the most extensively used in commercial fishing in both River Barak and the Katakhal basin.

The study also revealed that there are some gears that shows seasonality in their operations. In Barak River, Maha jal is operated during the monsoon. Holar jal also shows seasonality and these are operated during the rainy seasons, especially for catching *Hilsa (Tenualosa) ilisha* (Table-2). Jhaki jal is operated both in monsoon and in winter months. In Katakhal basin,

the Dheki jal is operated from around April to September.

The gear specificity to fish types also revealed that bamboo traps like Dori and Paran catches mainly small fishes like *Salmostoma bacaila*, *Puntius* spp, *Mastacembelus armatus*, *Mystus* spp, *Amblypharyngodon mola* etc. While Mahajal and Dheki jal are used to catch fishes of mostly all sizes (Table-2).

The efficacies of the gears have been determined on the basis of fish catch (catch/person/gear/hour) CPGH (Table-2), which revealed that in Katakhal basin, the Fash jal seems to be most efficacious. While in the Barak River, the CPGH (Table-2) of Golfa jal and the Jhaki jal are high which shows that these two gears are most efficacious in this area. The (Table-2) also reflects significant differences between the different kinds of gears with regard to their CPGH.



Fig-1: Gears operated in Katakhal basin: a. Dheki jal (Lift net); b. Fash jal (Gill net); c. Current jal (Gill net); d. Paran (Trap); e. Kupa borshi (Hook and Line gear)



**Fig. 2:** Gears operated in River Barak: a. Golfa jal (lift net); b. Holar jal (purse net); c. Jhaki jal (Cast net); d. Maha jal (Encircling gear); e. Dori (Trap)

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