

NEW RECORDS OF SOME PHYTOPLANKTON FOR BANGLADESH: CLASS - CHLOROPHYCEAE

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Abstract

The paper records 6 species of phytoplankton under the class Chlorophyceae namely, *Pteromonas golenkiniana* Pascher belonging to Family Phacotaceae; *Pediastrum biradiatum* var. *biradiatum* Meyen. belonging to Family Hydrodictyaceae; *Scenedesmus alternas* var. *indicus* Hortob. and *Scenedesmus quadricauda* var. *inermis* Playfair belonging to Family Scenedesmaceae; *Teilingia excavata* (Rafls) Bourelly and *Cosmarium vexatum* W. West var. *vexatum* W. West belonging to Family Desmidiaceae from Sylhet Division of Bangladesh which are all new records for Bangladesh.

Introduction

Studies on phytoplanktonic members of Chlorophyceae have been made sporadically from fresh water of Sylhet Division of Bangladesh. So far, there are large number of taxonomic studies of different species of phytoplankton under Class Chlorophyceae made (Alfasane *et al.* 2019; Abdel-Kareem, 2009; Ahmed *et al.* 2008; Khondker *et al.* 2008; Islam and Alfasane 2001a,b; 2002a,b; 2005; Islam *et al.* 1992; Islam 1973; Islam and Begum, 1970). The literature cited above showed that the members of the Chlorophyceae have not been studied from Sylhet Division of Bangladesh. Islam and Irfanullah 2005 have explored some of the genera of tea gardens at Srimangal. The samples were collected from different parts of Shari Goyain River, Piyain River and Madhabpur Lake of Sylhet division. But no detailed study on the class Chlorophyceae has not been done yet of these places. Therefore, the present research was undertaken to study this group of organism from fresh water habitats of Sylhet Division of Bangladesh. The present paper deals with 6 species of phytoplankton under the class Chlorophyceae which all are new records for Bangladesh. The descriptions of the organisms are given below.

Materials and Methods

The samples were collected from May 2017 to December 2019, from Shari Goyain River and Piyain River of Sylhet District and Madhabpur Lake of Moulvibazar District under Sylhet Division. The water of the sampling spots was fresh and non-polluted. The samples were collected with plankton net of mesh size 20 µm and preserved in Lugol's iodine. The water temperature of these places varied from 18.8–32.5°C, 18.5–32.5°C and 25.0–33.0°C, respectively and pH ranged from 6.9–8.5, 6.9–9.8 and 6.8–8.5, respectively.

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Taxonomy**Class: Chlorophyceae; Order: Chlamydomonadales; Family: Phacotaceae ;****Genus: *Pteromonas* Seligo**

1. *Pteromonas golenkiniana* Pascher (Fig. 1)

(Huber-Pestalozzi 1961, 581, Pl. 118, Fig. 823b)

Unicellular, biflagellate, covered with a bipartite lorica. Flagella two, inserted at the anterior end through openings in the loricae. Cell length 26–29 μm , breadth up to 25 μm , anteriorly tapered, 2 contractile vacuoles at the anterior end. Sides slightly elongated.

It is a new record for Bangladesh. Collection no. S-4(1), 05.05.2017; S-8, 13.09.2019; Shari Goyain River.

Class: Chlorophyceae; Order: Sphaeropleales; Family: Hydrodictyaceae;**Genus: *Pediastrum* Meyen**

2. *Pediastrum biradiatum* Meyen var. *biradiatum* Meyen. (Fig. 2)

(Huber-Pestalozzi 1983, 304, 307, Pl. 92, Fig. 2a-c; Pasztašleniec and Poniewozik 2004, 42, Fig. 8)

(Syn. *Pediastrum lobatum* Nit., *P. tetrapodum* Moroz.-Vodj.)

Coenobia circular in outline, with regular holes, sometimes as great as cell diameter, with 8–32 cells, individual cell 9–10 μm , perforated as the sides of the cells are emarginated. The diameter of coenobium from 64.2–106.2 μm (usually about 75 μm). Cell walls with developed sculpture. Marginal cells 9–25 \times 10–25 μm with two lobes in the middle divided into secondary lobes each. Inner cells \times -shaped with diameter from 12–23 μm . Only grown together with their corners. Cell wall with fine, irregular granulation.

It is a new record for Bangladesh. Collection no. P-4(3), 11.11.2017; P-8, 12.05.2019; Piyain River.

Class: Chlorophyceae; Order: Sphaeropleales ; Family: Scenedesmaceae ;**Genus: *Scenedesmus* Meyen**

3. *Scenedesmus alternas* var. *indicus* (Hortobagyi) Kirjakov (Fig. 3)

(Ling and Tyler 2000, 110, Pl. 50, Fig. 7)

Coenobia 4–8 cell, loosely 2 rows, straight with regularly alternating cells, which laterally touch each other with their proximal, rounded ends, but in 2 cell coenobias cells are almost parallel. Cells elongated, irregularly spindle-like or elongated oviform, sometimes slightly asymmetrical and curved, with wart-like thickenings at the distal ends. Cell length 7.5–11.5 μm , breadth 5–8 μm , ellipsoid to broadly oval.

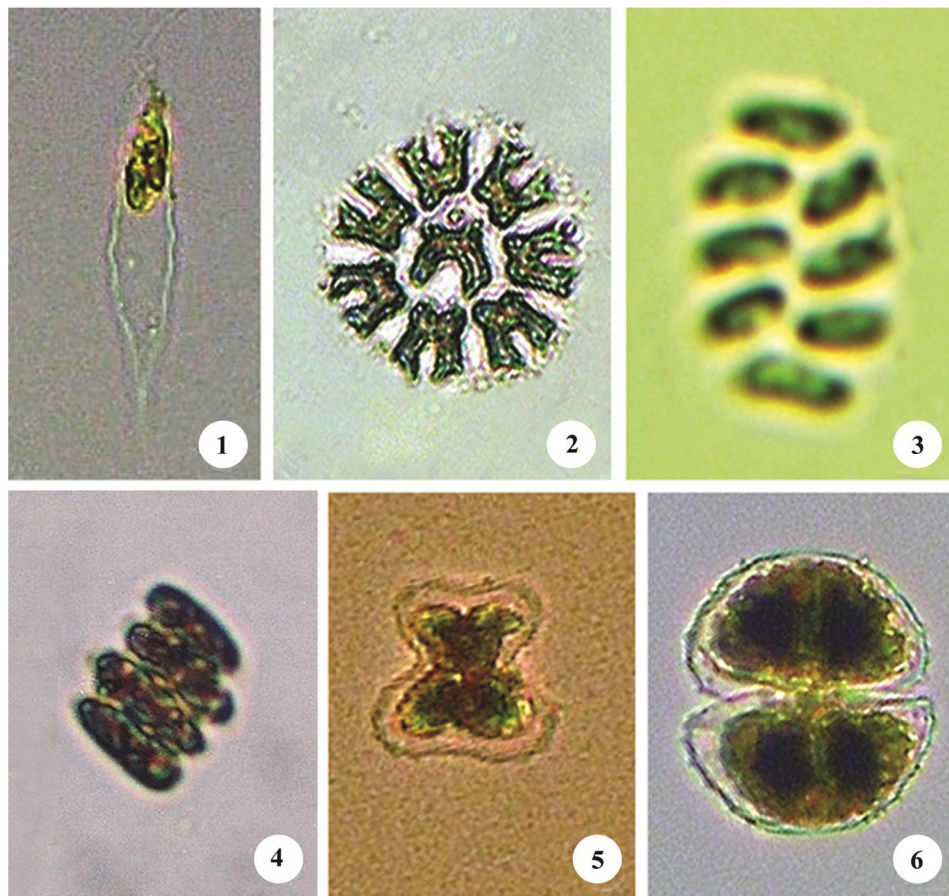
It is a new record for Bangladesh. Collection no. M-3(4), 04.02.2018; M-15, 17.11.2019; Madhabpur Lake.

4. *Scenedesmus quadricauda* var. *inermis* Playfair (Fig. 4)

(Ling and Tyler 2000, 114, Pl. 50, Fig. 18)

Coenobia 4 cell, one row, straight with a series, which longitudinally touch each other with their proximal, rounded ends and parallel. Cells elongated, spindle-like or elongated oviform, Cell length 12–18 μm , breadth 3–6 μm , ellipsoid to broadly oval.

It is a new record for Bangladesh. Collection no. P-3(4), 11.11.2017; P-14, 10.10.2019; Piyain River.



Figs 1-6: 1. *Pteromonas golenkiniana* Pascher, 2. *Pediastrum biradiatum* var. *biradiatum* Meyen., 3. *Scenedesmus alternas* var. *indicus* Hortob., 4. *Scenedesmus quadricauda* var. *inermis* Playfair, 5. *Teilingia excavata* (Rafls) Bourrelly, 6. *Cosmarium vexatum* W. West var. *vexatum* W. West.

Class: Chlorophyceae; Order: Zygnematales; Family: Desmidiaceae;

Genus: *Teilingia* Bourrelly

5. *Teilingia excavata* (Rafls) Bourrelly (Fig. 5)

(Ling and Tyler 2000, 279, Pl. 151, Figs. 11–13)

Cell length 12–16 μm , breadth 9–18 μm , medium, about 1.1–1.2 times broader than long, deeply constricted in the middle. Semi cells elliptic- oblong with a slightly elevated.

It is a new record for Bangladesh. Collection no. S-8(4), 03.02.2018; S-17, 12.04.2019; Shari Goyain River.

Genus: *Cosmarium* Corda 1834

6. *Cosmarium vexatum* W. West var. *vexatum* W. West (Fig. 6)

(Yamagishi and Akiyama 1995, 15: 27, Figs 1–4)

Cells medium in size, slightly longer than broad, deeply constricted in the middle, sinus narrowly linear but somewhat open at the extremity; Semicells pyramidal-truncate, basal angles

rounded, lateral margin convex and with six to seven undulations, apex straight or slightly undulate, intra marginal granules sparse and sub concentrically arranged gradually diminishing in size toward a smooth central area. Cell length 40–42 µm, breadth 54–58 µm, Isthmus 14 µm broad, deeply constricted in the middle. Cell wall punctate.

It is a new record for Bangladesh. Collection no. S-5(2), 04.08.2017; S-11, 08.10.2019; Shari Goyain River.

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