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RESEARCH ARTICLE

DIFFERENT TYPES OF FISHING GEAR AND METHOD USED IN GELABEEL, AN OXBOW LAKE OF GOLAGHAT DISTRICT

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ABSTRACT

Gelabeel is an oxbow lake of upper Assam. A wide range of fishing gears and methods are used by the fisher folk of the wetland. The survey results revealed that about 14 categories of fishing gears and methods are in use for fishing in *Gelabeel.* Use of fine meshed net, over exploitation of fish during festival seasons, use of poison are some of the harmful practices of fishing observed in the study area. 'Katal mara' or 'jeng fishing' is another destructive fishing technique observed during the study. These are potential threats to the fish biodiversity of the wetland.

INTRODUCTION

In Assam a large numbers of wetlands are scattered throughout the floodplains of the two main river systems, the Brahmaputra and the Barak. The floodplain wetlands are commonly known as *'beel'*. The physico-chemical parameters of soil and water of these beels are very suitable for fish growth. Therefore fish diversity and fish production are very high in these beels. Considering the very high potentiality, the present fish production from these beels cannot reach the expected yield. Like in other parts of the world, the fish habitats of upper Assam also degraded as a consequence natural and as well as ever increasing human interferences (Biswas and Boruah 2002). Fishing is considered as the main economic activity in the beels of Assam. Different types of traditional fishing devices are followed by fishermen folk of Assam including various fishing nets, bamboo made traps, hook and lines, wounding and fish aggregation devices etc. Selection of fishing gear is an important criterion to have a good catch. The total production of the Beel can be increased by applying the proper fishing gears. Beside these use of improper gear for fishing can harm the fish population. The documentation of different fishing gears and methods are very significant for their scientific development and for improvement of fishermen community. It is also very important to understand the existing fishing technique in the study area for sustainable and judicious fishing. In view of above, a study was conducted in *Gelabeel* of Golaghat district, Assam.

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MATERIALS AND METHODS

Study area: *Gelabeel* is an oxbow lake situated about 16 km north of Golaghat town ($94^{o}5^{/}$ $93^{.}$ $40^{/}$ E and $26^{o}45^{/}26^{.}$ $40^{/}$ N) in upper Assam, India. The *beel* (wetland) covers an area of 111 km^2. It is perennial wetland having a varying depth and current velocity, and also one of the prominent fishery resources in upper Assam.

Procedure of the study: All the data about the fishing gear and fishing method were collected through a field survey during 2012-2013 with the help of the local fishermen. A large number of fishermen were personally interviewed. Types of gears, seasonal variation of gears, types of indigenous fishing devices and fish composition were observed during the study period.

RESULTS

During the study, a diverse range of fishing gears and methods have been recorded. The principal categories of fishing gears traditionally used in *Gelabeel* are as the following: fishing nets, fishing traps, hooks and lines, wounding gears and fish aggregation device etc. Several systems of classification of fishing gears have been developed based on the principle of

capture, design and operational method. Recorded fishing gears are classified according to International Standard Classification of Fishing Gear.

Surrounding net

Ber jal- *Ber jal* is a rectangular surrounding net operated mainly in monsoon season (Fig.1). The mesh size of this net varies from 1-2.5cm and length varies from 25-120m. Its breadth is 4-20m. Length, breadth and mesh size vary with depth of the water body and target species. Operation of *ber jal* required 4-5 men.

Seine net

Musari jal- It is known as '*Mohori jal'* in Nalbari and Kamrup district. The net is made up of 2-5 pieces of rectangular nylon nets of mesh size of 1-1.2mm (Fig.2). Each piece of net varies 20-30m in length and 6-8 in breadth, tied together by nylon thread. The upper margin is attached with head rope and lower margin with foot rope. Net is also provided with floats and sinker. Two long ropes are tied on either side of the net. It requires 6-7 men for operation.

Lift net

Dheki jal-This is a fixed type of triangular shaped net made from cotton or nylon (Fig.3). The net is 10-12 m in length where the front side is 6 -8 m wide and the mesh size of the net is 0.5 to 2 cm. A total of thirteen number of bamboo poles of unequal size are required to set the net in shallow part of the wetland. At the time of operation the nylon ropes of the bamboo poles are kept free to dip the net in water. After 20-30 minutes, the net is lifted up to collect the fishes. A square type of net locally called as '*geoni'* is attached at the base portion to keep the trapped fish alive.

Tongi jal- The shape of the net is square and the length and width measure about 3-4 m^2 having mesh size 0.2-0.4 cm. Two pieces of split bamboo is crossed in such a way that all the four sides are equal in size. Another bamboo pole is tied together at the centre of the frame to act as a handle. The net is dipped for 5-10 minutes under water and lifted again to collect the catch. This net is frequently used in monsoon season.

Ghukuta jal-The net is fitted to a triangular bamboo frame (Fig.4). The bamboo frame is constructed with three small bamboos. Two divergent bamboos, one being longer than the other, meet behind at acute angle and the third bamboo joins their free ends to form a triangular shape. The triangular portion of the net is lowered and pushed forward along the bed of the shallow water areas.

Falling gear

Cast net (*khewali jal)* - It is a most commonly observed gear being operated throughout the year. It is a conical cast net like an umbrella having a strong cord attach to the apex of the umbrella. A number of heavy weights are fixed all along the margin. The length of the net is about 2-2.5m having 5-10 mm mesh size.

Gillnet and Entangling gear

Fansi jal – *Fansi jal* is a fixed type of net used throughout the year. The mesh size of the net is 2-3cm.The head and tail ropes of the net are provided with floaters and sinkers respectively. The length of the net is 10 to 30 meter and the width is 1 meter.

Langi jal- This type of gill net is fixed with the help of two bamboo poles. The foot rope and the head rope are provided with sinkers and floats. The length of the net is about 30-45m and 2-2.5m width with a mesh size of 8-10cm. The net is used throughout the year. Two people are required to operate the net.

Current jal- This gillnet is 10-50m in length where as the width varies from 8-2m. The mesh size measures 3-6 cm. Two floats are attached at both the ends of the upper line (Fig.5). Small sinkers are attached in an interval of about 1 m. This is a prohibited gear under fisheries act.

Traps

Paori-This is a large sized traps made of split bamboo. It has a uniform circumference from the base up to a certain height from where the strips converge into a tapering point bound round with a cord (Fig.6). The length varies from 1-2.5 m with a diameter .5 m. The trap is operated mainly in monsoon season in the beel.

Hukuma- This is funnel shaped trap made of bamboo. The length varies from 1-2m with a diameter 0.5-0.6m. Fish entered from its open end cannot retreat back (Fig.7).

Dolonga-The shape of this trap is Quadrangular. This trap commonly known as shelter trap or habitat trap is provided with tree branches, shrubs, and twigs. The trap is placed and lifted from water with the help of two bamboo poles. The diameter of the trap is about 2.5m. This trap is operated throughout the year (Fig.8).

Hooks and lines

It is a very old but widely used practice of fishing. In this method line and hook of different shapes and sizes are used. Fishing rods are made up of bamboo and the lines are usually of twisted cotton or nylon threads. Baits are usually small earthworms, prawn, frogs etc. *Nal barashi* and *sip barashi* are widely used for fishing in *gelabeel.*

Indigenous fishing method

Katal fishing- Katal fishing is popularly known as *jeng fishing* in the study area. This is a widely used profitable method of fishing in the beel fisheries of Assam. In this system branches from bushy trees, Water hyacinth (*Eichhornia crassipes*) are dumped together and a circle made by fixing tree stumps around these vegetation mass to avoid scattering. This type of shelter attracts fish and they accumulate in the *katha* in large numbers. After 2-3 months fishes are harvested using various types of nets and traps. The installation period of Katal is mostly monsoon and post monsoon seasons.

Fig. 1. Ber jal

Fig. 4. Ghukuta jal

Fig. 2. Musari jal

Fig. 5. Current jal

Fig. 3. Dheki jal

Fig. 6. Paori

Fig. 7. Hukuma

Fig. 8. Dolonga

DISCUSSION

The fishing gears and crafts in Assam are traditional, non-mechanized and mostly locally built (Islam *et al*, 2013). The topography of the water body and behaviour of fishes play a dominant role on the types of fishing gear used in fishing process (George, 1971). A large number of different types of fishing gear and methods are used in the *Gelabeel*. The above study recorded about 14 categories of fishing gear and methods. The method of fishing in the river Brahmaputra are diverse and broadly 8 major categories of gears, mostly indigenous are used throughout the valley (Jhingran 1991). Again Boruah (1999) recorded 24 numbers of fishing gear from upper Brahmaputra basin. Recenty Baruah *et al.* (2010) reported 30 varities of fishing traps from Brahmaputra valley. The success of these fishing techniques depends on various factors like selection of site, time, efficiency of materials used and availability of fish, etc. Majority of the trape\s made up of bamboo are different in shapes and sizes. They are comparatively cheaper and efficient than other fishing gear (Baruah *et al.*, 2013). As obtained from the study, it is evident that Langi jal, Phansi jal, current jal and Ber jal are the most extensively used implements in the study area. The present study reveals that "Khewali jal", i.e., Cast net is used all through the year. Dheki jal, Tongi jal, Ghukuta jal are also used all through the year except stormy weather. Unfortunately, Indian Fisheries Act, other state regulation are hardly followed in the *Gelabeel* area. Killing of fishes by poisoning the water bodies is also come to light during the survey. The use of monofilament current jal is detrimental for the fishes. It is argued that if fishing in immature fish is intense, the abundance of the species may be so reduced before it approaches maturity (Bania, 2011). Among the all indigenous fishing devices "Katal fishing" is the unique and assured method of capturing big sized fishes. This fishing method is locally known as 'jeng mara'. The traditional fishing is more energy efficient and also in a better position to adopt renewable source of energy (Joseph& Narayanan, 1965). Frequent poisoning of the wetland in dry month is another harmful practice. This has been reported by Biswas & Boruah (2000).

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