

Short Communication

Freshwater rotifers (Rotifera: Eurotatoria) from some domestic wells in West Bengal, India

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Abstract

Rotifer communities of 25 domestic wells in South 24-Parganas District, West Bengal, are made up of nine species belonging to six genera and five families. Comments are made on their species composition. The present report of *Myulina bisulcata* from these pristine environs is considered to be of special ecological interest.

Key words: Rotifers, domestic wells, West Bengal, species composition.

1. Introduction

Since the last century, rotifers are documented from a wide range of aquatic environs in India¹. However, only a single preliminary report from Andhra Pradesh² refers to their occurrence in freshwater wells of India. The present study is, therefore, undertaken to examine the rotifer species in some of these biotopes of West Bengal. All the reported species are briefly described and illustrated. Comments are also made on their species composition and distribution.

2. Material and methods

Plankton samples collected in March, 1986, from 25 domestic wells in Naya Basti and adjacent localities (South 24-Parganas District), West Bengal, were examined. Some main features of these wells were as follows:

Depth: 35–50 feet; approximate age: 25–30 years; water temperature: 24.6–27.8°C; pH: 7.2–7.6; dissolved oxygen: 3.8–5.2 mg/l, specific conductivity: 98–162 $\mu\text{S}/\text{cm}$.

Qualitative collections were made by towing a plankton net (No. 25; mesh: 55 μm) vertically through the water columns of different wells and were preserved in 5% formalin. Permanent mounts of the examined species were prepared in Polyvinyl alcohol–lectophenol mixture. Drawings were made by Leitz–Dialux phase contrast microscope. All the measurements were given in micrometers (μm). Various species were identified following Koste³.

3. List of examined species

Phylum	: Rotifera
Class	: Eurotatoria
Superorder	: Monogononta
Order	: Ploimida

Family: Brachionidae

Brachionus quadridentatus Hermann, 1783

Family: Mytilinidae

Mytilina bisulcata (Lucks, 1912)

Family: Trichotriidae

Trichotria tetractis (Ehrenberg, 1830)

Family: Colurellidae

Colurella uncinata (O.F. Müller, 1773)

Lepadella patella (O.F. Müller, 1786)

Family: Lecanidae

Lecane (Lecane) aculeata (Jakubski, 1912)

Lecane (Lecane) luna (O.F. Müller, 1776)

Lecane (Monostyla) closterocerca (Schmarda, 1859)

Lecane (Monostyla) decipiens (Murray, 1913)

4. Systematic notes

1. *Brachionus quadridentatus* Hermann, 1783 (Fig. 1)

Material examined: Only one specimen from one domestic well.

Characters: Lorica rigid, stippled and moderately compressed dorsoventrally. Occipital margin with characteristic six spines; medians longest and curving outwards, laterals longer than intermediates. Postero-lateral spines well developed. Vento-posterior spines prolonged to form a foot-sheath.

Measurements: Total length: 220; lorica length: 130; maximum width: 154; postero-lateral spines: 52.

2. *Mytilina bisulcata* (Lucks, 1912) (Fig. 2)

Material examined: Five specimens from one domestic well.

Characters: Lorica elongated, laterally compressed and without spines. Anterior end with two folds. Dorsal sulcus indistinct. Toes thin, slender and terminating into slender spines.

Measurements: Lorica length: 158–165; width of lorica: 78–82; toes: 68–70; spines: 6–8.

3. *Trichotria tetractis* (Ehrenberg, 1830) (Fig. 3)

Material examined: Four specimens from two domestic wells.

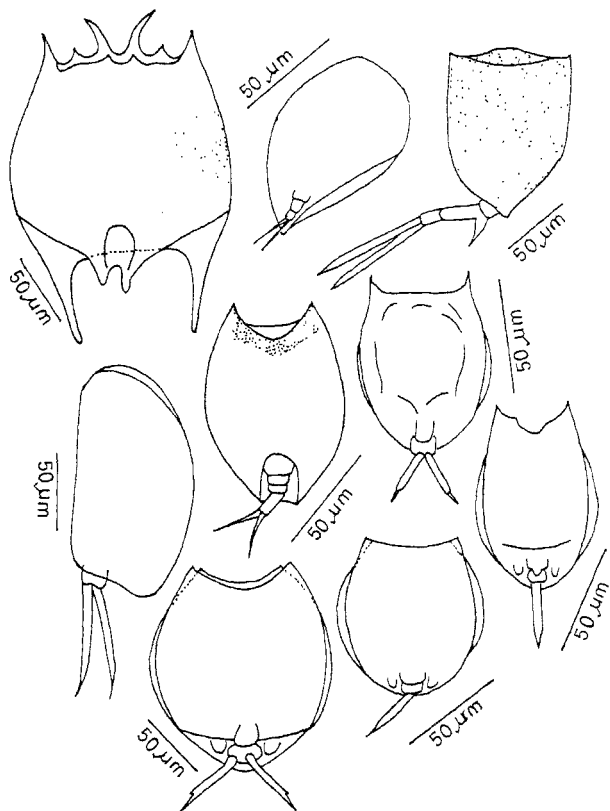


FIG. 1. *Brachionus quadridentatus* Hermann, ventral view; FIG. 2. *Mytilina bistucata* (Lucks), lateral view; FIG. 3. *Trichotria tetracis* (Ehrenberg), dorsal view; FIG. 4. *Colurella uncinata* (Müller), lateral view; FIG. 5. *Lepadella patella* (Müller), ventral view; FIG. 6. *Lecane (Lecane) aculeata* (Jakubski), ventral view; FIG. 7. *Lecane (Lecane) luna* (Müller), ventral view; FIG. 8. *Lecane (Monostyla) closterocerca* (Schmarda), ventral view; FIG. 9. *Lecane (Monostyla) decipiens* (Murray), ventral view.

Characters: Lorica stippled, rigid and with pointed antero-lateral angles. Foot three segmented; second foot segment longest and with pointed lateral spines. Toes long, cylindrical and with pointed tips.

Measurements: Lorica length: 116–118; lorica width: 77–80; toes: 85–88.

4. *Colurella uncinata* (O.F. Müller, 1773) (Fig. 4)

Material examined: Three specimens from two domestic wells.

Characters: Lorica broadly ovate, laterally compressed and with maximum height behind the head opening. Posterior angles of lorica downwardly directed and drawn closer. Foot two segmented; toes slender and pointed.

Measurements: Lorica length: 80–82; height of lorica: 52–55; toes: 18–20.

5. *Lepadella patella* (O.F. Müller, 1786) (Fig. 5)

Material examined: Seven specimens from four domestic wells.

Characters: Lorica broadly oval; dorsal plate strongly convex, ventral plate nearly flat. Dorsal and ventral anterior margins with stippled collars. Dorsal sinus shallow and ventral sinus deep. Foot-groove almost parallel sided and with projecting posterior edges. Toes straight and pointed.

Measurements: Lorica length: 75–80; lorica width: 60–63; toes: 20–24.

6. *Lecane (Lecane) aculeata* (Jakubski, 1912) (Fig. 6)

Material examined: Three specimens from two domestic wells.

Characters: Lorica elongate-oval; external angles of ventral plate with distinct out-curved spines. Ventral plate narrower than dorsal plate. Posterior segment semi-circular. Toes slender, parallel sided and terminating into pointed claws.

Measurements: Lorica length: 60–62; maximum width: 58–60; toes: 20–22; claws: 6–8.

7. *Lecane (Lecane) luna* (O.F. Müller, 1776) (Fig. 7)

Material examined: Four specimens from two domestic wells.

Characters: Lorica broadly sub-circular; ventral plate narrower than dorsal plate and with cuspidate external angles. Posterior segment small and rounded. Toes parallel sided, swollen at their bases; each terminating into a pointed claw, with a distinct basal spicule.

Measurements: Lorica length: 140–145; maximum width: 126–130; toes: 50–52; claws: 8–10.

8. *Lecane (Monostyla) closterocerca* (Schmarda, 1859) (Fig. 8)

Material examined: Eight specimens from six domestic wells.

Characters: Lorica broadly oval; anterior margins concave and with distinct external angles. Ventral plate narrower than dorsal plate. Toe parallel sided for about 1/2 of its length and with a pointed tip.

Measurements: Lorica length: 70–72; maximum width: 68–70; toes: 23–25.

9. *Lecane (Monostyla) decipiens* (Murray, 1913) (Fig. 9)

Material examined: Six specimens from six domestic wells.

Characters: Lorica elongate-oval; anterior spines flanked by two distinct cusps at external angles. Ventral plate oval, narrower than dorsal plate. Toe parallel sided for about 1/2 of its length and then tapering into a pointed apex.

Measurements: Lorica length: 76–78; maximum width: 54–56; toes: 26–28.

5. Remarks

Nine species of rotifers belonging to five families and six genera were encountered in this study. The members of this group, however, were observed in 16 out of 25 sampled domestic wells. The total number of rotifer species reported presently registered only 15.4% similarity (*vide* Sorensen Index⁴) with the earlier list from Andhra Pradesh². The examined collections reflected greater qualitative diversity with regard to overall species composition and representation of the different genera and families than Naidu's observations². In fact, previous reports of *Lapadella dactyliseta* and *L. similis* referred to *L. patella* which is the sole common species between the materials from Andhra Pradesh and West Bengal.

As a result of this study, 13 species of the monogonont rotifers are so far documented from domestic wells in India. The general paucity of species occurrence may be attributed to the pristine nature of these subterranean biotopes. Among the examined species, *Mytilina bistucata* comprised an example of regional distributional importance in this country. Further, it was earlier reported to occur primarily in peat-bogs^{3,5} while a few specimens were also collected from a gem-pit in Sri Lanka⁶. Sharma⁷ designated it to be an acidophilic species based on the investigations from Assam and Orissa. The present report of *M. bistucata* in alkaline potable waters of a domestic well is, therefore, considered to be of special ecological interest. Tropical and sub-tropical *Lecane aculeata* is yet another interesting rotifer noticed in this study while other species represented cosmopolitan elements.

The examined collections exhibited qualitative importance of the lecanid rotifers while various other documented species registered rare occurrence. This generalization is also supported by the author's unpublished findings from domestic wells in Assam State. Of the members of the family Lecanidae, *Lecane (Monostyla) closteroerca* and *L. (M.) decipiens* indicated co-occurrence in the studied samples. The presence of single specimen of *Brachionus quadridentatus* in one domestic well can be presently assigned to seepage from the adjacent pond even though some species of this brachionid genus were noticed earlier from Andhra Pradesh².

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References

1. SHARMA, B.K. **Rotifers. In *Animal resources of India: Protozoa to Mammalia: State of the art*, 1991, pp. 69–88, Zool. Surv. India, Calcutta.**
2. NAIDU, K.V. **A contribution to the rotatorian fauna of South India, *J. Bombay Nat. Hist. Soc.*, 1967, **64**, 384–388.**
3. KOSTE, W. **Rotatoria. Die Rädertiere Mitteleuropas. Begrundet von Max Voigt. Uberordnung Monogononta. Gebrüder Borntraeger, Berlin, 1978, I Textbd. (673 pp.) II Tafelbd. (T. 234).**
4. GREEN, J. **Latitudinal variations in association of planktonic Rotifera, *J. Zool. Soc. Lond.*, 1972, **167**, 31–39.**
5. VOIGT, M. **Rotatoria. Die Radertiere Mitteleuropas. Berlin-Nikolassee, 1957, I. Textbd. (508 pp.) II. Tafelbd. (T. 115).**
6. CHENGALATH, R.,
FERNANDO, C H
AND KOSTE, W. **Rotifera from Sri Lanka (Ceylon) 3. New species and records with a list of Rotifera recorded and their distribution in different habitats from Sri Lanka, *Bull. Fish. Res. Stn Sri Lanka (Ceylon)*, 1974, **25**, 83–96.**
7. SHARMA, B.K. **On the status and distribution of some new records of freshwater rotifers (Rotifera: Eurotatoria) from India, *Rec. Zool. Surv. India*, 1991, **89**, 95–99.**