

## Ichthyofaunal Diversity of Tandula Reservoir in Balod District of Chhattisgarh

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**ABSTRACT:** The current study examines the ichthyofaunal variety of the Tandula Reservoir situated at Chhattisgarh state of India. It is roughly two kilometers from the Balod Collectorate. The dam project at the Tandula and Sukha Nala Rivers was Started in 1910 and completed in 1921. Total of 39 species of fishes had been identified out of which 8 species Comes under the order *Siluriformes*, 4 under *Anabantiformes*, 2 under *Osteoglossiformes*, *Synbranchiformes*, and *Perciformes*, and 1 species each of the remaining six orders make up the 39 species. The study was conducted in the year 2024, Out of all the above-mentioned species 31 Species was identified as least concern (LC), two as vulnerable (VU), three as near threatened (NT), and three as not evaluated (NE) According to IUCN lists.

**Keywords:** Biodiversity, Reservoir, IUCN, Species, Ichthyofaunal.

### INTRODUCTION

India's total marine and inland fish production stood at 175.45 lakh tonnes, which includes 131.13 lakh tonnes and 44.32 lakh tonnes from inland and marine sectors, respectively (Anon., 2022). According to the Department of Fisheries, Chhattisgarh, the state produces 6.52 lakh metric tonnes of fish in total (Anon., 2022-23), which are contributed by rivers (7.47 thousand metric tonnes), reservoirs (1.64 lakh metric tonnes), and ponds (5.88 lakh). The Balod district produces 34.171 thousand metric tons of fish in total (2022–2023), of which 32.6 thousand metric tonnes come from ponds and 712 thousand from reservoirs. The coordinates of Chhattisgarh are 80° 15' -84°20' E longitude and 17° 46'-24° 5' N latitude. The state has 1.593 lakh acres of abundant water resources at its disposal. Over half of it (0.852 lakh ha) is shared by reservoirs, with the other portion (0.741 lakh ha) being covered by ponds and the water flowing through several rivers (3,573 km). There has been good rainfall (1200–1600 mm).

Balod district is having reservoir as an abundant source of water resources along with rivers, tanks & ponds. Out of Kharkhra, Tandula and Gondli reservoir Tandula has having largest catchment area and a major source of water for Balod district which is now facing a decline in its biodiversity due to human activities like urbanization, dumping of commercial and industrial waste, and loss of habitat by a reduction in water

quality. Water supply for the nearby Bhilai Steel Plant as well as consumption by humans like drinking and agriculture is the reservoir's primary function. The other goal is fishing, which also contributes to the availability of Employment & the economy because fish are a key source of food for the villagers who live near the reservoir. It is the first dam in the area famous for its rich rice fields.

### MATERIAL AND METHODS

**Study area.** Tandula Dam is located in the Indian state of Chhattisgarh. About two kilometers from the Balod Collectorate, it is located in the Balod district. The dam project at the junction of the Tandula and Sukha Nala rivers was started in 1910 and completed in 1921. The reservoir length is 1796.263 meters (5893.25 feet) long. The reservoir is located meters above mean sea level at 20.703°N 81.218°E, with a surface area of 12.430 km<sup>2</sup>. It stands 76.5 meters tall. The reservoir is located at latitude 20° 43' 50.92" N and longitude 81° 12' 20.81" E.

**Fish data collection and identification.** For collection and determination of fish diversity in Tandula reservoir different nets like gill net, caste net, drag net and mosquito nets are used along with traps and hooks. Morphometric characters and taxonomical standards are used for identification of different species (Talwar and Jhingran 1991).



**Photo 1:** View of Tandula reservoir of balod district of Chhattisgarh.



**Photo 2:** Different fishing gears, crafts & methods used for fish collection.

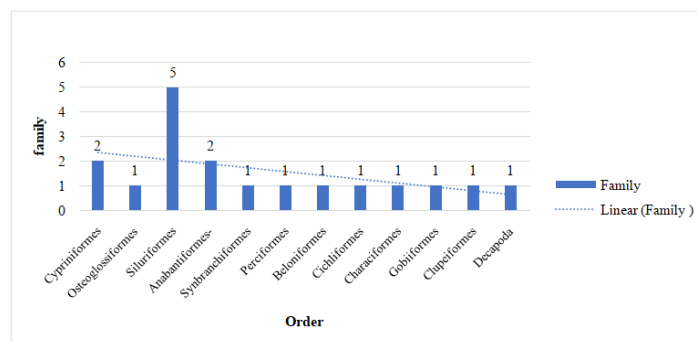
## RESULTS

From Tandula Reservoir, 39 fish species belonging to 13 families and 12 orders were discovered from the current study. Of the 39 species that have been identified, 31 are of least concern (LC), two are vulnerable (VU), three are Near Threatened (NT), and three have not been evaluated (NE). From the 39 species, 16 are members of the order *Cypriniformes*, 8 of the order *Siluriformes*, 4 of the order *Anabantiformes*, 2 of the each orders *Osteoglossiformes*, *Synbranchiformes*, and *Perciformes*, and 1 species each of the other 6 orders (Fig. 1).

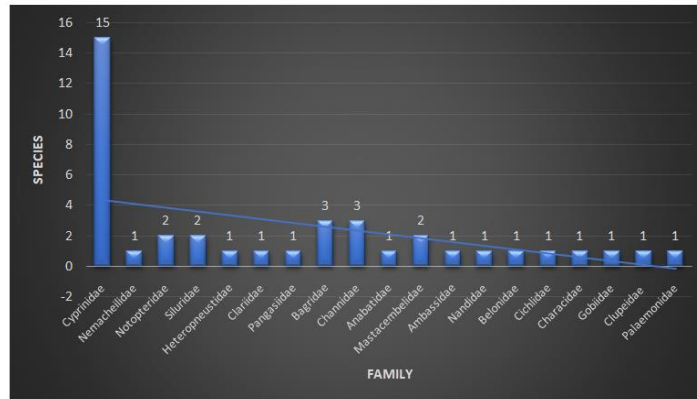
Out of all species family *Cyprinidae* has the greatest number of species which is 16 from which 4 species contribute to genus *Labeo*. Other than *Cyprinidae*, *bagridae* and *Channidae* are having 3,3 species each belong with *Siluridae* (2) species and *Notopteridae* (2) species. Remaining Other species belongs to families

other than mentioned above are having 1 species each (Fig. 2).

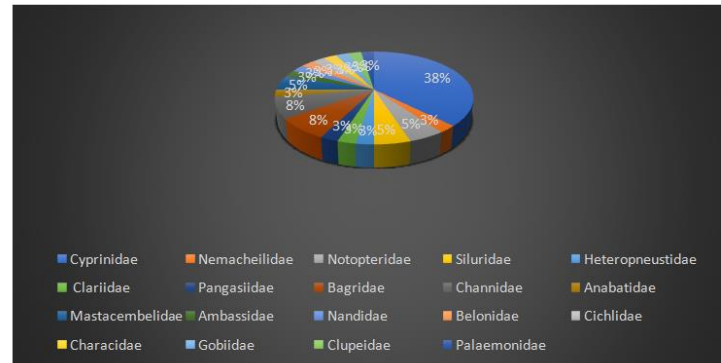
The family *Cyprinidae* contributed maximum share of 38.0% followed by *Bagridae* (8.0%), *Channidae* (8.0%), *Siluridae* (5.0%), *Notopteridae* (5.0%), *Nemacheilidae* (3.0%), *Heteropneustidae* (3.0%), *Pangasiidae* (3.0%), *Anabantidae* (3.0%), *Mastacembelidae* (3.0%), *Ambassidae* (3.0%), *Belonidae* (3.0%), *Cichlidae* (3.0%) *Claridae* (3.0%), *Nandidae* (3.0%), *Characidae* (3.0%), *Gobiidae* (3.0%), *Clupeidae* (3.0%) and *Palaemonidae* (3.0%) (Fig. 3). The most common fish species observed during the study were *Labeo catla*, *Channa striata*, *Cirrhinus mrigala*, *Wallago attu*, *Notopterus notopterus*, *Chanda nama*, *Cyprinus carpio*, *Oreochromis mossambicus* and *Anabas testudineus* (Fig. 3), comparable to the results of Niyazi *et al.* (2020). In Kharung Reservoir in Bilaspur District of Chhattisgarh.



**Fig. 1.** Order-wise contribution of fish families from Tandula reservoir.



**Fig. 2.** Family-wise contribution of fish species from Tandula reservoir.



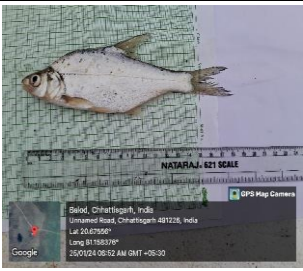






**Fig. 3.** Family-wise % contribution of the species from Tandula reservoir.

**Table 1: List of Fish diversity recorded from Tandula Reservoir, Balod.**

Order	Sr. No.	Scientific name	Local name	IUCN Red List Status
1. Cypriniformes	<b>I. Family- Cyprinidae</b>			
	1	<i>Puntius ticto</i>	Kotri	Least concern (LC)
	2	<i>Puntius sophore</i>	Kotri	Least concern (LC)
	3	<i>Puntius sarana</i>	Kotra	Least concern (LC)
	4	<i>Labeo catla</i>	Katla/Catla	Least concern (LC)
	5	<i>Labeo rohita</i>	Rohu	Least concern (LC)
	6	<i>Labeo calbasu</i>	Kalbaz / kannas	(LC)
	7	<i>Cirrhinus reba</i>	Borai	Least concern (LC)
	8	<i>Cirrhinus mrigala</i>	Mrigal	(LC)
	9	<i>Amblypharyngodon mola</i>	Mohroli	Least concern (LC)
	10	<i>Osteobrama cotio</i>	Chilhathi	(LC)
	11	<i>Hypophthalmichthys molitrix</i>	Silver carp	Near threatened (NT)
	12	<i>Ctenopharyngodon idella</i>	Grass carp	Not Evaluated (NE)
	13	<i>Cyprinus carpio</i>	Common carp	Vulnerable (VU)
	14	<i>Rasbora daniconius</i>	Dadhैया	Least concern (LC)
	15	<i>Salmophasia bacaila</i>	Sarangi	Least concern (LC)
2. Osteoglossiformes	<b>II. Family – Nemacheilidae</b>			
	16	<i>Nemacheilus botiya</i>	Rudw	Least concern (LC)
3. Siluriformes	<b>III. Family- Notopteridae</b>			
	17	<i>Notopterus notopterus</i>	Patola	Least concern (LC)
	18	<i>Notopterus chitala</i>	Patola	Near threatened (NT)
	<b>IV. Family- Siluridae</b>			
	19	<i>Ompok bimaculatus</i>	Pabda	Near threatened (NT)
	20	<i>Wallago attu</i>	Padhina	Vulnerable (VU)
	<b>V. Family- Heteropneustidae</b>			
	21	<i>Heteropneustes fossilis</i>	Singhi	Least concern (LC)
	<b>VI. Family-Clariidae</b>			
	22	<i>Clarias batrachus</i>	Mongri	Least concern (LC)



		<b>VII. Family- Pangasiidae</b>		
	23	<i>Pangasius pangasius</i>	Sawali	Least concern (LC)
		<b>VII. Family - Bagridae</b>		
	24	<i>Mystus (sperata) seenghala</i>	Tengna	Least concern (LC)
	25	<i>Mystus cavasius</i>	Desi Tengna	Least concern (LC)
	26	<i>Mystus(sperata) aor</i>	Singhada	Least concern (LC)
4. Anabantiformes		<b>VIII. Family – Channidae</b>		
	27	<i>Channa marulius</i>	Sawal	Least concern (LC)
	28	<i>Channa punctatus</i>	Bhunda	Least concern (LC)
	29	<i>Channa striata</i>	Khoksi	Least concern (LC)
		<b>IX. Family- Anabantidae</b>		
	30	<i>Anabas testudineus</i>	Keu	Least concern (LC)
5. Synbranchiformes		<b>X. Family- Mastacembelidae</b>		
	31	<i>Macrognathus punctatus</i>	Bami	Least concern (LC)
	32	<i>Mastacembelus armatus</i>	Bamb	Least concern (LC)
6. Perciformes		<b>XI. Family - Ambassidae</b>		
	32	<i>Chanda nama</i>	Chandaini	Least concern (LC)
		<b>XII. Family-Nandidae</b>		
	33	<i>Nandus nandus</i>	Bhedav	Not Evaluated (NE)
7. Beloniformes		<b>XIII. Family – Belonidae</b>		
	34	<i>Xenotodon cancila</i>	Shodhiya	Least concern (LC)
8. Cichliformes		<b>XIV. Family – Cichlidae</b>		
	35	<i>Oreochromis mossambicus</i>	Telpia / Tiger	Vulnerable (VU)
9. Characiformes		<b>XV. Family - Characidae</b>		
	36	<i>Astyanax bimaculatus</i>	Aamachani	Not Evaluated (NE)
10. Gobiiformes		<b>XVI. Family –Gobiidae</b>		
	37	<i>Glossogobius giuris</i>	chhuria	Least concern (LC)
11. Clupeiformes		<b>XVII. Family –Clupeidae</b>		
	38	<i>Gudusia chapra</i>	Chandaini	Least concern (LC)
12. Decapoda		<b>XVIII. Family – Palaemonidae</b>		
	39	<i>Macrobrachium rosenbergii</i>	jhinga	Least concern (LC)

		
<i>Osteobrama cotio</i>	<i>Oreochromis mossambicus</i>	<i>Wallago attu</i>
		
<i>Xenotodon cancila</i>	<i>Notopterus notopterus</i>	<i>Catla catla</i>
		
<i>Salmophasia bacaila</i>	<i>Mastacembelus armatus</i>	<i>Labeo calbasu</i>

**Photo 3:** Important fish species identified from Tandula reservoir, Balod.

## CONCLUSIONS

The study's findings showed that a large range of fish species can be found in Chhattisgarh's freshwater Tandula reservoir. Despite the fact that the reservoir contains a good amount of fish diversity, human activities like overfishing, the careless killing of both juvenile and adult fish, excessive water extraction, and pollution from household, industrial, and agricultural wastes all contribute to poor water quality, which negatively and permanently reduces the diversity of fish in the reservoir. Thus, it is critical that the finest conservation and rehabilitation techniques be used to protect these invaluable resources. Future research in the field can also be guided by the findings of this study.

## FUTURE SCOPE

The aim for this study was to examine the fish diversity and different parameters which affects their distribution therefore it's study leads to apply different methods for its conservation. Examination of Ichthyofaunal diversity is very important as it helps for further data collection and investigation, it also helps to examine the likely

vulnerable species which are going to be extinct in a particular water body. Study for biodiversity investigation also helps researcher on their new species identification.

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**Conflict of Interest.** None.

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