



Fish Diversity of Narmada River Backwater in Maharashtra, India

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Abstract : Fish is a rich source of protein and occupies a vital position in the diet of people of South Asian countries. As far as fish production and natural water resources are concerned, Maharashtra is an important state which has immense scope for developing fisheries. Fish are the most diverse group of vertebrates. The variety of Indian fish is about 2,500 species, of which 930 freshwater and 1,570 marine are estimated. There are about 450 families of freshwater fishes present in India. About 25 of these families contain commercially important species. There are several Indian fish species in the Narmada River. Narmada is the fifth largest river in the country and the largest one in Gujarat. The study was done in the Narmada River east (Longitudes 72°20' to 23°45') and Northern (Latitudes 21°20' to 23°45') and different survey places Domkhedi Latitude 21.919477° Longitude 74.172981° and Hafeshvar Gujrat Latitude 21.967429° Longitude 74.12392°. The fish population was recorded using the walk and ship traveling method, during a walk we observed the fish species in different places and took photos with the help of a GPS Map Camera. In present study we recorded a total of 16 species. Among identified fishes belonging to order Cypriniformes and Siluriformes were dominated with 7 species each followed by order Cichliformes with 1 and Anabantiformes with 1. Out of 16 fish species, 7 species belong to the family Cyprinidae, 3 species to Bagridae, 2 species to Pangasidae, 1 species to Cichlidae and 1 species from Channidae. In present study it was noted that very less fish diversity recorded that might be due to overfishing. Some limnological factors also affects on fish assemblage.

Keywords: Fish diversity, Narmada River, Freshwater fishes,

I. INTRODUCTION

Fish are the most diverse group diverse group of vertebrates. There are several Indian fish species in the Narmada River. Narmada is the fifth largest river in the country and the largest one in Gujrat. It traverses Madhya Pradesh, Maharashtra, and Gujrat and meets the Gulf of Cambay the total length of the river from source to sea is 1312 kilometers while the size up to the dam site is 1163 kilometers. Fish species diversity with the river Narmada in Nimar region of M.P. were 43 fish species under four orders, nine families and 16 genera (Khinchi Yogesh 2021).

Fish constitute almost half of the total number of vertebrates in the world, with 21,723 living species of fish out of 39,900 species of vertebrates Ichthyofaunal diversity displays 8,411 are freshwater species and 11,650 are marine, which are classified under 4,044 genera, 445 families and 50 orders are recorded. India (08°04'-37°06'N and 68°07'-97°25') is one of the 12 mega biodiversity countries in the world having two biodiversity hotspots, namely the Western Ghats and Eastern Himalayas.

The variety of Indian fish is about 2,500 species, of which 930 freshwater and 1,570 marine are estimated. There are about 450 families of freshwater fishes present in India. About 25 of these families contain commercially important species.

Indian fish fauna is divided into two classes viz, Chondrichthyes (cartilaginous fishes) and Osteichthyes (bony fishes). The Chondrichthyes are represented by 131 species under 67 genera 28 families and 10 orders in the Indian region, the Indian Osteichthyes are represented by 2,415 species belonging to 902 genera, 226 families, and 30 orders.

Fish is a rich source of protein and occupies a vital position in the diet of people of South Asian countries as far as fish production and natural water resources are concerned, Maharashtra is an important state which has immense scope for developing fisheries. A total of 165 fish species have been recorded and confirmed by various authors in Maharashtra, belonging to 9 orders, 26 families, and 82 genera (Pawara et al., 2014).

India occupies the ninth position in having the largest and richest biodiversity and has diverse water resources, lakes, and ponds that harbor various freshwater fishes.

Threatened freshwater finfish species in Asia account for 17.5% of all finfish species in the world, with 66 species classified as critically endangered and or endangered (Sena S. De Silva et al., 2007).

II. RESEARCH METHODOLOGY

2.1 Study Area:-

The study was done in the Narmada River east (Longitudes 72°20' to 23°45') and Northern (Latitudes 21°20' to 23°45') and different survey places Domkhedi Latitude 21.919477° Longitude 74.172981° and Hafeshvar Gujrat Latitude 21.967429° Longitude 74.12392°. The pictorial collection and observation of fish diversity study was done in February 2024.



2.2 Fish Survey

The fish population was recorded using the walk and ship traveling method, during a walk we observed the fish species in different places and took photos with the help of a GPS Map Camera. The survey was conducted during the morning time zone (Between 6-10 A.M.). Identification of fish species was carried out with the help of the Google Lens app.

III. RESULTS AND DISCUSSION

In present study we recorded a total of 16 species of fish which are the following species Big headed carp, Catla catla, Hemibagrus, Java barb, Nile tilapia, Pangasius larnaudii, Cirrhins cirrhosus, Mystus nigriceps, Poropuntius chondrorhynchus, Pangasius conchophilus, Phalacrotonus, Rohu, Sperata aor, Tor khudree, Channa striata. Fish species survey was done during February 2024. Most of the species we have reported come under threatened species in IUCN Red list (Dahanukar, N. 2010, Rema Devi, K.R. and Ali, A. 2011 and Huckstorf, V. 2012).

The present investigation of fish fauna in Narmada River backwater found a total 16 species of fish belonging to four orders and five families were recorded. Among identified fishes belonging to order Cypriniformes and Siluriformes were dominated with 7 species each, order Cichliformes

with 1 and Anabantiformes with 1. Out of 16 fish species, 7 species belong to the family Cyprinidae, 3 species to Bagridae, 2 species to Pangasidae, 2 species Siluridae, 1 species to Cichlidae and 1 species from Channidae.

1) The percentage of fish population shown Order Cypriniformes and Siluriformes were the most dominant constituting 43.75% followed by Order Cichliformes and Anabantiformes constituting 6.25%.

2) The economically important and cultivable fishes were also recorded, and include Cyprinus carpio, Catla catla, Labeo rohita, Cirrhinus mrigala, Sperata aor, and Channa striata. Some rare fish species we have recorded in Narmada River are the species viz. Oreochromis niloticus, Channa striata. In present study it was noted that very less fish diversity recorded that might be due to overfishing and disturbances in limnological factors (Bose Ridhi et al., 2018).

Table: 1 % Composition of fish orders in narmada river during february 2024.

Fish orders	% of Fish Species
Cypriniformes	43.75%
Siluriformes	43.75%
Cichliformes	6.25%
Anabantiformes	6.25%

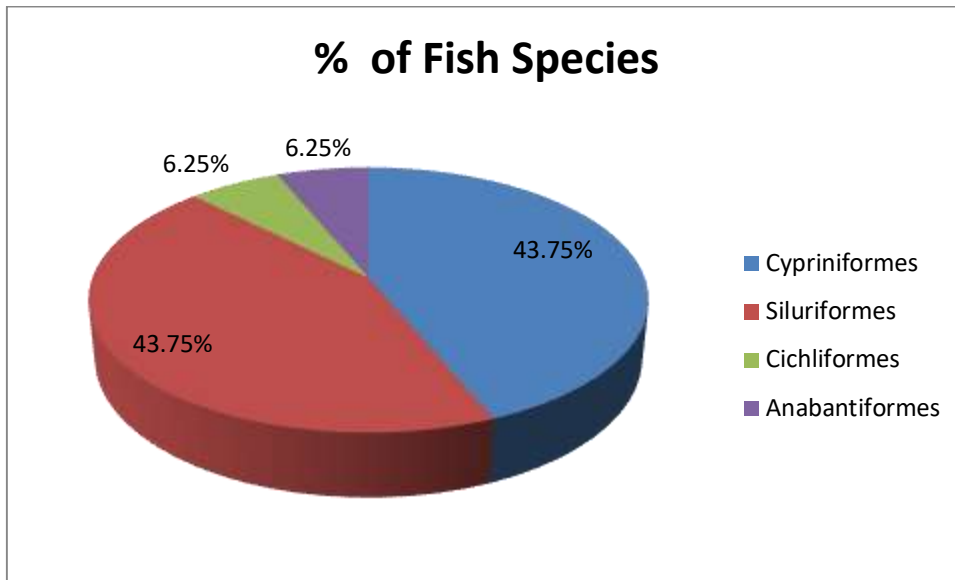


Table 2: List of recorded fish species in February 2024.

Order	Family	Species
Cypriniformes	Cyprinidae	<i>Hypophthalmichthys nobilis</i>
		<i>Catla catla</i>
		<i>Barbanymus gonionotus</i>
		<i>Labeo rohita</i>
		<i>Cirrhinus cirrhosis</i>
		<i>Poropuntius chondrorhynchus</i>
		<i>Tor Khudree</i>
Siluriformes	Bagridae	<i>Hemibagrus nemurus</i>
		<i>Mystus nigriceps</i>
		<i>Sperata aor</i>
	Pangasiidae	<i>Pangasius larnaudii</i>
		<i>Pangasius conchophilus</i>
		<i>Phalacrotonotus apogon</i>
Cichliformes	Cichlidae	<i>Oreochromis niloticus</i>
		Anabantiformes

Pictures of a few fishes recorded in Narmada River in February 2024.





Hemibagrus nemurus



Barbanyms gonionotus (Java barb)



Labeo rohita



Oreochromis niloticus (Nile tilapia)



Pangasius larnaudii (Catfish)



Pangasius conchophilus



Phalacrotonotus apogon



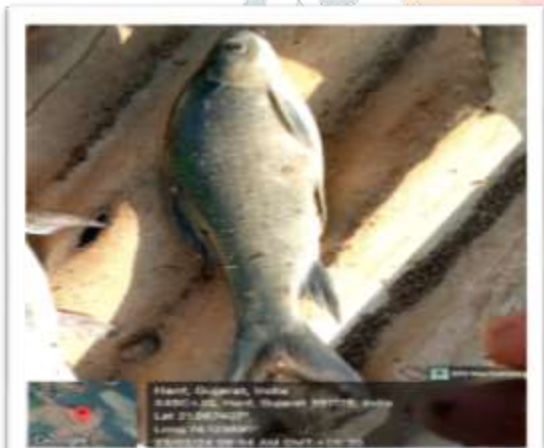
Mystus nigriceps



Poropuntius chondrorhynchus



Cirrhinus cirrhosus



Tor Khudree



Sperata aor



Channa striata (Snakehead fish)

IV.

The results indicate a reduction in the abundance of fish diversity. Information collected from fisherman communities displayed a decline in fish diversity. Some kinds of disturbances in the river are causing a reduction in the abundance of fish diversity. Poor fish diversity was recorded in the Narmada River due to the increase in overfishing resulting in the quantity of fish diversity decrease. Fish diversity and limnological parameters also influences fish assemblage pattern. Most of the species we have reported come under threatened species in IUCN Red list.

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