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Diversity of Euglenophyceae in Gorja Lake of Bhadrawati Tahsil, District Chandrapur (M.S.), India

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ABSTRACT

The Gorja Lake is principal fresh water body located in Gorja village of Bhadrawati tahsil in Chandrapur district of Maharashtra state. Bhadrawati is a tahsil place and it is 25 km north side of Chandrapur and 125 km south east side from Nagpur. It is situated at about 211 m above the mean sea level. A study of Euglenophyceae was undertaken during June 2014 to May 2016, two year to assess the types of Euglenophyceae presents in this water body. This water body is used by local resident's people for Wasing cloth , Irrication, Fishing activities and open defecation. The Euglenophyceae is important group of freshwater blue green algae. They include some of the most common species which are important both ecologically and scientifically. During the present study 3 species of Euglenophyceae were found at all three sampling sites of Gorja Lake.

Keywords: Gorja lake, Euglenophyceae Diversity.

I. INTRODUCTION

Euglenophyceae are commonly reported in small water bodies which having rich organic matter. Palmar, (1969) noted that Euglenophyceae are the key species of biological indicator of organic pollution.

Gorja lake is 10 km south side from Bhadrawati Tahsil at about 198 m above mean sea level and is at 79°05'48''E longitude and 20°05'59'' N latitude.Gorja Lake receives the water from the surrounding catchment areas during the monsoon period. The area of Gorja Lake is spread over 300 acres. The depth of water is 35 feet during the monsoon and 12 feet during the summer season. The water of this lake is primary used for washing, bathing, fishing activities, agriculture and other domestic purpose but now it is at a transitional state with respect to degradation.

II. MATERIAL AND METHOD

Sample for planktonic study were collected monthly from three sites of lake. The samples were collected in the morning hours between 8.30 a.m. to 10.30 a.m. 50 Lt. of water sample was filtrated through the plankton net made of bolting silk number 25 with mesh size 64 lime the collected samples were allowed to settle down by adding Lugol's Iodine. Normally sedimentation requires 24 hrs. after which supernatant was removed and concentrate was made up to 50 ml. depending the number of plankton and preserved in 5% formalin for further studies.

For the quantitative study the concentrated sample was shaken and immediately one drop of sample was taken on a clear micro side with the help of standard dropper the whole drop was then carefully covered with the cover glass and observed. Plankton identification up to genera and whenever possible upto species level was classified according to keys given by Prescott (1954), Edmonsonic (1959), Sehgal (1983), Adoni (1985), and

APHA (1985) and standard analysis was undertaken as per Zar (2005).

Quantitative study of plankton was done by Sedgwick – Rafter Cell method.

Sedgwick - Rafter Cell Method

The Sedgwick – Rafter Cell is a special kind of slide similar to the Haemocytometer. The cell has a 50 mm x 20 mm × 10 mm rectangular cavity that holds 1 ml. sample. The cell is moved in horizontal direction on the stage of an inverted microscope and plankton species encountered in the field are enumerated. A number of replicate samples are enumerated to calculate plankton/lit.

Plankton (units/lit) = n x c/v

Where, n = number of plankton in 1ml

c = Volume of concentrate

v = Volume of sample in lit.

III. RESULT AND DISCUSSION

In present investigation Euglenophyceae a total of 3 species were recorded from all the three sampling sites A, B and C from the lake under study. In site A, Euglenophyceae were recorded by 3 species in 2014-15 and 3 species in 2015-16, in site B, Euglenophyceae were represented by 2 species in 2014-15 and 2 species in 2015-16 and in site C, Euglenophyceae was represented by 3 species in 2014-15 and 3 species in 2015-16.

Alam and Khan, (1996) recorded the occurrence of Euglena sp. and Phacus sp. are a direct indication of beginning of pollution load because both species in generally, recorded to be dominant and tolerant genera of polluted pond. Palmer, (1969) has recorded that the Euglenophyta are the biological indicators of organic pollution. According to Chakravarthy, (1959) the factors such as temperature and also organic matter affect the growth and development of Euglenophyceae.

In present investigation of Euglenophyceae In site A, during 2014-15, 3 species were recorded among which Peranema trichophorum (276 no./lit) is dominant followed by Euglena acus (270 no./lit) and Phacus sp. (256 no./lit). In site A, during 2015-16, 3 species were recorded among which Peranema trichophorum (281 no./lit) is dominant followed by Euglena acus (279 no./lit) and Phacus sp. (228 no./lit).

In site B, during 2014-15, 2 species were recorded Phacus sp. (263 no./lit) is dominant and one Euglena acus (121 no./lit). In site B, during 2015-16, 2 species were recorded phacus sp. (500 no./lit) was dominant followed by Euglena acus (300 no./lit).

In site C, during 2014-15, 3 species were recorded among which phacus sp. (1069 no./lit) was dominant followed by Euglena acus (347 no./lit) and Peranema trichophorum (144 no./lit). In site C, during 2015-16, 3 species were recorded among which Phacus sp. (703 no./lit), was dominant followed by Euglena acus (389 no./lit) and Peranema trichophorum (99 no./lit).

Among the different species of Euglenophyceae species was recorded from site A, Euglena acus, Paranema sp and Phacus sp,.founded during 2014-15 also Euglena sp., Phacus sp. and Paranema sp. during 2015-16, in site B, Euglena sp. and Phacus sp. Found during 2014-15 and Euglena sp.,and Phacus sp. during 2015-16 and Euglenophyceae was recorded by three species i.e. Euglena sp. Phacus sp. and Paranema sp. in site C during 2014-15 and 2015-16.

According to Pendase, et.al., (2000) reported three species of Euglenopyceae viz, Euglena, Phacus and Trachenelomonon at percolation tank of village Dasane, Maharashtra. Shirsat, et.al., (2004) reported only one species that is Euglena in the freshwater pond at Dharmapuri in Beed District, Maharashtra. Jasprica, et.al.,(2006) founded 4 species of Euglena. Telkhede, (2008) reported only two species, Euglena and Phacus in Tadoba lake of Chandrapur District in Maharashtra.

Jayabhye, et.al., (2007) collected five species of Euglenophyceae in Paraola dam of Hingoli, Maharashtra., Aijaz, et.al., (2009) collected Euglenophyceae contributed 3 species from Wular lake. Banaker, et.al.,(2005) collected only Euglena in Chanravalli tank at Chitradurga, Karnataka. Prathap Singh and Regini Balasingh, (2011) observed 2 species to Euglenophyta in Kodaikanal Lake of Dindugal District. Malik and Umesh Bharti, (2012) observed 2 species of Euglenophyceae in Sahastradhara stream at Uttarakhand. Prathap Singh and Regini Balasingh, (2012) reported 6 species of Euglenophyceae in Kodaikanal lake of Dindigul District, Tamilnadu. Abdar,

(2013) collected 7 taxa belong to Euglenophyceae in Morna lake Shirala (M.S.), Patil, et.al., (2015) reported 7 species belong to Euglenophyceae in major freshwater bodies of Ajara tahsil of Kolhapur District (M.S.), Priya Gopinath and Ajit Kumar, (2015) they have observed 4 genera of Euglenophyceae in the fresh water lake in Thiruvananthapuram.

IV. CONCLUSION

In the present investigation, the maximum amount of Euglenopyceae during in the Winter season due to probable sunlight, increase in domestic sewage, human generated pollution, an minimum quantity during the Monsoon season is probably due to increase in water quantity.

Table 1. Yearly variation of Phytoplankton from sites of Gorja Lake during year 2014-15

S. N	Parameters	A	B	C	Total
1	Euglenopyce	66.83 ± 49.16	32.00 ± 25.41	130.00 ± 52.06	11.83 ± 2.43

Table 2. Yearly variation of Phytoplankton from sites of Gorja Lake during year 2015-16

S. N	Parameters	A	B	C	Total
2	Euglenopyceae	65.67 ± 47.47	66.67 ± 29.36	99.25 ± 33.16	77.19 ± 7.80

Table 3. Yearly variation of Phytoplankton from sites of Gorja Lake during year 2014-16

S. N.	Parameters	A	B	C	Total
3	Euglenopyceae	66.25 ± 47.96	49.33 ± 19.22	114.63 ± 38.73	76.74 ± 11.98

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