



Fishing techniques and gears developed by tribal communities around Bargi Reservoir in Madhya Pradesh, India

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Received 21 September 2019; revised 09 August 2021

Traditional knowledge (TK) plays a very important role in the lives of millions of people around the world. There is an immense need for documentation of traditional knowledge especially in countries rich in biodiversity, such as India. Bargi is one of the major dams constructed on the river Narmada in Madhya Pradesh. Local communities have used various fishing methods since time immemorial. Construction of the dam changes the ecology and hydrology of the river. Tribal communities have adapted their fishing techniques to these changes and have also developed new techniques. Fishing technique described in this paper is practiced around Bargi Reservoir. Five types of crafts and different gears were encountered during the two years of seasonal survey.

Keywords: Bargi Reservoir, Fishing craft, Fishing gear, Narmada river

IPC Code: Int Cl.²¹: B63B 35/14, B63B 35/24, B63B 35/26

Traditional Knowledge (TK) is important part of cultural identity. It is essential to the food security of millions of people in the developing world especially in countries with rich biodiversity and TK, like India. Recently, the international community has sought to recognize and protect TK¹. Documenting the TK is the first step towards eliminating any attempt for bio-piracy of TK, which is on the rise in India and other developing countries. There is also a possibility of developing economically profitable products by utilizing TK². Humans are the only species on the earth capable of developing new technologies to adapt to changes in the environment. TK is being refined and transferred to the other communities and also from generation to generation.

Freshwater fisheries provide food and a livelihood for millions of people around the world. It also forms an important source of animal protein. It makes up more than 6% of the world's annual animal protein supplies for human³⁻⁶. Crafts and gear used in fishery are the results of collective experiences gained over generations. Local communities have a unique pattern of crafts and gears for fishing according to the nature of the water body they have. Construction of reservoir changes the ecology and hydrology of river^{7,8}. Tribal

communities have adapted their fishing techniques to these changes and have also developed new techniques. The fishing techniques described in this paper are practiced around Bargi Reservoir.

Villages around the reservoir are inhabited by the Gond, Patel and Burman communities. Most of them are poor marginal farmers and laborers. Aquatic fauna has been an integral part of the tribal food habit since times immemorial in this region. There are lacunae in documentation from this part of Central India. This was a reason for undertaking this study.

Materials and Methods

Location: Rani Avanti Bai Lodhi Sagar (RABLS) Project is a major project situated on river Narmada in Madhya Pradesh and is 5.38 km long reservoir on the river Narmada near village Bargi in Jabalpur district⁹. Participatory research tools namely group discussions, semi-structured interviews, key informant surveys and on-site observations were taken to acquire insight into the fish harvesting practices. Seven villages in a stretch of 39.5 km downstream Bargi dam were surveyed for this study. Each village was visited 3-4 times a year for two consecutive years (2014-15). These villages were as follows - Zero tanky, Poudimul, Tatighat, Chutaka, Patha, Tewar and Kikara mal. Location of the villages is shown in Figure 1.

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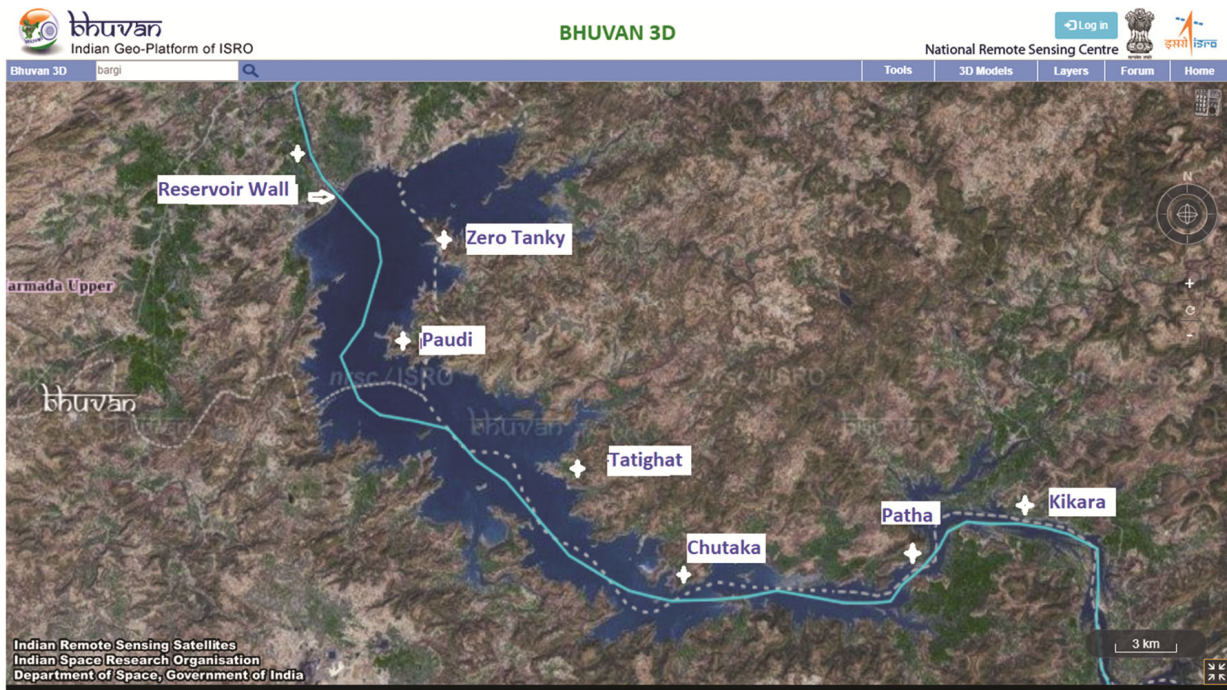


Fig. 1 — Sampling locations along the banks of Bargi dam

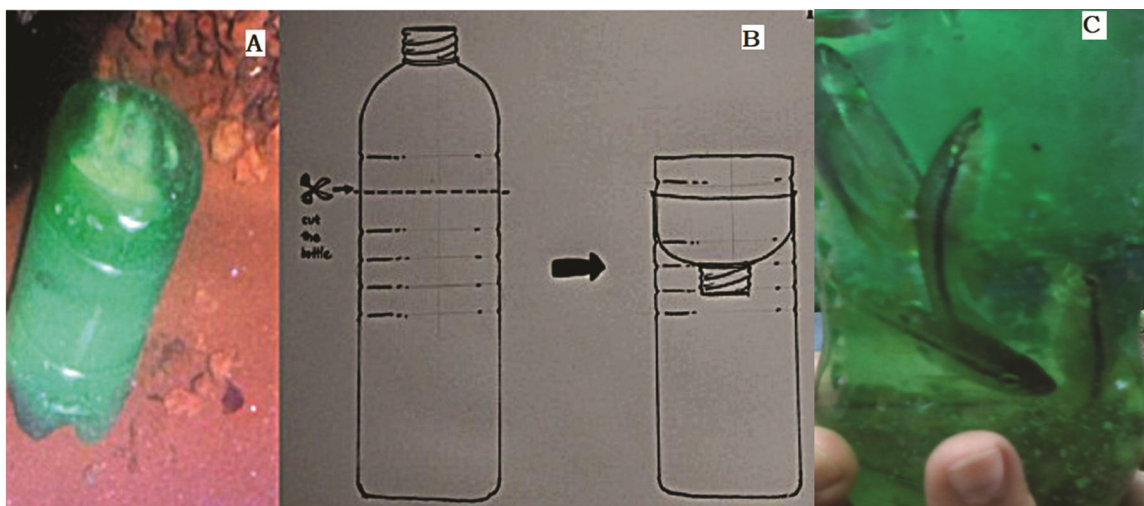


Fig. 2 — Fish trap using used Plastic bottle – Trap in water (A), construction of trap (B), trapped fishes (C).

Results and Discussion

Brief description of individual crafts and gear are given below

Fish trap using used plastic drink bottle

Big plastic bottle (2.5l Fig 2A) thrown by tourists is cut into half. Top of bottle inserted in another half in reversed order as shown in Figure 2B. Before putting trap in the water, some weights and bait (generally flour) is kept at bottom. Fish enters the bottle but unable to find its way out (Fig. 2C).

Triangular push net

This net is made of a triangular frame made up of Bamboo (Fig. 3A-B). Frame length is around half meter. Mosquito netting cloth is fixed in that frame. This net is operated in shallow stagnant water not more than four feet deep. Fisher pushed the net very close to submerged soil and then it scooped up. This net is used to catch shells and bivalves (Fig 3C). We have observed that tribals consume giant African snail (*Achatina fulica*) which is an invasive species and an ecological pest^{10,11}.



Fig. 3 — Triangular push net in operation (A) construction (B) and benthic fauna trapped (C)

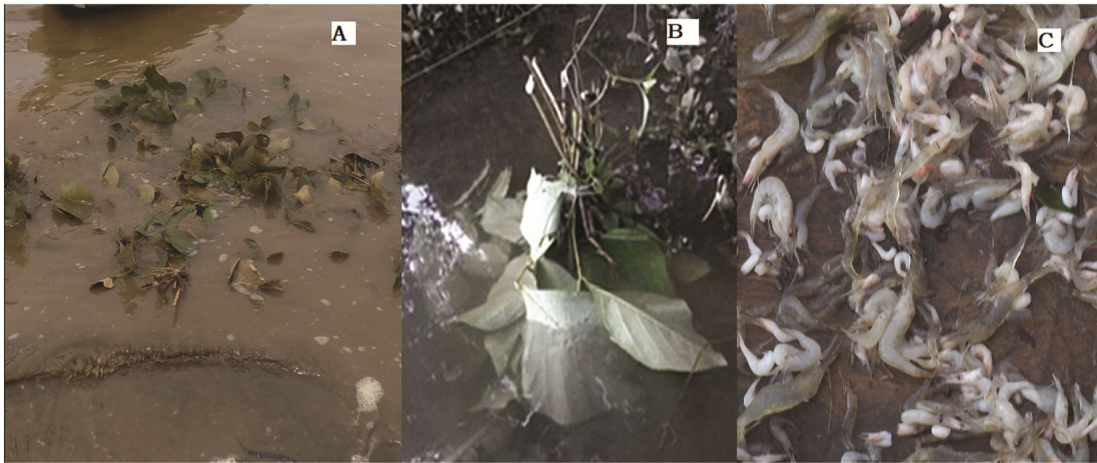


Fig. 4 — Brush trap suspended in water (A) construction (B) and prawns trapped (C)

a. Brush trap for catching Prawns

Brush traps are made by tying branches of teak (*Tectona grandis*) and Palash (*Butea monosperma*) into bundles. These leaves are specifically used for their big size and rough texture that provide grip for prawns. Wooden pole is buried in shallow water along the edge of the water (Fig. 4A). Bundles of branches are tied to the pole in such a way so that only the leafy part of the trap is soaked in the water (Fig. 4B). Prawns sheltering in the brush trap are caught by quickly lifting the bundles out of the water (Fig. 4C).

Crafts

Plank built boat

Plank built boats (Fig. 5) are the most widely used boats in the study area. Length of boat is varied in the range of 3-4 m. with 1 -1.5 m breadth. Inner skeleton of the boat is made up of hardwood trees like teak (*Tectona grandis*) and Ain (*Terminalia tomentosa*). Then a sheet of 1 mm thick aluminum is mounted on the skeleton with the help of nails. Waterproofing is done with natural or artificial resins. Boat is used for gill net operations.



Fig. 5 — Plank built boat in water

Dug out boat

Dug out boats are made up of hollowed-out wooden logs (Fig. 6). Length of boat is varied in range of 1.5 - 2 m. with 0.3 - 0.4 m breadth. These boats can accommodate at most two people at a time and also has space for gears and catch. Boat is used for cast net operations. Very few such boats are in use due to lack of suitable trees and low stability in the vast spread of backwaters.



Fig. 6 — Dug out boat in water

Conclusion

Adapting to changing environments is an important evolutionary trait that has enabled humans to survive. Dams not only alter the ecology of the river but also affect the livelihood of the people who depend on it¹². Fish is the important source of protein for the tribal communities^{3,14,15}. Discussions with the local communities reveal that before construction of the dam, fishing techniques used by communities were suited for free-flowing river. Dam changed the free-flowing river into a big lake, where these techniques are not suitable. Communities around Bargi dam have adopted the techniques to catch the fish and also changed their food habits¹⁶⁻¹⁸. They have started consuming new species such as giant African snail (*Achatina fulica*) which is very recent addition to the fauna of the river. Documenting such knowledge may help communities undergoing similar change in their environment and ensure food safety for them¹⁹⁻²¹.

Acknowledgements

This research was funded by BRNS, DAE, Govt. of India, Mumbai under the project no. 2010/36/84-BRNS/dt2/2/11.

Conflict of Interest

The Authors declare that there is no conflict of interest.

Authors' Contributions

VR and SD designed and directed the project; VR, and SY conducted field surveys; VR, SY and SD wrote the article.

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