



Traditional fishing gears and fishing practices from Radhanagari Tehsil Kolhapur District, Maharashtra

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Abstract

Throughout the world, freshwater fishes are exploited on a large scale for flesh and revenue. In the present work, we have highlighted the various indigenous fishing techniques performed by fishers to catch freshwater fish from Radhanagari Tehsil, Kolhapur District Maharashtra. The Radhanagari tehsil is well known for both lotic (Dudhganga River, Bhogawati River and Tulshi River) and lentic (Dudhsagar dam, Radhanagari dam, Tulshi dam) freshwater resources. The local fishers of Radhanagari tehsil were actively engaged in freshwater fishing. In this study, information was collected from the fishermen by both primary and secondary sources. The fishers belong to Khatik, Bhoi and Muslim communities and they are traditionally depending upon freshwater resources for their subsistence. These all communities were applying traditional based methods for fishing the freshwater fish. Fishers used various traditional gears and other devices for fishing purposes, the fishing gears comprising gill nets, cast nets, dol nets, traps of bamboo baskets, spears, hooks and lines etc. Since ancient times, these fishing gears or devices were used by fishers for commercial and domestic fishing purposes. This traditional-based fishing technique will help in the sustainable exploitation of fish resources without harming the natural ecosystem. Therefore, indigenous knowledge should be maintained and preserved as seek of ecological sustainability and health perspective.

Keywords: Indigenous fishing techniques, Fishing gears, fisher community and Radhanagari tehsil.

Introduction

Radhanagari forest is one of the hot spots for biological diversity and it has been declared a natural World Heritage Site by UNESCO since 2012. Radhangari is located in the southern region of the green Sahyadri valleys of the Western Ghats and it is ideal for vulnerable and delicate biodiversity sites in the world (Sangale, 2022). The Radhanagari tehsil is well known for both lotic (Dudhganga

River, Bhogawati River and Tulshi River) and lentic (Dudhsagar Dam, Radhanagari Dam, Tulshi Dam) freshwater habitats. The aquatic habitats are indicates the ecological health and wealth of Radhanagari. Since old age, these aquatic resources are actively harvested by living communities for their bread and better purpose. All rural and urban communities primarily rely on the fisheries and aquaculture sector for their income, food,

and means of livelihood (Bhendarkar et al., 2020).

The authors claim that the freshwater fishery industry is one of the primary sources of nutrients and high-quality protein, as well as a variety of employment options and a source of income, especially for rural areas that are economically underdeveloped (Ngasotter et al., 2020). Knowledge of fishing techniques, fishing gear and crafts is needed for the scientific and sustainable exploitation of fish resources and fishery management (Raju et al., 2016). Literature reported that the traditional fishing technique is an old age method and this knowledge is transferred orally from one generation to another in the fishing community (Saha et al., 2015). This traditional knowledge is passed by word of mouth through the generation and not has been reported in writing (Nath et al., 2018). Tradition knowledge is the oldest practice carried out by the local people, which employ communities, food and revenue (Bhilave, 2018; Devi et al., 2012).

The Radhanagari tehsil is rich in aquatic resources and these resources are exploited by the rural communities of Radhanagari tehsil district Kolhapur. After analyzing the available literature, we learned that there is no detailed documentation or report on traditional fishing methods performed by the rural communities of Radhanagari Tehsil. Hence, the present endeavor has been conducted by various surveys to highlight and disseminate the various traditional fishing methods adopted by fishers of Radhanagari tehsil Kolhapur district, Maharashtra.

Materials and Methods

The current investigation was carried out between February 2017 and

March 2019. The Dudhganga River and two minor streams in the Radhanagari tehsil were surveyed. We interacted directly with local fishermen to get knowledge of their techniques, equipment, and other tools. The primary goal of this study is to discover the traditional fishing equipment or methods used by the fishing communities in Radhanagari tehsil. Information was gathered using both primary and secondary sources, for example. In primary sources, information was gathered through personal interviews with the fishermen and direct visits to the study region (monthly surveys), group discussions, and questionnaires. Data was gathered from secondary sources from local students, reports, and literature.

Results and Discussion

To catch freshwater fish, the fishing people of Radhanagari tehsil used indigenous fishing techniques. Fishermen employed a variety of regional tools or equipment when they fished. Fishers use a very basic, non-mechanized, and traditional manner of fishing. They were passing down this fishing expertise unchanged from their ancestor. Three significant communities Khatik, Bhoi, and Muslim were found to be actively engaged in fishing in the study area. To catch fish, these fishing societies used a variety of forms and designs of fishing equipment, including caste nets, dol nets, gill nets, mosquito nets, various bamboo basket traps, spears, hooks, and lines.

Caste net fishing:

Caste net is a more common and widely used net by fishers. The caste net is of conical shape with an outer circular margin. The length of net is decreased as moves from outer circular margin toward top end hence, it becomes an umbrella

shape. The circular outer margin is about 8-14 feet in diameter and it is fitted with iron sinkers. Caste nets range in length from 12 to 18 feet and are constructed of synthetic nylon threads with a mesh size of 1 cm. Fishermen use special expertise when casting the cast net into the water. Fisher holds the top end while the rope is in their left hand and then the net is thrown into the water with the right hand so that it spreads out completely in a circular motion. Because of its iron sinkers, the net dips to the bottom and after a while, fishermen begin to slowly drag the net up. This net is commonly referred to as a throwing net because of its throwing skill (Figure 1a,b).

Gill net fishing:

All fishing communities throughout the river basin and the minor streams of the study area frequently employ gill nets. The shape of a gill net is rectangular, with varying lengths and widths. Gill nets are used with a width of 2-4 feet and four different mesh sizes such as 1 cm, 2 cm, 3 cm, and 4 cm by the fishers fishermen. When using this net, fishermen spread the gill net across the river and it remains for 2-3 hours in water. Due to floaters and sinkers, a gill net is erected in the water column. The movable fishes are trapped in the mesh by their operculum hence this net is called a gill net. (Figure 2 a,b,c,d).

Mosquito net fishing:

This net of vary in shape and size but the mesh size is 0.5 cm. A mosquito net is operated when the water level is about 2-3 feet in river or stream. In this fishing method, two-three fishers are holding the net in the water column very close to the bottom surface. At the same time, one-two fishers are coming from upstream towards downstream by making noise and stirring the water with bamboo sticks. Therefore,

fishes move downstream and get caught in net. (Figure 3 a,b).

Dol net fishing:

Dol net is occasionally used particularly by fishers of Pandewadi village when the water level is very low in river or streams. This net has a wide, rectangular mouth that is 6-7 feet wide, 4 feet tall, and 10 to 12 feet long. When the water level is low and the riverine basin is partially exposed by sands and pebbles then fishermen operate this net. Fishers constructed the embankment across the length of river and this net is fixed in the center of the embankment. This net was fixed in the evening and removed on next morning. (Figure 4 a,b,c,d).

Semi-circular shape fishing net:

This net is of semi-circular shape; its outer frame is made of bamboo or metallic. The length of net is about 2.5 to 3.5 feet and the height of 1.5 to 2 feet. The mesh is made of nylon threads with 0.5 to 1 cm in size. Locally this net is called 'Yend' and it is occasionally used by fishers. This net is dragged in shallow water or it is hold in the flow of riverine water. Both adult fishermen and young fishermen operated this net. (Figure 5).

Spear fishing:

Fishers used spear as fishing gear where water level is low or in a shallow region. Fishing with spear is carried out in the late evening or at night time with the help of a torch. A Multipoint barbed spear is used to catch or hunt the fishes. Generally, fishers of Radhanagari tehsil used four points or two points barbed spear to catch or hunt the fish. The medium and large size fishes are hunted by spear. Caught or hunted fish are used for domestic purposes only not for market use. (Figure 6 a,b,c,d)

Hook and Line fishing:

All ages of fishermen, from young children to senior citizens, use hook and line fishing frequently and extensively in the study area. Fishers used hooks and lines with bamboo pole and without pole. The length of the line is determined by the depth of the water. The most common types of hooks are curved or J-shaped are used by fishers. Hooks and line fishing can catch fish of any size. Fish that have been caught are used for both domestic and commercial purposes. (Figure 7 a,b,c,d)

Round vase-shaped bamboo trap:

The round vase-shaped trap is 1.5 to 2 feet tall, with an open mouth that is 0.3 to 0.5 feet wide. Compared to other types of trap fishing, the round vase-shaped trap fishing method is distinctive and intriguing. During fishing, initially, fishers made embankments (bund) across the stream. A narrow channel of 6-7 feet is open at the center of the bund for the construction of a fishing bed. Fishers fixed three traps underneath the space of the bed while mouth of trap is open at the roof of bed. When water is flowing over the roof of bed, water enters the trap through opening of pipe. The suctioning pressure is created near the opening hence, water speedily enters the trap. When fishes came near the opening of trap, due to water force fish enters through pipe and are caught in trap. Fishers fixed this trap for 12-24 hours. (Figure 8 a,b,c,d,e)

Oval shaped bamboo trap:

Fishermen typically use this style of bamboo trap to capture medium-sized fish and crabs. It has an oval appearance and is made of bamboo strips. A two-chamber trap with an open upper chamber that is 1.5 to 2 feet long and connected to the bottom chamber by a narrow structure resembling a valve that lets fish enter but

prevents them from escaping. (Figure 9 a,b)

Funnel shaped bamboo trap:

Funnel shaped trap is widely used to catch small and medium size fishes and crabs. It is made of long strips of bamboo with two chambers. Locally it is known as Khon. It is measured about 5 to 6 feet long with an open mouth at top diameter of about 0.8 to 1 feet. The upper chamber is small in size having a specialized valve opening that allows water to enter into the larger bottom chamber. In the bottom chamber of the trap fishes or crabs are caught. (Figure 10 a,b)

Circular shaped bamboo trap:

It has a top open mouth measurement of 1.5 to 2 feet and a height of about 3 feet. For fish entry, the open mouth has a specialized octagonal-shaped valve that opens into a bottom chamber that collects them. Locally, it is referred to as Topli because of its circular shape. It is made from bamboo strips and is used for catching fish and crabs. (Figure 11)

Cylinder shaped bamboo trap:

Fishermen frequently use this style of bamboo trap to catch crabs rather than fish. It is cylinder shaped measured about 2.5 to 3 feet in height and top open mouth is having a diameter of about 0.5 to 0.8 feet. This trap is having separate funnel with specialized narrow valve. The funnel is fitted in trap when it is fixed for fishing. (Figure 12).

Conclusion

According to the data gathered, three significant communities such as Khatik, Bhoi, and Muslim participate in fishing professionally and actively. This fishing community practices fishing with a variety of conventional or native equipment. These fishing techniques are

based on traditional knowledge and by word of mouth, they pass down the current fishing technique from generation to generation. The gears or devices utilized by fishing communities are locally made by themselves or purchased from nearby areas. The fish traps are made locally by themselves from the forest products available such as bamboo, Karanja, nirgunde etc. The fishing method is adopted by the fishers is truly a simple hand-operated technique without any support of a mechanical (machine-operated) device. This indigenous method of fishing is beneficial from the viewpoint of ecosystem due to its sustainable utilization, minimum destruction and proper management of natural resources. Moreover, traditional fishing practice helps in maintaining and preserving ecological resources and traditional knowledge to benefit the environment.

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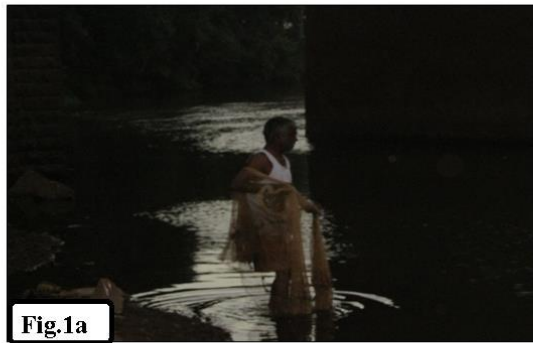


Fig.1a



Fig.1b



Fig.2a



Fig.2b



Fig.2c

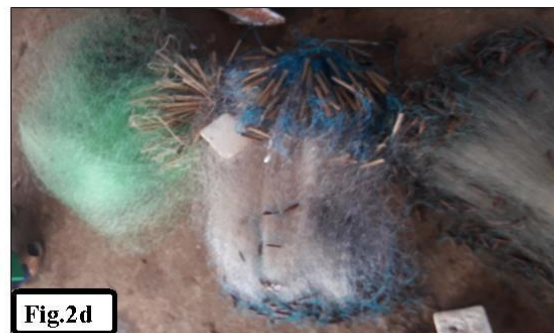


Fig.2d



Fig.3a



Fig.3b

Fig. 1—Caste net fishing: a—Fisher holding and ready to throw the caste net, b—Fisher pulling the net; **Fig.2—Gill net fishing:** a—Fisher releasing gill net in river, b—Fisher removing gill net from river, c—Fish caught in gill net (4cm), d—Three types of gill nets 1,2,3 cm. **Fig.3—Mosquito net fishing:** a—Fishers fixing mosquito net at downstream end and two fishers stirring water from upstream to downstream end, b—Fishers lifting the mosquito net.



Fig.4a



Fig.4b



Fig.4c



Fig.4d



Fig.5

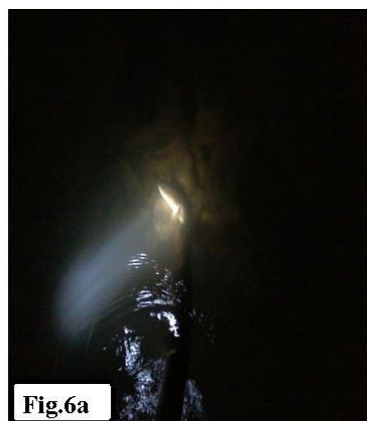


Fig.6a

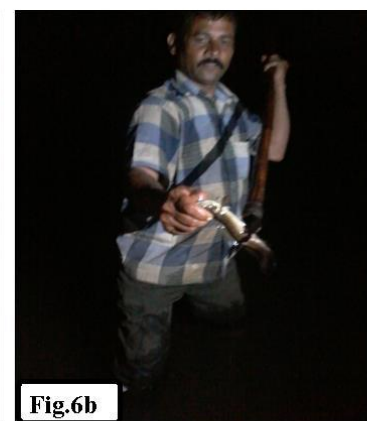


Fig.6b



Fig.6c



Fig.6d

Fig. 4—Dol net fishing: a—Fisher constructing embankment (Bund) across the river, b—Narrow channel in bund, c— Fishers with dol net, d—Fishers fixing dol net in bund; **Fig.5—Semi circular shape net fishing,** **Fig. 6—Spear fishing:** a—Fishers searching fish in night with torch, b—Fishers with spear, c—Fish hunt by four point barbed spear, d—Two point barbed spear.



Fig. 7—Hook and line fishing: a—Pole hook and line fishing, b—Hook and line fishing, c— Curved or ‘J’ shaped hook, d—Fisher caught fish in hook and line fishing;



Fig. 8—Round vase shape trap fishing: a—Construction of fishing bed, b—Fisher with round vase shaped trap, c—Fisher fixing trap underneath the fishing bed, d—Fisher adjusting the opening of trap at the surface of bed, e— Fisher removing the trap and inspecting the trap.



Fig. 9a —Oval shape fishing trap, b— trap with lid; Fig. 10a —Funnel shape fishing trap, Fig.9b—Trap with specialized valve; Fig.11—Round shape fishing trap; Fig.12— Cylinder shape fishing trap with funnel shape valve.