

Freshwater Fish Taxonomic Diversity from Godavari River, District Chhatrapati Sambhajnagar

Atul Kanbarao Kamble¹

¹Research Scholar, Department of Zoology, Malwanchal University, Indore

Publication Date: 2026/04/04

Abstract: Freshwater ecosystems are important in sustaining biodiversity and livelihoods, especially in semi-arid areas like Marathwada. Godavari River, the surrounding ponds, and reservoirs of Chhatrapati Sambhajnagar create a great habitat for fish species. The research purpose of the current study is to determine the taxonomic diversity, species composition, and distribution of freshwater fishes in these water bodies. The research design was to perform field sampling and secondary data analysis to record fish species and taxonomically classify them. The findings showed a diverse ichthyofaunal biomass comprising families like *Cyprinidae*, *Bagridae*, and *Channidae*. The fisheries of the area are mainly *Labeo rohita*, *Catla catla*, *Cirrhinus mrigala*, and catfish. According to previous research in the Godavari basin, there were almost 60 fish species, meaning that the area is very biodiverse. Nevertheless, the research also determines the major risks associated with anthropogenic processes that include pollution, the construction of dams, and overfishing, which negatively affect the fish diversity and distribution. Finally, the paper provides an emphasis on the environmental significance of freshwater ecological systems and the necessity of immediate conservation and sustainable management practices. The conservation of the fish diversity is important to provide ecological balance, improve the fisheries productivity, and secure long-term food security in the region.

Keywords: Freshwater Fish, Taxonomic Diversity, Godavari River, Marathwada, Ichthyofauna.

How to Cite: Atul Kanbarao Kamble (2026) Freshwater Fish Taxonomic Diversity from Godavari River, District Chhatrapati Sambhajnagar. *International Journal of Innovative Science and Research Technology*, 11(3), 3026-3028. <https://doi.org/10.38124/ijisrt/26mar1834>

I. INTRODUCTION

Among the most biologically diverse habitats are freshwater ecosystems, which support a great variety of aquatic organisms, especially fish. Fish diversity can be used as a valuable measure of ecological prosperity and the stability of the environment. Fish species also depend on rivers, ponds, and reservoirs as important sources of food and livelihoods (Dandawate and Lonkar 2014).

One of the river systems that is of great importance to the fisheries in Maharashtra is the Godavari River, commonly known as the Dakshin Ganga. The river and the water bodies within the Chhatrapati Sambhajnagar district support diverse species of freshwater fish. Reservoirs like Jayakwadi also have fish like *Rohu*, *Catla*, and *Mrigal*, which are major contributors to inland fisheries (Dahake, 2018).

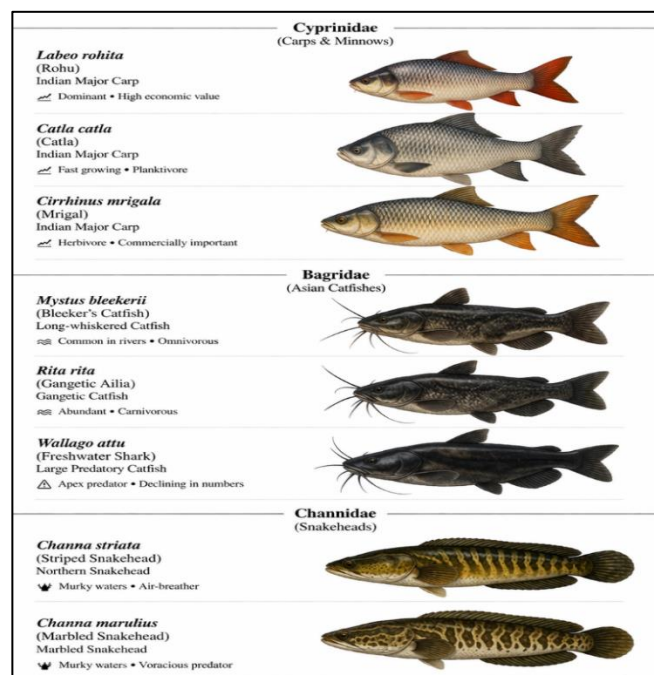


Fig 1 Fish Diversity and Conservation Status in the Godavari River Basin

II. LITERATURE REVIEW

Rivers and ponds constitute freshwater ecosystems, which have diverse fish communities that are dependent on the nature of the habitat and the environmental conditions. Flowing water, heterogeneity of habitats, and connectivity typically increase the species diversity in rivers, whereas ponds and reservoirs often harbor fewer species yet exhibit increased abundance of fishes of economic interest (FAO, 2022). Temperature, dissolved oxygen, pH, and seasonal changes in water flow are physicochemical parameters that have a strong effect on fish diversity. Moreover, biodiversity in the habitat, such as rivers, ponds, and reservoirs, is also a determining factor in species distribution (Jadhav and Babare, 2025).

III. METHODOLOGY

➤ Sampling Sites

To maximize the representation of the ichthyofaunal diversity, fish samples were taken in several freshwater habitats of the study area. The sampling areas covered different sections of the Godavari River, which is the major lotic (flowing water) ecosystem in the area. Furthermore, ponds and lakes located close to each other were also chosen as lentic water (standing water) systems in order to determine the diversity of the species in relatively stable aquatic systems. The reservoir tracts were also incorporated, especially the Jayakwadi reservoir as they have ecological and economic significance in sustaining the fish population. These various aquatic environments allowed comparing fish diversity in the various freshwater environments in the Chhatrapati Sambhajnagar district.

➤ Collection Methods

The collection of fish was done by the standard fishing method, which involved the use of cast net and gill net, which are very common in capturing different fish species in both flowing and stagnant water bodies. The sampling was conducted seasonally in order to consider the temporal variation in the composition and abundance of the species since the fish diversity tends to change according to variations in the water supply, temperature and breeding periods. The local fishermen traditional knowledge and experience were also utilized alongside the direct sampling techniques to determine the fishing locations, species presence, and information on the seasonal availability of the fish and hence, increasing the accuracy and complexity of data gathered.

➤ Identification

Species of fish that were sampled during the research were determined by standard taxonomic keys and ichthyological guides. Morphological traits such as body shape, size, and color patterns were mostly used to identify them through thorough analysis. Special consideration was put on the structure of the fin, the number of dorsal, pectoral, pelvic, anal, and caudal fins, position, and type used as important parameters to identify closely related species. Also, scale patterns, their arrangement, size, and type (cycloid or ctenoid) were studied in detail. All these morphological parameters gave precision in classifying and identifying fish species in their respective taxonomic groups (HS et al, 2025).

➤ Data Analysis

The data that had been collected were systematically analyzed to determine the taxonomic diversity and distribution of freshwater fish species in the study area. The richness of the species was calculated by summing up the number of fish species known in each sampling site, which gives a measure of the biodiversity present in the river, ponds, as well as in the reservoir ecosystems. The dominance of families of fish was examined by determining the most common fish families in terms of species count and frequency of their occurrence, which assisted in the interpretation of ecological structure and major groups of taxa in the area. Moreover, all the identified species were taxonomically classified in hierarchical groups based on the standard ichthyological classification systems i.e. order, family, genus, and species. This detailed analysis helped to clearly understand the patterns of diversity of the freshwater fish and the predominant groups, as well as the general taxonomic structure of the freshwater fish in the aforementioned Godavari River basin in Chhatrapati Sambhajnagar district.

IV. RESULTS

➤ Taxonomic Composition

Table 1 represents the division of fish species into various orders and families living in the study area. The most common order is Cypriniformes (family Cyprinidae) with major species such as *Labeo rohita* and *Catla catla*, implying that it is common. Examples of siluriformes are catfish, including *Mystus* spp., and *perciformes*, consisting of fish like the *Channa punctata*, whose adaptability was considered. *Cichliformes* (Cichlidae) contains an introduced species of *Oreochromis mossambicus*. In general, the findings show moderate fish diversity with preeminence of economically valuable species.

Table 1 Taxonomic Classification of Freshwater Fish Species

Order	Family	Example Species
Cypriniformes	Cyprinidae	<i>Labeo rohita</i> , <i>Catla catla</i>
Siluriformes	Bagridae	<i>Mystus</i> spp.
Perciformes	Channidae	<i>Channa punctata</i>
Cichliformes	Cichlidae	<i>Oreochromis mossambicus</i>

➤ Species Diversity

Table 2 shows the varieties of freshwater fish species alongside their common names and habitat in the area under study. It demonstrates that species like *Labeo rohita* (Rohu)

and *Catla catla* (Catla) mostly exist in the river and reservoir systems, suggesting that they prefer flowing or large bodies of water. Those species are *Cirrhinus mrigala* (Mrigal) and *Oreochromis Nilotic* us (Tilapia), which are also commonly

present in ponds, indicating that they can live in stagnant water. *Wallago attu* (Freshwater shark) can be encountered

primarily in river environments, which corresponds with its need to have flowing and deep water.

Table 2 Diversity of Freshwater Fish Species and their Habitat Distribution

Species	Common Name	Habitat
<i>Labeo rohita</i>	Rohu	River/Reservoir
<i>Catla catla</i>	Catla	River
<i>Cirrhinus mrigala</i>	Mrigal	Pond
<i>Wallago attu</i>	Freshwater shark	River
<i>Oreochromis niloticus</i>	Tilapia	Pond

V. DISCUSSION

The diversity and distribution of freshwater fish have attracted massive research in various riverine and lakes ecosystems. Freshwater habitats carry a large share of the biodiversity throughout the world, and fish communities can be regarded as sensitive to environmental conditions (Abila, 2020).

Labeo rohita, *Catla catla*, and *Cirrhinus mrigala* are the large carp species prevailing in the inland water bodies because of the conducive ecological factors and their economic value in aquaculture. Jayaram (2010) also reported similar results, and it was noted that the *Cyprinidae* family provides the greatest percentage of fish diversity in Indian freshwater ecosystems. Boyd (2015) states that parameters dissolved oxygen, pH, temperature, and nutrient availability have a direct impact on fish survival, growth, and reproduction. Healthy fish populations are grown in good water, which facilitates high diversity and abundance, whereas polluted or degraded water bodies show low diversity and abundance. Likewise, as pointed out by Welcomme (2001), physicochemical features of water have a strong control on the structure of fish communities in rivers and floodplains.

VI. CONCLUSION

Freshwater ecosystems in the Godavari River basin, Chhatrapati Sambhajnagar, are a biologically productive area that carries a great variety of fish species and aquatic animals (Ghosh and Modak, 2022). Within this basin, there are a variety of habitats comprising rivers, tributaries, irrigation canals, ponds, and reservoirs, among others, each playing its part in the total biodiversity. The existence of diverse ecological niches will support the coexistence of diverse fish families, especially *Cyprinidae*, *Bagridae*, and *Channidae*, and these are quite prevalent in Indian freshwater systems. These fish species are important in the ecological balance of ecosystems, food webs, and a source of livelihood and local fisheries.

REFERENCES

[1]. Abila, S. (2020). An analyses of threats to the realisation of the united nations' sustainable development goals report 2019 in the light of the recent report of the global futures (ie the world wildlife fund) on the unfolding trends on the environment in nigeria and the globe-a call for

sustained global action. *JL Pol'y & Globalization*, 95, 38.

[2]. Boyd, C. E. (2015). *Water quality: An introduction*. Springer.

[3]. Dahake, S. (2018). Taming Godavari River: Navigating through religious, developmental, and environmental narratives. *Wiley Interdisciplinary Reviews: Water*, 5(5), e1297.

[4]. Dandawate, R. R., and R. S. Lonkar. "FISH BIODIVERSITY OF GODAVARRIVER AT KOPERGAON AND PRAVARA RIVER AT PRAVARA SANGAMIN DISTRICT AHMEDNAGAR, MAHARASHTRA, INDIA." *UTTAR PRADESH JOURNAL OF ZOOLOGY* 34.2 (2014): 109-112.

[5]. FAO. (2022). *The State of World Fisheries and Aquaculture*. Food and Agriculture Organization.

[6]. Ghosh, N., & Modak, S. (2022). MANJRA GODAVARI. Riverine Systems: Underst.;anding the Hydrological, Hydrosocial and Hydro-heritage Dynamics, 267.

[7]. HS, M., C, S., MB, K., & AM, S. (2025). Fish assemblage dynamics, tilapia invasion, trophic guilds, and conservation priorities in the hydrologically fragmented Vaigai River-Estuary continuum, India. *Thalassas: An International Journal of Marine Sciences*, 41(3), 153.

[8]. Jadhav, S. L., & Babare, M. G. (2025). A Study on Floating and Free-Floating Aquatic Macrophytes in the District of Dharashiv, Maharashtra.

[9]. Jayaram, K. C. (2010). *The freshwater fishes of the Indian region*. Narendra Publishing House.

[10]. Welcomme, R. L. (2001). *Inland fisheries: Ecology and management*. FAO & Blackwell Science.