

Assessment of Freshwater Fish Diversity in the Godavari River at Bhadrachalam Region, Telangana, India

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ABSTRACT

Freshwater ecosystems support rich biodiversity and provide essential ecological and economic services. The present investigation assessed freshwater fish diversity in the Godavari River at Bhadrachalam, Telangana. Fish samples were collected with the assistance of local fishermen using traditional fishing gears including cast nets, gill nets, drag nets, and bamboo traps. Specimens were identified using standard taxonomic keys. A total of 35 fish species belonging to 14 families and 8 orders were recorded. Cyprinidae represented the dominant family contributing nearly 40% of the total diversity. The Shannon–Wiener diversity index ($H' = 2.11$) indicated high species diversity in the study area. The findings highlight the ecological importance of the Godavari. River ecosystem and emphasize the need for conservation and sustainable fisheries management.

Keywords: Freshwater ecosystems, Godavari River, Bhadrachalam, Telangana, Fish diversity, Cyprinidae

INTRODUCTION

Freshwater ecosystems represent some of the most biologically diverse habitats on Earth. Rivers, lakes, streams, and wetlands support numerous aquatic organisms including fishes, invertebrates, and aquatic plants. Fish diversity is widely used as an indicator of aquatic ecosystem health because fish communities respond sensitively to environmental changes. India is recognized as one of the megadiverse countries in terms of freshwater fish fauna, largely due to its extensive river networks. The Godavari River, often referred to as the Dakshina Ganga, is the second longest river in India and supports a wide variety of aquatic biodiversity. The river flows through several states and supports millions of people through fisheries, irrigation, and domestic water supply.

MATERIALS AND METHODS

Study Area: The study was conducted in the Godavari River near Bhadrachalam in Bhadrachalam district of Telangana, India. The river in this region flows through a semitropical climate and supports diverse aquatic habitats including deep pools, shallow waters, sand beds, and vegetated banks. These habitats provide suitable conditions for fish diversity.

Sampling Strategy: Fish samples were collected from multiple sampling stations along the river stretch. Sampling was carried out with the assistance of local fishermen using traditional fishing gears including cast nets, gill nets, drag nets, and bamboo traps.

Identification of Fish Species: Fish specimens were identified based on morphological characteristics such as body shape, fin arrangement, scale pattern, and coloration. Standard taxonomic literature and identification manuals were used for species verification.

Data Analysis: Fish diversity was analyzed using the Shannon–Wiener Diversity Index (H'). Species richness, family-wise distribution, and order-wise distribution were also calculated.

RESULTS AND DISCUSSION

The results indicate that the Godavari River at Bhadrachalam supports considerable freshwater fish diversity. Cyprinidae was the most dominant family, which is consistent with previous studies conducted in Indian river systems.

Table 1: Family-wise distribution of fish fauna

Family	No. of Species
Cyprinidae	14
Bagridae	3
Channidae	3
Cichlidae	2
Ambassidae	2
Mastacembelidae	2
Notopteridae	2
Others	1 each

Table 2: Order-wise distribution of fish fauna

Order	No. of Species
Cypriniformes	14
Siluriformes	6
Perciformes	5
Anabantiformes	4
Synbranchiformes	2
Osteoglossiformes	2
Clupeiformes	1
Anguilliformes	1

Table 3: Checklist of fish species recorded in the study area

S. No	Scientific Name	Family
1	<i>Catla catla</i>	Cyprinidae
2	<i>Labeo rohita</i>	Cyprinidae
3	<i>Cirrhinus mrigala</i>	Cyprinidae
4	<i>Cyprinus carpio</i>	Cyprinidae
5	<i>Puntius ticto</i>	Cyprinidae
6	<i>Puntius sophore</i>	Cyprinidae
7	<i>Amblypharyngodon mola</i>	Cyprinidae
8	<i>Garra gotyla</i>	Cyprinidae
9	<i>Osteobrama cotio</i>	Cyprinidae
10	<i>Hypophthalmichthys molitrix</i>	Cyprinidae
11	<i>Hypophthalmichthys nobilis</i>	Cyprinidae
12	<i>Labeo calbasu</i>	Cyprinidae
13	<i>Labeo bata</i>	Cyprinidae
14	<i>Labeo fimbriatus</i>	Cyprinidae
15	<i>Mystus vittatus</i>	Bagridae
16	<i>Mystus tengara</i>	Bagridae
17	<i>Sperata seenghala</i>	Bagridae
18	<i>Clarias batrachus</i>	Clariidae
19	<i>Heteropneustes fossilis</i>	Heteropneustidae
20	<i>Wallago attu</i>	Siluridae
21	<i>Channa striata</i>	Channidae
22	<i>Channa marulius</i>	Channidae
23	<i>Channa punctata</i>	Channidae
24	<i>Oreochromis mossambicus</i>	Cichlidae
25	<i>Oreochromis niloticus</i>	Cichlidae
26	<i>Anabas testudineus</i>	Anabantidae
27	<i>Glossogobius giuris</i>	Gobiidae
28	<i>Parambassis ranga</i>	Ambassidae
29	<i>Chanda nama</i>	Ambassidae
30	<i>Mastacembelus armatus</i>	Mastacembelidae
31	<i>Macrogynathus pancalus</i>	Mastacembelidae
32	<i>Notopterus notopterus</i>	Notopteridae
33	<i>Chitala chitala</i>	Notopteridae
34	<i>Tenuulosa ilisha</i>	Clupeidae
35	<i>Anguilla bengalensis</i>	Anguillidae

The presence of economically important species such as *Catla Catla*, *Labeo rohita*, and *Cirrhinus mrigala* highlights the importance of the river for fisheries and local livelihoods. Predatory species such as *Channa* species indicate a balanced trophic structure within the ecosystem. However, anthropogenic activities including pollution, sand mining, and overfishing may threaten fish diversity if not properly managed.

Pattern, utilization, importance, threats and challenges. *Reviews in Fish Biology and Fisheries* 22(1): 1–20. doi:10.1007/s11160-011-9218-6.

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CONCLUSION

The present study recorded 35 fish species belonging to 14 families and 8 orders in the Godavari River at Bhadrachalam. The Shannon diversity index indicated high biodiversity in the river ecosystem. The findings provide baseline data for future ecological studies and highlight the need for conservation and sustainable fisheries management.

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