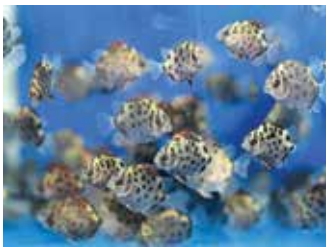
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Editor,
Fish Tech Digest



From the desk of Dean…

Dear esteemed Authors and Readers

It gives us immense pleasure to present this special issue of Fish Tech Digest, dedicated to the fisheries wealth, aquatic ecosystems, and coastal communities of Kanniyakumari District. Located at the southernmost tip of India, Kanniyakumari is blessed with diverse marine and inland aquatic resources that support livelihoods, biodiversity, and economic development.

This issue features insightful articles on the Ramsar wetlands of Vembannur and Suchindram–Theroor, the rich seaweed resources of Cape Comorin, and the vital role of Thengaipattinam Fishing Harbour in the marine fish export chain and coastal economy. Together, these contributions highlight the district's unique ecological and fisheries significance.

We are particularly pleased to showcase articles contributed by the faculty and students of St. Devasahayam Institute of Fisheries Science and Technology (DIFST), reflecting the institution's commitment to fisheries education, research, innovation, and sustainable development.

As the Blue Economy gains momentum, Kanniyakumari stands as a model where natural resources, traditional knowledge, scientific research, and community participation converge to create opportunities for sustainable growth. We hope this issue inspires readers to appreciate, conserve, and responsibly utilize these valuable aquatic resources for future generations.

I extend my heartiest congratulations to all the authors for their invaluable contributions. Your insights significantly enrich our collective academic knowledge and will undoubtedly inspire future research pathways. I trust that this issue of Fish Tech Digest will serve as a highly inspiring and practical resource for you all, as we continue to uphold our institutional benchmark for excellence in fisheries education, research, and community extension.

Best regards,
Prof. S. Felix
Chief Editor
Fish Tech Digest

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Exploring India's Aquatic Biodiversity: Newly Discovered and Newly Recorded Fish Species (2024)

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Abstract

India ranks among the globe's megadiverse nations and supports exceptionally rich aquatic life across freshwater, estuarine, and marine ecosystems. Extensive river networks such as the Ganga, Brahmaputra, Godavari, Krishna, and Cauvery, along with the adjoining Arabian Sea and Bay of Bengal, provide habitats for a highly diverse assemblage of fishes. According to the 2024 survey of the Zoological Survey of India (ZSI), 34 fish species were documented, including 23 species newly identified to science and 11 species newly recorded from Indian waters. Most of the newly described taxa were freshwater teleosts, primarily within Cypriniformes and Siluriformes, from Northeast Indian hill streams and Western Ghats river systems. Conversely, the newly recorded species were largely marine, comprising reef-associated and deep-sea fishes, which reflects faunal connectivity with the broader Indo-Pacific region. Many of the newly discovered species are presently categorized as Not Evaluated under IUCN criteria, indicating limited ecological data and the need for conservation assessment. These findings reinforce the importance of Northeast India as a centre of freshwater fish endemism and suggest that India's coastal and offshore environments still harbor undescribed biodiversity. Overall, the results emphasize the necessity for strengthened habitat protection, taxonomic research, and conservation evaluation to safeguard newly discovered species from ongoing habitat degradation.

Keywords: Aquatic biodiversity; conservation; freshwater fishes; India; Indo-Pacific connectivity; IUCN assessment; marine fishes; newly identified species; newly recorded species; Northeast India; Western Ghats; Zoological Survey of India (ZSI).

1. Introduction

India is globally recognized as one of the richest countries in terms of aquatic biodiversity, supporting an extraordinary range of freshwater, estuarine, and marine life. India is a megadiverse country with extensive freshwater and marine ecosystems. Major river systems such as the Ganga, Brahmaputra, Godavari, Krishna, and Cauvery, along with the Arabian Sea and Bay of Bengal, support rich fish diversity.

Newly identified species are those described for the first time, while newly recorded species are known globally but recorded for the first time in India from the Himalayan river systems and Northeast hill streams to the Western Ghats and the vast Indian coastline, aquatic ecosystems harbor thousands of species, many of which are endemic and still poorly understood.

According to the **Zoological Survey of India (ZSI) 2024 Survey**, a total of 34 fish species were documented, including 23 newly identified species (new to science) and 11 newly recorded species (new to India). Freshwater taxa dominated newly identified species, particularly from Northeast India and the Western Ghats, while newly recorded species were primarily marine and reef-associated.

2. Newly Identified Species and Newly Recorded

2.1 Newly Identified Fish Species (23)

The ZSI 2024 records indicate the identification of 23 fish species new to science from Indian freshwater and marine ecosystems (Table 1 & Fig 1). A large proportion of these discoveries originate from the **Northeast Indian river systems**, which are recognized as biodiversity hotspots due to their unique geography, isolation, and ecological diversity.

Newly Identified Species (23), which is Dominated by Teleostei (22 species) with one Elasmobranchii species (Squalus hima). Cypriniformes was the most dominant order, with high representation of Garra and Glyptothorax genera. Freshwater river systems accounted for over 56% of discoveries, mainly in Nagaland, Arunachal Pradesh, Meghalaya, and Manipur. Their discovery emphasizes the ecological uniqueness of these river basins and the presence of localized endemism.

New eel-like fishes belonging to the families Congridae and Ophichthidae were identified from coastal and estuarine environments, including Tamil Nadu and Odisha. These findings show that even well-known coastal zones continue to yield previously undescribed species.

Most newly identified fishes are currently classified as **Not Evaluated (NE)** under IUCN criteria, indicating that their conservation status has not yet been assessed. This underscores the need for ecological studies and conservation evaluation.

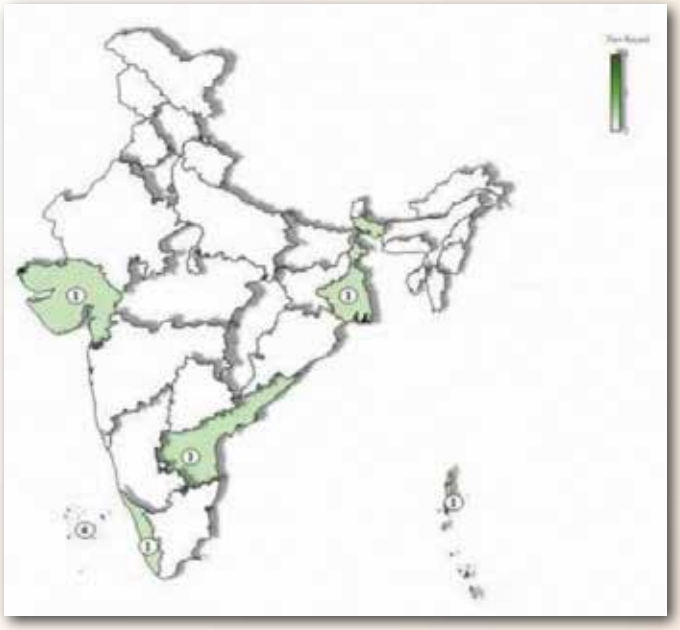


Fig. 1: Newly identified fish species from India (State wise)

Kingdom	Phylum	Class	Order	Family	Genus	Species
Newly Identified Species						
Animalia	Chordata	Teleostei	Cypriniformes	Danionidae	*Opsaius*	*Opasius siangi*
Animalia	Chordata	Teleostei	Cypriniformes	Cyprinidae	*Garra*	*Garra dohjei*
Animalia	Chordata	Teleostei	Cypriniformes	Cyprinidae	*Garra*	*Garra hexagonarostis*
Animalia	Chordata	Teleostei	Cypriniformes	Cyprinidae	*Garra*	*Garra Magnidiscus*

Animalia	Chordata	Teleostei	Cypriniformes	Cyprinidae	*Garra*	*Garra zubzaensis*
Animalia	Chordata	Teleostei	Cypriniformes	Cyprinidae	*Oreichthys*	*Oreichthys warjaintia*
Animalia	Chordata	Teleostei	Cypriniformes	Danionidae	*Opsarius*	*Opsarius mujnaiensis*
Animalia	Chordata	Teleostei	Cypriniformes	Nemacheilidae	*Indoreonectes*	*Indorenectes evezardi*
Animalia	Chordata	Teleostei	Cypriniformes	Nemacheilidae	*Indoreonectes*	*indorenectes kalsubai*
Animalia	Chordata	Teleostei	Cypriniformes	Nemacheilidae	*Indoreonectes*	*Indorenectes radhanagari*
Animalia	Chordata	Teleostei	Cypriniformes	Nemacheilidae	*Schistura*	*Schistura sonarengaensis*
Animalia	Chordata	Teleostei	Cypriniformes	Psillorhynchidae	*Psilorhynchus*	*Psilorhynchus kosygini*
Animalia	Chordata	Teleostei	Anguilliformes	Ophichthidae	*Apterichthus*	*Apterichthus nariculus*
Animalia	Chordata	Teleostei	Anguilliformes	Ophichthidae	*Ophichthus*	*Ophichthus suryai*
Animalia	Chordata	Teleostei	Anguilliformes	Congridae	*Ariosoma*	*Ariosoma gracile*
Animalia	Chordata	Teleostei	Anguilliformes	Congridae	*Ariosoma*	*Ariosoma kannani*
Animalia	Chordata	Teleostei	Anguilliformes	Congridae	*Ariosoma*	*Ariosoma anago*
Animalia	Chordata	Teleostei	Siluriformes	Sisoridae	*Exostoma*	*Exostoma sentiyonoae*
Animalia	Chordata	Teleostei	Siluriformes	Sisoridae	*Glyptothorax*	*Glyptothorax laosensis*
Animalia	Chordata	Teleostei	Siluriformes	Sisoridae	*Glyptothorax*	*Glyptothorax hymavatiae*
Animalia	Chordata	Teleostei	Siluriformes	Sisoridae	*Glyptothorax*	*Glyptothorax pongoensis*
Animalia	Chordata	Teleostei	Siluriformes	Sisoridae	*Glyptothorax*	*Glyptothorax zeiladensis*
Animalia	Chordata	Elasmobranchii	Squalliformes	Squallidae	*Squalus*	*Squalus hima*

Table.1 Newly Identified fish Species with their systemic position and IUCN Status

2.2 Newly Recorded Fish Species (11)

In addition to species new to science, ZSI 2024 documents ten fish species recorded for the first time from Indian or nearby regional waters (Fig. 2 & Fig. 3). These species were previously known from locations such as the Maldives, Sri Lanka, Red Sea, Southeast Asia, and the Pacific Ocean.

The newly recorded fishes include reef-associated species, benthic coastal fishes, and

deep-sea forms. Their presence in Indian waters indicates **biogeographic connectivity across the Indo-Pacific region**, suggesting that marine species distributions are broader than previously documented.

The documentation of a deep-sea sleeper shark species categorized as **Vulnerable (VU)** further highlights the conservation importance of offshore ecosystems and the need for monitoring deep-water biodiversity.

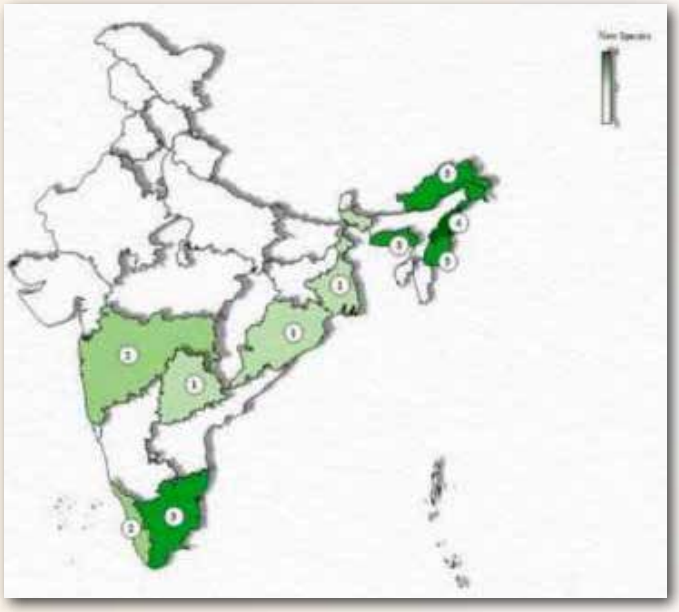


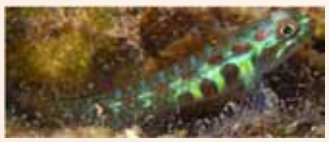
Fig. 2: Newly recorded fish species from India (State wise)



Bleekeria nigrilinea
Black-edged fin sandlance



Glyptoparus delicatulus
Delicate blenny



Eviota teresae
Terry's dwarfgoby



Coris latifasciata
Chagos coris



Eviota punyit
Punyit dwarfgoby



Pseudocheilinus evanidus
Striated wrasse



Dactyloptena tiltoni
Plain helmet gurnard



Scymnodon ichiharai
Japanese velvet dogfish



Laeops parviceps
Smallhead Flounder



Pomacentrus xanthocercus
Atoll Demoiselle



Ctenotrypauchen chinensis
Crested combgoy

Fig.3 Newly Recorded Fish species

3. Conservation Implications

The ZSI 2024 discoveries highlight urgent conservation needs:

- Protection of hill stream and river habitats in Northeast India.
- Conservation of estuarine and coastal ecosystems.
- Deep-sea biodiversity monitoring.
- Taxonomic and ecological research support.
- IUCN assessment of newly discovered species

Without proper habitat protection, species may decline or disappear before their ecology and conservation needs are fully understood.

4. Biodiversity Significance (ZSI 2024)

The ZSI 2024 data reveal several important ecological and conservation insights:

- Northeast India continues to be a major hotspot for freshwater fish discoveries.

- Southern coastal waters of India remain rich in undocumented marine biodiversity.
- Many newly discovered species lack conservation assessment (IUCN).
- Indo-Pacific faunal connectivity influences Indian marine biodiversity.
- Both freshwater and marine ecosystems still contain undescribed species.

These findings confirm that India's aquatic biodiversity inventory is still incomplete and requires continued exploration.

Conclusion

The Zoological Survey of India (ZSI) 2024 data demonstrate that India's aquatic ecosystems continue to yield significant biodiversity discoveries, including 23 newly identified fish species, 3 newly identified mollusc species, and several newly recorded species across marine and freshwater habitats. These findings reinforce the global importance of Indian rivers, coastal waters, and marine ecosystems as centers of biodiversity and endemism. At the same time, the large number of species categorized as Not Evaluated highlights gaps in conservation knowledge. Continued exploration, documentation, and protection of aquatic habitats are essential to safeguard this hidden biological wealth. The ZSI 2024 discoveries not only expand scientific understanding but also provide a strong foundation for biodiversity conservation and sustainable management of India's aquatic resources.

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