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Phytoplankton biodiversity of in Moharli Lake Moharli Near Chandrapur Maharashtra, India.

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ABSTRACT

The Moharly Lake is the principal local freshwater bodies. It is located 28 KM fromChandrapur. The lake is surrounded dense forest of TadobaAndhari Tiger Reserve of ChandrapurDistrict. The present study is aimed to record phytoplankton diversity in 4 site of Moharly Lake during thesummer of 2014 to winter 2016. In the present investigation, phytoplanktonic population was found to becomprised of 26 genera belonging to 04 different classes. The class Chlorophyceae was dominant amongall other classes having maximum diversity, represented by 19 genera, followed by classBacillariophyceae represented by 06 genera and Class Cyanophyceae represented by 08 genera andEuglenophyceae represented only 02 genera having least diversity. Plankton shows seasonal variation inall sampling sites, as per their nutrient status, age, and other physico-chemical factor. In Moharlilake,seasonal qualitative and quantitative fluctuation occurs in plankton communities. Their density variesaccording to the nature of water.

Keywords: Moharly, phytoplankton, Chlorophyceae, Bacillariophyceae, Cyanophyceae, Euglenophyceae.

INTRODUCTION

Phytoplankton constitutes the integral components of the aquatic food chain. They work as a primary producerand theyact as a direct food source for other aquatic animals. Density and diversity of phytoplankton is largely influenced by the fluctuation of physico-chemical factors. Indian researchers reported the several studies on the phytoplankton distribution with availability of light, physical,

chemical and biological qualities in freshwater lakes [1]. Today, Indian freshwater lakes are facing various ecological problems due to rising of pollution from rapid industrialization. However, mainly seasonal changes regulated pattern of phytoplankton growth [2].

METHODOLOGY

Plankton Analysis

Water sample were collected from 4 site of Moharlylake during the summer of 2014 to winter 2015. Phytoplankton varies greatly in their size. During the period of investigation separate samples were collected by plankton net made of silk bolting cloth No. 25, (mesh size 56). Water sample (50 lit.) was filter through the net form littoral and open water zone and carefully transferred to 50 ml bottle and preserved in 4% Formalin. Preserved sample were examined under a binocular microscope with different magnification. Quantitative analysis and identification was done on Sedgwick Rafter counter cell by taking 1 ml sample. Detailed taxonomic identification was carried out with Pennak [3] and Kodarkar, [4].

RESULTS AND DISCUSSION

In the present investigation, phytoplankton population was found to be comprised of 35 genera belonging to 04 different classes. The class Chlorophyceae was dominant among all other classes having maximum diversity, represented by 19 genera, followed by class Bacillariophyceae represented by 06 genera and class Myxophyceae represented by 08 genera and Euglenophyceae represented only 02 genera having least diversity.

The Myxophyceae are represented by about 8 different species such as *Sctonema spp., Anacystis spp., Microcystis spp., Spirulina spp., Rivularia spp., Nostoc spp., Anabaena spp.,Oscillatoria spp.* out of these *Microcystis spp., Spirulina spp.* and *Oscillatoria spp.* indicate that the quality of water is unfit for basic requirement of human being because these species indicator of organic pollution or sewage pollution. It is the Third largest group after Chlorophyceae. The Chlorophyceae are represented by about 19 different species. During study period group Chlorophyceae was dominated over rest of the phytoplankton population. Similar results were observed by Patil*et al.,* [5]. Chlorella spp. was most abundant genera among Chlorophyceae group at S_1 and S_2 and at S_4 *Spirogyra spp.* was abundant genera. Similar result are also observed [6] studied at fish pond of Hyderabad.

Table 1: Phytoplankton Diversity of water in Moharlilake during 2014-15

Myxophyceae	Bacillariophyceae	Chlorophyceae	Euglenophyceae
Sctonema spp.	*Fragilaria spp.*	*Vaucheria spp.*	*Phacus spp.*
Anacystis spp.	*Diatoma spp.*	*Oedogonium spp.*	*Euglena spp.*
Microcystis spp.	*Navicula spp.*	*Scenedesmus spp.*	
Spirulina spp.	*Mastogloia spp.*	*Micrasteria spp.*	
Rivularia spp.	*Pinnularia spp.*	*Volvox spp.*	
Nostoc spp.	*Nitzschia spp.*	*Pediastrum spp.*	
Anabaena spp.		*Chlorella spp.*	
Oscillatoria spp.		*Cladophera spp.*	
		Cosmarium spp.	
		Ceratium spp.	
		Spirogyra spp.	
		Zygnema spp.	
		Vorticella spp.	
		Closterium spp.	
		Coelastrum spp.	
		Vorticella spp.	

The Bacillariophyceae shows its dominance with 6 species, out of which the most dominant species is *Diatom vulgare*followed by *Naviculla spp*. and *Pinnularia spp*. while least *Nitzschia spp*. this species absent in S_4. Several literatures revels that Bacillariophyceae observed maximum during different month in different water body. Like Jayanti [7] observed maximum species between February to May.

Euglenophyceae appeared to be minor group of phytoplankton qualitatively as well as quantitatively. Group Euglenophyceae showed its dominance during winter and summer season and minimum in monsoon. The member of Euglenophyceae show tolerance of organic pollution and species belong to this group can be used as a biological indicator of organic pollution. Similar results were also observed by [2].

CONCLUSION

In the present investigation, total planktonic concentration maximum in winter season of all sites and minimum concentration observed during summer season at S_1, S_2 and S_4 except the S_3. At S_3 minimum concentration of total plankton observed during monsoon season. Hujare [8] were also reported that plankton density in different season in order of summer > winter > monsoon. Plankton shows seasonal variation in all sampling sites.

The study findings indicate that climatic changes are expressed in the phytoplanktondiversity and density. Species richness changed with monsoon climatic impact and decreased during the monsoon period and during winter favourable condition of lake increases population of phytoplankton.

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