

**STUDY ON ZOOPLANKTON DIVERSITY IN PRAVARA RIVER, MAHARASHTRA,
INDIA**

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ABSTRACT

Present study deals with collection and identification of Zooplankton diversity of Pravara River, a tributary of Godavari, Akole and Sangamner with six tehsils, District Ahmednagar, Maharashtra State. The duration of work was January 2021 to December 2021 i.e. one year period. The present study reports the zooplankton diversity composition from the Pravara River In total, 10 species of zooplanktons belonging to 4 classes viz. Rotifera, Cladocera, Copepoda and Ostracoda were recorded from the Pravara River near Bhandardara village. The dominance of Rotifera was observed among all zooplankton groups in all seasons. The study of seasonal variation of zooplankton analysis shows an average abundance of species in winter season.

Keywords Abundance, Anthropogenic, Bio indicator, Community, Dominance.

1. INTRODUCTION

The study of fresh water bodies like river, ponds and lakes is called as Limnology. Phytoplankton, zooplankton, small fish & large fish is main component of fresh water ecosystem. This all factor are part of food web.

The Pravara River is big river in Maharashtra. It originates on the eastern slopes of the Sahayadris between Kulang and Ratangad mountains in the Ahmednagar District of Maharashtra. The river flows into the town of Bhandardara. Here, the Bhandardara Dam is constructed across the river forming the Arthur Lake. The gates of the dam are periodically opened, to allow downstream flow of the Pravara, giving rise to the Umbrella Falls. From here on the river takes an east ward course and 58 km downstream, reaches another city- Sangamner, where the river Mahalungi confluences with it. This is the second largest city within the Ahmednagar District. Continuing eastwards, the river is joined by another tributary, this time on its right bank: River Mula. The river then, reaches the town of Nevasa and flows 12 km to the east where it finally empties itself into the Godavari River at Pravara Sangam located 208 km i.e., 129 miles from its source of origin. In recent year Pravara basin has been subjected to excessive pressure of anthropogenic activities such as religious festivals attracting millions of tourists through the year, growing pollution by urban center, growing paddy cultivation and over extraction on the river water to feed the water guzzling crop. These activities are taking role in river health and its water availability. The Pravara River is the one of the prime rivers of Bhandardara reservoir.

Zooplankton has small life span because its gives quick response to environment change. Carriack [6] Water birds, fish, macro invertebrate abundance also affect the zooplankton diversity. Russell et al. [15] Pravara River near Bhandardara study shows that seasonal variation in zooplankton diversity it indicates that maximum occurrence in summer season, average in winter and lower in monsoon Dede et al [7]

Copepoda is more diverse group whereas Ostracoda poorly contributed as compared to the other two groups. The density of Rotifera as well as their diversity increases due to increase in eutrophication. The density of rotifers significantly increased with increasing nutrient concentration Zooplanktons population and nutrient level is help to determine the health of ecosystem. Disturbance also responsible for to influence the species, community diversity and abundance Most of study shows the fresh water contain high rotifer density. Patil, [14] Temperature is major factor to change the

community composition and affect the diversity of species.

Fish larvae have oil globule that give them added buoyancy. Zooplankton biodiversity is essential to keep our ecosystem healthy because each species plays a specific role like in recycling of nutrients, food for another and maintaining of soil fertility. The increasing human population in India leads to number of industrializations which creates the problems of disposal of waste water products.

2. MATERIALS AND METHODS

Plankton samples were collected from Pravara River at six locations like Streams from catchments area (Site-I), Wilson dam (Site- II), Randha fall (Site-III), Akole (Site-IV) Ozar (Site- V) and Shendi (Site-VI) from Akole Tehsil of Ahmednagar District, MS, during January 2022 to December 2023. The Plankton samples were collected through 50 liters of water by standard plankton net made up of bolting silk cloth No. 20 and the collected samples were fixed in 4% formalin. The Zooplankton are identified with the help of standard literature up to generic level by using standard keys [1, 4, 9]. Drop count method were used for counting of zooplankton and result converted into organism per ml water. The counting was done following the work [9] For enumeration of zooplankton population surface water samples (100 liters) were filtered with the help of a plankton net made of bolting silk of mesh size of 20 µm and concentrated samples were preserved with 4% formaldehyde solution in 100 ml plastic vials, Asha [2]. These samples were then brought to laboratory for further quantitative and qualitative studies. Quantitative study were made with the help of Sedgwick- Rafter cell. Identification and enumeration of zooplankton were done by a light microscope.

3. RESULT AND DISCUSSION –

The present study reports the zooplankton diversity composition from the Pravara River in total,10 species of

Zooplanktons belonging to 06 families and 4 classes viz. Rotifera, Cladocera, Copepoda and Ostracoda were recorded from the Pravara River near Shendi village. The samples were collected from five locations of Akole Tehsil. The class Rotifera represents 5 species, Cladocera 2 species, Copepoda 2 species and Ostracoda 1 species. The species recorded during the study with their occurrence in summer monsoon and winter presented in table 1. Purushothama et al. [16] studied the physico chemical profile and zooplankton community composition in Brahmana Kalasi tank, Sagara, Karnataka. Their study reports 18 species of Zooplanktons from the Brahmana Kalasi Tank. Likewise, several records on hand about zooplankton diversity, abundance, composition and seasonal variation from the different fresh water bodies Jayabhaye, [12]

Table.1 Species composition of zooplankton at study area during Jan. 2021 to Dec. 2021

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Sr.no.	Zooplankton Groups	Family	Name of species	Summer	Winter	Monsoon
1	Rotifera	Brachionidae	Brachionus caudatus	+	+	+
2			Brachionus falcatus	+	+	+
3			Brachionus forficula	+	+	+
4			Keratella chochlearis	+	+	+
5		Filinidae	Filinia opolensis	+	–	–
6	Cladocera	Moinidae	Moina micrura	+	+	+
7		Chydoridae	Chydrous sphaericus	+	+	+
8	Copepoda	Diaptomidae	Mesocyclops	+	+	+
9			Microcyclops	+	+	+
10	Ostracoda	Cyprididae	Stenocypris	+	+	+

Table.2 Seasonal variation of various zooplanktons density from study area

Sr .no	Zooplankton groups	Kolhar	Wilson Dam	Randha Fall	Akole	Ozar	Shendi
	Rotifera (No/L)	535	511	490	497	595	507

1	(Summer)						
	Rotifera (No/L) (Winter)	428	472	440	470	490	405
	Rotifera (No/L) (Monsoon)	239	260	248	265	280	270
2	Cladocera (No/L) (Summer)	370	360	376	380	393	312
	Cladocera (No/L) (Winter)	250	230	243	278	285	260
	Cladocera (No/L) (Monsoon)	155	160	132	154	180	145
3	Ostracoda (No/L) (Summer)	150	132	137	146	165	122
	Ostracoda (No/L) (Winter)	100	102	88	95	120	108
	Ostracoda (No/L) (Monsoon)	50	24	45	58	70	65
4	Copepoda (No/L) (summer)	400	365	453	455	480	395
	Copepoda (No/L) (winter)	320	310	325	312	370	365
	Copepoda (No/L) (Monsoon)	200	180	210	234	250	240
5	Total. Zooplanktons (No/L)	3197	3106	3187	3344	3678	3194

4. CONCLUSION: -

Total, 10 species of zooplanktons belonging to 06 families and 4 classes viz. Rotifera, Cladocera, Copepods and Ostracoda were recorded from the Pravara River, hence Zooplankton diversity is directly depended on abundance of phytoplankton. Phytoplankton diversity is easily affected by change in physicochemical properties of water.

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