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INFLUENCE OF BACTERIA SUSPENSION ON FISH GROWTH AND WATER QUALITY IN SINGHI, MAGUR AND KOI PONDS OF BINPUR BLOCK AREAS, PURBA MEDINIPUR DISTRICT OF WEST BENGAL

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Abstract

The freshwater fish population of West Bengal, India's Purva Medinipur locale is the focus of current research. Koragat, Panskura 1 and Sahid Matangini Blocks to be exact From January 2020 to Walk 2020, the analyst surveyed Pisces from seven unique business areas. Mecheda Bazar, Siddha Bazar, Sagarbar Bazar of Kolaghat Block. Street market at Panskla railway station Chakdaha Bazaar, Keshapat Bazaar in Panskla 1 blocks Dhalhara Bazar, Kaktia Bazar of Sahid Matangini block. The Cyprinidae are the most abundant group of fishes, followed by the Perciformes, Silliformes, Cymbranformes, Osteoglosses, Osteoglosses, Characiformes, and Decapods. Species sets determine the essential groups into which species are classified. Hypophthalmicthysmolitrix, Hypophthalmicthysnobilis, Cyprinuscarpio, Ctenopharyngodonidella, Labeorohita, Labeobata, Labeoboga, Cirrinusreba, Labeocalbasu, catla, Cirrinusmrigala and Labeocalbasu. They will be better informed about the aftermath of this exploration, conservation and improvement effort at the Koragat, Panskla-1 and Sahid-Matangini fields.

Keywords: fish diversity, abundance, Purba Medinipur, conservation, freshwater

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1. INTRODUCTION

Purba Medinipur is a district in West Bengal that relies heavily on agriculture and manufacturing. Crop and fish illnesses and environmental stressors have a significant financial impact, reducing economic potential. The West Bengali locale of Purba Medinipur has a wealth of water highlights including streams, lakes, channels, and wetlands. Purba Medinipur area in West Bengal is home to a portion of the world's biggest fish ranches since the district's environment is great for fish cultivating. Fish is used to satisfy the protein needs of people in both rural and urban regions since it is abundant, highly productive, and much cheaper than meat. Carps, tilapias, catfishes, climbing perches (koi), shrimps, and Pangas catfishes are the most commonly grown species in the Purba Medinipur area of West Bengal, despite the availability of a wide variety of freshwater and marine fishes (Abedin et al., 2020). Since to its fast turn of events, high result, all year creation, and flexibility to diseases, Pangasius (Pangasianodonhypophthalmus) is perhaps of the most widely developed fish (Faruk et al., 2017). As a result of its potential to aid in increasing fish output and fulfil the needs of food-fish consumers, Pangasiusspp were imported from Thailand for aquaculture purposes in 1989. (Banglapedia, 2015). Limits on the economic viability and ecological efficiency of Pangasius are imposed by a wide variety of illnesses, including those caused by poor nutrition and polluted water, as well as those spread by viruses, bacteria, and protozoa (Chowdhury 1998, Faruk et al. 2004). However, the number of deaths from bacterial infections is considerable. Edwarsdsiellaictaluri, Aeromonas Hydrophila, A. sobria and A. caviae are examples of bacterial organisms that cause infections. . Aeromonas spp., specifically, have been distinguished as huge bacterial microorganisms in amphibian frameworks (Sarker and Faruk, 2016). The productivity of drugs against such contaminations has been a significant issue in fish research for counteraction and treatment of sicknesses brought about by Aeromonashydrophila in various refined fishes. Microsporidium, Myxobolus, Henneguya, Trypanosoma, Ichthyonyctus, Trichodina, Balantidium, Epistylis, and even IIchthyophthiriusmultifiliis are just some of the unicellular parasites present after Pangasius species. .

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Many variables, including pathogen virulence and environmental conditions, contribute to disease development in farmed fishes (Hedrick 1998, Thorburn 1996). (Kumer, 2006). The development of a pathogen's resistance to antibiotics also poses a problem for the prevention and treatment of illness. Pangasiusspp disease development was examined in connection to seasonal and geographical variations in the physicochemical factors of the aquatic environment. In addition, an effort was made to create a profile of antibiotic resistance among various diseases.

This vast quantity of water resources may be broken down into two categories: freshwater and saltwater. Ponds, rivers, marshy plains, canals, and reservoirs are all examples of inland resources. Fish diversity in West Bengal has been investigated in a variety of ways by various researchers. The 239 freshwater species found in West Bengal were classified into 147 genera, 49 families, and 15 orders by Barman. R.P. (2007). Seventy species of West Bengal-native ornamental fish were described by Basu et al. (2012). These fish were from 45 different genera, 30 different families, and 9 different orders. Specifically, the Paschim Medinipur District was home to 48 species, 32 genera, 18 families, and 7 orders, as described by Paul and Chanda [2014].

The purpose of this research was to catalogue the freshwater fish fauna of three blocks in Purba Medinipur District, West Bengal: Kolaghat, Panskura-1, Sahidmatangini. The data presented here form the basis for further studies and provide insight into the richness of local freshwater ecosystems. .

2. LITERATURE REVIEW

In the 1980s, in India (Roy et al. 1990; Das et al. 1991), Bangladesh (Ali et al. 1998), Cambodia (Gregory and Guttman, 1996; Guttman, 1999), and Vietnam, in occasionally flooded paddy fields, are particularly suitable for fish farming (Rothuis et al. 1998a, Rothuis et al. 1998b). The results of this study indicate that loading juvenile fish into flooded paddy fields has the potential to increase yields by more than 1 tonne of fish per hectare each year (i.e. individual ranchers fence off plots). to load fish during peak season).). It has been reported by a small number of employees that introducing fish to a rice field may enhance grain yields by anywhere from 4

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percent to 10 percent. It has also been discovered that fish eat a lot of weed, worms, insects, larvae, and algae, all of which might harm rice in one way or another (Datta et al, 1985).

Moreover, the fertilizing impact of fish is highest on poorer soils and in unfertilized crops, which means that fish farming inside rice fields may boost rice yields (Halwart, 1998). Net revenues are 7–65% more than they would be with rice monoculture due to the combination of reduced pesticide usage, fish sales, and better yields (Halwart, 1998). It has been estimated by Rao and Singh (1998) that of India's 42 million hectares of rice grown land, roughly 20 million hectares is suitable for rice-fish integration, whereas it has been estimated by Shyam (1998) that only 0.23 million hectares is now managed as rice-fish systems. Rice and freshwater fish and prawns may be grown successfully on the floodplains because of the abundant supply of freshwater (floodplain wetland 0.04 million ha). Seasonal brackish water farming and paddy cropping are also done consecutively in places that are not impacted by sewage in West Bengal, India, where the total brackish water area is estimated to be 405,000 hectares.

Around 73.75 percent of the entire brackish water farming in waterlogged paddy plots in the North and South 24-Parganas district is carried out by such fisheries, whether they are supplied by sewage or not (Dey, 1986). North 24-Parganas is home to several of these wetland ecosystems, including in the district of Sandeshkhali, Minakhan, Hasnabad, Basirhat, Haroa, etc. There are 513 bheries spread over 12,865.83 hectares in the Rajarhat, Barasat, Deganga, Haroa, Baduria, Swarupnagar, Basirhat, Minakhan, Sandeshkhali, Hasnabad, and Hingalgunj Police Stations. Forty-three of these bheries engage in perennial fisheries, while the remaining bheries conduct integrated farming, or rice-fish culture, by rotating or combining the two. In Moyna, Purba Medinipur, however, researchers have shown that combining fish aquaculture with rice cultivation has significantly altered the local economy.

Late years have seen a flood in interest in rice-fish fanning frameworks as a way to accomplish government objectives connected with maintainable rustic turn of events, food security, and destitution decrease. Somewhat recently, various worldwide and public level assessments on the social, financial, and ecological effects of rice-fish fanning have been distributed (Lee, 1988; Fernando, 1993a; Halwat, 1994. McKay, 1995Choudhury, 1995; Little et al. 1996)

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Madagascar's country rating was developed by Symoens & Micha (1995) and De la Cruz et al. (1992) includes Bangladesh, China, India, Indonesia, South Korea, Malaysia, Philippines, Thailand and Vietnamrice field. Some parts of India rely on normal access to fish seeds along channels of confiscated paddy fields, with only one famous catch of fish and shrimp in areas without tide (George et al., 1968; Pillay and Bose, 1957). . (Natarajan and Ghosh, 1985) A developing trend among fish farmers in many nations is the strategic stocking of chosen fast-growing fish species in certain environments in order to maximise fish production (Eapen, 1956; Ardiwinata, 1957).

3. MATERIALS AND METHODS

3.1.Study area

Mecheda Bazar、SiddhaBazar、Sagarbar Bazar des Kolaghat-Blocks。Straßenmarkt am BahnhofPanskura; Chakdaha Bazar、Keshapat Bazar des Panskura-1-Blocks; Dhalhara BazarKaktia Bazar des Sahid-Matangini-Blocks; were completely visited all through the review's three-month span. To gather information, we picked a fish market from among the three that fall under the Tamluk region. The orientation of the Koragat block is 22025°58.5192°N and 87051°35.5896°E. Panskura-1 block orientations are 22023°44.0952°N and 87044°30.7752°E. The orientation of the Sahid-Matangini block is 22024°31°N and 87054°46°E. The three are each located in the region of PurbaMedinipur. (Illustration 1)

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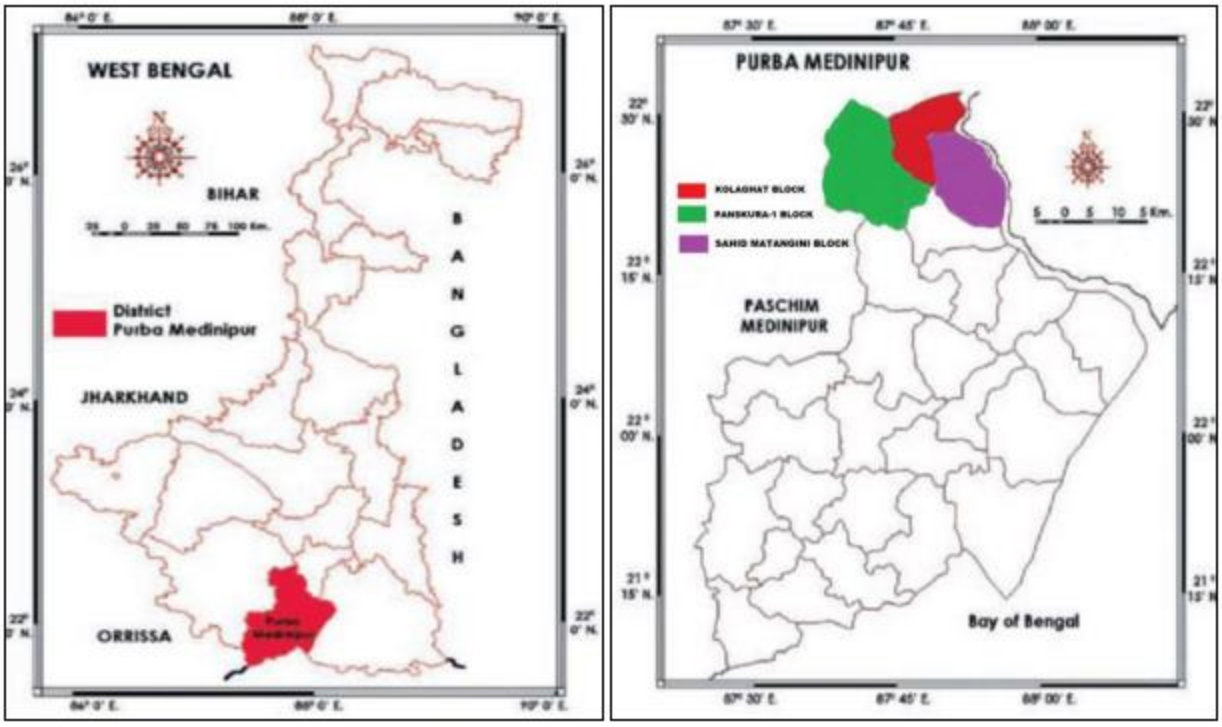

Fig 1: A map of the study area.

3.2Collection and identification of fishes

Information on fish was collected from shops in Koragat, Panskura-1 and SahidMatangini Block. . Three fish markets in Kolaghat, one each in Panskura-1 and Sahidmatangini, were chosen as the most representative of the city as a whole, and their respective populations, for the purpose of data collecting. As fish is most plentiful first thing in the morning, we scheduled our fish market surveys for that time frame (07:00 AM - 10:00 AM). To find out about the accessibility of different fish species, a market study and poll review were led with traders and anglers. Fishes have been identified and classified into their respective taxonomic groups using sources such as Talwar-Jhingran (1991); Jayaram, K.C. (1999) Secondary data was gathered by conducting interviews with local fishermen and observing their activities in the study region using questionnaires. The ongoing preservation status of the species was resolved involving the

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standards laid out by the Worldwide Association for the Protection of Nature's red rundown of jeopardized species (IUCN, 2018). Fishes' local names were gained from retailers and ranchers.

4. RESULTS

A total of 61 fish species affecting 8 orders and 17 families were reported in the study area (including the Koragat, Panskula 1 and SahidMatangini block areas) (Table 1). Cyprinids are the most diverse and diverse school of fish (21 species), followed by Perciformes (13 species), Silliformes (13 species), Synbranchformes (4 species), Osteoglossiformes (2 species) and Mugiliformes (1 species). FollowsCharaciformes (1) and Decapodas (6). (Table-2, Figure-2) The fish fauna of the Kolaghat, Panskura-1 and Sahid-Matangini blocks is dominated by Cyprinidae, accounting for 34.43% of the total. The Palaemonidae family, which accounts for 9.84% of all species, is the second most common species (Table 3, Figure 3). According to IUCN (2018), of the 61 species found in the Kolaghat, Panskura-1, and Sahid-Matangini blocks, 45 are considered Least Concern (LC), the other 5 are Vulnerable (VU), 2 is Not Evaluated (NE). , 1 is Endangered (EN) 1.64%, 6 is Compromised (9.84%), 1 is Insufficient Information (Table 1)

Table 1: Number of application names and types, and % of overflow

SL. No	Name of the order	Number of species	% of abundance
1	Cypriniformes	25	35.67
2	Perciformes	15	22.33
3	Siluriformes	15	22.33
4	Synbranchiformes	05	7.23
5	Osteoglossiformes	06	4.52
6	Mugiliformes	02	2.36
7	Characiformes	02	2.36
8	Decapoda	07	10.25

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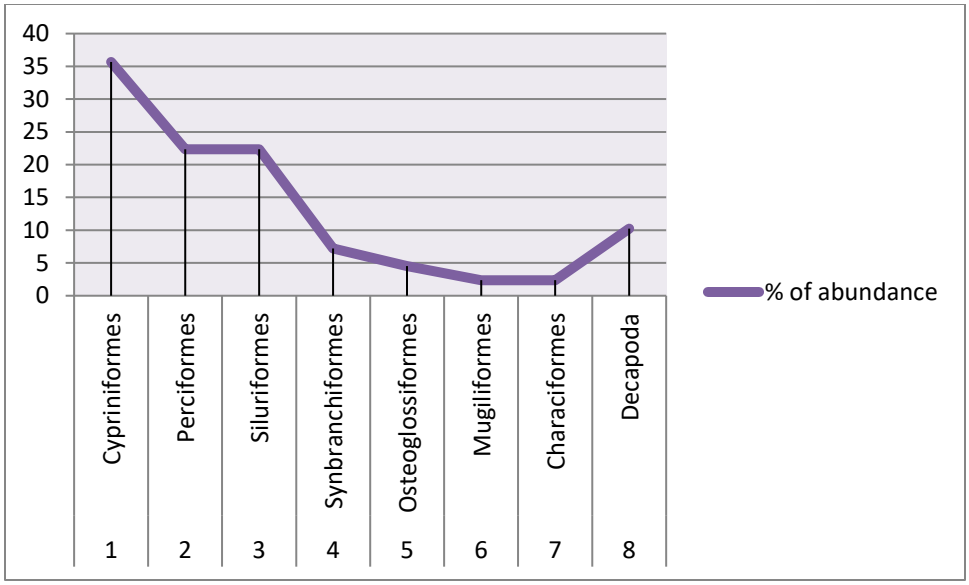

Fig 2: Relationship among request and species overflow.

The IUCN Red Rundown (Worldwide Association for the Protection of Nature and Regular Assets) as in, "Least Concern," Condensing for "powerless" or "feeble," NE = Not Assessed. Compromised (CP), Powerless (P), and Dubious (D)Koragat block = 1, Panskura 1 block = 2, SahidMatangini block = 3 For this situation, + implies Found and - implies Not Found.

Table 2: Family name, number of species and overflow rate

SL. No	Name of the Family	Number of species	% of Abundance
1	Cyprinidae	25	35.25
2	Ambassidae	12	14.25
3	Anabantidae	14	18.95
4	Channidae	10	12.36
5	Cichlidae	09	10.25
6	Nandidae	05	7.5
7	Osphronemidae	06	6.5
8	Pangasiidae	04	8.5
9	Bagridae	07	5.6

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10	Siluridae	04	6.4
11	Heteropneustidae	03	5.6
12	Clariidae	01	1.2

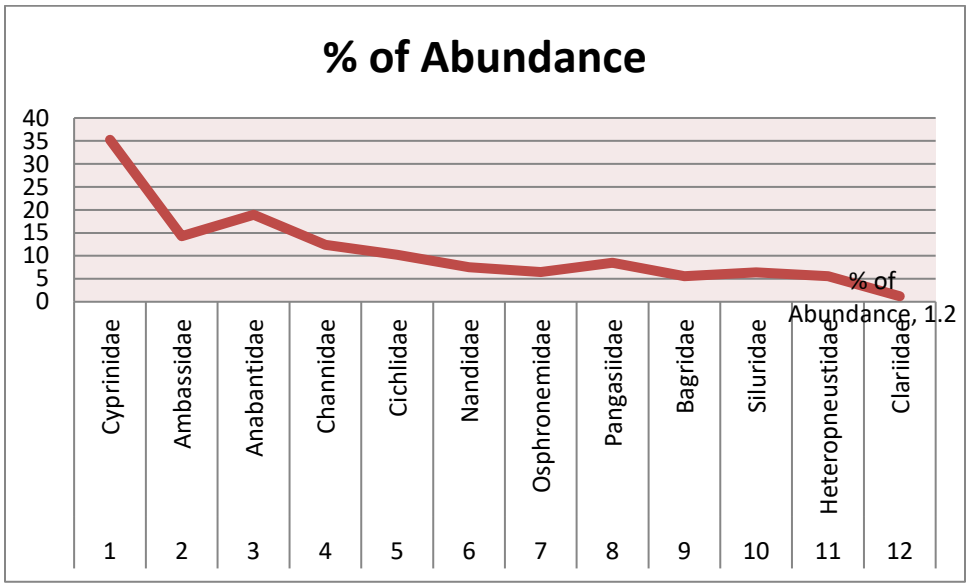

Fig 3: Relationship among family and species overflow.

Table 3: Number and level of fish fauna species by IUCN Red Rundown Class

Status	Number of species	%
Least Concern (LC)	53	78.36
Vulnerable (VU)	08	9.36
Not Evaluated (NE)	05	6.25
Endangered (EN)	03	4.23
Near Threatened (NT)	05	6.25
Data Deficient (DD)	02	3.25

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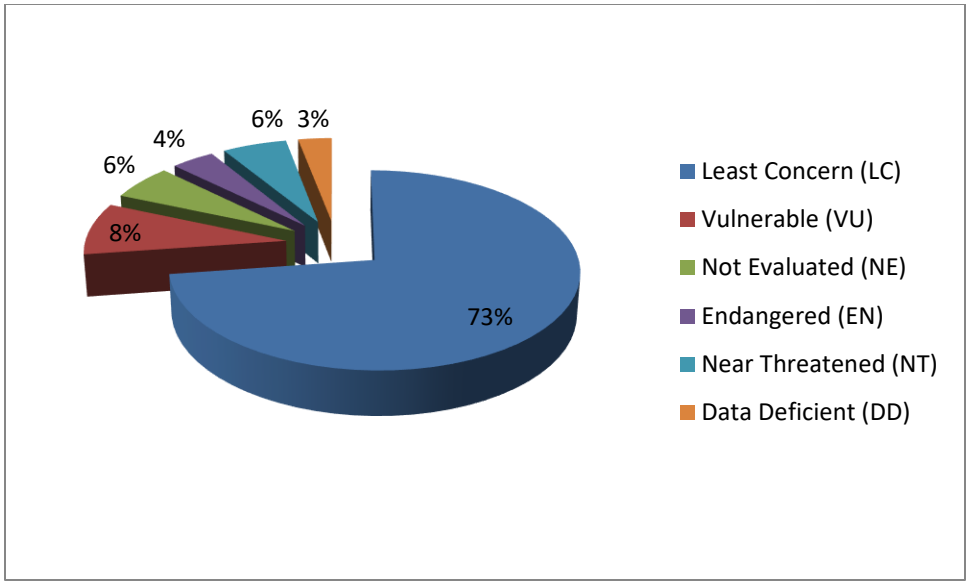

Fig 4: Level of species under various danger classes according to IUCN (2018).

5. DISCUSSION

Fish diversity in West Bengal's waterways been recorded by many authors. In the PurbaMidnapore District, 46 species of freshwater fish were recorded by Bhakta and Bandyopadhyay (2008). Mogalecar, etc. (2017) he found 267 species of freshwater fish, while Bhattacharya (2018) found that in the Bankura region he identified 102 species of freshwater fish, which he classified into 10 orders and 27 families bottom. The study focuses on fish diversity and abundance in the Purva He Medini pool area of West Bengal, especially in the Koragat, Panskla 1 and SahidMatangini blocks. . Around 61 fish species were recorded, addressing 8 request gatherings and 17 families. Information accumulated from a territorial fish market shows a serious drop in fish numbers throughout recent years. Anglers regularly saw and collected fish of the following species: Puntius, Macrognathuspancarus, Mustassemberusarmatus, Mistastenggara, Channapunctata, Anabas testidineus, Nandus, Channagachua, and Chanaorientalis. But these fish hadn't been seen in this mood for a long time. . Since these species were not readily accessible in extremely large quantities despite considerable market demand, a reevaluation of those in the "threatened" category is necessary. The increased demand for local fisheries may have led to unchecked fishing. Moreover, fishing

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Volume 2 Issue 3
June 2022
Impact Factor: 11.9
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efforts were stepped up with the development of cutting-edge fishing technology. As a result of these unscientific methods, the fisheries are in danger of seeing a rapid decline, and many important species are in danger of being wiped out of the area unless proper conservation measures are taken.

Unlawful and hurtful fishing rehearses, contamination, territory change, eutrophication, siltation, and water reflection all posture serious dangers to fish biodiversity, which thus undermines oceanic environments and human prosperity (Groombridge, 1992 and Allan et al., 2005). One of the primary worries for the loss of fish variety is illegal and harmful fishing practises (for example, the utilization of little lattice measured nets, harming, horrendous pinion wheels, Overfishing and catching fish of all life stages). In especially during breeding seasons, the usage of lengthy nylon nets with tiny mesh sizes poses a significant concern by resulting in the indiscriminate slaughter of fishes of all ages, including juveniles and brooders. In the long run, the overfishing and population declines that result from such techniques are not worth the short-term gains they provide.

6. CONCLUSION

A market-based poll revealed a decline in productivity during the previous three years. Proper conservation strategy and management of this region might play a crucial role in its preservation. The essential reasons of waning oceanic variety are human exercises, for example, deforestation, flooding, sand mining, sporting utilization, natural and inorganic contamination, overfishing, unrestrained pesticide use in horticulture, and strange fish gathering along various exercises. Research focuses on a set of basic management techniques for conserving fish biodiversity in freshwater bodies and should be aligned with government fisheries strategies.

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