

# Population Dynamics of Microzootic Fauna of Makani (Latur) Reservoir Water

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**Abstract:** The present investigation has been undertaken to study the population dynamics of microzootic faunas such as protozoans, rotifers, helminthes eggs and arthropods were studied. The minimum population was during summer while maximum during monsoon season. Rotifer was the most dominant group followed by arthropods, helminthes eggs and protozoans. About 19 zooplankton species were observed during study.

**Keywords:** Microzootic faunas, population dynamics, monsoon season, rotifers, zooplankton species

## 1. Introduction

Zooplankton communities of fresh water bodies constitute an extremely diverse assemblage of organisms represented by most of the invertebrate phyla. In freshwater system, zooplanktonic organisms form an important group as most of them feed upon and incorporate the primary produces into their bodies and make themselves available to higher organisms in food chain (Michael 1973). Analysis at the specific level cannot entirely disclose the functional mechanisms of the aquatic ecosystem unless the dynamics of zooplankton community is adequate known. Many workers such as Ganapati (1943), Dumot (1968), Somashekar et al., (1988), Biswas and Konar (2000), Narsimha Rao and Jaya Raju (2001) were studied the dynamics of zooplankton population.

In the present investigation, the qualitative and quantitative analysis of zooplankton communities of Makani reservoir water carried out during the year 2012. The four zooplankton components such as rotifers, protozoan, helminthes eggs and arthropods were studied.

## 2. Materials and Methods

For analysis, the zooplankton samples were collected monthly for a period of twelve months during the year 2022 (January to December) from three selected sampling stations namely S1, S2, and S3 over the reservoir. The samples were preserved using 4% formalin solution. The samples were taken into Sedgwick rafter cell and identification of zooplankton was carried out and counting was done following the work of Edmondson, Scourfield and Hardiling (1966), Harding and Smith (1974), Pontin (1978), Tonapi (1980), Pennak (1989), APHA (1989). Standard keys and other literature were used for identification of different species and the identified species were expressed in number per liter.

## 3. Results and Discussion

The seasonal percentage composition of zooplankton components are given in Table 1. the total number of zooplankton population were found to be varied from 55 to 128 per liter at S1, 53 to 121 number per liter at S2, and 47

to 121 number per liter at S3. The minimum population was during summer while maximum during monsoon season.

The annual rotifer population was 46.05% at S1, 47.634% at S2, and 44.599% at S3 of the total annual zooplankton population followed by arthropods 36.514% at S1, 37.96% at S2, and 39.679% at S3, helminthes eggs 10.6134% at S1, 8.5177% at S2 and 9.625% at S3 and protozoan's 6.816% at S1, 5.888% at S2, and 6.096% at S3 during study about 19 zooplankton species were observed.

The seasonal variation of zooplankton dominating group in the order of abundance were as follows:

### Summer Season: -

S1 – Rotifers> Arthropods> Helminthes eggs> Protozoans

S2 – Rotifers> Arthropods> Helminthes eggs> Protozoans

S3 – Rotifers> Arthropods> Helminthes eggs> Protozoans

### Monsoon Season: -

S1 – Rotifers> Arthropods> Helminthes eggs> Protozoans

S2 – Rotifers> Arthropods> Helminthes eggs> Protozoans

S3 – Rotifers> Arthropods> Helminthes eggs> Protozoans

### Winter Season: -

S1 – Rotifers> Arthropods> Helminthes eggs> Protozoans

S2 – Rotifers> Arthropods> Helminthes eggs> Protozoans

S3 – Rotifers> Arthropods> Helminthes eggs> Protozoans

The total protozoans population was found to be in the range between 3 to 10 number per liter at S1, 2 to 8 number per liter at S2 and 1 to 8 number per liter at S3 during study. About three protozoans species namely *Balantidiuncoli*, *Enataemoeba*, *Giardia lamia* were observed. Babu Rao (1997) observed five species of protozoans from Himayatsagar lake. According to Bhati and Rana (1987) higher number of protozoans indicate organic pollution. In the present investigation the protozoans population were less as compared to other zooplankton components which indicates that the water of the reservoir is less organically polluted. The total helminthes eggs population was found to be in the range between 3 to 17 numbers per liter at S1, 1 to 11 numbers per liter at S2 and 2 to 13 numbers per liter at S3 during study. About five helminth eggs species namely *Ascaris lumbricoides*, *Enterobius vermicularis*, *Fasciola hepatica*, *Hymenolepis nana*, *Trichuris trichuria* were

observed. The eggs of *AscarisLumbricoides* were found most prevently followed by *Fasciola hepatica*, *Enterobiusvermacularis*, *Hymenolepis nana*, *Trichuristrichuria*at all the three stations. Similar observations were observed by Hiware and Jadhav (2001)

The total rotifer populations were found to be in the range between 15 to 62 numbers per liter at S1, 18 to 56 numbers per liter4 at S2 and 14 to 49 number per liter at S3 during study. The minimum rotifer population was recorded during summer season while maximum during summer season. Mohd. Ahsan (1980) has reported the high population of rotifer during monsoon season from Saroornagar lake. During study about six rotifer species *namely Brachinus, Filina, Chromatogaster, Keratella, Epiphanes, Monostylla* were observed. Among the zooplankton components the rotifer may be attributed to their dependence on abundant particulate organic matter. (Sarwar and Pravee1995). The total arthropods population was found to be in the range between 12 to 53 numbers per liter at S1, 10 to 57 numbers per liter at S2 7 to 54 numbers per liter at S3 during study. The minimum population was observed in the month of June at S1 and in the month of May at S2 and S3 while maximum in the month September. Hiware and Jadhav (1998) observed the lowest population of arthropod during summer season and highest during rainy season.

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**Table 1:** Seasonal Percentage composition of Microzootic Fauna

Stations	Components	Summer	Monsoon	Winter
S 1	Protozoans	6.66	6.99	6.74
	Helminths eggs	10.74	9.06	12.13
	Rotifers	44.07	50.10	43.39
	Arthropods	38.52	33.93	37.73
S 2	Protozoans	4.74	6.49	6.10
	Helminths eggs	10.27	5.36	10.46
	Rotifers	48.61	51.69	42.73
	Arthropods	36.36	36.44	40.69
S 3	Protozoans	6.72	6.33	5.39
	Helminths eggs	8.82	8.26	11.67
	Rotifers	44.53	49.31	39.52
	Arthropods	39.91	36.09	43.41

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