



# **A BRIEF REVIEW ON STATUS OF MAHSEER - HISTORICAL PERSPECTIVE, CHALLENGES AND THREATS TO MAHSEER CONSERVATION IN THE LAST DECADE AND FUTURE PROSPECTS**

**Dr. ANUKRITI NIGAM**

**Department of Zoology, Fergusson College (Autonomous) 411004, Pune, India.**

## **ABSTRACT**

The rapid decline of mahseer populations across various regions of India is primarily attributed to the unregulated fishing of both breeding adults and juveniles, extensive degradation of aquatic ecosystems, and the construction of dams, barrages, and weirs for river valley projects. This situation underscores the urgent need to assign significant conservation importance to this species within India.

To safeguard this valuable aquatic resource, it is imperative to develop and execute effective strategies for conservation and restoration within the country. Such efforts demand a comprehensive understanding of the current status of mahseer populations in their natural habitats, encompassing their dwindling numbers, potential for aquaculture, and the structure of their populations.

This paper undertakes a thorough exploration of the evolutionary history of mahseers, their present-day status, and the pivotal role that conservation biology plays in ensuring their continued existence, sustainable utilization, and eventual augmentation. Drawing insights from this exploration, the paper outlines potential actionable plans, establishes priorities, and offers recommendations aimed at the preservation of these majestic mahseers throughout India.

**Keywords: Mahseer, conservation, Challenges, threats, Future Prospects**

## **INTRODUCTION:**

The Mahseer, a magnificent and ecologically important group of freshwater fish, has long captivated the hearts of anglers and conservationists alike. With their remarkable size, strength, and cultural significance, Mahseer species have held a prominent position in India's aquatic biodiversity for centuries. Mahseer fishes have earned

the revered title of 'God's fishes' in the regions where they are found, attributed to their substantial size and captivating beauty. This esteemed recognition is especially prominent among secluded tribal communities, as documented by Gupta et al. in 2016. However, in the past decade, these iconic fish have faced numerous challenges, leading to concerns about their survival and population dynamics.

In this review paper, we embark on a comprehensive journey to assess the status of Mahseer populations across India over the last ten years. By examining scientific literature, conservation efforts, and data from various sources, we aim to shed light on the threats, conservation initiatives, and emerging trends related to these enigmatic fishes.

Our review will delve into various aspects, including habitat degradation, overexploitation, climate change impacts, and the effectiveness of existing conservation measures. Moreover, we will explore the role of local communities, governmental policies, and collaborative efforts in safeguarding the future of Mahseer species.

Through this synthesis of information, we hope to provide a holistic understanding of the current state of Mahseer in India and identify potential strategies to ensure the continued existence and sustainable management of these remarkable fish for generations to come. By recognizing the challenges and successes in Mahseer conservation, we aim to inspire further research and action towards the protection and restoration of their habitats and populations throughout the country.

## **HISTORICAL PERSPECTIVE AND DECLINE OF MAHSEER IN INDIA:**

Mahseer, a group of iconic freshwater fish species native to South Asia, have long been revered for their cultural, ecological, and economic significance. They are known for their impressive size, strength, and sport-fishing value.

In India, Mahseer populations have faced challenges due to various factors:

- **Habitat Loss:** Urbanization, deforestation, and dam construction have led to the degradation and fragmentation of Mahseer's natural habitats, impacting their ability to migrate and reproduce.
- **Pollution:** Water pollution from agricultural runoff, industrial discharges, and other sources have negatively impacted Mahseer populations, affecting their health and reproductive success.
- **Overfishing:** Unsustainable fishing practices, both legal and illegal, have exerted excessive pressure on Mahseer populations, leading to a decline in their numbers.
- **Climate Change:** Changes in water temperature and flow patterns due to climate change can disrupt Mahseer's breeding and migration patterns, further impacting their survival.
- **Invasive Species:** Introduction of non-native species into Mahseer habitats can disrupt the local ecosystem and negatively affect Mahseer populations.

## **CONSERVATION EFFORTS:**

Several conservation initiatives have been undertaken to address the decline of Mahseer in India. These efforts include:

- **Legal Protection:** Some species of Mahseer have been given legal protection under Indian wildlife laws, which restrict their fishing and trade.
- **Habitat Restoration:** Efforts are being made to restore and protect the natural habitats of Mahseer, focusing on improving water quality and connectivity.

- **Awareness and Education:** Public awareness campaigns aim to educate communities and stakeholders about the importance of conserving Mahseer and their habitats.
- **Research and Monitoring:** Scientists and researchers have been conducting studies to understand the ecology and behavior of Mahseer, providing valuable information for conservation strategies.

Conservation initiatives and policies for Mahseer, a prized freshwater fish species in India, have witnessed significant developments over the past decade. These efforts have been geared towards safeguarding Mahseer populations and their habitats, which are vital for maintaining freshwater ecosystem health and supporting local livelihoods.

One notable initiative is the inclusion of Mahseer in the Wildlife Protection Act of India (1972), affording legal protection to the species and its habitats. The National Mission for Clean Ganga (NMCG) and the National Mission for Himalayan Studies (NMHS) have actively supported Mahseer conservation, focusing on restoring riverine habitats and controlling pollution in the Ganga River basin, a critical Mahseer habitat. As of 2018, the Forest Department took the initiative to create a document titled "Mahseer Conservation Reserve, Badi Lake, Udaipur." This document was submitted to the Government of Rajasthan with the primary goal of obtaining official recognition and designation for the reserve. The recognition was primarily based on the reserve's significance as a habitat for mahseer fish, while also acknowledging its role in supporting migratory and resident aquatic birds, various fish species such as Katla, Rohu, Mrigal, Sarsi, and Bam, as well as water snakes, frogs, and other wildlife. Additionally, the document highlighted the lake's importance as a water resource for irrigation of rabi (dry weather) crops and for drinking purposes.

Research and monitoring have played a pivotal role in guiding conservation actions, WWF-India (2013), Sarkar et.al.2015. Sarkar and Naskar 2020. Studies like Chakraborty et al. (2018) have contributed to understanding Mahseer migration patterns, highlighting the significance of maintaining connectivity between habitats. Conservationists have collaborated with local communities, as seen in the efforts by the Mahseer Trust, engaging in community-based conservation initiatives and promoting sustainable fishing practices.

Mahseer conservation has also gained international recognition through its listing on the International Union for Conservation of Nature (IUCN) Red List. This global acknowledgment underscores the urgency of conservation actions.

Despite these positive strides, challenges persist. Dams and weirs continue to hinder Mahseer migration, affecting their reproductive success. Illegal fishing and habitat degradation further threaten their survival.

In conclusion, the past decade has seen notable advancements in Mahseer conservation, with legal protection, research-driven strategies, and community involvement playing pivotal roles. However, sustained efforts and enhanced collaboration are imperative to overcome ongoing challenges and ensure the long-term survival of this iconic fish species, Pinder et.al 2019.

## CHALLENGES AND THREATS TO MAHSEER CONSERVATION

- Conservation of Mahseer, a species of freshwater fish, faces several challenges and threats. Raghavan et,al, 2013.
- Habitat Destruction: Loss of natural habitats due to dam construction, deforestation, and urbanization.
- Water Pollution: Contamination of rivers and streams with industrial and agricultural runoff.
- Overfishing: Unsustainable fishing practices leading to population decline.
- Invasive Species: Introduction of non-native species that compete with or prey on Mahseer. Singh and Srivastava 2022
- Climate Change: Altered water flow patterns and temperature changes affecting their breeding and survival.
- Every one of these classifications holds significant importance when it comes to the endangerment of Tor species' population status (Raghavan et al. 2011; Bhatt and Pandit 2016; Everard et al. 2018).

## FUTURE PROSPECTS:

- The initial portrayals of certain Tor fish species, nonetheless, exhibit disparities and uncertainties. This situation is exacerbated by the lack of corresponding authenticated reference specimens, which raises the risk of potential misclassifications (Walton et al. 2017). As a result, there is a pressing need for an exhaustive taxonomic investigation encompassing all significant drainage basins where mahseer are found. This study should encompass molecular taxonomic analyses utilizing various mitochondrial and nuclear genes, while considering all discernible distinguishing traits essential for species differentiation. Recognizing the ideal conditions for the effective recruitment of natural fish stocks holds great importance. Furthermore, pinpointing species that are particularly sensitive or resilient to climate variations will aid in determining which species conservation efforts should take precedence. The process of identifying, formulating, and showcasing strategies that bolster resilience to climatic changes will play a pivotal role in fortifying the overall adaptability of both ecosystems and fishing communities, Sarkar and Das, 2021.
- Sustainable Fishing Practices: Implementing and promoting sustainable fishing practices to ensure responsible harvesting of Mahseer populations.
- Habitat Restoration: Undertaking efforts to restore and protect natural habitats through conservation programs and river restoration initiatives.
- On urgent basis the integrity of aquatic ecosystems needs to be maintained by restoring ecological processes of the natural waters. Singh et .al .2016
- Community Engagement: Involving local communities in conservation efforts to create awareness and foster a sense of responsibility towards protecting Mahseer.
- Policy and Legislation: Strengthening conservation policies and regulations to enforce stricter protection measures for Mahseer.
- Research and Monitoring: Conducting ongoing research and monitoring programs to understand the species' behavior, ecology, and population dynamics.

**Conclusion:**

The past decade has witnessed significant shifts in the status of Mahseer populations, reflecting the ongoing challenges they face. Habitat destruction, water pollution, overfishing, invasive species, and climate change have collectively impacted the health of Mahseer populations. Conservation efforts have focused on raising awareness, implementing sustainable practices, and enhancing protection measures. While some progress has been made through community engagement and research initiatives, there remains a need for intensified efforts to ensure the long-term survival and recovery of Mahseer populations. In their study, Pinder and Raghavan (2013) portrayed the impact of recreational fisheries on the Cauvery River in Karnataka as predominantly positive. The authors highlighted how local NGOs played a pivotal role in ensuring the sustainable management of fisheries. These organizations also facilitated the transition of fishers, who once employed illegal fishing methods, into new roles such as guides and guards, providing them with alternative sources of employment

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