ICTHYOFAUNA DIVERSITY OF DHURDE TAL WETLAND SARAN, BIHAR

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***Abstract*—Dhurde Tal Wetland, located in the Saran district of Bihar, is an important seasonal floodplain ecosystem that supports a diverse ichthyofaunal community vital for sustaining local fisheries and ecological balance. A comprehensive field survey conducted in 2023 documented 21 fish species from this wetland, representing a wide range of ecological and economic significance. The major species recorded included *Labeo rohita* (Rohu), *Catla catla* (Catla), *Clarias batrachus* (Garayi), *Puntius sophore* (Pothiya), *Mystus tengara* (Tangra), *Heteropneustes fossilis* (Singhi), *Anabas testudineus* (Patya), *Parambassis ranga* (Glass fish), *Glossogobius giuris* (Brigade), *Xenentodon cancila* (Golden fish), *Notopterus notopterus* (Barari), *Wallago attu* (Dara), *Cirrhinus reba* (Rewa), *Gudusia chapra* (Nayani), *Macrognathus aral* (Kevyi), *Mystus cavasius* (Bangur), *Salmostoma bacaila* (Dhalo), *Rasbora daniconius* (Kholsa), *Chanda nama* (Nekti), *Macrobrachium rosenbergii* (Jhinga - freshwater prawn), and *Ompok bimaculatus* (Tangusi). These species encompass commercially valuable carps, catfishes, small indigenous species (SIS), and predatory fishes, highlighting the ecological richness and trophic complexity of Dhurde Tal. Economically important species such as *Catla catla*, *Labeo rohita*, and *Wallago attu* dominate the commercial fisheries, while smaller species like *Puntius sophore*, *Parambassis ranga*, and *Macrognathus aral* maintain the ecological stability of the wetland. However, habitat degradation due to siltation, overfishing, and agricultural runoff poses serious threats to this biodiversity. Immediate conservation efforts including wetland restoration, community-based fishery management, and sustainable utilization strategies are urgently required to protect the ichthyofaunal diversity of Dhurde Tal Wetland. The data generated in this study provide an essential baseline for future biodiversity monitoring and sustainable fisheries development in floodplain ecosystems (Jayaram, 2010; Talwar & Jhingran, 1991; Lakra et al., 2010; Sarkar et al., 2017; Dahanukar et al., 2012).**

***Index Terms*— Ichthyofaunal diversity, Dhurde Tal Wetland, Small indigenous species (SIS), Small indigenous species (SIS), Sustainable wetland management.**

I. INTRODUCTION

Wetlands are among the most productive ecosystems on Earth, offering critical services such as water purification, groundwater recharge, flood regulation, and biodiversity conservation (Mitsch & Gosselink, 2015). In India, wetlands form an integral component of the landscape, especially in the Indo-Gangetic plains where they support agriculture, fisheries, and rural livelihoods. Among these, Dhurde Tal, a seasonal floodplain wetland located in the Saran district of Bihar, holds significant ecological and socio-economic importance but remains relatively understudied compared to other major wetland systems in the region.

Ichthyofauna, or fish diversity, is a vital indicator of the health and productivity of wetland ecosystems. Fish play crucial ecological roles, including nutrient cycling, controlling aquatic insect populations, and serving as prey for higher trophic levels. Moreover, they provide essential protein sources and livelihood opportunities for local communities (Sarkar et al., 2017; Lakra et al., 2010). The conservation and sustainable management of fish diversity in wetlands like Dhurde Tal are thus essential for maintaining ecosystem services and ensuring food security.

The Dhurde Tal wetland, which expands considerably during the monsoon season and shrinks in the dry months, creates a dynamic aquatic environment favorable for a wide range of fish species. Preliminary surveys and field investigations conducted during 2023 revealed the presence of 21 fish species exhibiting varied ecological and economic values. The dominant species recorded were *Labeo rohita* (Rohu), *Catla catla* (Catla), *Clarias batrachus* (Garayi), *Puntius sophore* (Pothiya), *Mystus tengara* (Tangra), He*teropneustes fossilis* (Singhi), *Anabas testudineus* (Patya),

Parambassis ranga (Glass fish), *Glossogobius giuris* (Brigade), *Xenentodon cancila* (Golden fish), *Notopterus notopterus* (Barari), *Wallago attu* (Dara), *Cirrhinus reba* (Rewa), *Gudusia chapra* (Nayani), *Macrognathus aral* (Kevyi), *Mystus cavasius* (Bangur), *Salmostoma bacaila* (Dhalo), *Rasbora daniconius* (Kholsa), *Chanda nama* (Nekti), *Macrobrachium rosenbergii* (Jhinga), and *Ompok bimaculatus* (Tangusi).

These species represent a diverse array of ecological niches — from surface-dwelling plankton feeders like *Catla catla* to bottom-dwelling carnivores like *Wallago attu*. Economically important carp species (Catla, Rohu, Mrigal) dominate the fishery, while small indigenous species (SIS) like Pothiya (*Puntius sophore*), Kevyi (*Macrognathus aral*), and Glass fish (*Parambassis ranga*) play critical roles in maintaining ecosystem stability and serve as vital nutritional sources for marginalized communities (*Dahanukar et al., 2012*; *Das & Sharma, 2010*).

However, the ichthyofaunal diversity of Dhurde Tal faces increasing threats from anthropogenic pressures. Overfishing, particularly the indiscriminate harvesting of juveniles using fine-mesh nets, has led to a decline in the abundance of larger species (*Jha et al., 2019*). Agricultural runoff carrying pesticides and fertilizers, sedimentation due to soil erosion, and the conversion of wetland margins for agriculture are further deteriorating the habitat quality (*Bhatnagar & Devi, 2013; MoEFCC, 2021*). Additionally, seasonal drying and reduced hydrological connectivity to adjacent wetlands and river channels limit fish movement and spawning success.

Several studies across the Indo-Gangetic plains have emphasized the urgent need for conservation and sustainable utilization of small wetlands to protect freshwater fish biodiversity (*Lakra et al., 2010; Sarkar et al., 2017*). Unlike larger river systems, floodplain wetlands like Dhurde Tal act as critical breeding and nursery grounds for many commercially valuable and ecologically significant fishes. The loss of such wetlands could therefore have cascading effects on regional fisheries and ecosystem services.

Given this context, the present study was undertaken to systematically document the ichthyofaunal diversity of Dhurde Tal, assess the ecological significance of different species, and identify the emerging threats to their sustainability. The findings aim to provide baseline data essential for formulating effective conservation strategies, promoting community-based wetland management, and ensuring the sustainable development of inland fisheries in the Saran district Bihar.

II. MATERIALS AND METHODS

The present study was conducted at Dhurde Tal Wetland, located in Saran district of Bihar, during the year 2023. Surveys to document fish diversity were carried out during both the monsoon and winter seasons to maximize species detection. Various zones of the wetland, including deeper regions, shallow margins, and connecting channels, were selected for fish sampling. Fishes were collected using traditional fishing gears such as gill nets and drag nets, as well as local trapping methods (Lakra et al., 2010). The collected specimens were kept alive in water buckets and were identified on-site as far as possible.

Fish identification was performed based on morphological features such as body shape, coloration, fin structure, scale counts, and mouth orientation following standard taxonomic keys provided by Jayaram (2010), Talwar & Jhingran (1991), and Vishwanath et al. (2014). Scientific names and systematic classification were verified using the global FishBase database (Froese & Pauly, 2024). For each species, the common name, scientific name, order, family, genus, and economic value were recorded.

Basic water quality parameters, including water temperature, pH, and dissolved oxygen (DO), were measured on-site using portable meters to assess the influence of physicochemical conditions on fish distribution (APHA, 2017). Data collected from different sampling sites were systematically organized and analyzed comparatively to interpret the ichthyofaunal diversity pattern of the wetland.

Fig. 1 - Map showing the location of Dhurde Tal

IV. RESULTS AND DISCUSSION

A total of 21 fish species were recorded during the 2023 survey conducted at Dhurde Tal Wetland, Saran district, Bihar. The species were classified based on their order, family, genus, and scientific names. These species not only have high economic value but also play crucial roles in maintaining ecological balance within the wetland ecosystem.

The major fish species identified include: *Labeo rohita* (Rohu), *Catla catla* (Catla), *Clarias batrachus* (Garayi), *Puntius sophore* (Pothiya), *Mystus tengara* (Tangra), *Heteropneustes fossilis* (Singhi), *Anabas testudineus* (Patya), *Parambassis ranga* (Glass fish), *Glossogobius giuris* (Brigade), *Xenentodon cancila* (Golden fish), *Notopterus notopterus* (Barari), *Wallago attu* (Dara), *Cirrhinus reba* (Rewa), *Gudusia chapra* (Nayani), *Macrognathus aral* (Kevyi), *Mystus cavasius* (Bangur), *Salmostoma bacaila* (Dhalo), *Rasbora daniconius* (Kholsa), *Chanda nama* (Nekti), *Macrobrachium rosenbergii* (Jhinga – freshwater prawn), and *Ompok bimaculatus* (Tangusi).

Among these, species like Catla catla, Labeo rohita, and Wallago attu hold high commercial value, forming the backbone of local fisheries and rural livelihoods (*Lakra et al., 2010; Sarkar et al., 2017*). In contrast, small indigenous species (SIS) such as Puntius sophore (Pothiya), *Parambassis ranga* (Glass fish), and *Macrognathus aral* (Kevyi) contribute significantly to ecosystem stability by occupying various ecological niches (*Dahanukar et al., 2012; Jha et al., 2019*).

The diverse fish community structure highlights that Dhurde Tal supports a healthy aquatic food web, providing breeding, feeding, and nursery grounds essential for sustaining fish populations. However, anthropogenic pressures were clearly observed. Overfishing, particularly juvenile capture using fine mesh nets, along with agricultural runoff, siltation, and habitat alteration, were identified as significant threats to ichthyofaunal diversity (*Bhatnagar & Devi, 2013; MoEFCC, 2021*).

Comparative analysis indicates that small floodplain wetlands like Dhurde Tal are extremely sensitive to environmental changes compared to larger river systems. If current threats continue, small indigenous species could face localized extinction, leading to the collapse of wetland ecosystem services (*Sarkar et al., 2017; Lakra et al., 2010*).

Thus, urgent interventions are needed, including community-based management programs, sustainable fishing practices, habitat restoration initiatives, and awareness campaigns to conserve the rich fish diversity of Dhurde Tal Wetland.

The ichthyofaunal survey of Dhurde Tal Wetland recorded 21 fish species, exhibiting varied economic importance. Among these, species such as *Labeo rohita* (Rohu), *Catla catla* (Catla), *Wallago attu* (Dara), *Notopterus notopterus* (Barari), *Heteropneustes fossilis* (Singhi), *Clarias batrachus* (Garayi), and *Macrobrachium rosenbergii* (Jhinga) were categorized as high economic value fishes, widely preferred for commercial fisheries due to their larger size, market demand, and nutritional quality (Lakra et al., 2010; Sarkar et al., 2017). Other species like *Puntius sophore* (Pothiya), *Mystus tengara* (Tangra), *Anabas testudineus* (Patya), *Parambassis ranga* (Glass fish), *Macrognathus aral* (Kevyi), *Mystus cavasius* (Bangur), and others were categorized as moderate economic value species, contributing mainly to local subsistence fisheries, ecological stability, and rural food security (*Dahanukar et al., 2012; Jha et al., 2019*). Thus, Dhurde Tal Wetland supports a balanced assemblage of high and moderate value fishes, playing a vital role in sustaining rural livelihoods and maintaining aquatic biodiversity (*Jayaram, 2010; MoEFCC, 2021*).

Table 1: Fish Species recorded from Dhurde Tal wetland, Saran, Bihar.

Sl. No.	Common Name	Scientific Name	Family	Order	Species	Economic Value
1	Rohu	Labeo rohita	Cyprinidae	Cypriniformes	*Labeo rohita*	High
2	Catla	Catla catla	Cyprinidae	Cypriniformes	*Catla catla*	High
3	Garayi	Clarias batrachus	Clariidae	Siluriformes	*Clarias batrachus*	High
4	Pothiya	Puntius sophore	Cyprinidae	Cypriniformes	*Puntius sophore*	Moderate

5	Tangra	Mystus tengara	Bagridae	Siluriformes	*Mystus tengara*	Moderate
6	Singhi	Htereopneustes fossilis	Heteropneustidae	Siluriformes	*Htereopneustes fossilis*	High
7	Patya	Anabas testudineus	Anabantidae	Anabantiformes	*Anabas testudineus*	Moderate
8	Glass Fish	Parambassis ranga	Ambassidae	Perciformes	*Parambassis ranga*	Moderate
9	Brigade	Glossogobius giuris	Gobiidae	Perciformes	*Glossogobius giuris*	Moderate
10	Golden Fish	Xenentodon cancila	Belonidae	Beloniformes	*Xenentodon cancila*	Moderate
11	Barai	Notopterus notopterus	Notopteridae	Osteoglossiformes	*Notopterus notopterus*	High
12	Dara	Wallago attu	Siluridae	Siluriformes	*Wallago attu*	High
13	Rewa	Cirrhinus reba	Cyprinidae	Cypriniformes	*Cirrhinus reba*	Moderate
14	Nayani	Gudusia chapra	Clupeidae	Clupeiformes	*Gudusia chapra*	Moderate
15	Kevyi	Macrognatus aral	Mastacembelidae	Synbranchiformes	*Macrognatus aral*	Moderate
16	Bangur	Mystus cavasius	Bagridae	Siluriformes	*Mystus cavasius*	Moderate
17	Dhalo	Salmostoma bacaila	Cyprinidae	Cypriniformes	*Salmostoma bacaila*	Moderate
18	Khosla	Rasbora daniconius	Cyprinidae	Cypriniformes	*Rasbora daniconius*	Moderate
19	Nekti	Chanda nama	Ambassidae	Perciformes	*Chanda nama*	Moderate
20	Jhinga	Macrobrachium rosenbergii	Palaemonidae	Decapoda	*Macrobrachium rosenbergii*	High
21	Tangusi	Ompok bimaculatus	Siluridae	Siluriformes	*Ompok bimaculatus*	Moderate

V. CONCLUSION

Dhurde Tal Wetland, located in the Gangetic plain of Bihar, represents a vital seasonal floodplain ecosystem that supports rich ichthyofaunal diversity. The 2023 survey revealed a total of 21 fish species, including commercially valuable species such as

Labeo rohita (Rohu), *Catla catla* (Catla), *Clarias batrachus* (Garayi), *Puntius sophore* (Pothiya), and *Mystus tengara* (Tangra), as well as ecologically significant small indigenous species (SIS) like *Macrognathus aral* (Kevyi) and *Parambassis ranga* (Glass fish) (*Lakra et al., 2010*; *Dahanukar et al., 2012*).

The study highlights that Dhurde Tal's seasonal hydrology, nutrient-rich waters, and habitat diversity create favorable conditions for sustaining a wide range of fish species. However, anthropogenic pressures such as overfishing, siltation, agricultural runoff, and habitat alteration are posing serious threats to its ichthyofaunal richness (*Sarkar et al., 2017; Bhatnagar & Devi, 2013*). Without timely intervention, small indigenous species could face local extinction, resulting in disruptions to ecological stability and a loss of biodiversity services (MoEFCC, 2021).

There is an urgent need for an integrated conservation approach that includes community participation, promotion of sustainable fishing practices, restoration of natural habitats, and increased environmental awareness. Additionally, long-term biodiversity monitoring programs are essential to evaluate species populations and ecosystem health periodically (Jh*a et al., 2019; Lakra et al., 2010*).

This study provides a valuable baseline for future conservation planning, ecological research, and the sustainable management of wetland fisheries in

Bihar's floodplain ecosystems, underscoring the ecological and socio-economic significance of Dhurde Tal Wetland.

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