

CURRENT STATUS OF KAWAR JHEEL AND STRATEGIES FOR REVIVING ITS CONSERVATION POTENTIAL

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KAWAR Jheel, also known as Kabar Taal or Kawar Lake, is one of India's largest oxbow lakes, located in the Begusarai district of Bihar. Historically, a sanctuary for migratory birds and a vital fishing ground, this ancient wetland, formed by the meandering Gandak River, has been central to the region's ecology and economy. Recognised for its ecological significance, Kawar Jheel was designated a protected area under the Wildlife (Protection) Act in 1972 and later as a bird sanctuary in 1989. Despite these protections, the wetland has faced significant threats, including siltation, pollution, agricultural encroachment, and habitat degradation, causing the lake's area to shrink dramatically from 6,786 hectares in 1984 to just 2,032 hectares by 2012. This degradation has severely impacted the biodiversity of the lake, including its fish populations, which are vital for local fisheries. In 2020, the lake was designated a Ramsar site, highlighting its international significance. This study emphasises the urgent need for a comprehensive strategy to restore Kawar Jheel's ecological health.

Environmental Parameter Status

The water quality analysis conducted during the early monsoon season in June 2022 revealed several key parameters. The pH of the water was recorded at an average of 7.2, indicating a slightly alkaline nature typical of confined inland waters in India. Electrical conductivity (EC) was measured at 256 $\mu\text{S}/\text{cm}$. A low dissolved oxygen (DO) level of 5.4 ppm was observed, pointing towards the presence of organic pollution. Total hardness was found to be 148.0 mg/l, which is well within the Bureau of Indian Standards (BIS) limit of 300 mg/l for drinking water. The total alkalinity of the lake was recorded at 160.0 mg/l. A high concentration of total phosphorus (2.56 mg/l) was noted, suggesting increased nutrient levels and potential eutrophication. Silicate was present at 19.7 mg/l, higher than typical trace levels. Calcium and magnesium concentrations were 43.3 mg/l and 9.7 mg/l, respectively. Both are essential minerals, with calcium contributing to shell and bone formation, and magnesium playing a vital role in photosynthesis through its presence in chlorophyll.

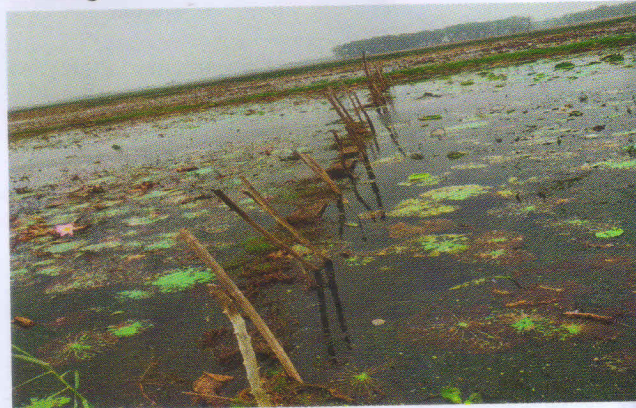
Fish and Fisheries of the Lake

Kawar Jheel harbours a rich and diverse fish community, including major carp species such as Catla (*Labeo catla*), Rohu (*Labeo rohita*), and Mrigal (*Cirrhinus cirrhosus*), along with smaller indigenous species like *Puntius* spp. and *Amblypharyngodon mola*. These fish species are essential to the local fisheries, which serve as a primary source of livelihood for the communities surrounding the lake. According to a study in 2004, "A Survey of Commercially Valuable Fish Species

in Kanwar Lake, Bihar" by Anon, 41 commercially important fish species have been identified in the Jheel. Later studies by Sinha and Jamal (The Study of Indigenous Ornamental Fish Diversity from Wetland of Bihar, 2015) recorded a total of 79 fish species, reflecting the lake's biodiversity. However, a more recent study by Kumari and Kumar (2023) titled "Water Quality Index Assessment of the Groundwater of Industrial Area and Absorption by Polymer Composites" reported only 26 species, most of which are of ornamental value, indicating a possible decline in fish diversity.

Traditional fishing methods, such as cast nets, gill nets, and traps, are commonly employed by local fishers. These practices have been passed down through generations, reflecting the deep cultural connection between the community and the lake. However, the fisheries of Kawar Jheel are currently facing significant challenges. Overfishing has put pressure on fish populations, while habitat degradation — due to factors like encroachment, water diversion, and agricultural runoff has further threatened the aquatic ecosystem. Pollution from domestic and industrial sources has also contributed to the decline in water quality, affecting fish health and diversity.

Additionally, the introduction of invasive species has disrupted the ecological balance, competing with native species for resources. To address these challenges, conservation efforts are increasingly focusing on habitat restoration, community-based fisheries management, and the regulation of fishing practices. Habitat restoration aims to improve the water quality and restore the natural environment of the lake, making it more conducive for fish breeding and growth. Community-based fisheries management involves local stakeholders in decision-making processes, ensuring that conservation measures are culturally appropriate and effectively implemented. Regulation of fishing practices, including restrictions on the use of certain nets and fishing



Setting up a trap for the harvesting of small indigenous fish