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# Green Algae of Waghur Dam from Jalgaon District of Maharashtra

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ABSTRACT

Microalgae is one of the important bio component of air. Phytoplankton survey has been conducted in order to isolate the various micro algal forms from the atmosphere of Waghur dam . Algae are natural inhabitants of water and serve as indicator of water quality in various ways . Though earlier workers have paid attention on Algal flora in Maharashtra but Waghur dam is unexplored regarding to Algal flora .

Algae have been the object of little applied research because they do not cause as many problems for man kind as do bacteria and fungi . But in future this situation is likely to change as human and algae interact more often in desirable and undesirable change .

The following member of green algae recorded from the aquatic system of Waghur dam are as follows : Lyngbya , Closterium , Chroococcus , Pediastrum , Oscillatoria , Cosmarium , Staurastrum , Spirogyra , Zygnemopsis etc.

**Keywords** = Green Algae ,Waghur dam Maharashtra .

## I. INTRODUCTION

In the atmosphere of earth different types of bioparticles such as pollen grains , fungal spores , bacteria , algal spores and filaments , hyphal fragments , insect scales , microscopic fragments of plant and animal origin etc ., are present .

Algae occur in water of low salinity called as fresh water algae are called as phytoplanktons . They are the most interesting and water algae beautiful microflora of microscopic world ; morphologically they range from unicellular to huge multicellular thalli with functionally and structurally distinctive tissues and organs . They vary considerably in size , shape, colour , and growth forms and are simple aquatic plants which perform the maximum quantity of photosynthetic activity than any other living organisms in aquatic world. Algae play an important role in biosynthesis of organic matter in an aquatic ecosystem , which directly or indirectly serves for all living organisms of water body as food as and constitutes an important source of food in an culture of fresh water fishes and crustaceans.

Algae occurs as bio-films on sub aerophytic habitat like soil , tree barks , building facades, monuments, caves , various extreme environments like hot spring , alpine lakes, glacial bed (snow surfaces) and also in symbiotic association with other living organisms.

## II. MATERIALS AND METHODS

In order to understand the diversity of microalgae the Waghur river flow its source near Ajanta through the Khandesh region. Work on this major irrigation project was taken up by the Water Resources Department of Maharashtra and begin construction in 1978. The dam's main purpose is to supply water for irrigation purpose in downstream area . Canals were built along the left and right banks of river to meet irrigation needs. In 2006 , record rainfall in the catchment area of waghur was recorded. Nearly 40 TMC of water spilled over the dam . As of 2008 , the dams reservoir had storage capacity of 8.5 TMC. Twenty additional spill gates wee planned for the dam , increasing storage capacity by 1.5 TMC. The project was to supply drinking water needs of roughly 500 thousand people and will irrigate approximately 64,000 acres (260 km2 ) of drought prone fields .

Early in the morning I have taken these algal samples from different places of waghur dam .The names of 5 different stations are as follows :-

1. Chinchkhede .
2. Neri Waghur – Neri Jalgaon Road.
3. Satara Pool – Neri Jamner Road
4. Gangapuri – Jamner Bhusawal Road
5. Kandari – Bhusawal Raod .

The sampling sites will be selected carefully , so as to get maximum number of algal forms growing in varied habitat. Another important aim is to preserve the material into 4% formalin and 96% distilled water in bottle. Take the sample in lab, and observe it carefully under microscope .

Some of the species that I have been found by identifying the samples are as follows :-

Lyngbya , Closterium , Chroococcus, Pediastrum , Oscillatoria , Cosmarium , Spirogyra , Zygnemopsis etc.

Samples were preserved as described earlier .

**1.Lyngbya lagerheimii (Mob.) Gomont**

(Pl. 1,Fig. 1)

Pl. 48, Fig. 6 & Pl. 53 , Fig. 2

Filaments single, or entangled with one another , in irregularly spirally coiled or occasionally straight ;sheath thin , colourless ; trichome about 2 μ broad ; cells 1.2-3μ long not constricted at the cross wall , with or without a single granule on either side , pale blue-green ; end cell rounded, not attenuated .

**2. Lyngbya gardneri (Setchell et Gardner ) Geitler**

(Pl. 1, Fig. 2)

Pl. 49 , Fig.

Filaments 1-2 mm long , attached by a basal cell , forming a thick or dense, straight or slightly bent, 2.6-3μ broad ; trichome 1.3 -1.6 μ broad, slightly constricted at a cross wall ; sheath indistinct , colourless , smooth ; cells quadrate or somewhat longer or shorter than broad; end cells rounded .

**3. Lyngbya limnetica Lemmermann**

(Pl. 1 , Fig . 3)

Pl. 50, Fig. 11

Filaments straight or slightly curved or coiled , single , free-floating, 1-2μ broad , sheath , thin or narrow , colourless , not coloured blue by chlor-zinc – iodide ; cell 1 -1.5μ broad quadrate to 1/3 rarely 1/8 as long as broad , 1-3μ long not constricted at the cross- walls , with or without a granule at the cross- wall , pale blue – green ; end cells not attenuated , rounded .

**4. Lyngbya confervoids C. Ag . ex Gomont**

(Pl . 1,Fig. 4 )

Pl.49 ,fig . 9 and Pl. 52 , Fig. 13

Thallus caespitose , fasciculate ,up to 5 cm in height , yellowish brown or dull green , when dried often violet ;filment at the base decumbent , above ascending and entangled, straight ; sheath colourless, when old lamellated, outside rough up to 5μ thick , not coloured violet by chlor-zinc-iodide ;trichome olive-green or blue-green , not constricted at a cross-wall , cross-walls commonly granulated , not attenuated at a apices , 9-25μ mostly 10-16 μ broad ;cells 1/3 -1/8 times as long as broad , 2-4μ long ; end cell rotund , calyptra absent .

**5. Lyngbya majuscule Harvey ex Gomont**

(Pl. 1 , Fig . 5)

Pl . 48 , Fig . 7 , Pl . 49 ,Fig . 12 and Pl. 52 , Fig . 10

Thallus expanded , up to 3cm long , dull bule-green to brown or yellowish brown ; filaments very long , curved or seldom only slightly coiled ; sheath colourless , lamellated up to 11 μ thick , outside often rough, not coloured violet by chlor-zinc-iodide ;trichome blue-green , brownish green, or grey violet not constricted at the cross-walls , not attenuated at the ends , 16-60 μ (or up to 80μ )broad , mostly 20-40 μ broad ; cells very short 1/6-1/5 times as long as broad , 2-4 μ long , cross-walls not granulated ; end cells rotund , calyptra absent .

**6. Lyngbya chaetomorphae Iyengar et Desikachary**

(Pl. 1 , Fig . 6)

Pl. 49 , Fig . 3

Trichome erect , light blue – green in colour , short up to 26.2 μ long , usually about 1.3μ broad ;apex rounded , not calyptrate , not constricted at the cross- wall , cross – walls not granulated ; sheath very thin and hyaline , closely investing the trichome , cells shorter than broad .

**1. Closterium dianae Ehr . var.dianae f.dianae Ehr.**

(Pl. 2 , Fig . 1)

Pl .1 , Fig . 3

Cell medium size , outer margins strongly curved 112-125 degrees of arc, inner slightly tumid ; cell gradually attenuated to acute or subacute apices; cell wall smooth ; chloroplast with 6-8 pyrenoids , arranged in a row . Cell 209 μm long 24.0 μm broad , apex 4.6μm wide

**2. Chroococcus minutus (Kuetz.) Naeg.**

(Pl. 2 , Fig . 2 )

Pl . 24 , Fig . 4 and Pl. 26 , Fig . 4,15.

Cells spherical or oblong single or in groups of 2-4 , blue – green without sheath 4.1 – 6.0μm in diameter ; colonies 16.5 – 20.2 μm in diameter , sheath not lamellated colourless .

**3. Chroococcus turgidus (Kuetz.) Naeg.**

(Pl. 2 , Fig . 3)

Pl. 26 , Fig . 6

Cells spherical or ellipsoidal , single or in groups of mostly 2-4 , very seldom many blue- green , without sheath 7.1- 10.5μm in diameter , 8.2-12.0μm long , sheath colourless , not lamellated .

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

(Pl. 2 , Fig . 4)

Pl. 26 , Figs . 7,16

Cells mostly in groups of in 2-4 ,blue – green , without sheath , 13.5 – 24.9 μm in diameter , with sheath 15.3 – 26.8μm in diameter , sheath colourless , very thick , distinctly lamellated , 3-4 lamellae.

**5. Pediastrum simplex Meyen var.biwaense Fukushima**

(Pl. 2 , Fig . 5)

Pl – 1 , Figs -6 and 7.

Colonies 16-32 or more celled circular , large intercellular spaces or a single central space with the cells arranged in a ring at the periphery . Inner face of a marginal cells concave, outer face prolonged into a single tapering processes ; side of marginal cells concave on nearly straight ; inner cells similar to marginal cells but short in processes . Cell wall smooth or slightly punctuate . Cells 5.6-9.3μm broad and 13. 5 – 19.8 μm long, 16 celled colony up to 46.5 – 70.1 μm in diameter .

**6. Oscillatoria willei Gardner em . Drouet .**

(Pl . 2 , Fig. 6)

Pl- 38 , Fig – 4 and 5 .

Trichome bent at the ends , 2.2μm broad , not constricted at cross walls , ends not attenuated cell 1.8 μm long , cell rounded without a thickened membrane .

**1. Oscillatoria annae Van Goor**

(Pl. 3 , Fig . 1)

Pl. 38 , Fig . 13

Filaments solitary , straight , yellowish blue green in colour , constricted at the cross walls, cells 7.8μm broad and 2.2 μm long, end cell rounded calyptra absent; cell content homogenous .

**2. Cosmarium subspeciosum Nordst var. validius Nordst.**

(Pl. 3 , Fig .2 )

Pl. 2 , Fig . 28 a,b

Cells longer than broad , deeply constricted , sinus dilated towards the apices ; semicells pyramidal , slightly undulations on lateral margin ; in side view circular , in end view broadly elliptic, six verticals rows of granules on the cemtral tumor ; chloroplast with the pyrenoids in each semicell

**3. Staurastrum dicodom Bruhl and Biswas.**

(Pl. 3, Fig . 3)

P. 67 , Fig . 77

Cells 27.0μm broad with arms and 20.2 μm broad without arms and 25.8μm long and isthmus 4.5μm.

**4. Spirogyra porticalis (MULLER) CLEVE**

(Pl. 3 , Fig . 4 )

Pl. 5 , Fig. 8 – 9

Conjugation scalariform ; tubes formed by both gametangia ; fertile cell cylindric or enlarged , zygospores mostly ovoid to globose-ovoid , 38-50 x 50-83 μ; median spore wall yellow , smooth.

**5.Zygnemopsis tambaramensis Iyengar**

(Pl. 3 , Fig . 5)

Fig. 140B ,a-b

Conjugation scalariform ; gametangia geniculate ; zygospores perfectly round, extending fully into the gametangia , zygospores 20-25 μ broad median spore- wall dark violet brown and scrobiculate with rounded pits about 2-3 μ in diameter and about the same distance apart .

**6.Zygnemopsis orientalis (CARTER) .**

(Pl. 3 , Fig . 6)

Fig. 117 ,a-b

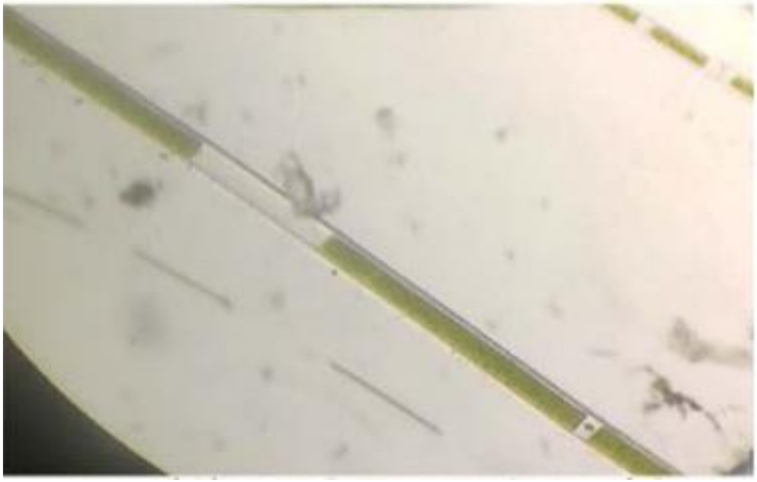
Conjugation scalarifrm , zygospores quadrangular , pillow – form , 20-25 μon aside , filling the broad tubes and dividing the gametangia ; median spore wall golden – brown (whether smooth or punctuate not stated ).

**PLATE 1**

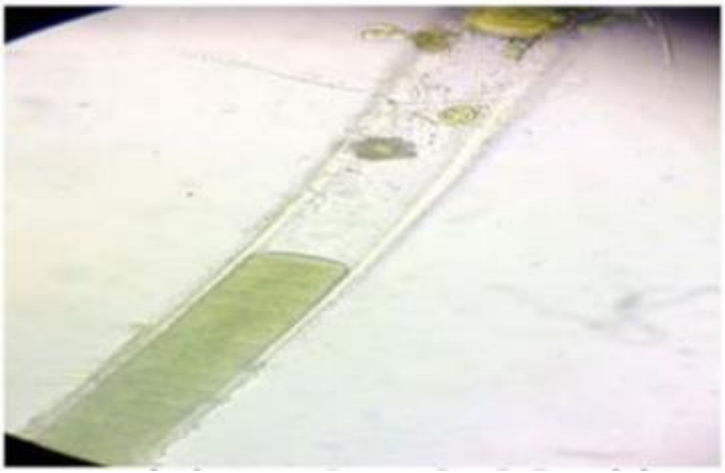
1.Lyngbya lagerheimii (Mob.) Gomont

(2)Lyngbya gardneri (Setchell et Gardner ) Geitler

(3)Lyngbya limnetica lemmermann



(4) Lyngbya confervoids C. Ag . ex Gomont

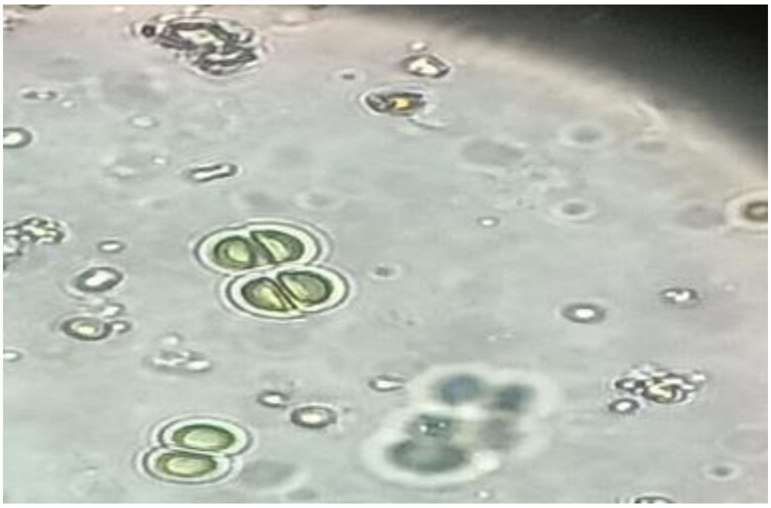


5) Lyngbya majuscula Harvex ex Gomont

6) Lyngbya chaetomorphae Iyengar et

**PLATE No. 2**

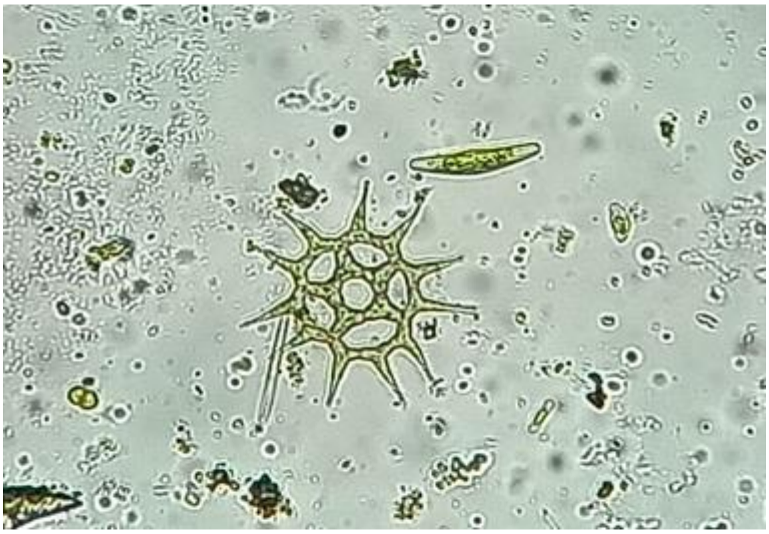
(1)Closterium dianae Ehr . var.dianae f.dianae Ehr.



(2) Chroococcus minutus (*Kuetz*) Naeg.

3) Chroococcus turgidus (*Kuetz*) Naeg.

(4)Chroococcus tenax (*Kirch*) Hieron



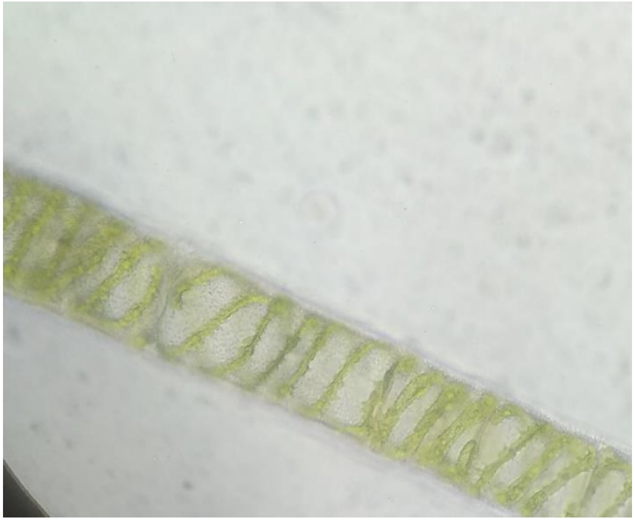
(5)Pediastrum simplex Meyen var . biwaense Fukushima .

(6) Oscillatoria willei Gardner em Drouet .

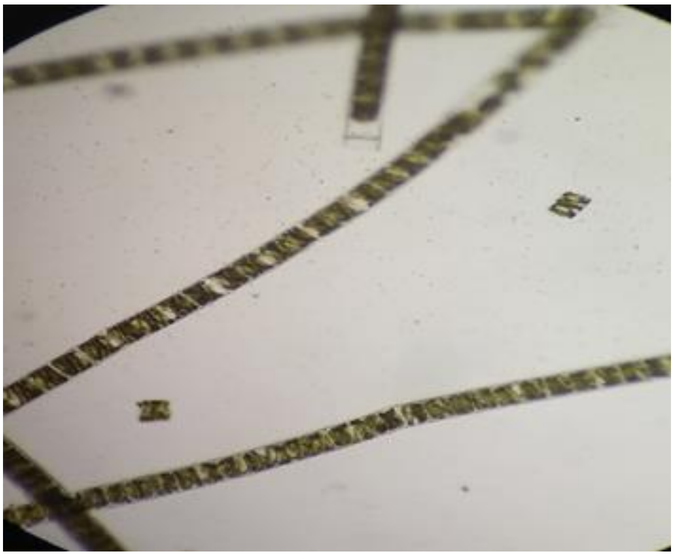
1)Oscillatoria annae *Van Goor.*

2) Cosmarium subspeciosum Nordst *var. validius Nordst.*

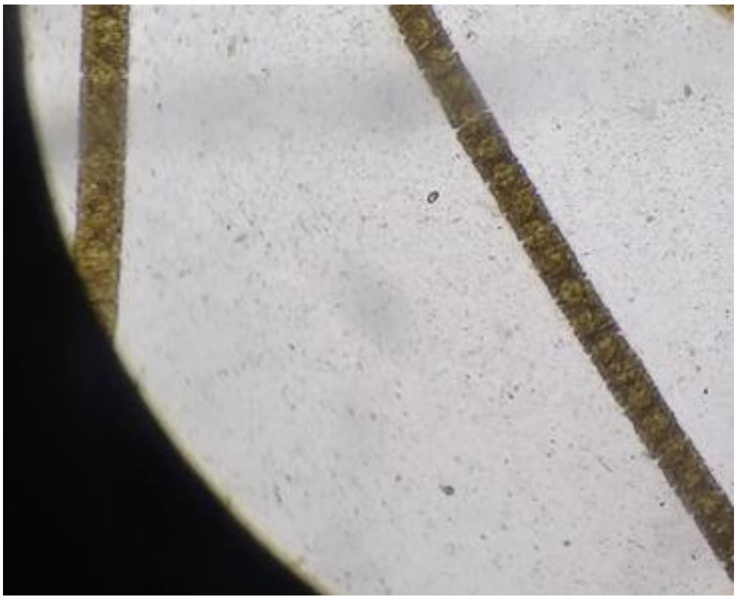
3)Staurastrum dicodom Bruhl and Biswas.



4)Spirogyra porticalis *(MULLER) CLEVE*



5)Zygnemopsis tambaramensis *Iyengar*



6)Zygnemopsis orientalis *(CARTER) .*

## III. SUMMARY AND CONCLUSION

The conclusion of present study reveals that the water in the Waghur dam area is so far in good condition harbouring the ecologically important desmidian flora. The present study reveals that water in Waghur dam of Jalgaon district, Maharashtra is still very clean and pollution free water body which should be protected in future in changing environment.

This research work help us to know type of algal flora in the Waghur dam and the data gathered serves as base line data for planning utilization and conservation strategies of algal diversity.

The present investigation will enrich the knowledge of future research worker who specially work in on algal flora of North Maharashtra region and Jalgaon district in Maharashtra to some extent.

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