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Indigenous Bamboo-Made Fishing Implements of Assam

Deepjyoti Baruah

Livestock Research Station
Assam Agricultural University, Hekra-791 127(Assam)

ABSTRACT

The rivers Brahmaputra and Barak along with their numerous tributaries and rivulets has been traditional source of fishing for the people of the state Assam from the time immemorial. Diverse range of traditional and indigenous fishing gears are used to harvest the fishery resources from these water bodies. Many of the traditional fishing gears are exclusively made of bamboos which are still in use today in one form or another contributing to the total fish production and the economy of the local community. Variation of fish harvesting systems in the region can be attributed due to the topography, diverse terrain, fish habitat, fish behaviour, fish diversity, fisher community and availability of construction materials, cost and skill. Bamboo-made fishing gears were found to be effective for specific kind of fishes and are widely used throughout the season due to its ease of operation, low cost and availability of raw material and easy construction.

Key Words: Indigenous, Fishing Devices, Bamboo, Brahmaputra, Assam.

INTRODUCTION

Aquatic resources of inland origin are harvested from rivers, its tributaries, distributaries, natural lakes, *beels*, *jheels*, multipurpose reservoirs, community tanks, household ponds, irrigation canals, water logged paddy fields, burrow pits and innumerable ditches by the sides of rivers, canals, roads and railway tracks (Varghese, 2002). The river Brahmaputra and Barak form the principal drainage of North-East India with its numerous tributaries flowing through the different states along with myriads of rivulets and lentic water bodies. These resources of the inland water areas are still exploited by traditional or artisanal fishing methods and gears (Joseph and Narayanan, 1965). Since the fishing opportunities vary at different areas, both as regards species and the nature of the fishing ground, and also because of variations in weather, currents, other environmental factors and local availability of materials and skills, a variety of different types of traditional fishing gear have been developed over the centuries (Baruah *et al* 2012). The methods of fishing in the river Brahmaputra are diverse and the crafts and gears used are mostly indigenous (Jhingran, 1991). An attempt has been made in this paper to identify and classify some of the indigenous gears exclusively made of bamboos which are readily available, cheaper and easy to prepare.

MATERIALS AND METHODS

A study was carried out to investigate on the bamboo-made fishing gears and methods in the rivers and tributaries of river Brahmaputra and river Barak and major wetlands (*beels*) at different locations of the districts of Assam. Information on types of gears in use, method of operation, time and season of operation, areas of operation, and their probable fish catch were collected at the fishing sites, fish landing centers, fish markets, fishing villages through personal interview of the fishers, lessees, *mohaldars*, middleman etc.

RESULTS AND DISCUSSION

Diverse kinds of fishing devices were found to be made other than textiles by the local and migrant fishermen in the entire length of the river

*Corresponding Author's Email: deep_baruah@rediffmail.com

system and the floodplain wetlands of the state Assam. These fishing contrivances vary widely in shapes from a single rod (spears) to conical (baskets), cylindrical to rectangular or box shaped (traps). Most of he traps are either temporarily or permanently fixed to the bottom, the principle of capture based on leading the fish to enter, enticing or attracting to it but difficult to exit through openings preferably defended with non return valve or labyrinths. The framework is formed of fine screen-work made of slender slips or splints of bamboo, separated by narrow interspaces and bound together by strands of coir fibers, fine strips of cane and bamboo and plastic ropes. Some of the bamboo weaved fishing contrivances found in the water bodies of Assam were as under:

i. *Jakhra* (Spear):

Jhakra (spear) is a bamboo-made spear which possesses 24 bamboo splits firmly tied in a bunch on one end and the other pointed ends are arranged in such a way as to cause them to diverse from one another. The pointed ends are covered with simple, sharp iron points. This is a heavy weapon and requires considerable strength to hurl. It is generally thrown by a man standing at the prow of a boat, sometimes from the bank of a stream. This instrument is named as *jakhra* in Dhubri district of Assam and also called as *konch* in W. Bengal (Hornell, 1924). Big sized fishes such as *Aorichthys aor, Wallago attu,* carps and murrels are the major catch. The cost of the gear varies from Rs. 100/- to 500/- and the life span varies with the use of the fishermen from 1-20 years.

ii. *Dhenukar* (Bow and arrow):

Bow and arrow is a mechanical contrivance devised for propelling short light spears with greater force and accuracy than the average man can attain with mere arm power. The bow and arrow are normally used to shot at fish visible from a distance. This gear is locally known as "*Dhenukar*". Big sized fishes (catfishes, murrels, carps) are the usual targets. The cost of such gear ranges from Rs.60-100/- and the life span depends on their maintenance.

a. *Bow*: The frame of the bow is made of a bamboo strip of variable length and is tied by a jute string of required length at the either ends.

b. *Arrow*: An arrow is composed of a light wooden or bamboo shaft of approximately 1.7m length. One end of the shaft is pointed to which a 2-forked or 3-forked steel/iron head is socketed by its base. Each arrow consists of a retrieving line.

iii. *Boroxi* (Pole lines):

Boroxi is a simple fishing rod made of bamboo of suitable length (2-10 m) and girth (2-3 cm) with a line or string made of cotton or nylon (Fig. 1). A barbed hook is fixed to every line. A float in the form of a piece of lightwood, sandal or rubber and a sinker as a piece of lead or iron is seen in all the pole lines. Live baits are given in the form of frog, small *Channa* spp. Predatory fishes like *Wallago attu, Mystus seenghala, Aorichthys aor, Channa* spp. are attracted to the moving baits and are caught in the process of swallowing the bait with the hooks.

iv. *Dolonga/Derjakori/Tak/Hukuma* (Hiding place):

These are artificial bamboo-made implements stuffed with bunches of twigs, bushes, and weeds etc which afford refuge for lured fish and whence the fish are captured based on its modus operandi. The shape of the gear varies from bowl shaped to funnel or pyramidal shape in different locations and so the local names. The trap is submerged in *beels* and mild flowing rivers with a buoy (bamboo piece or banana stem) at the surface depending on the depth. The gear is lifted periodically to harvest small sized fish of less than 1.5 kg.

v. *Chunga/Dhun:*

This is a piece of bamboo or betel nut trunk (1-1.2m length) closed at one end by a node. The device is placed at the bottom of a water body at a reachable depth. Floats such as aquatic weeds are used to mark the position of the trap. Fishes taking shelter inside it are caught by periodical lifting. Common catch are *Mastacembelus armatus, Mystus spp., Puntius spp., Clarias batrachus, Monopterus cuchia* etc.

vi. *Seppa/Tepa* (Trap):

It is a spindle shaped trap with a girth maximum at the middle. Both the ends are tapering and are stitched with coir or plastic ropes (Fig. 2). The trap is made of bamboo splits and is provided with 1-4 trap doors near the base. The trapped fish is removed by untying one of the ends. These traps are operated in inundated paddy fields and shallow water bodies during monsoon season. Small sized fishes such as *Puntius* spp., *Mystus* spp., eels and prawns are the major catch.

vii. *Ubhoti/Queen/Faron/Kuni/Tuni*:

These traps are known by different names according to locality with slight variation in the construction design. These traps are provided with two trap doors. The trap has a uniform circumference from the base to a certain height whence the splits converge into an apex as a bunch, bound round by a cord or rope. Trapped fishes are taken out by untying the bunch or from a slit created near to the apex. Mollusks, earthworm, mussels (*Lamellidens spp*) are used as baits. *Mastacembelus aculeatus, Mystus spp, Mystus tengra, Mastacembelus armatus, Monopterus cuchia, Channa punctatus, Channa gachua, Clarias batrachus,* small prawns, etc. are the major catches. Cost of the trap varies from Rs.50/- to 100/- and may lasts for 3-4 months or even up to 3 years.

viii. *Paori/Doo/Juti/Sasha*:

It is one of the biggest traps used in Assam. Its length varies from 1.2-2.5m with a diameter of 47-94cm. It is broader and circular towards the base while tapering towards the opposite end. The base is concave and possesses a trap door for the entrance of fish. Based on harvesting method and mouth opening three varieties has been observed. The trap is operated during monsoon in rivers and *beels*. The catch is miscellaneous and is harvested once in a day or in a week.

ix. *Darki/Seppa/Bosna/Boldha*:

This is a long box trap provided with 1-2 trap doors placed just above the base along the longer axis (Fig.3). The trap has an opening at any of the rear ends at the apex or top for removing the trapped fishes. This trap is operated either single or in series, provided with bamboo screens. Bamboo or cane or plastic ropes are used to bind the bamboo strips together. The trap is used to catch fishes like *Clarias batrachus* (*magur)* and *Amphiopnous cuchia (cuchia)*, *Botia* spp., *Mystus* spp. etc.

x. *Jakoi* (scoop gear):

This is a lifted instrument made of non-textile webs fastened to a triangular shaped rigid frame in which the capture of fish is affected by a brailing or dipping action, and manually disturbing the bottom (Fig. 4). A string or rope is attached to two arms of the mouth near to its base. The operator places the gear with its mouth facing him and disturbs the bottom mud with its feet, so that in trying to escape the fish enter the trap. The gear is scooped periodically to remove the harvest. This gear is versatile and found in almost all the districts of Assam. Small sized fishes are the major catch.

xi. *Chalonee*:

This is a saucer shaped circular sieve made of bamboo matting. The device is inserted below a patch of floating water hyacinth in weed infested water bodies such as *beels* and ponds. Fish taking shelter underneath and within the roots of the water hyacinths are shaken on the sieve thereby forcing the fishes to fall on the sieve from the root tufts. Murrels, perches, eels etc. are its major catch. The gear is operated during the winter months (December-February).

xii. *Dheki jal/khora jal/jata jal/ghat jal* (Mechanised lift nets):

This net consists of a 'V' shaped bamboo-made frame to which the webbing is attached (Fig. 5). The arms are 13-15 m in length. The width of the mouth is 15-16 m. This gear is locally known as '*dheki jal*', '*jata jal*', '*khora jal*', and '*ghat jal*' in different parts of state Assam. The net is fixed on a bamboo platform down the riverbank and is operated against the water current throughout the day and

Fig. 1: A *boroxi* (pole line)

Fig. 2: A seppa (trap)

Fig. 3: *Darki* (box trap)

Fig. 4: Operation of a *jakoi* (scoop gear)

Fig. 5: A *dheki jal* (mechanized lift net)

Fig. 6: *Banas* (Barricades or Barriers)

night. The net is installed in a manner that its base comes out of water for 1-1.5 m when weight is applied on its angle during lifting. The net is operated in rivulets, channels and beels. At certain localities, split bamboos are grounded as barriers in front of the net in 'V' shape to direct the fish into the net. This net is non selective in its catch. Cost of the gear is Rs. 4000/- to 5000/- and the life span is 5 years.

xiii. *Polo/Juluki* (Falling gear):

These are bell-shaped plunge baskets which are clapped over the fish. These devices have an opening both at the base and the apex. The gear is operated in *beels*, shallow water bodies, ponds, paddy fields, etc. The fisher carries the trap in hand, slowly wades and plunges it into water in a probable place. The fisher firmly presses the pot; insert one hand through the top/apex opening and takes out the fishes caught inside. Medium sized fishes are the usual catch.

xiv. *Banas* (Barricades or Barriers):

Barriers are principally made of bamboo screens or weirs made of bamboo splits which are closely woven permitting a low inter space between them and fastened together with coir ropes which prevent the escape of fish from a certain natural area in which they have voluntarily entered after having been intercepted in their natural course of migration or movement in their search of food and breeding grounds (Fig. 6). This method is practised across a river or channel of a *beel*, from bank to bank with a small passage left at the mid. The weirs serve as a barricade as well as a guide wall to lead the fish into the passage. A lever-operated dip net is installed in this passage to lift the fish periodically. The *banas* are set during the winter season from September to April. The catch is miscellaneous from prawns to small and big sized fishes.

CONCLUSION

Fisher folk in the state are professional and non-professional by origin, using a number of active and passive gears of selective and non-selective nature. The majority of the fishers use traditional gears of various types, forms and sizes. The simplicity in its design, construction, operation and low investment cost makes the bamboo woven devices the preferred gear for the small-scale fishermen. In certain cases, the same type of gear, with certain modifications, are used in different localities in different names. In addition, drastic change in demographic structure and occupational status of fishermen community also contributed significantly in gradual shift in fishing pattern and use of gears.

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