



RESEARCH ARTICLE

A SURVEY ON INDIGENOUS, ECO-FRIENDLY TECHNOLOGY OF FISH HARVESTING IN PASCHIM MEDINIPUR DISTRICT OF WEST BENGAL, INDIA

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ABSTRACT

Present study is a survey work done on the indigenous technology adapted and designed by the village people for fish harvesting from their nearby aquatic bodies to compensate their daily protein requirement as well as their livelihood. Present study reveals that the indigenous technology of fish harvesting in Paschim Medinipur has mainly been categorized into three heads namely hooks, nets and traps. All these technologies are very ecofriendly and causing no environmental hazards. But these technology needs revision for sustainability of utilization of small indigenous fish fauna of the study area.

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INTRODUCTION

India is a sub continent in the geographic map of the world. It is a land of diversity. It has a rich heritage of thousand and thousand years of ancient culture. Indian tradition, way of living, social activities, religion, political life -all these elements make it a unique example in the history of civilization. It is rightly said that-"India is a miniature form of the world". The history of any country is not only an amalgamation of its historical or geographical features like its mountains, rivers, forests etc. rather it is the history of man, because man is the propeller of history. The famous Nobel laureate Rabindra nath Tagore has aptly said-"Indians history is whose history? It is the history of man" ('Purba-Paschim' Vishabharati Sanskaran; Vol-6; Page-553-54) India's culture is a pluralistic culture. The people of different regions have different food habits. Major part of Indian sub continent is non-vegetarian. Among other foods, Bengalese has special preference on fish prepared plates. To meet the demand of huge amount of fish, fisherman and other general public tap all sources of fish supplies-ocean, rivers, ponds, reserves, water outlets etc. but the people living in remote rural areas still depend upon their ponds, canals, water outlets etc.

In the rainy seasons, when rain water overflows throughout the paddy-field particularly in the Village areas, fishes find their play-ground all round. The situation became amazing when river water overflows the paddy fields, ponds, canals due to breakage of river bank caused by floods. Fishes coming out from rivers, ponds, canals spread all over paddy fields, water outlets etc. The quantity of fish also increases due to procreation of fishes, in the wide-spread paddy-fields in rain Water, specifically in fertile flood-waters of river. Under this general background; authors would like to throw some light upon the techniques of fish catching adapted by the people of Paschim Medinipur district. The geography of Paschim Medinipur covers an area of 9,345kms. Its population according to 2011 census is 5943300. Paschim Medinipur has four sub-divisions like kharagpur, Medinipur sadar, Ghatal and Jhargram. Regarding technologies of fish catching in Paschim Medinipur district there are varieties of techniques and technologies. Let us examine these varieties one by one. The fishermen use their pre-designed nets to catch fishes in ocean, rivers and ponds. But the general public use indigenous instruments made by themselves. These include varieties of fishing nets, and instruments made up of bamboos, nylon threads etc. The varieties of these instruments have their interesting names. Also the names of the same instruments vary from region to region, and these are all local names given by people of a particular area. Now we shall take into account

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the techniques and names of instruments used for fish-catching by different people at different regions.

MATERIALS AND METHODS

Present study is mainly based on the field record of traditional indigenous fishing methods operated by the local fisher-men of Paschim Medinipur. The study was conducted from January to June, 2016. A number of fisher-men in the fishing villages were interviewed for several times and their experience has been recorded throughout the study. During the study all available fishing traps has been photographed and described in the result and discussion part of the present dissertation. Though this type of work is a pioneering study for the area, a very short bibliography of literature consulted has been enlisted at the end of the manuscript like Panday & Sukla (2005); Madhusudan Manna (10th June, 2015); Paul, B. and Chanda, A. (2014 & 2015) etc.

the fish catcher. Boys and girls of teen-aged group and house hold wives use little or medium size borshi to catch little fish like “Puthi (*Puntius* sp.), “Tangra (*Mystus* sp.)”, “Koi (*Anabas* sp.)”, and also small “Pona (*Labeo* sp)”. This is done generally during their leisure period. This is done generally during their leisure period. This is a method where the catcher has no contact with water. Generally an iron hook is stitched at the end of the long nylon cord of a borshi. This hook has a sharp edge which can easily catch a fish. This iron-hook is locally called “Kanta”. This Kanta remains hidden under a perfumed bait (in Bengali is it called “tope”). This tope is prepared by the components which are mostly favored by fishes, as their food. The fish is attracted by these perfumed topes, comes nearby and swallows the tope. The “fatna” which is the indicator of tope being swallowed by the fish, the fish-catcher then makes a big jerk of the borshi & the fish is caught by the big kanta in its mouth, the Kanta which was hidden under the perfumed tope.

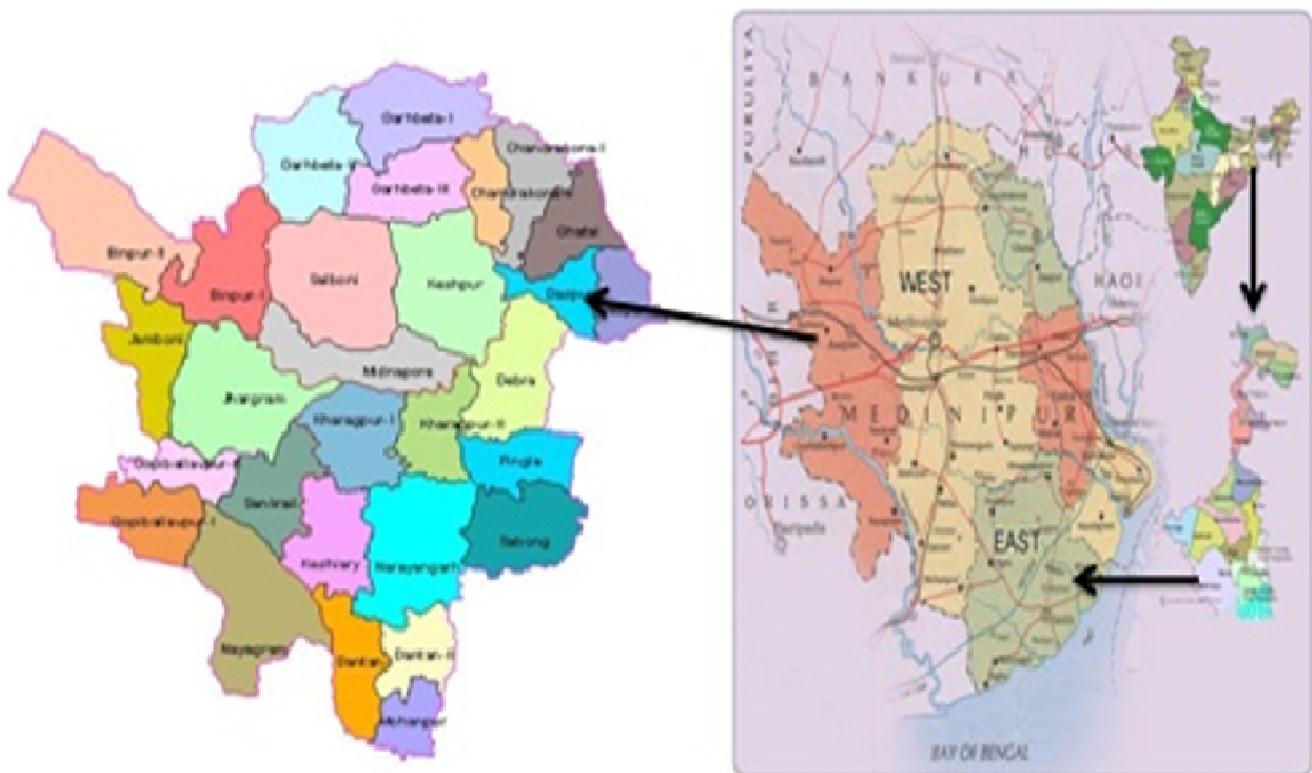


Fig.1. Map of study area

RESULTS AND DISCUSSION

During the present study, following different types of fishing traps have been studied. Traditional fishing instruments of Paschim Medinipur are categorized into following three heads-

- (A) Hooks
- (B) Nets
- (C) Traps

(A) Hooks

i) BORSHI

Borshi (fish-hook) is generally made up of bamboo sticks. Its length and size vary according to the age group and gender of

After a tactical fight in the water for some time, the fish becomes tired and surrenders before the fish-catcher; and is brought up to the land with a pleasure of the catcher winning a battle. Now the size of the borshi and the iron-hooks vary according to the size of the fish targeted to be caught. Though traditional borshi was made up of a bamboo-stick, but now a days, borshi is made up of an iron-stick to make it more stronger. Even the cords of borshi were traditionally prepared from jute rope and the like, now they are invariably prepared from nylon-threads, which can bear the weight and fighting of the fish. Man of mature age group (some times woman) uses big borshi, which is known as wheel to fight against big fishes like “Catla (*Catla catla*)”, “Rohu (*Labeo rohita*)”, and “Mrigel (*Cirrhinus cirrhosus*)” etc. A wheel with a small handle is

affixed on a borshi. This wheel is the regulator of the length of the nylon-cord, which is adjusted regularly according to the movement of the fish in the water. When the fish becomes tired and surrenders to the fish catcher, the nylon-cord is folded in the wheel; the fish is caught with the help of a net. Well to do persons enjoy fish catching by wheel as past-times and sometimes with their courtiers. The fishes collected by youngsters and house wives are generally used as foods, but the fishes collected by grown-up people are used for feats or sale.



rohu (*Labeo rohita*), mrigel (*Cirrhinus cirrhosus*), grass-carp (*Ctenopharyngodon idella*), chitals (*Notopterus chitala*) etc. This khiya – jal is used to catch fish in ponds of deep and big size. But it is also used in paddy fields, rivulets; water-outlets during floods.



B) Varieties of Jals (Nets)

There are varieties of nets called jals which are used to catch fishes.

i) Khiya jals

This is made up of cotton threads, now a days of nylon threads, together with some jal- kathis, (made up of cast iron) to make it easy to be drowned in water. It is thrown into water by expert fish catchers in such a fashion that the throwned net makes a nice circle in water. Khiya jals are of two types, one of small slip knots for catching small fishes like 'puthi (*Puntius sp.*)', 'pabda (*Ompak pabo*)', 'bata (*Labeo bata*)', 'chingri (*Macrobrachium sp.*)', etc. But comparatively big slip knots are used for catching big fishes like catla (*Catla catla*),



ii)Chagni-jal:-

This is a small apparatus to catch fishes particularly in muddy water. It has a bamboo – structure of round shape. It may be made of wood. It varies according to locality. This round bamboo-made structure is stitched with nylon-threads all around. This is a very handy instrument, to catch small fishes and is used by youngster girls and boys. When fishes lose their sight in muddy or foul water and they float in swarms – it becomes an easy task to catch them with chagni-jal.



iii) Ganti-jal

Ganti-jal is a small-sized net covering a length of 10 feet and a breadth of 3 feet. Two bamboo poles are fixed in two sides of less-deep water binding each side of ganti-jal with these bamboo-sticks. It catches small fishes like ' Puthi (*Puntius* sp), 'mourala (*Amblypharyngodon* sp),' Tangra (*Mystus* sp)'. It also catches species of eelfish. It is generally fixed in water during first part of night and is rolled up in the early morning.



iv)Koli-jal

Its two big handles are wide spread to cover an extensive area of water to catch floating fishes. The handles are of bamboo-made. This instrument is used in ponds when fishes float in swarms; it is also used during floods. Big fishes like 'Folui (*Notopterus notopterus*),' 'Boal (*Wallago* sp),' and 'Chital (*Notopterus chitala*),' Pona-fishes are caught in muddy water. Also small fishes like ' Puthi (*Puntius* sp), 'Tangra (*Mystus* sp), 'Chingri (*Macrobrachium* sp), etc are caught in this net.



v)Chabi-jal: -

This is an instrument to catch fishes. A round circle is made up of bamboo-lath. The inner-circle of this bamboo structure is knotted by nylon threads. The fish catcher waits long to trace the movement of the fishes. When a fish comes nearer, fish-

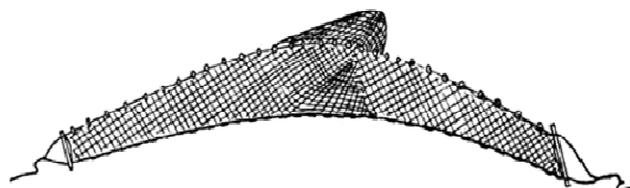
catcher suddenly jumps with his chabi-jal over the movement of fish, pointing it at the middle of circle-structure of chabi-jal. The bamboo made circle-structure of chabi-jal makes a deep entry into the mud making it impossible for the targeted fish to go out of the trap. Tracing the location of the fish by his legs, the fish-catcher catches the fish with his hand, folds it with the net of the chabi-jal and brings it upon the land. The fishes of every type, particularly jeol-fishes like Sol (*Channa striata*), Magur (*Clarias* sp), Lata (*Channa punctatus*), Folui (*Notopterus notopterus*) are caught by this type of jal.



vi) Beudi-jal :-

Beudi-jal is used generally a place where water is floating like a stream and particularly during rainy season when huge water comes down from an upper place, or during a time when flood water comes down in a huge quantity due to breakage of river-

bank. It is a long net made up of nylon-threads with two open mouths the big mouth is used for entry of the fish and the small mouth is used for unloading the trapped fishes. Beudi-jal is made up in such a fashion that the fishes can make easy entry into the net but cannot get out until they are released.



C) Traps

i) Hanri-khal: -

Hanri-khal is a trap for catching fishes placed on water –outlet of a paddy field or that of a small khal or nala or drain. Hanri is generally made up of muddy-mixture burnt in fire. An artificial obstacle is created on the water line. The fishes coming in swarms in water line make jump to overcome the obstacle and enter into the easy trap of hanri-khal. Fishes make movement particularly at dark of night. Fish collectors collect fishes from Hanri-khal in the early morning and keep a part of it for domestic consumption, sell the excess in the market.



ii) Ghuni: -

Before making ghuni, the maker makes ready the indeginious materials. He first cuts pacca bamboo and prepares thin bamboo-lath and dries them up in the sun-shine for few days. He also prepares thin ropes from jute. When the thin bamboo-laths become dry, they are knitted by thin jute ropes. Then the marker prepares ghuni according to his own design. Generally there are two entry-points in each side of the ghuni, so that fishes may enter into ghuni from both sides of water. It is placed on water-pass drain in the first part of the night, and is picked up in the early morning. Its size varies from 18 inches-36 inches in length. Ghuni catches little Puthi (*Puntius* sp), Tangra (*Mystus* sp), Bhola (*Glossogobius giuris*), Pabda (*Ompak* sp), eel- fish and so many little fishes. These fishes make palatable dishes of fish- curry for the house-holds.



iii) Mugri:-

In preparing Mugri, all the first stages of preparing a ghuni are followed. Of course the size and design differ a long from that of a Ghuni. It is longer in size than ghuni. It has one sided entry point of the fishes. It has two limbs in the front side covering wide area, so that all the floating fishes may take easy entry into the main body of Mugri. It has two locking points inside, so that fishes once entered cannot get out until they are released by the catcher. Its size varies from 36 inches to 50 inches in accordance with the flow and depth of the water. Fishes of larger size like sol (*Channa striata*), Boal (*Wallago attu*), Pakal (*Macrognathus pancalus*), Tangra (*Mystus sp*), Big Prawns- all find their shelter in the dark of the night at the womb of a Mugri.



iv) Hangar :-

Perhaps the name is borrowed from the name of a sea monster. As a sea-monster eats up big fishes with the help of its big and wide mouth, so also a Hangar has a big rounded mouth. A trap is placed just behind its mouth so that a prey once entered

cannot get out unless released by the catcher. It is also made up of bamboo laths and nylon ropes. Of course in this case bamboo laths are of a thick size. It is placed on speedy current water. Big fishes including "Rohu (*Labeo sp*)", "Catla (*Catla catla*)", "Mrigel (*Cirrhinus cirrhosus*)", "Boal (*Wallago sp*)", "sol (*Channa striata*)", "Magur (*Clarias sp*)", big prawns – all are trapped within a Hangar.



v) Ghepa and pung :-

These are two indigenous instruments for catching fishes of big size. Ghepa and Pung are both big in size and are placed in deep water with or without current in the water. They catch big fishes of Geol-group like-Magur (*Clarias sp*), Sol (*Channa striata*), Singi (*Heteropneustes sp*) etc. they are made up of thick bamboo laths and nylon ropes. Both of these are strong built, so that big fishes may not break them to get out.





catcher. In this process, big fishes like “Rohu (*Labeo sp*)”, “Catla (*Catla catla*)”, “Sol (*Channa striata*) ” are caught with the help of this trap. But there is another type of patta which is generally seen during rainy season. When the paddy field become over burdened with water the excess water is to be released through a cut on the boundary bandhs which are known as “Alls”, and the cut is called “nala”. A small patta is placed on a nala in such a design that the fishes go over it to a ditch which is engraved by the side of a patta. In this case, the ditch replaces the function of the big net of the previous process. In this process small fishes are caught like “Puthi (*Puntius sp*)”, “Tangra (*Mustus sp*)”, “Chela (*Salmophasia sp*)”, ”eel fish ,“Lata (*Channa punctatus*)”, “Chingri (*Macrobrachium sp*)” etc. Thus all these technologies make it a happy venture for catching fishes to the fish loving Bengalese. The sailing of excess fishes by the poor villagers helps them to earn their livelihood during rainy season, when they have no work at their hand.

Table 1. A Detail List of Selective Fishing Nets Used on the Paschim Medinipur District

Local name	Traget sp	Size	Technique	Operation period	Approx Cost
Khiya jal	Katla, Mrigal, Rui, Bata etc.	Big&Medium sized fishes	Throwing upon the swarms of big fishes	Day	Rs-800/-
Koli jal	Folui, Boal, Pabda, Othrs small fishes	Big & small Medium all variety	The two handles with the extended net are hidden under water and when the swarms come nearer by the fisher man catches them.	Day	Rs-700/-
Ganti jal	Puthi, Tangra, Mourala, eel fish etc.	Mainly small, Medium sized fishes	The net is bound on the two poles of both sides of the net.	Day & Night	Rs-500/-
Chagni jal	Puthi, Mourala, Chingri, etc.	Small sized fishes	It has a bamboo structure of round shape and a nylon thread is stiched all around the net. It is used to catch fish in muddy water.	Day	Rs-100/-
Chabi jal	Sol, Folui and mainly Geol fish	Big, Medium sized fishes	Around circle is made up of bamboo structure is knoted by nylon thread. Fish catcher jumps with Chabijal over the movement of fish.	Day & Night	Rs-400/-
Beudi jal	Mainly Chingri	Small sized fish	Kept vertically open by a frame & held horizontally stretched by the water cuurent.	Day & Night	Rs-300/-

Table 2. Interviews with Fish-catchers and Fisher men

Name	Locality	Fishing Place	Date of Interview
Kalipada Dinda	Duria	Near Keleghai River	3thJan, 2016.
Sita Dolui:	Sekendari	Near Kangsabototi River	10 th Jan,2016.
Jagannah Bera	Jotegobardhan	Near Palaspai Khal	17 th Jan,2016.
Manu Patra	Goalageria	Near Balichak Canal	7 th Feb,2016
Kartik Santra	Paharpur	Near Daha Khal	20 th Mar, 2016.
Nimai Samanta	Chak Bhagat	Near Ponds and Water Outlets	10 th Apr,2016.
Madhusudan Dua	Hajakundu	Near Krishnagar Daha	15 th may, 2016.
Badal Maiti	Simulhati	Near Ranir Pukur	8 th June,2016.

vi) Patta :-

Patta is made up of a knitted Bamboo Sticks. It is placed on a water outlet or a small rivulry where there is water current. Its size depends upon the depth and wideth of the water outlet. Patta is afixed by the bamboo poles on both sides with the help of ropes. On the down side of the patta, a big net is placed. When the fish faces obstacle in its movement in front of a patta, it makes a big jump to cross the hurdle. Through its jump, it reaches the other side of the patta, where a well placed net is ready to welcome the guest-fish. The net is so designed and so placed, the fish cannot go out until it is released by the

Conclusion

The above mentioned indigenous fish harvesting instruments are made and used by the people of Paschim Medinipur. As there is no ocean like that of Purba Medinipur (Bangopasagar at Digha) ; Paschim Medinipur is devoid of a natural reservoir of varieties of fishes of abandon quality and quantity. So also Paschim Medinipur does not depend much upon machine-made instruments for harvesting fishes. Of course Paschim Medinipur has a number of rivers like Kangsaboti, Silaboti, Keleghai, Khirai, Buri-ganga etc. These rivers became over-burden with flood water unless from the barrages of reservoirs like Mython, Panchet, Durgapore etc. In other dry seasons

rivers became dry and became devoid of fish supply. So the people of Paschim Medinipur mainly depend upon their ponds for supply of fishes. Only during rainy season which mainly extends from July to September, fish supplies became larger as the area also extends to the paddy fields, rivulets, and water-drainages. In all such cases, people of Paschim Medinipur mainly depend upon their indigenous fish harvesting instruments which are made, designed and used by themselves. The above mentioned nets and indigenous instruments are made with such technologies that the fishes once entered cannot find any way to get out.

So, these technologies serve three fold purposes to the major portion of the rural inhabitants. This are-

- (a) Supplying of proteinous food to the fish lovers.
- (b) Ensuring additional income to the needy persons of rural areas and
- (c) Making enjoyment through this hobby of fish-catching.

All these persons are inhabitants near

- a) Keleghai River
- b) Kangsabt River
- c) Silabti River
- d) Buriganga River
- e) Khirai Canal

All those rivers, canals, ponds are within the area of Paschim Medinipur district. The above mentioned persons are interviewed mainly on Sundays and holidays .They are users of indigenous technologies of fish catching and at the same time they are makers of such apparatus.

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