

Some Filamentous Blue Green Algae from Sukhana Dam, Aurangabad, Maharashtra

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ABSTRACT: Algae from Sukhana dam, Aurangabad were investigated from 2015-2017. Algal samples were collected from 3 different locations of the water body. Several taxa belonging to class Chlorophyceae, Bacillariophyceae, Cyanophyceae and Euglenophyceae were observed. In the present study 21 species of genus *Oscillatoria*, belonging to class Cyanophyceae were observed. These are *Oscillatoria acuta*, *O. annae*, *O. bornetii*, *O. brevis* var. *non granulata*, *O. calcuttensis*, *O. chalybea*, *O. chilkinsis*, *O. cortiana*, *O. curviceps*, *O. fracta*, *O. jenensis*, *O. limosa*, *O. mougeotia*, *O. nigra*, *O. ornate* var. *Crassa*, *O. perornata*, *O. sancta*, *O. simplicissima*, *O. subbrevis*, *O. tenuis*, *O. vizagapatensis*. These species are being reported for the first time from the study area.

Keywords: Cyanophyceae; *Oscillatoria*; blue green algae and Sukhana dam.

INTRODUCTION: In Aurangabad district, Sukhana dam is constructed on Sukhana river near Aurangabad at village Garkheda. It is about 32 km away from Aurangabad city of Maharashtra. It is about 3536 m in length and 18.92 m height. The gross storage of water is 21,340,000 m³. It is an earthen dam, chiefly constructed for irrigation purpose on the river Sukhana. The dam is having good capacity of water storage. The depth of water on the banks of the water body is less than 1 m. This area of water body is biologically active having flora and fauna. Several species of migratory birds visit this water body during winter. Different species of algae and fishes are observed in this region. Blue green algae is an important group and several species belonging to this group were observed in the study area. As these prokaryotic algae are pollution tolerant, its study is important as effluents from some factories are drained in this water body.

MATERIAL AND METHODS: For algal collection, random sampling technique has been applied. The sample collections were made for 3 consecutive years (2015-2017) during the months of September to February. The algal samples were preserved in 4% formalin in 35 mL plastic bottles, these samples were numbered consecutively for further studies. Morphological studies of the specimens were done using Research Microscope and the photographs were taken using

Nicon Camera. The algal species observed are described in the present paper.

The species of *Oscillatoria* were identified using Desikachary (1959), Prasad and Srivastava (1992) and other relevant literature.

RESULTS AND DISCUSSIONS: During present investigation, 21 species of *Oscillatoria* were observed which are described as under.

Class: Cyanophyceae

Order: Nostocales

Family: Oscillatoriaceae

Genus: *Oscillatoria*

Genus: *Oscillatoria* Vaucher

1) *Oscillatoria acuta* Bruhl & Biswas (Pl.1 Fig.1)

Tiwari and Chauhan, 2006, p 113, pl 1, f 19: Trichomes in bundles, nearly straight, apices attenuated and curved, blue-green in color, separation disc present, not attenuated at the cross wall, 5 µm in diameter.

2) *O. annae* van Goor (Pl.1 Fig.2)

Desikachary, 1959, p 203, pl 38, f 13: Thallus dark blue green in color, straight, not attenuated at the end, somewhat constricted at the cross wall, terminal cell

rounded and without calyptra, separation disc prominent, 8 µm in diameter.

3) *O. bornetii* Zukal (Pl.1 Fig.3)

Prescott, 1951, p 486, pl 108, f 19: Thallus blue-green, straight, not attenuated at the apex, apex rounded and without calyptra, not constricted at the cross wall, separation disc present, 12 µm in diameter.

4) *O. brevis* (Kuetzing) Gomont var. *non-granulata* Kamat (Pl.1 Fig.4)

Ashtekar, 1980, p 225, pl 59, f 462: Trichomes blue-green in color, straight, somewhat bent at the cross wall, end cell conical without calyptra, 2 µm in diameter.

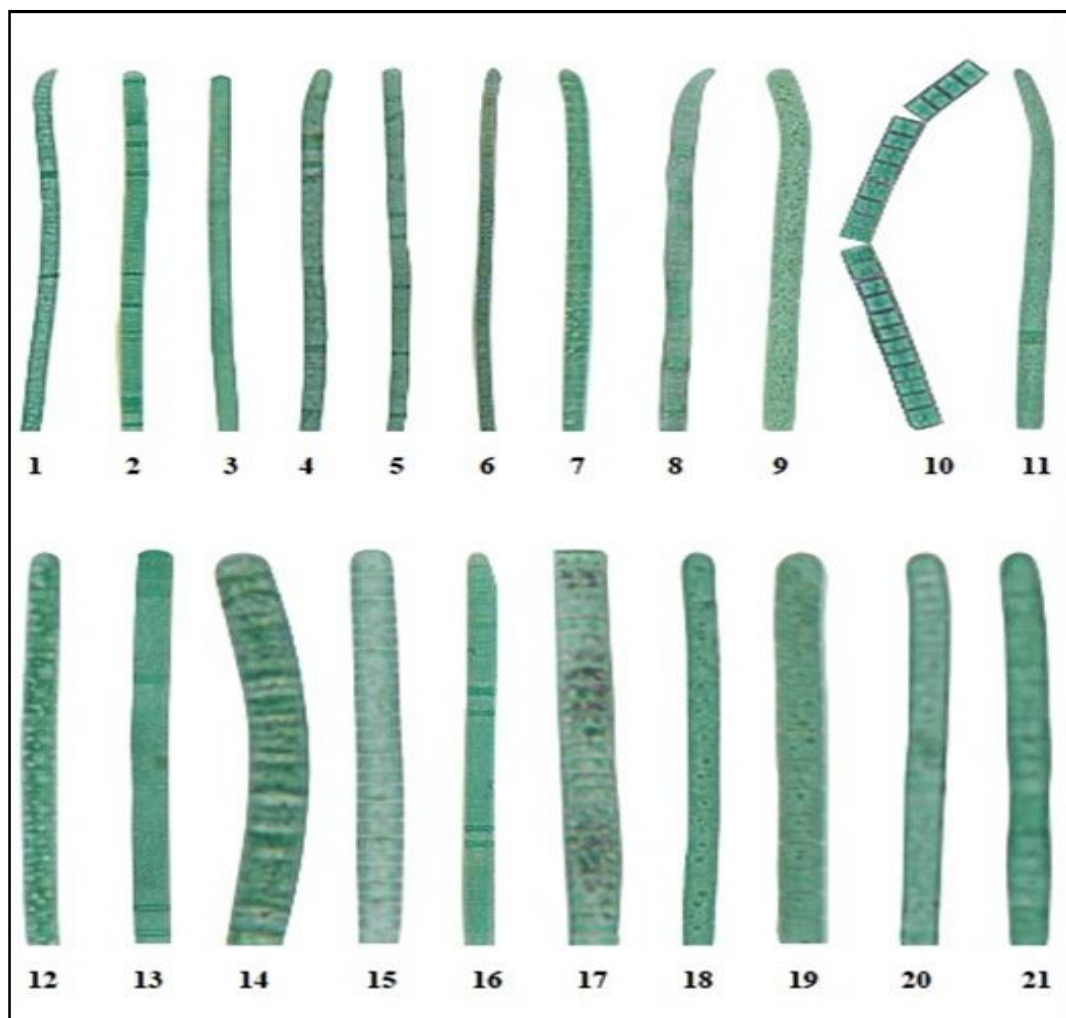


Plate: 1

Figures: 1) *Oscillatoria acuta* 2) *O. annae* 3) *O. bornetii* 4) *O. brevis* var. *non granulata* 5) *O. calcuttensis* 6) *O. chalybea* 7) *O. chilkinsis* 8) *O. cortiana* 9) *O. curviceps* 10) *O. fracta* 11) *O. jenensis* 12) *O. limosa* 13) *O. mougeotia* 14) *O. nigra* 15) *O. ornate* var. *crassa* 16) *O. perornata* 17) *O. sancta* 18) *O. simplicissima* 19) *O. subbrevis* 20) *O. tenuis* 21) *O. vizagapatensis*.

5) *O. calcuttensis* Biswas (Pl.1 Fig.5)

Shukla *et al.*, 2009, p 66, pl 1, f 5: Trichomes solitary, straight, brown in color, leathery, not constricted at the cross wall, separation disc distinct, thallus slightly attenuated at the end nearly flat, trichomes 12 µm in diameter.

6) *O. chalybea* Mertens (Pl.1 Fig.6)

Prescott, 1951, p 486, pl 109, f 8: Trichomes blue green in color, straight, separation disc present, slightly tapering towards the apex, apical cell conical, cells 10 µm in diameter.

7) *O. chilkinsis* Biswas (Pl.1 Fig.7)

Kesarwani *et al.*, 2015, p 24, pl 1, f 1: Trichomes light blue- green in color, slightly tapering towards the apex

and curved, a little constricted at the cross wall, apical cell without calyptra, trichome 6 µm in diameter.

8) *O. cortiana* Meneghini ex Gomont (Pl.1 Fig.8)

Shukla *et al.*, 2009, p 67, pl 1, f 4: Trichomes solitary, blue green in color, straight, slightly constricted at the cross wall, separation disc present, taper at the apex, apices bent, without calyptra, 6 µm in diameter.

9) *O. curviceps* Ag ex. Gomont (Pl.1 Fig.9)

Tiwari and Chauhan, 2006, p 111, pl 1, f 11: Trichomes light-blue in color, straight, bent at the apices, not constricted at the cross wall, end cell rounded and without calyptra, 10 µm in diameter.

10) *O. fracta* Carlson (Pl.1 Fig.10)

Kesarwani *et al.*, 2015, p 25, pl 1, f 10: Trichome blue-green in color, straight but somewhat bent intermittently, not attenuated towards the apex, apical cell flat, cross wall distinct, 10 µm in diameter.

11) *O. jenensis* Schmidle (Pl.1 Fig.11)

Kesarwani *et al.*, 2015, p 27, pl 2, f 27: Trichomes dark blue green in color, tapering towards the end and slightly bent, terminal cell conical, end wall not thickened, without calyptra, not constricted at the cross-wall, 20 µm in diameter.

12) *O. limosa* Ag. ex Gomont (Pl.1 Fig.12)

Kesarwani *et al.*, 2015, p 26, pl 2, f 19: Trichomes straight, solitary, blue green in color, cross wall distinct, not constricted at the cross wall, apical cell rounded, 12 µm in diameter.

13) *O. mougeotia* Kuetzing (Pl.1 Fig.13)

Astekar, 1980, p 232, pl 59, f 476: Trichome blue green, long, straight, not constricted at the cross wall, ends not attenuated, without calyptra, 5µm in diameter.

14) *O. nigra* Vaucher (Pl.1 Fig.14)

Prescott, 1951, p 489, pl 109, f 18: Trichomes dark green, in color, straight but slightly curved at the end, not constricted at the cross wall, apical cell round without calyptra, 10 µm in diameter.

15) *O. ornata* Kutz. ex Gomont var. ***crassa*** Rao (Pl.1 Fig.15)

Desikachary, 1959, p 206, pl 39, f 11: Trichome dark - blue in color, straight, distinctly constricted at the cross wall, cross wall distinct, thallus of uniform thickness, terminal cell a little convex and without calyptra, 12 µm in diameter.

16) *O. perornata* Skuja (Pl.1 Fig.16)

Desikachary, 1959, p 205, pl 41, f 14: Trichome pale-blue in color, straight, somewhat curved at the apex, constricted at the cross wall, separation disc distinct, terminal cell hemispherical, without calyptra, 10 µm in diameter.

17) *O. sancta* (Kutz.) Gomont (Pl.1 Fig.17)

Dwivedi *et al.*, 2008, p 31, pl 1, f 14: Trichome blue-green in color, straight slightly constricted at the cross wall, end cell flattened with outer wall slightly thickened, 10 µm in diameter.

18) *O. simplicissima* Gomont (Pl.1 Fig.18)

Kesarwani *et al.*, 2015, p 25, pl 1, f 13: Thallus blue-green, trichome straight not constricted at the cross wall, not attenuated towards the end, apical cell rounded without calyptra, 10 µm in diameter.

19) *O. subbrevis* Schmidle (Pl.1 Fig.19)

Desikachary, 1959, p 207, pl 37, f 2: Trichome blue-green in color, solitary, straight, apex not constricted at the cross wall, end wall rounded, without calyptra, 6 µm in diameter.

20) *O. tenuis* Ag. ex Gomont (Pl.1 Fig.20)

Kesarwani *et al.*, 2015, p 25, pl 1, f 9: Trichomes planktonic, forming blue green mats, slightly curved, not attenuated towards the end, end wall rounded, cell wall thick, cross walls not present at the septa, 8 µm in diameter.

21) *O. vizagapatensis* Rao (Pl.1 Fig.21)

Kesarwani *et al.*, 2015, p 25, pl 1, f 15: Trichomes blue- green in color, not constricted at the cross wall, straight, apical cell conical with slightly thickened outer wall, trichome not attenuated towards the apex, 10 µm in diameter.

DISCUSSION: During present investigation, 21 species of *Oscillatoria* belonging to Cyanophyceae were recorded. Kesarwani *et al.* (2015) observed 30 species of *Oscillatoria* from Uttar Pradesh. Jadhavar and Pardiwal (2016) reported 9 species of blue green algae from Nathsagar water reservoir. Diversity of Cyanobacteria in polluted ponds at Pattukkottai, Tamil Nadu was investigated by Kasthuri *et al.* (2016) and observed 21 species of blue-green algae. Das and Keshri (2017), while studying the species of Oscillatoriales from Eastern Himalayas, have stated that several *Oscillatoria* species are pollution indicator. They have also found some species of *Oscillatoria* to fix atmospheric nitrogen. Narayan *et al.* (2018) observed 21 species belonging to Cyanophyceae from Kaylanalake of Rajasthan.

CONCLUSION: Blue-green algae which are also called as Cyanobacteria are the photosynthetic prokaryotes which produce oxygen. This oxygen may get accumulated in the water body and their by increase dissolved oxygen in the water. This may oxygen may be used by the aquatic animals present in the water. In addition the filamentous blue green algae present in the water body may be used by aquatic animals.

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