



Sustainable freshwater fisheries in Bangladesh: problems and pathways forward

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Abstract

Bangladesh is one of the leading countries in global fish production; however, numerous problems and challenges persist. This paper summarises the problems faced by seven major stakeholder groups in the country's fisheries sector: (i) fish farmers, (ii) freshwater fishermen, (iii) fish traders, (iv) fish seed producers, (v) fisheries administrators and extension personnel, (vi) researchers and (vii) fish consumers. Fish farmers reported 19 problems, with transportation issues being the most common (35% of respondents), followed by the lack of quality fish seed (20%). Freshwater fishermen reported 13 problems, with reduced fish catch as the most common (65%), followed by the shrinkage of fishing habitats (15%). For freshwater fish traders, lack of preservation and storage facilities was the most common problem, reported by 80% of respondents. Seven problems were reported by finfish seed producers; among the top-ranked, lack of quality brood and its high price were most common, reported by 60% and 40% of respondents respectively. Fisheries administrators and extension personnel reported nine problems, with insufficient manpower being the most common, reported by 70%. Eleven problems were reported by fisheries researchers, with inadequate research funding as the most common, reported by 60%. Fish consumers reported five problems, including price hikes and insufficient supply of native fishes. The results of this study will be useful in prioritising problems and formulating effective policies for the sustainable development of the fisheries sector in Bangladesh and other countries facing similar challenges.

Keywords: challenges; constraints; invasive species; overfishing; poor transportation; price hikes; quality fish seed; supplementary feed

1 | INTRODUCTION

Bangladesh is one of the leading countries in global fish production— it ranked fifth in aquaculture production and second in inland fisheries production (FAO 2024). However, numerous problems persist in the country's fisheries sector (Mohsin *et al.* 2012; Galib *et al.* 2023). Identification of problems is essential for formulating effective so-

lutions. Unfortunately, most studies in Bangladesh do not focus on identifying problems, especially when they are stakeholder-dependent (Galib *et al.* 2023). Therefore, formulating effective policies for specific stakeholder groups is not always possible.

In this paper, we summarise the problems and challenges faced by seven major stakeholder groups in the

Bangladesh's fisheries sector. The results of the study will be helpful in prioritising problems to address and in formulating effective policies for the sustainable development of the fisheries sector in Bangladesh and other countries facing similar challenges.

2 | METHODOLOGY

2.1 Data collection framework

We conducted questionnaire-based interviews with respondents from various stakeholder groups. A total of 2000 freshwater fish farmers, 2000 freshwater fishermen, 200 fish traders, 100 fish seed producers, 50 fisheries administrators and extension personnel, 100 researchers and 4000 fish consumers were selected from different regions of the country. When face-to-face interviews were not possible ($n = 206$), telephone interviews were conducted to collect data. Prior to each interview, respondents were briefed about the study and informed that the data would be used solely for research purposes, with their identities kept confidential. They were also assured that participation in the study was voluntary.

Fish farmers, fishermen and fish traders were selected from major fishing sites and landing centres across various districts of Bangladesh (Rajshahi, Naogaon, Rangpur, Thakurgaon, Mymensingh, Dhaka, Shariatpur, Habiganj, Comilla, Rangamati, Jashore, Khulna and Patuakhali). No aquarium fish traders were included in this study.

Fish seed producers were either those directly involved in seed production at hatcheries or the hatchery owners themselves. These respondents were identified in the districts of Rajshahi, Jashore and Mymensingh. Fisheries administrators and extension personnel referred to officers working with the Department of Fisheries under the Ministry of Fisheries and Livestock of the Government of Bangladesh. Researchers included individuals employed at various higher education institutions (e.g. universities) and recognised research institutes (e.g. Bangladesh Fisheries Research Institute, BFRI). Finally, fisheries consumers were identified in fish markets across more than 40 districts representing different divisions of the country. During selection of fish consumers, every third consumers (=buyers of fish) were selected for the study (Shalehin *et al.* 2022; Galib *et al.* 2023)

During interviews, respondents were asked to mention problems they faced in their work. Responses were discarded if they were not directly related to the respondent's own professional activities. Respondents were also asked to rank the challenges and problems they identified.

2.2 Data analysis

All the responses were recorded and ranked accordingly. Data were subjected to simple descriptive analysis and

presentation.

3 | RESULTS

3.1 Problems faced by fish farmers

A total of 19 problems were identified during the surveys (Table 1). Among the top-ranked problems ($n = 9$), transportation issues were the most common, reported by 35% of respondents, followed by the lack of quality fish seed (20%; Table 1).

Among the second-ranked problems ($n = 9$), fish disease was the most commonly reported, cited by 20% of respondents, followed by high labour costs (15%) and product price fluctuations (15%; Table 1). Whereas, among the third-ranked problems ($n = 10$), high price of supplementary feed was the most commonly reported, cited by 30 of respondents (Table 1).

Fish farmers also reported nine problems among the fourth-ranked issues. Of these, transportation was the most common, reported by 15% of farmers, followed by the high price of supplementary feed (10%) and lack of quality seed (10%; Table 1).

TABLE 1 Problems faced by the freshwater fish farmers of Bangladesh ($n = 2000$).

Problems	Rank and % respondent reported						
	1 st	2 nd	3 rd	4 th	5 th	6 th	7 th
Fish disease	5	20	–	–	–	5	5
High price of supplementary feed	10	–	30	10	–	–	–
Lack of financial loans	10	5	10	5	–	–	–
High labour cost	5	15	5	–	–	–	–
Lack of quality seed	20	5	5	10	5	–	–
Fish mortality	5	–	–	–	–	–	–
Transportation problem	35	5	–	15	–	–	–
Water quality problem	5	5	–	–	5	–	–
Lack of modern technology	5	–	5	–	–	–	–
Fish poaching	–	10	–	5	–	5	–
Long marketing channel	–	5	–	–	–	–	–
Product price fluctuation	–	15	–	5	–	–	–
Lack of training	–	10	5	5	–	–	–
Physical structure of pond	–	5	–	–	–	–	–
Power supply	–	–	5	–	–	–	–
Lack of government support	–	–	15	5	5	–	–
Water supply	–	–	15	5	–	–	–
Predatory fish in pond	–	–	5	–	5	–	–
Illegal toll collection	–	–	–	–	5	–	–

3.2 Problems faced by freshwater fishermen

A total of 13 problems were reported by the freshwater fishermen during the surveys (Table 2). Among the top-ranked problems, reduced fish catch was the most common, reported by 65% of respondents, followed by the shrinkage of fishing habitats (15%; Table 2).

Among the second-ranked problems ($n = 10$), high cost of fishing gears was the most commonly reported, cited by 30% of respondents, followed by shrinkage of fishing areas (15%), use of traditional fishing method (10%) and high fuel cost for fishing vessels (10%; Table 2).

Fishermen also reported four problems among the third-ranked issues. Of these, insufficient government subsidy during fishing ban period was the most common, reported by 35% of fishermen (Table 2).

TABLE 2 Problems faced by the freshwater fishermen of Bangladesh ($n = 2000$).

Problems	Rank and % respondent reported				
	1 st	2 nd	3 rd	4 th	5 th
High cost of fishing gear	5	30	–	–	–
Unstable market price	5	–	–	–	–
Shrinkage of fishing areas	15	15	–	–	–
Lack of secondary occupation	5	5	5	–	–
Reduced catch	65	5	–	–	–
Use of traditional fishing method	5	10	5	–	–
Insufficient Govt. subsidy during fishing ban period	–	5	35	10	5
Long marketing channel	–	5	–	–	–
High labour cost	–	5	–	–	–
Lack of financial loans	–	5	–	–	–
High fuel cost for fishing vessels	–	10	–	5	–
Illegal toll collection	–	–	5	–	–
Managing invasive plant	–	–	–	10	–

3.3 Problems faced by fish traders

A total of five problems were reported by the freshwater fish traders (Table 3). Among the top-ranked problems, lack of preservations and storage problems were the most common, reported by 80% of respondents, followed by the illegal toll collection (10%) and transportation problems (10%; Table 3).

Among the second-ranked ($n = 5$), third-ranked ($n = 4$) and fourth-ranked ($n = 3$) problems, lack of financial loans (30% of respondents), illegal toll collection (40%) and social/political unrest (20%) were the most common respectively (Table 3).

TABLE 3 Problems faced by the fish traders of Bangladesh ($n = 200$).

Problems	Rank and % respondent reported			
	1 st	2 nd	3 rd	4 th
Lack of preservation and storage	80	20	–	–
Transportation problem	10	10	30	10
Illegal toll collection	10	20	50	–
Lack of financial loans	–	30	40	5
Social / political unrest	–	20	20	20

3.4 Problems faced by fish seed producers

A total of seven problems were reported by the finfish seed producers (Table 4). Among the top-ranked problems, lack of quality brood and its high price were the most common, reported by 60% and 40% of the respondents respectively (Table 4).

Among the second-ranked ($n = 5$), third-ranked ($n = 5$) and fourth-ranked ($n = 3$) problems, lack of quality brood (30% of respondents), high price of brood and labour cost (30% each) and lack of financial loans and modern technology (20% each) were the most common respectively (Table 4).

TABLE 4 Problems faced by the fish seed producers of Bangladesh ($n = 100$).

Problems	Rank and % respondent reported			
	1 st	2 nd	3 rd	4 th
Lack of quality brood	60	30	10	–
High price of brood	40	20	30	10
High labour cost	–	20	30	–
Mortality of fry	–	20	20	–
Water quality problems	–	10	10	–
Lack of financial loans	–	–	–	20
Lack of modern technology	–	–	–	20

3.5 Problems faced by fisheries administrators and extension personnel

A total of nine problems were reported by the Problems faced by fisheries administrators and extension personnel (Table 5). Among the top-ranked problems, limited or insufficient manpower was the most common, reported by 70% of the respondents followed by unskilled manpower (20%) and political influences (10%; Table 5).

Among the second-ranked ($n = 4$), third-ranked ($n = 4$) and fourth-ranked ($n = 3$) problems, limited funds (70% of respondents), political influence and managing invasive plants (20% each) and law offender stakeholders (50%) were the most common respectively (Table 5).

TABLE 5 Problems faced by the fisheries administrative and extension personnel ($n = 50$).

Problems	Rank and % respondent reported					
	1 st	2 nd	3 rd	4 th	5 th	6 th
Limited manpower	70	10	–	–	–	–
Political influence	10	10	20	10	–	10
Unskilled manpower	20	–	–	–	–	–
Lack of stakeholder coordination	–	10	10	20	–	–
Limited funds	–	70	10	–	–	–
Law offender stakeholders	–	–	–	50	20	–
Transportation	–	–	–	–	10	10
Lack of stakeholder database	–	–	–	–	10	–
Managing invasive plants	–	–	20	–	–	–

3.6 Problems faced by researchers

A total of eleven problems were reported by the fisheries researchers (Table 6). Among the top-ranked problems, insufficient research grant was the most common, reported by 60% of the respondents followed by insufficient research facilities (20%; Table 6).

Among the second-ranked ($n = 7$), third-ranked ($n = 5$) and fourth-ranked ($n = 5$) problems, insufficient research grant and unskilled researchers (15% of respondents each), insufficient research facilities (25%) and insufficient research facilities (20%) were the most common respectively (Table 6).

TABLE 6 Problems faced by the researchers in fisheries sector of Bangladesh ($n = 100$).

Problems	Rank and % respondent reported						
	1 st	2 nd	3 rd	4 th	5 th	6 th	7 th
Insufficient research grant	60	15	10	–	5	–	–
Out-dated research	5	–	10	5	–	–	–
Research policy is not favourable	5	5	–	5	–	5	10
Insufficient research facilities	20	–	25	20	25	10	–
Limited access to outdoor facilities	5	–	–	–	–	–	–
Unskilled researchers	5	15	5	10	5	10	5
Discrimination in grant allocation	–	10	–	5	–	–	–
No reward for quality research	–	10	–	–	–	–	–
Publication in predatory journals	–	10	–	–	–	–	–
Lack of collaboration	–	–	5	–	5	10	5
Lack of reliable historical data	–	5	–	–	–	–	–

3.7 Problems faced by fish consumers

A total of five problems were reported by the fish consumers (Table 7). Among the top-ranked problems, price hikes in fishes was the most common, reported by 70% of the respondents followed by insufficient supply of native fishes in the market (30%; Table 7).

TABLE 7 Problems faced by the fish consumers ($n = 4000$).

Problems	Rank and % respondent reported			
	1 st	2 nd	3 rd	4 th
Price hikes in fishes	70	30	–	–
Insufficient supply of native fish	30	70	–	–
No / reduced taste of fish	–	–	50	20
Unfair means of increasing weight	–	–	20	–
No proper market facilities	–	–	10	10

Among the second-ranked ($n = 2$) problems, insufficient supply of native fish was the most common, report-

ed by 70% of respondents. Whereas, no taste of fish was ranked the top among the third- and fourth-ranked problems, reported by 50% and 20% respondents respectively (Table 7).

4 | DISCUSSION

4.1 Problems of the fish farmers

It is not surprising that fish disease has been reported as one of the top-ranked problems by fish farmers. In a study by Ahmed *et al.* (2025), it was shown that 70% of aquaculture farms in Bangladesh were affected by this issue. The researchers also reported regional variation in disease occurrences and levels of biosecurity adoption, and therefore emphasized the need for tailored interventions.

The high price of supplementary feed in Bangladesh is a common problem (Mohsin *et al.* 2012). Feed costs usually contribute about 60% of the total production cost (Asimi *et al.* 2023); therefore, alternative feeds produced from locally available ingredients are encouraged.

Difficulties in obtaining financial loans are common among fish farmers worldwide (Pomeroy *et al.* 2020) including Bangladesh (Hossain *et al.* 2024). This is also true in Bangladesh, particularly from commercial banks, which require complex paperwork (Shalehin *et al.* 2022). In contrast, loans from non-governmental organisations (NGOs) and individuals (personal loans, also known as dadon) are available but typically carry higher interest rates (Mredul *et al.* 2020; Shalehin *et al.* 2022).

High labour costs, driven by shortages in labour supply, further contribute to increased overall production costs (Li and Li 2022; Phuong and Pomeroy 2025). Transportation is another common problem affecting multiple components of fisheries activities. Delays in transportation—for example, of feed—can negatively impact both production and economic outcomes (Deb 2025).

Fish mortality may be attributed to various factors, including seed quality (Mohsin *et al.* 2012). This was also reflected in the responses of fish seed producers in this study, who identified the lack of quality brood as a key problem contributing to fish mortality and, consequently, reduced production (Hossain *et al.* 2022; Islam *et al.* 2023; Chandan and Roy 2024).

Maintaining water quality at appropriate levels is often challenging for fish farmers (Mramba and Kahindi 2023; Hridoy *et al.* 2025). This difficulty may arise from various practices, including the application of inappropriate doses of chemicals and fertilisers. In such cases, dissolved oxygen (DO) content may decrease, toxic ammonia may be produced, or algal blooms may appear and persist (Mohsin *et al.* 2012; Boyd 2017).

Aquaculture in Bangladesh is primarily based on extensive or improved extensive techniques (Haque *et al.* 2025). Modern technologies usually require additional financial investment. As most fish farmers in the country

are not financially solvent, they struggle to adopt modern aquaculture facilities or techniques.

Fish poaching and poisoning are frequently reported in different regions of the country, primarily as a result of political or social conflicts (Mohsin *et al.* 2012).

In Bangladesh, the fish distribution system is characterised by a long marketing chain (Islam *et al.* 2023). This affects all stakeholders and increases the retail price of fish. Price fluctuations in fish products are also common in the country, primarily due to political unrest (Mohsin *et al.* 2012). This also negatively affects stakeholders across the value chain.

The physical structure of ponds is an important consideration in aquaculture, yet broken dikes are common in many ponds. Floods and heavy vehicles on nearby roads are often responsible for this damage. Power supply is another critical factor affecting multiple functions of fish farms, including water supply. Interruptions in continuous power supply are common in Bangladesh, especially in rural areas, and can negatively affect water availability, particularly during the dry season.

A lack of training on relevant subjects is another common problem faced by fish farmers in Bangladesh (Faruk *et al.* 2023). Fish farmers expect various forms of support (e.g. training, technical advice and subsidies during fishing bans) from government offices, but such support is not always available.

The presence of predatory fish in ponds sometimes leads to decreased production, as they feed on aquaculture species, especially during early life stages and result in economic losses (Avdelas *et al.* 2021; Stobart *et al.* 2025). Although fish farmers in Bangladesh employ different methods (e.g. poisoning and repetitive netting) to control or eradicate these species, they may persist if the methods are not properly applied. Training on this subject could help farmers control these species more effectively.

Illegal toll collection, particularly during the transportation of fish and fish products by road, is another common problem in Bangladesh. This issue is often linked to the country's politics, involving members of ruling parties or syndicates of various associations.

4.2 Problems of the freshwater fishermen

The high cost of fishing gear has been reported as a key problem for fishermen. In recent times, fishermen have increasingly relied on factory-produced fishing devices and nets, requiring them to allocate a considerable portion of their budget to these items. In addition, repairing factory-made nets is more difficult compared to traditional handmade nets. In many cases, fishermen invest in illegal fishing devices and nets (e.g. China net and Current Jal; local names; Figure 1) in an attempt to catch more fish, which further increases their investment in fishing efforts. Unstable market prices of fish and limited access to financial loans affect fishermen in the same way they

affect fish farmers.

The shrinkage of fishing areas, primarily due to land-use changes, is a major concern in Bangladesh. Wetlands are particularly vulnerable (Islam and Kitazawa 2013; Kashmi *et al.* 2025), but rivers are also being affected. For example, the area of the largest wetland in Bangladesh, the Chalan Beel, decreased from 2635 km² in 1967 to 769 km² in 2010, with the dry-season area shrinking to only 73 km² in 2012 (Islam and Kitazawa 2013). Similarly, the water area of the Lower Ganges has declined by about 50% since 1980 (Parvez *et al.* 2023).



FIGURE 1 Fishing with illegal fishing net (gill net) in a wetland of Bangladesh.

Fishermen community in Bangladesh is economically vulnerable (Islam *et al.* 2013; Galib *et al.* 2016). Reduced catches have been reported in almost all inland natural aquatic habitats of the country. This decline is attributed to the shrinkage of aquatic habitats, habitat degradation through water pollution and flow modification and over-fishing (Galib *et al.* 2018a, 2018b; Kashmi *et al.* 2026; Figure 2). Therefore, many fishermen are seeking alternative employment opportunities (Alam and Yousuf 2024; Hasan *et al.* 2025). However, as many fishermen lack secondary occupations, they are particularly vulnerable to these challenges concerned (Shalehin *et al.* 2022).



FIGURE 2 Municipal wastewater is flowing through a canal before finding its way into the Barnoi River in Rajshahi district of northwest Bangladesh.

Several fishing bans are introduced in Bangladesh each year. Insufficient or delayed government subsidies during ban periods are commonly reported. In some cases, these circumstances lead fishermen to engage in illegal fishing (Mredul *et al.* 2020; Rayhan *et al.* 2021; Shalehin *et al.* 2022).

High labour costs also negatively affect fishermen, especially during the operation of large fishing nets, which require several people to manage. Rising fuel costs for fishing vessels have also become a significant problem in recent years. Fuel price hikes can result in reduction in fishing pressure and overcapacity (Owusu 2025). Like fish farmers, fishermen experience illegal toll collection during the trade of their catches.

Managing invasive plants (e.g. water hyacinth) has become a common problem in natural aquatic habitats of Bangladesh, particularly in wetlands and lakes (Hossain *et al.* 2025; Figure 3). In many cases, these plants form dense mats on the water surface, making fishing difficult. Floating water hyacinths also move from one location to another, as observed in the country's largest lake, Kaptai Lake, further reducing fishing efficiency. Dense mat of invasive water hyacinth not only affecting fisheries but also agriculture crop production (Hossain *et al.* 2025).



FIGURE 3 Invasive water hyacinth in 2025 in the largest wetland of Bangladesh– the Chalan Beel.

4.3 Problems of the fish traders

As previously discussed, the lack of preservation and storage facilities is common in most fish markets in Bangladesh (Parvin *et al.* 2022). This also negatively affects the transportation of fish and fish products. Illegal toll collection impacts fish traders in the same way it affects fish farmers and fishermen. Issues related to obtaining financial loans from financial institutions or other sources have already been highlighted. In addition, social and political unrest in the country adversely affects the business activities of fish traders.

4.4 Problems of the fish seed producers

The importance of quality brood has already been discussed in Section 4.1. Wild brood fish are preferred in

hatcheries across the country, and government authorities (Department of Fisheries, DoF) also recommend the use of brood fish collected from wild sources to avoid induced breeding depression (Islam *et al.* 2023; Chandan and Roy 2024). However, for various reasons, obtaining brood of suitable size from wild sources has become extremely difficult. Therefore, it is not surprising that the price of brood, when available in the wild, is very high.

High labour costs and limited access to financial loans affect fish seed producers in the same way they affect earlier stakeholder groups. High fry mortality is frequently reported in hatcheries across the country, which may be due to poor water quality management or disease outbreaks (Chandan and Roy 2024). The use of modern technology in the majority of finfish hatcheries is uncommon. Consequently, optimum performance cannot be ensured in most cases.

4.5 Problems of the fisheries administrators and extension personnel

Limited manpower is a common problem in government offices in Bangladesh, and the Department of Fisheries (DoF) is no exception. In most upazilas (sub-districts), only 1–3 personnel are available. With such limited manpower, it is very difficult to provide effective services to the large number of beneficiaries, often numbering several thousands. Limited manpower is often coupled with the presence of unskilled personnel, which greatly affects the performance of service-providing organisations.

Political influence on the government's regular activities is well known in Bangladesh (Talukdar *et al.* 2022). This sometimes affects the proper distribution of subsidies and other technical services. Lack of stakeholder coordination is another common problem. Most projects require stakeholder involvement, yet gaps in collaboration are frequently observed. In addition, law-offending stakeholders can make it difficult to achieve project goals (D. Paul, personal communication).

Limited funding is also an issue in ensuring effective services from fisheries administrators and extension personnel. The absence of stakeholder databases is common in many places, which further reduces the efficiency of fisheries administrators and extension personnel in project implementation. As mentioned earlier, many natural aquatic ecosystems are now affected by invasive plants. This therefore poses a significant challenge to fisheries administrators and extension personnel (Hossain *et al.* 2025).

4.6 Problems of the researchers

Researchers in developing world enjoy less facilities than those are in developed world (Salager-Meyer 2008) and Bangladesh is not an exception. Insufficient research funding is a key problem affecting researchers in the field of fisheries. This is not a new problem in developing coun-

tries where funding constraint is common (Al-Worafi 2024). There are more than 16 universities offering fisheries education and research, along with several research organizations (e.g. Bangladesh Fisheries Research Institute, BFRI). Unfortunately, not all researchers receive funding for their work each year. Outdated research is common in Bangladeshi higher education and research institutes. Consequently, the outputs of these organisations are often unsatisfactory. Research efforts must align with current and future demands.

Another major problem lies in the research policies of the government and institutions, which are often unfavourable to researchers. In many instances, grants are released late, greatly affecting project implementation. Insufficient research facilities at universities and research organisations are also a common problem. Although initiatives have been undertaken to strengthen teaching and learning facilities through various projects (e.g. Higher Education Quality Enhancement Project, HEQEP; and Higher Education Acceleration and Transformation, HEAT), these are highly competitive, and not all institutions benefit from them. Moreover, discrimination in grant allocation is frequently reported by researchers.

Limited access to outdoor research facilities is another challenge in Bangladeshi universities and research institutes. Field experiments (e.g. in wetlands or rivers) are often difficult to conduct due to lack of social security, as they may be subjected to theft or damage by careless local residents. The presence of unskilled researchers at research institutes is also problematic. Many laboratory instruments remain unused due to a lack of trained personnel. In some cases, flawed research designs result from insufficient subject knowledge.

Despite wider recognition of the importance of rewards or recognition for quality research (Hur *et al.* 2016; Thibault-Landry *et al.* 2017), such practices are largely absent in most universities and research institutes in Bangladesh. Although a considerable number of researchers have been publishing quality papers but this number may not be satisfactory when compared to total number of researchers working in the field concerned. Unfortunately, institutional rules and regulations generally do not require researchers to publish papers in recognised journals (e.g. Web of Science or Scopus-indexed journals), except for few exceptions. Consequently, researchers are often demotivated from conducting high-quality research and publishing their findings in reputable journals. As a result, many publish their work in predatory journals. This phenomenon also contributes to a lack of effective collaboration among researchers, both nationally and internationally. It is widely agreed that researchers are more likely to prioritise quality over quantity when rewards are provided for their work (Gärtner *et al.* 2024). However, the scientific achievements of a researcher should not be evaluated using purely quantitative indica-

tors (e.g. journal impact factor, h-index, or number of publications). Instead, evaluation should be based on the quality, transparency, reproducibility, and innovative strength of their scientific contributions (Klein 2022; Gärtner *et al.* 2024).

Bangladesh is widely recognised as a data-poor region for many subjects, including aquatic biodiversity and conservation and related issues (Kashmi *et al.* 2026). Lack of reliable historical data is another major concern in Bangladesh. The available data are often unreliable, making it difficult to use them for drawing sound research conclusions.

4.7 Problems of the fish consumers

Rapid increase in price of essential goods can result in a fall in living standard (Atas and Dabrowski 2025). Price hikes in fish have been observed in Bangladesh over the past years (Emon 2023). This particularly affects consumers from middle- and low-income groups (Ghosh 2023).

Insufficient supply of native fish in markets reflects the decreasing abundance of fish in wild habitats (Parvez *et al.* 2023). Not only wild fish but also other aquatic biodiversity—such as freshwater turtles, river dolphins and aquatic birds—are declining in the country due to various factors, including habitat shrinkage, overexploitation, flow modification and water pollution (Galib *et al.* 2018a, 2018b; Kashmi *et al.* 2025; Khatun *et al.* 2025).

Loss or reduction of taste in fish is another commonly reported problem in recent times. Consumers believe that the intensification of aquaculture, involving the use of high doses of supplementary feed and other chemicals, may have contributed to reduced taste compared to their wild counterparts. In addition, off-flavour is often reported in aquaculture species (e.g., pangasius catfish *Pangasianodon hypophthalmus*; Rahman *et al.* 2021).

Unfair practices to increase weight are sometimes reported by consumers. This is particularly true for shrimp in fish markets, where foreign particles are often injected into the body or under the shell. However, the majority of fish markets in Bangladesh lack proper facilities (e.g. adequate drainage, sanitation, preservation and storage) (Parvin *et al.* 2022). Although the government and several organisations are working to develop fish markets and landing centres with improved facilities, much greater effort is required to improve the situation nationwide.

However, one limitation of this study that should be acknowledged is the relatively small sample size of stakeholder groups compared to the total number in the country. However, we attempted to include a large number of randomly selected participants and believe that the results presented here are applicable to all relevant stakeholder groups in Bangladesh.

5 | CONCLUSIONS

This study systematically identified key problems faced by

major fisheries stakeholders in Bangladesh. The results are expected to be useful in prioritising problems and, consequently, identifying solutions. We recommend further studies on similar subjects involving stakeholders from coastal and marine ecosystems.

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CONFLICT OF INTEREST

The author declares no conflict of interest.

AUTHORS' CONTRIBUTION

Sanzida R. Swarna: investigation; data curation; data analysis; and writing - original draft. Md. Yeakub Ali: investigation; data curation; and writing - review & editing. Shams M. Galib: conceptualisation; supervision; and writing - review & editing.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on a reasonable request from the corresponding author.

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