# Ethno-fishery by locals In Sub-Himalayan North Bengal, India

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*Long Abstract*: Ethno-fishery by locals In Sub-Himalayan North Bengal, India is the prime object of the paper. Locals practice there agro-forestry, are involved in collection of wild potatoes and rhizomes of various types,bamboo and mushroom, collect catechu and rubber, work under forest department, protect forest, collect fuel, used as labourforce in logging, make wooden plough and boats, work as forest guards to prevent bio-piracy and preventing wild attacks.

They also possess knowledge about local fishes of both edible and ornamental types. They have prepared different types of fishing implements and traps to collect these fishes of different size and season along with crabs, tortilla and shrimps/prawns.

Many of these folk communities have now become settled cultivators and involved in other types of job,but their fishing traps actually symbolizes their Indo-Mongoloid affinities suitable for small rivers and streams coming down from Tibeto-Himalayas.

**Main paper (documentation)**

Various wooden and bamboo implements are used in agriculture, fishing and livestock management here in North Bengal, Sub-Himalayan India. These things are very crucial to understand the mode of production on which traditional socio-economic conditions of the Rajbanshi and other local people depend. The whole issue is networked with political and religious organizations and various other institutions. Most of the implements are made up of bamboo.

Here brief description of the fishing implements is given below-

*Kochia*: It is made up of a slender and stout bamboo pipe with one end sliced into many radiating sharp sticks giving rise to a cone like structure. This cone and long handle together serve as a broom. This is used in fishing purpose. In a marshland area, this type of tool is used to catch fishes by piercing into the fish flesh.

*Thor Kochia*: it is a variety of *kochia* where the pipe-like bamboo handle is much longer and the radiating sharp sticks at the cone portion in one end with sharpened teeth are in a smaller radius. It is also used to catch fish in a marshland by piercing these teeth into the skin. It is not like a broom but a brush.

*Dhokra*: It is made up by furrowing a bamboo pipe from one end to give rise to a cone-like structure with prominent five to eight radiating sticks. The cone is given extra support by bamboo strips encircling it. In a small waterfall from naturally or artificially created dam, such *dhokras* are hanged avertedly. Water is pouring down into the device from upside and fishes also fall down into each *dhokra*. Fishes could not move out from narrow conical end of each *dhokra* and trapped in within.

*Temai*: It looks like a pillow made up of bamboo sticks. Some fine bamboo sticks parallel to one another are bent to give rise to a boat like shape. Two such boat-like halves are joined at their open ends. Fine cane strips are used for such tying. So, the fine bamboo sticks of these two halves are actually crisscrossed and strongly tied up at the margins. In this way, a pillow like figure is formed. Bending of sticks in these two halves is supported by cane and bamboo bands. In any of the halves three or more pairs of small-sized entrances are prepared. Each entrance is of a rectangular shape and contains a four-walled inwardly directed small pyramid like pocket inside this bamboo pillow. These four walls of such a pyramid are built up of finer bamboo sticks. Small fishes with the water flow enter into this pillow through these inwardly directed pockets, but could go out of this entire trapping device neither from the pockets (as they are inwardly directed) nor through the gaps between the parallel bamboo sticks (closely associated).

*Burung*: A stout and short piece of bamboo pipe is delicately sliced into so many fine sticks from one side and bent or curved into a bulbous structure. A bamboo strip is bent around the bulb to provide support to this. The other side is kept intact. The sticks on open side are tied up together tightly. So, during fishing, this open end is is strongly tied up. On this bulb, a rectangular entrance with an inwardly directed four-walled small pyramid like locket of finer bamboo sticks is created. With water flowing, small fishes enter into this bulb through this pocket, but could not go out of this trap. When the bulb is filled up with fishes, they bring it outside, open the rope that ties all the sticks of the bulb together at the free end and by shaking collect all the fishes.

*Sati*: By using some fine bamboo sticks tied up together at one end, a small cone like structure is prepared. At the open end of this cone, sticks are also loosely tied up with one another. This fishing device is placed in flowing water through the holes in the mud barricade on local streams during the rains. When the fishes enter inside, the rope is pulled out and in this way, the trap successfully catch a handful of fishes.

*Pata*: It is made up of many bamboo sticks that are parallel to one another and tied up two to three times tightly in double strand manner and in such a way, a good fence is produced. One end of each stick is sharpened and hence, this entire fence could be used as a wall in muddy floor of the stream against water flow. Extra bamboo poles could be used in order to support the fence. Water could pass easily through this fencing, but fishes could not. It could be used to resist the moving out of fishes from a pond during floods and heavy rains.

*Chak*: It is a long cone made up of fine bamboo sticks in double layer system. If one layer is clockwise, then the other is in anti-clockwise fashion. Sticks of these two layers are obliquely overlapped in crisscross manner and hence, bamboo netting is developed. This is further strengthened by adding additional bamboo strips and finer cane flakes in zigzag. This cone is actually a fish trap and fishes cannot go outside through this netting system. Four bamboo pipes on four sides are used to support this cone like structure.

*Jhoka*: It is a basket-like structure made up of bamboo sticks that are tied up with one another by several bamboo strips. It is single layered and no such double strand ropes or crisscrossed bamboo netting is needed here. It is used to catch fishes in pond and marshland. Trapped fishes inside the inverted basket are taken away by hand from the pore atop.

*Jongla*: looking like a one or two chambered drum, it is made up of bamboo or cane lath framing. Sticks are obliquely arranged in two layers (clockwise and anti-clockwise) that are just overlapped and thatched into a fine bamboo net and in this way, wall of the drum is formed. End rings of the drum are also made up of bamboo lath thatch. One of these has an inwardly directed conical pocket. Hole is this pocket allows fishes to come inside the drum-like chamber with water flow, but not getting out of this. Water is flown out of the other side, but fishes could not. Fishes are

gradually collected into the chamber(s) of the trapping device. When the drum is brought out of the water, it is full of different local fish varieties.

*Jakoi*: This is a half spherical basket-like big sieve made up by molding a mat woven with fine bamboo splits in order to catch the fishes. The mat is of a rhomboidal shape and therefore has a shorter side and a broader side. The shorter side is then inserted between the two bamboo strips and fixed there by finer cane strip through rimming. The bamboo strip pair is then bent to a triangular fashion. The open ends of the bamboo strip pair are further tied up tightly together to made the handle. In this way, *jakoi* takes its shape; the broader open side bends simultaneously leaving an elliptical free space. In that free space, a thin net made up of fine bamboo strips is attached with. More bamboo strips could be attached to frame of the device to give it extra support. Rope is also attached to the device that allows the fisherman/ fisherwomen to pull out the trap from shallow water.
Using the handle, fisherman can submerge this semi-spherical sieve into water and catch fishes. During this in-and-out process, many fishes and other water creatures would enter into this semi-circular basket. Handle is used here like a lever. When the basket is pulled out from the water with help of the rope, water will automatically shed off from the pores but fishes stay inside.

*Shal*: It is a very long and thin (but stout) bamboo pole or tube with sharp steel or iron made lanceolate head attached with. This is used for hunting big fishes and other water creatures.

*Shuli*: It is a long bamboo tube or pipe or pole that is thin, slender and stout; but not so much elongated like a *shal*. In one end, a sharp steel or iron arrow is tightly bound with and the other open end is used as the handle. It is used to hunt big fishes and tortilla (*dura*) in running water by piercing this hunting implement into their flesh or shell.

Often fishing is done by nylon net. Two bamboo tripods are placed on local river streams along with a lattice where the fisherman can sit. A bamboo pole horizontal to this water level is bound with these two tripods for proper balance. Another bamboo lever is attached with any one of the tripod. Nylon net is tied up with this tripod and tip of this bamboo lever. By pulling the other end of this lever up, the tip portion to which the net is tied up with goes into the water. In this way, the net is submerged into

the river water and many fishes fall into this trap. When suddenly the free end of the lever again pushed back into the water, the tip end along with the net comes out of the water. In this way, collected fishes inside the net are stored in the bucket on the lattice. Lattice might be on a tripod or with four legs. On three to four bamboo poles, a sitting frame is constructed and over that pedestal, many halved bamboo poles are used to manufacture the seat.

Buckets, pots, small nets, ethno-toxicants, poison, electrodes and cloth pieces are also used to catch the fishes.

Traditional implements are good as they let the baby fishes get back into the water. This happens because of the fact that pores of any bamboo or cane lath grill or crisscrossed sieving thatch easily permits the spawns get free from these trapping device, which is impossible in case of a nylon net.

*Matia Bhasa*: It is a cushion like fishing device with four pairs of bamboo strips forming four margins. For each bamboo strip pair, some finer bamboo sticks are collected, inserted between the bamboo strip pair, bent into curvatures, other ends of these curves are again inserted into the same strip pair and tied tightly. In this way, from four margins, we can get four curving units. These curves from four different sides are overlapped in order to give rise to this cushion-like structure. In this way, a rectangular cushion like bamboo net trap is developed. Fishes once enter into this trap through the inwardly directed pockets could not way out from this trap anymore. This trap is widely used by the Rajbanshis of Cooch Behar and Jalpaiguri.

**Conclusion**

Ethno-fishery by locals In Sub-Himalayan North Bengal, India is the prime object of the paper. Locals practice there agro-forestry, are involved in collection of wild potatoes and rhizomes of various types,bamboo and mushroom, collect catechu and rubber, work under forest department, protect forest, collect fuel, used as labourforce in logging, make wooden plough and boats, work as forest guards to prevent bio-piracy and preventing wild attacks.

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affinities suitable for small rivers and streams coming down from Tibeto-Himalayas. Raidak is one of such water system.

These people also domesticate various types of cattle that includes not only goat, sheep and gau (*Bovis indica*), but also buffalo and mithun. Some also maintain piggery. They feed their cattle wild grass, different types of potato and medicinal leaves that increase the amount of the milk. Wetland grass, azolla and other flora are used as fodder.

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Tufanganj sub-division is based on Raidak river system of the Kaljani-Raidak water body east to Teesta-Torsa. It enters from Alipurduar-Kumargram region of Jalpaiguri district and forms so many marshland and oxbow lakes. It is a heaven for water weeds, two to three times paddy cultivation in a year, paddy-cum-fish-cum-duck production system. Soil is good for maize and wheat also. Vegetables and rapeseed are also produced, but emphasis is given on staple foods and jute. Fishing is an district feature of this area. Soil is gray and black in colour with a combination of clay, mud and loam. It is a on the interstate border zone between northern West Bengal and lower Assam state. Thankuni, gandal, Malvaceae, Compositeae, shrubs with cone inflorescence, ferns, grazing land with various types of grasses, water hyacinth and red and green algae are distinct feature of this area. Azolla (aquatic fern) and other friendly algae help in increasing fertility to the wet paddy cultivation. It is good bio-fertilizer, feed for each and every livestock, fixes nitrogen into the soil, thick patches resist mosquito larvae and other weeds, controls excess carbon di-oxide in atmosphere and hence reducing the global warming and green house effect. It is a companion plant in wetland rice cultivation and full of minerals, micro-nutrients and vitamins. Shola, *Aeschynomene aspera*, is also an aquatic plant and propagated as minor weed in wet paddy lands. It is a kind of natural sponge. North Bengal is suffering from boron deficiency despite these Azolla propagating patches. Water hyacinth bio-fertilizers, mud fishes and catfishes

are other alternative way of earning money in this region. Rasik bil is the biggest wetland and this is protected by the forest range. Besides eco-tourism, it is also an important area of agro-forestry in association with forest dwelling Rabha tribe. Balabhut area is surrounded by Kurigram district of neighbouring country of Bangladesh. Boxirhat-Jorai is interstate Assam-West Bengal border with Chagolia check-post of Dhubri.

## Local Fish Biodiversity

chand(a)/ India glassy perchlet/ *Parambassis* spp., tengra/ *Tengara mystus*, fauli or foli/ bronze featherback or grey featherback/ *Nolopterus notopterus*, chapila or khoira / Indian river shad/ *Gudusia chapra*, punti/ *Puntius* spp, sarpunti/ Olive barb/ *Puntius sarana*, tit punti /Ticto barb / *Puntius ticto*, bagha punti/ *Puntius canchonius*, catla/ catla/ *Catla catla*, rui/ rohu/ *Labeo rohita*, mourala/ Mola carplet/ *Amblypharyngodon mola*, kholisha/ Banded gourami/ *Colisa fasciata*, khoksa/ *Barilius vagra*, bhola/ *Barilius varna*, banspata/ Jumuna ailia/ *Ailia coila*, bacha/ River catfish/ *Eutropiichthys vacha*, chela/ Chela/ *Oxygaster annomalura*, magur / Walking catfish / *Clarius batrachus*, shingi/ Stinging catfish / *Heteropneustes fos silis*, koi/Climbing perch/*Anabas testudineus*, bain/Eel/ *Macrognathus* spp, boal/ Wallago/ *W allago attu*, shol/ Striped snakehead or Snakehead murrel / *Channa striatus*, cheng/ Asiatic snakehead or Walking snakehead /*Channa orientalis*, taki (lata in southern West Bengal)/ spotted snakehead/ *Channa punctatus*, bele/ Tank gobi/ *Glossogabius giuris*, gutum (guntia or poa in southern west Bengal)/ Guntea loach or pool barb/ *Lepidocephalus guntea* plus exotic fishes like carp (Common carp/ Cyprinus carp, Grass carp/ *Ctenopharyngodon idellus*, Silver carp/ *Hypophthalmichthys molitrix*, etc.), tilapia (Tilapia/ *Oreochromis* spp.), Japani punti/ Japanese barb/ *Puntius javanicus*, and other fishes (lathi fish/ River stone carp, dharangi or dhara, bhagna bata, bata, kalabata, mona puti, kajari, ghugia, etc).