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CYANOPHYCEAE FROM ABHORA DAM OF JALGAON DISTRICT, MAHARASHTRA

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ABSTRACT

The present communication deals with the enumeration of 21 species of Cyanophyceae from Abhora dam of Raver Tahsil of Jalgaon district, Maharashtra. A total of 07 genera viz. *Chroococcus* (2), *Gloeocapsa* (1), *Merismopedia* (2), *Spirulina* (3), *Oscillatoria* (10), *Phormidium* (1), *Nostoc* (2) All these species have been reported for the first time from the study site.

Keywords: *Algae, Cyanophyceae, Abhora Dam, Raver, Maharashtra*

INTRODUCTION

During the course of studies on the algal flora and ecology of Abhora dam, Cyanophyceae along with other algal samples were collected in acid washed collection bottles and preserved in 4% formalin for further taxonomic investigation. In this communication description of 21 taxa of cyanophyceae is given. Our knowledge of cyanophyceae in Maharashtra is known through the work of Thomas and Gonzalves (1965), Kamat (1965), Mahajan (1988), Tarar *et al.*, (1998), Mahajan (2004), Jawale *et al.*, (2005), Nandan (2010) and Kumawat and Patil (2010), Mahajan (2012).

MATERIALS AND METHODS

The algal sample collections were made for one year from two different location of Abhora dam from April, 2007 to March, 2008. The dam is located near foot of Satpura hills (76° 01' North latitude and 21° 18' East longitude) in the Raver Tahsil of Jalgaon district, Maharashtra. The collected samples were preserved in 4% formalin for microscopic studies and line drawings were drawn with the help of camera lucida technique from fresh as well as preserved material. Identification was made with the help monograph of Desikachary (1959), Iyengar and Desikachary (1981) and relevant research papers.

Systematic Enumeration

***Chroococcus schizodermaticus* West**

Plate 1, Figure 1

B. N. Prasad and P. K. Misra, 1992, p. 31, Plate 5, Figure 6.

Cells 7.6-8.4 µm in diameter arranged loosely in groups of four, somewhat reniform each cell surrounds very distinct, yellowish-brown lamellated sheath, blue green.

Habitat: Coll. No. 456, AI Jan., 453 AII Jan date 25/01/2008.

***Chroococcus tenax* (Kirch.) Hieron**

Plate 1, Figure 2

T. V. Desikachary, 1959, p. 102, Plate 26, Figures 7, 16.

Cells mostly in groups of in 2-4, blue green, without sheath 8.0 µm in diameter, with sheath 27.2 µm in diameter, sheath colourless, very thick, distinctly lamellated, 3-4 lamellae.

Habitat: Coll. No. 415 AII June date 30/06/2007

***Gloeocapsa punctata* Naeg.**

Plate 1, Figure 3

T.V. Desikachary, 1959, p.115, Plate 23, Figure 2

Thallus gelatinous, light blue green, cells spherical or oblong, without sheath 3.8 µm in diameter, with sheath 6.9 µm in diameter, sheath hyaline, unlamillated, cells 2-8 in a group.

Habitat: Coll. No. 415 AII June date 30/06/2007

***Merismopedia glauca* (Ehr.) Naeg.**

Plate 1, Figure 4

B. N. Prasad and P. K. Misra, 1992, p. 44, Plate 6, Figure 5.

Colonies 16-64-128 celled; light blue green; cells oval or hemispherical, present in multiples of four, regularly arranged, 2.3-3.8µm broad.

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Habitat: Coll. No. 414 AII June, date 30/06/2007.

***Merismopedia punctata* Meyen.**

Plate 1, Figure 5

G. R. Hegde and S. G. Bharati, 1983, p.51, Plate 1, Figure 2.

Colonies small 4-64 celled cells not closely packed, spherical or ovoid, 3.0-3.4 μm broad, pale blue green.

Habitat: Coll. Nos. 457AI Feb., 414AII June, date 29/02/2008, 30/06/2007.

***Spirulina laxissima* G.S.West**

Plate 1, Figure 6

G. W. Prescott, 1982, p. 480, Plate 107, Figure 17.

Trichomes bright blue-green, very slender twisted in a very loose spiral; spirals regular 1.1 μm broad and 12.2 μm distant from each other.

Habitat: Coll. No. 496AII Feb., date 29/02/2008.

***Spirulina major* Kuetz. ex Gomont**

Plate 1, Figure 7

T. V. Desikachary, 1959, p.196, Plate 36, Figure 13.

Trichomes dark blue-green, active with great length, loosely regularly spirally coiled; spirals 2.3-2.6 μm broad and 6.1 μm distant.

Habitat: Coll. No. 435AI Dec., date 16/12/2007.

***Spirulina meneghiniana* Zanard. ex Gomont**

Plate 1, Figure 8

T. V. Desikachary, 1959, p. 195, Plate 36, Figure 8.

Trichomes bright blue-green, flexible loosely regularly spirally coiled; spiral 1.5 μm broad and 3.8 μm distant from each other

Habitat: Coll. No. 475 AI April, date 28/04/2007.

***Oscillatoria acutissima* Kufferath**

Plate 1, Figure 9

B. N. Prasad and M. N. Srivastava, 1992, p.60, Plate 8, Figure 6.

Trichomes solitary, light blue-green, almost straight, gradually attenuated towards sharply pointed and curved apex; cells usually shorter than broad but very rarely slightly longer than broad, not constricted at septa, 3.4 μm in broad, 1.1 μm long; cell contents light blue green homogenous without granules and gas vacuoles; end cells somewhat acute-conical, not capitate, calyptra absent; cell wall thick, smooth.

Habitat: Coll. No. 422AI Oct., date 07/10/2007.

***Oscillatoria chalybea* (Mertens) Gomont**

Plate 1, Figure 10

T. V. Desikachary, 1959, p. 218, Plate 38, Figure 3.

Trichome straight or lightly spirally coiled, constricted at the cross walls, apex bent, 5.4-7.2 μm broad; cells 3.6-5.4 μm long, end cell obtuse, not capitate, without calyptra.

Habitat: Coll. No. 422AI Oct., date 07/10/2007.

***Oscillatoria formosa* Bory ex Gomont**

Plate 1, Figure 11

G. W. Prescott, 1982, p. 487, Plate 109, Figures 10,11.

Trichome elongated, aggregated to form a dark blue-green plant mass; straight or somewhat curved, especially at the apex, slightly attenuated, may or may not be constricted at the cross walls, which are granular, 4.9 μm in diameter; cells quadrate 3.0 μm long; apical cell conical, not capitate, without a calyptra.

Habitat: Coll. No. 422AI Sep., date 29/09/2007.

***Oscillatoria granulata* Gardn.**

Plate 1, Figure 12

M. M. Watanabe, M. Watanabe and T. Yamagishi, 1979, p.82, Figures 5, 6

Cell 5.4 μm broad, non-constricted at the cross walls which are distinctly granular; trichome straight or somewhat curved, especially at the apex, which is slightly attenuated; apical cell not capitate and without a calyptra.

Habitat: Coll. No. 457 AI Feb., date 29/02/2008.

***Oscillatoria proboscidea* Gomont**

Plate 1, Figure 13

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B.N. Prasad and M.N. Srivastava 1992, p. 69 plate 8 figure 9

Trichomes single dark blue-green, flexuous or more or less erect, distinctly attenuated and slightly curved at the ends, not constricted at the cross walls, 13.6 µm in diameter; cells ¼ to 1/6 times as long as broad, 3.6-4.5 µm long; end cells almost truncate, capitate with thick convex outer membrane.

Habitat: Coll. No. 401AI April, date 28/04/2007.

Oscillatoria raoi De Toni

Plate 1, Figure 14

T. V. Desikachary, 1959, P. 223, Plate 42, Figures 16-19.

Trichomes straight usually of uniform thickness and only rarely slightly tapering at the ends, without constrictions at the joints, 6.1 µm broad, septa indistinct, but with distinct granules closely arranged on either side; cells 4.6 µm long, end cells rounded rarely conical, sometimes with constrictions at the septum, without any calyptra.

Habitat: Coll. No. 435AI Dec., date 16/12/2007.

Oscillatoria subbrevis Schmidle

Plate 1, Figure 15

B.N. Prasad and M.N. Srivastava 1992, p. 71 plate 9 figure 2

Trichomes solitary, straight or slightly curved, pale blue-green, not tapering towards the apex, not constricted at the cross walls, 5.3 µm in diameter; cells 1/3 to ¼ times as long as broad, 1.5 µm long; end cells rounded, not capitate, calyptra absent; Cell wall thick, smooth.

Habitat: Coll. No. 422AI Sep., date 29/09/2007.

Oscillatoria tenuis Ag. ex Gomont var. tergestina (Kuetz.) Rabenh.

Plate 1, Figure 16

G. L. Tiwari, 1975, p. 772, Plate 4, Figure 1.

Trichome free, straight, fragile, slightly constricted at the cross-walls, 4.9 µm broad, not attenuated at the ends, cells quadratic 3.4-3.8 µm long; end cell with broadly rounded apex, more or less hemispherical with thickened outer membrane.

Habitat: Coll. No. 456 AI Jan., date 25/01/2008.

Oscillatoria terebriformis Ag. ex Gomont

Plate 1, Figure 17

B.N. Prasad and M.N. Srivastava 1992, p. 75 plate 8 figure 4

Trichome thin aggregated to forming light blue-green thallus straight below, gently tapering and spirally twisted at ends, unconstricted at the cross walls, 4.6-4.9 µm in diameter; cells quadrate or longer than broad, 3.0-3.8 µm long; ends rounded or obtusely rounded, not capitate, calyptra absent; cell wall thick, smooth.

Habitat: Coll. No. 422AI Sep., date 29/09/2007.

Oscillatoria vizagapatensis Rao

Plate 1, Figure 18

B.N. Prasad and M.N. Srivastava 1992, p. 16 plate 8 figure 12

Trichome solitary pale blue-green uniformly broad, straight, not constricted at the cross walls. 14.2 µm in diameter; cells much shorter than broad, 1.9 µm long; end cells rounded, capitate forming a cap with thick outer membrane, cell wall thick, smooth.

Habitat: Coll. No. 475AI April, date 28/04/2007.

Phormidium retzii (Ag.) Gomont

Plate 1, Figure 19

B.N. Prasad and M.N. Srivastava 1992, p. 83 plate 10 figure 11&12

Thallus thick, bright blue-green, compact, sometimes forming branched tufts; filaments more or less straight, densely entangled with each other, sheaths very thin, sometimes diffuent; trichome 4.9 µm broad, not constricted at the cross walls, straight, not tapering towards apices; cells somewhat quadrate or cylindrical 3.4-3.8 µm long; cell contents olive blue green, end cells not attenuated truncate, calyptra absent; cell wall thick, smooth.

Habitat: Coll. No. 457AI Feb., date 29/02/2008.

Nostoc commune Vaucher ex Born.et Flah.

Plate 1, Figure 20

T.V. Desikachary, 1959, p.387, Plate 68, Figure 3

Thallus firm, gelatinous, expanded, later flattened, blue-green, filaments entangled, sheath distinct only at periphery; trichome 4.0-6.8 µm broad; barrel shaped, nearly spherical, nearly as same as broad, 6.8 µm long; heterocysts spherical, 8.1 µm broad, as big as vegetative cells.

Habitat: Coll. No. 432AII Nov., date 07/11/2007.

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Nostoc sphaericum Vaucher ex Born. et Flah.

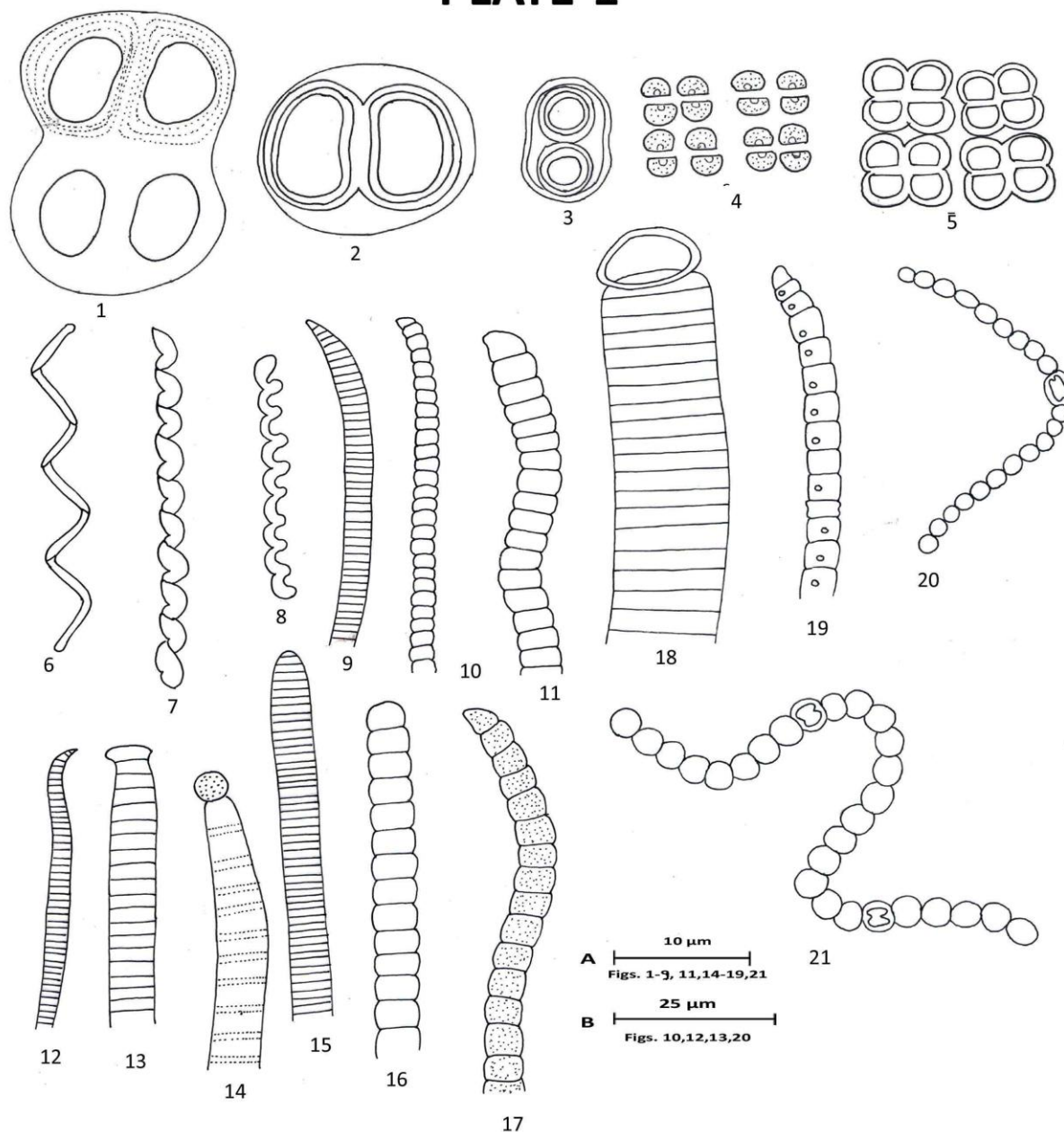
Plate 1, Figure 21

G. L. Tiwari and R. S. Pandey, 1976, p. 706, Plate 3, Figure 3.

Trichome densely entangled, 3.0-3.8 μm broad; cells compressed spherical, barrel shaped, 3.4- 4.2 μm long; heterocysts terminal and intercalary, sub-spherical; 3.8-4.6 μm broad; spores not seen.

Habitat: Coll. No. 442AII Dec., date 16/12/2007.

PLATE-1



Figures 1-21: 1. *Chroococcus schizodermatics*, 2. *Tenax* 3. *Gloeocapsa punctata*, 4. *Meismopedia glauca*, 5. *M. Punctata*, 6. *Spirulina laxissima* 7. *S. Major*, 8. *S. Meneghiniana*, 9. *Oscillatoria acutissima*, 10. *O. Chalybea*, 11. *O. Formosa* 12. *O. Granulate*, 13. *O. Proboscidea*, 14. *O. Raai*, 15. *O. Subbrevis*, 16. *O. Tennis* var. *Tergestina*, 17. *O. Terebriformis* 18. *O. Vizagapatensis*, 19. *Phormidium retzii*, 20. *Nostoc commune*, 21. *N. Sphaericum*

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Conclusion

In the present study a total of 21 taxa of 07 genera belonging to class Cyanophyceae have been described. They were recorded in all seasons (summer, winter and rainy). All species are new records from this region.

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