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New Records of Sessile Rotifers from Freshwater Fishponds of Tripura II

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Six different species of sessile rotifers viz., *Ptygura tacita* EDMONDSON, *Lacinularia flosculosa* (MULLER). *L. elliptica* SHEPHARD, *Sinantherina semibullata* (THORPE), *S. procera* (THORPE) and *S. spinosa* (THORPE) are being reported for the first time from Tripura. During the study period the different physico-chemical factors of water, the nature of substrata and seasonal abundance of these rotifers are also observed.

Key Words: **Sessile rotifer, New report, Ecological conditions**

Introduction

In the earlier paper (Banik & Kar 1995) five species of sessile rotifers had been reported.

The present observation cpmmunicates the description of six rotifer species with their ecological conditions (such as limnological factors, substrata preference, and seasonal abundance).

Materials and Methods

The study has been carried out in nine freshwater pisciculture ponds of Tripura (west district, Latitude 23°50′ 15" N and Longitude 91°15′ 45" E; south district, Latitude 30°15′ 00" N and Longitude 91°27′00" E; north district, latitude 24°28′00" N and Longitude 92°15′00" E) during a period of August 1994 to July 1995. The mean depth of the study site varied from 0.9 (± 0.3)m during summer to 1.6 (± 0.43)m during monsoon. In these ponds different varieties of Indian major carps and some exotic carps had been cultured.

The description or rotifer is based on 216 biotic samples, which have been studied in live condition. The rotifers have been collected through different natural (such as gelatinous matrix, and root, stem and leaf of hydrophyte) as well as artificial substrata (such as glass slides) at an interval of fortnight from all the ponds. The glass slides had been immersed vertically with reference to the water surface (Banik 1987).

The different limnological factors of water such as water temperature, transparency, *p*H,

dissolved oxygen, free carbon dioxide, bicarbonate, dissolved organic matter, silicate, phosphate, nitrate, chlorinity, salinity, calcium and magnesium have been analysed adopting the methodology of APHA (1985). The data of these parameters of all ponds are pooled together into a yearly mean (table 1) in order to understand the limnological picture very clearly. To identify the rotifers upto species the works of Koste (1978), Pennak (1978), Edmondson (1992) and Hyman (1992) had been consulted. The animals have been described on basis of camera lucida drawings.

Results

The present study consists of six species of sessile rotifers representing one family and three genera.

Table 1 *The physico-chemical conditions of the studies ponds during August 1994 to July 1995*

Parameter	Range
Water temperature (°C)	17.00-30.00
Transparency (cm)	15.00-42.00
*p*H	06.70-07.80
Bicarbonate (ppm)	60.00-160.00
Dissolved oxygen (ppm)	04.10-10.60
Free carbon dioxide (ppm)	1.83-3.72
Dissolved organic matter (ppm)	0.80-3.61
Chlorinity (ppm)	24.81-62.70
Salinity (ppt)	0.07-0.14
Silicate (ppm)	3.60-10.10
Phosphate-P (ppm)	0.21-0.62
Nitrate-N (ppm)	0.09-0.21
Calcium (ppm)	5.00-23.00
Magnesium (ppm)	2.00-10.90

Family : Flosculariidae (HARRING 1913)
Ptygura (EHRENBERG 1832)

1. *Ptygura tacita* EDMONDSON
Lacinularia (SCHWEIGGER 1820)
1. *Lacinularia flosculosa* (MULLER 1758)
2. *L. elliptica* (SHEPHARD 1897)
Sinantherina (BORY DE ST. VINCENT 1826)
1. *Sinantherina semibullata* (THORPE 1889)
2. *S. procera* (THORPE 1893)
3. *S. spinosa* (THORPE 1893)

Ptygura tacita EDMONDSON

The individual of this species is solitary. The corona is circular with a ventral depression (figure 1A). Presence of two long antennae. The lorica is fibrous with some characteristic transverse bands. The trophi is malleoramate type with many teeth having distinct fulcrum (figure 1B). One to three amictic eggs are found at a time. During summer (at water temperature of more than 30°C) one to two resting eggs are found to be seen (instead of amictic eggs).

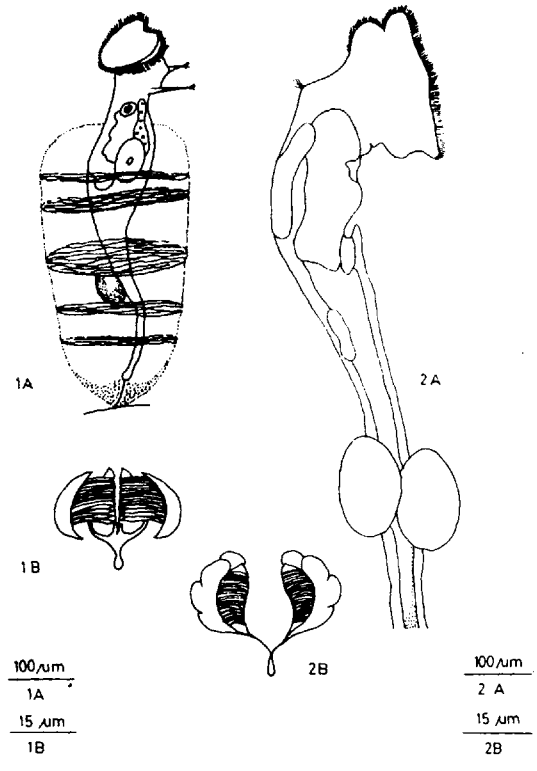
Physico-chemical condition : This species is observed at *p*H 6.7 to 7.4 and also at bicarbonate of 60 to 100 ppm. Their populations are found during a transparency value of 26 to 42 cm.

Substratum : Found on the stem and leaf of *Utricularia*, root of *Eichhornia crassipes*. Only one individual is recorded on the glass slide substratum in one sample.

Seasonal abundance : Highest abundance during the autumn and lowest in the summer have been observed.

Lacinularia flosculosa (MULLER)

Spherical colony with individuals of nearly same age. The corona is heart shaped with a deep ventral sinus. The ventral antenna is



Figures 1&2 1A, *Ptygura tacita* EDMONDSON; **1B**, Malleoramate type of trophi; **2A**, *Lacinularia flosculosa* (MULLER); **2B**, malleoramate type of trophi

clearly visible. The cloacal papilla is found to be raised (figure 2A). Two to four amictic eggs are observed at a time. The trophi is malleoramate type with many teeth (of which the four pairs are very distinct) (figure 2B).

Physico-chemical condition : The animals are mostly available during water temperature of 24-27°C and *p*H 6.8-7.3 (above this *p*H they have not been recorded).

Substratum : This species is observed only on the gelatinous matrix substratum.

Seasonal abundance : Their maximum numbers are found in the autumn months and minimum in the winter. A highest destiny of 90 individuals per colony is observed in September 1994 and a lowest of 15 individuals in February 1994. However, none is found in December 1994.

L. elliptica SHEPHARD

The colony is elliptical having many individuals of different ages. The colony as a whole can move from place to place with the help of continuous contraction as well as relaxation capability of the animals (figure 3A). In a colony the animals towards the broader area are mostly fertile. There is presence of malleromate type or trophi (figure 3B).

Physico-chemical condition : The animals prefer such littoral area which is populated by *Eichhornia crassipes* as a result sheds are found to be sufficient. They are abundant during dissolved oxygen of 4.86 -7.11 ppm, dissolved organic matter of 0.8-2.89 ppm, bicarbonate of 73-119 ppm and silicate of 5.1-10.1 ppm. At bicarbonate more than 160 ppm no animals have been found.

Substratum : The foot base of the animals are firmly attached with the gelatinous matter. However, none is found on any other substratum.

Seasonal abundance : Highest numbers in the autumn and lowest in the monsoon months have been observed. However, none is found during December 1994.

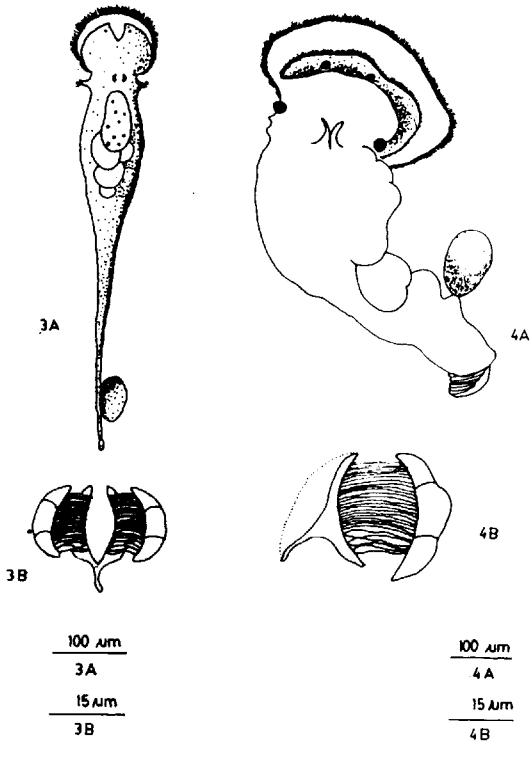
***Sinantherina semibullata* (*THORPE*)**

Circular colony having many individuals of different ages. The corona of the animal is quadrilateral, the breadth of which is almost twice the trunk (figure 4A). On the corona there are two rows of cilia. On the periphery of the corona two dark coloured dorsally placed eye spots are there which are wide

apart from each other. Just below the corona two opaque warts are placed ventrally on the trunk area. No dorsal antennae are there. However, two ventral antennae are there on the trunk. The trophi is of malleoramate with many teeth, of which the three are prominent (figure 4B). Two to five amictic eggs are found at a time. Some of these eggs are found to be attached to the oviferon.

Physico-chemical condition : This species is mostly available during higher water temperature (26-30°C), and alkaline *p*H (7.1-7.8) conditions. However, they are also found during water temperature of 17-20°C.

Substratum : The animals are found to be attached on the gelatinous matter only.



Figures 3&4 **3A** *L. elliptica* SHEPHARD; **3B**, malleoramate type of trophi; **4A**, *Sinantherina semibullata* (THORPE); **4B**, Malleoramate type of trophi.

Seasonal abundance : They are observed with higher density in the summer season and with lower density in the winter months.

***S. procera* (THORPE)**

The animals of this species form hemispherical colony with many individuals of similar age (figure 5A). There is presence of heart-shaped corona. Behind the corona there are four dark coloured opaque warts on the ventral part of the trunk. Four teeth are very prominent in the malleoramate type of trophi (figure 5B). One to three amictic eggs are found at a time.

Physico-chemical condition : Higher density of this species is found during *p*H 6.9 to 7.4 at *p*H 7.8 no rotifer of this species is found.

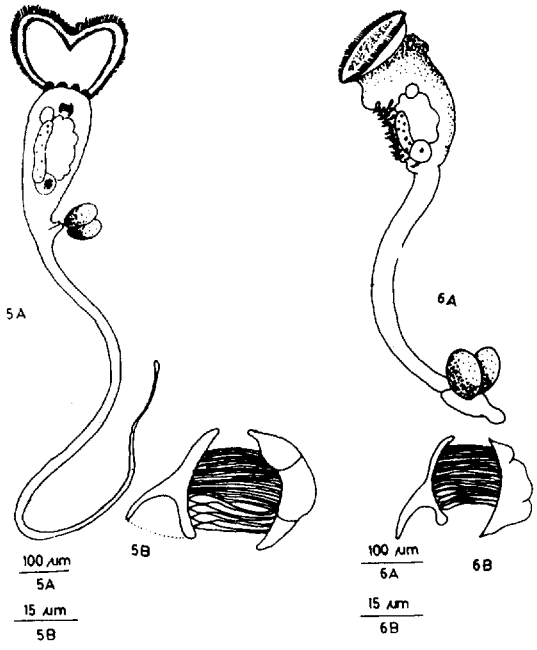
Substratum : The foot base of the animals are embedded in the gelatinous matter centrally which remains attached to the root of *Eichornia crassipes*. On the glass slide one to two individuals are observed.

Seasonal abundance : The animals depict maximum number of 40-66 individuals in the autumn and minimum of 12-22 in the summer.

***S. spinosa* (THORPE)**

The colony is spherical with individuals of different ages. The adults and their youngs are arranged alternatively (figure 6A). The adult is S-shaped. There are two eye spots in the coronal area. On the anterior-lateral side of the body there are presence of number of spines. The trophi is malleoramate type (figure 6B). Two to three amictic eggs are found at a time. During peak summer time one to two resting eggs are found instead of amictic egg.

Physico-chemical condition : At *p*H 7.8 no such species is found. However, they are available during *p*H 6.7-7.3, bicarbonate 60-



Figures 5&6 **5A** *S. procera* (THORPE); **5B**, Malleoramate type of trophi; **6A**, *S. spinosa* (THORPE); **6B**, Malleoramate type of trohpi

111 ppm, dissolved oxygen 4.1-7.93 ppm and silicate 3.6-7.31 ppm.

Substratum : The foot ends are embedded in the central gelatinous mass due to which the whole colony can float freely in the water. However, one to four individuals are found to be recorded on the glass slide where they survive for short period only.

Seasonal abundance : 40-74 individuals are recorded during the autumn and 16-38 individuals in the summer.

Discussion

The present study redescribed six rotifer species such as *Ptygura tacita* EDMONDSON, *Lacinularia flosculosa* (MULLER), *L. elliptica* SHEPHARD, *Sinantherina semibullata* (THORPE), *S. procera* (THORPE), and *S. spinosa* (THORPE), for which the most important taxonomical characteristics are put together after comparing with my own observations. It is observed that all sessile rotifer species recorded in the present investigation are available during particular limnological condition(s) (Datta & Banik 1987, Banik 1992, 1995). It is further recorded that these animals are very much specific in regard to the abundance in a particular season (Datta & Banik 1987a, Banik & Datta 1991, Banik & Kar 1995) and species specific in regard to the substrata selection (Wallace & Edmondson 1986, Banik et al. 1994).

Although these six species had earlier been reported from some other states of India (Arora 1963, Nayar 1968, Nair 1972, Bhardwaj 1985, Sarma 1988), they are reported for the first time from Tripura, which confirms their occurrence all over India. Of them, *P. tacita*. EDMONDSON (Edmondson 1949), *L. flosculosa* (MULLER) (Edmondson 1992). *L. elliptica* SHEPHARD (Wallace 1987). *S. semibullata* (THORPE) (Gunter & Knight 1978), *S. procera* (THORPE) (Wallace 1987), and *S. spinosa* (THORPE) (Wallace 1987) had also been reported earlier from various corners of the world (Koste & Hollowday 1992, Felix et al. 1995). So, the present report also confirms their nature of cosmopolitan distribution.

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