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A STUDY ON SEASONAL VARIATION AND ABUNDANCE OF HYTOPLANKTON COMMUNITY IN KAVALKERE POND

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ABSTRACT

Plankton population variation depends upon size, location and depth of the pond and also influenced by season. Most of the studies on plankton dynamics have been conducted in fresh water aquatic ecosystem in and around of Bangalore city. Bannerghatta National Park is situated around 22KM from Bangalore city .This study aims at the seasonal variation in phytoplankton community in Kavalkere pond present in Bannerghatta national Park and abundance of phytoplankton community for a year.

Keywords: Bannerghatta, Biological Park, Kavalkere, Physico Chemical, Phytoplankton, Seasonal Variation

INTRODUCTION

Several lentic habitats are found in Bannerghatta national park which differ in their morphology, catchment area, physico-chemical and biological condition of water. Bannergatta national park is situated around 22KM from Bangalore city and is maintained by Dept. of Forests. National park includes several natural ponds and also manmade artificial tanks which forms the main source of water for wild animals. Part of national park is converted in to Biological park (BBP) for maintaining of rescued wild animals.

Planktons are microscopic organism which freely float in the water .Phytoplankton are primary producers of the aquatic ecosystem. The abundance of phytoplankton indicates the water quality of the aquatic ecosystem, the phytoplankton includes varieties of different classes of algae.

The present study is made to survey the abundance of phytoplankton of one of the ponds present in Bannerghatta Biological park.

MATERIAL AND METHOD

The physico-chemical analysis of water was made by collecting the surface water samples from the collecting station of pond for over a period of 12 months between January to December. The water is collected in a acid washed plastic cans of 1L capacity and physico- chemical analysis were made according to APHA. Some of the parameters like temperature, fixing of oxygen, pH and presence of carbon dioxide were analysed on the spot. For the analysis of phytoplankton, samples were collected in a separate bottles by using plankton net and preserved immediately with 5% formalin (Formaldehyde). The analysis of phytoplankton were made using 1mL sample on a SEDGWICK- RAFTER counting cell under microscope

RESULTS AND DISCUSSION

Physico- chemical analysis of the Kavalkere pond is given in the **Table 1**. The range of different parameters are found to be at the permissible level and reveals that the pond water is almost free from pollutants. The phytoplankton of the Kevelkere pond were identified as *Myxophyceae, Bacillariophyceae, Chlorophyceae* and *Euglenophyceae*. The total number of different groups of phytoplankton and their species present in the water is tabulated in the **Table 2 and 3**. During the study period at the site of collection, 15 species of phytoplankton were recorded. *Myxophyceae*, included 2 species, *Bascillariophyceae* 5 species, *Chlorophyceae* included 7 species and *Euglenophyceae* 1 species. The average variation of phytoplankton occur during the month between October and December (Winter season). The average number of present phytoplankton were 3868 Chlorophyceae, followed by Bascillaroiopphyceae were more in May to July (2114).

The phytoplankton compositions were varied in different months of the year. Chlorophyceae were found more in number in the month of May and lowest in September month. This also recorded by S.C. Tiwari, *et. al*. in Devi tank of Beohari and Singh in Undasa pond. Bacillariophyceae were abundant in between May and July. Dr. Chakrapani recorded the same in Madivala tank in June and July months. Euglenophyceae occurred in least number in all the months.

Table 1: Physico-Chemical Characteristic of Kavalkere Pond (BBP) (Range of Parameters)

Parameter	Values
Water temperature	20-27.2 ^{0}c
pH	7.4 to 8.6
Free CO_2 (mg l^{-1})	0.0 to 8.2
Conductivity	115.28 to 426.39
Total alkalinity ((mg l^{-1})	48 to 152
Nitrate nitrogen (mg l^{-1})	Traces to 0.26
Phosphate(mg l^{-1})	Traces to 0.29
Silica (mg l^{-1})	0.01 to 1.3
Total iron (mg l^{-1})	0.02 to 0.9
Dissolved Oxygen (mg l^{-1})	6.8 to 10.83

Table 2: Monthly Variation of Phytoplankton Population (No. l^{-1}) in Kavelkere Pond (BBP)

Month	Bacillariophyceae	Myxophyceae	Chlorophyceae	Euglenophyceae
January	432	232	693	240
February	540	217	709	145
March	650	360	781	248
April	392	320	638	350
May	683	648	1653	286
June	693	540	768	202
July	738	436	739	108
August	463	414	654	120
September	471	390	428	110
October	333	767	1310	242
November	378	927	1062	280
December	432	648	1486	220

Table 3: Phytoplankton Groups Identified in Kavelkere Pond (BBP)

S. No.	Bacillariophyceae	Myxophyceae	Chlorophyceae	Euglenophyceae
1	Pinnularia sp.	Oscillatoria sp	Pediastrum	Euglena sp
2	Eymbella sp.	Spirulina sp	Zygnema sp	
3	Navicula sp		Netrium sp	
4	Synendra sp		Ulothrix sp	
5	Fragellaria sp		Chaetophora sp	
6	-		Pendorina sp	
7	-		Spirogyra sp	

CONCLUSION

Palmer has shown that certain phytoplankton like Euglena, Navicula, Nitzschia, Microcystis are abundant in organically polluted water and is supported by Goel *et al*., The study on Kavalkere pond shows the presence of these genera in the water. The number of pollution indicating genera were very less and the physico-chemical analysis of water indicates that the presence of a minute quantity of organic matter in the water. The Kavalkere pond is used for recreation of visitors to the Park and the washings of zoo area were released to this pond that may added the organic constituents to the pond water. Hence a few genera of pollution indicating phytoplankton are present in the pond water.

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