



Diversity and Abundance of the Algal Flora of River Padma II. Cyanophyceae and Bacillariophyceae

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Abstract

Lotic water habitats of tropical country are rich depository of algae which is the primary producer of the food chain. Present study intends to study blue green algae and diatom, the former is an indicator of pollution and the later is the indicator of soil constitution. In all, 40 taxa have been recorded and taxonomically illustrated. Among these 12 belonged to Chroococcaceae, 13 to Oscillatoriaceae, 1 to Nostocaceae, 4 to Fragilariaceae, 7 to Naviculaceae, 4 to Cymbellaceae from the Padma river between I-dam and T-dam belonging to Padma garden of Rajshahi district of Bangladesh. The Padma river is under the threat of pollution which is supported by the findings of present communication.

Keywords: Diversity, Abundance, Cyanophyceae, Bacillariophyceae.

INTRODUCTION

River is prominent feature of the landscape in Bangladesh. Long-term studies indicate that in both India and Bangladesh population growth, urbanization, agricultural practices and industrialization, coupled with the lack of efficient or adequate sewage treatment and waste disposal systems, have contributed to the contamination of the Ganges and the Padma (Ahmed 1990). Chowdhury *et al.* (1996) studied the physico-chemical and biological conditions of a canal receiving industrial effluents and their effects on the river Padma in Rajshahi. Chowdhury and Zaman (1998) worked on the

river Padma in relation to zooplankton and other physical-chemical conditions. Again, Chowdhury and Zaman (2000) studied the limnology of river Padma near Rajshahi City. The water and bed sediment pollution status of the Padma river was determined by analysing the representative samples for selected metals and ions at T-dam, Rajshahi (Zereen *et al.* 2000). Ali (1998) recorded 78 species of phytoplankton belonging to 34 genera from the same localities. Sultan (2001) recorded 33 taxa of algal flora from I-dam and T-dam of the Padma river, Rajshahi. In the present work,

phytoplankton diversity of the diatom and blue green algal flora was carried out in Padma river. Seasonality and abundance of the same were also taken into consideration.

MATERIALS AND METHODS

The present study was carried out in the Padma river situated in between 24°21'38" north latitude and 88°34'50" east longitude of Bangladesh from October 2007 to September 2008. The area and photograph of the both spots were mentioned in our previous paper (Naz and Azam 2008). The descriptions and identification of all the studied taxa are based upon the specimens collected all the year round. The present communication deals with the Cyanophyceae and Bacillariophyceae specimens. Camera Lucida drawings were made at 150-675x magnification under a Reichert microscope (Nr. 309 209). All the specimens were preserved in Transeau's solution and identified by following relevant literature e.g. Islam and Nahar (1967), Islam and Begum (1970), Islam and Uddin (1978a), Islam and Irfanullah (2005), Khondker *et al.* (2006), Islam and Haroon (1975), Naz and Homyra (2008) and Naz and Azam (2008).

TAXONOMIC ENUMERATION

**Class: Cyanophyceae; Order: Chroococcales;
Family: Chroococcaceae**

1. *Anabaenopsis arnoldi* Apterkarj (Pl. 3, Fig. 15)
(Desikachary 1959, 356, Pl. 62, Figs 1-9, Pl. 63, Fig 1-8, Islam and Nahar 1967, 147, Pl. 4, Figs. 12)
Trichome single, regularly spirally coiled; spirals 20-42 µm broad, 40 µm away from each other; cell 7 µm broad, 3-4 µm long; with a heterocyst at one end, at the other one or two heterocyst or seldom a spore; heterocyst spherical, 7-8 µm broad, 5-7 µm long.
Date of collection: April 16, 2008; June 15, 2008 in SP-1 and January 5, 2008 and February 15, 2008 in SP-2.
2. *Aphanocapsa biformis* A. Br. (Pl. 1, Fig. 1)
(Desikachary 1959, 134, Pl. 21 Figs. 3,4)
Thallus olive green, gelatinous, often expanding; cells 4-7 µm in diam., spherical, mostly with a special envelope, loosely arranged, 2-4 together in a common mucilaginous envelope.
Date of collection: May 15, 2008; December 22, 2007 in SP-1 and October 10, 2007; April 6, 2008; March 13, 2008 in SP-2
3. *Aphanocapsa crassa* Ghose (Pl. 1, Fig. 9)
(Desikachary 1959, 136, Pl. 22 Fig. 6)
Stratum gelatinous, delicate, brownish; cells generally single, globose, not very closely arranged, 7-12 µm thick, brownish green.
Date of collection: May 15 2008; December 22, 2007 in SP-1 and October 10, 2007; April 6, 2008; March 13, 2008 in SP-2.
4. *Aphanocapsa koordersi* Strom (Pl. 1, Fig. 3)
(Desikachary 1959, 132, Pl. 23 Fig. 1; Islam and Nahar 1967, 144, Pl. 3, Fig. 8)
Colony more or less spherical, dull green to blue green, 2-3 mm diam.; cells arrange loosely or in groups of four, spherical, 2.48-2.97 µm in diam.
Date of collection: April 6, 2008; November 25, 2007; December 22, 2007 in SP-1 and November 25, 2007; December 22, 2007 in SP-2
5. *Aphanocapsa virescens* (Hass.) Rab. (Pl. 1, Fig. 5)
(Desikachary 1959, 100, Pl. 21, Fig. 6; Islam and Nahar 1967, 144, Pl. 3, Fig. 7)
Thallus blue green with irregular mucilaginous sheath; cells many, spherical or sub spherical, single or in pairs with individual sheath, 5-8 µm in diam.
Date of collection: June 10, 2008; July 17, 2008; August 21, 2008 in SP-1 and October 10, 2007; November 25, 2007 in SP-2.
6. *Merismopedia glauca* (Ehrenb.) Näg. (Pl. 1, Fig. 7)
(Desikachary 1959, 155, Pl. 29 Fig. 5)
Colonies mostly small with 14-64 cells, 45-150 µm in diam., cells oval or spherical closely arranged, 3-6 µm broad, pale blue green.
Date of collection: May 15, 2008; November 25, 2007; December 22, 2007 in SP-1 and June 15, 2008; July 17, 2008 in SP-2.
7. *Merismopedia tenuissima* Lemm. (Pl. 1, Fig. 6)
(Desikachary 1959, 154, Pl. 29 Fig. 7)
Cells pale blue green closely packed in colonies of 16-100 cells, sub spherical, 1.3-2 µm broad, sometimes individual cells with distinct mucilaginous envelopes.
Date of collection: March 13, 2008; November 25, 2007; December 22, 2007 in SP-1 and June 15, 2008; July 17, 2008; August 21, 2008 in SP-2.
8. *Microcystis aeruginosa* Kütz. (Pl. 1, Fig. 10)
(Desikachary 1959, 93, Pl. 18 Fig. 10)
Colonies when young round or slightly longer than broad, solid, when old becoming clathrate, with distinct hyaline colonial mucilage; cells 4-7 µm in diam.,

spherical, generally with gas vacuoles.

Date of collection: April 6, 2008; October 10, 2007 in SP-1 and October 10, 2007; November 25, 2007 in SP-2.

9. *Gomphosphaeria aponina* Kütz. (Pl. 1, Fig. 2) (Desikachary 1959, 150, Pl. 28 Figs. 1-3)

Colonies roughly spherical, ellipsoidal or somewhat elongate, not clathrate, with indistinct colonial mucilage; cells 3-7 µm in diam., spherical with gas vacuoles; nannocytes present.

Date of collection: February 15, 2008; March 13, 2008 in SP-1 and February 15, 2008; December 25, 2007 in SP-2.

10. *Microcystis marginata* (Menegh.) Kütz. (Pl. 1, Fig. 4) (Desikachary 1959, 87, Pl. 17 Figs. 3-5)

Colony round or irregularly flattened and more or less lenticular, margins of colonial mucilage very distinct 140-150µm in length and 60-65 µm in width, 3-6 µm in diam., closely arranged with gas vacuoles.

Date of collection: February 15, 2008; March 13, 2008; April 26, 2008 in SP-1 and April 26, 2008; May 15, 2008.

11. *Microcystis robusta* (Clark) Nygaard (Pl. 1, Fig. 8) (Desikachary 1959, 85, Pl. 17 Figs. 7-10)

Colonies at first round, later irregularly elongate and clathrate; sheath distinct, later gelatinizing; cells 6-9 µm in diam., spherical, without gas vacuoles.

Date of collection: April 6, 2008 in SP-1.

Order: Nostocales; Family: Oscillatoriaceae

12. *Arthrospira platensis* (Nordst.) Gomont (Pl. 3, Fig. 11) (Islam and Uddin 1978a, 82, Pl. 2, Figs. 40-43; Islam and Nahar 1967, 147, Pl. 4, Figs. 5-8)

Thallus blue green, trichomes slightly constricted at the cross-walls or not, trichomes 4-5.6 µm broad, little attenuated at the ends, regularly spirally coiled, twisted, distance between the spirals 60-90 µm, 4-6 µm broad and 2.8-4.2 µm long, end cell rounded.

Date of collection: April 6, 2008 in SP-2.

13. *Oscillatoria acuminata* Gomont (Pl. 2, Fig. 12) (Desikachary 1959, 240 Pl. 38 & 40 Fig. 7 & 13)

Thallus blue green, trichomes 3.3-4.5 µm broad and 6.6 µm long, cross-walls constricted, tip cell acutely pointed.

Date of collection: October 10, 2007; November 25, 2007; June 15, 2008 in SP-1.

14. *Oscillatoria agardhii* Gomont (Pl. 2, Fig. 3) (Islam and Nahar 1967, 146, Pl. 2, Fig. 6)

Trichome straight or somewhat curved, not constricted at the cross-walls, at the ends gradually tapering, 2 µm broad; cells mostly shorter than long, quadrate at the septum; end cells convex, sometimes bluntly conical or more or less pointed.

Date of collection: October 10, 2007; November 25, 2007; February 15, 2008 in SP-2.

15. *Oscillatoria curviceps* Ag. ex Gomont (Pl. 2, Fig. 10) (Islam and Nahar 1967, 146, Pl. 2, Fig. 11-12)

Thallus light or dark blue green; trichome more or less straight, bent at the end, not attenuated or very little attenuated, not constricted at the cross-walls 11-13 µm broad, 3-4 µm long, cross wall granulated; end cells flat rounded, not capitate.

Date of collection: March 13, 2008; April 6, 2008; August 21, 2008 in SP-1.

16. *Oscillatoria formosa* Bory (Pl. 2, Fig. 4) (Desikachary 1959, 232, Pl. 40, Fig. 15)

Thallus blue-green; trichome straight, slightly constricted at the cross walls, 4-6 µm broad, bright blue green, attenuated at the ends and bent; cells nearly quadrate, 4.13 µm long, end-cells nearly obtuse.

Date of collection: November 25, 2007; December 22, 2007 in SP-1.

17. *Oscillatoria okeni* Ag. ex Gomont (Pl. 2, Fig. 14) (Desikachary 1959, 231, Pl. 38 Figs. 17; Islam and Nahar 1967, 146, Pl. 2, Fig. 13)

Thallus blue green; trichome straight, fragile, distinctly constricted at the cross-walls 6.6-9 µm broad, at the ends gradually attenuated, undulating, slightly bent, cells $\frac{1}{3}$ as long as broad, 3-4 µm long, at the ends up

to 8 µm long; end cells obtuse or sub conical, not capitate.

Date of collection: April 6, 2008 May 15 in SP-1.

18. *Oscillatoria miniata* (Zanard.) Hauck ex Gomont (Pl. 2, Fig. 5)

(Desikachary 1959, 202, Pl. 40, Fig. 17)

Thallus solid, black olivaceous, expanded, trichome straight, 11-15 µm broad, apex not attenuated or briefly attenuated, obtuse, cells $\frac{1}{2}$ - $\frac{1}{6}$ as long as broad, 2-5.5 µm long, contents homogeneous, sparsely granulated, cross-walls granulated; apex capitate.

Date of collection: April 6, 2008; May 15, 2008 in SP-1.

19. *Oscillatoria perornata* Skuja (Pl. 2, Fig. 1) (Desikachary 1959, 205, Pl. 41, Figs. 8, 9, 14; Islam and Uddin 1978, Pl. 1, Fig. 4)

Trichome erect, apices attenuated and bent or curved constricted at the cross walls, 13-15 µm broad, cells commonly as long as broad, finely granular, end cell depressed, pseudo vacuolated.

Date of collection: October 10, 2007; November 25, 2007; April 6, 2008 in SP-2.

20. *Oscillatoria raoi* J. de Toni (Pl. 2, Fig. 2)
(Desikachary 1959, 223, Pl. 42 Figs. 16-19; Islam and Uddin 1978, Pl. 1, Fig. 20)

Thallus blue green, filamentous straight, cross walls not constricted, filaments 7-9 µm broad and 2-3 µm long, end cell not capitate.

Date of collection: May 15, 2008; June 15, 2008 in SP-1 and January 5, 2008 in SP-2.

21. *Oscillatoria subbrevis* Schmidle (Pl. 2, Fig. 6)
(Desikachary 1959, 207, Pl. 37, Fig. 2 and Pl. 40, Fig. 1)
Trichomes single, 5-6 µm broad, nearly straight, not attenuated at the apices; cells 1-2 µm long, not granulated at the cross-walls; end cell rounded, calyptra absent.

Date of collection: May 15, 2008; August 21, 2008 in SP-1 and July 17, 2008 in SP-2.

22. *Oscillatoria tenuis* Ag. ex Gomont (Pl. 2, Fig. 11)
(Desikachary 1959, 222, Pl. 42, Fig. 15; Islam and Irfanullah 2005, 37, Pl. 1, Fig. 6)

Thallus olive green, slimy; trichome straight, fragile slightly constricted at the cross-walls, 4-10 µm broad, blue green, not attenuated at the apices, not capitate, cells 2.6-5 µm long, at the septa mostly granulated; end cell more or less hemispherical with thickened outer membrane.

Date of collection: July 12, 2008; May 15, 2008 in SP-1.

23. *Oscillatoria ornata* Kütz ex Gom var. *crassa* Rao
(Pl. 2, Fig. 13)
(Desikachary 1959, 206, Pl. 39, Fig. 11)

Trichomes dark blue green, straight, uniform, thickness 8.8-10.1 µm broad, cross-walls granulated, cells shorter than broad 6.30- 8.34 µm long.

Date of collection: June 20, 2008; July 12, 2008 in SP-2.

24. *Spirulina major* Kg. ex Gomont (Pl. 3, Fig. 10)
(Desikachary 1959, 196, Pl. 36, Fig. 13)

Trichome very long and up to 165 µm, upto 2 µm in diam., regularly spirally coiled blue-green, spirals 2.5-4.29 µm distant.

Date of collection: January 25, 2008; March 13, 2008 in SP-1.

Order: Oscillatoriales; Family: Nostocaceae

25. *Pseudanabaena mucicola* (H-P. and Naumann)
Bourr. Emend Chang (Pl. 3, Fig. 9)
(Khondker *et al.* 2006, 178, 13a)

Individual cell length up to 247.5 µm, width 4.95 µm.

Date of collection: August 14, 2008; September 20, 2008 in SP-1.

Class: Bacillariophyceae; Order: Pennales; Family: Fragilariaceae

1. *Eunotia sudetica* (Müller) Hust. (Pl. 3, Fig. 1)
(Islam and Haroon 1975, 30, Pl. 2, Fig. 33; Germain 1981, 90, Pl. 31, Fig. 3; Naz and Homyra 2008, 218, Pl. 1 Fig. 17)

Frustules 32.67 µm long and 13.2 µm broad at the tip end middle; 9.9 µm broad at the lower.

Date of collection: February 15, 2008 in SP-1 and November 7, 2007; April 6, 2008 in SP-2.

2. *Diatoma anceps* (Ehr.) Grun. (Pl. 3, Fig. 13)
(Hustedt 1930, 137, Fig. 117 a)

Each frustule 105.6 µm long and 6 colony of frustules are 14 µm broad.

Date of collection: January 5, 2008 in SP-1 and April 16, 2008 in SP-2.

3. *Synedra acus* Kütz. (Pl. 3 Fig. 8)
(Islam and Haroon 1975, 29, Pl.1, Figs. 9-10)

Frustules 145.2 µm long and 7.59 µm broad at the middle; at the tip 3.3 µm in breadth. 12-14 striae in 10 µm.

Date of collection: October 10, 2007; November 25, 2007; May 15, 2008 in SP-1 and November 25, 2008 in SP-2

4. *Synedra ulna* var. *oxyrhynchus* (Kütz.) Van Heurck
(Pl. 3 Fig. 14)

(Islam and Haroon 1975, 29, Pl.1, Fig. 8; Naz and Homyra 2008, 218, Pl. 1, Fig. 8)

Frustules 118.8 µm long and 9.9 µm broad at the middle; at the tip 2.97 µm in broad.

Date of collection: June 20, 2008 in SP-1 and October 10, 2007; November 25, December 22, 2007 in SP-2.

Family: Naviculaceae

5. *Gyrosigma acuminatum* var. *lacustre* Meist
(Pl. 2 Fig. 7)

(Islam and Haroon 1975, 31, P. 1. 2, Fig. 37)

Frustules 82.50 µm long and 14.85 µm broad.

Date of collection: August 21, 2008; October 10, 2007

in SP-2.

6. *Gyrosigma scalproides* (Rabh.) Cleve (Pl. 2 Fig. 9)
(Islam and Haroon 1975, 31, P. 1. 2, Fig. 35)
Frustules 54.45 µm long and 13.2 µm broad. It also resembles *G. wansbeckii* but slightly smaller in size.
Date of collection: September 5, 2008; November 25, 2007; February 15, 2008; March 13, 2008 in SP-2.

7. *Gyrosigma* sp. (Pl. 2, Fig. 8)
Frustules 54.60 µm long and 6.60 µm broad.
Date of collection: September 5, 2008; November 25, 2007; August 21, 2008 in SP-1.

8. *Navicula cryptocephala* Kütz. (Pl. 3, Fig. 5)
(Germain 1981, 188, Pl. 72, Fig. 2; Naz and Homyra 2008, 219, Pl. 1, Fig. 16)
Frustules 34.65 µm long and 10.725 µm broad at the middle.
Date of collection: January 5, 2008; February 15, 2008 in SP-1 and February 15, 2008; March 13, 2008 in SP-2.

9. *Navicula* sp. (Pl. 3, Fig. 3)
Frustules 29.7 µm long and 9.9 µm broad at the middle.
Date of collection: October 10, 2007; December 22, 2007 in SP-1.

10. *Pinnularia gibba* var. *parva* (Her.) Grun. (Pl. 3, Fig. 2)
(Islam and Haroon 1975, 32, Pl. 3, Fig. 66; Naz and Homyra 2008, 219, Pl. 2, Fig. 38)
Frustules 36 µm long and 9.9 µm broad at the middle.
Date of collection: May 15, 2008; October 10, 2007; April, 2008 in SP-1 and May 15, 2008 in SP-2.

11. *Amphora veneta* Kütz. (Pl. 3, Fig. 6)
(Germain 1981, 295, Pl. 108, Fig. 8, 9, 12; Naz and Homyra 2008, 220, Pl. 3, Fig. 55, 56, 67)
Frustules 23-26.4 µm long and 9.9-16.5 µm broad at the middle; 6.39 at the tip.
Date of collection: July 17, 2008, August 14, 2008 in SP- and SP-2.

Family: Cymbellaceae

12. *Amphora normanii* Rabh. (Pl. 3, Fig. 4)
(Germain 1981, 295, Pl. 109, Fig. 5; Naz and Homyra 2008, 220, Pl. 3, Fig. 66)
Frustules 42.9 µm long and 11.55 µm broad at the middle.
Date of collection: June, 2008; July 15, 2008; September, 2008 in SP-1 and April 6, 2008 in SP-2.

13. *Cymbella hustedtii* Krasske (Pl. 3, Fig. 7)

(Islam and Haroon 1975, 33, Pl. 4, Figs. 79)

Frustules 34.65 µm long and 10.56 µm broad at the middle and 7.26 µm at the tip.

Date of collection: April 26, 2007 in SP-1 and November 25, 2008 in SP-2.

14. *Epithemia turgida* (Ehr.) Kütz. (Pl. 3, Fig. 13)
(Germain 1981, 318, Pl. 118, Fig. 4; Naz and Homyra 2008, 220, Pl. 3, Fig. 65)

Frustules 70.95 µm long and 19.8 µm broad at the middle.

Date of collection: September 20, 2008 in SP-1 and November 25, 2007; June 20, 2008; July 17, 2008 in SP-2.

15. *Pleurosigma balticum* (Ehrenb.) var. *simile* (Grun.)
(Pl. 2, Fig. 15)

(Islam and Haroon 1975, 31, Pl. 2, Figs. 36)

Frustules 89.1 µm long and 15.42 µm broad.

Date of collection: August 14, 2008; December 22, 2007 in SP-2.

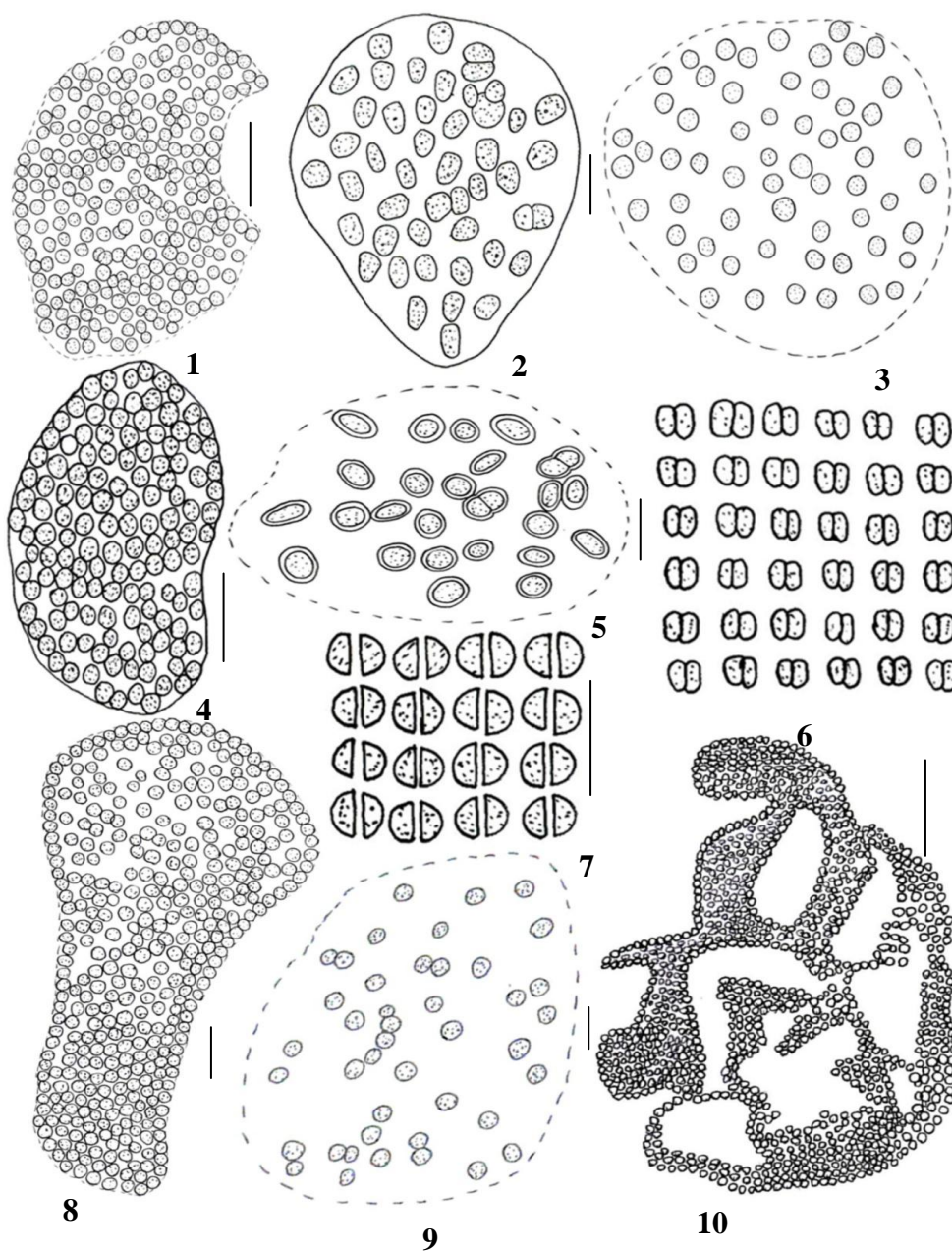
Ecological notes:

Cyanophyceae

Spot 1.

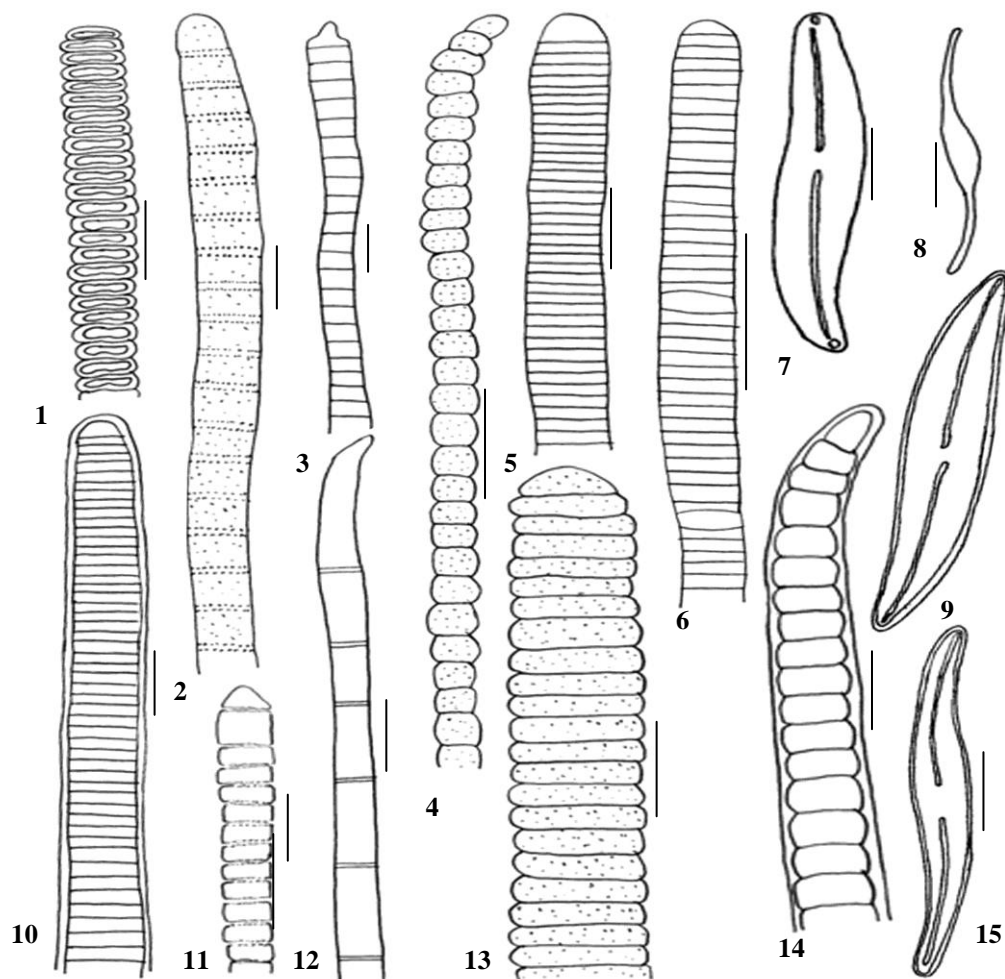
Abundance of Cyanophyceae found to vary from 550 to 8450 cells/l. Highest and lowest abundance were recorded in the month of Dec'07 and Jun'08. The seasonal mean value of Cyanophyceae was found to vary from 950 to 6750 cells/l post monsoon, 2250 to 8450 cells/l in winter, 1250 to 3400 cells/l in summer and 550 to 1350 cells/l in monsoon. The Cyanophytes constituted of 40.41% of the total phytoplankton population. *Oscillatoria* sp. constituting 8.72% of the total phytoplankton was dominant genera and the others genera were *Microcystis* sp. 6.69%, *Anabaenopsis* sp. 3.12%, *Aphanocapsa* sp. 5.31%, *Merismopedia* sp. 7.19%, *Arthrospira* sp. 3.57%, *Spirulina* sp. 0.19% and *Pseudanabaena* sp. 5.62%.

Plate 1



Figs. 1-10. 1. *Aphanocapsa biformis*, 2. *Gomphosphaeria aponina*, 3. *Aphanocapsa koordersi*, 4. *Microcystis marginata*, 5. *Aphanocapsa virescens*, 6. *Merismopedia tenuissima*, 7. *Merismopedia glauca*, 8. *Microcystis robusta*, 9. *Aphanocapsa crassa*, 10. *Microcystis aeruginosa*, (Scales = 20 μ m)

Plate 2



Figs 1-10. 1. *Oscillatoria perornata*, 2. *O. raoi*, 3. *O. agardhii*, 4. *O. formosa*, 5. *O. miniata* 6. *O. subbrevis*, 7. *Gyrosigma acuminatum* var. *lacustre*, 8. *Gyrosigma* sp. 9. *G. scalproides*, 10. *O. curviceps*, 11. *O. tenuis*, 12. *O. acuminata*, 13. *O. ornata* var. *crassa*, 14. *O. okeni*, 15. *Pleurosigma balticum* var. *simile*. (Scales = 20µm)

Spot 2.

Abundance of BGA was found to vary from 50 to 4100 cells/l. Highest and lowest abundance were recorded in Oct' 07 and Sep' 08 accordingly. The seasonal mean value of Cyanophyceae was found to vary from 950 to 6750 cells/l post monsoon, 1650 to 3150 cells/l in winter, 2250 to 2850 cells/l in summer and 1450 to 1700 monsoon cells/l.

The BGA members were 34.72% of the total phytoplankton population. *Oscillatoria* sp. 17.06% was dominant genera of Cyanophyceae followed by *Microcystis* sp. 6.30%, *Anabaenopsis* sp. 0.33%,

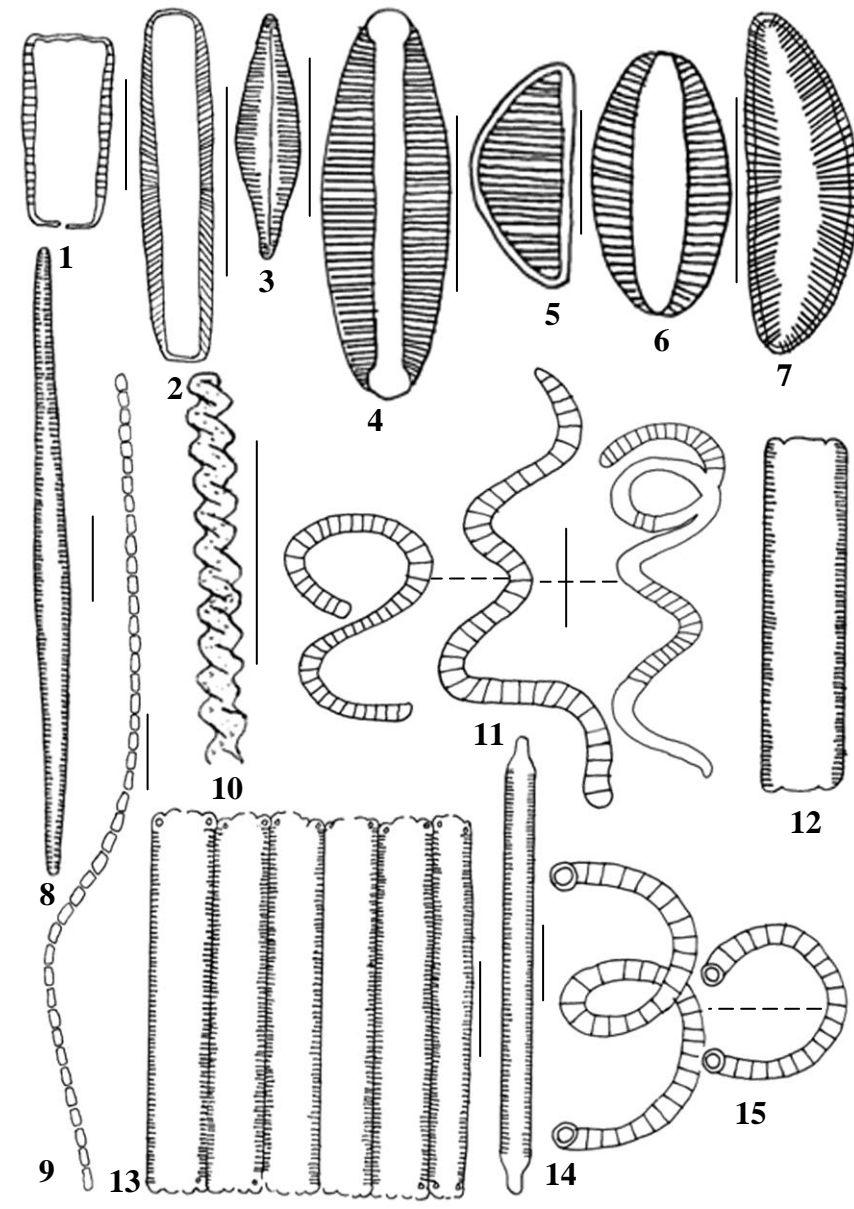
Aphanocapsa sp. 8.74%, *Merismopedia* sp. 2.07% and *Gomphosphaeria* sp. 0.22%.

Bacillariophyceae

Spot 1.

Abundance of Bacillariophyceae found to vary from 650 to 3950 cells/l. Highest and lowest abundance were recorded in the month of Apr' 08 and Aug'08. The seasonal mean value of Bacillariophyceae was found 700 to 4050 cells/l post monsoon, 2000 to 3200 cells/l in winter, 2150 to 4050 cells/l in summer and 900 to 2300 monsoon cells/l.

Plate 3



Figs. 1-15. 1. *Eunotia sudetica*, 2. *Pinnularia gibba* var. *parva*, 3. *Navicula* sp. 4. *Amphora normannii*, 5. *Navicula cryptocephala*, 6. *Amphora veneta*, 7. *Cymbella hustedtii* 8. *Synedra acus*, 9. *Pseudanabaena mucicola* 10. *Spirulina major*, 11. *Arthrospira platensis*, 12. *Epithemia turgida*, 13. *Diatoma anceps*, 14. *Synedra ulna* var. *oxyrhynchus*, 15. *Anabaenopsis amoldi*. (Scales = 20µm)

Diatoms were 33.71% of the total phytoplankton population. *Diatoma* sp. 7.79% was the dominant genera of the group. Other identified genera were *Eunotia* sp., 2.27%. *Synedra* sp. 0.59%, *Amphora* sp. 2.40%, *Gyrosigma* sp. 4.68%, *Navicula* sp. 3.71%, *Pinnularia* sp. 4.98%, *Cymbella* sp. 5.39% and *Pleurosigma* sp. 1.90%.

Spot 2.

Abundance of Bacillariophyceae found to vary from 300 to 4000 cells/l. The highest and lowest abundance were recorded in the month of Dec'07 and Jun'08. The seasonal mean value of Bacillariophyceae was found

1900 to 3750 cells/l in post monsoon, 2950 to 4000 cells/l in winter, 1900 to 3900 cells/l in summer and 300 to 900 cells/l in monsoon.

Diatoms constituted 39.08% of total phytoplankton population. *Diatoma* sp. 11.04% was the dominant genera of the group. Other identified genera were *Eunotia* sp. 0.72%, *Synedra* sp. 2.44%, *Gyrosigma* sp. 1.59%, *Navicula* sp. 7.80% *Pinnularia* sp. 3.58%, *Amphora* sp. 5.09%, *Cymbella* sp. 5.95%, *Epithemia* sp. 0.86% and *Pleurosigma* sp. 0.01%.

CONCLUSION

Percentage composition and diversity status indicate the River Padma is gradually transforming to be eutrophic and one of the major constituent of soil composition is sand and it is under threat of pollution which is supported by the findings of the present work. Detail works on the floristic composition is recommended for constructing a database of the river Padma.

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