THE FISHWORLD
ISSN: 3049-138X
Vol.2(8) August 2025, 916-919

Aqua Parks and Sanctuaries: The New Life of India's

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https://doi.org/10.5281/zenodo.17053985

Abstract

India's reservoirs, covering nearly 3 million hectares, represent vast yet underutilized fisheries resources. Despite the nation's rich aquatic biodiversity, unsustainable fishing practices and habitat degradation have hindered productivity, leaving yields far below potential. Converting selected reservoirs into fish sanctuaries and aqua parks offers a sustainable strategy to protect fish biodiversity, restore habitats, and enhance fish production. Sanctuaries act as protected breeding and nursery zones, safeguarding ecologically sensitive areas and replenishing fish stocks in adjacent fishing zones. Community-led models, as seen in the Western Ghats and Karnataka's temple-based sanctuaries, demonstrate successful integration of conservation and livelihoods. These initiatives have shown positive impacts on biodiversity, fish yield, and socio-economic conditions without adverse environmental effects. Establishing fish sanctuaries through government action and community participation is an urgent need to ensure the long-term sustainability of India's inland fisheries, secure livelihoods, and preserve genetic diversity for future generations.

Introduction

Reservoirs are among the largest man-made ecosystems in the world, combining characteristics of both rivers (fluviatile) and lakes (lacustrine). They have played a vital role in India's agricultural self-sufficiency and now stand as "sleeping giants" in terms of fisheries potential. With an estimated 3 million hectares of reservoir area spread across varied climatic, geographic, and soil conditions, these water bodies can become a significant alternative source of fish production.

Reservoir Resources of India (Paul et al., 2017)

Type of reservoir	Small	Medium	Large
Number	19,134	180	56
Area (ha)	14,85,557	5,27,541	11,40,268
Average fish yield (Kg/ha)	174	94	33

Publication Date: August 30, 2025
THE FISHWORLD A MONTHLY MAGAZINE
Official Website
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The data clearly shows that these natural water bodies are performing far below their productive capacity. Although India is one of the world's biodiversity hotspots, stretching from the Himalayas in the north to the Western and Eastern Ghats, fisheries production has not kept pace with the growing demand for fish. Unsustainable fishing practices have further reduced the natural replenishing capacity of aquatic ecosystems.

To bridge this gap, alternative strategies must be implemented. Enhancement approaches should aim either to increase fish production or to conserve aquatic biodiversity. Possible measures include:

- Habitat restoration and enhancement
- Converting selected water bodies into Fish Sanctuaries and Aqua Parks
- Promoting reservoir-based aquaculture

Fish Sanctuaries: A Conservation Tool

A fish sanctuary is a designated area within a water body set aside as a permanent refuge for fish. Fishing is prohibited in these zones, allowing fish populations to grow and reproduce naturally. Establishing sanctuaries is one of the most effective ways to conserve fish stocks, preserve biodiversity, and boost long-term productivity.

Key benefits of fish sanctuaries in reservoirs:

1. **Habitat protection** – Safeguarding ecologically sensitive areas and natural nursery grounds.
2. **Stock replenishment** – Increasing the number and size of spawning fish, which in turn boosts fish availability in surrounding fishing areas.

Community-Led Conservation

India has a long tradition of community-managed conservation areas. The Western Ghats, in particular, have many Community Fish Sanctuaries that protect local fish diversity. This region is home to 290 freshwater fish species (Dahanukar et al., 2011), including 189 endemic species found nowhere else. Many have ornamental value and high market demand, but overharvesting has placed several species in the threatened, endangered, or extinct categories.

Community sanctuaries, often linked to temples play a crucial role in protecting these species while sustaining local livelihoods.

Karnataka: A Model for Fish Sanctuary Development

Karnataka is among India's richest states in freshwater fish diversity. However, several endemic species face serious threats from overexploitation. The state has 289 recorded fish

species, with about 41% under extinction risk. Notable species include Mahseer, *Puntius pulchellus*, *Labeo fimbriatus*, and *Bagarius yarrelli*.

To address this, the Karnataka government has established several nature reserves and fish sanctuaries, many maintained by local communities and religious trusts.

Fish Sanctuaries of Karnataka;

Name	Region
Nakur Gaya Fish Sanctuary	Netravathi Basin
Yenekal Fish Sanctuary	Netravathi Basin
Karappura Fish Sanctuary	Kabini reservoir
Shringeri Fish Sanctuary	Tunga River
Chippalgudde Fish Sanctuary	Tunga river
Fish Sanctuary near Hosmata, Netravathi Basin	Netravathi River Basin

Temple Fish Sanctuaries of Karnataka

1. Shringeri Fish Sanctuary – Maintained by Sharada peeta, Shringeri Matt
2. Chippalgudde Matsya dhama - Maintained by siddhivinayaka trust
3. Shishila matsya teertha – Kumaradhara river – Dakshina kannada
4. Bachananayaka gundi – Darmastala
5. Jamathagni Agrahara – Chikkamagaluru
6. Ramanathapura Fish sanctuary – Hasan
7. Thingale Fish sanctuary –Seethangadi near Agumbe

Impact and Future Prospects

In almost all cases, fish sanctuaries have had a positive impact—improving fish populations, enhancing biodiversity, and strengthening the socio-economic conditions of fishing communities. No negative environmental effects have been reported. They are also relatively easy for local communities to manage and enforce, making them an efficient fisheries management tool.

Conclusion

The establishment of fish sanctuaries is now an urgent need to protect wild fish stocks, ensure sustainable fisheries development, and conserve aquatic genetic diversity. Without timely action, the decline of native fish species could have serious environmental and socio-economic consequences. By setting up sanctuaries in rivers, reservoirs, and floodplains, either through government initiatives or active community participation, India can secure both biodiversity and livelihoods, while unlocking the full potential of its inland and coastal fisheries.

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