

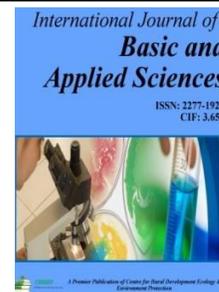
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**Full Length Research Paper****Diversity of Ichthyofauna of Maheshwar Dam in Narmada River Madhya Pradesh India.*****Shailendra Sharma, **Rekha Sharma, **Anita Shinde****Post Graduate. Department of Zoology, Adarsh Institute of Management Science, Dhammod (M.P.) India.****Department of Zoology, Holkar Science College, Indore, India.***ARTICLE INFORMATION****ABSTRACT****Corresponding Author:**

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Fish production in Reservoir is directly or indirectly dependent on the abundance of plankton and bottom fauna. The physico-chemical properties of water determine the quality and quantity of the fauna. The inland fisheries in India contribute nearly 1/3rd of the total fish production. But in total domestic supply its share is 57% in contrast to marine sector with 43% through the fish production from inland sector having great significance in India. Fresh water fishes show variation in relation to habitat and geographical distribution. The biotic and abiotic factors and types of the Ecosystem (lentic & lotic habitat) play main role in fish diversity. Age of the water body, mean depth, water level fluctuation, dam design and morphometric feature have great ecological implications. During the present Survey of Narmada river 43 species of fishes were recorded which belong to 7 order, 14 families & 26 genera. The Present study was carried out at Maheshwar dam of Narmada River during Jan.2017- Dec. 2017.

Introduction

"Fish being a valuable and easily accessible source of food, its pursuit and capture, constituting the fisheries, are of great importance", The wealth of India (1962). Fish culture in fresh waters not only includes the maintenance, feeding, breeding, growth and stocking, but it also reflects the quantity and quality of the fish and their economic production (Huet, 1970). Thus, inland fisheries have a vital role in the economic progress and as a distinct sector of economy. Their benefits are production of food, contribution to national income, employment opportunities, recreation and sports (Rao, 1966). Fishes are a treasured resource both in terms of utility as food, sport, and aquarium and for other scientific studies. Approximately 21723 fishes are known to science of which 40% live in fresh waters, that too, majority of them in tropics. Indian fisheries constitute an important sector of our National economy for various reasons.

India has vast potential for development of inland fisheries. The fish population of our aquatic system plays a significant role in the human economy. Fishes of the inland waters of the Indian subcontinent have been subject of study since long back. Hamilton-Buchanan (1822); Day (1878); Jayaram (1981); Talwar and Jhingran (1991). Fresh water fishes show variations in relation to habitat and geographical distribution. It is thus necessary to understand their distributional and behavioral pattern so as to know the suitability of a fish for culture in a particular locality.

Some fishes in hilly region show some special adaptations, like modification of pelvic fins into suckers, smooth and soft body, small size etc. Much work has been done on different river in hill stream fishes by Silas (1960), Berg (1964), Baloni (1976), Jayaram (1981), Talwar, Jhingran (1981). The environmental factors affecting the fish-food in fresh water fisheries were reported by Bhowmik (1968). Co-relation of physico-chemical factors with planktons ecology recorded by George (1969). The influence of soil and chemistry of water in relation to productivity was reported by Golterman (1967). The organisms exert influence on one another. They are dependent mutually on each other. According to Odum (1953) The main objective of our present study to carried out the current status of the diversity of ichthyofauna of Maheshwar Dam, the impact different of anthropogenic activity, over utilization of water recourses etc. from the study it has been observed the river is in a polluted state which is mostly due to the human activity. Hence

effective measures have to be taken to conserve the river, which is not only the source of water but also as a source of food and economy for the local and rural people.

Materials and method

Study area

The Narmada River, hemmed between Vindya and Satpuda ranges, extends over an area of 98,796 km², and lies between east longitudes 72 degrees 32' to 81 degrees 45' and north latitudes 21 degrees 20' to 23 degrees 45' lying on the northern extremity of the Deccan Plateau. The basin covers large areas in the states of Madhya Pradesh (86%), Gujarat (14%) and a comparatively smaller area (2%) in Maharashtra. There are 41 tributaries, out of which 22 are from the Satpuda range and the rest on the right bank are from the Vindhya range. Maheshwar Dam is situated on Narmada River in Khargone district of Madhya Pradesh State in central India. It is located 91 km. away from Indore. The Maheshwar Dam is part of the Narmada Valley Development Project. It's Latitude (DMS) 22°18'60"N and Longitude (DMS) 75°34'60" E.

Sampling of fish has been made for every fortnight days throughout the study period Jan.2017 to Dec.2021. Collection of fish was made directly from the fisherman's during the time of fishing. Two types of fish nets were used: (i) Gill net and (ii) Cast net. (Gill nets of different mesh sizes viz. 20,25,30,36,78,100mm cost net of (mesh size 14 and 22 mm) and hand net (mesh size 610 of mm). Coloration and general pigmentation of the fishes was recorded prior to their preservation in the formalin. The identification of the fishes was done with the help of standard keys and book (Jayaram 1994, Shrivastava 1998, Jhingran 1991 and Day 1958).

Results and Discussion

The species diversity peak in post monsoon, coinciding with favorable conditions such as sufficient water and ample food resources. The diversity was low in pre monsoon probably due to the shrinkage of water. Information collected from fisherman communities displayed high decline of fish diversity. Deforestation, water scarcity, pollution, introduction of exotic species, sand mining and excessive fishing are the biggest threats to fish population. The diversity of fishes mainly depends upon the biotic & abiotic factors and types of the ecosystem (lentic & lotic habitat). Age of the water body, mean depth, water level fluctuations, Dam design and morphometric features have great ecological implications. During the present survey of Maheshwar dam of Narmada river 36 fishes species were recorded which belong to 7 order, 12 families & 22 genera (Table 1). Out of the six orders Cypriniformes (44.44) was dominant with 16 species followed by Siluriformes (27.77) with 10 species, order Ophiocephaliformes (11.11) with 4 species order Perciformes (5.56) with 2 species and order Mastacembelidae (5.56) with 2 species, Beloniformes (2.77) and Clupeiformes (2.77) represented by 1 species each (Fig.1).

The change in the composition of a fish assemblage often indicate a variation in the water quality parameters, such as pH, temperature, dissolved oxygen and nutrient (Jhingran, 1982; Vijay Kumar, K. and R. Paul, 1990). Due to more fecundity of major carp and suitable environmental condition there exists a relatively also reported by Talwar and Jhingran (1991), Das and Chand (2003), Pathak and Mudgal (2005).

Table 1: Seasonal Variations In Fishes Of Maheshwar Dam (Narmada River)

Order	Family	Species	Monsoon	Post Monsoon	Winter	Summer
Clupeiformes	1. Notopteridae	1. Notopterus notopterus	-	-	++	+
Cypriniformes	2. Cyprinidae	2. Cyprinus carpio	-	++	++	-
		3. Catla catla	+	++	+++	-
		4. Cirrhinus mrigala	+	+	++	-
		5. Cirrhinus reba	+	+	+++	+
		6. Garra mullya	+	+	+++	+
		7. Labeo bata	+	+	+++	++
		8. Labeo calbasu	+	+	+++	+
		9. Labeo gonius	+	+	+++	+
		10. Labeo rohita	-	++	+++	+
		11. Labeo fimbriatus	+	+	++	++
		12. Puntius sarana	+	-	+++	-
		13. Puntius ticto	+	++	+	++
		14. Puntius guganio	-	-	+++	++
		15. Tor tor	-	-	++	+
		16. Rasbora daniconius	-	++	+	-
		3. Cobitidae	17. Nemacheilus botia	-	-	-

Siluriformes	4.Siluridae	18.Ompok bimaculatus	-	++	+	+	
		19.Wallago attu	+	+	-	-	
	5.Bagridae	20.Mystus bleekari	-	++	++	+	
		21.Mystus seenghala	-	++	++	-	
		22.Mystus vittatus	+	+	+++	-	
		23.Mystus cavasius	-	-	+	+	
		24.Mystus tengara	+	+	+++	++	
	Heteropneustidae	25.Rita rita	+	-	+++	+	
		26.Heteropneustes fossilis	+	-	+++	+	
	Beloniformes	7.Clariidae	27.Clarius batrachus	-	++	++	+
8.Belonidae		28.Xenentodon cancila	+	++	+	++	
Ophiocephaliformes	9.Ophiocephalidae	29.Channa gachua	-	-	+	+	
		30.Channa marulius	-	-	+++	++	
Perciformes	10.Centropomidae	31.Channa punctatus	+	+	++	+	
		32.Channa striatus	-	-	+	+	
		33.Chanda nama	-	-	++	+	
Mastacembeliformes	11.Nandidae	34.Nandus nandus	-	-	++	-	
		12.Mastacembelidae	35.Mastacembelus armatus	+	++	+++	-
			36.Mastacembelus pancalus	+	++	++	-

Index: +++ Abundant , ++ Less Abundant, Always Visible + Rare, Sometime Visible , - Absent

Several workers have done work on Narmada river in different region and they have been reported their observation in different manner Vishwakarma et.al. (2014), recorded 33 fish species belonging to 5 orders, 9 families and 21 genera. Kumar et.al. (2014) studied the fish species diversity of river Narmada In Khedighat, Bdarwaha, Madhya Pradesh, and recorded 21 species of fish belonging to 4 orders and 6 families. Family cypriniformes were dominated with 15 species of fish. Pathak et.al. (2014) recorded 58 species of fish from western region of Narmada river at Jabalpur. Vyas et.al. (2013) recorded 27 species of fish from Jamner river, a tributary of Narmada river. Siddiqui et.al.(2014) recorded 48 species Ichthyofauna of Narmada river of Mandleshwar region, Madhya Pradesh, India of Ichthyofauna belonging to 7 orders and 17 families. Bose at.al. (2013) recorded 57 species of fishes belonging to 35 genera , 13 families, and 6 orders from middle stretch of river Tawa. Bakawale et, al. (2013) reported 51 species of the fish species diversity of the river Narmada in western zone, belonging to 7 orders and 15 families.

In the present study 36 fish species, belonging to 7 orders and 12 families & 22 genera were recorded (Table 1and fig.1). Present investigation revealed that, Narmada river is a healthy water body providing a habitat for freshwater fishes of diverse type. However, there is constant threat to fish population due to eutrophication and illegal fishing activities. The illegal fishing activities should be banned to prevent depletion of fresh water fish resources and further studies should be conducted to generate more details regarding seasonal production and ecology of fishes. In situ conservation is one of the several prominent and suggestive measures for the conservation of fish biodiversity.

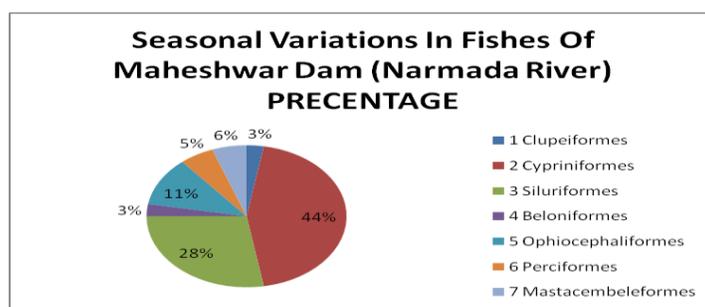


Fig.1: showing percent contribution of families to the orders.

Conclusion

Fishes being nutrient rich is considered as an ultimate source of food. Due to the population is increasing rapidly so is the decline of agriculture land due to mass transformation into urbanization, building roads etc. It is quite evident that in the near future more than half of the population will face starvation due to increasing demand and shortage of agricultural food. The only solution to fix this problem is effective and planned utilization of aquatic resources mostly the fish resources. Hence important steps and measures has to be made to conserve our water of resources as these resources not only provide the food but are also the valuable source of economy mostly in India and other countries. The Narmada river is life line of Madhya Pradesh has a huge diversity of ichthyofauna but due to some anthropogenic activities in the river Narmada some of the Fish species are declined, So on behalf of our study conservation of fish species must be the need for in situ conservation and protection.

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