

CHAPTER 5

Traditional Riverine Fishing Crafts and Gears in Marathwada Region of Maharashtra

Bimbisar D. Waghmare

Department of Zoology, Netaji Subhashchandra Bose Art's, Commerce & Science College, Nanded 431604 Maharashtra, India

Corresponding author Email: bimbisar.16@gmail.com

Received: 19 January, 2024; Accepted: 29 January, 2024

Abstract

Fish catching is one of the ancient practices of human beings and fishes are good source of food for mankind. Freshwater fishes are caught for their meat and income all over the world. In India also thousands of fishermen communities are engaged in fishing for their livelihood. In Maharashtra, some of the fishermen's are traditionally capturing the fishes. In the current study, we have focused on the several traditional fishing methods in Marathwada region of Maharashtra. The Marathwada region has various fresh water sources in the form of rivers, lakes, reservoirs etc. Marathwada region fishers actively involved in fresh water fishing. Fishers of Marathwada region used various traditional crafts and gears for fresh water fishing. Eight types of fishing crafts and eight types of fishing gears were found in the area, and they differ in size from one location to another. During the research, crafts such as Thermocol rafts, Coracles, Plastic cans, rubber tube platforms and gears like drag nets, gill nets, caste nets, trap-bundh methods, hook and line were discovered. Through direct observations, focus groups, in-person interviews, and questionnaire techniques, primary data were gathered from nearby fisherman. Secondary data were gathered from published sources such as papers, journals, and research findings. The current research report contains documentation of the thorough examination.

Keywords: Traditional, Riverine, Fishing, Crafts, Gears, Marathwada

Introduction

Fishing has been a traditional activity from the beginning of time. Man catching the fishes from last 70,000 years (https://en.m.wikipedia.org/wiki/History_of_fishing). During this period man developed various fishing technology for catching the fish. Human beings not only catch the fish for food they also catch fishes for recreational sport. Over time, traditional fishing methods have changed to take into account local body

This work is licensed under a [Creative Commons Attribution 4.0 International License](https://creativecommons.org/licenses/by/4.0/). This allows re-distribution and re-use of a licensed work on the condition that the author is appropriately credited and the original work is properly cited.

Interdisciplinary Research in Life Sciences: A Path Towards Sustainability (Vol. 1) - Jayvardhan V. Balkhande (Ed.)

ISBN: 978-93-95369-85-5 | © 2023 Advent Publishing. All rights reserved.

conditions, target fish species, and preferred fish size. The best fishing methods can be found in places or areas that have withstood the test of time. **(Eyo and Akpati, 1995)**.

The Indian fisheries rely heavily on the customary fishing methods used by artisanal fishermen. In order to bring sustainability to the fishing industry, it would be imperative to have a deeper grasp of harvesting systems in addition to traditional fishing techniques, given the new issues facing the capture fisheries. Conventional fishing is easier to implement, less energy-intensive, and better for the environment. Furthermore, compared to the mechanized sector, traditional fishing provides a greater opportunity for the equitable sharing of ecological benefits. **(Riddhi Bose et. al. 2019)**.

Material & Methods

We selected only four district of Marathwada region viz. Hingoli, Parbhani, Nanded, and Latur. This study was carried out on rivers Penganga, Kayadhu, Purna, Asna, Kapra, Dudhana, Godavari, Manar, Lendi and Manjra. The present investigation conducted form January 2023 to December 2023, for a period of one year.

Data on different indigenous fishing crafts, gears and fishing techniques was collected from both primary sources and secondary sources. A semi-structured and pretested interview schedule was used to conduct in-person interviews with 72 fishermen. Information on various kinds of fishing gear used, how they work, how big they are, how much they cost, which species they are used on, and the average catch were gathered during the interviews. Literature also served to collect secondary data on fishing methods, how they work, and the knowledge structure that goes along with it. A mobile camera used to take pictures of various crafts and gears. Scale measurements were obtained for crafts' height, width, and length, and for gears' diameter and mesh size. We have direct conversations with local fisherman to learn about their methods, gear, and other resources. Finding out the traditional fishing techniques used in the Marathwada region is the main objective of this study.

Results & Discussion

The ancient fishing technique is practiced in Maharashtra's Marathwada region. The details of traditional fishing methods will differ significantly across areas, but a review of the variety of methods used shows that the methods and equipment utilized are contingent upon the kind of habitat being targeted for exploitation. The Marathwada region uses a variety of traditional fishing techniques, including as hand picking, nets, and baskets built of different natural materials. Fishermen used basic, primarily antiquated, indigenous fishing gear and craft. The use of different boats, equipment, and fishing techniques varies depending on the river's geology, the time of year, the fishermen's financial situation, etc.

Eight crafts and eight gears were discovered during the current research. The most common craft in the river under study are the coracle, Thermocol raft, motor vehicle tube, wooden frame sheet boat, etc. The most common gears are the gill net, cast net, hook and line, and traps.

The following fishing craft and gear was observed being used by traditional fishermen:

Fishing Crafts

Coracle

Typically, coracles are being used across the river. It is a small rounded, light weight boat of traditional fishermen used for fishing and transportation. Its diameter ranges between 2 to 3 meters with an inner depth of about 0.5 m. Besides being simple and economical, it is long-lasting and has very good transferability in all types of waters. It is a versatile craft used for laying and lifting of nets. Weight of the Coracles ranges from 10-15 kg. Usually, two fishermen carry out fishing from a coracle.

Thermocol Raft

It is another cheap craft this is mostly used by low-income fishermen. Fish in the river are captured using a thermocol raft. This is made up of two to three thermocol pieces 0.7-0.8m long and 0.5-0.6m wide, which are knotted together and used solely for laying and hauling fishing gear such as gill nets, cast nets, and angling. Another sort of craft involves tying pieces of thermocol to a bamboo frame using rope to form a bundle of 0.5-0.7m in length and 0.4-0.5m in width.

Hodi Boat

Hodi boats range in length from 5 to 6 meters, breadth from 1-1.5 meters, and draft from 90 to 105 centimeters. Two fishermen run the boat, which is owned mostly by full-time fishermen. Boats are also used to transport nets and family items when fishermen travel to other places via rivers. However, because of the shallow character of the rivers, it is currently widely used.

Plastic cans

The unused empty plastic cans are also used for fishing which is having the capacity of 10 – 20 L. Two similar cans are attached together with a piece of rope or cloth, with a 1-foot space between both. During fishing, the cans are put between two legs, one in front and the other in back. As the upper section of the body remains above water, fishermen may control the net and paddle for some distance.

Rubber tube platform (Motor Vehicle tube)

In different parts of the river, fishermen use other types of makeshift materials. They demonstrate tremendous inventiveness in creating a makeshift out of discarded old rubber tubing. A wooden platform measuring 1 square meter is built above the rubber tube and tightly secured with rope. It is mostly utilized for hook and line operations, as well as establishing and hauling gill nets. A single inflated tube is also utilized for fishing reasons.

Bamboo Raft

This is the most primitive kind of watercraft employed in fishing and transportation. It is a low-cost, simple craft used by poor fishermen. This raft is made up of between 10 to 20 light-weight bamboos connected to each other by coir or jute rope. This craft is usually 1 – 12m in length with a width of 1.5 – 5m. The size is determined by the water current and the amount of bamboo stalks used. This raft is strong to push through water and has an average lifespan of one to two years. This is typically utilized in slow-moving rivers.

Dug-out Canoe

The length of the boat is about 3 – 4m with a width of 0.5 – 0.6m. Palm tree trunks are occasionally used to create miniature watercraft. It is operated by only two fishermen because it is smaller in size and also lot of rolling movement requiring skilling to maneuver them.

Plank-built Boat

This is the most modern fishing craft utilized in the area. These spindle-shaped boats are made by connecting boards of high-quality timber with iron nails. The boat is coated with coal tar to prevent joint leaks and lengthen the boat's life. This boat varies in shape and size and depends on where it is being handled. Small boats (4 - 6 m in length; 0.8 - 1.0m width) are used in floodplain wetland areas, while larger boats (7 - 8m in length; 1.2 - 1.8m width) are used on rivers. These boats are generally manually propelled.

Fishing Gears

Gill nets, cast nets, seines (drag nets), and a variety of other gear are utilized in studied rivers. It varies depending on the target species and the current condition of the river.

Gill net

It is a passive gear with mesh sizes that vary according to the body depth of the target fish. It consists of multifilament gill nets and is employed along the examined river. Floats and sinkers are used to keep the gill nets vertical in the water column. It is utilized throughout the year except for monsoon season. In this sort of gear, the net meshes play a major part in capturing diverse fish species. Gill nets of various mesh sizes were found in the river under investigation. Gill nets are typically 2-10 meters wide and 50-200 meters long. A larger gill net measures 500 meters in length. The larger fish landings occur wherever a larger mesh size is applied. The yellow gill net produced more landings than any other gill net color. It works in all depths, from shallow to deep water. The fishermen use boats to establish the net across the river; the net is either set with bamboos overnight or just set free in the water for a short period of time. After a certain period of time, the net is lifted to catch the fish that have been entangled. Thermocol, light wooden pieces, and plastic floats are commonly employed as floaters, whereas sinkers are used to sink.

Seine Net or Drag Net

Seine net fishing is a form of fishing that uses an encircling net known as a seine. Seine nets are wall-like structures that are commonly used for fishing in ponds, lakes, and rivers. To maintain the net vertical, the head rope is equipped with floats, while the foot rope is outfitted with sinkers. The floating objects are connected to the head rope at a distance of within 5-6 feet. The iron sinkers are spaced 7.5 cm apart. Each iron sinker measures 2 cm in length and 1.5 cm in diameter. The net's mesh size is one square centimeter. The length and height of the drag net depend on the size and depth of the water body. The netting process is carried out by placing the net vertically over the breadth of the river. The fisherman holds the foot rope in his right foot while raising the head rope above the water with his hands. The net is moved from one end of the pool to the other. The fishermen hold the net from a distance of 5-6 feet. The number of fisherman necessary to hold the net depends on the length of the net. When approaching the corner, the net is dragged from both sides, and the fish are collected. The larger seine is operated by approximately ten people, whereas the little seine net is operated by two to three people. Previously, carps, catfishes, and other species dominated the catch, but in recent years, miscellaneous fish and prawns have taken the lead. It is less commonly used because it takes tremendous manpower, plain terrain, and a relatively low water level. It is used in rivers with depths ranging from 0.5 to 2 meters, when drag net operations are frequent.

Cast net

It is the most widely used gear along the river. The logical response is that it can be used with one hand. These type of nets are usually referred to as "Fake Jal". It is conical or bell-shaped and creates a circle while spread out. The lower edge has a foot rope that attaches a succession of sinkers to it. Small iron or lead weights are tied to the foot rope around the net's circumference at intervals of 10-15 cm. This is a falling gear, and the fishing is done by quickly moving the gear to cover the fish. It primarily operates in shallow water. Each weight is cylindrical, measuring 4 cm long by 2 cm in diameter. A string or line extends from the center and is held in the hand to operate the net. The primary line (rope) branches out into multiple lines and sub-branches before connecting to the net's free edge. In certain circumstances, the edges of the net are folded inside and secured with string to form pockets. Various mesh and pocket sizes are utilized to target specific species. Almost every angler has a throw net to catch prawns and small fish. Few units with a larger mesh (15-20 cm) exploit giant carps.

Scoop or Push net

The indigenous gear known as "Jali" is used manually in shallow water. The net is made up of a 2-foot diameter bamboo ring. It is constructed of a triangular bamboo frame with a mosquito netting cloth (1/14" mesh). Fishermen employ it by first dragging a net then sweeping from the water to extract the seeds of the tiger prawn, *P. monodon*. Mesh size is extremely tiny. It allows just water to pass through. The large one (1.5-2 m arm length) is used to collect prawns, while the tiny one (1 m arm length) is used to cover the opening of a floating vessel where the catches are preserved in living form before being utilized for stocking. The triangular shape of this little net balance helps to keep the vessel upright.

Trap fishing

This approach is widely used since it saves time, requires less maintenance, and does not require a physical attendant. This has been in operation for a long time, and the working time of the traps varies, sometimes lasting more than a week depending on the design, season, and location. The traps are built such that once the fish enters, it cannot escape. Trap designs are referred to by various names.

Lift net

This method employs a square net, with the four corners of the sheet connected to the tips of a crossing flexible bamboo. A bamboo is linked to the crossing point of the flexible bamboo. The entire system may or may not have a rope; when there is a rope to operate, it is termed a hand lift net, and when there is no rope, it is called a Chinese dip net. The tool is mostly employed in slow-moving rivers in the plain.

Hook and lines

This method involves tying a rod with indigenous fiber, cotton thread, or nylon twine and attaching the end to a hook. The bait used to lure the fish can be an earthworm, a beetle nymph, smaller fish or frogs, or artificial bait prepared from rice bran or wheat flour. Fishermen catch fish and prawns in the river. The line may be composed of indigenous fiber, cotton thread, or nylon thread. This line can be linked to a pole (pole and line) made of bamboo or other locally available twine. If there is no pole, it is referred to as a hand line. A sinker or float may or may not be present. Hooks and lines come in a variety of styles, including short hand lines, long hand lines, pole and line combinations, and so on. Most locals utilize the method as a leisure activity in most rivers.

Trap-Bundh method

This is one of the indigenous tactics often employed by fisherman in the Marathwada region. It is also referred to as "Kodom or Gundu". Kodom is rectangular in shape, with a length of 5 feet and a height of 2.5 feet, and a breadth of roughly 3 feet at the mouth region. Kodom is formed by intertwining bamboo splits with enough space to pass water through. One end of the bamboo netting is folded lengthwise in the middle to form a single vertical line, while the other end remains completely open. Bamboo frameworks are installed all around its mouth.

The gear is positioned along the water's current. The water trap is kept between two bamboo poles. Tree branches are stored inside the trap. It serves as a shelter/hiding spot for the fish. The upper section of the trap is kept open to attract fish. Some enticement, such as rice bran or bait, is kept within the trap. The trap is pulled after 4 to 5 hours to remove the fish. Traps are operated from September to January. This net primarily catches *Labeo sp.*, *Cirrhinus mirgala*, *Channa sp.*, *Wallago attu*, and shrimp.

Conclusion

Fishing methods and gear are chosen based on a variety of criteria, including the physiographic qualities of the water body, the nature of the fish stock, the characteristics of the material used to make the gear, and the standard of life. Fishing activities follow a seasonal pattern, therefore variations in gear application can be seen in different rivers, each with its own distinct characteristics due to the region's unique water resources. The traps utilized in different regions of the river are extremely diverse. Some traps have similar principles and structural variations. In light of quickly changing livelihoods and resource constraints, the use of these gears in tribal societies is rapidly disappearing, necessitating timely documenting of such equipment and traditions. This area requires additional research to understand some of the more traditional methods and traps used by the indigenous tribal folk.

According to the findings of the current study, there is no damaging fishing in this area, and fishermen are utilizing indigenous fishing methods, which contribute significantly to the river fishery's sustainability. All fishing gear is designed to sustain the river's fishery resources while preventing the catch of small fish, fry, and eggs.

Acknowledgement

The author expresses gratitude to the fishing population of the research region for their genuine cooperation and for providing excellent information about various fishing tactics. The author would like to thank Dr. A. N. Kulkarni for technical assistance and ideas, as well as the Head of Zoology and Principal of Netaji Subhashchandra Bose Art's, Commerce, and Science College in Nanded for providing library and research facilities throughout studies.

References

1. **B. D. Waghmare (2019)**. Fishing methods in Lendi river, district Nanded, Maharashtra, India. *International Journal of Fisheries and Aquatic studies*, 7(5): 204-209, 2019.
2. **Eyo, J. E., & Akpati, C. I. (1995)**. Fishing gears and fishing methods. Proceeding of the UNDP assisted Agriculture and rural development programme (Ministry of Agriculture Awka, Anambra State). Training course on Artisanal Fisheries development, held at University of Nigeria Nsukka, 143, 167.
3. **Riddhi Bose et. al. (2019)**. Traditional fishing crafts and gears of Madhya Pradesh, India. *International Research Journal of Biological Sciences*, Vol. 8(3), 29-36, March (2019).

https://en.m.wikipedia.org/wiki/History_of_fishing

<https://vikaspedia.in/agriculture/fisheries/fish-production>

Fishing Crafts



Fishing Gear



Line-Hook Fishing



Gill Net Fishing



Seine Net Fishing



Trap Fishing



Cast Net Fishing



Scoop Net Fishing