Diversity of Chlorophyceae from Sulwade Barrage of River Tapti-I, Dhule, (M. S., India)

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Abstract

Sulwade barrage located 21.30^0 N and 74.80^0 E on river Tapti of Dhule District. River Tapti shows variety of blue-green algae. Biodiversity of green algae was studied for one year. Present article deals with nineteen taxa belonging to eight genera. *Characium*- two species, *Chlamydomonas*- two species, *Chlorococcum*- one species, *Chlorella*- one species, *Cladophora* - one species, *Closterium* - four species, *Coelastrum*-one species and *Cosmarium*- seven species. All the species were collected and observed abundantly during winter and summer season. Brief notes and illustration are given for each species.

Key Words: Sulwade, Tapti, Chlorophyceae.

Introduction

Algae represent large group of oxygen-evolving photosynthetic autotrophs which are ubiquitous in nature. In Indian subcontinent various studies has been carried out to record the diversity of algae.

M.O.P. Iyengar "Father of Indian Phycology" has made incredible contribution in this field. Voluminous work by Venkatraman (1957), Sarma et Khan (1980) documented 3023 species of freshwater algae, Balakrishnan (1958, 1972), Krishnamurthy (2000). In Maharashtra Deore (1983), Mahajan (1988), Balakrishnan and Chaugule (2002), Nandan and Aher (2005), Nandan and Magar (2006).

There is meager information from Sulwade Barrage.

Materials and Methods

For present investigation the algal samples with water and some soil particles were collected and preserved with 4% formalin. For taxonomic investigation camera lucida drawings were made with the help of 40X and 100X magnifications of microscope. Identification were made with the help of Prescott, 1966; Turner, 1978; Philipose, 1967 and other relevant literature.

Taxonomic Account

Characium angustum A. Braun (Fig.1)

Bruan, 1855.

Cells straight and lanceolate with short hyaline beak, stalk short and thick, cells 14-24 µ broad, 40-110 µ long.

Characium terrestris Kanthamma (Fig. 2)

S. Kanthamma, 1940.

Cells shortly stalked, obovate to nearly globose, 22-38 µ broad, 26-38 µ long, stalk narrow and filamentous, 7-10 µ long expanded at the point of attachment.

Chlamydomonas angulosa Dill (Fig. 3)

O. Dill, 1895.

Cells broadly ellipsoidal ovoid to cylindrical, flagella long, chloroplast massive, cup-shaped, cells 11-15 µ X 12-15 µ.

Chlamydomonas conoides Iyengar (Fig. 4)

Iyengar and Desikachary, 1981.

Cells pyriform, chloroplast cup shaped with thick basal portion, flagella two long, 4.5-7 µ X 7.5-12 µ.

Chlorococcum infusionum (Schrank) Meneghini (Fig. 5)

J. Meneghini, 1842.

Cells usually spherical, rarely ovoid or elongated and variable of dimensions solitary or flat irregular colonies, cells 100-109 µ in diameter.

Chlorella vulgaris Beijerinck (Fig.6)

M. W. Beijerinck, 1890.

Free living, cells solitary, or in small colonies, spherical, thin membrane, chloroplast cup shaped, cells 5-10 µ in diameter.

Cladophora glomerata (Linnaeus) Kutzing (Fig.7)

Kutzing, 1843.

A coarse, thin, branching, branches irregular, cells long, cylindrical, 36-38 µ in diameter.

Closterium intermedium Ralfs. (Fig. 8)

Britton and Tiffany, 1952.

Cells 18 X 21 µ, 12-15 times longer than wide, moderately curved, gradually attenuated to the rounded-truncate apices.

Closterium moniliferum (Bory) Ehrenberg (Fig. 9)

Britton and Tiffany, 1952.

Cells 25.6 µ X 155 µ, 6-8 times longer than wide, curved, outer margin 100-130 degree of arc, inner margin inflated in the meddle, uniformly narrowed to the obtusely rounded apices, cell wall smooth, chromatophores with about 6 ridges.

Closterium prolongum Rich (Fig. 10)

Rich, 1932.

Cells 180-190 µ long, 6.5-7 µ broad, apex round about 2. µ broad, chromatophores 1-4, pyrenoid, in a single row, cells straight.

Closterium tumidum Johns. (Fig. 11)

Johnson, 1895.

Cells 81-88 µ 9.2-9.6 µ broad, pyrenoid two in single row straight, cell straight, apex narrow.

Coelastrum microsporum Naegeli (Fig. 12)

Philipose, 1967.

Colonies 16 celled, spherical, inter cellular spaces small, cells spherical, gelatinous sheath, chloroplast partial with pyrenoid, colony 27-28 µ in diameter, cells 8-9 µ in diameter.

Cosmarium depressum (Naegeli) Lunedell (Fig. 13)

Britton and Tiffany, 1952.

Cells 42-62 µ and 20 µ thick, somewhat wider than long, constricted, sinus narrow, linear, apex dilated, opening outwords, isthmus very narrow, semi cells transversely elliptic, lateral margins broadly rounded, apices convex- truncate.

Cosmarium granatum Breb. (Fig. 14)

Taketoshi Hinode, 1962.

Cells 16-18 µ long, 12-13 µ broad, isthmus 2-3 µ broad.

Cosmarium moniliforme (Trup.) Ralfs (Fig. 15)

Scott and Prescott, 1961.

Cells 20 X 12. 7 µ, isthmus 7-9 µ wide, margins entire, semicircular, or sub- circular, constriction deep, sinus open, wall smooth, pyrenoid 2.

Cosmarium plicatum Reinsch. (Fig. 16)

Hinode, 1965.

Cells 48-50 µ long, 25.5-26.5 µ broad, isthmus 9.5-10 µ wide, semicircular, sinus open.

Cosmarium quadrum Lundell (Fig. 17)

Britton and Tiffany, 1952.

Cells 54-60 µ long, 35-36 µ broad, isthmus 18-29 µ wide, about as long as wide, quadrate in outline, deeply constricted, sinus linear, semi-cells, sub-rectangular, basal angles rounded,

Cosmarium subcrenatum Hantzsch. (Fig. 18)

Britton and Tiffany, 1952.

Cells 26-34 µ long, isthmus 7-16 µ wide, slightly longer than wide, deeply constricted, sinus narrowly linear, sub-semicircular in outline, broadly rounded.

Cosmarium westii Bernard (Fig.19)

Hinode, 1962.

Cells 90-92 µ long, 51-53 µ broad, isthmus about 47.5-48 µ broad, constricted.

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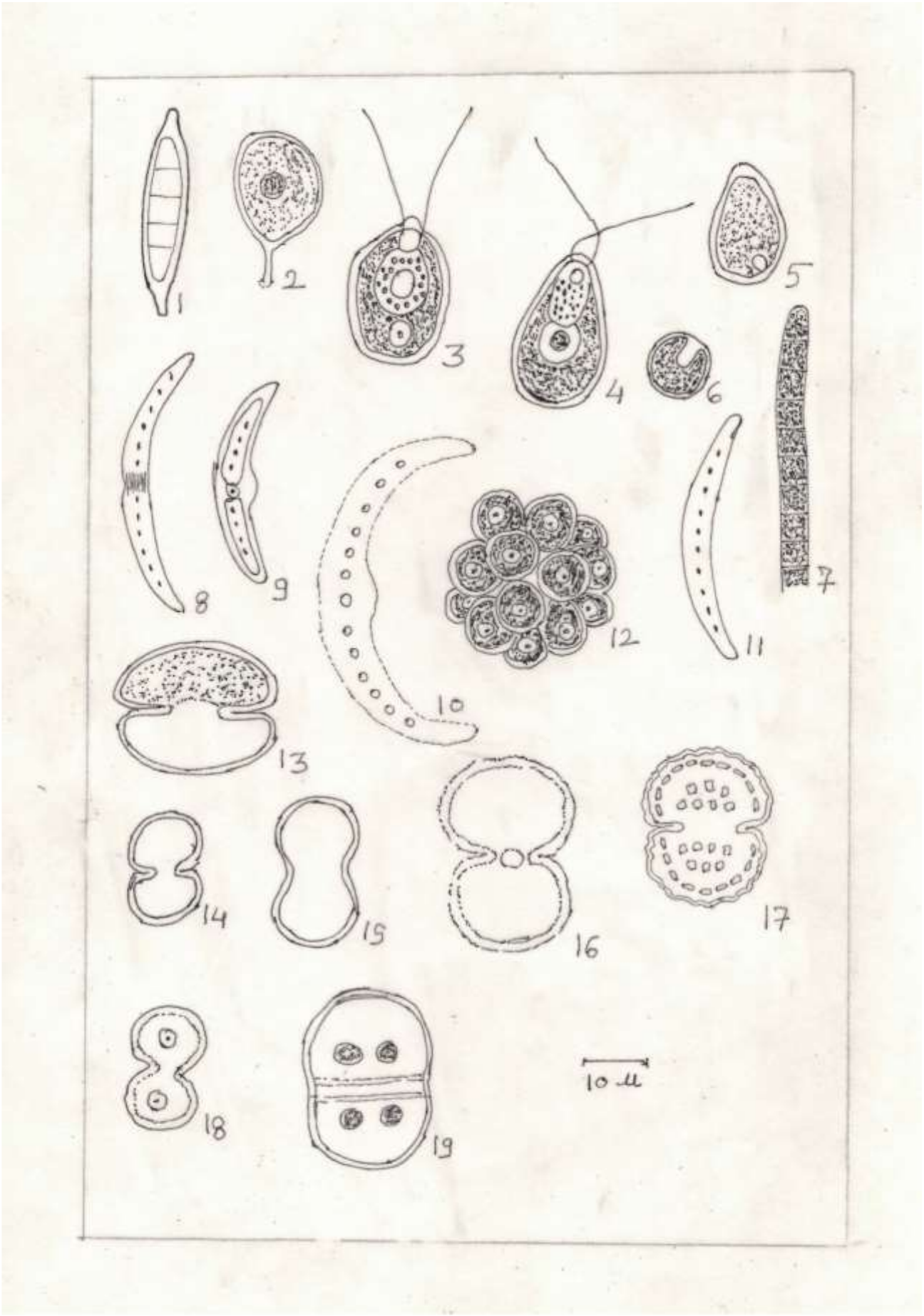
Figure Legends:

1) *Characium angustum* A. Braun
2) *Characium terrestris* Kanthamma
3) *Chlamydomonas angulosa* Dill
4) *Chlamydomonas conoides* Iyengar
5) *Chlorococcum infusionum* (Schrank) Meneghini
6) *Chlorella vulgaris* Beijerinck
7) *Cladophora glomerata* (Linnaeus) Kutzing
8) *Closterium intermedium* Ralfs.
9) *Closterium moniliferum* (Bory) Ehrenberg
10) *Closterium prolongum* Rich
11) *Closterium tumidum* Johns.
12) *Coelastrum microsporum* Naegeli
13) *Cosmarium depressum* (Naegeli) Lunedell
14) *Cosmarium granatum* Breb.
15) *Cosmarium moniliforme* (Trup.) Ralfs
16) *Cosmarium plicatum* Reinsch.
17) *Cosmarium quadrum* Lundell
18) *Cosmarium subcrenatum* Hantzsch.
19) *Cosmarium westii* Bernard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