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DIVERSITY AND SEASONAL FLUCTUATION OF PHYTOPLANKTON IN FRESHWATER RESERVOIR KHAIRKATTA DIST, KANKER, CHHATTISGARH

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ABSTRACT

Phytoplankton are the subject of great interest becomes of their role as primary producers in an aquatic ecosystem. The quantitative and qualitative studies of phytoplankton may provide good indices of water quality and capacity of water to sustain heterotrophic communities. The phytoplanktonic community are 29 species of the following 4 group Chlorophyceae 12 Species (48.00%), Myxophyceae 9 Species (36.00%) Bacillariophycveae 3 Species (12.00%) and Euglenophyceae 1 species (4.00%) has been observed Khairkatta Dam during study periods. The Diversity of the different phytoplankton in more summer season than during winter and rainy season.

Key words: *Diversity, Density, Khairkatta*

INTRODUCTION

Plankton is the most sensitive floating community which is being the first target of water pollution, thus any undesirable change in aquatic ecosystem affects diversity as well as biomass of this community. Phytoplankton are Autotrophs and belonging to first trophic level. The environmental variables such as temperature, pH and phosphate play a decisive role in altering the phytoplankton density. The diversity and seasonal fluctuation of Phytoplankton observed in Khairkatta Dam during one year study period. Similar attempts have also been made in different freshwater body of India Davis C.C.(1955) Zafar A.R.(1957), Philipose M.T.(1960), Zafar (1968), Sharma A.P. (1980) Velecha V. and Bhatnagar G.P. (1988), Mahajan A.(1995), Mishra, N.K. (2005).Shanker(2010), Leela et al. (2010), Nafeesa et al., 2011;Purushothama et al., 2011; Roy et al., 2011; Sayeswarab et al., 2011c;2011d; 2011e.

MATERIALS AND METHOD

Study Area:

The Khairkatta fresh water reservoir situated about 127 km west of Kanker city. Khairkatta reservoir is situated between 20.10” 32.460 N. latitude and 80.37” 22.810 E longitudes. The reservoir was surrounded by dense forest from two sides. There water spread area of 9717 hectors Phytoplankton diversity. Site 1 was fixed at near the Mendra village, site 2 near the village P.V no 1.

Water of Dam is used for irrigation and aquaculture practices. Present work has been

conducted on two sampling sites of Khairkatta Dam for the estimation of its Grazed site remained more or less constant through the year. It ranged from 0.02 to 0.03 percent. The overall organic carbon (0.48%), the percentage of nitrogen in the soil ranged between 0.07 to 0.36% and available potassium (53 to 92 ppm).

The present investigation was carried out for a period of one year's January to December 2011.Biological samples have been collected from the reservoir was fixed with 5 percent formalin for sedimentation. This sedimented sample was observed under microscope for algal composition and diagram was drawn. The identification of phytoplankton up to the species was with the help of literature cited Philips M.T (1967) and Gandhi (1995).

RESULT AND DISCUSSION

The population of phytoplankton in Khairkatta

Figure-1. Satellite image of Khairkatta Dam

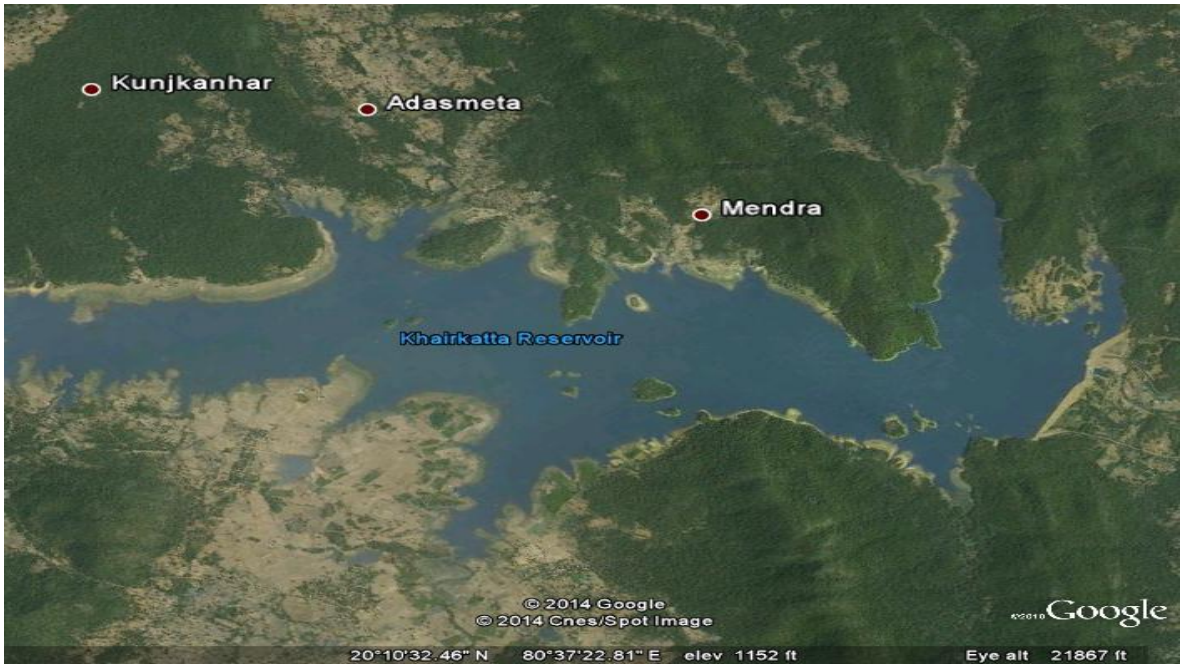
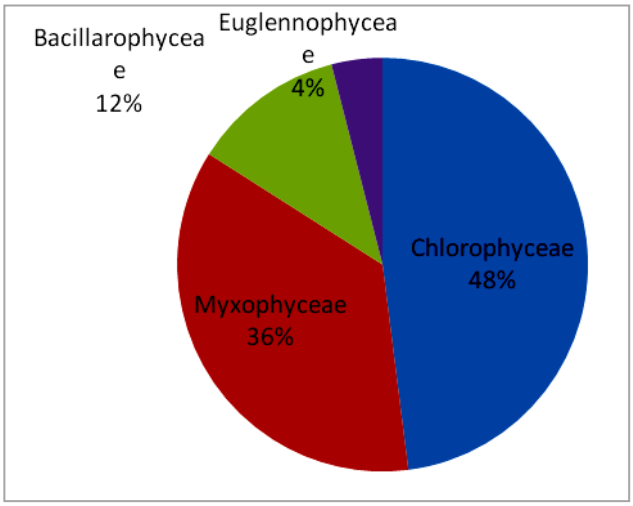


Table. 1:- Diversity of phytoplanktonic group of Khairkatta Dam Kanker C.G

Chlorophycae	Myxophyceae	Bascillarophyceae	Euglenophycae
Cosmarium	Anabena	Diatoma vulgare	Euglena
Chlorella	Arthropira jeanneri	Nitzscia	
Closterium	Microcystis aeruginosa	Navicula	
Gongrosira	Merismopedia glauca		
Odogonium	Nostoc		
Pedistraum simplex	Oscilatoria		
Schroederia setigera	Stigonema		
Sphaerocystis	Scytonema		
Scandesmus arcuatus	Spirulena		
Spirogyra microspora			
Ulothrix tenuissima			
Zygnema indicum			

Figure-2. Percentage composition of Phytoplankton in Khairkatta Dam



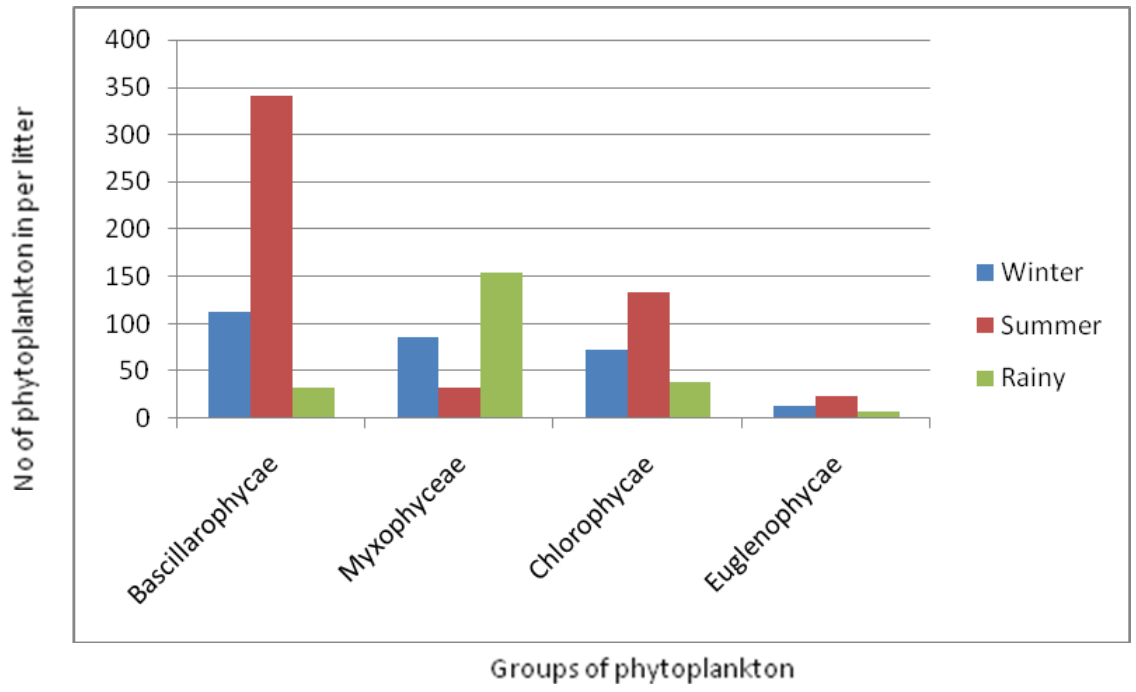
Dam composed of four major groups namely chlorophyceae, bacillariophyceae, myxophyceae, euglenophyceae. All the dominant group of phytoplankton were present throughout the year. Diversity analysis showed that Chlorophyceaenad 12 species, bacillariophycveae 03, Myxophyceae 09 species, Euglonophyceae 01 species. Their diversity of phytoplankton group show in table No. 1. Seasonal variation of phytoplanktonic species show in table No. 2. In the present investigation, the phytoplankton fluctuates monthly and its productivity high during summer season and low in winter and rainy season.

Maximum density of phytoplankton was observed at site P.V. 1 no village. %).

Table-2: Seasonal variation (%) phytoplankton in the fresh water Reservoir Khairkatta.

Season	Bacillarophyceae	Myxophyceae	Chlorophyceae	Euglenophyceae
Winter	112	86	73	14
Summer	341	32	134	23
Rainy	33	154	38	07
Total	486	272	245	44
Percentage	46.41	25.97	23.40	4.20

Figure-3. Seasonal fluctuation of phytoplankton in Khairkatta Dam



Chlorophyceae was observed to be the most dominant class of phytoplankton. Thus qualitatively Chlorophyceae formed the largest group and was followed by other group. The entire phytoplankton group was recorded throughout years.

During the study Bacsillariophyceae, Chlorophyceae and Euglenophycae were most dominated in summer and minimum observed in rainy season. Devika et al., (2006) also recorded high population during summer and suggested that this might be due to physical rather than chemical condition in which the water temperature and transparency had a direct relation with phytoplankton population. Ven Den Hoeck et al., (1995) reported that higher Chlorophyceae are a large and important group of fish water algae. %). Chlorophyceae was observed to be the most dominant class of phytoplankton. Thus qualitatively Chlorophyceae formed the largest group and was followed by other group.

CONCLUSION

The phytoplanktonic community is represented by 4 class and 25 species. Density of the different group of phytoplankton is more in the summer season than during winter and rainy season. The water of reservoir used for fish culture, Irrigation and drinking purpose.

REFERENCES

1. Adesau, T.A and D.I Nwankwo, (2008). Effect of water quality idices on phytoplankton of a sluggish Tied Creec in Logs, Nigeria. Pakistan J. Biols.Sci., 11, 836-844.
2. Adoni A.D.G., Joshi, K. Gosh, S.K. Chourasia, A.k. vaishya , Manoj Yadav and H.G Verma (1966). Work book on limnology. Pratibha Publisher, Sagar. Pp. 1-166.
3. Ahmad M.S. (1996). Ecoigica survey of some agal flora of polluted habitat of Darbhanga. J.Environ pollut., 3. 147-151.
4. Ahmad M.S. and E.N Siddique (1995). Freshwater diatom of Darbhanga. J.Freshwater Bios., 7, 41-48.
5. Bhatnaga G.P (1988) seasonalchanges of phytoplankton in relation to some physic chemical factor in lower lake. Bhopal,Geobios 15:170.
6. Chaturvedi R.K., K.P.Sharma, Kamaayani Sharma, S.M Bharawaj and S.Sharma (1999). Plankton community of pouted water around Sanganer, Jaipur. J.Environ. Pout., 61 77-84.
7. Cheappa N.T., J.M Borba and O. Rocha (2008). Phytoplankton community and physical-chemica characteristics of water in the pubic reservoir of Cruzeta, RN, Brazil. Braz. J.Bios., 68, 477-494
8. Kamat,s. and V.Sima (2000). Hydrological studies of two temple pond in ponda aluka Goa. Ecol. Environ. Con., 361-362.
9. Sultana L.H. and Gupta S (2009). Phytoplankton diversity and dynamics of Chatla floodplain lake Barak Valley, Assam, North East India- A seasonal study. J. Environ. Bios., 30, 1007-1012
10. Narayan, R,K.k Saxena and S. Chauhan (2007). Limnolologica investigation of Texi Temple pond in district Etawah (U.P). J. Environ. Biol., 28, 155-157.
11. Pundhir, P. and K.S. Rana (2002). Population dynamics of phytoplankton in the wetland area of keoladeo National Park, Bharatpur, (Rajasthan). Ecol. Environ. Conser., 8, 253-255.
12. Philipose M.T (1960) Fresh water phytoplankton of Inland Fisheries Proc. Symp. Algol Icar, New Delhi 272-291.2.
13. Shekhar et. al. (2008). Studied phytoplankton as indicator of water quality with references To industrial pollution.
14. Zafar AR (1964). On the ecology of algae in certain fish pond of HyderaIndia. Distribution of unicellular and colonial form. Hydrobiology. 24: 556-566.

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