



Research Paper

STUDY OF ZOOPLANKTON DIVERSITY IN TRIVENI LAKE AT AMRAVATI DISTRICT OF MAHARASHTRA

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Abstract

Triveni lake is the historical lake situated in Amravati district. Zooplankton is the important component of aquatic flora serve as a major component of aquatic food chain. Also it maintain proper equilibrium between biotic and abiotic components of the aquatic ecosystem. The present investigation deals with study of diversity zooplankton of Triveni lake. The work was carried out for the period of one year that is December 2012 to November 2013. The zooplankton of Triveni lake water is represented by five different groups like Protozoa, Rotifera, Cladocera, Copepoda, Ostracods with 19 different species were identified and recorded in Triveni lake. Rotifera dominant among zooplankton and this indicates the polluted nature of the lake water.

Key words: Zooplankton, Triveni lake and Diversity.

INTRODUCTION

Biodiversity refers to variety and variability among living organism and the ecological complexes in which they occur. Human induced activities pose series threats to the biodiversity which ultimate leads to environmental degradation. Zooplankton is microscopic organism which move at the mercy of water currents. Rotifera, cladocera, copepoda and ostracods constitutes the major groups of zooplanktons. These groups occupy an intermediate position in the food web. The earliest studied on zooplankton diversity have been made by researchers like Arora (1962), Chandra Mohan and Rao (1976), Verma and Dutta Munshi (1987) Sharma (1980), Kodarkar (1994), Mishra and Saksena(1998), Dhanpathi and Rama Sarma(2000),Trivedy(2000), Baghela (2006), Pandit et al (2007).

Zooplankton play an integral role in transferring energy to the consumers hence they form the next higher trophic level in the energy flow after phytoplankton. Ecological environment and mode of reproduction zooplanktons have attracted the attention of several workers throughout the world. Yousuf and Qadri (1981) studied Manasbal lake at Shrinagar for zooplankton population and recorded a cyclic patten with lowest in winter and then rising through early part of summer and early autumn. They noted that Copepods contributed generally more than half of the total zooplankton

in lake Rotifers was second to contribute to total density and Cladocera comprised generally lower as other to the total zooplanktons.

The lake provide the moisture near agriculture side by percolation of the water being the eutrophic lake large numbers of migrating birds visit throughout the year, with this view the present investigation has been carried out regarding the diversity of zooplankton in Triveni lake of Amravati district

MATERIALS AND METHODS

The lake selected for the present investigation is situated on the local nala near ambada village in morshi taluka 60 km away towards north-south from Morshi of district Amravati in Maharashtra. The lake is surrounded by marginal weeds, trees and agricultural land.

The water samples for biodiversity of Zooplankton analyzed were collected once in a month during the period of December 2012 to November 2013. The surface water samples were collected from the collection site between 8.00 am to 10.00 am in plastic bottles. The different physicochemical characteristics (table.1) were analyzed as per the procedure given in APHA (1998), Theroux *et.al.*(1943) and Trivedy & Goel (1986). In order to study the zooplankton biodiversity samples were collected from surface water by filtering 50 litres of lake water through nylon bolting silk cloth. The samples were fixed using 4% formaline and the identification of zooplankton was done in laboratory Tonapi (1980), Sudha S. (2012), and Battish (1992).

RESULTS AND DISCUSSION

Zooplankton of the most important food items of the aquatic organisms. Almost all the fishes in their larval stages were dependent on it and some of them exclusively feed on planktons. Monthly variation of Zooplankton species were presented in table. 1. The zooplankton pollution observed has been composed of Protozoa, Rotifera, Copepods, Cladocera and Ostracods .

Zooplanktons density and composition exhibit a monthly variation. In the present study the concentration of Zooplankton was recorded in the month May and August exhibited maximum and minimum in January zooplankton per liter respectively. On the whole zooplankton exhibited higher density in summer season. Similar summer maximum of zooplankton population was also reported by George (1970) and Adoni (1985) Joshep B. *et. al.* (2011).

Monthly variation in the species diversity index of the major zooplankton population was also recorded. Composition and abundance of each zooplankton group varied from time to time and season and depended on limnological characteristics of the water body. Zooplankton consisted of species of Protozoa, Rotifer, Copepoda and Cladocera in Triveni lake. Rotifera dominate among zooplankton and this indicates the polluted nature of the lake water were presented in table 2.

Table.1: Monthly distribution of Zooplankton at Triveni lake from December 2012 to November 2013.

MONTHS	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV
Protozoa												
<i>Diffugia</i>	+	+	+ +	+ +	+ +	+	+	+	+ +	+ +	+	++
<i>Nebela</i>	+ +	+	+ +	+ +	+ +	+	+	+ + +	+ +	+ +	+	+
<i>Paramecium</i>	+	+	+	+ +	+ +	+ +	+	+ +	+ +	+	+	++
<i>Verticella</i>	+	+	+	+	+	+ +	+	+	+	+	+ +	+
Rotifers												
<i>Polyartha</i>	+	+	+	+ +	+ +	+ + +	+ + +	+	+	+	+	+
<i>Keralullo</i>	+	+	+	+ +	+ +	+ +	+ +	+ +	+ +	+	+	++
<i>Rotaria</i>	+ +	+	+ +	+ +	+	+ +	+	+ +	+ +	+	+	+
<i>Gastropus</i>	+	+	+	+	+	+ +	+	+	+	+	+ +	+
<i>Brachionus</i>	+	-	+	+	+	+ +	+ +	+	+	+	+	++
Copepods												
<i>Eyclops</i>	+	-	+ +	+	+ +	+	+ +	+ +	+ +	+	+	+
<i>Diaptomus</i>	+ +	-	+ +	+	+ +	+	+ +	+ +	+ +	+	+	+
<i>Heliodiaptomus</i>	+	+	+	+ +	+ +	+ +	+	+	+	+	+	++
<i>Paracyclops</i>	+	+	+	+	+	+ +	+	+	+	+	+ +	+
Cladocerans												
<i>Bosmania</i>	+	+	+	+	+	+ +	+	+	+	+	+ +	+
<i>Daphnia sp.</i>	+	+	+	+	+	+ +	+	+	+	+	+ +	+
<i>Alona</i>	+	+	+	+	+	+ +	+	+	+	+	+ +	+
Ostracods												
<i>Cyperis</i>	+	+	+	+	+	+ +	+	+	+	+	+ +	+
<i>Steno cypris</i>	+	+	+	+	+	+ +	+	+	+	+	+ +	+
<i>Cyclo cypris</i>	+	+	+	+	+	+ +	+	+	+	+	+ +	+

Table 2. Total Zooplankton of Triveni lake during Dec. 2012 to Nov.2013.

Zooplanktons	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov
Protozoa (11.21 %)	63.29	22.01	18.81	77.39	117.9	102.7	32,03	32.51	52.68	45.36	70.30	65.20
Rotifera (41.17%)	123.3	167.4	146.1	220.2	324.5	386.3	295.5	127.9	186.7	84.70	135.2	130.1
Copepods (20.06 %)	66.88	51.31	106.9	142.5	242.9	216.1	117.1	9.78	1.63	1.07	70.80	74.01
Cladocera (24.06 %)	14.79	27.67	63.16	250.4	190.3	190.9	145.2	128.2	56.93	109.5	30.79	20.15
Ostracods (03.03%)	8.93	8.43	15.51	24.39	33.31	29.63	23.68	0.83	0.00	0.00	280.8	260.0
Total Zooplankton s	277.2	276.86	350.5	715.0	909.1	925.7	604.7	299.3	297.9	240.6	587.8	550.5
	3		4	5	8	8	6	3	5	7	9	1

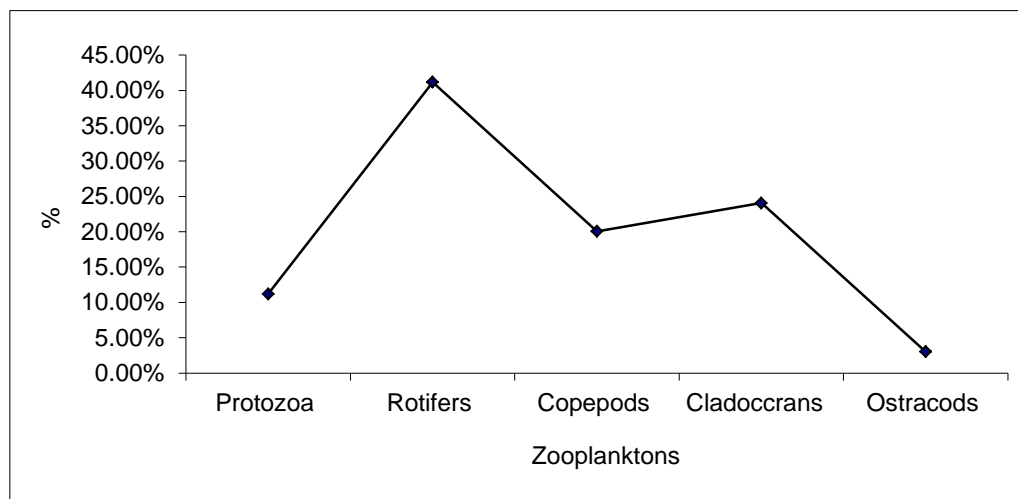


FIG. 1.Total Zooplankton of Triveni lake during Dec. 2012 to Nov.2013

CONCLUSION

Diversity of Zooplankton exhibit a major biotic component of an aquatic ecosystem an emphasis has been given to identify various plankton species as indicates particular type of water pollution. Prasad and Singh (1958) emphasized the importance of biological survey in monitoring water quality which is dependent on qualitative and quantitative composition of aquatic population. The most importance effect of organism pollution in a water body is due to enrichment of nutrients and total number of algal species. Zooplanktons Rotifera were good indicators of water quality.

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