

BIODIVERSITY OF CHLOROPHYCEAE IN SHAHA LAKE, KARANJA (LAD), MAHARASHTRA

D. R. Halwe

Department of Botany

S.S.S.K.R.Innani Mahavidyalaya, Karanja Lad Dist. Washim (M.S.), India

ABSTRACT

Monthly samples were collected from Shahalake at six sampling stations during the period of investigation from December 2001 to January 2003. During the study period, 26 species of Chlorophyceae were recorded from the lake. The total Chlorophyceae count showed two peaks in a year, in October-November 2002 and in January-March 2002. It was found that Chlorophyceae dominated the lake during winter 2002 and their minimum population was recorded in post summer and pre monsoon 2002. The minimum Chlorophyceae member were recorded 85 Ind/l and 82 Ind/l in the month of July 2002 at sampling station no.4 and 5. The maximum no. of Chlorophyceae as 1340 Ind/l was recorded in the month of November 2002 at sampling station no. 1. The sampling station no. 6 also showed high count of Chlorophyceae as 1285 Ind/l and 1252 Ind/l in the month of October and November 2002 respectively. The seasonal fluctuations of Chlorophyceae member are discussed in the present investigations.

Key words : Shaha lake - Chlorophyceae - Seasonal fluctuations.

Introduction

Algae are principal source of organic material in the lakes. Algae make up a large part of food consumed by several species of microfauna, fishes, molluscs etc. and liberate a large amount of oxygen, vital for life support system in the lakes the phytoplankton consist of macro and microscopic suspended or free floating non-motile or weakly motile unicellular, colonial or filamentous algae. The intrinsic movement of planktonic algae is usually slight relative to water turbulence induced by current. The majority of phytoplankton are non-motile and are therefore at the mercy of water. However, motile phytoplankton are *Chlamydomonas*, *Volvox* and members of Dinoflagellates and Chrysophytes etc. are unable to swim against water current. In fresh water lakes the members of Chlorophyceae and Cyanophyceae are more abundant than those of Bacillariophyceae, Dinophyceae and Euglenophyceae. Which on other

hand are more abundant in small lakes enriched with organic matter.

MATERIALS AND METHODS

The water body selected for the present investigation is located on the north of the Karanja town. It is situated at about 1310 ft. above the sea level. It is at 77⁰ 29' E Longitude and 20⁰ 29' N Latitude.

Phytoplanktons are chlorophyll bearing suspended microscopic organisms consisting of algae with representative from all major taxonomic phyla. The majority of members belonged to Chlorophyceae, Cyanophyceae and Bacillariophyceae.

Preparation of the sample :

1 litre of the water sample was collected in a glass bottle. 10 ml Lugol's iodine was added and allowed to stand for at least 24 hours to ensure complete sedimentation. The supernatant was taken out with the help of pipette. Further, the remaining sample was concentrated upto 10 ml for the phytoplankton counting by "Drop count

method" (Adoni, 1985 and APHA, 1998). Phytoplankton identification upto genera and whenever possible upto species was done according to keys given by Edmondson (1959) and APHA (1998).

Result and Discussion

The water samples from six different sampling spots were analysed for phytoplanktons during the period of investigation from December 2001 to January 2003.

The monthly variation in the Chlorophycean biodiversity (Ind/l) was analysed at different sampling spots.

During the period of investigation, 26 species of Chlorophyceae were recorded from the lake water. The total Chlorophyceae count showed two peaks in a year, one in October-November 2002 and other in January-March 2002. Chlorophyceae dominated the lake during October-November 2002 and their minimum population was seen during May, June and July 2002. The minimum Chlorophycean members were recorded 85 and 82 Ind/l in the month of July 2002 at spot no. 4 and 5 respectively. The maximum Chlorophyceae 1340 Ind/l were recorded in the month of November 2002 at spot no.1. The spot no 6 also showed high count of Chlorophyceae as 1285 and 1252 Ind/l in the month of October and November 2002 respectively. In the present investigation, the genera *Spirogyra* was found to be dominant at spot no. 5 and 6 throughout the year. However, *Hydrodictyon* and *Volvox* were dominant at spot no.1 and 3 respectively.

Similarly at spot no.2 the genera *Gonium* were found to be absent throughout the year while *Sphaerosoma* at spot no.3 except January 2003, were less in population. Chlorophyceae

dominated at spot no.3 and 6 throughout the period of investigation.

During the period of investigation, the maximum Chlorophycean individuals were recorded in the winter and minimum during post summer. Similar observations were made by Kohli *et. al.*, (1982) and Khatri (1987) where they stated that Chlorophycean species were found to be dominant over the other phytoplanktonic groups. Hazarika and Dutta (1998) also reported maximum density of Chlorophyceae in winter and minimum in summer and rainy season. Choubey (1991) reported peak period of Chlorophyceae in winter while studying Gandhisagar reservoir. The minimum density of Chlorophyceae was estimated in summer season and maximum in winter by Gujrathi and Kanhere (1998). However, Choudhary and Singh (2001) found highest peak of Chlorophyceae in May in the water of Boosra lake, Muzaffarpur.

The dominant species of Chlorophyceae were observed as *Spirogyra*, *Hydrodictyon*, *Volvox*, *Ankistrodesmums* and *Stigeoclonium*. Similar findings were made by Jha and Bharat (2003). The dominant nature of above species was attributed to organic nutritive rich nature of the lake in the present study. According to Saify *et al.*, (1986) Chlorophycean dominance was attributed to eutrophic condition of water bodies.

Table 1 : Chlorophycean Biodiversity of ShahaLake.

Sr. No.Species observed

01	<i>Actinastrum hantschil</i>
02	<i>Ankistrodesmus counvolutus</i>
03	<i>Characium sp.</i>
04	<i>Chlamydomonas cingulata</i>
05	<i>Chlorella vulgaris</i>

06	<i>Coelastrum acerosum</i>	17	<i>Scenedesmus dimorphus</i>
07	<i>Coelastrum lanceolatum</i>	18	<i>S. quadricauda</i>
08	<i>Cosmarium grannatum</i>	19	<i>Selenastrum gracile</i>
09	<i>C. monomazum</i>	20	<i>Sphaerocystis sp.</i>
10	<i>Euastrum didelta</i>	21	<i>Sphaerosoma sp.</i>
11	<i>Golenkinia sp.</i>	22	<i>Spirogyra sp.</i>
12	<i>Gonium duplex</i>	23	<i>Stigeoclonium sp.</i>
13	<i>Hydrodictyon reticulatum</i>	24	<i>Ullothrix sp.</i>
14	<i>Mesotaenium sp.</i>	25	<i>Volvox aureus</i>
15	<i>Oedogonium sp.</i>	26	<i>Zygnema sp.</i>
16	<i>Pediastrum simplex</i>		

References

Adoni, A.D.(1985) : Workbook on Limnology.

APHA, (1998) : Standard methods for examination of water APHA. AWWA, Washington.

Choubey, U. (1991) : Studies on physico-chemical and biological parameters of Gandhi Sagar reservoir, Ph.D. Thesis, Vikram University Ujjain; 244.

Choudhary, S. and Singh D.K. (2001) : Phytoplankton populations at Boosra lake (Gajghat Block, Muzaffarpur, Bihar); Environment and Ecology, 19(1) 171-174.

Edmondson, W.T. (1959) : Freshwater Biology Ed. ward and Whipple, 2nd Edn, 95-189. John. Wiley Sons Inc, New York.

Gujarathi, A.S. and Kanhere R. R. (1998) : Seasonal dynamics of phytoplankton population in relation to abiotic factors of a fresh water pond at Barwani(M.P.); Poll Res., 17(2) : 133-136.

Hazarika, A. K. and Dutta A. (1998): Interrelationship of certain physico-chemical parameters and plankton community of Tasek lake (Meghalaya); Environment & Ecology, 16(3); 561-567.

Jha, Prithwiraj and Sudip Bharat (2002) : Hydrobiological study of lakeMiriki in Darjeeling Himalayas, J. Environ. Biol., 24(3) : 339-344.

Khatri, T.C.(1987) : Seasonal distribution of phytoplankton in Idukki reservoir of Kerla, India, Environ. Ecol.; 5(1): 71-73.

Kohli, M.P.S. ; Nirmal Kumar Thakur and S. K. Munnet (1982) : Seasonal changes in plankton population of some fresh water pond at Patana. J. Inland Fish. Soc. India.14 : 69-76.

Saify, T.; Chaghatai S.A.; Ali P.and Durrani LA. (1986) : Hydrobiology andperiodicityof phytoplankton in the sewage fed Moti pond, Bhopal, India, Geobios, B: 199-203.