

NEW RECORDS OF FRESHWATER DINOFLAGELLATES FROM BANGLADESH.

I. *CERATIUM*, *GYMNODINIUM* AND *PERIDINIUM*

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Abstract

Ten species of dinoflagellates from freshwater domestic ponds of Pirojpur and Barisal districts, Bangladesh, have been reported for the first time. The taxa are *Ceratium hirundinella* var. *furcoides*, *Gymnodinium aeruginosum*, *G. coronatum*, *G. veris*, *Peridinium aciculiferum*, *P. allorgei*, *P. cinctum* fa. *westii*, *P. cunningtonii* tab. *remotum* var. *wildemani*, *P. gatunense* and *P. goslaviense*.

Introduction

Dinoflagellates are important group of planktonic algae occurring most commonly in marine waters. In freshwater habitats they seldom form bloom in certain seasons as they do in marine waters (Prescott 1982). In Bangladesh so far 17 taxa of dinoflagellates have been reported from the Northeastern Bay of Bengal (Islam and Aziz 1975, 1977), estuaries (Aziz and Islam 1979) and freshwater ponds (Aziz and Tanbir 2003). Recently, a large number of collections were made from freshwater domestic ponds of Pirojpur and Barisal districts and a good number of taxa from different classes have been described and illustrated (Khondker *et al.* 2006, 2007a, b, c, d; 2008). During the investigations the authors came across some dinoflagellate taxa belonging to the genera *Ceratium*, *Gymnodinium* and *Peridinium* and these are illustrated as new records for Bangladesh in the present account.

Materials and Methods

Plankton samples were collected from domestic ponds of Mathbaria Upazila of Pirojpur district and Bakerganj Upazila of Barisal district, Bangladesh. In addition one sample was collected from a rivulet (Station No. 5 of Bakerganj, Barisal) while another one from *Azolla* culture ponds at Sirajganj district. Samples were obtained by sieving 100 L of water through a plankton net having a mesh aperture of 22 μ m. Detailed description of the habitats and methodology used have been published elsewhere (Khondker *et al.* 2006).

Results and Discussion

A total of ten taxa of dinoflagellates have been identified as new report for Bangladesh. Of these one taxon belonged to *Ceratium*, three taxa to *Gymnodinium* and six taxa to *Peridinium*. The taxa belonged to pelagic plankton of pond ecosystem except one from rivulet. In the present paper, an illustrated taxonomic account of ten species have been provided.

Division: Pyrrophyta, Class: Dinophyceae, Order: Gymnodiniales
Family: Gymnodiniaceae, Genus: Gymnodinium

1. ***Gymnodinium aeruginosum* Stein** (Figs. 1a-b)
(Huber-Pestalozzi 1968, 127, 15: 99b; Ling and Tyler 2000, 61, 23: 1)

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Cells elongated, somewhat dorsiventrally flattened; anterior part equal to or may be little bigger than posterior part; cell thin. Posterior part eventually bell shaped. Chromatophores small, many, blue green and discoid. Resting stage with broad mucilage sheath. Cells 22 μm long, 18 μm broad.

Distribution: Mathbaria, Station No. 2, 30 August, 2004. Sirajganj in *Azolla* culture ponds during April, 1999.

2. ***Gymnodinium coronatum*** Wolosyńska (Huber-Pestalozzi 1968, 131, 17: 107) (Fig. 2)

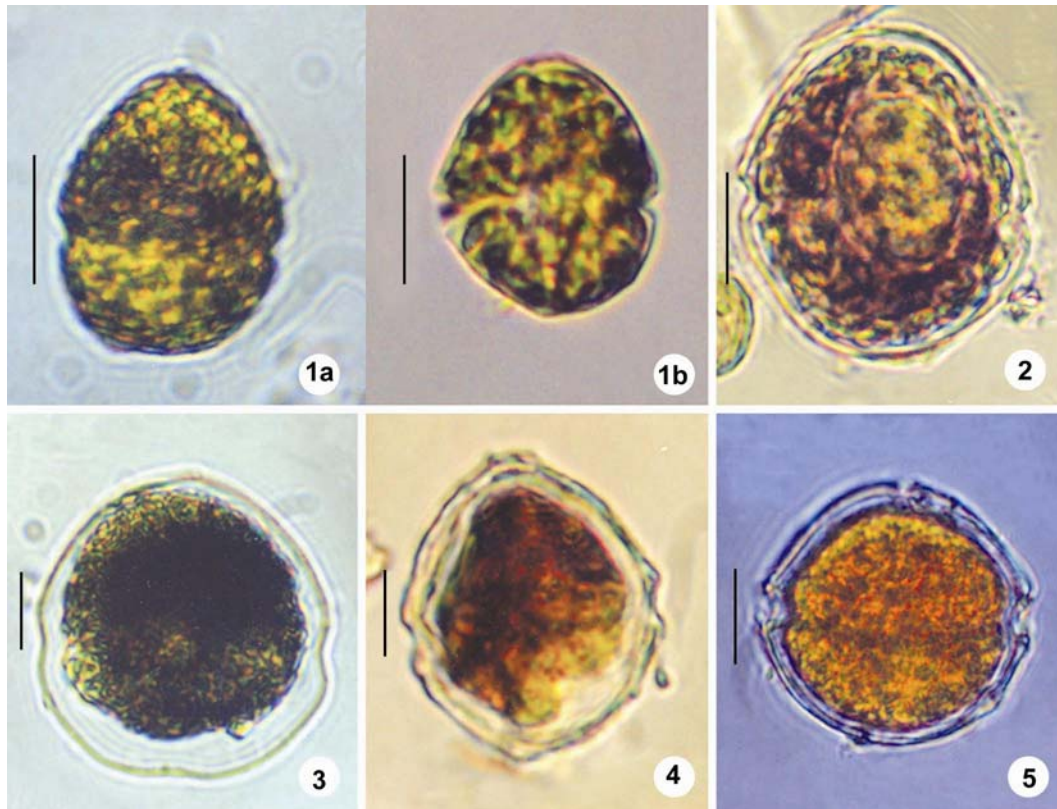
Cells somewhat spherical, anterior and posterior parts almost equal in dimension, posterior end more rounded than anterior end. Cells 30 μm long, 27 μm broad.

Distribution: Bakerganj, Station No. 5, 29 March, 2005.

3. ***Gymnodinium veris*** Lindeman (Huber-Pestalozzi 1968, 130, 17: 106b) [Syn.: *Gymnodinium carinatum* Schilling var. *hiemalis* Wol.] (Fig. 3)

Cells ovoid to spherical, anterior end broadly cone shaped with weakly convex margins. Posterior end slightly depressed in the axial region. Cells 32-38 μm long, 31-32 μm broad.

Distribution: Bakerganj, Station No. 1, 06 September, 2004.



Figs. 1-5: 1a-b. *Gymnodinium aeruginosum* dorsal view, 2. *Gymnodinium coronatum* dorsal view, 3. *Gymnodinium veris* dorsal view, 4. *Peridinium aciculiferum* dorsal view, 5. *Peridinium allorgei* dorsal view. Scales = 10 μm .

Order: Peridinales, Family: Peridiniaceae, Genus: Peridinium

4. **Peridinium aciculiferum** Lemm. [Syn.: *Glenodinium aciculiferum* (Lemm.) Lindem.; *Peridinium umbonatum* var. *aciculiferum* Lemm., *Peridinium stagnale* Meunier] (Fig. 4)
(Huber-Pestalozzi 1968, 214, 41: 210c)

Cells ovoid, dorsiventrally little flattened, epivalve nearly cone shaped, hypovalve slightly smaller, almost hemispherical. Chromatophores brown, many, discoid. Cells 35 μm long, 24 μm broad.

Distribution: Bakerganj, Station No. 4, 12 July, 2004.

5. **Peridinium allorgei** Lefèvre (Fig. 5)
(Huber-Pestalozzi 1968, 218, 43: 216b)

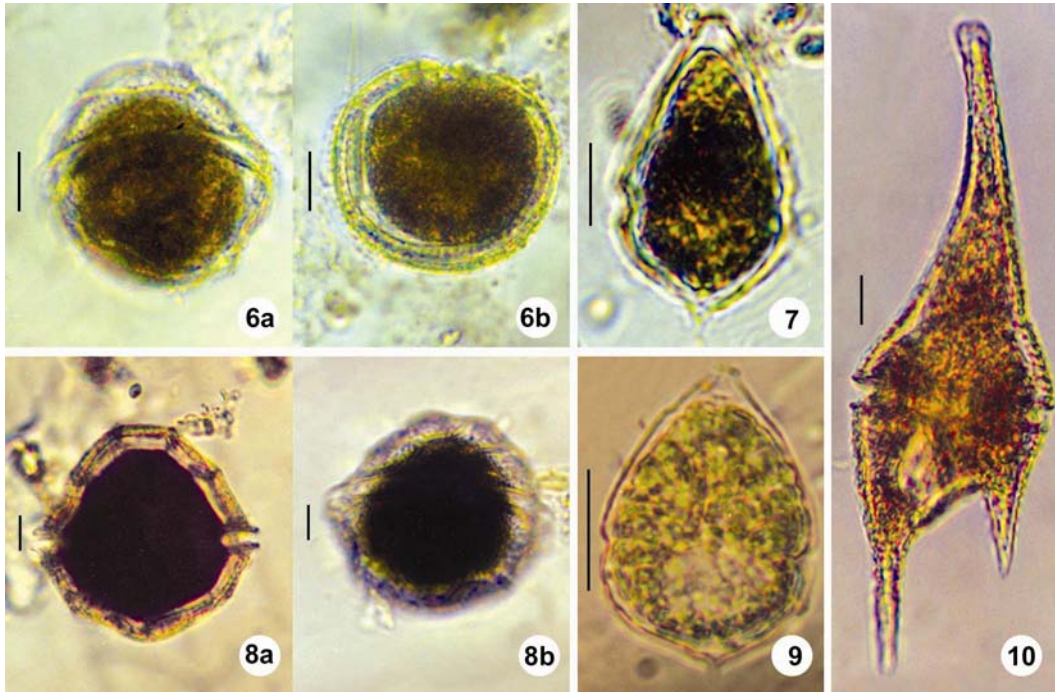
Cells round, dorsiventrally little flattened, opening present at apex of epivalve, regularly rounded, both the valves nearly half circle. Cells 27 μm long, 31 μm broad.

Distribution: Bakerganj, Station No. 8, 07 July, 2004.

6. **Peridinium cinctum** fa. *westii* (Lemm.) Lef. (Figs. 6a-b)
(Huber-Pestalozzi 1968, 200, 33: 183A, a-e)

Cells spherical to ovoid, dorsiventrally little to moderately flattened off, apical opening absent; chromatophores brown; sutures very wide with striations; cells 53 μm long, 48-51 μm broad. Type differs from the variety in that the plate thickness beset with ramified, vermiform strips.

Distribution: Mathbaria, Station No. 1, 19 July, 2004.



Figs. 6-10: 6a-b. *Peridinium cinctum* fa. *westii*, a. dorsal view, b. apical view, 7. *Peridinium cunningtoni* tab. *remotum* var. *wildemani* dorsal view, 8a-b. *Peridinium gatunense*, a. dorsal view, b. dorsal view in a slightly slanting position, 9. *Peridinium goslaviense*, 10. *Ceratium hirundinella* var. *furcoides* ventral view. Scales = 10 μm .

7. **Peridinium cunningtonii** tab. **remotum** var. **wildemani** (Wol.) Lef. [Syn.: *Peridinium wildemani* Wol.] (Fig. 7)

(Huber-Pestalozzi 1968, 240-242, 54: 264a)

Cells elongate ovoid, dorsiventrally prominently flattened; with apical opening; epivalve cone shaped; apical pole pointed. Differs from the type by its smaller dimension and nearly hemispherical hypovalve with spines. Cells 30 μm long, 15 μm broad.

Distribution: Bakerganj, Station No. 4, 06 September, 2004.

8. **Peridinium gatunense** Nygaard [Syn.: *Peridinium cinctum* var. *gibbosum* Lef.; *Peridinium cinctum* var. *gatunense* Nyg.] (Figs. 8a-b)

(Huber-Pestalozzi 1968, 202, 35: 188a)

Cells nearly spherical, apical opening missing, epi and hypovalves different in shape but with both ends truncated cone, hump like contour; plates strongly areolated, sutures wide with mostly very wide striations strips; cells 61 - 66 μm long, 61 - 64 μm broad.

Distribution: Mathbaria, Station No. 6, 30 August, 2004.

9. **Peridinium goslaviense** Woloszynska (Fig. 9)

(Huber-Pestalozzi 1968, 230, 49: 243a).

Cells elongate ovoid, dorsiventrally weakly flattened, epivalve sharply pointed with apical pore, hypovalve almost half circled with spines, plates beset with fine papillae; cells 24 μm long, 21 μm broad.

Distribution: Bakerganj, Station No. 2, 12 July, 2004.

Order: Ceratiales, Family: Ceratiaceae, Genus: Ceratium

10. **Ceratium hirundinella** fa. **furcoides** Levander (Fig. 10)

(Huber-Pestalozzi 1968, 260, 277,1)

Cells robust, dorsiventrally strongly flattened; apical horn long, narrow, with apical pores; antapical horns 2, short, straight, ends pointed and run parallel to the apical axis. Cells 135 μm long, 44 μm broad.

Distribution: Bakerganj, Station No. 8, 29 March, 2004.

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