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**SYNOPTIC STUDY ON ZOOPLANKTON DIVERSITY IN BHIMA RIVER,
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Authored by

Rajendra Dandawate,
Department of Zoology, Arts, Commerce & Science College, Sonai, Dist
Ahmednagar,

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**SYNOPTIC STUDY ON ZOOPLANKTON DIVERSITY IN BHIMA RIVER,
MAHARASHTRA, INDIA**

Supriya Waykar Department of Zoology, Dada Patil Mahavidyalaya, Karjat, Dist Ahmednagar MS
waykar.supriyaa@gmail.com

Mawiyanz Shaikh, Department of Zoology, Dada Patil Mahavidyalaya, Karjat, Dist Ahmednagar
MS, mawiyashaikh98@gmail.com

Rajendra Dandawate, Department of Zoology, Arts, Commerce & Science College, Sonai, Dist
Ahmednagar, Corresponding Author: drajendra2006@gmail.com

ABSTRACT

Present study deals with collection and identification of Zooplankton diversity of Bhima River from six localities of Karjat and Shrigonda tehsil from Ahmednagar District, Maharashtra State. The duration of work was January 2019 to December 2019 i.e one year period. The present study reports the zooplankton diversity composition from the Bhima River In total, 13 species of zooplanktons belonging to families and 4 classes viz. Rotifera, Cladocera, Copepoda and Ostracoda were recorded from the Bhima River in karjat shrigonda tehsil area. The dominance of Rotifera was observed among all zooplankton groups in all seasons. The study of seasonal variation of zooplankton analysis shows an in-winter season species number are more.

Keyword:s Abundance, Anthropogenic, Bioindicator, Community, Dominance.

1 INTRODUCTION

Limnology is the study of fresh water bodies like river, ponds and lakes. Phytoplankton, zooplankton, small fish & large fish is main component of fresh water ecosystem. This all factor are part of food web. The Bhima River is big river in Maharashtra. It originate near Bhima shanker temple in the Bhima shanker hills in khed taluka on the western side of western Ghats ,known as Sahyadri, in Pune district, Maharashtra state. It flows through Bhimashanker wildlife sanctuary where it enters khed taluka and is soon joined by its tributaries. In recent year Bhima basin has been subjected to excessive pressure of anthropogenic activities such as religious festivals attracting millions of pilgrims through the year, growing pollution by urban center, growing sugarcane 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 Bhima River is the one of the prime rivers of Ujani reservoir and it meets to reservoir at Bhigwan back water by siddhatek.

Zooplankton has small life span because its gives quick response to environment changes. Carriack [6] Water birds, fish, macro invertebrate abundance also affect the zooplankton diversity. Russell et al. [15] Bhima river near Ramwadi 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 diversified group whereas Ostracoda is less 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 the 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 necessary to keep our ecosystem healthy because each species plays a specific role like in recycling of nutrients,

food for another aquatic animals 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. MATERIAL AND METHOD

Plankton samples were collected from Bhima river at six locations like Siddhatek, Shimpora, Aautewadi, waysewadi, Khed, Babhulgav dumala from Karjat and Shrigonda tehsil of Ahmednagar District, MS, during January 2019 to December 2019. 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 organisam 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 5% 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 –

Kalasi tank, Sagara, Karnataka. Their study reports shows 18 species of Zooplanktons from the Brahmana Kalasi Tank. Likewise several records on hand about zooplankton The present study reports the zooplankton diversity composition from the Bhima river. In total, 13 species of zooplanktons belonging to families and 4 classes viz. Rotifera, Cladocera, Copepoda and Ostracoda were listed from the Bhima River. The samples were collected from six locations of Karjat and Shrigonda Tehsil. The class Rotifera represents 5 species, Cladocera 3 species, Copepoda 3 species and Ostracoda 2 species. The species noted 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 diversity, abundance, composition and seasonal variation from the different fresh water bodies Jayabhaye, [12]

Table.1 Zooplankton Species composition at study area during Jan. 2019 to Dec. 2019

Table.1 Species composition of zooplankton at study area during Jan. 2019 to Dec. 2019

Sr.no.	Zooplankton Groups	Family	Name of species	Summer	Winter	Monsoon
1	Rotifera	Brachionidae	Brachionus caudatus	+	+	+
2			Brachionus forficula	+	+	+
3			Keratella chochlearis	+	+	+
4			Keratella crassa	+	+	+
5		Filinidae	Filinia opolensis	+	–	–
6	Cladocera	Moinidae	Moina micrura	+	+	+
7		Chydoridae	Chydrous sphaericus	+	+	+
8		Sididae	Diaphanosoma sarsi	+	+	+
9	Copepoda	Diaptomidae	Mesocyclops	+	+	+
10			Undinula valgaris	+	+	+
11			Nauplius	+	+	+
12	Ostracoda	Cyprididae	Stenocypris	+	+	+
13			Heterocypris	+	+	+

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

Sr .no	Zooplankton groups	Siddhatek	Shimpora	Aautewadi,	Vaysewadi	Khed	Babhulga v dumala
1	Rotifera (No/L) (Summer)	535	511	490	497	595	507
	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, thirteen species of zooplanktons belonging to families and 4 classes viz. Rotifera, Cladocera, Copepods and Ostracoda were recorded from the Bhima River, hence Zooplankton diversity is directly depend on abundance of phytoplankton. Phytoplankton diversity is easily affected by change in physicochemical properties of water.

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