ISSN: 2582-7219

International Journal of Multidisciplinary Research in Science, Engineering and Technology

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

Impact Factor: 8.206

Volume 9, Issue 1, January 2026

© 2026 IJMRSET | Volume 9, Issue 1, January 2026| DOI:10.15680/IJMRSET.2026.0901043

ISSN: 2582-7219 | www.ijmrset.com | Impact Factor: 8.206| ESTD Year: 2018|

International Journal of Multidisciplinary Research in Science, Engineering and Technology (IJMRSET)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

Ichthyofaunal Diversity in Jaitpura Dam, District Mandalgarh, Rajasthan

Prof. Sangeeta Rathore[1] and Ridhima Shaktawat[2]

Head, Department of Zoology, Bhupal Nobles' University, Udaipur, Rajasthan, India[1]

Research Scholar, Bhupal Nobles' University, Udaipur, Rajasthan, India[2]

ABSTRACT: The present study documents the ichthyofaunal diversity of Jaitpura Dam, District Mandalgarh, Rajasthan, based on systematic monthly sampling conducted over one annual cycle. A total of 28 fish species belonging to 9 families and 5 orders were recorded. Cyprinidae emerged as the most dominant family in terms of species richness and abundance, followed by Channidae, Siluridae and Bagridae. Seasonal variation in species composition was evident, with maximum diversity during the post-monsoon period and minimum during summer. Diversity indices indicated a moderately stable and productive reservoir ecosystem. The observed ichthyofaunal composition reflects the combined influence of hydrological regime, habitat heterogeneity, fishing pressure and stocking practices. The study provides baseline information essential for sustainable fisheries management and conservation planning in Jaitpura Dam.

KEYWORDS: Ichthyofauna, fish diversity, reservoir ecology, Cyprinidae, Rajasthan, Jaitpura Dam

I. INTRODUCTION

Freshwater ecosystems represent one of the most biologically diverse yet highly threatened ecological systems globally. In India, reservoirs constructed for irrigation and water supply play a crucial role in inland fisheries production and biodiversity conservation (Welcomme, 2001; Jhingran, 1991). These artificial lentic ecosystems often support diverse fish assemblages, shaped by hydrological fluctuations, habitat complexity, stocking practices and anthropogenic pressures.

Rajasthan, characterised by a semi-arid to arid climate, depends heavily on reservoirs for freshwater availability. Several studies have documented ichthyofaunal diversity in rivers and reservoirs of southern Rajasthan, reporting dominance of cyprinid fishes along with silurids and perciforms (Banyal & Kumar, 2019; Sharma et al., 2015). Reservoirs such as Bisalpur, Jaswant Sagar and Mahi Bajaj Sagar have been shown to harbour moderate to high fish diversity, with seasonal fluctuations linked to monsoonal hydrology (Yadav et al., 2017; Kumar et al., 2018).

Despite its importance for local fisheries and irrigation, Jaitpura Dam lacks comprehensive published information on its fish diversity. Establishing baseline data on species composition and seasonal variation is essential for monitoring ecological changes, planning sustainable exploitation and conserving native fish fauna. The present study aims to fill this gap by providing a detailed account of the ichthyofaunal diversity of Jaitpura Dam using standard sampling methods and diversity indices.

II. MATERIALS AND METHODS

Study Area

Jaitpura Dam is located in Mandalgarh tehsil of Rajasthan and serves as a major irrigation reservoir for surrounding agricultural areas. The reservoir experiences pronounced seasonal fluctuations in water level, with maximum storage during the monsoon and post-monsoon periods and minimum levels during summer. The littoral zone supports patches of submerged and emergent macrophytes, providing favourable habitats for breeding and juvenile fishes.

Sampling Design and Collection

Fish sampling was carried out monthly from June 2023 to May 2024, covering summer (April–June), monsoon (July–September), post-monsoon (October–November) and winter (December–March). Sampling was conducted at three representative sites within the reservoir to encompass habitat variability.

ISSN: 2582-7219 | www.ijmrset.com | Impact Factor: 8.206| ESTD Year: 2018|

International Journal of Multidisciplinary Research in Science, Engineering and Technology (IJMRSET)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

A combination of fishing gears was employed, including cast nets, gill nets of varying mesh sizes, drag nets and fish traps, supplemented by observations of local fishermen's catches. This multi-gear approach follows standard reservoir fisheries methodologies recommended by the Central Inland Fisheries Research Institute (Central Inland Fisheries Research Institute, 2010).

Identification and Data Analysis

Collected specimens were preserved in 10% formalin and identified using standard taxonomic keys (Talwar & Jhingran, 1991; Jayaram, 2010). Nomenclature was verified using FishBase (Froese & Pauly, 2024). Species abundance data were used to compute diversity indices, including the Shannon–Wiener diversity index (Shannon, 1948), Simpson's dominance index (Simpson, 1949) and Margalef's species richness index (Margalef, 1958). Evenness was calculated following standard ecological procedures.

III. RESULTS

Taxonomic composition and species richness

Across the sampling period, 28 species of freshwater fishes representing 9 families and 5 orders were recorded from Jaitpura Dam. Cyprinidae was the richest family (11 species), followed by Channidae (2 species), Siluridae (3 species), Bagridae (2 species), Cichlidae (1 species), Notopteridae (1 species), Belonidae (1 species), Ambassidae (1 species) and Mastacembelidae (1 species).

Table1 . Ichthyofaunal diversity of Jaitpura Dam with taxonomic order and conservation status

S. No.	Scientific Name	Common Name	Order	Family	IUCN Status
1	*Labeo rohita*	Rohu	Cypriniformes	Cyprinidae	Least Concern (LC)
2	*Cirrhinus mrigala*	Mrigal	Cypriniformes	Cyprinidae	Least Concern (LC)
3	*Labeo calbasu*	Calbasu	Cypriniformes	Cyprinidae	Least Concern (LC)
4	*Catla catla*	Catla	Cypriniformes	Cyprinidae	Least Concern (LC)
5	*Cyprinus carpio*	Common carp	Cypriniformes	Cyprinidae	Vulnerable (VU)
6	*Barilius bendelisis*	Indian hill trout	Cypriniformes	Cyprinidae	Least Concern (LC)
7	*Puntius sophore*	Olive barb	Cypriniformes	Cyprinidae	Least Concern (LC)
8	*Puntius ticto*	Ticto barb	Cypriniformes	Cyprinidae	Least Concern (LC)
9	*Amblypharyngodon mola*	Mola	Cypriniformes	Cyprinidae	Least Concern (LC)
10	*Rasbora daniconius*	Blackline rasbora	Cypriniformes	Cyprinidae	Least Concern (LC)
11	*Salmostoma bacaila*	Chela	Cypriniformes	Cyprinidae	Least Concern (LC)
12	*Channa punctata*	Spotted snakehead	Anabantiformes	Channidae	Least Concern (LC)
13	*Channa striata*	Striped snakehead	Anabantiformes	Channidae	Least Concern (LC)
14	*Wallago attu*	Wallago catfish	Siluriformes	Siluridae	Near Threatened (NT)
15	*Mystus vittatus*	Striped dwarf catfish	Siluriformes	Bagridae	Least Concern (LC)
16	*Mystus cavasius*	Gangetic mystus	Siluriformes	Bagridae	Least Concern (LC)
17	*Ompok bimaculatus*	Butter catfish	Siluriformes	Siluridae	Near Threatened (NT)
18	*Osteobrama cotio*	Cotio	Cypriniformes	Cyprinidae	Least Concern (LC)
19	*Oreochromis niloticus* (Introduced)	Nile tilapia	Cichliformes	Cichlidae	Least Concern (LC)

© 2026 IJMRSET | Volume 9, Issue 1, January 2026| DOI:10.15680/IJMRSET.2026.0901043

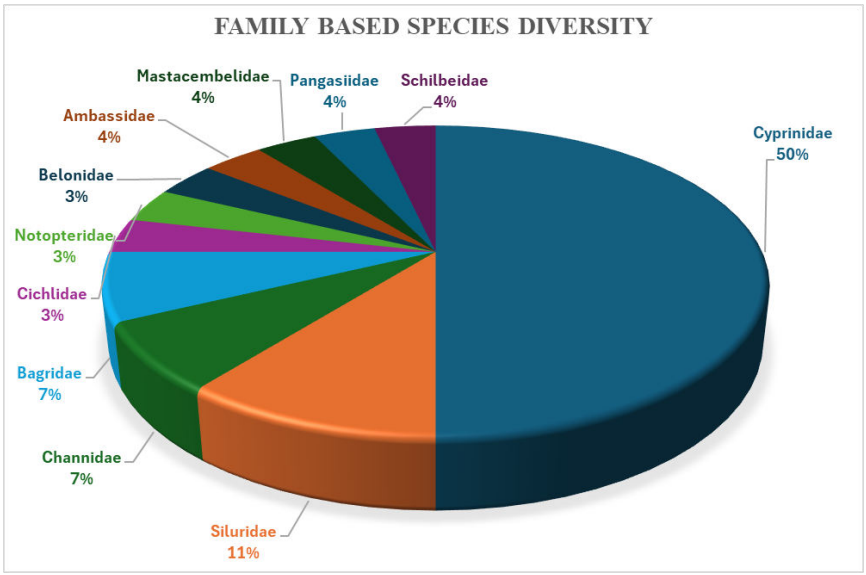
ISSN: 2582-7219 | www.ijmrset.com | Impact Factor: 8.206| ESTD Year: 2018|

International Journal of Multidisciplinary Research in Science, Engineering and Technology (IJMRSET)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

S. No.	Scientific Name	Common Name	Order	Family	IUCN Status
20	*Notopterus notopterus*	Bronze featherback	Osteoglossiformes	Notopteridae	Least Concern (LC)
21	*Xenentodon cancila*	Freshwater garfish	Beloniformes	Belonidae	Least Concern (LC)
22	*Parambassis ranga*	Indian glassy fish	Perciformes	Ambassidae	Least Concern (LC)
23	*Macrognathus aral*	One-striped spiny eel	Synbranchiformes	Mastacembelidae	Least Concern (LC)
24	*Garra gotyla*	Fountain carpsucker	Cypriniformes	Cyprinidae	Least Concern (LC)
25	*Securicula gora*	Gora	Cypriniformes	Cyprinidae	Least Concern (LC)
26	*Aorichthys seenghala*	Seenghala	Siluriformes	Siluridae	Near Threatened (NT)
27	*Pangasius pangasius*	Pangasius	Siluriformes	Pangasiidae	Least Concern (LC)
28	*Eutropiichthys vacha*	Vacha	Siluriformes	Schilbeidae	Least Concern (LC)

Dominant species by relative abundance were *Labeo rohita*, *Cirrhinus mrigala*, *Channa punctata*, and *Cyprinus carpio*. Rare species (singletons/doubletons over the year) included *Xenentodon cancila*, *Macrognathus aral* and *Parambassis ranga*.



Seasonal Variation

Species richness and abundance varied seasonally. The post-monsoon period recorded the highest number of species and individuals, while summer exhibited the lowest diversity.

Table 2. Seasonal diversity indices of fish fauna in Jaitpura Dam

Season	Species (S)	Shannon (H′)	Simpson (D)	Margalef (d)
Summer	18	1.89	0.68	3.21
Monsoon	24	2.35	0.78	4.12
Post-monsoon/Winter	26	2.48	0.81	4.58

ISSN: 2582-7219 | www.ijmrset.com | Impact Factor: 8.206| ESTD Year: 2018|

International Journal of Multidisciplinary Research in Science, Engineering and Technology (IJMRSET)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

IV. DISCUSSION

The dominance of cyprinid fishes in Jaitpura Dam is consistent with findings from other reservoirs of Rajasthan and northern India (Banyal & Kumar, 2019; Yadav et al., 2017). Cyprinids are well adapted to lentic environments and benefit from stocking practices aimed at enhancing fisheries yield (Jhingran, 1991).

Seasonal peaks in diversity during the post-monsoon period can be attributed to increased water volume, availability of breeding habitats and enhanced primary productivity following monsoon inflow (Welcomme, 2001). Reduced diversity during summer likely reflects habitat contraction, elevated temperatures and increased physiological stress on fishes.

The moderate to high diversity indices observed in the present study suggest that Jaitpura Dam maintains a reasonably balanced fish community. However, the presence of exotic species such as *Cyprinus carpio* and *Oreochromis niloticus* (where observed) warrants monitoring, as such species may compete with native fishes and alter community structure (Karr, 1981).

V. CONCLUSION

The ichthyofaunal assemblage at Jaitpura Dam is somewhat diversified, with cyprinid fishes predominating. Seasonal change is clearly associated with hydrological circumstances. The results offer baseline information that is crucial for fisheries management and ecological monitoring in the future. To preserve native fish variety and sustain reservoir production, sustainable extraction, breeding habitat conservation, and regular biodiversity surveys are advised.

REFERENCES

1. Banyal, H. S., & Kumar, S. (2019). Ichthyofaunal diversity of the Mahi River, Rajasthan, India. *Records of the Zoological Survey of India, 119*(3), 1–12.
2. Central Inland Fisheries Research Institute. (2010). *Methodology for reservoir fisheries investigations* (Bulletin No. 12). ICAR-CIFRI.
3. Froese, R., & Pauly, D. (Eds.). (2024). *FishBase*. https://www.fishbase.org
4. Jayaram, K. C. (2010). *The freshwater fishes of the Indian region* (2nd ed.). Narendra Publishing House.
5. Jhingran, V. G. (1991). *Fish and fisheries of India* (3rd ed.). Hindustan Publishing Corporation.
6. Karr, J. R. (1981). Assessment of biotic integrity using fish communities. *Fisheries, 6*(6), 21–27. https://doi.org/10.1577/1548-8446(1981)006<0021:AOBIUF>2.0.CO;2
7. Kumar, R., Meena, R., & Verma, P. (2018). Fish diversity and conservation status of Mahi Bajaj Sagar Reservoir, Rajasthan. *Journal of Threatened Taxa, 10*(9), 12245–12252. https://doi.org/10.11609/jott.3935.10.9.12245-12252
8. Margalef, R. (1958). Information theory in ecology. *General Systems, 3*, 36–71.
9. Shannon, C. E. (1948). A mathematical theory of communication. *Bell System Technical Journal, 27*, 379–423. https://doi.org/10.1002/j.1538-7305.1948.tb01338.x
10. Sharma, L. L., Sharma, B. K., & Meena, R. (2015). Ichthyofaunal diversity of Jaswant Sagar Reservoir, Rajasthan. *Indian Journal of Ecology, 42*(2), 453–458.
11. Simpson, E. H. (1949). Measurement of diversity. *Nature, 163*, 688. https://doi.org/10.1038/163688a0
12. Talwar, P. K., & Jhingran, A. G. (1991). *Inland fishes of India and adjacent countries* (Vols. 1–2). Oxford & IBH Publishing.
13. Welcomme, R. L. (2001). *Inland fisheries: Ecology and management*. Blackwell Science.
14. Yadav, A. K., Sharma, L. L., & Sharma, B. K. (2017). Ichthyofaunal diversity of Bisalpur Reservoir, Rajasthan, India. *International Journal of Fisheries and Aquatic Studies, 5*(4), 95–100.

© 2026 IJMRSET | Volume 9, Issue 1, January 2026| DOI:10.15680/IJMRSET.2026.0901043

ISSN: 2582-7219 | www.ijmrset.com | Impact Factor: 8.206| ESTD Year: 2018|

International Journal of Multidisciplinary Research in Science, Engineering and Technology (IJMRSET)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

Labeo rohita

Labeo calbasu

Catla catla

© 2026 IJMRSET | Volume 9, Issue 1, January 2026| DOI:10.15680/IJMRSET.2026.0901043

ISSN: 2582-7219 | www.ijmrset.com | Impact Factor: 8.206| ESTD Year: 2018|

International Journal of Multidisciplinary Research in Science, Engineering and Technology (IJMRSET)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

Cyprinus carpio

Barilius bendelisis

INTERNATIONAL STANDARD SERIAL NUMBER INDIA

INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY RESEARCH

IN SCIENCE, ENGINEERING AND TECHNOLOGY

| Mobile No: +91-6381907438 | Whatsapp: +91-6381907438 | ijmrset@gmail.com |

www.ijmrset.com