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## Meiofauna diversity of freshwater reservoir, Kalaburagi district, Karnataka

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### Abstract

A study on Meiofauna species abundance and diversity of Khaji Kotnoor reservoir, Kalaburagi district, Karnataka, India was conducted to know the diversity status of freshwater ecology. Samples were collected during October 2013 to September 2014. A total of 31 species were recorded in this reservoir. Among these, Lecanidae family comprises of 13 species Brachionidae represented by 7 species, Lepadellidae family composed of 6, and 5 species contributed by Trichocercidae family respectively. Some of the dominant meiofauna species were present throughout the year. The season wise meiofauna analysis showed an average abundance of species in winter, lower in winter and maximum occurrence in summer due to the different environmental and inflow characteristics of the water body

**Keywords:** Zooplankton, Kagina River

### 1. Introduction

Meiofauna of freshwater ecosystem are the micro organisms and these organisms are cosmopolitan in their distribution. They play pivotal role in freshwater ecosystem. They served as major food sources for higher organism and served as bio-indicators for aquatic pollution. Community of Meiofauna survival is controlled by some of the factors viz, variations in climate, physical and chemical parameters of water body and surrounding macrophytes<sup>[1-3]</sup> Thus in any aquatic ecosystem Meiofauna not only take part in transferring food from primary to secondary level but also switch over to conversion of detritus matter into edible animals food. The species composition of zooplankton is directly or indirectly influenced by complexes of ecological Factors and other seasonality. A number of studies has been carried out on the condition of ecology and freshwater bodies in various parts of India<sup>[4-6]</sup> but in some parts of north Karnataka, the diversity studies of freshwater ecosystem especially Meiofauna studies are very scanty. Hence, the present work undertaken to know the species and abundance of Meiofauna in two water bodies of Kalaburagi district.

### Material and Methods

Kalburagi is the Divisional headquarter of five revenue districts. It is situated in the northern part of Karnataka State 76°-04' to 77°-42' longitudes and 16°-12' to 17°-46' latitude located 454 meters above MSL. The Kaji-Kotnoor reservoir was selected for the present investigation, which is situated about 15 km distance from the Kalaburagi city.

Water samples were collected randomly in different locations of the two water bodies during an early hours of the day (7.30am to 10.30am) for a period of one year (October 2013 to September 2014) and such samples were pooled together to consider a final sample for analysis.

Monthly zooplankton collections were made employing a modified Haron –Trantor net with a square metallic frame of 0.0625 M<sup>2</sup> area. The net was handed for a distance of 15 meters collected samples were transferred to label PVC bottles containing 5% formaldehyde. The quantitative estimation of Meiofauna was carried out in the laboratory. Sedge wick- Rafter counting chamber was used for making sub samples and estimated quantitative meiofauna.

The identification of Meiofauna was done on the basis of existed literature provided by various authors<sup>[7-10]</sup>.

### Results and Discussion

During the study period, total 31 species were identified which are belongs to four families of phylum Rotifera namely, Brachionidae, Lepadellidae, Lecanidae, Trichocercidae.

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During the study period, Lecanidae family represented by maximum number of species among During the study period, Lecanidae family represented by maximum number of species among the four families of phylum Rotifera. The total 13 species of Lecanidae family were recorded, i.e *Lecane (Lecane) aculeata* (Jakubski, 1912), *L. (L) curviconis* (Murray, 1913), *L. (L) leontina* (Turner, 1892), *L. (L) ludwigia* (Eckstein, 1883), *L. (L) papuana* (Murray, 1913), *L. (L) signifera* (Jennings, 1896) *L. (L) ungulata* (Gosse, 1887), *L. (Monostyla) bulla* (Gosse, 1851) *L. (M) clostercerca* (Schmarda, 1859), *L. (M) lunaris* (Ehrenberg, 1832) *L. (M) pyriformis* (Daday, 1905), *L. (M) quadridentata* (Ehrenberg, 1832) *L. (M) unguitata* (Fadeev, 1925).

Brachionidae family is occupied second position in the composition of species and which is represented by seven species i.e *Anuraeopsis fissa* (Gosse, 1851) *Brachionus angularis* (Gosse, 1851) *B. B. caliciflorus* (Pallas, 1766) *B. patulus* (O. F. Muller, 1786) *B. quadridentatus* (Hermann, 1783) *Keratella cochlearis* (Gosse, 1851) *K. tropica* (Apstein, 1907).

The third position was occupied by Lepadellidae family, which is composed of six species i.e *Colurella obtusa* (Gosse, 1886), *C. sulcata* (Stenroos, 1898), *C. uncinata* (O.F. Muller, 1773), *Lepadella acuminata* (Ehrenberg, 1834), *L. ovalis larga* (Sharma, 1978) *L. patella* (O.F. Muller, 1773).

The Trichocercidae family is represented by four species i.e *Trichocerca cylindrica* (Imhof, 1891) *T. elongata* (Murray, 1913) *T. pusilla* (Lauterborn, 1898).

Whereas Notommatidae family is represented by three species, namely, *Cephalodella auriculata* (O.F. Muller, 1773) *C. gibba* (Ehrenberg, 1832) *Scaridium longicaudum* (O.F. Muller, 1786)

It has been observed that Meiofauna population of water bodies increases in summer while decrease in rainy season.

Similar observations are made by some of the authors who studied meiofauna diversity in freshwater ecosystems of India [11]. The Meiofauna density ranged between 15 to 260 number/liter at all the sampling stations. The seasonal variations affect the meiofauna population and their composition. During summer season maximum meiofauna density (260No/liter) was record at station III and minimum density (15 No/liter) was noticed at station I in rainy season. Meofuna was observed to be more at all stations throughout the study period. Presence of maximum meiofauna population in summers might be due to the presence of higher population of bacteria. Plankton depends on water quality, remains of dead and decaying vegetation. These results increase of the organic matter and growth of the bacterial population and high oxygen with increase in meiofauna density. Rotifers showed numerical superiority over other groups of meiofauna. It is interesting to note that the rotifers have a versatile capacity to thrive in different environments and as such they usually dominate over other zooplankton meiofauna unities. Dominance of rotifers in seasonal data of zooplankton as observed in the present study is in accord with the findings of authors [12-14]. The seasonal occurrence and abundance of different species of rotifers showed that *B. angularis* was dominated in number over the species. Williams (1966) has suggested that more than one genus show only one dominant species.

**Table 1:** Percentage of Meiofauna in Khaji Kotnoor reservoir

Meiofauna groups	Percentage
Brachionidae	66.85
Lepadellidae,	16.47
Lecanidae,	10.39
Trichocercidae.	6.29

**Table 2:** Meiofauna density in Khaji Kotnoor reservoir during the study period

Months	Meiofauna density			
	Brachionidae	Lepadellidae	Lecanidae	Trichocercidae
Oct-2013	4532	1360	816	216
Nov.	6266	350	1760	132
Dec.	6347	302	1730	82
Jan.2000	4037	398	568	80
Feb.	3883	330	608	1260
Mar.	2788	20	1258	1460
Apr.	4027	91	366	500
May	4855	240	108	176
June	188	512	64	130
July	18	986	-	152
Aug.	02	2468	-	152
Sep.	14	2056	-	56
Oct.	4064	1192	-	136
Nov.	6214	602	-	40
Dec.	6981	474	1200	302
Jan.2014	3608	344	288	348
Feb.	4129	366	628	-
Mar.	3322	242	1134	-
Apr.	4649	208	1072	-
May	6091	282	170	-
June	133	272	-	339
July	06	2004	-	31
Aug.	62	2976	60	1200
Sept.	118	2352	266	548

## References

1. Rocha O, Matsumura-Tundisi T, Espindola ELG, Roche KF, Rietzler AC. Ecological theory applied to reservoir zooplankton. In: Theoretical reservoir ecology and its application (Eds.:J.G. Tundisi and M.Straskraba). Internat. Inst. Ecol., Sao Carlos, 457-476.
2. Neves IF, Rocha O, Roche KF, Pinto AA. Zooplankton community structure of two marginal lakes of river Cuiaba (Mato Grasso, Brazil) with analysis of Rotifers and Cladocera diversity, Braz. J Biol, 63.
3. Mukherjee B. Environmental Biology, Tata McGraw Hill Publishing Company Limited, New Delhi
4. Sinha B, Islam MR. Seasonal variation in zooplankton population of two lentic bodies and Assam State Zoo cum Botanical garden, Guwahati, Assam Environ. Cons 2002; 8:273-278.
5. Smitha PG, Byrappa K, Ramaswamy SN. Physico chemical characteristics of water samples of bantwal Taluk, South-estern Karnataka, India. J Environ Biol. 2007, 595.
6. Singh SP, Pathak D, Singh R. Hydrobiological studies of two ponds of Satna (M.P), India Cons 2002; 8:289-292.
7. Edmondson WT. Freshwater Biology (2nd edition). John Wiley & Sons, New York, 1959, 1248.
8. Needham JG, Needham PR. A guide to the study of fresh water biology (5th eds.), Holden Day in Francisco, California. USA, 1966, 104.
9. Sharma BK. Rotifera. In: Faunal Diversity in Indic. Eds. J. R. B. Alfred, A. K. Das and A.K. Sanyal Zool. Sury of India, 1998, 57-70.
10. Sharma BK, Sharma S. Freshwater Rotifers (Rotifera: Eurotatoria) In: State Fauna Series Fauna of Tripura Zoological Survey of India, Calcutta, 2000; 7(4):163-224.
11. Srivastava KN, Srivastava P, Sinha AK. Zooplankton studies of Ganga river between Kalakankar (Pratapagarh) Phaphamau (Allahabad) (U.P). Recent trends in Limnology. 1990, 129 -133.
12. Michael RG. Studies on zooplankton of tropical fish pond. *Hydrobiologia* 1968; 32(1-2):47-60.
13. Saha GN, Sehagal KL, Mitra E, Nandy AC. Studies on the seasonal and diurnal variation in physico-chemical and biological condition of perennial freshwater pond. J Inland Soc India. 1971; 3:79-102.
14. Bahura CK, Bauhra P, Saxsena MM. Zooplanktonic community of Shivabari temple tank, Bikner. J Ecobiol. 1993; 5(1):5-8.
15. Needham JG, Needham PR. A guide to the study of fresh water biology (5th eds.), Holden Day in Francisco, California. USA, 104, 1966.