

Short Communication

A New Record of Rotifer (family Dicranophoridae) from Survey of some PIR Panjal Waters, J&K, India

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Abstract

Present investigation of 13 water bodies situated in pir panjal range of inner Himalayas is an attempt to record the rotifer diversity from these waters. Rotifers are the fascinating creatures in all types of fresh waters. They form an important interlace in the food web. Presently 7 lotic and 6 lentic waters were investigated from which 11 rotifer species were enlisted. *Philodina* showed the presence in all water bodies and presence of *Dicranophorus hauerianus* was on record for the first time from this area. Maximum diversity of rotifers was found in the lentic waters.

Keywords: Lotic, lentic and diversity.

Introduction

Being the smallest in category of metazoan¹ the group which includes even human beings and having body organized into organ system, Rotifera are multicellular animals with body cavities being lined up by mesoderm. These diversity structured, 1500-2000 species of heterotrophic organisms have about 200-500 micrometer length with exceptional species of few longer, ones (*Rotaria neptunia*)².

Rotifera is a group of primary freshwater invertebrates³. These rotating wheel animalcules lack cell wall and possess unique distinguishing features from other animal as being bilaterally symmetrical and possessing pseudocoelom, a fluid filled body cavity between two different tissue layers. The most unique and salient feature is the presence of corona-usually in the form of two lobes surrounded by beating cilia, which gives them a vivid impression of rotating wheels. Possessing transparent body, showing complex movements in varied life types and being ecologically important as indicator and purifier agents (since they feed on suspended organic particles, free swimming algae) rotifers are amongst the most fascinating creatures ever to encounter in aquatic environment⁴⁻⁸. For an attempt to enlist these aquatic dwellers some water bodies running through the foot hills of mountain range lying in the inner Himalayan region commonly known as Pir Panjal range, in Jammu province of J&K state were surveyed. During present course enlistment was done from 7 lotic (Rajouri Tawi, Shadra, Bangi, Behrote, Mandi, Durangli, Dariya Surankote) and 6 lentic (Muradpur, Nagali bawli, Durangli bawli, Dungus, Bawli, Azad mohalla) water sources (figure-1 and 2).

Material and Methods

In order to record the rotifer fauna inhabiting various water sources a detailed survey 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 (bolting silk). Collection site was mainly considered bearing marginal vegetation. Vegetation was vigorously shaken before filtering, in order to detach the organisms.

Identification of the 4% formalin preserved samples was done in laboratory, using Olympus microscope while mastax was separated using sodium hypochlorite method and verification of mastax was done as per Koste⁹.

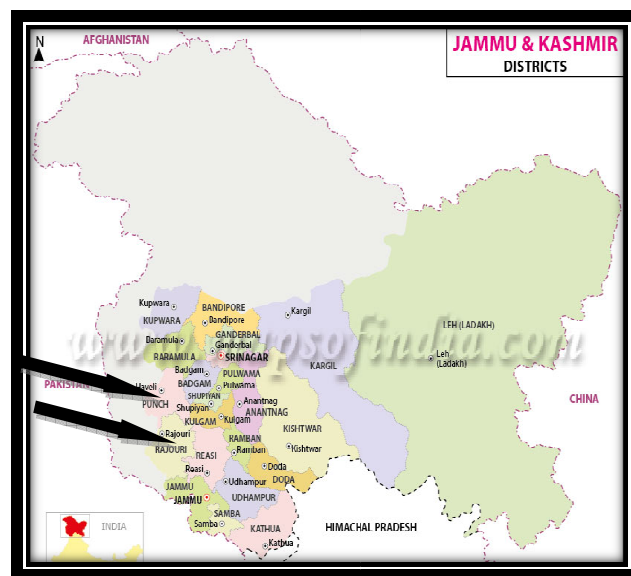


Figure-1
Map of Jammu and Kashmir, India



Figure-2
 Map of J&K showing study areas

represented by maximum number, with presence of 9 species belonging to 7 genera of 5 families (Colurellidae, Lecanidae, Brachionidae, Notommatidae, Dicranophoridae) all belonging to order Ploima (table-1). Assessment of maximum availability was headed by Digononts by the presence of *Philodina* genus of family Philodinidae in all the surveyed bodies. All the genera presently recorded among Monogononts showed well marked distinction from each other and some features are enlisted in table-2. Rotifer diversity was also studied by various researchers in different water bodies¹⁰⁻¹¹.

The first ever record of *hauerianus* species of genus *Dicranophorus* was from a marginally vegetated mud pond with shallow depth. This species had structural salient features as:

Presence of ventral corona, two large frontal eyespots, retrocerebral sac, prominent parallel toes, segmented toe, without double caudal papilla.

Results and Discussion

From the survey of 13 water bodies, both Digononts and Monogononts were recorded but the order Monogononta was

Table-1
 List of inhabitant Rotifers (+ shows presence)

Genera/Stations	Rajouri Tawi	Shadra	Banghi	Behrote	Mandi	Durangli	Dariya Surankote	Muradpur	Nagali bawli	Durangli bawli	Dungus	Bawli	Azad Mohalla
Family: Philodinidae													
<i>Philodina</i> sp.	+	+	+	+	+	+	+	+	+	+	+	+	+
<i>Rotaria neptunia</i>	-	-	-	-	-	-	-	-	-	-	-	-	+
Family: Colurellidae													
<i>Colurella uncinata</i>	-	+	-	-	-	+	-	-	-	-	-	-	-
<i>Colurella obtuse</i>	-	-	+	+	-	-	-	-	-	-	-	-	+
<i>Lepadella ovalis</i>	-	+	+	+	-	-	+	-	-	-	+	-	-
Family : Lecanidae													
<i>Lecane closterocerca</i>	-	+	-	+	-	+	-	-	-	-	-	-	-
Family : Brachionidae													
<i>Brachionus bidentata</i>	-	-	-	-	-	-	-	+	-	-	-	-	+
<i>Brachionus rubens</i>	-	-	-	-	-	-	-	-	-	-	-	-	+
<i>Keratella tropica</i>	-	-	-	-	-	-	-	+	-	-	-	-	-
Family: Notommatidae													
<i>Cephalodella gibba</i>	-	-	-	-	-	+	-	-	-	+	-	-	-
Family: Dicranophoridae													
<i>Dicranophorus hauerianus</i>	-	-	-	-	-	-	-	-	-	-	-	-	+

Table-2
Table showing features of various genera identified.

Genus/ Features	<i>Philodina</i>	<i>Rotaria</i>	<i>Colurella</i>	<i>Lepadella</i>	<i>Lecane</i>	<i>Brachionus</i>	<i>Keratella</i>	<i>Cephalodella</i>	<i>Dicranophorus</i>
Lorica	Absent but presence of smooth cuticle	Absent	Present with two plates	Present more or less circular	Present	Present with Dorsal and ventral plates fused laterally	Present with two immovable plates fused laterally	Present	Present
Mastax	Ramate	Ramate	Malleate, Submalleate	Malleate	Malleate	Malleate	Malleate	Virgate	Forcipate
Corona	Lateral	Well developed capable of retracting into mouth	Dorsal	Circular with circumapical band	Anterior	Ciliated anterior	Not especially large	Oblique and strongly convex	Oblique or ventral
Foot and Toes	4 plain toes (2dorsal, 2 terminal)	3 plain toes one dorsal 2 terminal	Terminal short foot, 2 toes with tapering ends	Well developed short foot, small acutely pointed toes	Long and straight	Foot long annulated retractile 2 toes	Foot and toes absent	Long pointed curved	Prominant
Habitat	Littoral	Free swimming leech like creeping	Littoral	Commusal, littoral	Pasmmo-biotic	Limnetic	Planktonic/ limnetic	Pasmo-littoral	Littoral

Conclusion

Bdelloides is among the most common variety of Rotifers in Fresh waters¹². Same stands true in present observations where class Digononta is represented by *Philodina* of order bdelloidea. Data analysis indicates *Philodina* as the most suitable rotifer in these waters as it showed presence in all water bodies scanned. Another interesting factor documented is the diversity ranging from illoricates to well loricated rotifers.

All the size types inhabit waters of Pir Panjal range is well documented from the encounter of one of the longest species (when fully stretched) *Rotaria neptunia* in a lentic water source. Over all preview states maximum diversity among vegetation which is a kind and protective habitat for these miniature which form the important representatives of aquatic food web.

References

- Pennak W.R., Freshwater invertebrates of United States, 3rd Ed. 1 Protozoa and Mollusca, John Wiley and Sons, New York, (1989)
- Meksuman P., Pholpunthin P. and Segers H., Diversity of Sessile rotifers (Gnesiotrocha, Monogononta, Rotifera) in Thale Noi Lake, Thailand, *Zootaxa*, **2997**, 1-18, (2011)
- 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)
- Ricci C. and Balsamo M., The biology and ecology of lotic rotifers and gastrotrichs, *Freshwater Biology*, **44**, 15-28, **2000**
- Tadphale S. and Pejaver M., Preliminary observations on effect of three different types of food on the population density of freshwater Rotifer, *Lecane Inopinata*, *J. Aqua. Biol.*, **20**, 159-161, (2005)
- Couch K.M., Burns C.W. and Gilbert J.J., Contribution of rotifers to the diet and fitness of *Boeckella* (Copepoda: Glanoida), *Freshwater. Biol.*, **41**, 107-118, **1999**
- Fenchel T. and Finlay B.J., The ubiquity of small species: patterns of local and global diversity, *Bioscience*, **54**, 777-784, **2004**
- Wallace R.L., Distribution of sessile rotifers in an acid bog pond, *Arch. Hydrobiol.*, **79**, 478-505, (1977)
- Koste W., *Rotatoria Die Rädertiere Mitteleuropas* bergründet von Max Voigt-Monogononta. 2. Auflage neubearbeitet von Walter Koste. Berlin, Gebrüder Borntraeger, 673pp, (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)
- Segers H., Global diversity of rotifers (Phylum Rotifera) in freshwater, *Hydrobiologia*, **595**, 49-59 (2008)