

Fish diversity and Socio-economic status of the fish traders at Notun bazar Fish market, Dhaka

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Abstract

The study aimed to assess the diversity of fish sold at the Notun Bazar fish market and the socio-economic conditions of the traders. Direct observations with 15-day intervals from August to October 2025 were used for data collection. In total 56 species of fish were recorded, where the freshwater fish species were dominant with the order Cypriniformes (32%) and Siluriformes (36%), followed by Perciformes (10%), Clupeiformes (9%), Decapoda (8%), Gobiiformes (2%), Osteoglossiformes (1%), Beloniformes (1%), Synbranchiformes (1%) respectively. The majority of recorded fish species (65.45%) were Least Concern, while 25.45% threatened and 9.09% exotic fish. The socio-economic study revealed that the fish trade was the primary source of livelihood for most fish traders. Half (50%) of traders' monthly income was between BDT 13,500 and 20,000, while only 15% of traders' monthly income was above BDT 30,000. About 55% of traders lived in temporary houses, marking their socio-economic vulnerability. The importance of interlinkages among fish diversity, the livelihoods of fish traders, and a holistic approach to fish diversity conservation, as well as socio-economic resilience in fish markets, has been underscored by this study.

Keywords: Fish diversity, Urban fish market, Socio-economic condition, Fish traders, Interlinkages.

INTRODUCTION

Fish and fisheries are integral components of in the nutritional, economic, and social lives of the people in Bangladesh (Shamsuzzaman *et al.*, 2020). In the fiscal year 2023-2024, the total fish production in Bangladesh was about 5.018 million Metric Tons (MMT) (DoF, 2022). Fish accounts for almost 60% of the total protein obtained from livestock sources in the Bangladeshi diet and are also the most price-efficient protein source for middle-class families (FAO, 2022). The fish provides essential nutrients such as omega-3 fatty acids, vitamin D, calcium, iodine, zinc. These are vital for the development of children, for the health of mothers, and for nutritional security (Byrd *et al.*, 2022). The fishing sector is one of the primary contributors to the GDP with around 2.53% contribution, and it provides livelihood to more than 20 million people either directly or indirectly through fishing, aquaculture, fishing trade, transport, processing, and marketing (DoF, 2022). Bangladesh is identified as one of those nations that possess high freshwater fish diversity, possessing more than 260 species of freshwater fishes found in various ecological niches (Haque *et al.*, 2026). Nevertheless, many of those species have already faced severe threats due to excessive fishing, loss of habitats, river regulation schemes, pollution, and climate change

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(IUCN, 2015). Urban fish markets constitute an important source for the estimation of the general fishery resources, as they form points of aggregation for fish caught from inland fishery, aquaculture, and marine ecosystems (Toufique *et al.*, 2018). In particular, it has been observed that the type of fish available at fish markets in cities differs with the seasons and is dependent upon supply chain, transport networks, and market demand (Belton and Thilsted, 2014). As a consequence, market-based study can be valuable in the estimation of the diversity and abundance of fish (Sarkar *et al.*, 2012).

Notun Bazar fish market is located in the north-eastern part of in Dhaka city is considered one of the major retail fish markets catering to a large urban population. Seasonal variation in species composition is particularly noticeable during the monsoon and post-monsoon periods, when increased water connectivity enhances fish availability (Rahman *et al.*, 2012). Fish diversity in this market is hence very instrumental in assessing the nutritional value and sustainability of urban food systems (FAO, 2022). Fish traders are also the key players in the fish chain, acting as a linkage between the fish suppliers and the fish consumers. The majority of fish traders rely on fish trading for a living, which makes them sensitive to economic fluctuations (Alam *et.al.*, 2010). The fish traders in Notun Bazar encounter quite a few problems, including the lack of ice and cold storage, poor sanitation, price fluctuation, electricity shortage and increasing operational cost. This causes post-harvest losses and the resultant loss of income, thereby impacting the livelihood of the traders (Flores *et.al.*, 2024). The aims of this study are 1. To document the different species of fish found in Notun Bazar Fish Market. 2. To assess seasonal variability in fish availability. 3. To examine the socio-economic conditions and identify significant constraints experienced by fish traders.

MATERIALS AND METHODS

The study was carried out at Notun Bazar fish market over a period of three months, from August 2025 to October 2025. Data were collected at 15-day intervals; a total of 20–25 fish vendors were regularly observed in the market during the study period. For the socio-economic survey, 20 fish traders were selected, and detailed information was collected through face-to-face interviews using a structured questionnaire. Selection of respondents was conducted using purposive sampling, focusing on traders actively involved in fish sales. Data was collected between the morning market hours of 7:00 AM and 9:00 AM, when the fish trade was observed to attain its peak. The collected data were compiled and organized using spreadsheet software. Fish diversity data were summarized in tables and simple descriptive formats, while socio-economic data were analyzed using descriptive statistics, such as frequencies and percentages, to interpret the livelihood conditions of fish traders.

RESULT AND DISCUSSION

Fish Diversity: During the study, a total of 56 fish species were identified (Table 1) from the market, representing a variety of taxonomic groups. Carp and carp-like fishes are abundant and in high demand, as evidenced by the order-wise analysis, which revealed

Siluriformes as the dominant order, accounting for 36% of all documented species, underscoring the commercial significance of catfishes in the regional fish trade. Cypriniformes, which made up 32% of the species. The dominance of the same orders has also been supported by Haque *et al.* (2026) and DoF (2022), who pointed out that Cyprinidae and Siluriformes form the backbone of the country's inland fisheries and fish markets in Bangladesh. While Perciformes, and Gobiiformes each contributed 12% of the total species, other groups like Clupeiformes (9%) and Decapoda (8%) were also well-represented (Fig.1). These groupings contained a number of freshwater fish that are frequently eaten. The least dominant orders were Beloniformes, and Synbranchiformes, each contributing 2% of the total fish species. Overall, the order-wise composition indicates that the fish diversity at Notun Bazar fish market is dominated mainly by freshwater fish groups, which play an important role in supporting the livelihoods of fish traders and meeting the protein demand of the urban population.

Table 1. Recorded Fish Species at Notun Bazar (Dhaka) During Study Period

Sl. No	Order	Family	Species	Local name	National status
1			<i>Johnius belangerii</i>	Lalpoya	LC
2	Acanthuriformes	Sciaenidae	<i>Pama pama</i>	Poya	LC
3		Anabantidae	<i>Anabas testudineus</i>	Koi	LC
4	Anabantiformes		<i>Channa marulius</i>	Gojar	EN
5			<i>Channa punctata</i>	Taki	LC
6		Channidae	<i>Channa striata</i>	Shol	LC
7		Osphronemidae	<i>Trichogaster fasciata</i>	Khalisha	LC
8	Aulopiformes	Synodontidae	<i>Harpodon nehereus</i>	Loitta	LC
9	Beloniformes	Belonidae	<i>Xenentodon cancila</i>	Kakila	LC
10	Carangiformes	Latidae	<i>Lates calcarifer</i>	Koral	LC
11	Cichliformes	Cichlidae	<i>Oreochromis niloticus</i>	Tilapia	NE
12			<i>Corica soborna</i>	Kachki	LC
13	Clupeiformes	Clupeidae	<i>Gudusia chapra</i>	Chapila	LC
14		Engraulidae	<i>Setipinna phasa</i>	Phaisa	LC
15		Clupeidae	<i>Tenualosa ilisha</i>	Ilish	LC
16			<i>Amblypharyngodon mola</i>	Mola	LC
17			<i>Aspidoparia morar</i>	Piyali	VU
18			<i>Cirrhinus cirrhosus</i>	Nola	LC
19			<i>Cirrhinus reba</i>	Tatkini	VU
20			<i>Ctenopharyngodon idella</i>	Grass carp	NE
21	Cypriniformes		<i>Cyprinus carpio</i>	Common carp	NE
22		Cyprinidae	<i>Hypophthalmichthys molitrix</i>	Silver carp	NE
23			<i>Hypophthalmichthys nobilis</i>	Bighead carp	NE
24			<i>Cyprinidae juvenile</i>	Carp juvenile	NE
25			<i>Labeo bata</i>	Bata	EN

26			<i>Labeo calbasu</i>	Kalibaus	NT
27			<i>Labeo catla</i>	Catla	LC
28			<i>Labeo rohita</i>	Rui	LC
29			<i>Systomus sarana</i>	Sarputi	CR
30			<i>Puntius sophore</i>	Puti	LC
31		Palaemonidae	<i>Macrobrachium rosenbergii</i>	Golda chingri	LC
32			<i>Metapenaeus</i> spp.	Mixed chingri	LC
33	Decapoda	Penaeidae	<i>Penaeus monodon</i>	Bagda chingri	LC
34			<i>Penaeus</i> spp.	Small chingri	LC
35			<i>Glossogobius giuris</i>	Bele	LC
36			<i>Odontamblyopus rubicundus</i>	Lal cheua	LC
37	Gobiiformes	Gobiidae	<i>Pseudapocryptes elongatus</i>	Cheua	LC
38	Kurtiformes	Nandidae	<i>Nandus nandus</i>	Meni	NT
39			<i>Chitala chitala</i>	Chital	EN
40	Osteoglossiformes	Notopteridae	<i>Notopterus notopterus</i>	Foli	VU
41		Scombridae	<i>Euthynnus affinis</i>	Tuna	LC
42	Scombriformes	Stromateidae	<i>Pampus argenteus</i>	Rupchanda	LC
43		Ailiidae	<i>Ailia coila</i>	Kajoli	NT
44		Sisoridae	<i>Bagarius bagarius</i>	Bagair	CR
45		Clariidae	<i>Clarias batrachus</i>	Magur	NT
46			<i>Chupisoma garua</i>	Fakila	VU
47		Ailiidae	<i>Eutropiichthys vacha</i>	Bacha	VU
48		Heteropneustidae	<i>Heteropneustes fossilis</i>	Shing	LC
49	Siluriformes		<i>Mystus cavasius</i>	Gulsha	LC
50		Bagridae	<i>Mystus vittatus</i>	Tengra	LC
51		Siluridae	<i>Ompok pabda</i>	Pabda	EN
52		Pangasiidae	<i>Pangasius pangasius</i>	Pangas	CR
53			<i>Rita rita</i>	Rida	EN
54		Ritidae	<i>Sperata aor</i>	Ayre	VU
55		Siluridae	<i>Wallago attu</i>	Boal	VU
56	Synbranchiformes	Mastacembelidae	<i>Mastacembelus armatus</i>	Baim	EN

Critically Endangered – CR, Least Concern – LC, Endangered – EN, Vulnerable – VU, Near Threatened – NT

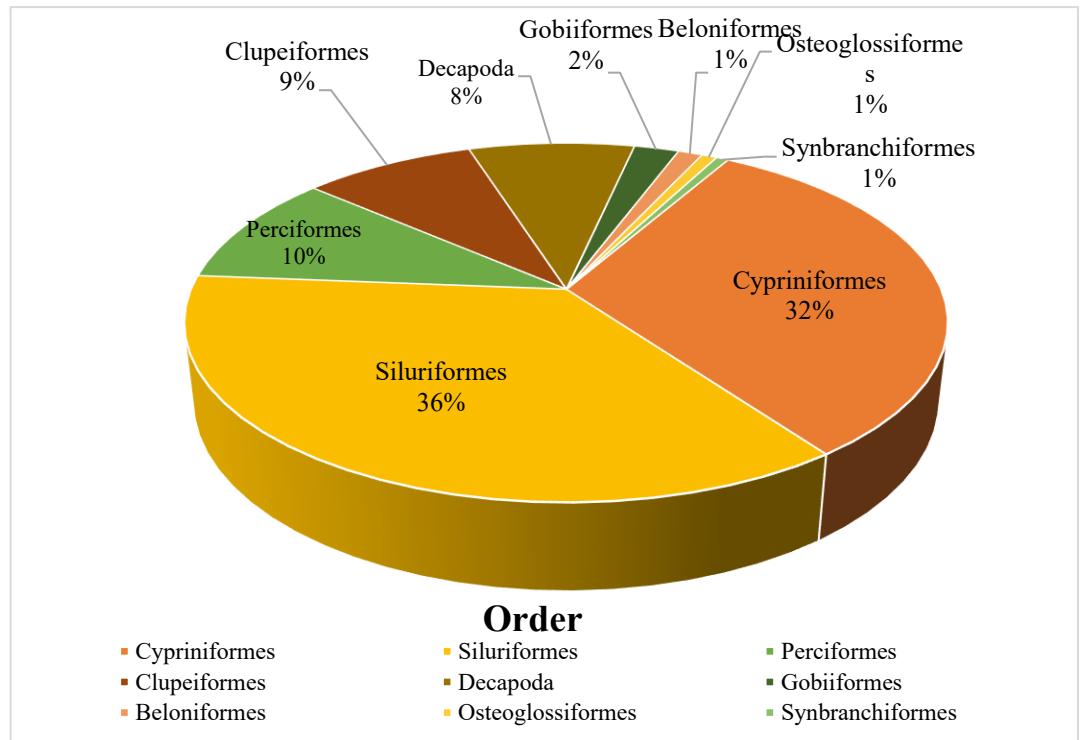


Fig. 1. Percentage of Fish Order during the Study Period

National Status: The conservation status analysis shows that the majority of recorded fish species were categorized as Least Concern (65.45%), indicating that the study area still supports a comparatively stable and suitable habitat for many common fish species. This reflects the availability of favorable environmental conditions and sufficient resources for sustaining dominant fish populations. However, the presence of species in the Critically Endangered (5.45%), Endangered (7.27%), and Vulnerable (9.09%) categories (Fig. 2) is a cause for concern. These threatened species are likely affected by factors such as overexploitation, habitat degradation, pollution, and changes in river flow. The occurrence of Near Threatened (3.64%) species further suggests the possibility of future declines if existing pressures persist. The record of exotic species (9.09%) indicates human-mediated introductions, which may pose ecological risks by competing with native species and altering natural ecosystem balance. Moreover, DoF (2022) reports that aquaculture has become a significant factor in offsetting declines in wild fish stocks. Overall, the findings highlight the need for sustainable fishing practices, habitat conservation, and effective management strategies to protect native fish diversity and maintain ecological stability of the river system.

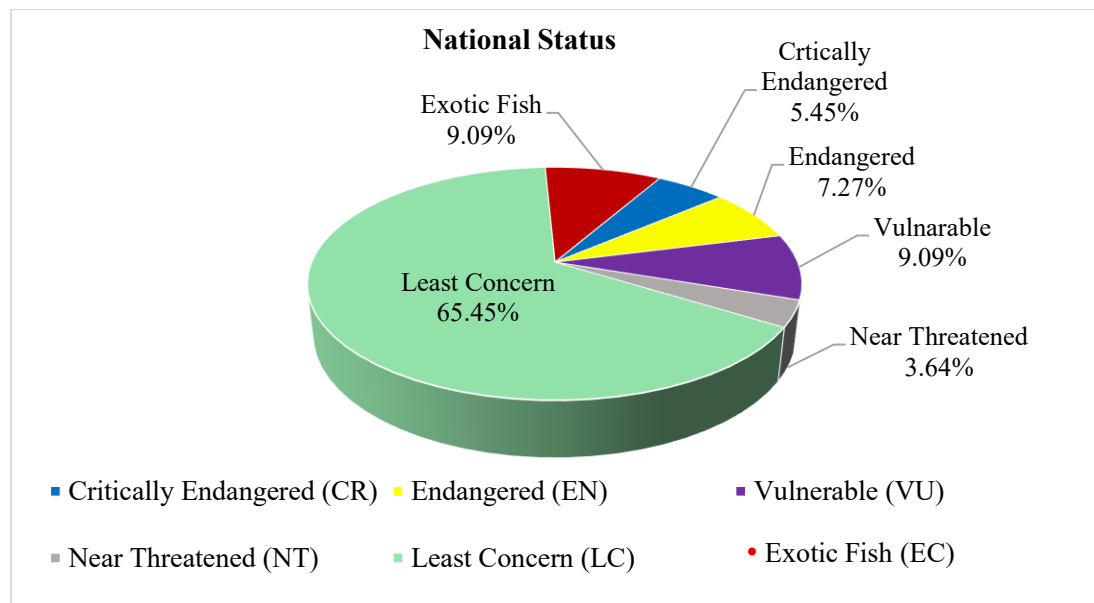


Fig. 2. National Status of Recorded Fish Species

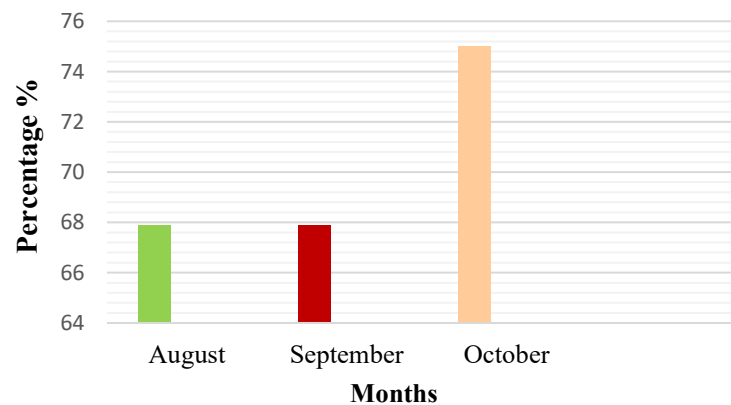


Fig. 3. Percentage of Monthly Wise Fish Species at Notun Bazar

Month-wise availability of fish species: Though the study was conducted only for three months, there were some variations fish species richness (Fig. 3). A total of 38 species were observed in both August and September, representing 67.86% of the total recorded species. In October, species richness increased to 42 species, accounting for 75% of the total. This gradual increase in the number and percentage of species from August to October suggests improved species availability, possibly influenced by seasonal changes in hydrological conditions, water quality, and habitat suitability. The higher species richness in October suggests more favorable environmental conditions for fish assemblages.

Habitats of the recorded fish: Fish species and their habitat are presented in Table 2. It was observed that the habitats of the fish species were River, Beel, Pond, Estuary, Marine etc.

Table 2. Habitats of the Recorded Fish Species

Habitat	Local Names of Fishes
River / Reservoir	Nola, Bata, Rui, Catla, Kalibaus, Ayre, Boal, Chital, Foli, Rita, Bacha, Kajoli, Bagair, Gaira, Pabda, Piyali, Tatkini, Kakila, Mola, Carp Juvenile.
Pond / Fishery	Rui, Catla, Mrigel (Nola), Silver Carp, Grass Carp, Common Carp (Carp), Bighead Carp, Tilapia, Bata, Puti, Mola.
Beel / Field	Shing, Magur, Shol, Gajar, Taki, Koi, Khalisha, Baim, Meni, Puti, Mola.
Estuarine / Brackish	Ilish, Koral, Loitta, Lalpoya, Poya, Phaisa, Lal Cheua, Cheua, Bagda Chingri, Golda Chingri, Bele.
Lake	Boal, Chital, Foli, Gojar, Tilapia, Common Carp.
Marine (Saltwater)	Tuna, Rupchanda, Loitta, Poya.

Socio-economic condition of fish traders

Age group: Out of the five age groups, 30%, 30%, 25%, 5% and 10% of fish traders were within the age ranges of 21–30, 31–40, 41–50, 51–60 and above 60 years, respectively (Fig.4). The results revealed that the majority of the fish traders belonged to the 21–40 years age group, indicating that young and middle-aged individuals were dominant in fish trading due to their higher physical capacity, active involvement in market activities and better adaptability to market demands (Belton and Thilsted, 2014).

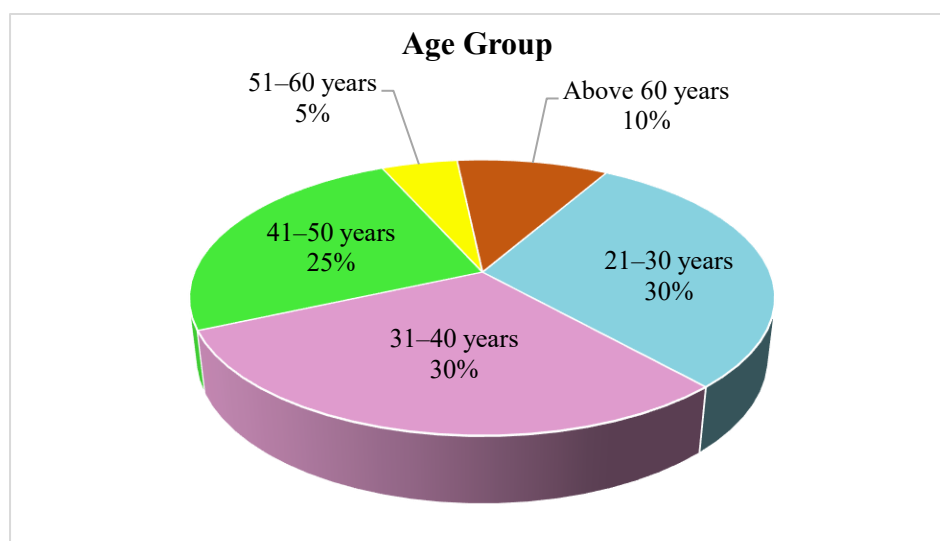


Fig. 4. Status of the Age Group of Fish Traders

Religious Status: Of the total respondents, 55% were Muslim and 45% were Hindu. This indicates that fish trading in Notun Bazar involves people from different religious communities and reflects social inclusiveness in fish market-based livelihoods.

Education Status: Observed seven education categories, 20% of the fish traders were illiterate, 25% had primary education, 15% completed Class 5, 10% Class 8, 5% Class 6, 5% Class 7 and 20% completed SSC level education. The results indicate that most of the fish traders possessed low to moderate educational attainment, which limits their access to alternative employment opportunities and modern marketing knowledge (Islam *et al.*, 2022).

Housing Condition: Recorded three housing categories, 55% of the fish traders lived in Temporary houses, 40% in Semi-pucca houses and only 5% in Pucca houses. The findings reveal that the majority of fish traders live in poor housing conditions, reflecting their limited income and overall low socio-economic status. According to a study revealed that instability and a lack of savings were the primary factors that led to the poor housing status.

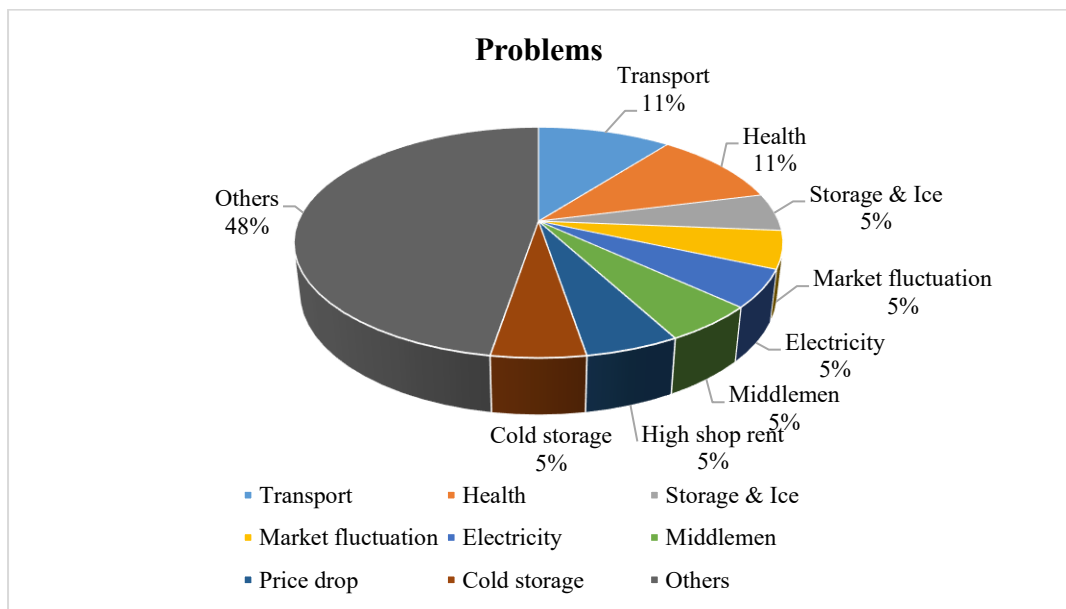


Fig. 5. Several Problems Faced by Fish Traders

Problems Faced by Fish Traders: Fish traders reported a wide range of problems including transport difficulties (11%), health issues (11%), price fluctuation (5%), lack of cold storage (5%), high shop rent (5%) and middlemen interference (5%) (Fig. 5). Each problem was reported by approximately 5–10% of respondents, indicating that fish traders face multiple small but persistent challenges rather than a single dominant problem. These findings strongly emphasized that inadequate infrastructure and the dominance of intermediaries reduce profit margins and increase post-harvest losses.

Monthly Income: The study revealed that 50% of traders earn between 13,500 - 20,000 BDT, representing the largest group. Around 35% earn 20,001-30,000 BDT, while only 15% earn more than 30,000 BDT (Table 3). This indicates that most traders operate on a small- to medium-scale using their own capital. The same trend was also observed by Alam *et.al.*, (2010), where they identified the instabilities of the incomes of the urban fish traders due to the fluctuation of prices & supply.

Table 3. Monthly Income of Fish Traders

Monthly income (taka)	No. of traders (n = 20)	Percentage (%)
13,500 – 20,000	10	50
20,001 – 30,000	7	35
Above 30,000	3	15

Conclusion: In this regard, the present study has shown that the Notun Bazar fish market indirectly reflects the richness of aquatic resources in Bangladesh, along with current conservation issues, thereby substantiating the role of a fish market as an effective bioindicator of biodiversity. Species availability was influenced by seasonal variation, while the presence of threatened fish species in the market raises serious conservation concerns. Most importantly, the socio-economic findings suggest that nearly all fish traders depend solely on fish trading for their livelihoods, yet they are considered economically vulnerable due to low incomes, limited education, inadequate infrastructure, and market-related constraints. Thus, the study provides strong evidence of interlinkages between fish biodiversity and the livelihood security of traders, emphasizing that supportive policy measures and improved market facilities are fundamentally vital not only for ecological sustainability but also for socio-economic stability in an urban fish market like Notun Bazar.

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