



STUDIES ON FISH DIVERSITY IN WATER BODIES OF PONDI FISH FARM MAIHAR (M.P.)

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ABSTRACT:

India is one of the mega biodiversity countries in the world and occupying ninth position in terms of freshwater biodiversity. There are about 450 families of freshwater fishes globally. Roughly 40 are represented in India (warm freshwater species). About 25 of these families contain commercially important species. Freshwater fishes are a poorly studied group since information regarding distribution, population dynamics and threats is incomplete, and most of the information available is from a few well-studied locations only.



KEY WORDS: Biodiversity, Fish, freshwater and India.

INTRODUCTION

Biodiversity is also essential for stabilization of ecosystems, protection of overall environmental quality, for understanding intrinsic worth of all species on the earth¹ (Ehrlich and Wilson, 1991). In India, there are 2,500 species of freshwater fishes that have been recognized in the Indian subcontinent out of which 930 are categorized as freshwater species (Jayaram, 1999) and 1570 are marine (Kar, 2003 ; Vijaykumar et al., 2008). Fishes are not only important indicators of ecological health and the abundance, but also maintain a balance in the food chain by consuming plankton and small animals and form food for many animals. This balance in food chain may be affected due to pollution in aquatic system. In addition, there are many threats to fish diversity such as construction of dam, which block the spawning migrations and introduction of exotic species and over fishing. Therefore, knowing the status of fish fauna is indispensable to prevent the loss of particular species (Ramanjaneya and Ganesh, 2016). The Western Ghats is the richest region in India with respect to endemic freshwater fishes. Northeastern India, which has a very high diversity among freshwater fish, does not have many endemic species within India because of its jagged political boundary. There are about 450 families of freshwater fishes globally. Roughly 40 are represented in India (warm freshwater species). About 25 of these families contain commercially important species. Number of endemic species in warm water is about 544. Freshwater fishes are a poorly studied group since information regarding distribution, population dynamics and threats is incomplete, and most of the information available is from a few well-studied locations only (Zooreach organization 2010; Sabuj Kumar Chaudhuri 2010; Thirumala et al., 2011).

MATERIALS AND METHODS:

Study Area:

Podi village in Maihar Tehsil of Satna district in Madhya Pradesh State. Maihar is known for the temple of the revered mother goddess Sharda situated on Trikuta hill. Maihar is located at 24.27°N 80.75°E. It has an average elevation of 367 metres (1204 ft). The area receives moderate rainfall mostly in the month of July and August.

Fish and Water Sampling:

The current study was carried out regularly for a period of 6 months from January 2021 - June 2021 and fishes were collected with the help of fisherman by using gill nets of varying mesh sizes. The fishes were identified as per Jayaram (1999), Talwar and Jhingran (1991) and Dutta Munshi and Shrivastava (1988). The physico-chemical parameters were recorded at regular intervals and analysis was done by following standard procedures of APHA (1998) and Trivedi et al. (1998).

RESULTS AND DISCUSSION:

The ichthyofaunal diversity of pondi fish farm comprises 9 species belonging to 6 families. The Major carps, Catla, Rohu, Mrigal were dominating due to regular seed stocking and the similar results were also obtained. The other fish group which increases the species diversity of farm are Pabda, Murrel, Silver carp, Eel and Sandkhol. The Carps are considered as Major fishes where, Pabda, Murrels and Vam are considered as minor fishes as per their abundance. The major carps, Pabda, Murrel, Silver carp, Eel and sandkol etc. have great food value.

The present fish study has also shown that some of fish species recorded were predatory in nature. Sukumaran and Das (2005) have also made the same observation and stated that majority of the reservoirs of Karnataka state have a large population of predatory fish species. Habitat loss and environmental degradation has adversely affected the fish fauna. Human anthropogenic activities also contribute towards the disruption in the balance on aquatic ecosystem. This work will provide future strategies for development and conservation of fish species. Conservation measures require plantation in catchment area and information on illegal fishing. Rajaram et al. (2004), Mawhoob Noman Alkadasi et al (2010), Shivashankar and Venkataramana (2012) and Thirumala and Kiran (2016) have studied fish diversity in relation to physicochemical variables. Our studies have shown that water quality parameters including DO are the factors for the distribution of fishes. Our results are in confirmatory with above researchers.

Water Quality:

The physico-chemical variations of the water of the water bodies are depicted in Table 1. The water temperature ranged between 23 to 32 °C in pondi fish farm respectively. The increase in pH values was due to increased concentration of bicarbonate alkalinity. The same results were achieved by Mawhoob Noman Alkadas et al. (2010). The results are also in accordance with those of WHO (1984a & b). The calcium content ranged 14-43 mg/l respectively. But magnesium content was less than the calcium and it fluctuated 10-36 mg/l. The low values of BOD (1.4 to 2.6 mg/l) show the less quantity of biodegradable materials. Dissolved Oxygen (DO) is an important indicator of water quality. DO affect the solubility and availability of many nutrients and therefore productivity of aquatic ecosystems (Wetzel, 1983). Significant fluctuations in DO ranged 3.8-6.4 mg/l, thus supporting the concept that bodies under natural conditions contains a high quantity of DO ending with saturation point (Welch, 1952). The total alkalinity values observed in the range of 87 to 212 mg/l. The present investigation show the total hardness varied between 52 and 84 mg/l respectively and showed soft to moderately hard category. The optimum values of hardness ranges between 75 to 150 mg/l which supports the total fish productivity (Das, 1996). Hence, the water suitable for fish culture.

Table 1: Water quality of water bodies Pondi fish farm Maihar M.P.

S.No.	Parameters	Pondi fish farm
1.	Water Temperature (OC)	23-32
2.	pH	7.2-8.2
3.	Calcium (mg/l)	14-43
4.	Magnesium (mg/l)	10-36
5.	Dissolved Oxygen (mg/l)	3.8-6.4
6.	Biochemical Oxygen Demand (mg/l)	1.4-2.6
7.	Total Hardness (mg/l)	75- 150
8.	Total alkalinity (mg/l)	87-212

CONCLUSION:

The investigation of the physico-chemical parameters of pondi fish farm revealed that most of the water quality parameters are under tolerable limits. Water bodies contains economically important and cultivable fishes as well as fishes. However, in recent days the water holding capacities of farm is decreasing, which might affect the survival of fish fauna. In addition, human anthropogenic activity and surface run off might also influence the fish diversity in the water bodies. Nevertheless, it is suggested to monitor the water regularly in these farm and appropriate control measures are required to conserve the fish diversity.

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