RESEARCH ARTICLE

Diversity of Chlorophyta in Freshwater Lakes of Sangli (MS) India

Lohar DN[1] and Korekar SL[2]

[1]Department of Botany, Shrimant Babasaheb Deshmukh Mahavidyalaya, Atpadi, Dist. – Sangli, MS, India
(Affiliated to Shivaji University, Kolhapur)
[2]Department of Botany, Yashwantrao Chavan College,Tuljapur. Dist.-Osmanabad MS, India
(Affiliated to Dr. B. A. M. U. Aurangabad)
*Corresponding author Email : dhananjay.lohar@gmail.com

Manuscript details:

Available online on
http://www.ijlsci.in

ISSN: 2320-964X (Online)
ISSN: 2320-7817 (Print)

Editor: Dr. Arvind Chavhan

Cite this article as:
Lohar DN and Korekar SL (2015) Diversity of Chlorophyta in Freshwater Lakes of Sangli District (MS)India, *International J. of Life Sciences*, A3,:127-135.

ABSTRACT

Study of algal diversity is an important aspect of environmental studies. Algae are present in almost all aquatic habitats. There are very few reports of study of algal diversity from Sangli District of Maharashtra state. However, these studies were carried out in very limited localities. Therefore the present study is important from collection of database of algal diversity in this District. Algal taxa of Sangli District were studied during the present investigation, carried out between the years 2009-2012. For this study, 4 water tanks *Viz.* Chandoli (CH), Morna (MR), Siddhewadi (SD) and Basappawadi (BS) was selected from different talukas of the District having varied rainfall. The precincts of Chandoli and Morna receives comparatively high rainfall (over 1300 mm/year); while Siddhewadi and Basappwadi areas receive comparatively low rainfall (about 300mm/year). In all 51 Chlorophytes were recorded, which includes benthic, planktonic, floating and some epiphytic species.

Key Words: Diversity, Freshwater Algae, Lakes, Sangli

INTRODUCTION

Division Chlorophyta includes a diverse assemblage of photosynthetic organisms commonly known as green algae. The organisms can be unicellular, multicellular, coenocytic (more than one nucleus in a cell) or colonial representatives. They are one of the pioneer species in aquatic food web. During present study 51 chlorophyceae were recorded from different locations. The algae were identified by using various available resources such as reference books, web facilities, Manuals, etc.

MATERIALS AND METHODS

Algae stored initially in a bucket, jar, bottle or plastic bag, with some water from the collecting site. After collecting most algae were kept alive for short periods (a day or two). For long-term storage, specimens were preserved in formalin. Even with preservation, examination of fresh material was sometimes essential for an accurate determination. Motile algae examined with flagella and other delicate structures remain intact.

The phytoplankton samples were collected by using plankton net (200 mesh). The 50 liters of water was filtered through plankton net to get 50ml of sample. Some macroalgae were collected directly with the help of hand. The collections were done frequently at intervals of month. Identification was made with help of standard texts, keys and monographs given by Prescott (1951), Sarode and Kamat (1984), Cox (1996), Prasad and Shrivastava (2005), Prasad and Misra (1992), Philipose (1967), Rath and Adhikary (2005) and publications appeared in journals from time to time. Motile algae particularly examined while flagella and other delicate structures were intact. The morphological studies of specimens were done by using Magnius Research Microscope (Model No. MLM 2051) and Photomicrographs were made with attached Digital camera (C 2000).

RESULTS AND DISCUSSION

Division: Chlorophyta
Class: Chlorophyceae
Order: Volvocales
Family: Polyblepharidaceae

1) ***Chlamydomon asdinobryonii***G. M. Smith
Prescott, 1951, P 70, Pl 1, Fig. 5

Cells ovoid to pyriform, without an anterior papilla, chloroplast disc-shaped to hemispherical, lying either at the base of the cell or along the lateral wall; pigment-spot lacking.

Locality: Siddhewadi, Chandoli
Coll. No. and Date: SD- 01 (26/06/2010), CH-101 (25/08/2010)

2) ***Phacotus lenticularis***(Ehr.) Stein.
Prescott, 1954, P 32, Fig. 23(a)

Envelope composed of 2 overlapping pieces, the seam showing when the vegetative cell is seen from the side. This genus is relatively rare, but is often abundant in collections. It occurs in two localities.

Locality: Basappawadi, Morna
Coll. No. and Date: BS- 110 (21/06/09), MR- 07 (04/03/2010)

3) ***Gonium pectorale*** Muller
Prescott, 1951, P 75, Pl 1, Fig. 21

Colony of 8 ellipsoidal, subspherical cells closely arranged in a flat, quadrangular plate,usually with 4 inner cells, bordered by a series of 12 marginal ones which have their anterior ends projected outward and parallel with the plane of the colony, the inner cells directed at right angles to the plane. Cells inclosed, by individual sheaths, which are connected to neighboring sheaths by very short processes.

Locality: Siddhewadi, Basappawadi
Coll. No. and Date: SD-78 (25/06/2010), BS-12 (20/04/2011)

4) ***Pandorina morum*** (Muell.)Bory.
Prescott, 1954, P 28, Fig. 14
Prescott, 1951, P 75, Pl 1, Fig. 23

Colony spheroidal; cells pear-shaped, crowded together with broad ends all directed outwardly. Cells are pear-shaped and often are more compactly arranged. A tumbling colony in which pear-shaped cells are closely compacted within a spheroidal or oval gelatinous sheath. Colonies are to be seen in which all individuals have divided to form each a daughter colony. Cells pyriform, crowded. More frequent among dense growths of algae in shallows,especially in water rich in nitrogenous matter.

Locality: Siddhewadi, Basappawadi
Coll. No. and Date: SD-78 (25/06/2010), BS-11 (05/10/2011)

5) ***Eudorinaelegans***Ehr.
Prescott, 1954, P 29, Fig. 17
Rath and Adhikary, 2005, P 51, Pl, 16, Fig. 119

All cells of the same size within the colony. Cells have a tendency to arrange themselves in transverse bands. Occurs along with *Volvox*.Colonies spherical, ellipsoidal in shape, colonial envelope smooth in outline, colonies of 16 or 32, rarely 64, cells arranged in distinct tiers with a confluent double layered gelatinous envelope, cells equal in size, mature cells spherical or ovoid in shape with a single radially striated cup-shaped cells.

Locality: Basappawadi, Siddhewadi
Coll. No. and Date: BS-14 (24/05/2010), SD-78 (25/06/2010)

6) ***Volvox globator*** L.
Prescott, 1951, P 78, Pl 2, Fig. 5

Large, monoecious, spherical, gelatinous colonies containing many ovoid cells.Cells with conspicuous protoplasmic interconnections; with 1 parietal plate-like chloroplast and a pigment-spot in each cell, and with 2-6 small contractile vacuoles in the anterior region below the point of flagellar attachment. Individual sheaths of the cells conspicuous and not confluent with the colonial mucilage, clearly visible in surface view of the colony, the sheaths 5-8-sided from mutual compression. Coenobium commonly containing daughter colonies; sexual colony with eggs,

each enclosed by a wide gelatinous sheath; Zygotes with thick walls exteriorly decorated with wart-like, blunt spines.
Locality: Siddhewadi, Basappawadi,
Coll. No. and Date: SD-14 (24/05/2010), BS-60 (22/02/2011)

Family: Sphaerellaceae
7) ***Stephanosphaera pluvialis Cohn***.
Prescott, 1954, P 29, Fig. 16
Prescott, 1951, P 81, Pl 46 Fig. 26

Cells fusiform with sharply pointed lateral processes or extensions of the protoplast.Oval colony forming a median band. The cells commonly show 2 pyrenoids. A colony of 4-8 ovoid cells with branched protoplasmic extensions, arranged in a median circumferential band within an oblate-spheroid colonial mucilage. Cells free from, and some distance from,one another, not connected by protoplasmic extensions. Flagella 2,lateral, near the anterior end of cell; chloroplast parietal.
Locality: Morna, Basappawadi
Coll. No. and Date: MR-13 (04/03/2009), BS- 05 (25/06/2010)

8) ***Haematococcus lacustris***(Girod.)Rostaf.
Prescott, 1954, P 30, Fig. 19

Protoplast at a considerable distance within the cell wall and connected to it by fine, radiating processes; cells with a mass of red pigment often present in the center of the protoplast. Swimming cell showing protoplast with radiating processes; cysts are brick-red in color.
Locality: Basappawadi, Morna
Coll. No. and Date: BS- 05 (25/06/2009), MR- 108 (25/08/2011)

Order: Tetrasporales
Family: Palmallaceae
9) ***Gloeocystis major*** Gerneck ex Lemmermann
Prescott, 1954, P 41 Fig. 41c
Prescott, 1951, P 84, Pl 52, Fig. 9, 10

Cells enclosed by concentric layers of mucilage (individual cell sheaths distinct).Cells ovoid, in colonies of 4, inclosed by a wide, lamellate sheath in which groups of individual sare surrounded by concentric layers;Chloroplast massive, completely covering the wall.
Locality: Siddhewadi, Morna
Coll. No. and Date: SD-144 (24/05/2010), MR-108 (25/08/2011)

Family: Tetrasporaceae
10) ***Tetraspora lacustris Lemmermann***
Prescott, 1951, P 88, Pl 5, Fig. 11

Thallus a free-floating, spherical and irregularly shaped, microscopic gelatinous colony containing relatively few spherical cells, the long pseudocilia clearly seen. Cells arranged in groups of four. This species is microscopic and apparently free-floating at all stages.
Locality: Chandoli, Morna
Coll. No. and Date: CH- 101 (25/08/2010), MR - 47 (09/04/2011)

Order: Ulotrichales
Suborder: Ulotrichineae
Family: Ulotrichaceae
11) ***Ulothrix zonata*** (Weber & Mohr) Kuetz.
Prescott, 1951, P 97, Pl 6, Fig. 14

Filaments attached, usually long and stout, variable in diameter in the same plant mass. Cells Short, or elongate-cylindric, slightly swollen with constrictions at the cross walls.Cell walls thick, especially near the base of the filament.Chloroplast a complete circular band in the mid region of the cell, with several pyrenoids.
Locality: Morna, Chandoli
Coll. No. and Date: MR- 38 (04/03/2010), CH- 101 (25/08/2010)

Order: Microsporales
Family: Microsporaceae
12) ***Microspora loefgrenii***(Nordst.) Lag.Prescott, 1954, P Fig. 172 Prescott, 1951, P 107, Pl 9, Fig. 2

Cells without haematochrome; chloroplast a perforated and padded sheet or a branched, beaded ribbon. The simple, unbranched filaments have chloroplasts that vary greatly in respect to the degree with which they cover the wall. The ends of the filaments where the line of separation having occurred in the midregion of the cell, which forms characteristic H-shaped pieces.Walls thick, sections evident in the midregion of the cell.Cells short-cylindric, rectangular, as long as broad or a little longer.Chloroplast a loose net,covering nearly all of the cell wall.
Locality: Chandoli, Siddhewadi
Coll. No. and Date: CH- 101 (25/08/2010), SD- 39 (20/04/2011)

Order: Chaetophorales
Family: Chaetophoraceae
13) ***Stigeoclonium nanum Koetz***. Prescott, 1951, P 116, Pl 9, Fig. 7, 8

Thallus composed of short-tufted filaments, the branches arising alternately and tapering to blunt points. Cells of the branches scarcely smaller than those of main axis, prostrate portion of plant is expansive, pseudoparenchymatous, becoming filamentous; the cells subglobose and giving rise to vertical branches, species forms green film on submerged plants.

Locality: Chandoli, Morna

Coll.No. and Date: CH- 44 (10/05/2010), MR- 89 (14/06/2010)

14) ***Chaetophoraattenuata***Hazen

Prescott, 1951, P 118, Pl 13, Figs. 4, 5

Forming attached, firm, gelatinous globules, having radiating, nearly parallel, erect branches from numerous basal, rhizoidal processes. Filaments dichotomously branched, ending in pointed, setiferous cells; branches loose and evenly developed from main axis, much elongated.

Locality: Basappawadi, Morna

Coll.No. and Date: BS- 45 (24/09/2010), MR- 89 (14/05/2011)

15) ***Draparnaldia acuta***(C. A. Ag.) Kuetz.

Prescott, 1951, P 120, Pl 15, Fig. 1

Main axis of thallus bearing horizontal branches, from which opposite or whorled fascicles of branches arises, branchlets crowded to acuminate in outline with an apparent rachis that extends beyond the other branches of fascile. Cells of main axis and primary branchesswollen, chloroplast about V the length the cell.

Locality: Siddhewadi, Chandoli

Coll.No. and Date: SD- 40 (24/05/2010), CH- 44 (10/09/2010)

16) ***Aphanochaete repens***A. Braun; Prescott, 1951, P 125, Pl 17, Figs. 2, 3Prescott, 1954, P 104, Fig. 161

Filaments creeping, cells irregularly inflated. Setae long and very slender, wide at the base. It is most common species occurring frequently with other algae. Filaments prostrate, creeping on larger filamentous algae. Very common reeping on the walls of large filamentous algae. The simple setae, with their swollen bases extending from the cell wall.

Locality: Basappawadi, Chandoli

Coll.No.and Date: BS- 48 (24/09/2010), CH- 173 (15/10/2010)

Family: Coleochaetaceae

17) ***Coleochaete orbicularis*** Pringsheim

Prescott, 1951, P129, Pl 18 Figs.3, 5

Prescott, 1954, P 97, Fig. 150

Thallus forming a regular, circular monostromatic disc of branching filaments radiating from common center and adjoining laterally.Cells quadrangular, oogonia ovoid. It is common on submerged plants. Plant a cluster of short, erect filaments (it is branched but sometimes appears unbranched when young; form attached discs).

Locality: Morna, Basappawadi

Coll.No. and Date: MR- 50 (14/05/2010), BS- 45 (24/09/2010)

Family: Trentepohliaceae

18) ***Trentepohlia iolithus***(L.) Wallworth; Prescott, 1951, P 134, Pl 19, Figs.4-8; Prescott, 1954, P 109, Fig.171a

Plants golden-red, forming a compact felt on moist rocks. Basal filaments composed of fusiform cells. Branches possessing cylindrical cells and ending in bluntly rounded apices. Cell walls roughened clearly lamellated. Sporangia globose and terminal. Cells orange or golden-red because of haematochrome; plants aerial on trees and rocks; chloroplast dense and indeterminate of shape.

Locality: Basappawadi, Morna

Coll.No. and Date: BS- 99 (24/04/2009), MR- 49 (12/12/2009)

Order: Cladophorales

Family: Cladophoraceae

19) ***Cladophora profunda*** var ***nordstedtiana*** Brand

Prescott, 1951, P 139, Pl 22, Figs. 1-4

Thallus composed of attached, irregularly and much branched filaments growing from a prostrate, colorless, rhizoidal portion. Basal branches directed downward and ending in colorless rhizoid-like cells; upper branches irregular in arrangement, often entangled and interlocked to form snarled tufts, Cells irregularly inflated or sub-cylindric, long in the main axis. Walls of cells encrusted or merely roughened with lime and sometimes with iron deposits, giving a rust-colored appearance to older plants.

Locality: Siddhewadi, Morna

Coll. No. and Date: SD- 42 (10/01/2010), MR- 21 (25/06/2011)

Order: Oedogoniales

Family: Oedogoniaceae

20) ***Bulbochaete crassa*** Pringsheim

Prescott, 1951, P149, Pl 25, Fig. 8

Nannandrous; gynandrosporous. Vegetative cells long. Oogonia sub-depressed, globose. Oospores depressed-globose with scrobiculate outer wall.Male

filaments on the oogonia; stipe wide and long.Occurs on grass in the marshy end of lakes. It is similar to *B. insignis* but differ in presence of nannandria.
Locality: Chandoli, Morna
Coll. No. and Date: CH- 41 (12/06/2011), MR-21 (25/07/2011)

21)*Bulbochaete insignis* Pringsheim
Prescott, 1951, P 150, Pl 26, Figs. 4-6
Prescott, 1954, P 122, Fig. 195a
Nannandrous; gynandrosporous, vegetative cells long.Oogonia depressed globose. Oospores globose; outer spore wall with high thick denticulate coast (margin); Male filaments on the oogonia. It found commonly in two lakes attached to other aquatic plants. Setae bulb-like at the base.
Locality: Chandoli, Morna
Coll. No. and Date: CH-41 (12/07/2010), MR- 111 (21/09/2011)

22)*Oedogonium spurium* Hirn Prescott, 1951, P 188, Pl 37, Figs. 4-5
Macrandrous; monoecious. Vegetative cells capitulate, oogonia solitary; subglobose; operculate; oospores depressed-globose; sometimes filling the oogonia; wall smooth.
Locality: Morna, Chandoli,
Coll. No. and Date: MR- 35 (10/08/2009), CH- 101 (25/08/2010)
Order: Ulvales (As per Prescott 1954)
Family: Ulvaceae

23) *Enteromorpha intestinalis*(L.) Neesa
Rath and Adhikary, 2005, P 60, Pl 8, Fig. 29
Plant up to 25 cm height, attached to the substratum by a basal rhizoidal portion and later floating when torn away from the substrate; deep green to yellowish green; fronds clavate, more or less compressed, with apices perforated and found gradually increasing in width; branched, branches and branchlets shortly club-shaped, inflated towards the apex, cells in surface rounded, polygonal, irregularly arranged throughout thallus, cell contents granular with one nucleus and a parietal chloroplast.
Locality: Morna, Chandoli
Coll. No. and Date: MR- 46 (04/03/2010), CH- 101 (25/08/2010)

Order: Chlorococcales
Family: Chlorococcaceae
24)*Chlorococcum humicola* (Nag.) Rabenhorst
Philipose, 1967, P 73, Fig. 3
Prescott, 1954, P 42, Fig. 42 Prescott, 1951, P 212, Pl 45, Fig. 12
Cells spherical, solitary or number of cells crowded together to form a stratum,Chloroplast a hollow sphere with a lateral notch and a single pyrenoid. Chloroplast covering almost the entire wall; cells variable in size within the colonial mucilage. This species is luxuriantly represented forming green films in association with *Scenedesmus* and *Euglena.*
Locality: Chandoli, Basappawadi
Coll.No. and Date: CH- 155 (14/04/2010), BS- 90, (12/05/2010)

Family: Characiaceae
25)*Characiumangustum*A. Braun Philipose, 1967, P 84, Fig.10
Cells straight and lanceolate with short hyaline apical beak, stalk short and thick witha colourless disc-shaped basal thickening.
Locality: Morna, Basappawadi
Coll.No. and Date: MR- 89 (14/04/2010), BS- 90, (12/05/2010)

Family: Hydrodictyaceae

26) *Hydrodictyon reticulatum* (L.) Lag.
Prescott, 1951, P 219, Pl 47, Fig. 1
Prescott, 1954, P 54, Fig. 69
Thallus macroscopic composed of cylindrical cells which are adjoined at their ends to form a cylindrical net with 5- or 6-sided meshes; chloroplast at first a parietal plate with a single pyrenoid, later becoming a reticulum covering the entire wall and containing many pyrenoids; cells multinucleate. Cells 1 cm long when fully enlarged, forming a net up to 2 m.in length; chloroplast a much diffused reticulum, light yellow-green color in the plant mass,especially at maturity. Cells cylindrical, one cell attached by 2 others at the end walls repeatedly to form a network. This is the familiar "water-net" which often grows in such dense mats in two lakes, as a troublesome weed. Each cell of the net in turn produces a new cylindrical net of small cells. The nets are of macroscopic size.
Locality: Morna, Siddhewadi
Coll.No. and Date: MR- 29 (25/05/2010), SD- 167 (30/06/2010)

27)*Pediastrum duplex* Meyen Philipose, 1967, P 121, Fig. 43 (a); Prescott, 1951, P 223, Pl 48, Fig. 4
Colony 32 celled and circular to oval with medium-sized perforations between cells.Cells H-shaped with ends of processes round. Cell membrane covered with serially-arranged granules. The walls smooth, with

lens-shaped spaces between the inner cells, which are quadrate, the outer margin concave; peripheral cells quadrate, the outer margin extended into2 tapering, blunt-tipped processes, distance between processes of one cell about one-half the distance between processes of adjacent cells.

Locality: Chandoli, Siddhewadi

Coll. No. and Date: CH -24 (25/06/2010), SD- 105 (08/11/2010)

BS-23(12/10/2010),MR-108 (25/08/2011)

28)*Sorastrum americanum* (Bohlin) Schmidle Prescott, 1951, P 228, Pl 50, Fig. 8

A free-floating spherical colony of 32 heart-shaped cells with the outer free walls emarginate and furnished at each of the 4 angles with a long, stout, outwardly directed spine; cells narrowed toward the base and attached to the center of the colony by a short, stalk cylindrical adjoining the sides of other stalks in such a way as to form a central hollow sphere.

Locality: Morna, Siddhewadi

Coll. No. and Date: MR- 219 (25/06/2010), SD- 167 (30/05/2011)

Family: Coelastraceae

29)*Coelastrumcambricum*var.***Intermedium*** (Bohlin) G. S. West Rath and Adhikary, 2005, P 52, Pl 16, Fig. 122

Colonies spherical, 32 celled, cells spherical and thickened at the poles, 10-12 sided when seen from the apex, connected to each other by 4-6 short gelatinous flat projections,interspaces between cells circular to triangular, outer face of the external cells being subspherical and gradually arched, outstanding projections blunt and rounded and not truncate,interspaces between cells more or less triangular.

Locality: Siddhewadi, Chandoli

Coll. No. and Date: SD- 78 (29/09/2010), CH- 106 (20/12/2011)

Family: Oocystaceae

30)*Chlorella vulgaris* Beijerinck

Philipose, 1967, P 173, Fig. 82(d)

Prescott, 1951, P 237, Pl 53, Fig. 13

Alga free living.Cells solitary in small colonies, spherical and with a thin cell membrane. Chloroplast parietal, cup-shaped and with a pyrenoid which is indistinct. Cells spherical scattered among other algae.

Locality: Morna, Siddhewadi

Coll. No. and Date: MR- 15 (25/06/2010), SD- 19 (29/09/2010)

31)*Dictyosphaerium pulchellum* Wood

Philipose, 1967, P 199, Fig. 110(a)

Prescott, 1951, P 238, Pl 51, Figs. 5-7

Colonies spherical more than 64 cells.Cells ovoid with single parietal cup shaped chloroplast having single pyrenoid. Cells arranged in series of 4 on dichotomously branched threads, inclosed in mucilage.

Locality: Chandoli, Siddhewadi

Coll. No. and Date: CH- 28 (21/05/2011), SD- 167 (30/06/2011)

32) *Oocystis borgei* Snow

Philipose, 1967, P 183, Fig. 93, Prescott, 1951, P 243, Pl 51, Fig. 10

Cells broadly ellipsoid, with rounded ends. Poles not thickened. Colonies 4 celled the enclosing envelope round and narrow. Unicellular or crowded in groups of 2-8, inclosed by the old mother cell wall; ellipsoid cells with the poles broadly rounded and smooth; chloroplast single with parietal plate, each with a pyrenoid.

Locality: Morna, Chandoli

Coll. No. and Date: MR- 16 (25/06/2010), CH-106 (20/12/2011)

33) Ankistrodesmus spiralis (Turner) Lemmermann

Philipose, 1967, P 210, Fig. 121(e)Prescott, 1951, P 254, Pl 56, Figs. 11, 12

Cells acicular with acute apices; in colonies of usually 4 cells spirally twisted round one another in the median region, but free at the ends. Chloroplast single and without a pyrenoid.

Locality: Siddhewadi, Morna

Coll. No. and Date: MR- 84 (08/09/2010)

34) *Closterium lunula* var ***massartii*** (Wildem.) Krieg. Prasad and Misra, 1992, P 111,112, Pl 15, Fig. 8

Cell large, about 6 times longer than broad, more or less straight, outer margin more convex than inner and shows 60 degrees of arc, cell gradually and gently attenuated to slightly truncate spices; cell wall smooth; chloroplast with 7 ridges and numerous scattered pyrenoids.

Locality: Basappawadi, Morna

Coll. No. and date BS - 23 (12/10/2010), MR - 108 (25/08/2011)

35) *Cosmariumbiretum*Breb.

Prasad and Misra, 1992, P 154, Pl 23, Fig. 19

Cells rather small, a little longer than broad, very deeply constricted, sinus narrowly linear with slightly dilated extremity; semicells sub rectangular with

somewhat convex sides and apex; cell wall with granules arranged in indistinct curved vertical series; each semicell with an axile chloroplast and two pyrenoids.

Locality: Chandoli, Siddhewadi

Coll. No. and date CH - 56 (15/04/2010), SD - 157 (18/03/2011)

36) *Cylindrocystis subpyramidata* *W.et* G.s. West

Prasad and Misra, 1992, P 89, Pl 15, Fig. 11

Cells cylindrical, about 1-5 times longer than broad, slightly constricted in middle, cell apices, sub pyramidal with rounded ends; chloroplast sub-stellate with one large pyrenoid in each semicell.

Locality: Basappawadi, Siddhewadi

Coll. No. and date BS - 53 (14/08/2009), SD - 157 (18/03/2011)

37) *Micrasterias foliacea Bail*.

Prasad and Misra, 1992, P 141, Pl 20, Fig. 6

Cells small, united in filaments by inter-locking of polar lobes, rectangular in outline,deeply constricted, sinus narrowly linear, semicells 5-lobed, basal part of polar lobes with subparallel sides, upper part greatly expanded and anvil shaped with an excavation in the median portion, base of excavation exhibits 2 asymmetrically produced spines of unequal length, polar and lateral angles uncinate, lateral lobes asymmetrical, superior lobes divergent,inferior horizontally disposed, incisions simple and sub-acuminate, the ultimate lobelets with truncate-emarginate apices; cell wall smooth.

Locality: Basappawadi, Chandoli

Coll. No. and date BS - 53 (14/08/2009), CH - 68 (10/01/2010)

38) *Euastrum ansatum* Ehr.

Prasad and Misra, 1992, P 133, Pl 19, Fig. 7

Cell small, twice as long as broad, deeply constricted, sinus narrowly linear with somewhat dilated extremity; semicell spyramidate with broadly rounded basal angles, lower part of sides convex, upper part slightly concave, apex rotundo-truncate with a fairly deep incision, each semicells with one slight and one preeminent protuberance and two across the centre; cell wall with punctations arranged in indistinct vertical series.

Locality: Chandoli, Basappawadi

Coll. No. and date CH - 68 (10/05/2009), BS - 60 (22/02/2011)

39) *Pleurotaenium ehrenberghii* (Breb.) de Bary

Prasad and Misra, 1992, P 124, Pl 18, Figs. 9, 10

Cells fairly large, longer than broad, sub-cylindrical, slightly constricted at the base;semicells cylindrical, gently attenuated from base towards apex; basal inflation small with one undulation; apex with a ring of tubercles; cell wall minutely punctate.

Locality: Siddhewadi, Morna

Coll. No. and date SD - 54 (25/06/2009), MR - 59 (04/03/2010)

40) *Staurastrum gracile* Ralfs forma Iyengar *et.* Vimala Bai.

Prasad and Misra, 1992, P 197, Pl 25, Figs. 14, 18

Cell small, longer than broad with slight constriction in the form of an acute notch; semi cell slightly broad towards the faintly convex apex, upper angles produced into more or less horizontally disposed long processes tipped with 3 minute spines and showing many concentric series of denticulations; top view triangular; chloroplast axial with one pyrenoid in each semicell.

Locality: Chandoli, Siddhewadi

Coll. No. and date CH- 68 (10/01/2010), SD- 57 (18/03/2011)

41) *Xanthidium cristatum* var. ***uncinatum*** Hass.

Prescott, 1954, P 77, Fig. 115

Apex of semicell furnished with prominent spines; facial protuberance one large low swelling, the wall thickened here and often pitted or punctuate. Cells, compressed so that they are narrow, when seen from top. There is a facial swelling in the center of the semicell and all angles bear stout spines or short arms that are tipped with spines. Granules present on the wall.

Locality: Morna, Siddhewadi

Coll. No. and date MR - 59 (04/06/2010), SD - 37 (22/03/2010)

42) *Kirchneriella lunaris* (Kirch.) Moebius

Prescott, 1951, P 258, Pl 58, Fig. 2

Philipose, 1967, P 222,223, Fig. 131

Colony composed of numerous cells arranged in groups of 4 within a close, gelatinous envelope; cells flat, strongly curved crescents with rather obtuse points; chloroplast covering the convex wall. Cells irregularly arranged within the envelope, flattened and crescent-shaped with pointed ends and about twice as long as broad. Chloroplast nearly filling the cell and with a single pyrenoid.

Locality: Morna, Siddhewadi

Coll.No.&Date:MR-49(12/12/2009),SD-179 (29/09/2010)

Sub-family: Tetraedronoideae(Philipose,1967)

43) ***Tetraedron pentaedricum*** W. *et* G. S. West Philipose, 1967, P 151, Fig. 65(a-b) Prescott, 1951, P 268, Pl 60, Figs. 21-23

Cells small, irregularly five-lobed with four lobes in one plane and the fifth at an angle to the former.Corners somewhat acute, each with a short slightly curved spine. Angles sharply rounded, the apex of each lobe furnished with a sharp spine.

Locality: Chandoli, Siddhewadi

Coll. No. and Date: CH - 18 (21/06/2010), SD - 167 (30/05/2011)

Family: Scenedesmaceae

44) ***Scenedesmus abudans*** (Kirch.) Chodat Philipose, 1967, P 278, Fig. 184 a-d

Colonies usually 4 celled and arranged in a linear series. Cells ovoid to oblong-ovoid.External cells with one median lateral spine from the outer face in addition to spines from thefour corners of the colony. Internal cells without spines. It is present at bottom of pool.

Locality: Morna, Chandoli

Coll. No. and Date: MR- 88 (10/01/2010), CH-26 (12/07/2010)

45) ***Actinastrum gracilimum*** G. M. Smith Prescott, 1951, P 281, Pl 64, Fig. 5 Philipose, 1967, P 318

Cells cylindrical, with very slightly narrowed to abruptly truncate poles, forming colonies of individuals with the long axes of the cells radiating in all planes from a common center. Cells 7-10 times long than broad. Chloroplast single, parietal and laminate and without pyrenoid.

Locality: Siddhewadi, Morna

Coll. No. and Date: SD- 19 (29/09/2010), MR- 21 (25/06/2011)

46) ***Crucigenia quadrata*** Morren Prescott, 1951, P 285, Pl 65, Fig. 10 Philipose, 1967, P 241, Fig. 152

Colonies free-floating, consisting of a circular plate of 4 triangular cells, crucially arranged with small central space, the outer free wall of the cells broadly convex, the lateral walls straight, adjoined throughout their length with neighboring cells and converging toward the center of the colony; walls with knob-like projections; chloroplasts parietal discs 4 in a cell; pyrenoids not always present; multiple quadrate colonies formed by the close arrangement of component quartets. Cells, with rounded corners.

Locality: Chandoli, Siddhewadi

Coll. No. and Date: CH- 126 (12/07/2010), SD-167 (30/05/2011)

Order: Vaucheriales (Heterosiphonales)

Family: Vaucheriaceae

47) ***Vaucheria sessilis*** (Vauch.) De Candolle Prescott, 1951, P 294, Pl 68, Fig. 5 Prescott, 1954, P 124, Fig. 199 b

Aquatic; filaments somewhat slender, with irregular branching; monoecious; oogonia usually in pairs, ovoid to subglobose with the pore in a short beak and directed obliquely upward; antheridia on a short pedicel between 2 oogonia, either straight or circinate, but usually with the opening directed toward the pore of an oogonium; oospore with a 3-layered membrane, filling the oogonium. Filaments not dichotomously branched; without constrictions.

Locality: Morna, Siddhewadi

Coll. No. and Date: MR - 102 (20/07/2010), SD - 64 (27/06/2011)

Order: Zygnematales

Family: Zygnemataceae

48) ***Mougeotiaviridis*** (Kuetz.) Wittrock; Prescott, 1951, P 306, Pl 71, Figs. 8-10

Filaments slender, becoming geniculate in conjugation; cells long; chloroplast a broad plate extending the full length of the cell with 4-6 pyrenoids. Zygospores formed in the tube,dividing both gametangia; quadrate, the sides concave, corners retuse; median spore wall smooth and colorless.

Locality: Chandoli, Morna

Coll. No. and date CH -34 (25/09/2009), MR -47 (09/04/2011)

49) ***Spirogyra weberi*** Kuetz.Prescott, 1951, P 322, Pl 76, Figs. 8-10

Filaments of long cells, with replicate end walls; chloroplast solitary, broad, making 3 to $6^1/_2$ turns. Conjugation by tubes from both gametangia; fertile cells cylindric.Zygospores cylindric-ovate; median spore wall smooth and brown. The genus seems always to be mixed with other filamentous algae. Long, slender cells and the long ovate spores are distinctive features, Entangled among other algae.

Locality: Siddhewadi, Morna

Coll. No. and date SD -37 (22/04/2010), MR -47 (09/06/2010)

50) ***Zygnema insigne*** (Hass.) Kuetz. Prescott, 1951, P 325, Pl 78, Fig. 11

Vegetative cells 2 times longer than width; fertile cells cylindrical, inflated on one side only.Zygospores

formed in one of the gametangia; subglobose; median wall brown and smooth.

Locality: Chandoli, Morna

Coll. No. and date CH -136 (25/08/2011), MR -108 (25/08/2011)

51)*Zygnema micropunctatum* Transeau Prescott, 1951, P 325, Pl 78, Fig. 12

Vegetative cells long; fertile cells not inflated. Zygospores formed in the tube;depressed-globose, compressed at right angles to the conjugation tube; median wall yellow-brown and minutely punctate.

Locality: Chandoli, Siddhewadi

Coll. No. and date CH -36 (22/08/2009), SD -116 (24/08/2010)

Bhosale *et al.,* (2010b) studied algae of Sangli, Satara and Kolhapur District and reported 116 species of Chlorophyceae during rainy season. Dhumal *et al.,* (2010) recorded 57 species of phytoplankton from Divad lake of Satara District and 19 species filamentous algae from Rajewadi lake in Sangli District. They have also reported *Ankistrodesmus septatus* from Mayani lake of Satara District. Patil, (2010) reported 22 species belonging to 14 genera of Chlorophyceae from Bhambarde lake, 20 species of 13 genera from Siddhewadi lake, 17 species belonging to 11 genera from Borgaon lake and 24 species belonging to 16 genera from Birnal lake in Sangli District. Lohar D. N. and S. L. Korekar (2013) and (2012) also reported 46 Chlorophyta species in two lakes of Sangli District. Mahajan (2011) reported diversity of desmids at Jalgaon, North Maharashtra. In the absence of earlier literature (Bhosale *et al.,* 2010c; Dhumal *et al.,* 2010 and Patil, 2010) *Ankistrodesmus spiralis* appears to be the first record from Sangli District.

CONCLUSION

During present study, the algal taxa belonging to class Chlorophyceae were observed at all the 4 selected tanks. In all 51 species belonging to 49 genera were recorded. It is observed that only one alga i.e. *Pediastrum duplex* was present at all locations. 4 algal taxa were recorded at three sites, 45 algal taxa at two locations and 1 alga *(Ankistrodesmus spiralis)* was recorded only at Morna. It is also revealed from the table that maximum species of algae (32) were recorded at Morna while minimum (13) were recorded at Basappawadi.

REFERENCES

Bhosale LJ, Patil SM, Dhumal SN and Sabale AB (2010a) Occurrence of phytoplankton in the lakes in and around Kolhapur city. *Indian Hydrobiology,* 12(2): 133-142.

Bhosale LJ, Patil SM, Dhumal SN and Sathe SS (2010b) Phytoplankton biodiversity in water bodies of Tahasil Kavathe Mahankal (Sangli District), during post summer period. *Indian Hydrobiology,* 12(2): 190-194.

Bhosale LJ, Patil SM, Dhumal SN, and S. S. Sathe(2010c): Occurrence of phytoplankton in the water bodies of Miraj Tahasil of Maharashtra. *The Ecoscan.*4(1):73-76

Cox EJ (1996) Identification of freshwater diatoms from live material. Edn 1, Chapman and Hall. p. 158.

Dhumal SM, Bhosale LJ, Patil SM and Sabale AB (2010) Occurrence of phytoplankton in the lakes in and around Kolhapur city. *Indian Hydrobiology,* 12(2): 133-142.

Lohar DN and Korekar SL (2012) Phytoplankton Diversity in Kacharewasti Tank, Atpadi, Dist. Sangli (M.S.) *Journal of Science information, JSI, Vol. 2 (2)*204-205.

Lohar DN and Korekar SL (2013) Diversity of Freshwater Algae In Two Lakes of Sangli District, *Interlink Research Analysis Vol.-IV, Issue-VII,* 01-07.

Mahajan SR (2011) Diversity of desmids at Jalgaon, North Maharashtra, *J. Bioinfolet* 8 (1): 37.

Patil AP (2010) Studies on importance of wetlands In Sangli District in relation to Fishery and agricultural Productivity, A thesis submitted to Shivaji university, kolhapur

Philipose MT (1967) *Chlorococcales*, I.C.A.R. monograph on algae, New Delhi. 365p

Prasad BN (1984) Algal floristics in India and Andamans. *J. Indian bot. Soc.* 63: 1-10.

Prasad BN and Srivastava MN (1992) Freshwater Algal flora of Andaman and Nicobar Islands, Vol-I, Bishen Singh Mahendra Pal Singh, Dehradun.

Prasad BN and Srivastava MN (2005) Fresh water Algal flora of Andaman and Nicobar Islands, Vol-II, Bishen Singh Mahendra Pal Singh, Dehradun.

Prasad BN and Misra PK (1992) Freshwater algal flora of Andaman and Nicobar Islands, Vol. II, Bishen Singh Mahendra Pal Singh, Dehradun.

Prescott GW (1951) How to know the freshwater algae W.M.C. Brown Company Publishers, Dubuque, Iowa.

Prescott GW (1954) How to know the freshwater algae W.M.C. Brown Company Publishers, Dubuque, Iowa.

Rath J and Adhikary SP (2005) Algal flora of Chilika Lake. Daya Publishing house, Delhi.

Sarode PT and Kamat ND (1984) Freshwater Diatoms of Maharashtra. Saikripa Prakashan, Aurangabad. 338.

Ward HB and Whipple GC (1959) Freshwater biology. *2nd Ed. John Wiley and Sons, Inc,* New York.