

GENUS COSMARIUM CORDA FROM HARTALA LAKE DISTRICT JALGAON MAHARASHTRA

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During an extensive study on algae from Hartala lake the authors collected about 50 taxa of desmids. The present paper deals with the description of 23 taxa of Genus *Cosmarium* Corda belonging to 10 species, 11 varieties and 2 forms. The lake is situated near village Hartala of Taluka Muktainagar, District Jalgaon, Maharashtra. Hartala is located at 21° North latitude and 76° East longitude. The lake has a capacity of 140 millions of cubic feet and commands an area of 548 acres. The algal samples were collected from different stations around the lake by planktonnet, squeezing the hydrophytes as well as scrapping wooden sticks, rocks, stones etc. The collections were made early in the morning at monthly intervals. The taxa were studied and sketched both from fresh as well as preserved material. Identification of taxa is done with the help of relevant research papers. The material is deposited at the Research Centre, Department of Botany, Dhanaji Nana Mahavidyalaya, Faizpur, District Jalgaon, Maharashtra.

SYSTEMATIC ACCOUNT

1. *Cosmarium awadhensis* Prasad and Mehrotra pl. 1, fig. 1 Prasad and Mehrotra 1977, p. 55, fig. 35, 81.

Cell 34.4 mm long, 28.1 mm broad, isthmus 6.9 mm, cell longer than broad, deeply constricted, sinus wide; semicells subsemicircular, sides having 4 crenations without granules; side view elliptic; apex truncate; cell wall smooth; chloroplast axile with a single pyrenoid in each semicell. (C. N. 261).

2. *Cosmarium bicardia* Reinsch. pl. 1, fig. 2

Gronblad, Scott and Croasdale 1964, p. 16, pl. 4, fig. 80, 81. Cells 20.0 - 22.8 mm long, 16.9 - 20.1 mm broad, isthmus 3.1 - 5.9 mm, cells slightly longer than broad, deeply constricted, sinus linear; semicells semicircular, lateral margin rounded; cell wall smooth; chloroplast with a single pyrenoid in each semicell. (C. Nos. 180, 204, 231).

3. *Cosmarium bioculatum* Breb. var. *canadense* Krieg. and Gerl. pl. 1, fig. 3 Bicudo 1969, p. 495, pl. 126, fig. 144. Cells 22.8 - 23.6 mm long, 20.1 - 22.5 mm broad, isthmus 5.9 mm, cells about as long as broad or very slightly longer, deeply constricted, sinus narrowly

linear with slightly dilated apex; semicells somewhat elliptic, lateral margins rounded; cell wall smooth; chloroplast axile with a single pyrenoid in each semicell. (C. Nos. 180, 205).

4. *Cosmarium circulare* Reinsch var. *minus* Hansgirg. pl. 1, fig. 4 Parra 1975, p. 37, fig. 88.

Cell 30.0 mm long, 21.5 mm broad, isthmus 6.2 mm, cell deeply constricted, sinus linear; semicells subpyramidate, apex rounded to flat; cell wall smooth; chloroplast axile with a single pyrenoid in each semicell. (C. N. 180).

5. *Cosmarium divergens* Krieg. pl. 1, fig. 5

Shaji, Jose and Patel 1989, p. 174, pl. 2, fig. 4. Cell 21.3 mm long, 20.6 mm broad, isthmus 5.0 mm, cell deeply constricted; cell wall crenate; semicells somewhat rectangular with flat apices. (C. N. 261).

6. *Cosmarium granatum* Breb. pl. 1, fig. 6

Suxena and Venkateswarlu 1966, p. 56, pl. 2, fig. 29. Cell 32.3 mm long, 20.0 mm broad, isthmus 6.2 mm, cell medium sized, elongate-rhomboid; semicells subpyramidate with rounded angles, side covering to a broadly rounded or subtruncate apex. (C. N. 180).

7. *Cosmarium granatum* Breb. var. *rotundatum*

Krieg. pl. 1, fig. 7 Bharati and Hegde 1982, p. 742, pl. 2, fig. 7. Cells 28.0 - 32.4 mm long, 18.0 - 20.8 mm broad, isthmus 3.1 - 5.3 mm, cells about 1.5 times longer than broad; semicells more tapered to a narrower apex; cell wall smooth; chloroplast with a single pyrenoid in each semicell. (C. Nos. 169, 170, 180).

8. *Cosmarium impressulum* Elfv. pl. 1, fig. 8

Bharati and Hegde 1982, p. 742, pl. 11, fig. 6. Cells 22.5 - 23.7 mm long, 16.5 - 17.8 mm broad, isthmus 5.0 - 6.6 mm, cells subsemi-circular, deeply constricted; cell wall dentate, apices flat; chloroplast axile with a single pyrenoid in each semicell. (C. Nos. 169, 180).

9. *Cosmarium impressulum* Elfv. f. *minus* Turn.

pl. 1, fig. 9 Bharati and Hegde 1982, p. 742, pl. 11, fig. 3. Cells 22.5 - 24.0 mm long, 15.0 - 16.2 mm broad, isthmus 3.1 - 5.0 mm, margins with 3 or 4 undulations, apex flat. (C. Nos. 112, 158).

10. *Cosmarium levae* Raben. var. *octangularis* (Wille) West & West. pl. 1, fig. 10 Prescott 1966, p. 16,

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pl. 5, fig. 39.

Cell 17.8 mm long, 15.3 mm broad, isthmus 4.0 mm, cell small, deeply constricted in the middle, sinus linear; lateral margins of semicells more angular, slightly concave just below the apical margin which is moderately retuse; chloroplast axile with a single pyrenoid in each semicell. (C. N. 170).

11. *Cosmarium meneghinii* Breb. f. *tricrenata* Turn. pl. 1, fig. 11

Turner 1892, p. 71, pl. 8, fig. 25. Cell 15.2 mm long, 11.5 mm broad, isthmus 3.4 mm, cell longer than broad, deeply constricted; semicells subsemicircular; cell wall crenate with generally three crenations; chloroplast axile with a single pyrenoid in each semicell. (C. N. 261).

12. *Cosmarium phaseolus* Breb. var. *subbireme* Racib. pl. 1, fig. 12

Suxena and Venkateswarlu 1968, p. 190, pl. 5, fig. 38 a-c. Cell 21.2 mm long, 22.3 mm broad, isthmus 6.2 mm, cell broader than long, sinus dilated at the tip; semicells are rounded very much narrowed toward the apices; chloroplast axile with a single pyrenoid in each semicell. (C. N. 180).

13. *Cosmarium portianum* Arch. var. *majus* Scott & Prescott. pl. 2, fig. 1

Bharati and Hegde 1982, p. 748, pl. 4, fig. 1. Cells 78.4 - 84.7 mm long, 64.6 - 66.9 mm broad, isthmus 25.4 - 36.9 mm, cells longer than broad, deeply constricted in the middle, sinus broad; semicells elliptic, crenate; cell wall uniformly granular; chloroplast axile with two pyrenoids in each semicell. (C. Nos. 204, 249).

14. *Cosmarium portianum* Arch. var. *nephroideum* Wittr. pl. 2, fig. 2

Bharati and Hegde 1982, p. 748, pl. 5, fig. 5. Cells 25.0 - 26.5 mm long, 19.3 - 20.0 mm broad, isthmus 7.8 - 8.8 mm, cells longer than broad, deeply constricted in the middle, sinus wider and open; semicells elliptic; cell wall uniformly granular, granules rounded; chloroplast axile with a single pyrenoid in each semicell. (C. N. 217).

15. *Cosmarium pseudopyramidatum* Lundell pl. 2, fig. 3

Prescott 1966, p. 21, pl. 4, fig. 21. Cell 29.3 mm long, 19.0 mm broad, isthmus 5.6 mm, cell about 1.5 times longer than broad, deeply constricted in the middle, sinus narrowly linear with a slightly dilated apex; semicells pyramidate and oblong, basal angle slightly rounded, apex linear; chloroplast axile with a single pyrenoid in each semicell. (C. N. 158).

16. *Cosmarium regnellii* Wille var. *pseudoregnellii* (Messik.) W. Krieg. pl. 2, fig. 4

Tomaszewicz 1988, p. 52, pl. 10, fig. 6. Cell 18.1 mm long, 11.2 mm broad, isthmus 3.4 mm, cell longer than broad, deeply constricted in the middle, sinus narrow, linear; semicells oblong, undulate, apex linear; cell wall smooth. (C. N. 230).

17. *Cosmarium reniformae* (Ralfs) Arch. pl. 2, fig. 5

Sinha and Mishra 1967, p. 102, fig. 3. Cells 43.8 - 45.4 mm long, 38.5 - 43.1 mm broad, isthmus 11.5 mm, cells as long as broad or slightly longer than broad, deeply constricted in the middle, sinus somewhat narrowly linear with dilated apex; semicells reniform; lateral view of semicell circular; apical view elliptic; cell wall uniformly granulate; chloroplast axile with two pyrenoids in each semicell. (C. Nos. 168, 268).

18. *Cosmarium subspeciosum* Nordst. var. *transiens* Messik. pl. 2, fig. 6

Bharati and Hegde 1982, p. 725, pl. 9, fig. 2. Cells 32.2 - 40.0 mm long, 24.3 - 31.2 mm broad, isthmus 8.1 - 8.5 mm, cells longer than broad, deeply constricted, sinus linear with the apex slightly dilated; semicells subcircular, margins regularly crenate, 5-7 crenations; chloroplast with a single pyrenoid in each semicell. (C. N. 261).

19. *Cosmarium subtumidium* Nordst. var. *borgei* Krieg. & Gerl. pl. 2, fig. 7

Gronblad and Croasdale 1971, p. 17, pl. 6, fig. 75, 76. Cell 34.0 mm long, 24.0 mm broad, isthmus 6.6 mm, cell longer than broad, deeply constricted in the middle, sinus dilated towards the apices; semicells pyramidal, basal angles rounded, apex rounded; in side view circular; in end view broadly elliptic and thicker; chloroplast with a single pyrenoid in each semicell. (C. N. 180).

20. *Cosmarium subtumidium* Nordst. var. *minor* Strom pl. 2, fig. 8

Gronblad and Croasdale 1971, p. 18, pl. 6, fig. 77. Cells 18.7 - 29.9 mm long, 12.5 - 20.8 mm broad, isthmus 4.1 - 5.3 mm, cells longer than broad, deeply constricted in the middle, sinus narrowly linear with a slightly dilated apex; semicells pyramidate-semicircular, basal angles rounded, lateral margin convex; lateral view of semicell circular; apical view elliptic; chloroplast axile with a single pyrenoid in each semicell. (C. Nos. 181, 182).

21. *Cosmarium trilobulatum* Reinsch pl. 2, fig. 9

Prescott 1966, p. 23, pl. 5, fig. 36, 41. Cell 12.5 mm long, 10.9 mm broad, isthmus 2.5 mm, cell very slightly longer than broad, deeply constricted in the middle, sinus narrowly linear with slightly dilated apex; semicells somewhat three lobed, basal lobes short,

subrectangular with rounded angles, apical lobe widest, apex straight or slightly convex, incisions between lobes wide and shallow; lateral view of semicell broadly elliptic; apical view elliptic; cell wall smooth, colourless; chloroplast axile with a single pyrenoid in each semicell. Cell showing starting of division in the figure. (C. N. 158).

22. *Cosmarium vexatum* West pl. 2, fig. 10

Prescott 1966, p. 23, pl. 4, fig. 6. Cells 35.4 - 42.3 mm long, 31.5 - 39.2 mm broad, isthmus 9.2 - 11.8 mm, cells longer than broad, deeply constricted in the middle, sinus narrowly linear with dilated apex;

semicells elliptic, margins crenate; chloroplast axile with two pyrenoids in each semicell. (C. Nos. 170, 198, 231, 268).

23. *Cosmarium wembaerense* Schindler pl. 2, fig. 11

Agarkar and Agarkar 1973, p. 15, pl. 5, fig. 51. Cell 31.3 mm long, 21.9 mm broad, isthmus 4.6 mm, cell longer than broad, deeply constricted in the middle, sinus narrowly linear, dilated towards the apices; semicells slightly elliptic, basal angle rounded, slightly straight or convex; chloroplast axile with a single pyrenoid in each semicell. (C. N. 261).

PLATE 1

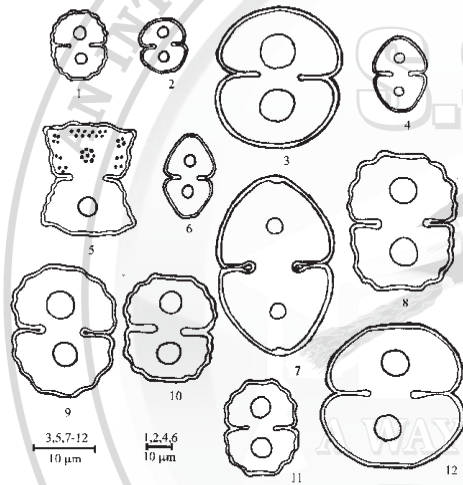


Fig. 1. *Cosmarium awadhensis* Prasad and Mehrotra, Fig. 2. *C. bicardina* Reinsch., Fig. 3. *C. bicusulatum* Breb. var. *canadense* Krieg. and Gerl., Fig. 4. *C. circulare* Reinsch var. *minus* Haugsting., Fig. 5. *C. divergens* Krieg., Fig. 6. *C. granatum* Breb., Fig. 7. *C. granatum* Breb. var. *retundatum* Krieg., Fig. 8. *C. impressulum* Elfv., Fig. 9. *C. impressulum* Elfv. f. *minus* Turm., Fig. 10. *C. levea* Raben. var. *octangulatis* (Wille) West & West., Fig. 11. *C. meneghinii* Breb. f. *tricornata* Turm., Fig. 12. *C. phaseolus* Breb. var. *subhirsute* Racib.

PLATE 2

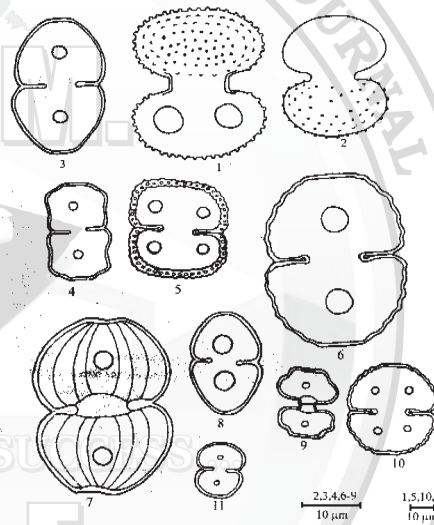


Fig. 1. *C. portulacum* Arch. var. *major* Scott & Prescott., Fig. 2. *C. portulacum* Arch. var. *nephroidicum* Witt., Fig. 3. *C. pseudopyramidatum* Lundell, Fig. 4. *C. regnellii* Wille var. *pseudoregnellii* (Messik.) W. Krieg., Fig. 5. *C. reniformae* (Ralfs) Arch., Fig. 6. *C. subspectuosum* Nordst. var. *transiens* Messik., Fig. 7. *C. subundatum* Nordst. var. *borgei* Krieg. & Gerl., Fig. 8. *C. subundatum* Nordst. var. *minor* Strom, Fig. 9. *C. trilobatum* Reinsch, Fig. 10. *C. vexatum* West, Fig. 11. *C. wembaerense* Schindler.

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