

Freshwater Micro-algal Diversity –Chlorococcales from Sawaimadhopur, Rajasthan, India

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ABSTRACT

The fresh water bodies of Sawaimadhopur district, Rajasthan were surveyed for enlisting of different phytoplankton diversity. The Chlorococcales are phototrophic micro-algal group with great diversity and cosmopolitan in their distribution. Forty two species were recorded and described in present paper from study area during January 2014 to Dec. 2015. The fluctuation and blooming of Chlorococcales are important criteria to describe healthy condition of water bodies. The present work is first systematic report of Chlorococcales from this tourist and historical important area.

Keywords: Algae, lakes, planktons, blooms, colonies, freshwater

The present work is outcome to explore algal diversity of Sawaimadhopur region. The work on algal diversity of south Rajasthan is very scanty whatever reported mostly deals with Cyanobacteria. The present work deals with the systematic and ecological study of Chlorococcales, major part of planktonic algae. The work on Chlorococcales were carried out from different region of India by many workers like Brühl and Biswas (1926), Gonzalves and Joshi (1946), Biswas (1949), Mitra (1951), Gupta (1956), Bharati (1964), Philipose (1967), Hortobadyi (1969), Patel (1970), Patel and Isabella (1977), Kant and Anand (1978), Pandey et al (1983)

Study area

The district is situated in the western part of the Rajasthan and the rainfalls are moderate. It cover area 5042.99.99 sq km and situated in between North longitudinal 25°-45' to 26°-41 and in between 75°-59' to 77°-0 East longitude. The temperature ranges from 4°

to 45°C with average rainfall 873.40 mm. The district is divided in to eight tehsils namely 1. Sawai Madhopur 2. Khandar, 3. Chauth ka Barwara 4. Gangapur City. 5. Bonli; 6. Bamanwas; 7. Vazirpur; 8 Malarna Dungar. The sample collection site was selected from each tehsil to represent whole district. The area has many freshwater ponds, Dams and lakes. The perennial river Chambal in the Khandar tehsil is natural boundary between Rajasthan and Madhyapradesh. The district has rolling hills of Aravali and Vindhya ranges. Ranthambhore National Park (RNP) is the main attraction and tourist spot of the district and forest are dry-deciduous dominated by *Anogeissus pendula* (Dhok).

MATERIALS AND METHODS

The samples were collected from different sampling stations at monthly intervals. The samples brought to laboratory for further investigation (APHA 1995) and fresh material were examined as much as possible.

Few samples were centrifuged or cultured for their identification enumeration. The identification done by standard methods and keys (Philipose 1967; Fritsch, 1935, Prescott, 1962; Bold and Wynne, 1978; Palmer, 1980; Gary E Dillard 2000).

Systematic enumeration

Golenkinia radiata Chodat (Pl.I, Fig. 23); Philipose, 1967, 102, Fig. 27.

Cells solitary, spherical, with the entire cell wall covered by a number of long bristles. Chloroplast cup shaped and with a pyrenoid. Width of cells 3.7-9.37 μ . Bristles of unequal length from 29 - 37 μ .

Habitat- planktonic in small tank near Khandar Fort, May, April 2014.

Chlorella vulgaris Beijerin (Pl. II fig.16, 17, 18); Philipose, 1967, 173, Fig. 82a, b, c, d.

Cells ovoid with usually a single chloroplast is in form of a parietal plate. Cells diameter ranging from 1.37 to 2.7 μ .

Habitat - form a major part of green algal bloom after rainy season, padamlata Talai, August, September 2014.

Ankistrodesmus spiralis (Turner) Lemmermann (Pl.II. fig.11); Philipose, 1967, 210, Fig. 119 a,b,c.

Acicular cells in group of 8-16, sometime two. Cells spirally twisted round one another in the median region, but free at the ends. Cells up to 4.5 μ broad, and up to 35 μ .

Habitat - planktonic in Gilai Sagar, Rameshshwer ghat area, Ranthambhore fort lake and it is a part of algal bloom, July and august 2014-15.

Ankistrodesmus spiralis var. *fasciculatus* G.M. Smith (Pl.II fig.10); Philipose, 1967, 211, Fig. 119, d.

Cells curved or sigmoid, twisted around one another and united in colonies of 50- 200cells cells with the median portion of the cells in contact and apices free. Cells diameter up to 4.7 μ , up to 60 μ long. Colonies diameter ranging from 89-190 μ .

Habitat- Shyampura and dungari Area, July, August 2014

Ankistrodesmus falcatus (Corda) Ralfs; Philipose, 1967, 211, Fig. 121.

Cells acicular to narrowly fusiform with the end tapering to acute apices, usually in fasciculate bundle of 4-8 cells, solitary in crude culture of Sewage canal. Chloroplast single and parietal. Cells 2.78 - 8.9 μ broad, 30- 87 μ long.

Habitat- Gilai Sagar, January 2014.

Ankistrodesmus falcatus var. *duplex* (Küetz.) G.S.West; Ahmed *et al*, 1983, p. 400, Pl. III, f. p

Cells aggregated, longitudinally arranged and joined by side walls. Cells fusiform, straight, 2.5-5.4 μ in diameter and 35.0-43.5 μ long

Habitat - planktonic in drainage of Chauth Ka Barwara Pond, Oct, 2014

Ankistrodesmus convolutus Corda; Philipose, 1967, 214, Fig. 122, a-d.

Solitary or in-group of 2-4 cells. Cells strongly curved or twisted with the ends pointed. Cells dia. Up to 6.7 μ and 31 μ long.

Habitat - running water of Bamnwas area, July, August 2014.

Selenastrum gracile Reinsch Pl.I, f. 25; Philipose, 1967, P. 219, f.128.

Cells loosely aggregated, lunate, with acute apices. 3.5-6.0 μ broad at middle and 11.5-21.0 μ long

Habitat- Planktonic in tank, College campus, Dec. 2014

Chlorococcum infusionum (Schrank) Meneghini (Pl.II. fig. 12, 13); Philipose, 1967, 73, Fig. 1,

Cells usually spherical, rarely ovoid or elongated and of variable dimensions, solitary or in flat irregular colonies. Chloroplast likes a hollow sphere with a notch one side and with a single pyrenoid. Cells 10-109 μ , rarely up to 135 μ in diameter.

Habitat- in crude culture of moist soil of Gilai sagar, June 2014.

Coelastrum microporum Naeg. (Pl.I, Fig. 24); Philipose, 1967, P. 228, f. 135

Colonies usually 16 celled or more, 35.0-62.0 μ in diameter. Cells ovoid sometimes spherical with sheath, 7.0-12.5 μ wide.

Habitat- Planktonic in Gilai sagar, Oct. 2014

Actinastrum hantzschii Lagerheim (Pl. II, f.21); Philipose, 1967, P. 217, f. 125 a-c.

Alga colonial or sometimes solitary cells, number of cells not fixed in colony. Cells fusiform, slightly tumid at middle and taperin towards ends, 4.7-6.7 μ wide at middle and 23.5-26.9 μ long. Asexual reproduction by autocolonies.

The specimen differ from type in having irregular arrangement of cells instead radial arrangement.

Habitat- Planktonic in flowing water, Piplda, Bonli area, Oct. 2014.

Characium acuminatum A. Braun ex Kuetzing (Pl. I fig. 7); Philipose, 1967, p. 83.

Planktonic cells oblong with the apex in the form of a short acuminate beak. Stalk short and with a basal knob-like thickening. Cells 5.26 μ broad, and 19-72 μ long.

Habitat: Kawalji Pond, attached on *Spirogyra* sp. *Cladophora* sp. Collect during all season 2014-15.

Shroederia planctonica (Skuja) Comb. nov.; Philipose, 1967, P.90, f. 18.

Cells tumid at middle and acute at apices, 7.8-15.0 μ broad and up to 37.0 μ long

Habitat- Planktonic in pond, 2014.

Tetraedron minimum (A.Braun) Hqansgirg (Pl. II fig. 19); Philipose, 1967, 138, Fig. 53a, b, c.

Cells small and quadrangular with the sides concave and angles rounded. Cell wall smooth. Width of cells 4.7- 9.6 μ .

Habitat – Baler khandar, July, August 2014.

Tetraedron regulare Kuetz. (Pl. II, F. 14, 15); Philipose, 1967, P. 145, f. 60, a-d, f.

Cells 12.5-22.0 μ wide and spines 6.0-6.5 μ long

Habitat- Isherda Jan. 2014.

Pediastrum integrum Naegeli (Pl.I, fig. 26, 27). (Philipose, 1-67, P. 112)

Colonies 8-16 celled, not perforated. Marginal cells with two short stumpy processes. Inner cells usually pentagonal, 11.5-34.0 μ wide. Previously not recorded from Indian region.

Habitat- Planktonic in small pond, way to National Park, Rnathambhore 2014.

Pediastrum simplex Meyen (Pl. II fig. 1) . Philipose 114, f. 36 a-c, 1967.

Colonies circular to oval, generally 16-32 cells. Inner side of marginal cells nearly straight, outer side produced in to a gradually tapering process, side concave. Inner cells polygonal. Cells in contact with adjacent ones and usually without intercellular spaces. When present, intercellular spaces very small and few in number. Cells wall smooth or punctae to granulate. Cells up to 12 μ broad and length vary from 14 μ to 28 μ .

Habitat - The alga was collected during September from all Lakes of Sawaimadhapur 2014.

Pediastrum simplex var. *duodenarium* (Bailey) Rabenh (Pl.II fig. 9); Philipose, 1967, 115, f. 36 d-h.

Specimen with large intercellular spaces, cells arranged in a ring at the periphery. Inner face of marginal cells concave, outer face prolonged into a single delicately tapering process. Sides of marginal cells also concave. Interior cells similar to the marginal cells but with shorter processes. Cell wall finely punctate or smooth. Colonies usually found in 16 cells. Cell width ranging from 9.34 to 27.5 μ , length up to 47.7 μ .

Habitat- As planktonic in Gilai Sagar, September 214.

Pediastrum duplex Meyen (Pl.II fig. 1); Philipose, 1967, 121, f. 43 a-b,.

Planktonic, colonies usually of 16-32, sometimes of 4, 8, 64, or 128 cells with small lens-shaped perforations between cells. Inner cells quadrate to angular and not

in contact at the central portion of the side walls. Inner side of marginal cells concave, outer side produced into two short truncate processes. Cells 8-21 μ in diameter. 16- celled colonies up to 90 μ in diameter.

Habitat: found in all stagnant water area including various Lakes, July-August, 2014-15

Pediastrum duplex var. *subgranulatum* Rociborski (Pl. II fig. 3); Philipose, 1967, 125, f. 43 c, j.

Colonies usually with 16-32 cells. Cell wall granulated. Cells width 12-18 μ length up to 40 μ .

Habitat- planktonic Rawanjana Dungaer area Oct 2014.

Pediastrum duplex var. *clathratum* (A. Braun) Lagerheim (Pl.II fig.4); Philipose, 1967, 123, f. 43 e, f.

Cells with deeply emarginate sides and larger intercellular spaces than the type species. Other characteristics same as *P. duplex*

Habitat- planktonic forma found in all study area 2014-15.

Pediastrum boryanum (Turnip) Meneghini (Pl.II fig.6); Philipose, 1967, 118 f. 40 a.

Colonies circular to oval and usually of 16- 32 cells arranged in concentric ring without inter cellular spaces. Inner cells polygonal with straight sides. Outer face of marginal cells deeply emarginate and with two short processes and with short processes ending in stumpy spines. Cell wall granulated. Cells width up to 27.5 μ and length up to 10.5 μ .

Habitat – RNP salim lake 2014-15.

Pediastrum tetras var. *excisum* (Rabenh.) Hansgirg (Pl. I fig.22); Philipose, 1967, 129, f. 45 f.

Colonies rectangular, circular 8-32 cells without intercellular spaces. Marginal cells with less deeply concave than type. Inner cells of colony with single linear incision. Diameter of cells ranging from 7 to 15 μ . Eight colonies 20-30 μ and 16 colonies up to 50 μ in diameter.

Habitat- small pond in RNP, January 2015.

Pediastrum tetras var. *tetraodon* (Corda) Hansgirg (Pl.II fig.5) ; Philipose 129, f. 45 d, e, g. 1967.

Colonies 8-16 cells. Incision of cells with the lobes adjacent to the incision of the marginal cells very pronounced. Cells diameter Up to 20 μ .

Habitat - small ditches near Ganesh Nagar, Sawaimadhopur July, 2014.

Pediastrum ovatum (Ehr.) A. Braun (Pl.II fig.8); Philipose, 1967, 115, f. 37 a-g.

Colonies usually 4-8-16 celled, with arranged in a ring round a central space or with one or more interior cells and a number of marginal cells, perforate, the perforation is small. Cell wall smooth of identified specimen. Four-celled colony up to 70.5 μ , and 16 celled up to 97.5 μ in diameter. Cells 9.4- 15.7 μ broad and 16-25 μ long.

Habitat – Gilai Sagar April 2014.

Hydrodictyon reticulatum (Linn.) Lagerheim (Pl.II fig.20); Philipose, 1967, p. 134, f. 48.

Colonies reticulate meshes pentagonal or hexagonal. Cells elongate-cylindrical. Cell wall two-layered. Cells up to 250 μ broad and up to 1.5 cm long. Nets up to 20 cm long.

Habitat –surrounding area of RNP march 2014.

Hydrodictyon indicum Iyenger; Iyenger, 1925, P.316, Pl. 1-4; Philipose, 1967, P. 134, f. 49.

Colony easily breaking on handling, reticulate, meshes pentagonal to hexagonal. Cells are uninucleate in early stage (13.6 μ wide and 32.7 μ long) and becomes coenocytic on maturity, 672.0-682.0 μ wide and 1 cm or longer. Cell wall bilayered but short knob like projections not observed.

Habitat- Gilai Sagar, Rameshwer Ghat, Baler area, Chauth Ka Barwara pond, Nov. 2014

Scenedesmus acuminatus (Lagerheim) Chodat (Pl. I, F.4); Philipose, 1967, P. 251, f.161.

Colonies generally four celled, cells fusiform or lunate with pointed ends, 3.5 – 4.0 μ wide and 20.0-24.0 μ long. Cell wall without any spines

Habitat- Plannktonic in Chauth ka Barawara pond, July 2014.

Scenedesmus bijugatus (Turnip) Kuetzing (Pl. I fig.5); Philipose, 1967, p. 252, f. 164, c, e, f .

Colonies slightly curved, of 4-8 cells arranged in a single linear series. Cells oblong-ellipsoid with the ends broadly rounded. Cells up to 7.89 μ broad, 21.04 μ long.

Habitat. Bari Talai. khandar July 2014

Scenedesmus bijugatus var. *bicellularis* (Chodat) Comb. nov. (Pl.I fig.7); Philipose, 1967, p. 253, f. 164, d, n, o, f.

Colonies usually two celled but four celled colonies also not uncommon. Single cells are more prominent in crude culture. Cells up to 4.47 μ broad and 10.3 μ long.

Habitat- found in crude culture of Gilai Sagar, July 2014.

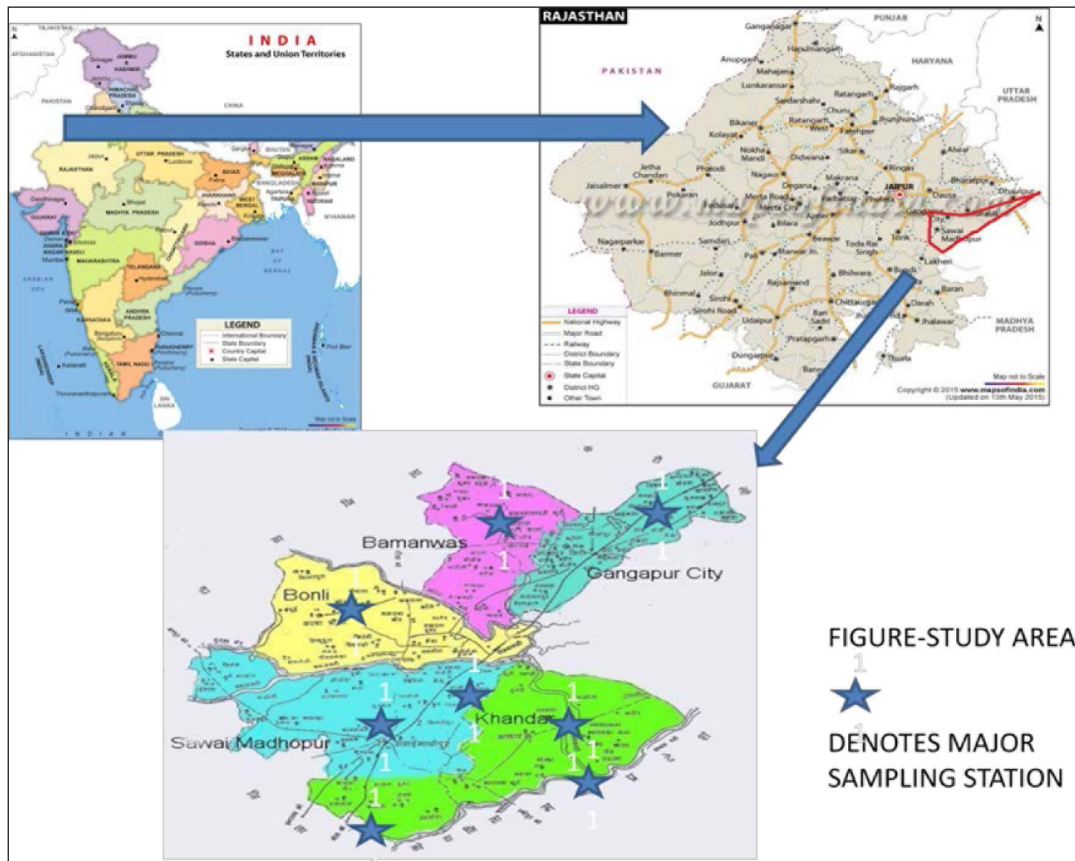
Scenedesmus bijugatus var. *graevenitzii* (Bernard) Comb. Nov.(Pl.I fig.8); Philipose, 1967, p. 253, fig. 164, a, b.

Colony four to eight celled. Cells fusiform, ellipsoidal, oblong-ellipsoidal to ovoid with obtuse poles and arranged in an alternating series with adjacent cells in contact only along a short portion of their length. Cells 4.7- 8.1 μ broad and up to 19.5 μ long

Habitat - planktonic forms in all study area, 2014-15.

Scenedesmus bijugatus var. *alternans* (Reinsch) Hansgirg (Pl. I fig. 9); Philipose, 1967, p. 255, fig. 164, g.

Colonies flat, eight celled (sometime four celled), cells distinctly arranged in alternate series. Adjacent cells adnate to each other along a short portion of their length only. Cells ellipsoidal to ovoid- ellipsoid with rounded ends. Cells about twice as long as broad. Length of cells up to 14.5 μ and width up to 5.0 μ



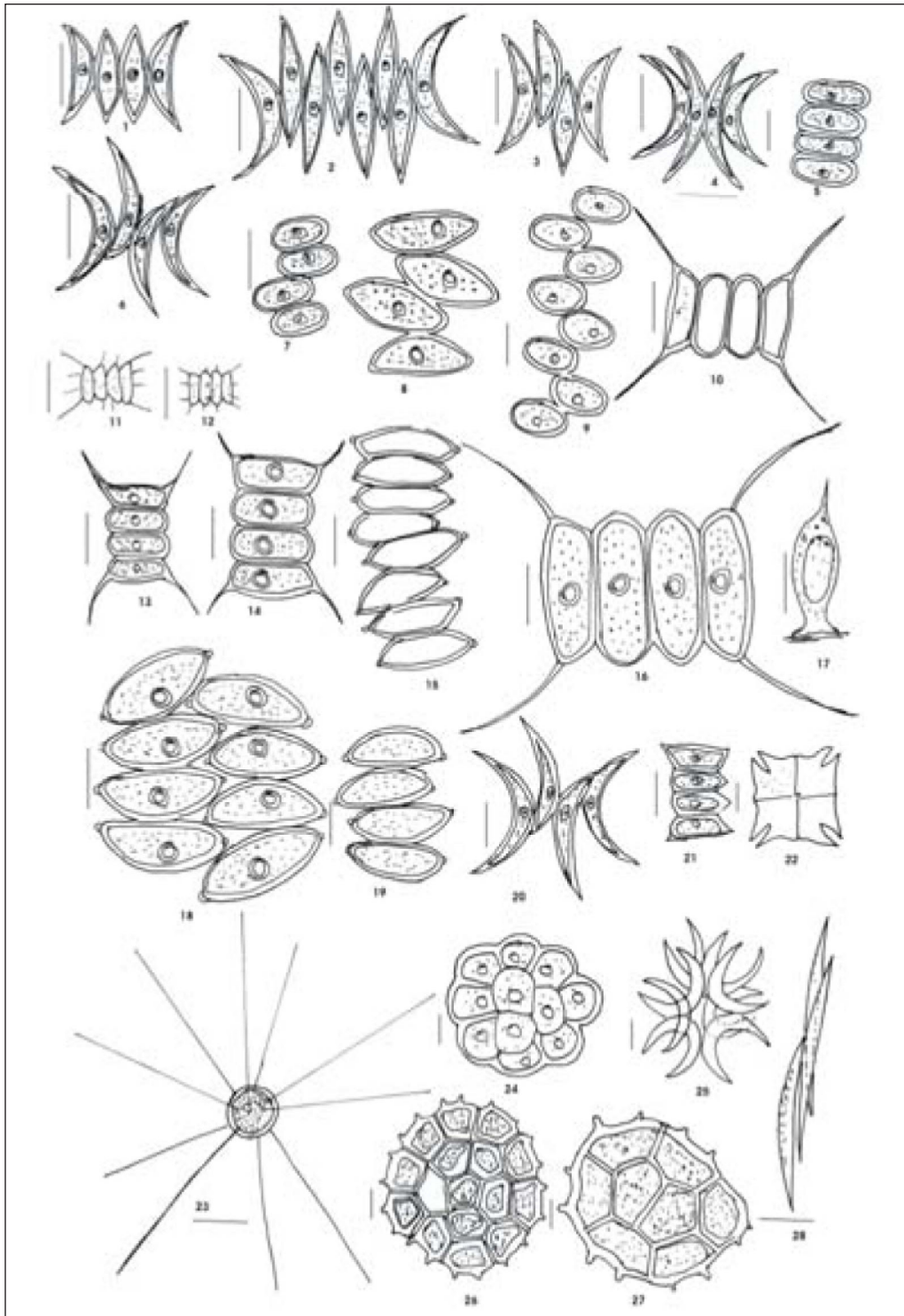
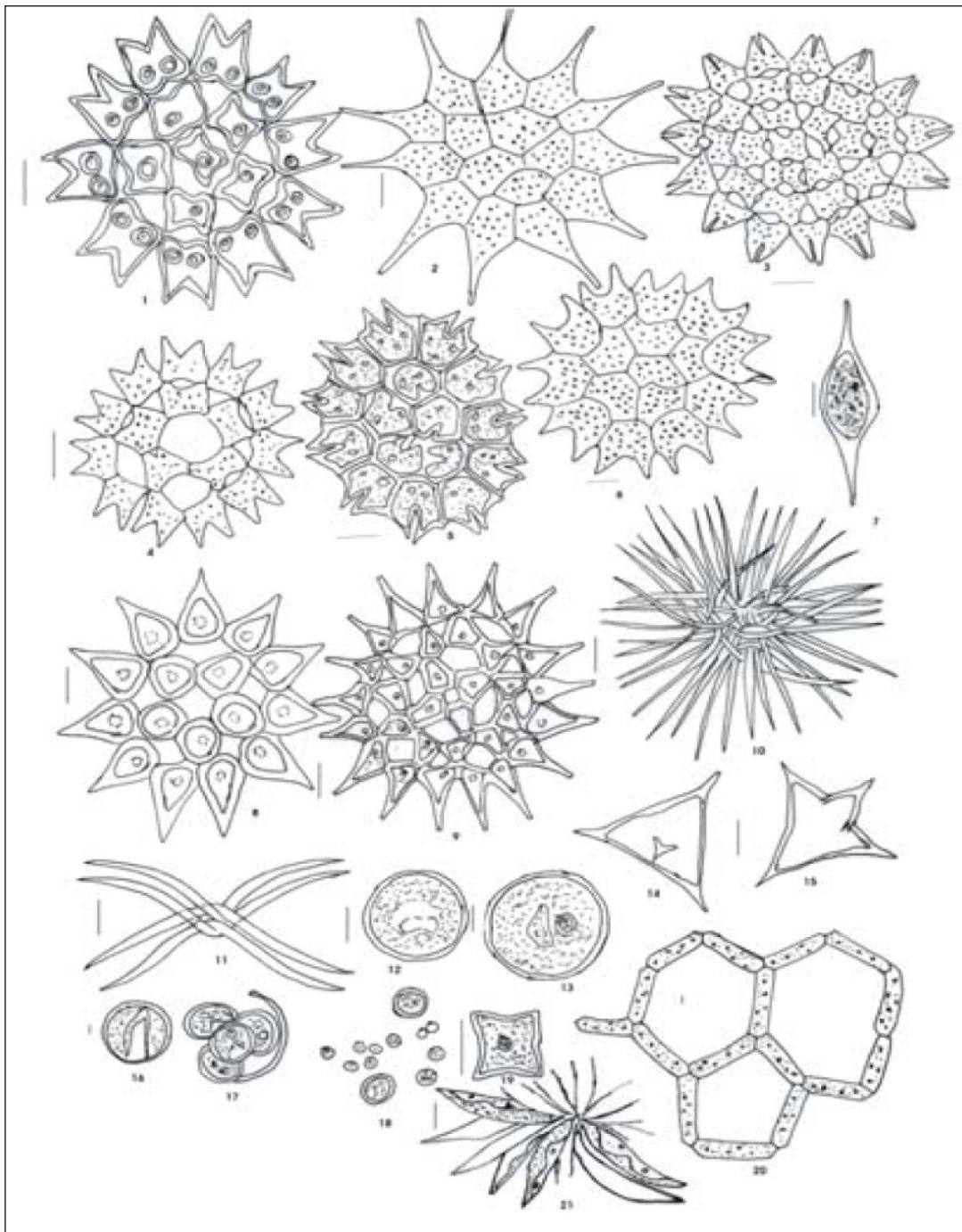


Plate I



Palte II

Legends of plates

Plate-I

- | | |
|--|---|
| 1. <i>Scenedesmus obliquus</i> (TURNIP) KÜETZING; | 14. <i>Scenedesmus quadricauda</i> var. <i>quadrispina</i> (CHODAT) G.M. SMITH; |
| 2. <i>Scenedesmus dimorphus</i> (TURNIP) KÜETZING; | 15. <i>Scenedesmus arcuatus</i> var. <i>capitatus</i> G.M. SMITH; |
| 3. <i>Scenedesmus dimorphus</i> (TURNIP) KÜETZING; | 16. <i>Scenedesmus quadricauda</i> var. <i>maximum</i> W. et G.S. WEST; |
| 4. <i>Scenedesmus acuminatus</i> (LAGERHEIM) CHODAT; | 17. <i>Characium acuminatum</i> A. BRAUN ex KÜETZING; |
| 5. <i>Scenedesmus bijugatus</i> (TURNIP) KÜETZING; | 18. <i>Scenedesmus arcuatus</i> var. <i>capitatus</i> G.M. SMITH; |
| 6. <i>Scenedesmus bernardii</i> G.M. SMITH; | 19. <i>Scenedesmus arcuatus</i> var. <i>capitatus</i> G.M. SMITH; |
| 7. <i>Scenedesmus bijugatus</i> var. <i>bicellularis</i> (CHODAT) Comb. nov.; | 20. <i>Scenedesmus bernardii</i> G.M. SMITH; |
| 8. <i>Scenedesmus bijugatus</i> var. <i>graevenitzii</i> (BERNARD) Comb. Nov.; | 21. <i>Scenedesmus obliquus</i> (TURNIP) KÜETZING; |
| 9. <i>Scenedesmus bijugatus</i> var. <i>alternans</i> (REINSCH) HANSGIRG; | 22. <i>Pediastrum tetras</i> var. <i>excisum</i> (RABENH.) HANSGIRG; |
| 10. <i>Scenedesmus quadricauda</i> (TURNIP) BÈBISSON; | 23. <i>Golenkinia radiata</i> CHODAT; |
| 11. <i>Scenedesmus abundans</i> (KIRCHNER) CHODAT; | 24. <i>Coelastrum microporum</i> NAEG; |
| 12. <i>Scenedesmus abundans</i> var. <i>brevicauda</i> G.M. SMITH; | 25. <i>Selenastrum gracile</i> REINSCH; |
| 13. <i>Scenedesmus quadricauda</i> var. <i>longispina</i> (CHODAT) G.M. SMITH; | 26. <i>Pediastrum integrum</i> NAEGELI; |
| | 27. <i>Pediastrum integrum</i> NAEGELI; |
| | 28. <i>Ankistrodesmus falcatus</i> var. <i>duplex</i> (KUETZ.) G.S. WEST. |

Plate-II

- | | |
|---|--|
| 1. <i>Pediastrum duplex</i> MEYEN | 11. <i>Ankistrodesmus spiralis</i> var. <i>fasciculatus</i> G.M. SMITH |
| 2. <i>Pediastrum simplex</i> MEYEN | 12. <i>Chlorococcum infusionum</i> (SCHRANK) MENEGHINI |
| 3. <i>Pediastrum duplex</i> var. <i>subgranulatum</i> ROCIBORSKI | 13. <i>Chlorococcum infusionum</i> (SCHRANK) MENEGHINI |
| 4. <i>Pediastrum duplex</i> var. <i>clathratum</i> (A. BRAUN) LAGERHEIM | 14. <i>Tetraedron regulare</i> KÜETZ. |
| 5. <i>Pediastrum tetras</i> var. <i>tetraodon</i> (CORDA) HANSGIRG | 15. <i>Tetraedron regulare</i> KÜETZ. |
| 6. <i>Pediastrum boryanum</i> (TURNIP) MENEGHINI | 16. <i>Chlorella vulgaris</i> BEIJERINCK |
| 7. <i>Shroederia planctonica</i> (SKUJA) Comb. nov. | 17. <i>Chlorella vulgaris</i> BEIJERINCK |
| 8. <i>Pediastrum ovatum</i> (EHR.) A. BRAUN | 18. <i>Chlorella vulgaris</i> BEIJERINCK |
| 9. <i>Pediastrum simplex</i> var. <i>duodenarium</i> (BAILEY) RABENH | 19. <i>Tetraedron minimum</i> (A. BRAUN) HANSGIRG |
| 10. <i>Ankistrodesmus spiralis</i> (TURNER) LEMMERMANN | 20. <i>Hydrodictyon reticulatum</i> (LINN.) LAGERHEIM |
| | 21. <i>Actinastrum hantzschii</i> LAGERHEIM |

Habitat- plank tonic in small pond near Salem Lake, RNP, February 2014.

Scenedesmus quadricauda (Turnip) Brèbisson (Pl.I fig. 10); Philipose, 1967, p. 283, Fig. 187 a.

Colonies usually four-celled, sometimes 2- or 8-celled. Cells oblong-cylindrical with rounded ends and arranged in a linear series. Poles of terminal cells with a long, more or less straight or curved spine. Cell wall smooth and without ridges. Cells 3-7 μ broad, 9-18.5 μ long. Spines 6.5 – 15 μ long.

Habitat- small and big pond at Khandar, Gilai Sagar, Chautha Ka Barwara, Piplda Gangapurcity, Lakes and Ponds at RNP 2014

Scenedesmus quadricauda var. *longispina* (Chodat) G. M. Smith (Pl.I fig. 13); Philipose, 1967, p. 285, Fig. 187 b,c.

Colonies usually four celled, sometimes eight celled. Cells ovoid to cylindrical with the cells narrower than in the type and spines longer than length of cells. Cells 4.0 μ broad, up to 11.5 μ long. Spines generally more than 10.5 μ .

Habitat- ponds near Chauth Mata Mandir, Chuth Ka Barwara April 2014.

Scenedesmus quadricauda var. *quadrispina* (Chodat) G. M. Smith (Pl.I fig. 14); Philipose, 1967, p. 285, Fig. 187 d, j.

Colonies usually 2-4 celled. Cells broadly ovoid and about twice as long as broad. Poles of terminal cells with single short recurved spines. Cells 3.7-6.7 μ broad, up to 9.6 μ long.

Habitat - small tank near Lake Salim, RNP, July 2014

Scenedesmus quadricauda var. *maximum* W. et G. S. West (Pl.I fig. 16); Philipose, 1967, p. 286, Fig. 187 g.

Colonies usually four celled. Colonies and cells much larger than in the type. Cells up to 12 μ broad, up to 28 μ long. Spines 21-28 μ long.

Habitat- small stagnant water body, near College. January 2014.

Scenedesmus bernardii G. M. Smith (Pl.I fig. 6); Philipose, 1967, 251, Fig. 162 a, b.

Colonies 4-8 celled. Internal cells fusiform, lunate or sigmoid with acute apices and arranged alternately with their apices in contact with the apices or median portion of adjacent cells. Terminal cells fusiform or lunate, usually attached to the plane of the colony. Cell wall smooth without spines. Width of cells up to 4.47 μ and 23.5 μ long.

Habitat- mid way of RNP, September 2014.

Scenedesmus obliquus (Turnip) Kützing (Pl.I fig. 1); Philipose, 1967, 248, Fig. 159 a, b, c.

Colonies with four celled, erect celled arranged in a linear or sub linear series. Cells fusiform with acute or slightly rounded end and usually with straight sides. Outer side of marginal cells slightly convex. Cells 2.73- 4.47 μ broad and up to 21 μ long.

Habitat- Sewage Canal near Baharawanda Kalan, August 2014.

Scenedesmus dimorphus (Turnip) Kützing (Pl.I fig. 2, 3); Philipose, 1967, 249, Fig. 160 a, b, c

Four or eight celled colonies with alternating series of cells. Outer cells of colony lunate and apices attenuated. Cells 5.57 μ broad and up to 18-25 μ long

Habitat - found in all study area during July, August 2014.

Scenedesmus arcuatus var. *capitatus* G. M. Smith (Pl.I fig. 15, 19); Philipose, 1967, 257, Fig. 166, d-i.

Colonies eight celled arranged in a double series. Cells slightly curved with one side convex and the other straight or slightly concave. Ends of cells stumpy and with nodular thickenings. Cells 7.89 μ broad and up to 16-21 μ long

Habitat- identified from crude culture of Sewage canal Sawaimadhopur, February 2014.

Scenedesmus abundans (Kirchner) Chodat (Pl.I fig. 11); Philipose, 1967, 278, Fig. 184 a-d.

Colonies usually 2-4 celled, rarely eight-celled, and arranged in a linear series. Cells ovoid to oblong-

ovoid. External cells with one or more median lateral spines from the outer face in addition to spines from the four corners of the colony. Internal cells with 1-2 spines from their poles, or without species. Cells 2-7 μ broad, 6-15 μ long. Spines 3.5 – 8 μ long in all study samples.

Habitat; Bohna Village, Rawanjana Dungar, Neemli village-2014

Scenedesmus abundans var. *brevicauda* G. M. Smith (Pl. I fig. 12); Philipose, 1967, 279, Fig. 184, e.

Cells up to 2.73 μ and up to 6.5 μ long. Four celled colony up to 10.7 μ long and 6.5 μ broad.

Habitat – Lake Salim, RNP and adjacent area, Feb 2014.

CONCLUSION

Chlorococcales are part group of micro-algal species and abundantly found in various lakes of Sawaimadhopur district. The most common planktonic and bloom creating species are *Scenedesmus quadricauda* (Turnip) Brebisson, *Scenedesmus abundans* (Kirchner) Chodat, *Scenedesmus bijugatus* (Turnip) Kütetz, *Coelastrum microporum* Naeg., *Pediastrum simplex* Meyen, *Pediastrum duplex* Meyen, *Ankistrodesmus spiralis* (Turnip) Lemmermann, *Chlorella vulgaris* Beijerick, *Hydrodictyon reticulatum* (Linn.) Lagerheim.

Pediastrum species commonly found in oligotrophic water bodies like Lake Salim Lake RNP and Gilai Sagar, *Scenedesmus* species create bloom condition in eutrophic water bodies like sewage canal while *Chlorella vulgaris* Beijerick, abundantly found in Mesotrophic water body like ponds. *Hydrodictyon* species create bloom condition and form thick blanket on water surface in slowly running water bodies or most commonly in drainage of various lakes like Gilai Sagar, Salim Lake RNP during Dec. - March. It was also noted that Chlorococcalean bloom replaced by Cyanobacterial bloom after winter season. *Characium acuminatum* A. Braun ex Kützing found attached on larger hydrophytes or larger filamentous algae like *Cladophora* sp. and *Pithophora* species. The presence of higher population of chlorococcalean population in

organic rich water bodies method of self-purification which has been observed by many workers including degradation of surfactants.

So the knowledge about the dynamics of Chlorococcales will be useful towards self-purification methods. Many chlorococcales species are also found very suitable for biomass production due to their rapid and luxuriant growth.

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