The Bioscan AN INTERNATIONAL QUARTERLY JOURNAL OF LIFE SCIENCES 21(2): S.I (2), 107-125, 2026 www.thebioscan.com

Comparative Assessment of Fish Species Diversity across Coastal and Inland Regions of Southern Tamil Nadu

S. Nirmala[1], K, Sofia Revathy[2], L. Jeyapraba[3]

[1,2,3] Department of Zoology and Research Center,
Sarah Tucker College (Autonomous),
Affiliated to Manonmaniam Sundaranar University,
Tirunelveli-627007, Tamil Nadu, India.
*Corresponding author Email Id: nirmalagunaseelan@gmail.com

DOI: https://doi.org/10.63001/tbs.2026.v21.i02.S.I(2).pp107-125

KEYWORDS
Fish market diversity, Southern Tamil Nadu, Feeding guilds, Sustainable fisheries

Received on:
13-02-2026
Accepted on:
09-03-2026
Published on:
07-04-2026

Abstract

Fish markets provide valuable, low-cost proxies for assessing regional biodiversity, trade dynamics, and exploitation patterns. The present study documents and compares fish species diversity in major markets of three ecologically distinct districts of southern Tamil Nadu—Kanyakumari (coastal), Tirunelveli (transitional), and Tenkasi (inland). Market surveys conducted from July to September 2025 recorded 22 fish species belonging to 20 families. Species were identified using scientific reference and morphological validation, and classified by taxonomic family, habitat preference, feeding guild, and conservation status. Marine species dominated overall market composition (77.8%), particularly in Kanyakumari, while Tirunelveli exhibited a mixed marine–freshwater assemblage and Tenkasi showed limited diversity dependent on transported marine catches. Carnivorous species constituted the dominant trophic guild (63%), indicating selective exploitation. Diversity indices revealed highest evenness and richness in coastal markets. The study highlights the utility of market-based surveys in identifying biodiversity patterns, trophic biases, and conservation concerns, emphasizing the need for diversified utilization and sustainable fisheries management in southern India.

Introduction

Fish and fisheries represent one of the most critical renewable resources globally, underpinning food security, nutritional equilibrium, and socioeconomic livelihoods. In India, the fisheries sector is a cornerstone of the economy, contributing approximately 1% to the national GDP and supporting direct or indirect employment for over 16 million individuals (NFDB, 2019). With an extensive coastline exceeding 7,500 km and diverse aquatic ecosystems encompassing marine, estuarine, and inland waters, India harbors more than 2,500 fish species, many of which sustain domestic consumption and export markets (Rout & Behera, 2025). Tamil Nadu, situated along the southeastern coast, emerges as a pivotal maritime state, boasting rich fishery resources from the Gulf of Mannar—a globally recognized biodiversity hotspot (Subramanian *et al*., 2022). This region's aquatic biodiversity

not only reflects ecological richness but also drives regional trade networks, where fish markets serve as vital indicators of resource exploitation, consumer preferences, and environmental health (Salim *et al.,* 2021).

The diversity of fish species in local markets encapsulates broader ecological dynamics, including habitat variability, trophic interactions, and anthropogenic influences. Market inventories provide accessible proxies for assessing biodiversity without intensive field sampling, revealing patterns in species richness, evenness, and functional composition (Magurran, 2013). For instance, habitat origins—marine, freshwater, or euryhaline—dictate market supply chains, with coastal areas typically dominated by pelagic and demersal marine taxa, while inland regions integrate aquaculture-derived freshwater species (Subramanian et al., 2022). Feeding guilds further illuminate exploitation biases; carnivorous species often prevail due to higher market value, potentially exacerbating trophic imbalances in source ecosystems (Sit *et al.,* 2021; Machahary, 2023). Taxonomic diversity at the family level, such as the prominence of Carangidae and Scombridae in marine catches, underscores evolutionary breadth and selective harvesting pressures (Rout & Behera, 2025).

Nationally, surveys in Andhra Pradesh and Telangana document a predominance of inland freshwater species like *Catla catla* and *Labeo rohita*, supplemented by marine imports via enhanced transport infrastructure (Salim *et al.,* 2021). In West Bengal, market analyses reveal 53 species across freshwater, exotic, and marine categories, illustrating the fusion of supply chains in non-coastal zones (Sit *et al.,* 2021). Kolkata's suburban markets show increasing diversity attributable to cold-chain advancements and consumer demand (Bej et al., 2024), while Punjab's inland markets incorporate frozen marine taxa, demonstrating geographic diffusion (Arjunsinh, 2024). Central Indian studies, such as those in Jabalpur, enumerate 34 edible freshwater species from 17 families, including exotics like *Oreochromis mossambicus* (Paunikar, 2024).

Habitat and trophic analyses in the literature consistently emphasize marine dominance in coastal markets (80% in Andhra Pradesh; Salim *et al.,* 2021) and carnivore-centric exploitation, aligning with preferences for predatory fishlike groupers and snappers (Machahary, 2023). This pattern risks ecosystem destabilization, as overharvesting apex predators disrupts food webs (Magurran,

2013). Taxonomic surveys report broad family representation—e.g., 30 families in Assam (Machahary, 2023)—but often with single-species dominance per family, signaling selective trade (Paygude *et al.,* 2025). Infrastructure and socioeconomic factors, including cold storage and price differentiation, further modulate diversity (NFDB, 2019; Bej *et al.,* 2024). However, persistent gaps include reliance on presence data over abundance, neglect of seasonal variations, and inconsistent ecological classifications (Salim *et al.,* 2021; Machahary, 2023). Notably, southern Tamil Nadu receives limited attention despite its ecological significance, with most research concentrated in northern and eastern states.

The need for this study arises from these identified lacunae, particularly in integrating market diversity with ecological and managerial perspectives in southern Tamil Nadu's contiguous districts: Tenkasi (inland, reliant on transported species), Tirunelveli (transitional, blending marine and freshwater), and Kanyakumari (coastal, marine-dominant). While prior works focus on natural habitats or isolated markets, few employ multidimensional frameworks encompassing taxonomy, habitats, feeding guilds, and quantitative indices like Shannon-Wiener and Simpson (Magurran, 2013). Market diversity here not only mirrors regional biodiversity hotspots like the Gulf of Mannar but also highlights vulnerabilities such as overreliance on marine captures amid climate-induced shifts and pollution (e.g., industrial influences in Tirunelveli). Addressing this gap is imperative for sustainable fisheries management, as market data can inform conservation strategies, enhance supply chain resilience, and promote underutilized species to mitigate trophic pressures. Moreover, with global calls for biodiversity preservation under frameworks like the Convention on Biological Diversity, localized baselines are essential for policy formulation, especially in biodiverse yet understudied regions like southern India.

The primary aim of this investigation is to document and comparatively analyze fish diversity in major markets across Tenkasi, Tirunelveli, and Kanyakumari districts. Specific objectives include: (1) Inventorying common and scientific names of encountered species; (2) Classifying species by taxonomic family, feeding habits (carnivorous, herbivorous, omnivorous, filter feeder), and habitat (marine, freshwater, brackish); (3) Comparing inter-district similarities, unique occurrences, and diversity patterns using ecological indices. Through this integrative approach, the study seeks to furnish scientific evidence supporting ecosystem-based management, market diversification, and

conservation initiatives in southern Tamil Nadu.

Methodology

This study employed a systematic, cross-sectional market survey design to document and comparatively analyze fish species diversity in the major fish markets of Tenkasi, Tirunelveli, and Kanyakumari districts in southern Tamil Nadu. The methodology integrated direct field observations, vendor consultations, taxonomic validation, and quantitative diversity metrics to ensure accuracy, reproducibility, and ecological relevance.

Study Area and Duration

The investigation was conducted across three ecologically and geographically distinct districts: Kanyakumari (coastal, with rich marine and estuarine habitats including the Gulf of Mannar and Manakudy estuary), Tirunelveli (transitional, featuring freshwater systems like the Tamirabarani River and associated ponds), and Tenkasi (inland, characterized by Western Ghats streams with limited direct coastal access). These districts were selected to capture gradients in habitat availability and market supply chains. Surveys were carried out over three months, from July to September 2025, to account for potential seasonal influences on fish availability and landings during the post-monsoon transition period.

Survey Design and Sampling Strategy

A purposive sampling approach was adopted to target high-turnover markets representative of regional fish trade. In each district, the central wholesale market and two prominent retail markets were selected, ensuring coverage of both bulk suppliers and consumer-facing outlets. This design facilitated comprehensive capture of marketed species diversity.

Data Collection Protocol

Data were gathered through direct observation during peak business hours (typically 5:00 AM to 9:00 AM), when fresh catches exhibit maximum variety. Prior verbal informed consent was obtained from fish vendors for photographing stocks and recording details. For each distinct fish type observed:

- Local (Tamil) names were recorded as provided by vendors, who served as key informants.
- High-resolution photographs were taken from multiple angles (lateral, dorsal, and frontal) to document morphological features such as body shape, fin structure, mouth position, and coloration.

Species Identification and Taxonomic Validation

Initial identification relied on local names and field morphology. Scientific nomenclature (genus and species) and family classification were subsequently validated by cross-referencing morphological characteristics and local names with authoritative resources, primarily the FishBase database (www.fishbase.org). This step addressed potential ambiguities where a single local name may correspond to multiple species or vice versa, ensuring taxonomic accuracy.

Ecological and Biological Data Compilation

For each confirmed species, additional attributes were compiled from peer-reviewed literature and FishBase:

- **Taxonomic family**
- **Feeding habits**: Classified into carnivorous, herbivorous, omnivorous, filter feeder, or ambush hunter
- **Habitat origin**: Marine (including sub-categories like pelagic or demersal where applicable), freshwater, or brackish/euryhaline

Habitat categories reflected the species' primary natural environment, irrespective of market origin.

Data Recording and Organization

All information was systematically entered into pre-designed datasheets, including fields for serial number, common name, scientific name, family, feeding habit, and habitat. A master dataset was compiled in Microsoft Excel, aggregating records from all three districts.

Diversity Indices Calculation

To quantify species diversity and enable inter-district comparisons, two widely used ecological indices were computed. These indices incorporate both species richness (number of species) and evenness (relative abundance), providing a more robust measure than richness alone.

The **Shannon-Wiener Diversity Index (H′)**, an information-theoretic measure sensitive to rare species, was calculated as:

$$H' = -\sum_{i=1}^{S} p_i \ln p_i$$

Shannon–Wiener Diversity Index (H′)

Where:

S = total number of species (species richness)

Pi = proportion of individuals belonging to

the i th species

Ni = number of individuals of species i

N = total number of individuals of all species

A higher H″ value indicates greater diversity, with values typically ranging between

1.5 (low diversity) and 3.5 (high diversity)

Simpson's Diversity Index (1 – D) Where:

$$D = 1 - \sum_{i=1}^{N}(p_i)^2$$

Pi= proportion of individuals of species iii (as defined above)

D = Simpson's Dominance Index (probability that two individuals randomly selected from a sample belong to the same species) • 1−D = Simpson's Diversity Index (probability that two individuals randomly selected belong to different species)

Values of 1 – D range from 0 to 1, where values closer to 1 indicate higher diversity.

Data Analysis

Data were analyzed using both qualitative (descriptive comparisons, compositional breakdowns) and quantitative (diversity indices) approaches. Descriptive statistics included total species richness, habitat and feeding guild proportions, and inter-district overlap (via Venn diagrams). Proportional representations were visualized using pie charts and bar graphs in Microsoft Excel. Comparative tables identified shared and unique species across districts.

Results

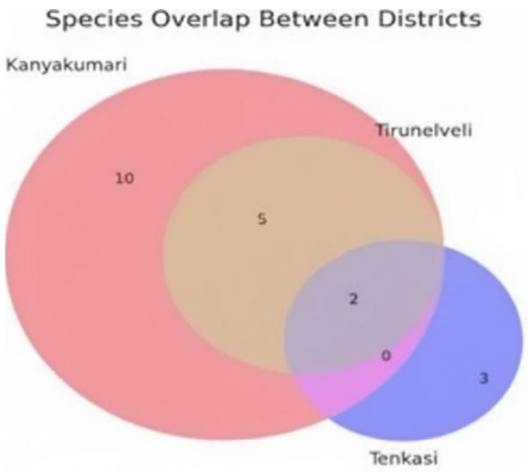
A total of **22 fish species** belonging to **20 families** were documented from the major fish markets across Kanyakumari, Tirunelveli, and Tenkasi districts during the survey period (July–September 2025).

Species Richness and Distribution: Species richness varied across districts as follows:

- **Kanyakumari**: 16 species (highest richness, predominantly marine)
- **Tirunelveli**: 9 species (mixed marine and freshwater composition)
- **Tenkasi**: 5 species (lowest richness, entirely marine)

The Venn diagram (Figure 1) illustrates species overlap: only two species (*Salmo salar* – commonly known as Sala Meen/Salmon, and *Thalassoma lunare* – Romeo Fish) were recorded in markets of all three districts. Kanyakumari exhibited the highest number of unique species.

Figure 1: Venn diagram showing overlap of fish species between Kanyakumari, Tirunelveli, and Tenkasi districts.



Habitat Composition

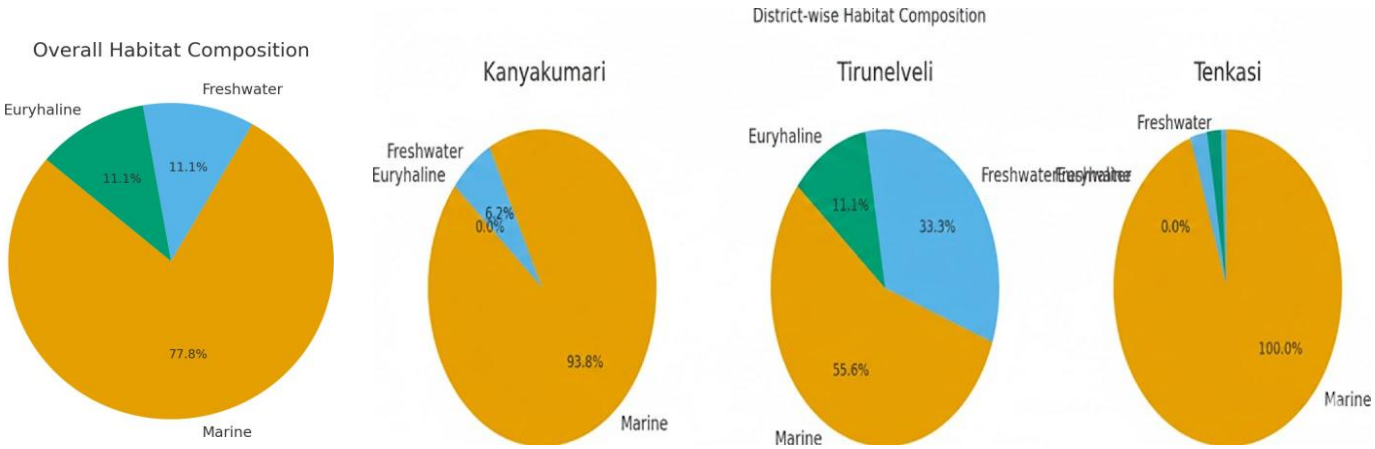
Overall habitat composition across all documented species:

- **Marine**: 77.8%
- **Freshwater**: 11.1%
- **Euryhaline/Brackish**: 11.1%

Table 1: District-wise Habitat Composition

District	Marine (%)	Freshwater/Euryhaline (%)
Kanyakumari	93.7	6.3
Tirunelveli	55.6	44.4
Tenkasi	100.0	0.0

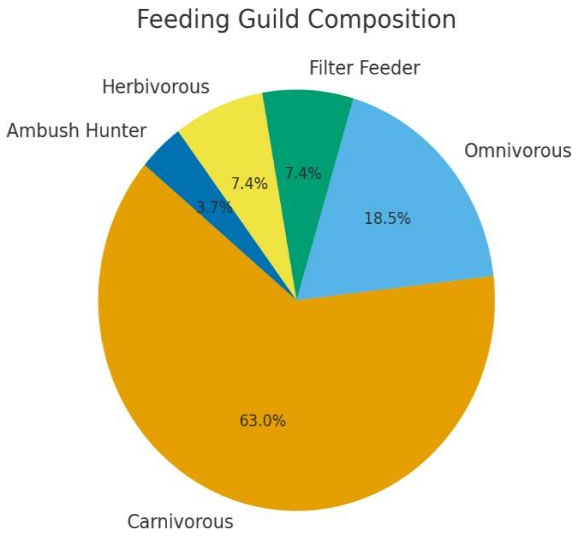
Figure 2: Pie chart of overall habitat composition of documented species, showing dominance of marine fishes (77.8%). Figure 3: Pie charts of district-wise habitat composition. (Kanyakumari and Tenkasi markets were dominated by marine species; Tirunelveli showed a mixed composition.)



Feeding Guild Composition: The documented species represented the following trophic (feeding) guilds:

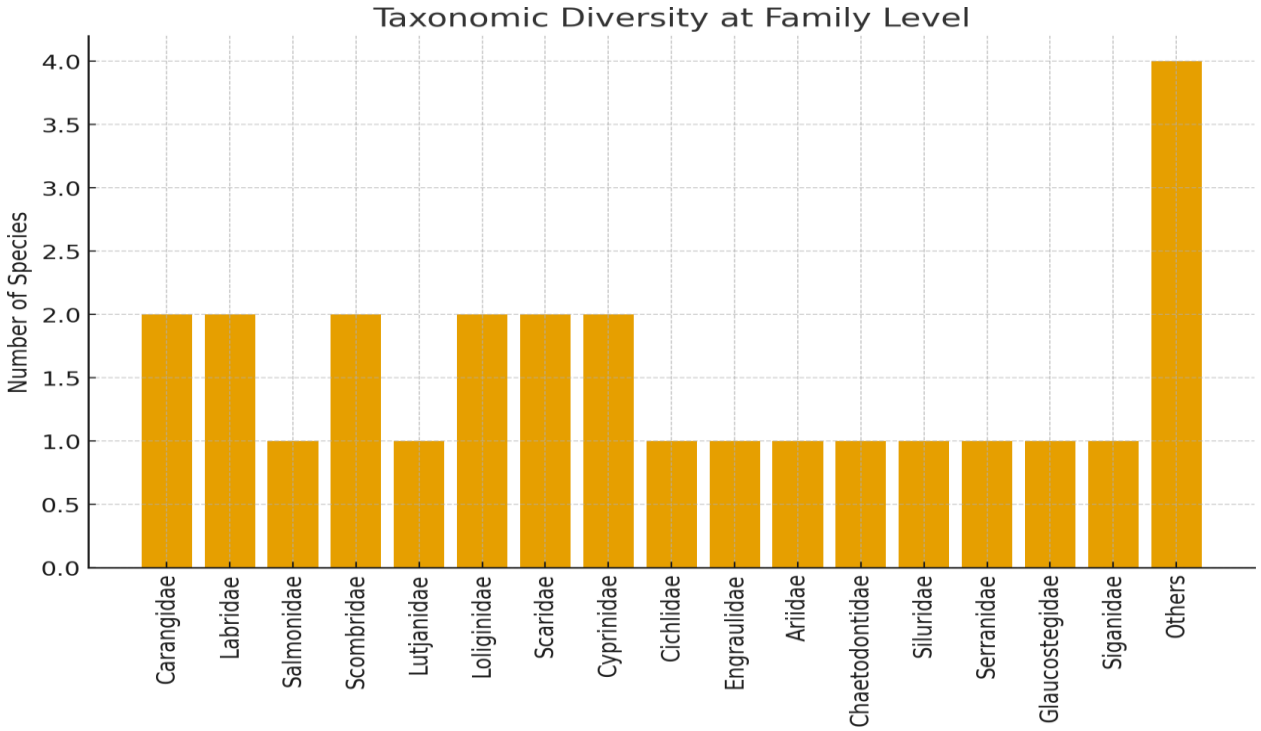
- **Carnivorous**: 63.0%
- **Omnivorous**: 18.5%
- **Filter feeder**: 7.4%
- **Herbivorous**: 7.4%
- **Ambush hunter**: 3.7%

Figure 4: Pie chart of feeding guild composition of documented species. (Carnivores were the most represented guild at 63%, followed by omnivores at 18.5%.)



Taxonomic Diversity

Figure 5: Bar chart of family-level taxonomic diversity, showing representation across 20 different families.



The 22 species belonged to **20 different families**, with no single family dominating the overall market catch. The most represented families included:

Carangidae (Parastromateus sp., Alepes dieclaba) – 2 species.
Labridae (Thalassoma lunare) – 1 species, widely distributed.
Scombridae (Thunnus sp., Rastrelliger kanagurta) – 2 species.
Salmonidae (Salmo salar) – 1 species, shared across districts.

Diversity Indices

Diversity indices were calculated for each district based on species occurrence and relative frequency across surveyed market stalls.

Table 2: District-wise Diversity Indices Values

District	Shannon–Wiener Index (H′)	Simpson's Diversity Index (1 – D)
Kanyakumari	2.77	0.94
Tirunelveli	2.20	0.89
Tenkasi	1.61	0.80

Relative frequency of species occurrence across market stalls was used as a proxy for abundance, as direct biomass estimation was beyond the scope of this market-based survey.

Plate 1: List of Encountered and Identified Fish Species

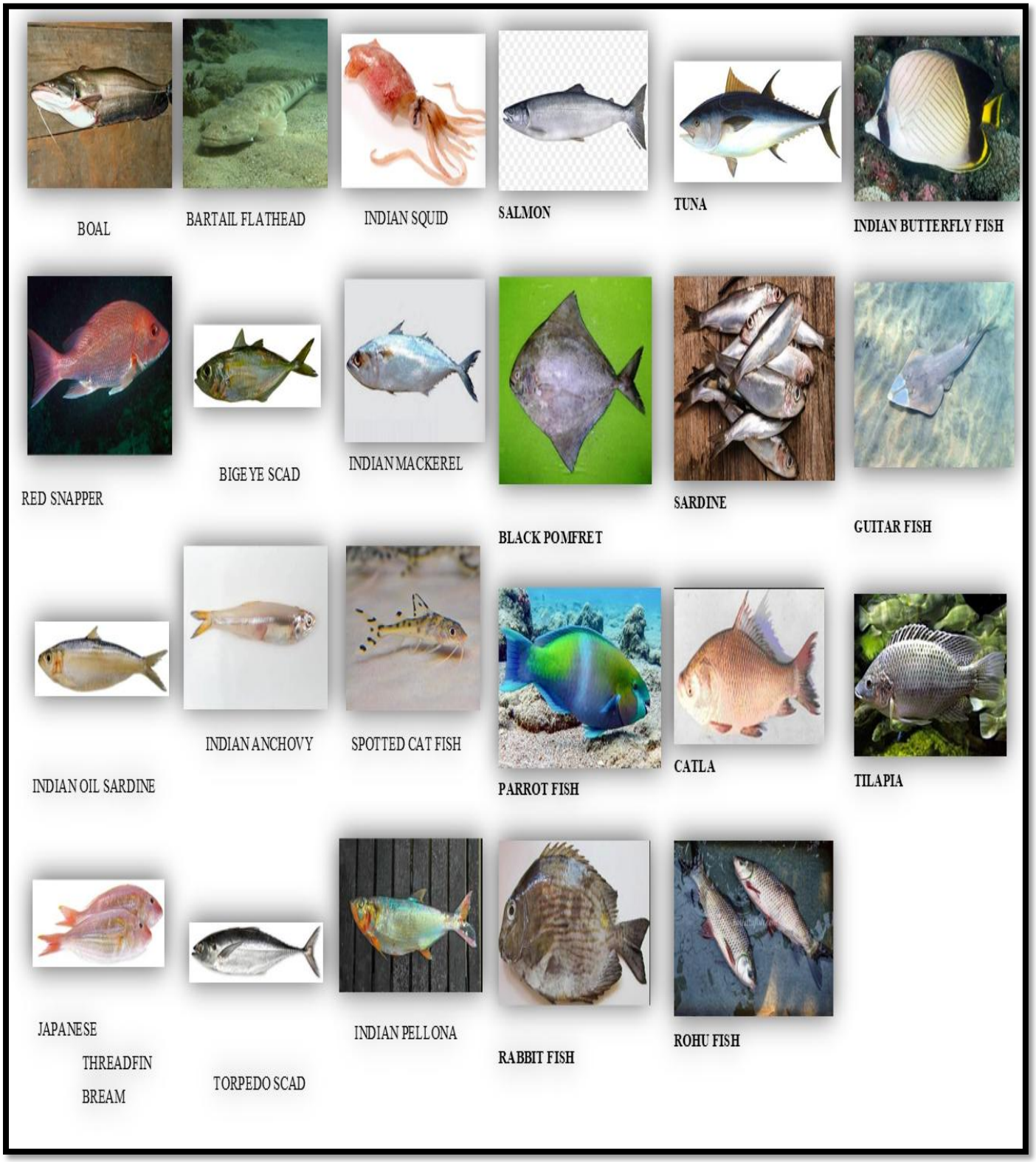


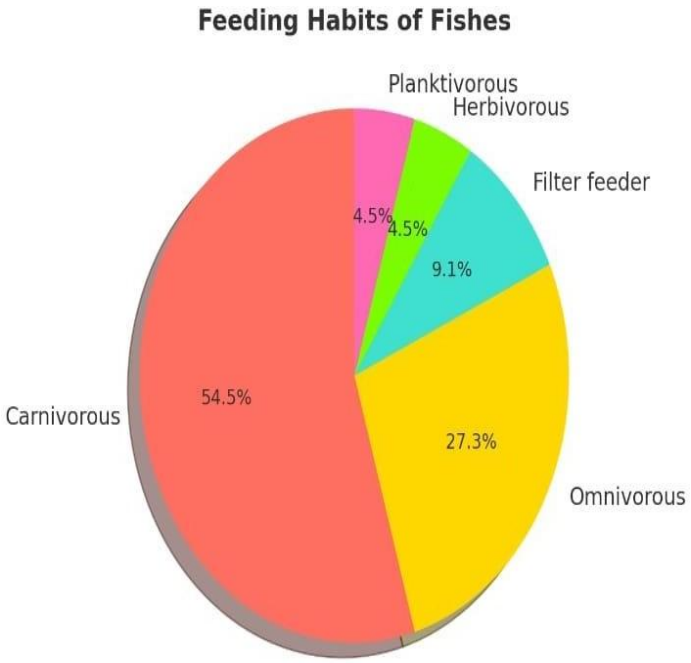
TABLE 3: IDENTIFIED FISH SPECIES AND IUCN STATUS -IUCN Red List, 2020

S.No.	ORDER	FAMILY	COMMON NAME	ZOOLOGICAL NAME	IUCN

1	Siluriformes	Siluridae	Boal	*Wallago attu*	VU
2	Perciformes	Platycephalidae	Bartail flathead	*Platycephalus indicus*	DD
3	Myopsida	Loliginidae	Indian squid	*Uroteuthis duvaucelii*	NE
4	Perciformes	Lutjanidae	Red snapper	*Lutjanus malabaricus*	LC
5	Scombriformes	Scombridae	Indian mackerel	*Rastrelliger kanagurta*	LC
6	Clupeiformes	Clupeidae	Indian oil sardine	*Sardinella longiceps*	LC
7	Perciformes	Carangidae	Bigeye scad	*Selar crumenophthalmus*	LC
8	Clupeiformes	Engraulidae	Indian anchovy	*Stolephorus indicus*	LC
9	Siluriformes	Ariidae	Spotted catfish	*Arius maculatus*	NE
10	Spariformes	Nemipteridae	Japanese threadfin bream	*Nemipterus japonicus*	LC
11	Carangiformes	Carangidae	Torpedo scad	*Megalaspis cordyla*	LC
12	Clupeiformes	Pristigasteridae	Indian pellona	*Pristigaster indicus*	LC
13	Salmoniformes	Salmonidae	Salmon	*Salmo salar*	NT
14	Scombriformes	Scombridae	Tuna	*Thunnus albacares*	NT
15	Acanthuriformes	Chaetodontidae	Indian butterflyfish	*Chaetodon mitratus*	LC
16	Perciformes	Stromateidae	Black pomfret	*Parastromateus niger*	LC
17	Rhinopristiformes	Rhinobatidae	Guitarfish	*Acroteriobatus variegatus*	CR
18	Labriformes	Scaridae	Parrotfish	*Scarus ghobban*	LC
19	Cypriniformes	Cyprinidae	Catla	*Catla catla*	LC
20	Cichliformes	Cichlidae	Tilapia	*Oreochromis mossambicus*	VU
21	Acanthuriformes	Siganidae	Rabbitfish	*Siganus canaliculatus*	LC
22	Cypriniformes	Cyprinidae	Rohu fish	*Labeo rohita*	LC

IUCN – International Union for Conservation of Nature, LC – Least Concern, NT – Near Threatened, VU – Vulnerable, EN – Endangered, CR – Critically Endangered, DD – Data Deficient, NE – Not Evaluated

Figure 6 : FEEDING HABITS AND HABITAT



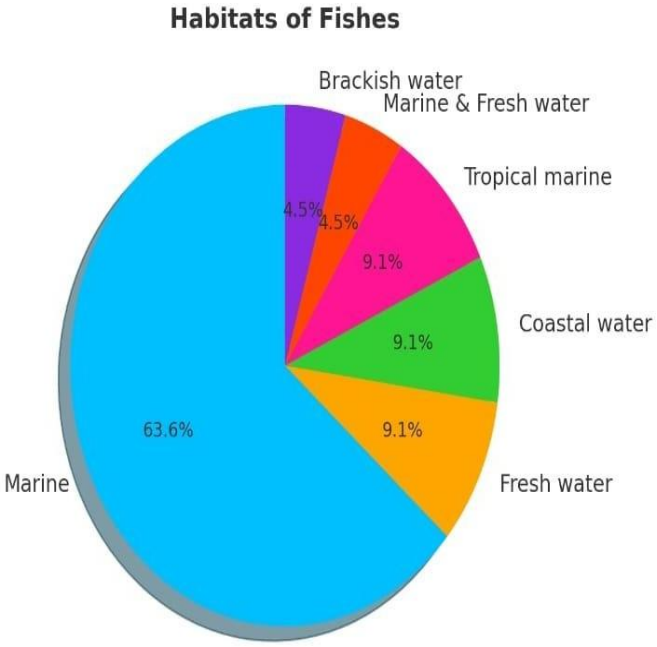


Table 4: Feeding Habits and Habitat

S.No.	COMMON NAME	SCIENTIFIC NAME	FAMILY	FEEDING HABITS	HABITAT
1	Boal	*Wallago attu*	Siluridae	Carnivorous	Freshwater rivers, lakes, ponds
2	Bartail flathead	*Platycephalus indicus*	Platycephalidae	Carnivorous	Marine, demersal
3	Indian squid	*Uroteuthis duvaucelii*	Loliginidae	Carnivorous	Marine, pelagic, neritic
4	Red snapper	*Lutjanus malabaricus*	Lutjanidae	Carnivorous	Tropical marine reefs
5	Indian oil sardine	*Sardinella longiceps*	Clupeidae	Filter feeder	Marine, coastal
6	Bigeye scad	*Selar crumenophthalmus*	Carangidae	Planktivore	Marine, pelagic
7	Indian anchovy	*Stolephorus indicus*	Engraulidae	Filter feeder	Coastal marine waters
8	Spotted catfish	*Arius maculatus*	Ariidae	Omnivore	Coastal waters, estuaries
9	Salmon	*Salmo salar*	Salmonidae	Carnivorous	Freshwater, anadromous marine
10	Tuna	*Thunnus albacares*	Scombridae	Carnivorous	Oceanic marine
11	Indian mackerel	*Rastrelliger kanagurta*	Scombridae	Omnivorous	Marine, pelagic schools
12	Japanese threadfin bream	*Nemipterus japonicus*	Nemipteridae	Carnivorous	Marine, demersal
13	Indian butterflyfish	*Chaetodon mitratus*	Chaetodontidae	Omnivorous	Coral reefs, marine
14	Torpedo scad	*Megalaspis cordyla*	Carangidae	Carnivorous	Marine inshore/offshore
15	Indian pellona	*Pristigaster indicus*	Pristigasteridae	Planktivorous	Tropical marine, brackish
16	Parrotfish	*Scarus ghobban*	Scaridae	Herbivorous	Coral reefs, marine
17	Catla	*Catla catla*	Cyprinidae	Zooplanktivore	Freshwater rivers, ponds
18	Tilapia	*Oreochromis mossambicus*	Cichlidae	Omnivorous	Freshwater, brackish
19	Rabbitfish	*Siganus canaliculatus*	Siganidae	Herbivorous/ Omnivorous	Marine reefs, seagrass
20	Rohu fish	*Labeo rohita*	Cyprinidae	Detritivore	Freshwater rivers, ponds

21	Black pomfret	*Parastromateus niger*	Stromateidae	Carnivorous	Marine, coastal
22	Guitarfish	*Acroteriobatus variegatus*	Rhinobatidae	Carnivorous	Marine, demersal

Discussion

The present study recorded a total of 22 fish species belonging to 20 families across the major markets of Kanyakumari, Tirunelveli, and Tenkasi districts, indicating moderate overall species richness in the regional fish trade. This number aligns with patterns observed in other Indian market surveys, where species counts typically range from 30–70 in mixed coastal-inland systems, influenced by supply chain connectivity and habitat proximity (Salim et al., 2021; Sit et al., 2021).

Kanyakumari exhibited the highest species richness (16 species), with 93.7% marine dominance, consistent with its direct access to the Gulf of Mannar—a recognized biodiversity hotspot supporting over 1,100 finfish species and extensive reef-associated fauna (Rout & Behera, 2025; Balaji et al., 2012, as cited in marine biodiversity reports). The Gulf of Mannar's coral reefs, seagrass beds, and estuarine systems facilitate high marine pelagic and demersal catches, explaining the elevated richness and marine proportion in Kanyakumari markets. In contrast, Tirunelveli's mixed composition (9 species; 44.4% freshwater/euryhaline) reflects integration of local riverine resources from the Tamirabarani River and aquaculture inputs, such as *Catla catla*, *Labeo rohita*, and *Oreochromis mossambicus*. Tenkasi's lowest richness (5 species; 100% marine) underscores its inland position and dependence on transported coastal catches, a pattern common in non-coastal Indian markets where infrastructure enables marine species diffusion but limits overall diversity (Paunikar, 2024).

Overall marine dominance (77.8%) across districts mirrors coastal-heavy supply chains in southern India, where the Gulf of Mannar and adjacent waters contribute significantly to commercial landings (Subramanian et al., 2022). The limited representation of freshwater (11.1%) and euryhaline (11.1%) species, particularly in inland markets, suggests underutilization of local riverine and aquaculture potential, despite Tamil Nadu hosting 226

documented freshwater species (Mogalekar & Jawahar, 2015).

Trophic guild analysis revealed a strong predominance of carnivorous species (63.0%), followed by omnivores (18.5%), with herbivores, filter feeders, and ambush hunters collectively underrepresented. This carnivore bias is consistent with consumer preferences for predatory marine fishes (e.g., snappers, mackerels, tunas) in Indian markets, as documented in West Bengal and Assam surveys (Sit et al., 2021; Machahary, 2023). Such selective exploitation can lead to trophic imbalances in source ecosystems, as overharvesting higher-level predators disrupts food-web stability (Magurran, 2013). The presence of key pelagic planktivores (e.g., *Rastrelliger kanagurta*, *Sardinella longiceps*) and benthic carnivores highlights a mix of trophic levels, but the skew toward carnivores warrants concern for long-term sustainability.

Taxonomic spread across 20 families, with minimal dominance (e.g., Carangidae and Scombridae at 2 species each), indicates broad evolutionary representation without heavy reliance on a few taxa—a positive sign compared to studies showing single-species family dominance (Machahary, 2023). However, the narrow representation in many families increases vulnerability to localized depletion.

Diversity indices reinforced these patterns: Kanyakumari showed the highest values ($H' = 2.77$; $1–D = 0.94$), indicating greater richness and evenness, while Tenkasi recorded the lowest ($H' = 1.61$; $1–D = 0.80$), reflecting concentration around common marine taxa. These values fall within typical ranges for moderately diverse Indian fish assemblages (2.0–3.5 for Shannon; Magurran, 2013), and align with market studies using similar occurrence-based calculations (Salim et al., 2021).

The only shared species across all districts (*Salmo salar* and *Thalassoma lunare*) highlight the role of imported and widely distributed taxa in linking markets. Limitations include reliance on presence data (rather than true abundance), absence of seasonal replication, and potential traceability issues for transported species.

Overall, the findings demonstrate that market diversity serves as a practical proxy for regional ecological status and trade dynamics in southern Tamil Nadu. The marine-carnivore dominance emphasizes the need for diversified harvesting, promotion of underutilized freshwater/omnivorous species, and

enhanced monitoring to support sustainable fisheries amid growing demand.

Conclusion and Future Directions

This study provides a comprehensive baseline assessment of fish market diversity in the three districts of Kanyakumari, Tirunelveli, and Tenkasi in southern Tamil Nadu, documenting a total of 22 species from 20 families. The results clearly demonstrate a strong marine dominance (77.8%), particularly in Kanyakumari (93.7%), coupled with a pronounced carnivorous feeding guild bias (63.0%), reflecting both the ecological richness of the Gulf of Mannar and prevailing consumer preferences for predatory marine fishes. Tirunelveli's mixed composition highlights the integration of local freshwater and aquaculture resources, while Tenkasi's limited diversity underscores its dependence on transported coastal catches. The calculated Shannon–Wiener ($H' = 1.61–2.77$) and Simpson's ($1–D = 0.80–0.94$) indices confirm moderate to high evenness in the most diverse market (Kanyakumari), offering a quantitative indicator of market structure and ecological connectivity across districts. These findings emphasize that fish markets serve as accessible proxies for regional biodiversity status, trade dynamics, and potential exploitation pressures, and highlight the urgent need for balanced utilization of marine, freshwater, and under-represented trophic groups to ensure long-term sustainability.

Future research should prioritize longitudinal monitoring with quarterly or seasonal sampling to capture temporal fluctuations in species composition and abundance. Incorporating quantitative abundance or biomass data, rather than presence-based records, would enable more precise diversity index calculations and dominance assessments. Additionally, molecular barcoding or traceability studies are recommended to accurately determine the origin of traded species (local vs. imported) and prevent mislabeling. Expanding the scope to include economic valuation, consumer preference surveys, and ecological impact assessments of selective harvesting will further support evidence-based fisheries management and policy formulation in this biodiverse yet understudied region of southern Tamil Nadu

References

1. Arjunsinh, P. N. (2024). In-depth analysis of fish markets in Punjab. Indian Ecological Society Journal.
2. Balaji, S., Patterson Edward, J. K., & Samuel, D. V. (2012). Coastal and

marine biodiversity of Gulf of Mannar, southeastern India: A comprehensive updated species list. Gulf of Mannar Biosphere Reserve Trust Publication No. 22.

3. Bej, A., Mistry, I., Basu, A., & Mondal, M. (2024). A study on fish marketing system in Kolkata and adjoining areas. International Journal of Fisheries and Aquatic Studies, 12(6), 1-6.
4. Dhusiya, A., & Gupta, S. K. (2023). Edible freshwater fish diversity across the fish market in Jabalpur City. The Pharma Innovation Journal, 12(9S), 181-164.
5. Machahary, H. (2023). A study on the diversity, marketing and conservation status of fish in district markets. Indian Journal of Fisheries and Aquaculture Studies, 24, 327-330.
6. Magurran, A. E. (2013). Measuring biological diversity (2nd ed.). Wiley-Blackwell. ISBN: 978-1-118-33607-6.
7. Mogalekar, H. S., & Jawahar, P. (2015). Freshwater faunal diversity in India. In Freshwater Biodiversity in India (pp. 45-67).
8. Nath, A. K., & Patra, A. (2023). Fish diversity in Hooghly District with respect to market availability. International Journal of Research and Analytical Reviews, 10(2), 56-65.
9. National Fisheries Development Board (NFDB). (2019). Fish & Fisheries of India: Introduction to fish and fisheries. Hyderabad: NFDB. https://nfdb.gov.in
10. Paunikar, S. (2024). Study on marine water food fish biodiversity across fish markets in Jabalpur City. Research Trend - Biodiversity Journal.
11. Paygude, P., et al. (2025). Species identification for Indian seafood markets. Data in Brief.
12. Raju, S. S., & Shyam, S. S. (2021). Market-structure analysis of fish markets in North Coastal India. Semantics Scholar Preprint. https://www.semanticscholar.org
13. Rout, S. S., & Behera, B. (2025). Marine fish diversity and nutritional insights from the East Coast of India. Journal of Basic and Applied Zoology, 86, 79. https://doi.org/10.1186/s41936-025-00500-2
14. Salim, S. S., Stanley, L., Athira, N. R., & Lakshmanadinesh, K. (2021). Species diversity across fish

markets in Andhra Pradesh and Telangana. Indian Journal of Economics and Development, 9, Article IJED-2021-4.

15. Sit, G., Jana, A., & Chanda, A. (2021). A study on fish diversity, marketing and economics in fish markets at Kharagpur, West Bengal, India. Bhartiya Krishi Anusandhan Patrika, 36(2), 112-119.
16. Subramanian, K., Natarajan, S., & Bose, R. (2022). How seafood wholesale markets matter for urban food and nutrition security: A case study from Chennai, India. Marine Policy, 138, 105004. https://doi.org/10.1016/j.marpol.2022.105004