

**NEW RECORDS OF PHYTOPLANKTON FOR BANGLADESH.
8. TRACHELOMONAS EHR. (EUGLENOPHYCEAE)**

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Abstract

Investigation of pelagic plankton communities from some freshwater ponds of Pirojpur and Barisal districts revealed the presence of 17 species under the genus *Trachelomonas* Ehr. for the first time in Bangladesh.

Introduction

Huber-Pestalozzi (1955) compiled 256 species, 190 varieties and 46 formae of the genus *Trachelomonas* Ehr. Dillard (2000) reported 85 species and 27 varieties of this genus from the Southeastern United States. In Bangladesh, Islam and Moniruzzaman (1981) carried out a comprehensive work on *Trachelomonas* where they reported 39 taxa. Later studies have accounted 40 species (Islam and Alfasane 2003, 2004; Islam and Irfanullah 2005, Islam and Paul 1978). The total *Trachelomonas* reported from Bangladesh appears to be 79.

The present authors while working on some pond plankton samples collected from Mathbaria of Pirojpur district and Bakerganj of Barisal district noticed the occurrence of a number interesting species of *Trachelomonas*. However, the authors also reported many other taxa of phytoplankton (various groups) from the same locality (Khondker *et al.* 2006, 2007a, b, c, d; 2008).

Materials and Methods

Plankton concentrates obtained via plankton net and sedimentation technique by Lugol's solution were used for the present study (Khondker *et al.* 2006). Collection of samples was carried out from 7 domestic ponds and 1 river channel of Bakerganj (Barisal) and 6 ponds of Mathbaria (Pirojpur) in between 2004 and 2006. Details of the sampling procedure and descriptions of the sites have been published in Khondker *et al.* (2006).

Taxonomic enumeration

In all 17 taxa of the genus *Trachelomonas* Ehr. family Euglenaceae were identified from the pelagic plankton communities of different ponds of Mathbaria and Bakerganj. An illustrated account of these species have been provided in the present paper.

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Division: Euglenophyta; Class: Euglenophyceae; Order: Euglenales
Family: Euglenaceae

1. **Trachelomonas anulifera** var. **semi-ornata** (Conrad) H.-P. [Syn.: *Tr. rugulosa* var. *semi-ornata* Conr.] (Fig. 1)
 (Huber-Pestalozzi 1955, 263-264, 58: 406)
 Lorica spherical, light brown in color. Flagellar aperture surrounded by thick transverse rings whose number decreases towards bottom (2 such rings are prominent in the present material). Lorica 10 µm in diameter. Lorica surface thickly and strongly punctate.
Notes: The present specimen is relatively smaller than the type (Huber-Pestalozzi 1955).
 Mathbaria: Station No. 6, 30.08.2004.

2. **Trachelomonas bernardi** Wol. [Syn.: *Trachelomonas volvocina* var. *bernardi* (Wol.) Defl.] (Fig. 2)
 (Huber-Pestalozzi 1955, 270, 59: 432)
 Lorica spheroidal, anterior end truncate, posterior half hemispherical, wall smooth, yellow brown. Flagellar pore annularly thickened, ring like. Lorica 8 µm long, 12 µm broad. Found attached to sand grain.
 Mathbaria: Station No. 5, 19.07.2004.

3. **Trachelomonas compacta** Middelh. (Figs. 3a-c)
 (Huber-Pestalozzi 1955, 319, 69: 624a)
 Lorica spherical, wall very thick, 2-3 µm wide. Flagellar opening having a broad collar, 4-6 µm wide. Lorica wall densely scrobiculate, 15-16 µm long, 14-15 µm broad. Flagellum c 14 µm long.
 Mathbaria: Station No. 4, 30.08.2004, Bakerganj: Station No. 3, 29.11.2004.

4. **Trachelomonas crebea** Kellicott emend. Defl. [Syn.: p.p.: var. *podolica* Drez.] (Figs. 4a-b)
 (Huber-Pestalozzi 1955, 330, 71: 676)
 Lorica regularly ellipsoid, irregularly punctate, flagellar pore encircled by a wide cylindrical collar, yellow brown. Lorica with collar 26 µm long, 15 µm broad; collar 3 µm long, 4 µm broad.
 Bakerganj: Station No. 4, 12.07.2004.

5. **Trachelomonas globularis** (Awerinzew) Lemm. (Fig. 5)
 (Dillard 2000, 88, 14: 14)
 Lorica nearly globose, dark brown in color, anterior slightly narrowed. Lorica surface densely but irregularly covered with spines. Flagellar pore without a collar. Lorica 24 µm in diameter.
 Mathbaria: Station No. 6, 30.08.2004.

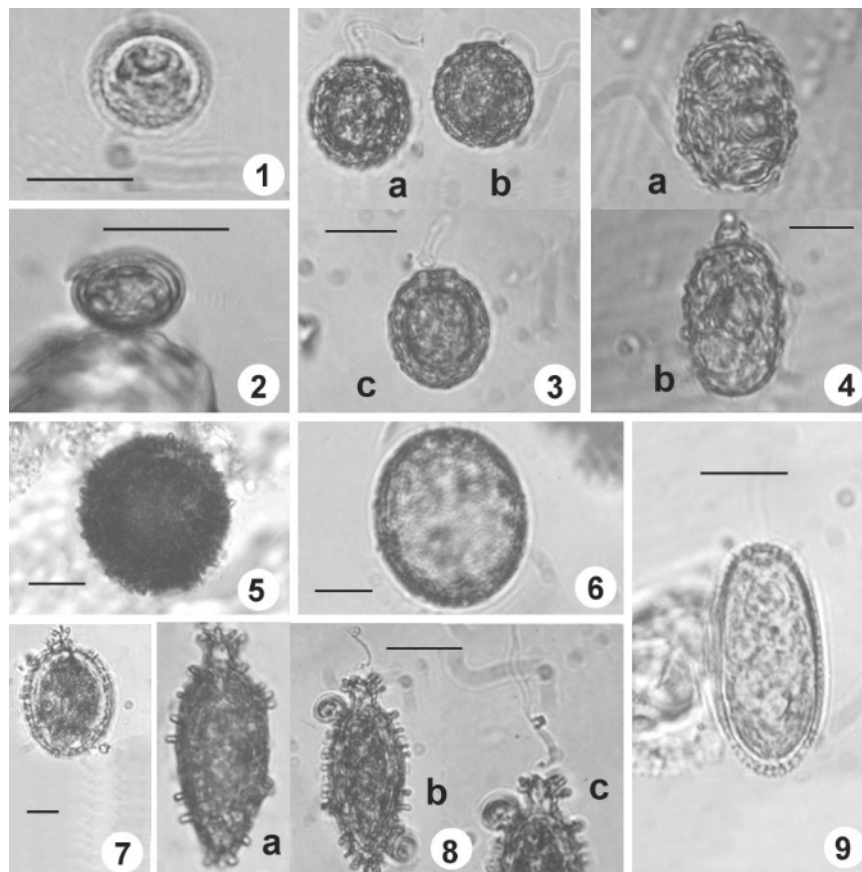
6. **Trachelomonas granulosa** var. **subglobosa** Playfair (Fig. 6)
 (Huber-Pestalozzi 1955, 322, 70: 642)
 Lorica ellipsoidal to subspherical, surface densely granulated, collar sunken or absent, light dark brown in color. Lorica 29 µm long, 23 µm broad. Slightly angled. Flagellum not seen.
 Bakerganj: Station No. 1, 06.09.2004.

7. **Trachelomonas hispida** var. **coronata** Lemm. fa. **irregularis** fa. nov. (Fig. 7)

Lorica ellipsoidal, covered with sparsely distributed spines. Anterior end rounded with a sunken collar. Posterior slightly conical. Flagellar pore encircled by a crown of spines whose lengths are dissimilar and irregularly arranged. Lorica without crown of spines, 34 μm long, 23 μm broad. Crown of spines c 2-4 μm long.

Notes: The present specimen fits well with var. *coronata* (Huber-Pestalozzi 1955) but differs in having the crowns of spine irregularly arranged and having different length.

Bakerganj: Station No. 1, 06.09.2004.



Figs. 1-9. 1. *Trachelomonas anulifera* var. *semi-ornata*, 2. *T. bernardi*, 3a-c. *T. compacta*, 4a-b. *T. crebea*, 5. *T. globularis*, 6. *T. granulosa* var. *subglobosa*, 7. *Trachelomonas hispida* var. *coronata* fa. *irregularis*, 8a-c. *T. hystrix*, 9. *T. lacustris* var. *ovalis*. (Bars = 10 μm).

8. **Trachelomonas hystrix** Teiling (Figs. 8a-c)

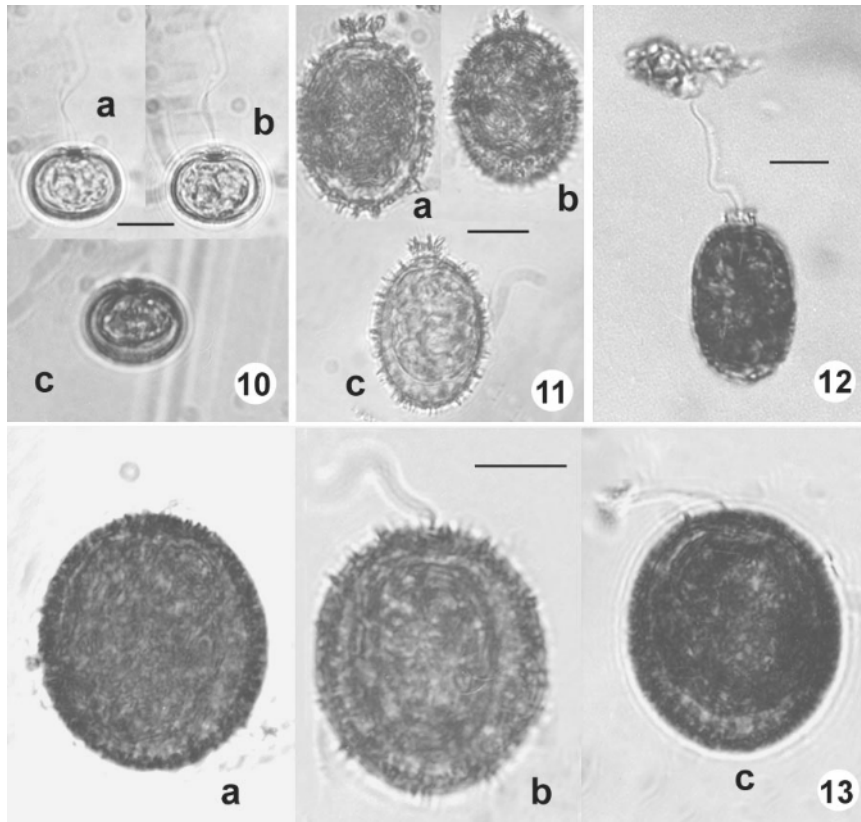
(Huber-Pestalozzi 1955, 346, 74: 734)

Lorica elongate oval, flower vase shaped, covered densely with thorns having blunt end. Anterior with distinct neck through which flagellum comes out, tip of the neck densely thorned. Posterior somewhat conical but do not end in a pointed tip. Lorica with spine and neck 32-35 μm long, 13-16 μm broad. Neck c 5 μm long, thorn around 2 μm long. Flagellum 22-30 μm long.

Notes: The species fits more or less with that described in Huber-Pestalozzi (1955) but only differences are that in the present material the thorns are stubby and blunt.

Mathbaria: Station No. 3, 21.06.2004, Station No. 4, 30.08.2004, Station No. 5, 19.07.2004.

9. **Trachelomonas lacustris** Drez. var. **ovalis** Drez. emend. Deflandre (Fig. 9)
(Huber-Pestalozzi 1955, 290, 63: 505).
Lorica cylindrical or ellipsoid cylindrical, yellow brown. Anterior end broadly rounded, posterior end slightly conical shaped but rounded. Flagellar aperture encircled by a crown of very short spines. Lorica surface smooth but in the middle very thinly punctate, on the contrary both ends are strongly punctate. Lorica 26 μm long, 14 μm broad. Flagella somewhat body length.
Bakerganj: Station No. 2, 15.06.2004.
10. **Trachelomonas lismorensis** var. **inermis** Playf. [Syn.: *Trachelomonas volvocina* var. *compressa* Drez. em. Defl.] (Figs. 10a-c)
(Huber-Pestalozzi 1955, 273, 60: 444)
Lorica flat, compressed from both the poles, 10-12 μm long, 14-16 μm broad, wall smooth or lightly punctate. Flagellum long, about twice the body length, 20 μm .
Bakerganj: Station No. 2, 15.06.2004, Station No. 3, 01.11.2004.
11. **Trachelomonas mirabilis** var. **minor** Woronichin (Fig. 11a-c)
(Huber-Pestalozzi 1955, 312)
Lorica ellipsoidal, surface densely covered with short, sharp spines. Flagellar aperture encircled by a cylindrical collar, which is 3-4 μm long, 5-7 μm broad. Lorica with collar 30-31 μm long, 22-23 μm broad.
Bakerganj: Station No. 1, 06.09.2004, Station No. 2, 15.04.2004.
12. **Trachelomonas planctonica** var. **oblonga** Drez. (Fig. 12)
(Huber-Pestalozzi 1955, 328, 71: 669)
Lorica subspherical to somewhat cylindrical, dark yellow brown, smooth. Flagellar aperture encircled by a strong rim like collar. Both the posterior and anterior end identically rounded. Lorica 26.9 μm long, 15.2 μm broad, collar 2.5 μm long, 5.1 μm broad, flagellum 20.3 μm long.
Mathbaria: Station No. 3, 12.02.2005.
13. **Trachelomonas raciborskii** Wolosz. (Figs. 13a-c)
(Huber-Pestalozzi 1955, 299, 64: 539)
Lorica elliptical, dark brown in color, surface covered with short spines, strongly on both the poles, membrane thick. lorica 27-28 μm long, 25-27 μm broad. Flagellar pore without a collar, sometimes crowded with very short spines, flagellum 14 μm long.
Mathbaria: Station No. 6, 02.08.2004, 30.08.2004, 11.10.2004,
14. **Trachelomonas scabra** var. **pygmaea** Playf. (Figs. 14a-b)
(Huber-Pestalozzi 1955, 324, 70: 655A)
Lorica elliptical, both the poles rounded in the same manner or the posterior part may be pointed. Flagellar aperture with short but wide collar. Lorica 21-24 μm long, 15 μm broad. Lorica surface rough, warty but irregularly. Flagellum 35 μm long. Collar c 2 μm high, 5-6 μm broad.
Mathbaria: Station No. 6, 30.08.2004.



Figs. 10-13. 10a-c. *T. lismorensis* var. *inermis*, 11a-c. *T. mirabilis* var. *minor*, 12. *T. planctonica* var. *oblonga*, 13a-c. *T. raciborskii*. (Bars = 10 μ m).

15. ***Trachelomonas silvatica*** fa. Defl.

(Figs. 15a-b)

(Huber-Pestalozzi 1955, 325, 70: 657)

Lorica elongated ellipsoid, or nearly cylindrical, anterior slightly narrowed, posterior broadly rounded. Flagellar aperture is surrounded by a high cylindrical collar. Lorica surface rough, yellow to yellow-brown in color. Lorica without collar 25.4-28.0 μ m long, 17.0-22.9 μ m broad. Collar 2.5 μ m long and 6.0 μ m broad. Flagellum 43.2 μ m long.

Bakerganj: Station No. 4, 12.07.2004.

16. ***Trachelomonas sowerbii*** Skv.

(Fig. 16)

(Huber-Pestalozzi 1955, 347, 74: 740)

Lorica widely elliptical, dark brown in color, from top to bottom slightly narrowed. Flagellar aperture bears a short collar. Lorica 33 μ m long, 20 μ m broad. Flagellum 46 μ m long. Collar c 8 μ m wide.

Mathbaria: Station No. 4, 02.08.2004.

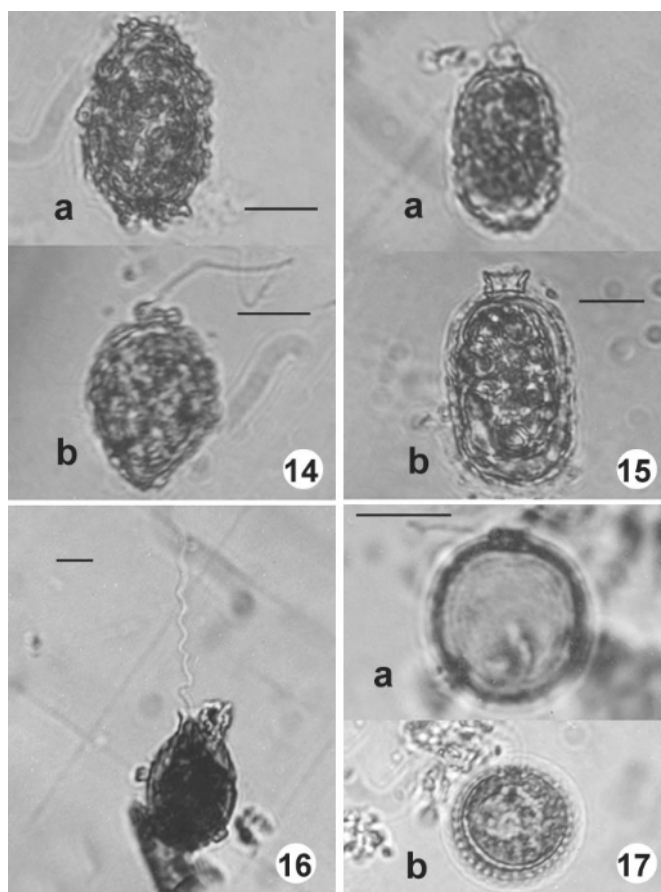
17. ***Trachelomonas volvocina* var. *punctata*** Playf. [Syn.: *Tr. punctata* (Playf.) Conr.

(Huber-Pestalozzi 1955, 252, 56: 354)

(Figs. 17a-b)

Lorica spherical, brown in color. Flagellar aperture without a rim or collar. Lorica 10-16 μm in diameter. Lorica surface thickly and strongly punctate.

Mathbaria: Station No. 1, 24.05.2004, Station No. 6, 30.08.2004.



Figs. 14-17. 14a-b. *T. scabra* var. *pygmaea*, 15a-b. *T. silvatica*, 16. *T. sowerbii*, 17ab. *T. volvocina* var. *punctata*. (Bars = 10 μm).

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