



# Habitat Preference of Rotifers Inhabiting some Waters of Jammu province, J&K, India

Sharma K.K., Kaur Sarbjeet\*, Antal Neha and Shvetambri

Department of Zoology, University of Jammu, Baba sahib Ambedkar road, Jammu, J&K-180006, INDIA

Available online at: [www.isca.in](http://www.isca.in)

Received 25<sup>th</sup> March 2013, revised 1<sup>st</sup> April 2013, accepted 2<sup>nd</sup> May 2013

## Abstract

The water sources running in this stretch of J&K state are both lentic and lotic including pools, ponds, lakes, streams to mighty rivers. These water bodies varying from seasonal to perennial share a rich amount of aquatic biodiversity among which rotifers is one important group. In an attempt to enlist rotifers 40 lotic and 45 lentic waters were scanned from which 106 rotifer species were recorded. There was seen the presence of both classes (monogononta and digononta) in these waters. Major share of rotifers preferred lentic conditions but 9 species showed an affinity for lotic conditions.

**Keywords:** Lentic, lotic, perennial.

## Introduction

Rotifers are the fascinating microscopic creatures which belong to the group of primary fresh water invertebrates<sup>1</sup> and their beauty lies in the capacity by which they have invaded endless sources of aquatic, semi aquatic habitats throughout the globe. Not strange to encounter them in damp soil, vegetable debris, mosses to interstices between sand grains of lake beaches. Among the members of about 2500 species most encounters is of the females, males are smaller and definitely known for relatively few species as they seldom live for more than 2-3 days<sup>2-5</sup>.

Among the recorded species of the phylum Rotifera maximum are known to occur in littoral areas of lakes and ponds and there density having a correlation with the relative amount of available substrate, exposed area and other a biotic and biotic factors<sup>5-8</sup>. Although any substrate may be used by rotifers but sessile species are by far the most abundant on submerged aquatic vegetations.

These miniatures are although cosmopolitan in distribution but there appears a striking correlation between the pH of water body and composition of rotifers<sup>9-13</sup>. Thus, it appears that whether a given species is present in a particular body depends partially on its geographic location along with the precise complex of ecological condition prevailing there<sup>14</sup>.

The present attempt is thus a preliminary step to record the distribution of rotifers residing in the lotic and lentic waters of this belt of lower Himalaya which have diverse biotic and a biotic ranges.

## Material and Methods

In order to record the rotifer fauna inhabiting various lentic and lotic sources a detailed surveyed was conducted to take into

record the maximum water bodies possible and then they were grouped into to either of the category viz. lotic or lentic.

Collection of rotifers was done along various water sources by filtering 50 litres of water through the plankton net. Collection site was mainly considered bearing marginal vegetation. Vegetation was vigorously shaken before filtering, in order to detach the organisms.

Identification of the 4% formative preserved samples was done in laboratory. Using Olympus microscope and mastax was separated using sodium hypochlorite method and verification of mastax was done as per Koste<sup>15</sup>.

## Results and Discussion

From the present enlisting of the rotifer species a total of 106 species of rotifers were recorded inhabiting some 40 lotic and 45 lentic sources. These rotifer species recorded belong to both class Digononta and Monogononta among which Monogononts took a lead by showing maximum presence. Order Bdelloidea was the only representative of Class Digononta. Of the record from class Monogononta which constitutes about 90% of recorded rotifer species, the maxima to rotifer number was added by order Ploima being represented by families Lecanidae, Colurellidae, Trichotriidae, Mytilinidae, Euchlanidae, Brachionidae, Epiphanidae, Asplanchidae, Trichocercidae, Gastropodidae, Synchaetidae, Dicranophoridae, Proalidae and Notommatidae<sup>15</sup>.

In totality lentic sources had maximum preference of the rotifer species and representatives of some families (Gastropodidae, Asplanchidae, Proalidae, Fillinidae, Conocohilidae) were recorded only in lentic waters with there no representative in lotic types.

Among all, the maximum bulk to rotifer count during present studies was by individuals of Family Brachionidae (Genus *Brachionus*, 13 species, *Keratella*; 6 species, *Platyiias* 2, *Notholca* 2 species) and family Lecanidae with 14 represented of genus *lecan*. Both these families were having well marked distribution in both lentic and lotic water bodies (table-1). Rotifer diversity was also studied by various other researchers in different lentic and lotic water bodies<sup>16-17</sup>.

Other interesting features which came in view during this attempt of enlisting was that rotifers belonging to various categories viz-a-viz epizoic or commensals (*Lepadella* and *Testudinella*), psammobiotic (*Trichocerca*, *Lecane*) were also having such habitat preferences this part of the globe<sup>18-21</sup>.

Individuals of genus *Ptygura* and *Collotheca* were having good association with algae. Species of *Asplanchna*, *Polyarthra* were having preference for open water zones and those of genus *Brachionus*, *Keratella*, *Rotaria*, *Philodina* were mostly encountered along the vegetative zones<sup>22,23</sup>.

### Conclusion

Although rotifers are the most beautiful creatures with diverse body forms and sizes. They do have likes for the type of habitat to reside and flourish in but no single parameters was found to be regulating their distribution. It can be concluded that waters of lower Himalayas are a good house of rotifers among which maximum had lentic choice barring 9 species having lotic preference with maximum from family Notommatidae.

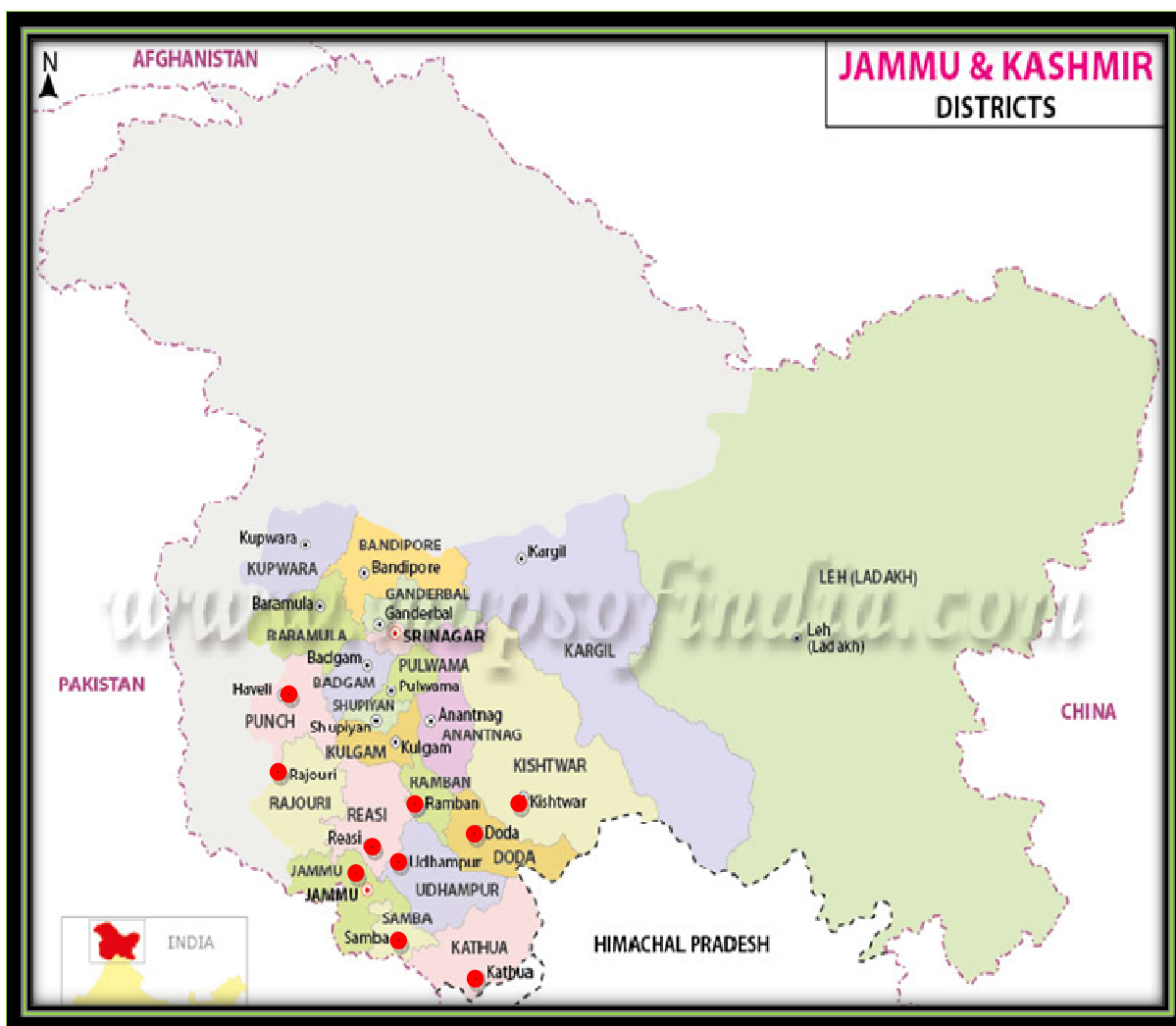


Figure-1  
Map of J&K showing study areas in Jammu Province (Red dot [ ● ] represents the study area)

**Table-1**  
**Rotifer species recorded from various lentic and lotic water bodies**

S. No.	Name	Lentic	Lotic	S. No.	Name	Lentic	Lotic
1.	<i>Anuraeopsis fissa</i>	+	-	49.	<i>Euchlanis</i> sps.	+	-
2.	<i>Brachionus angularis</i>	+	+	50.	<i>Dipleuchlanis propatula</i>	+	-
3.	<i>Brachionus bidentata</i>	+	+	51.	<i>Dipleuchlanis</i> sps.	+	-
4.	<i>Brachionus calyciflorus</i>	+	+	52.	<i>Euchlanis incise</i>	-	+
5.	<i>Brachionus caudata</i>	+	+	53.	<i>Lecane bulla</i>	+	+
6.	<i>Brachionus falcatus</i>	+	+	54.	<i>Lecane closterocerca</i>	+	+
7.	<i>Brachionus patulus</i>	+	+	55.	<i>Lecane (M) decipiens</i>	+	+
8.	<i>Brachionus plicatilis</i>	+	-	56.	<i>Lecane ludwigii</i>	+	+
9.	<i>Brachionus quadridentata</i>	+	+	57.	<i>Lecane luna</i>	+	+
10.	<i>Brachionus rubens</i>	+	-	58.	<i>Lecane lunaris</i>	+	+
11.	<i>Brachionus budapestensis</i>	+	-	59.	<i>Lecane ohlioensis</i>	+	-
12.	<i>Brachionus diversicornis</i>	+	-	60.	<i>Lecane</i> sps.	+	+
13.	<i>Brachionus</i> sps.	+	+	61.	<i>Lecane (M) quadridentata</i>	+	+
14.	<i>Keratella cochlearis</i>	+	-	62.	<i>Lecane depressa</i>	+	-
15.	<i>Keratella tropica</i>	+	+	63.	<i>Lecane ploensis</i>	+	+
16.	<i>Keratella serrulata</i>	+	-	64.	<i>Lecane curvicornis</i>	+	+
17.	<i>Keratella procurva</i>	+	-	65.	<i>Lecane leontina</i>	-	+
18.	<i>Keratella quadrata</i>	+	-	66.	<i>Lecane conspicua</i>	-	+
19.	<i>Keratella</i> sps.	+	+	67.	<i>Mytilina ventralis</i>	+	+
20.	<i>Platylas quadricornis</i>	+	+	68.	<i>Mytilina</i> sps.	+	-
21.	<i>Platylas</i> sps.	+	+	69.	<i>Polyarthra vulgaris</i>	+	+
22.	<i>Notholca labis</i>	+	-	70.	<i>Polyarthra</i> sps.	+	-
23.	<i>Notholca</i> sps.	+	+	71.	<i>Synchaeta oblonga</i>	+	-
24.	<i>Ascomorpha</i> sps.	+	-	72.	<i>Pleosoma hudsoni</i>	-	+
25.	<i>Asplanchna</i> sp.	+	-	73.	<i>Trichocerca</i> sps.	+	+
26.	<i>Asplanchna priodonta</i>	+	-	74.	<i>Trichocerca similis</i>	+	-
27.	<i>Asplanchnopus</i>	+	-	75.	<i>Trichocerca stylata</i>	+	+
28.	<i>Asplanchna brightwelli</i>	+	-	76.	<i>Trichocerca porcellus</i>	+	+
29.	<i>Cephalodella</i> sps.	+	-	77.	<i>Trichocerca rattus</i>	+	+
30.	<i>Cephalodella gibba</i>	+	+	78.	<i>Dicranophorus hauerianus</i>	+	-
31.	<i>Scaridium longicaudum</i>	+	+	79.	<i>Dicranophorus epicharis</i>	-	+
32.	<i>Monommata</i> sps.	+	+	80.	<i>Dicranophorus</i> sps.	+	-
33.	<i>Eosphora erhenbergi</i>	-	+	81.	<i>Proales</i> sps.	+	-
34.	<i>Cephalodella auriculata</i>	-	+	82.	<i>Epiphanes brachionus</i>	+	+
35.	<i>Cephalodella catellina</i>	-	+	83.	<i>Epiphanes senta</i>	-	+
36.	<i>Eosphora</i> sps.	-	+	84.	<i>Epiphanes</i> sps.	-	+
37.	<i>Colurella</i> sps.	+	-	85.	<i>Trichotria tetractis</i>	+	+
38.	<i>Colurella obtuse</i>	+	+	86.	<i>Trichotria</i> sps.	+	-
39.	<i>Colurella bicuspidata</i>	+	+	87.	<i>Macrochaetus</i> sps.	+	-
40.	<i>Lepadella ovalis</i>	+	+	88.	<i>Filinia longiseta</i>	+	+
41.	<i>Lepadella</i> sps.	+	+	89.	<i>Filinia opoliensis</i>	+	-
42.	<i>Lepadella crestata</i>	+	-	90.	<i>Filinia terminalis</i>	+	-
43.	<i>Colurella uncinata</i>	-	+	91.	<i>Filinia</i> sps.	+	+
44.	<i>Lepadella heterostyla</i>	-	+	92.	<i>Tetramastix opoliensis</i>	+	-
45.	<i>Lepadella patella</i>	-	+	93.	<i>Tetramastix</i> sps.	+	-
46.	<i>Squatinella</i> sps.	+	-	94.	<i>Hexarthra mira</i>	+	-
47.	<i>Euchlanis dilatata</i>	+	+	95.	<i>Hexarthra</i> sps.	+	-
48.	<i>Euchlanis dapidae</i>	+	-	96.	<i>Testudinella patina</i>	+	-

97.	<i>Testudinella</i> sps.	+	-
98.	<i>Ptygura</i> sps.	+	-
99.	<i>Conochiloides arboreus</i>	+	-
100.	<i>Conochiloides</i> sps.	+	-
101.	<i>Conochilus</i> sps.	+	-
102.	<i>Colotheca</i> sps.	+	-
103.	<i>Philodina</i> sps.	+	+
104.	<i>Rotaria rotatoria</i>	+	+
105.	<i>Rotaria neptunia</i>	+	-
106.	<i>Rotaria</i> sps.	+	+

## References

- Kadam S.S. and Tiwari L.R., Zooplankton Composition in Dahanu Creek-West Coast of India, *Res. J. Recent Sci.*, **1(5)**, 62-65 (2012)
- Battish S.K., Fresh water Zooplankton of India, Oxford and IBH Publishing Co. Pvt. Ltd, New Delhi (1992)
- Mageed A.A.A., Biomass production and turnover rate of zooplankton in Lake Manzala (South Mediterranean sea, Egypt), *Egypt. J. Aqua. Res.*, **32**, 158-167 (2007)
- Kumar S., Dutta S.P.S., Malhotra Y.R. and Kumari V., An ecological study of rotifers in Kunjwani pond, Jammu, *Hydrobiol.*, **7**, 41-45 (1991)
- Nayana S.R. and Pejaver M., New records of Rotifers from Thane lakes (Maharashtra), *J. Aqua. Biol.*, **20(1)**, 9-14 (2005)
- Boon P.I. and Shiel R.J., Grazing on Bacteria by zooplanktons in Australian Billabongs, *Aust. J. Mar. Freshwat. Res.*, **41(2)**, 247-257 (1990)
- Duraggan C.I., The ecology of periphytic rotifers, *Hydrobiologia*, **446/447**, 139-148 (2001)
- Fontaneto D. and Ricci C., Spatial gradients in species diversity of microscopic animals: The case of Bdelloid rotifers at high altitudes, *J. Biogeo.*, **33**, 1305 (2006)
- Rajashwar M., Vijaykumar K and Zeba Paerveen, Seasonal variations of zooplankton community in Fresh water reservoir Gulberga District, Karnataka, South India, *International Journal of Systems Biology*, **2(1)**, 6-11 (2010)
- Choudhary S. and Singh D.K., Zooplankton population of Boosra Lake at Muzaffarpur, Bihar, India, *Environ. Ecol.*, **17**, 444-448 (1999)
- Arora H.C., Responses of rotifers to variation in some ecological factors, *Proc. Ind. Acad. Sci.*, **63**, 57-66 (1966)
- Akhtar R., Assessment of water quality of two high altitude ponds (Sarkoot and Shalimar) with special reference to fish performance. M.Phil Dissertation, University of Jammu, Jammu (2003)
- Yousuf A.R. and Quadri M.Y., Seasonal fluctuations of zooplankton in Lake Manasbal, Kashmir, *Ind. J. Ecol.*, **12**, 354-359 (1985)
- Thomas S. and Azis A, Plankton abundance and zonal differentiation in Peppara reservoir, Kerala, *Ind. J. Environ. Ecol.*, **1**, 22-25 (1998)
- Koste W., *Rotatoria Die Rädertiere Mitteleuropas* bergründet von Max Voigt-Monogononta. 2. Auflage neubearbeitet von Walter Koste. Berlin, Gebrüder Borntraeger, 673 (1978)
- Tripathi A.K. and Chishty N., Rotifer Diversity in a Semiurban Shallow Perennial Water Body: A Case Study of Jalaser Tank Mandalgarh, India, *I. Res. J. Environmen. Sci.*, **1(1)**, 42-45 (2012)
- Hashemzadeh F. and Venkataramana G. V., Impact of Physico-Chemical Parameters of Water on Zooplankton Diversity in Nanjangud Industrial Area, India, *I. Res. J. Environmen Sci.*, **1(4)**, 37-42 (2012)
- Balvay G. and Laurent M., Long term quantitative evolution of rotifers during the eutrophication in the Lake Geneva, *Aquat. Sci.*, **52(2)**, 162-175 (1990b)
- Pennak W.R., Freshwater invertebrates of United States, 2<sup>nd</sup> Edn. A wiley intersc pub., John Wiley and Sons, New York, 803 (1989)
- Jan N., Ecology of Janipur Pond (Jammu) with special reference to zooplankton dynamics. M.Phil Dissertation, University of Jammu, Jammu (2005)
- De Smet W.H., Notes on the monogonant rotifers from submerged mosses collected on Hopen (Svalbarb), *Fauna Norv. Sec. A.*, **11**, 1-8 (1990)
- Pandit K.A. and Yousuf A.R., Rotifers community in some Kashmir Himalayan lakes of varied tropic status, *Journal of Research and Development*, **3**, (2003)
- Schmid-Araya J.M., Distribution and population dynamics of rotifers in bed sediments, *Hydrobiologia*, **313-314**, 279-290 (1995a)