



DIVERSITY OF PHYTOPLANKTON IN SUMMER SEASON FROM GONDUR WATER RESERVOIR, DHULE (M.S.)

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ABSTRACT:

Phytoplankton are microscopic algae growing on surface of water. Composition of phytoplankton depends on many factors. Some algal members are responsible for algal bloom which may pollute water. Gondur water reservoir is situated in Dhule district. It provides water supply to Gondur village. It fulfils most of the domestic water requirements of village. Phytoplankton diversity of Gondur water reservoir was studied in summer season of year 2019-2020. Surface growing planktonic algae was screened per week in summer season to record diversity.

Key words : - Diversity, Phytoplankton. Summer season, Gondur water reservoir

INTRODUCTION :

Gondur water reservoir situated near village Gondur, District Dhule of North Maharashtra. Location 20.9451° N and 74.7251° E. Gondur reservoir is having 32.06 sq. Kilometre catchment area with 83.40 Hector under water. It is a stagnant water reservoir. Summer season causes evaporative losses as well as bright sunlight promotes phytoplankton. Some reports are available on algal diversity of various water bodies and rivers of North Maharashtra. Barhate and Tarar (1981-83) studied algal flora of river Tapi as well as Cyanophyceae and diatom flora of Khandesh. Bhoge and Ragothaman (1986) studied Cyanophyceae from Jalgaon region. Mahajan and Mahajan (1990) worked on fresh water Blue green algae from Satpuda ranges in Jalgaon. Nandan (1993) studied algal flora of fish pond from Dhule. Nandan and Mahajan (2004,2007) studied BGA and Green algae from Hartala lake of Jalgaon. More et al (2005) worked on algal diversity of Panzara river, Dhule. Nandan and Jain (2005) studied Biodiversity of Desmids from Devbhane and Sonvad dam of Dhule. Jawale

et al. (2005) studied desmids from Anjale fish ponds near Jalgaon. Jawale et al. (2009, 2010) made addition in Volvocales of North Maharashtra. Chaudhari (2022) studied scum forming cyanophycean algae from Bori dam as well as microalgae from stagnant waters of Jalgaon. Gondur water reservoir was still unexplored in relation to study planktonic algae.

MATERIAL AND METHODS:

Surface growing planktonic algae was collected weekly from different sites of Gondur water reservoir in year 2019-2020. Collection was made generally during morning hours. Surface water layer is funnelled in a collection bottle. Samples were preserved in 4% formalin. These preserved algal samples were analysed under microscope to study phytoplanktonic diversity. The taxa were identified with the help of standard monograph and relevant literature (Sarode and Kamat 1984, Desikachary 1959, Philipose 1967). All the taxa belonging to Cyanophyceae, Bacillariophyceae and Chlorophyceae reported from Gondur water reservoir is enumerated with their systematic account.

SYSTEMATIC ACCOUNT:

Class :Cyanophyceae

Order :Chroococcales

Family:Chroococcaceae

1] *Microcystis stagnalis* Lemn.

Colonies expanding, mucilage of colony diffluent, cells loosely arranged spherical 5 μ broad, light blue green.

2] *Chroococcus minutus* (Kuetz.) Nag.

Cells in groups 2-4, light blue green, sheath 5-6 μ diameter cell 4-5 μ in diameter, colonies 10 \times 12 μ .

3] *Merismopedia aeruginea* Breb.

Colonies 4-32, cells 4-4.5 μ broad, blue green in colour, cells closely packed.

Order :Nostocales

Family : Oscillatoriaceae

4] *Oscillatoria subtilissima* Kuetz.

Trichome 1-1.5 μ broad, slightly curved septa not distinct.

5] *Oscillatoria tenuis* Ag Ex Gomont

Trichome straight, slightly constricted 3-4 μ broad, blue green, cells 2.5 μ long, granulated at septa, end cell hemispherical.

6] *Spirulina subtilissima* Kuetz. Ex Gomont

Trichomes blue green, spiral close and regular, distance 3-4 μ , 1.5-2.0 μ in diameter.

7] *Arthrospira platensis* Nordst. Gomont

Trichomes 6-8 μ broad, little attenuated at end cells broadly rounded, trichomes regularly coiled, spiral coils 27-34 μ broad.

8] *Phormidium fragile* Gomant

Trichomes constricted at cross walls, attenuated at ends, 1.2-2 μ broad, pale blue green, 1.2 μ long, apical cell acute.

9] *Lyngbya martensiana* Menegh. Ex Gomont

Filament with sheath, 7-10 μ broad, cell 2 μ long, not constricted at cross wall, end cell rounded, sheath colourless.

Class: Bacillariophyceae

Order :Centrales

Family: Coscinodiscaceae

10] *Cyclotella meneghiniana* Kuetz.

Valves discoid, 11-20 μ in diameter, large central field, finely punctate. Striae 8-10 in 10 μ , thick.

Order: Pennales

Family: Fragilariaceae

11] *Fragilaria intermedia* Grun.

Valves 74-85 μ long, 6-8 μ broad linear with parallel margins, ends tapering, rounded rectangular in girdle view, striae 10-11 in 10 μ , distinct.

12] *Synedra ulna* (Nitz.) Ehr.Var.*subaequalis* Grun.

Valves 200-225 μ long, 7-7.5 μ broad, long linear with constricted ends, subcapitate, striae 9-10 in 10 μ , distinct.

13] *Synedra auscus* Kuetz.

Valves 80-87 μ long, 4.2 μ broad, narrow linear, gradually tapering at both ends, end obtuse striae 12-13 in 10 μ , very fine.

Family: Naviculaceae

14] *Cymbella aspera* Ehr.Cleve.

Valves 95-128 μ long, 24-26 μ broad, asymmetric with convex dorsal and ventral side, ends rounded obtuse, raphe distinct, central pore central area present, striae 9-10 in 10 μ , clear radial.

15] *Gomphonema constrictum* Ehr.Var *indica* Gandhi

Valves 40 μ long 10-11 μ broad, clavate with constricted broadly rounded apex, straight raphe, central area rhomboid, axial area narrow, striae 10-12 in 10 μ radial.

16] *Navicula cuspidata* Kuetz.

Valves 100-106 μ long, 15-18 μ broad, elliptic, lanceolate with tapering sub truncate ends, raphe thin, straight with central pore, central area narrow, striae fine.

17] *Navicula cuspidata* Kuetz. Var. *ambigua* Ehr.

Valves 90-100 μ long, 15-17 μ broad, lanceolate, capitate ends, raphe thin, straight, striae 20-22 in 10 μ fine.

18] *Navicula pupula* Kuetz.

Valves 30 μ long, 10-12 μ broad linear, broadly rounded but slightly constricted end, central area rectangular, raphe straight, striae fine radial, curved.

19] *Pinnularia dolosa* Gandhi.

Valves 85-90 μ long, 15 μ broad, linear, tumid in middle with slightly swollen broad rounded end, central pore present, striae 9-11 in 10 μ thick.

Class: Chlorophyceae

Order: Zygnematales

Family: Desmidiaceae

20] *Closterium parvulum* Nag.

Cells curved, 120 μ long, 5-8 μ diameter, dorsal side strongly convex, tapering gradually towards the poles, walls smooth.

21] *Cosmarium pseudopyramidatum* Var. *oculatum*

Length 50-60 μ , width 20-22 μ , isthmus 9-12 μ , apex without process, blunt, rounded.

22] *Scenedesmus dimorphus* Turp. Kuetz

Colony at 4-8 cells, arranged in single or double alternate rows, cells fusiform 3-6 μ broad, 16-25 μ long.

CONCLUSION:

Diversity of 22 taxa of phytoplankton was taxonomically studied from Gondur water reservoir. Cyanophyceae represented by 9 taxa, Bacillariophyceae by 10 taxa and Chlorophyceae represented by 3 taxa. *Oscillatoria*, *Merismopedia* from Cyanophyceae, *Synedra*, *Fragilaria* and *Navicula* from Bacillariophyceae and Desmids *Cosmarium*, *Closterium*, from Chlorophyceae was found frequent as planktonic algae of summer season. Toxic algae with bloom was not observed in Gondur water reservoir.

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Conflict of interests:

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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