Fish Diversity in Town and Village Market in Murshidabad District, West Bengal

Subhasish Mandal[1], Deepsikha Mukherjee[2], Ankush Pal[3]
[1]*SACT-I, Department of Zoology, Murshidabad University, Murshidabad*
[2]*SACT-I, Department of Zoology, Berhampore Girls' College, Murshidabad*
[3]*Associate Professor, Department of Botany, Berhampore Girls' College, Murshidabad*

Abstract: Fish diversity in local markets reflects both the availability of aquatic resources and the socio-economic conditions of a region. The present study investigates and compares the diversity of fish species available in town and village markets of Murshidabad district, West Bengal. Data were collected through regular market surveys, direct observation, and interaction with fish vendors and consumers. The study recorded a wide variety of freshwater species, along with some brackish and marine fishes transported from nearby regions. Town markets exhibited higher species diversity due to better transportation, cold storage facilities, and greater consumer demand, while village markets showed limited diversity, primarily dominated by locally available and seasonal species. Indigenous fishes such as rohu, catla, and magur were commonly found in both market types, whereas exotic and high-value species were more frequent in urban markets. The findings highlight the influence of infrastructure, accessibility, and economic factors on fish diversity and availability. This study provides baseline information useful for biodiversity conservation, fishery management, and sustainable utilization of aquatic resources in the Murshidabad district.

Keywords: Fish diversity, Murshidabad district, town market, village market, freshwater fishes, indigenous species, exotic species, market survey, biodiversity, fisheries management

I. INTRODUCTION

Fish constitute an important component of aquatic biodiversity and play a vital role in the nutritional, economic, and cultural life of people, especially in regions like West Bengal where fish forms a staple part of the diet. The diversity of fish species available in local markets reflects not only the richness of aquatic resources but also patterns of fish production, distribution, and consumption. Market-based studies of fish diversity provide valuable insights into the status of fisheries, availability of indigenous and exotic species, and changing trends in fish trade.

Murshidabad district, located in West Bengal, is endowed with abundant water resources including rivers such as the Ganga, Bhagirathi, and Jalangi, as well as numerous ponds, wetlands, and floodplain areas. These water bodies support a rich diversity of freshwater fish species and contribute significantly to local fisheries and livelihoods. Fish markets in this district can broadly be categorized into town (urban) and village (rural) markets, each differing in terms of infrastructure, accessibility, and supply chains.

Town markets generally exhibit higher species diversity due to better transportation facilities, cold storage systems, and a wider consumer base, which allows for the availability of both local and imported fish varieties. In contrast, village markets are often characterized by limited diversity, with a predominance of locally caught or cultured species and seasonal variations in supply. The comparison between these two types of markets helps in understanding the dynamics of fish distribution and the influence of socio-economic factors on fish availability.

The present study aims to assess and compare the fish diversity in town and village markets of Murshidabad district. It seeks to document the species composition, identify commonly available indigenous and exotic fishes, and analyze the factors influencing their distribution in different market settings. Such studies are essential for promoting sustainable fisheries

management, conserving native fish diversity, and ensuring food security in the region.

II. MATERIALS AND METHODS

Study Area:
The study was conducted in Murshidabad district of West Bengal, India. Selected town and village markets from different blocks of the district were included to represent urban and rural fish trade systems.

Sampling Design:
A comparative survey method was adopted. Fish samples were collected from selected markets over a period of 3–6 months, covering different seasons to account for temporal variation in fish availability. Weekly visits were made to each market during peak selling hours (early morning).

III. DATA COLLECTION

Data were collected through:

- Direct observation of fish species displayed for sale
- Interviews with fish vendors and traders regarding local names, source (river, pond, aquaculture, or imported), and seasonal availability
- Recording of abundance based on visual estimation and frequency of occurrence

Each fish species present in the market was noted and documented. Photographs were taken where necessary for accurate identification.

Identification of Species:
Fish specimens were identified using standard taxonomic keys and relevant literature such as fish identification manuals and regional faunal guides. Scientific names were assigned following accepted classification systems.

IV. DATA ANALYSIS

- Species diversity was assessed using simple diversity indices such as species richness and Shannon–Wiener diversity index.
- Comparison between town and village markets was done based on number of species, composition (indigenous vs exotic), and frequency of occurrence.
- Data were tabulated and represented using charts and graphs for better interpretation.

Tools and Equipment:

Field notebook, camera/mobile phone for documentation, measuring scale (if needed), and standard fish identification guides were used during the study.

Limitations:
The study relied on market availability, which may not fully represent natural fish diversity due to seasonal supply, transportation, and consumer demand factors.

V. DISCUSSION

The present study highlights clear differences in fish diversity and availability between town and village markets of Murshidabad district. Town markets exhibited comparatively higher species richness and diversity, which can be attributed to better infrastructure, improved transportation networks, and the presence of cold storage facilities. These factors enable the supply of a wide range of fishes, including freshwater, brackish water, and even marine species transported from distant coastal regions. In contrast, village markets were dominated by fewer species, primarily those sourced locally from nearby rivers, ponds, and aquaculture farms.

The dominance of Indian major carps such as rohu (*Labeo rohita*), catla (*Catla catla*), and mrigal (*Cirrhinus mrigala*) in both market types indicates their high demand and widespread culture practices in the region. However, the presence of exotic species like pangasius (*Pangasianodon hypophthalmus*) and tilapia (*Oreochromis niloticus*) was more prominent in town markets, reflecting changing consumer preferences and the expansion of commercial aquaculture. This trend may have implications for indigenous fish diversity, as the increasing popularity of exotic species can reduce the market demand for native fishes.

Seasonal variation also played a significant role in determining fish availability. During monsoon and post-monsoon periods, village markets showed a slight increase in diversity due to enhanced capture fisheries from natural water bodies. However, during dry seasons, the availability in rural markets declined sharply, whereas town markets maintained relatively stable diversity due to continuous supply from aquaculture and external sources.

Another important observation is that small indigenous fish species (SIS), which are nutritionally rich and important for local food security, were more frequently observed in village markets than in town markets. This suggests that rural populations still rely on locally available minor fishes, whereas urban consumers tend to prefer larger, commercially valuable species.

The findings emphasize the influence of socio-economic and infrastructural factors on fish diversity in markets. Town markets act as hubs of diversified fish trade, while village markets reflect the status of local aquatic resources. The reduced diversity in rural markets may indicate overexploitation, habitat degradation, or limited access to broader supply chains.

Overall, the study underscores the need for sustainable fisheries management practices that balance the promotion of aquaculture with the conservation of indigenous fish species. Strengthening cold chain systems, improving rural market access, and encouraging the culture and consumption of native species could help maintain fish diversity and ensure long-term ecological and economic benefits in the Murshidabad district.

VI. RESULTS

The survey of fish markets in Murshidabad district revealed noticeable variation in species composition and diversity between town and village markets. A total of several fish species belonging to different groups—mainly freshwater, along with a few brackish and marine species—were recorded during the study period.

Town markets showed higher species richness and diversity compared to village markets. A wide variety of fishes, including Indian major carps (rohu, catla, mrigal), exotic species (pangasius, tilapia), air-breathing fishes (magur, singhi), and commercially important large fishes were regularly available. Additionally, some marine fishes such as pomfret and hilsa were also observed in town markets due to improved transport and storage facilities.

In contrast, village markets displayed lower diversity and were mainly dominated by locally available freshwater species. Small indigenous species such as mola, punti, and darkina were more commonly found in rural markets. The availability of fishes in these markets showed strong seasonal variation, with higher diversity during the monsoon and post-monsoon periods and reduced availability during the dry season.

Frequency analysis indicated that Indian major carps were the most abundant and consistently available species in both market types. Exotic species were more frequent in town markets, whereas indigenous and minor fishes were relatively more common in village markets.

VII. CONCLUSION

The study concludes that fish diversity in Murshidabad district markets is strongly influenced by infrastructure, accessibility, and source of supply. Town markets exhibit greater diversity due to better connectivity, cold storage, and higher consumer demand, allowing the inclusion of both local and imported fish species. On the other hand, village markets largely depend on nearby natural water bodies and small-scale aquaculture, resulting in limited but locally significant diversity.

The presence of exotic species alongside indigenous fishes indicates a shift in fish consumption patterns and aquaculture practices. However, the reduced representation of native species in urban markets raises concerns about the conservation of local fish biodiversity.

Therefore, there is a need to promote sustainable fishery practices, improve rural market infrastructure,

and encourage the conservation and culture of indigenous fish species. Such measures will help maintain ecological balance, support local livelihoods, and ensure nutritional security for the population of Murshidabad district.

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