



PHYTOPLANKTON DIVERSITY OF SUMTHANA LAKE IN BHADRAWATI, DIST.- CHANDRAPUR, MAHARASHTRA

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Abstract:

The present study was carried out on Phytoplankton diversity of Sumthana Lake in Bhadrawati, dist.- Chandrapur, Maharashtra state, India during 2015-2016. The present paper reveals the phytoplankton diversity in Sumthana Lake. During this study, 44 genera of phytoplanktons were recorded out of 44 genera, 14 genera recorded for cyanophyceae, 25 genera for chlorophyceae and 5 genera for bacillariophyceae amongst three family members, chlorophyceae members found dominant and then cyanophyceae and bacillariophyceae. In case of chlorophyceae members, amongst them *Vaucheria*, *Cosmarium*, *Spirogyra*, *Volvox Chara* and *Oedogonium* were found to be dominant. In case of cyanophyceae members, amongst them *Nostoc*, *Anabaena*, *Oscillatoria*, *Anacystis*, *Microcystis* were found to be dominant. In case of bacillariophyceae, Diatoms was found to be dominant. This indicates that the plenty of phytoplanktons are available in the lake and maintaining the Ecological balance of the particular lake and will be helpful for the feeding zooplanktons and fishes which will maintain food chain and sustainable ecological balance of the lake.

Keywords: Sumthana Lake, Phytoplankton diversity, Bhadrawati, Chandrapur.

Introduction

Sumthana Lake is located near Sumthana locality in Bhadrawati, Dist.- Chandrapur. It is One and half km. from Nilkanthrao Shinde Science & Arts College, Bhadrawati. This lake is providing Bread & Butter to Bhoi (Dhiwar) community which are regularly taking out Shingala (*Trapa*) from this lake apart from rearing the fishes. Phytoplankton are the primary producers, which forms the base of an autotrophic food chain. They are of great importance as a source of live food for zooplanktons and fishes. The present investigation as an attempt to study the phytoplankton diversity of the Sumthana Lake in Bhadrawati, Dist. Chandrapur of Maharashtra state during 2015-2016

Materials and Methods

The samples of phytoplankton from three sampling stations were collected once in a month from the Sumthana Lake in Bhadrawati during 2015-2016. The samples were collected from surface water. The phytoplankton were counted by drop count method (Lackey, 1957). The phytoplankton species were identified following Edmondson (1966), Needham and Needham (1978) and APHA (1998). The results were expressed as number of organisms/ml.

Results and Discussion

During the present investigation, 44 genera of phytoplankton belonging to cyanophyceae, chlorophyceae and bacillariophyceae were recorded. Members of

cyanophyceae viz *Gloeocapsa*, *Microcystis*, *Nostoc*, *Spirulina*, *Oscillatoria*, *Anacystis*, *Gleotrichia*, *Anabaena Rivularia*, *Scytonema*, *Stigonema*, *Cylindrospermum*, *Tolypothrix*, *Oscillatoria* were observed throughout the investigation period. amongst them *Nostoc*, *Anabaena*, *Oscillatoria*, *Anacystis*, *Microcystis* were found to be dominant.

Member of chlorophyceae viz. *Chlamydomonas*, *Pandorina*, *Eudorina*, *Scenedesmus*, *Draparnaldia*, *Frittschiella*, *Oedogonium*, *Zygnema*, *Cosmarium*, *Hydrodictyon*, *Spirogyra*, *Vaucheria*, *Chara*, *Nitella*, *Volvox*, *Pediastrum*, *Mougeotia*, *Pithophora*, *Cladophora*, *Protococcus*, *Stigeoclonium*, *Coleochaete*, *Chateophora*, *Ulothrix*, *Chlorella*, were observed throughout the study period. Amongst them *Vaucheria*, *Cosmarium*, *Spirogyra*, *Volvox Chara* and *Oedogonium* were found to be dominant.

Five members of bacillariophyceae viz Diatom, *Cyclotella*, *Navicula*, *Nitzschia*, *Rhopalodia* have recorded. Amongst Bacillariophyceae *Diatoms* was found to be dominant. Similar type of investigation was done by several workers. Kumawat and Jawale (2003) recorded 59 genera of phytoplankton from a fish ponds at Angale. Out of these 14 genera belonged to chlorophyceae. In the same study, eight genera were observed throughout the year. Somani and Pejaver (2003) also reported 14 genera of Chlorophyceae, in the lake Masunda, Thane, Maharashtra. The species such as *Closterium*, *Cosmarium*, *Oedogonium*, *Ulothrix*, *Zygnema*, *Chara*, *Nitella* were observed

throughout the year. The *Chlamydomonas*, *Chlorella Cladophora*, *Pediastrum*, *Scenedesmus* were observed only monsoon months. *Hydrodictyon sp.* was observed only on the month of June.

Tripathi and Pande (1995) observed maximum blue green population during summer months while minimum during winter. Harris and James (1974), Witzel (1975) observed the occurrence of *Microcystis*, the toxin producing blue green in blooms is a significant feature of tropical waters the species of *Microcystis* such as *M. protocystis*, *M. incera*, *M. aenuginosa*, *M. lotaliis*; *Oscillatoria*, *O. princeps*, *O. limosa*, *Lyngbya*, *L. majuscula*, *Nostoc sp.* and *Anabaena sp.* were found to be toxin producing algal species. Nasare et al (2009) observed six members of Cyanophyceae viz. *Oscillatoria*, *Micricystis* *Gleotrichia* *Abacystis*, *Spirulina*, *Agmenelleum* in Khadki lake of Chandrapur District, Maharashtra. Rao and Raju (2000) observed the Bacillariophyceae species represented by *Melosira*, *Synedra*, *Navicula*, *Nitzschia*, *Gyrosigma*, *Cymbella* and *Amphora* in fish culture pond at Nambur near Guntur, Andhra Pradesh. Pendse et al. (2000) observed the Euglenophyceae species *Euglena Phacus* and

Trachelomonas in percolation tank of Dasane, Maharashtra. Sirsat et al. (2004) recorded 24 genera of Phytoplanktons from fresh water ponds at Dharampuri in Beed District, Maharashtra. Similarly, Pawar et al (2006) recorded 61 genera of Phytoplankton from Pethwadaj Dam of Nanded district in Maharashtra. Nafeesa Begum and Narayana (2006) recorded 85 species of phytoplankton from four lentic water bodies in and around Davangare city, Karnataka.

Nasare et al. (2009 a) observed nine cyanophyean members during winter season. Nasare et al (2009 b) also Study the Phytoplankton biodiversity of Vinjan Lake in Bhadrawati town of Chandrapur district, Maharashtra state, India. Drashana Bhosale & Nasare (2010) observed Chlorophyceae members as dominant in the reservoir while Englenophyceae members were found scanty. Cyanophyceae and Bacillariophyceae members were also found in adequate numbers. Nasare (2014) observed Chlorophyceae, Englenophyceae, Bacillariophyceae and Cyanophyceae members in Masanghat Lake of Bhadrawati, Dist.- Chandrapur, Maharashtra state, India. during Jan. 2013 to June 2013.

Table 1.: Phytoplankton diversity of Sumthana Lake in Bhadrawati

Sr.No.	Genera / Species	Months (2015– 2016)				
		Sept	Oct	Nov	Dec	Jan
A	CYANOPHYCEAE					
1	<i>Gloeocapsa sp.</i>	3	8	14	19	16
2	<i>Microcystis sp.</i>	13	18	17	25	14
3	<i>Nostoc sp.</i>	15	18	24	40	55
4	<i>Spirulina sp.</i>	1	3	10	12	16
5	<i>Oscillatoria sp.</i>	19	25	28	34	53
6	<i>Anacystis sp.</i>	16	22	29	15	37
7	<i>Gleotrichia sp.</i>	6	9	12	4	8
8	<i>Anabaena sp.</i>	12	15	19	25	48
9	<i>Rivularia sp.</i>	8	9	15	3	15
10	<i>Scytonema sp.</i>	3	2	9	4	6
11	<i>Stigonema sp.</i>	2	5	7	9	3
12	<i>Cylindrospermum sp.</i>	4	8	12	15	14
13	<i>Tolypothrix sp.</i>	4	10	9	7	12
B	CHLOROPHYCEAE					
1	<i>Chlamydomonas sp.</i>	9	3	12	6	5
2	<i>Pandorina sp.</i>	3	8	4	2	1
3	<i>Eudorina sp.</i>	2	6	8	4	10
4	<i>Scenedesmus sp.</i>	12	10	11	8	12
5	<i>Draparnaldia sp.</i>	8	12	14	18	23
6	<i>Fritschiella sp.</i>	9	3	6	8	7
7	<i>Oedogonium sp.</i>	14	15	10	23	18
8	<i>Zygnema sp.</i>	3	10	8	12	6
9	<i>Cosmarium sp.</i>	13	18	23	33	30
10	<i>Hydrodictyon sp.</i>	3	14	17	10	12
11	<i>Spriggyra sp.</i>	20	18	23	28	14
12	<i>Vaucheria sp.</i>	14	20	33	38	35
13	<i>Chara sp.</i>	16	14	19	22	24
14	<i>Nitella sp.</i>	6	8	4	2	13

15	<i>Volvox sp.</i>	12	14	18	30	32
16	<i>Pediastrum sp.</i>	8	10	13	18	16
17	<i>Mougeotia sp.</i>	3	2	1	2	2
18	<i>Pithophora sp.</i>	3	8	1	1	2
19	<i>Cladophora sp.</i>	8	10	3	2	8
20	<i>Protococcus sp</i> (<i>pleurococcus sp</i>)	4	9	12	16	3
21	<i>Stigeoclonium sp.</i>	5	13	15	19	3
22	<i>Coleochaete sp.</i>	3	8	12	15	18
23	<i>Chateophora sp.</i>	4	2	1	8	10
24	<i>Ulothrix sp.</i>	3	4	8	20	3
25	<i>Chlorella sp.</i>	4	8	3	13	10
C	BACILLARIOPHYCEAE	Sept	Oct	Nov	Dec	Jan
1	<i>Diatom sp.</i>	18	19	30	35	38
2	<i>Cyclotella sp.</i>	3	14	10	6	8
3	<i>Navicula sp.</i>	9	2	3	1	1
4	<i>Nitzschia sp.</i>	9	3	6	4	1
5	<i>Rhopalodia sp.</i>	6	12	3	2	4

*The numbers in table indicates no. of organisms recorded per ml.

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