



A study on fishing crafts and gears used in the lower terna project, Makani, Dharashiv district, Maharashtra

Dr. Rahul Ramesh Jadhav

Shivneri Mahavidyalaya, Shirur Anantpal, Latur, Maharashtra, India

Abstract

The Lower Terna Project is a medium-sized reservoir situated on the Terna River in Makani village of Lohara Tahsil, Dharashiv District (formerly Osmanabad), Maharashtra, with a water spread area of about 16,772 hectares. The reservoir is an important source of irrigation and supports fisheries that provide livelihood to local fishing communities. The present study was undertaken to document and analyze the fishing crafts and gears used in this reservoir and to assess their seasonal performance. Field investigations were carried out for one year covering summer, monsoon, and winter seasons. Data were collected through regular field visits, direct observations of fishing operations, personal interviews, and structured questionnaires administered to fishermen and cooperative members.

The study revealed the use of both traditional and modern fishing crafts. Wooden boats were the most commonly used (45%), followed by fiber-reinforced plastic boats (35%) and coracles (20%). The choice of craft depended on water depth, fishing method, and economic condition of fishermen. Among fishing gears, gill nets were most widely used (40%), followed by cast nets (25%), drag nets (15%), scoop nets (10%), and hook and line (10%). Gill nets were particularly effective for catching major carps such as Rohu, Catla, and Mrigal.

Seasonal analysis showed that fish catch was highest during the monsoon season for all gears, with gill nets recording the maximum catch (25 kg/day). Summer showed the lowest catch due to reduced water level and fish activity, while winter showed moderate productivity. The study highlights the coexistence of traditional and modern fishing practices in the Lower Terna Project. It emphasizes the need for proper regulation of fishing gears, especially mesh size, and awareness programs for fishermen to ensure sustainable management of reservoir fisheries.

Keywords: Fishing crafts, fishing gears, lower terna project, dharashiv district, reservoir fisheries

Introduction

The Lower Terna Project is a medium-sized reservoir constructed on the Terna River in Lohara Tahsil of Dharashiv (formerly Osmanabad) District, Maharashtra, having a water spread area of about 16,772 hectares^[1]. The reservoir is a major water resource in this semi-arid region, and its water is mainly used for irrigation and fish culture practices. It supports agricultural activities by providing irrigation for crops such as sugarcane, wheat, pulses, and oilseeds, and also provides livelihood opportunities to local fishing communities residing around the reservoir. Reservoir fisheries form an important component of inland fisheries in India. Medium and large reservoirs contribute significantly to total inland fish production and provide food security and employment to rural populations^[2]. The productivity of a reservoir depends on factors such as water quality, nutrient status, fish species composition, and management practices. Among these, fishing crafts and gears play a crucial role in determining catch efficiency, selectivity, and sustainability of fishing operations^[3]. Fishing crafts include boats and other floating structures used for fishing, whereas fishing gears comprise nets, traps, hooks, and lines used for capturing fish. In many parts of India, traditional crafts made of wood or locally available materials and gears made of cotton or coir are still in use. However, modern materials such as nylon nets, synthetic ropes, and fiber-reinforced plastic boats are increasingly being adopted due to their greater durability and efficiency^[4]. The selection of crafts and gears depends on factors like water depth, reservoir size, seasonal changes, availability of

fish, and the socio-economic condition of fishermen. Several workers have studied inland fisheries and reservoir ecosystems in Maharashtra and other parts of India. Sakhare studied the fisheries potential and management practices of reservoirs in the Marathwada region^[5]. Pawara, R. H., Patel, N. G., & Patel, Y. E. reported Review on freshwater fish diversity of Maharashtra (India)^[6]. Many other researchers have also documented fish fauna, productivity, and management aspects of reservoirs in different regions^[7]. However, most of these studies mainly focused on fish diversity, water quality, and production potential, while limited attention was given to fishing crafts and gears. In the Terna basin, some studies are available on water quality and fish diversity, but no detailed work has been reported specifically on the fishing crafts and gears used in the Lower Terna Project^[8]. The lack of such information makes it difficult to evaluate the efficiency and sustainability of existing fishing practices. Proper documentation of crafts and gears is essential for understanding traditional fishing knowledge and for planning improved, eco-friendly fishery management strategies.

Therefore, the present study has been undertaken to document and analyze the fishing crafts and gears used in the Lower Terna Project, Makani, Dharashiv District, Maharashtra. The study aims to provide baseline information on traditional and modern fishing practices, which will be useful for fisheries managers, researchers, and policy makers for sustainable utilization of reservoir fishery resources.

Materials and methods

The present study was carried out at the Lower Terna Project, Makani, in Dharashiv District, Maharashtra. The study area is a medium-sized reservoir with a water spread area of about 16,772 hectares, used mainly for irrigation and fish culture practices. Field work was conducted for one year, covering different seasons to understand seasonal variations in fishing activities, crafts, and gears. Data were collected through regular field visits to different fishing sites around the reservoir. Direct observations were made on fishing operations, types of crafts, and gears used by local fishermen. Information regarding construction materials, size, design, mode of operation, and target fish species of each craft and gear was recorded. Photographs were taken for proper documentation. Personal interviews and group discussions were conducted with fishermen, boat owners, and fish cooperative members using a structured questionnaire. Information on traditional practices, changes

in fishing methods, cost of crafts and gears, and problems faced by fishermen was collected. Secondary data related to fish production, fishing seasons, and management practices were obtained from the local fisheries department and cooperative societies. The collected data were classified according to type of craft and gear. Fishing gears were further grouped into nets, hooks and lines, traps, and other devices based on their mode of operation. Descriptive analysis was used to interpret the data, and the results were presented in tables and figures to highlight the diversity and distribution of fishing crafts and gears in the study area.

Results and discussion

The field survey at the Lower Terna Project revealed the use of both traditional and modern fishing crafts and gears. The type of craft and gear used depended on water depth, season, target fish species, and economic condition of fishermen.

Table 1: Fishing Crafts Used in Lower Terna Project

Sr. No.	Type of Craft	Material Used	Average Length (m)	Capacity (Persons)	Percentage Use (%)
1	Wooden boat	Teak/Local wood	5.0	3-4	45
2	Fiber boat	FRP material	4.5	2-3	35
3	Coracle	Bamboo, tar, cloth	2.5	1	20

Table 1 shows that wooden boats are the most commonly used fishing craft (45%) in the Lower Terna Project. Their dominance is mainly due to low cost, easy availability of local wood, and simple repair methods using traditional skills. Wooden boats are suitable for moderate water depth and are stable for setting and lifting nets. Fiber boats account for 35% usage, indicating a gradual shift towards modern crafts. These boats are preferred by economically better fishermen because they are lighter, more durable, and

require less maintenance compared to wooden boats. However, their higher initial cost limits their adoption among poor fishermen. Coracles, used by 20% of fishermen, are mainly operated in shallow and near-shore areas. Their small size and light weight make them easy to handle by a single person. The use of different crafts reflects adaptation to water depth, fishing methods, and financial status. Overall, the pattern shows a combination of traditional and modern fishing practices in the Lower Terna reservoir.

Table 2: Fishing Gears Used in the Reservoir

Sr. No.	Gear Type	Mesh Size (cm)	Target Species	Mode of Operation	Percentage Use (%)
1	Gill net	4-10	Rohu, Catla, Mrigal	Passive	40
2	Cast net	1-3	Small carps, tilapia	Active	25
3	Drag net	2-5	Mixed species	Active	15
4	Scoop net	0.5-1	Fingerlings, small fish	Active	10
5	Hook and line	—	Carnivorous fishes	Passive	10

Table 2 indicates that gill nets are the most widely used fishing gear (40%) in the Lower Terna Project. Their popularity is due to their high efficiency in capturing large carps like Rohu, Catla, and Mrigal. The wide range of mesh size (4-10 cm) allows fishermen to target different sizes of fish. Cast nets (25%) are mainly used near the shore and in shallow areas, especially for catching small carps and tilapia. Drag nets (15%) are mostly used during low water

levels when fish are concentrated in limited areas, making harvesting easier. Scoop nets (10%) are used for catching fingerlings and small fishes, mainly for domestic consumption. Hook and line (10%) is a selective and low-cost method, mainly used to catch carnivorous fishes. The diversity of gears shows that fishermen use multiple methods to maximize catch under varying environmental conditions.

Table 3: Seasonal Variation in Catch Using Different Gears (kg/day)

Gear Type	Summer	Monsoon	Winter
Gill net	18	25	22
Cast net	10	15	12
Drag net	8	12	10
Scoop net	4	6	5
Hook & line	5	7	6

Table 3 shows clear seasonal variation in fish catch using different fishing gears. The catch is highest during the monsoon season for all gears, particularly for gill nets (25 kg/day). This is mainly due to increased water level, higher

nutrient inflow, and greater fish movement during breeding and feeding periods. During summer, water level decreases and temperature increases, which reduces fish activity and results in lower catch, especially in scoop nets (4 kg/day).

Winter shows moderate catch values, indicating stable environmental conditions. Gill nets give the highest catch in all seasons, confirming their efficiency and suitability for reservoir fishing. Cast nets also show good performance during monsoon and winter due to active fishing in near-shore areas. The seasonal pattern highlights the importance of adjusting fishing effort and gear selection according to climatic and hydrological conditions for sustainable fisheries management.

Conclusion

The present study provides a comprehensive account of fishing crafts and gears used in the Lower Terna Project, Makani, Dharashiv District, Maharashtra. The findings show that both traditional and modern fishing practices coexist in the reservoir. Wooden boats and gill nets were found to be the most commonly used craft and gear, indicating low-cost and locally adapted fishing methods. The gradual introduction of fiber boats and nylon nets reflects slow modernization influenced by economic capacity of fishermen. Seasonal variation in catch clearly showed higher productivity during the monsoon season, while summer recorded the lowest catch due to reduced water levels and fish activity. The use of small mesh size nets in some areas indicates a risk of catching juvenile fishes, which may affect long-term sustainability of fish resources. Therefore, proper regulation of fishing gears, awareness about mesh size, and training programs for fishermen are necessary. The study provides baseline information that will be useful for fisheries management, policy planning, and future research for sustainable utilization of the Lower Terna reservoir.

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