

**SEASONAL VARIATION IN ABUNDANCE OF FISH DIVERSITY AT MULA DAM
RESERVOIR, AHMEDNAGAR (M. S.), INDIA**

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ABSTRACT:

The monitoring of seasonal fluctuation in species abundance of fish diversity from the Mula Dam reservoir was assessed monthly from May 2021 to April 2022. The main objective of the present study was to compare and describe the species assemblage and seasonal variation in the Ichthyofaunal diversity of the Mula Dam reservoir.

During this monthly fixed station sampling, the Ichthyofaunal diversity of Mula reservoir represent the collection of 23 species. The study showed the identification of total 328 fish specimens in 2021-22 (38 on May, 24 on August, 22 on November, and 28 on February). The present study shows the strong seasonal variation in fish species assemblage over the four seasons throughout the year.

The findings of this work will be helpful in Ichthyofaunal conservation and proper management of fisheries resources of Mula Dam Reservoir.

KEY WORDS: Seasonal fluctuation, Abundance, Mula Dam, Fish assemblage.

INTRODUCTION:

Water reservoirs are one of the most significant tools that provides a yeoman service to society as they promote socioeconomic development and contributes to the conservation of biodiversity. Ichthyofaunal diversity is an indication of a balanced ecosystem which influences human life in many ways. The index of diversity, defined by Fisher et al,[2] are two measures of the degree of concentration or diversity achieved when the individuals of a population are classified into groups [16]. In general, there have been two approaches to measuring species diversity, both of which incorporate information on the number of species (species richness) and the relative abundances of individuals within each species (species abundance) [14].

Variability in species richness and abundance of fishes is seen due to the fluctuations in environmental factors according to the season. Reservoir cascades present longitudinal shifts in physical and biological parameters, which drive changes in biodiversity that can vary in intensity and direction depending on the longitudinal position of the impoundment[3], [4], [5], [6].

Present investigations was undertaken to examine the seasonal variation in Ichthyofaunal diversity of Mula dam reservoir, Ahmednagar. This study provides baseline data for future studies, related to the diversity and abundance of Ichthyofauna from Mula dam reservoir about to with concerning a seasonal variation.

MATERIALS AND METHODS:

Study area:

The dam was constructed artificially in 1972 across the Mula river the south of Bargaon nandur Taluka Rahuri, District Ahmednagar [7]. Mula Dam encompasses a total surface area of 53,600 km² with a gross storage capacity of 7,36,330,00 km³ and a water capacity is 26 TMC [1]. The height of the Mula dam is 46.33m (153 ft.) alone lowest foundation while the length is 3019 M (9950 ft.) and the volume content of the dam is 7594 km³ [1].

Collection of fishes:

This research work was conducted monthly from May 2021 to April 2022, fish sampling was done with the help of local fishermen and fish sellers seasonally from 2021 to 2022, Spring from March to May, and Summer from June to July

Identification of species:

Identification of fishes was done to the species level based on the meristematic feature and diagnostic characters. And with the help of standard taxonomic keys and books [17], [18], [19], [20].

RESULT AND DISCUSSION:

In the present study totally 328 fish specimens were caught and identified comprised of 23 fish species belonging to 8 different orders and 12 different families during the 2021-22 sampling period. According to the season we found significant differences in the distribution of fishes. We found that the diversity analysis shows significant differences in the distribution of fishes from Mula dam reservoir in 2021-22. The sampling was done across the four seasons throughout the year 2021-22 which represents that the largest catch was of 38 specimens in the month of May followed by the month of April with 35 specimens and the third-largest catch was seen in June with 34 specimens. This study analyzed the apparent seasonal variation in both the abundance and the composition of fishes captured from the Mula dam reservoir. In terms of composition, the five most important species were *Oreochromis niloticus* which accounted for 12.15% of the total biomass, followed by *Tilapia sparamanii* (8.51%), *Salmostoma baccaila* (8.20%), *Labeo catla*, *Pangasius pangasius* (7.59%) and *Hypophthalmichthys malitrix* (6.68%). In terms of abundance, amidst of all some species are most dominant which observed throughout the year, some species are subdominantly seen in the reservoir and some of which occurred occasionally. The highest evenness was presented by the summer.

SR. NO	COMMON NAME	SCIENTIFIC NAME	FAMILY	MA Y	JU N	JU L	AU G	SE P	OC T	NO V	DE C	JA N	FE B	MA R	AP R
1	Tilapia	<i>Oreochromis niloticus</i>	Cichlidae	5	3	5	2	2	3	3	2	3	3	4	5
2	Tilapia	<i>Tilapia sparamanii</i>		4	3	3	2	2	2	1	1	1	2	3	4

3	Large rozarbelly minnow	<i>Salmostoma bacaila</i>	Cyprinidae	4	3	2	1	1	2	2	2	2	2	3	3
4	Indian major carp	<i>Labeo catla</i>		3	4	2	2	1	1	2	1	2	2	2	3
5	Silver carp	<i>Hypophthalmichthys molitrix</i>		3	1	1	2	2	1	1	2	2	1	2	2
6	Common carp	<i>Cyprinus carpio</i>		2	1	1	1	0	1	1	1	1	1	1	2
7	Indian major carp	<i>Cirrhinus mrigala</i>		0	1	1	0	1	0	0	1	0	0	1	1
8	Indian major carp	<i>Labeo rohita</i>		2	1	1	1	2	1	2	1	1	1	2	1
9	Ray- finned fish	<i>Garra mullya</i>		1	1	0	0	0	0	0	1	1	1	1	0
10	Loli fish	<i>Gymnostomus ariza</i>		0	1	0	1	0	1	1	0	0	1	0	0
11	Slender barb	<i>Rasbora doniconius</i>		1	1	0	1	0	0	1	0	1	1	0	1
12	Olive barb	<i>Punctius sarana</i>		0	2	1	1	0	0	1	0	1	1	0	1
13	Spiny eels	<i>Macrognathus arale</i>	Maslacembelidae	1	1	1	1	0	1	0	0	1	2	1	1
14	Striped snakehead	<i>Channa striata</i>	Channidae	1	1	0	0	1	0	0	1	1	0	1	0
15	Pangus	<i>Pangasius pangasius</i>	Pangasidae	3	2	2	1	2	1	1	2	2	3	3	3
16	freshwater pomfret	<i>Piaractus brachypomus</i>	Serrasalminidae	1	2	1	1	2	1	1	0	1	1	3	3
17	Red-bellied piranha	<i>Pygocentrus nattereri</i>		2	1	2	1	2	2	1	1	1	1	1	0
18	Garfish	<i>Xenotodon cancila</i>	Belonidae	0	1	1	1	1	0	0	0	0	1	1	2
19	Bagrid catfish	<i>Mystus gulio</i>	Bagridae	1	1	1	1	0	0	1	1	1	1	0	1
20	Freshwater/helicopter catfish	<i>Wallago attu</i>	Siluridae	0	1	0	1	1	0	1	0	1	0	1	0
21	Ghost kneifish	<i>Notopterus notopterus</i>	Notopteridae	1	1	1	2	0	1	1	1	0	1	1	1
22	Bar-eyed fish	<i>Glossogobius giuris</i>	Gobisidae	1	1	1	0	1	0	0	1	0	1	1	0
23	Indian glossy fish	<i>Parambassis ranga</i>	Ambassidae	2	1	0	1	0	0	1	1	2	1	1	2
TOTAL NO. OF FISHES				38	35	27	24	21	18	22	21	25	28	33	36

Table 1. The species diversity and abundance of fish fauna recorded at Mula dam reservoir.

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CONCLUSION:

The study concludes that the alterations in species richness observed during the study were correlated with changes in several environmental factors linked to seasons considerably throughout the year. The long term monitoring is important to assess biodiversity.

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