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Phytoplankton Diversity of Benisagar Lake Panna

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Abstract

Study of phytoplankton diversity of Benisagar lake panna was carried out. The phytoplankton receive water from drainage water and rain water. All Species of phytoplankton were investigated.

Keywords: Phytoplankton, Benisagar Lake.

Introduction

Limnology is fresh water biology, Wetzel (1975) has defined Limnology as the study of the functional relationships and productivity of fresh water community. August Forel (1841 - 1972) and August Thienemenn (1882-1960) are the pioneer workers in the field of limnology. Our knowledge of limnology has been enriched greatly by Welch (1948, 1952), Hutchinson (1957, 1967), Macon and Worthington (1951), Macon (1963), Ruttner (1963), Welch Talling (1960-1975) and Wetzel (1975)

Nitrogen and phosphorus in river are often present at high concentration and generally in excess of algal requirements (Kelly and Whitton 1998, Young et.al. 1999 and Soininen and Kononen 2004). The growth of phytoplankton is unlikely to be constrained by nitrogen availability unless nitrate concentration fall below Reynolds (2006). Phytoplankton community has been extensilvely used as biological monitors from various parts of the world Atazaden et.al (2007).

Material & Method

The district Panna is situated in the Eastern part of madhya Pradesh. Its area is 2716 squae miles and its population is 4.28 lakhs. This district lies between 23 50' and 25°2' North latitudes and between 79°45' to 80°42' east latitudes. The boundries of this district touch Benda district of uttar pradesh in the North, Jabalpur district in the south east, satna district in north east and chhatarpur district in west.

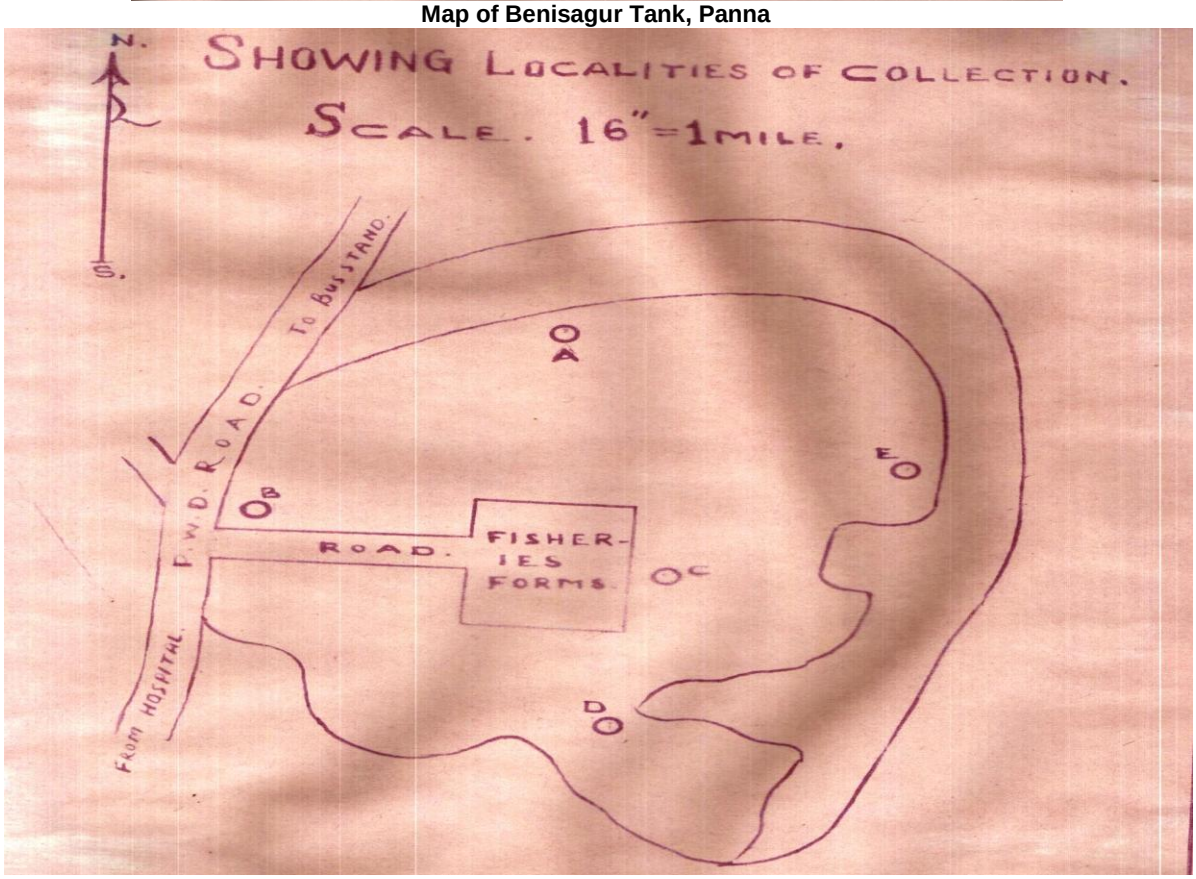
Five sampling station were selected for the purpose of present study. These have been called as A, B, C, D and E Each station was marked by bamboo which was inserted into the bed of lake for their permanent location.

1. Station A - Area of Northern side.
2. Station B - Area of west side
3. Station C - Area of eastern side near fisheries office
4. Station D - Area of Southern side
5. Station E - Area of Easter side

The depth variation at the five experimental sites was recorded using a non elastic card with a weight tied on the one end and a graduated scale.

For the study of planktonic forms 20 litres of water was filtered through a prece of silk bolting cloth. The sample was immediately preserved in 4% formaline. Identification of planktonic forms was done by using research compound microscope. Plankton counting was done by using Whipple micrometer.

Map of Benisagur Tank, Panna



Aim of the Study

To observe and Identify various Phytoplankton in different station of lake. Phytoplankton are the primary produces. Hence it is imperative to identify the various phytoplankton act as indicators of pollution of water.

Review of Literature

The positive effect of species diversityon the production and temporal stability of terrestrial plant communities has been studied extensively both theoretically and empirically (Tilman et al., 1997, 2006; Naeem et al., 2012).

More recent ecological theory has been trying to reconcile this apparent contradiction between theory and field data (Loreau, 2010).

New theoretical framework suggests that species diversity can increase aggregate community-level properties such as total primary production or biomass (Loreau, 2010). Different species may have distinct ecological nichesand thus would respond differently to environmental changes, leading to an asynchrony of individual population dynamics (Loreau and de Mazancourt, 2013).

Community assembly theory suggest that the two main processes that determine the distribution of species are ecological fitness by resource competition ability and environmental filtering (Cornwell et al., 2006; Kraft et al., 2015).

Environmental filtering occurs when a species arrives at a focal site but fails to survive even in the absence of neighbours; competitive exclusion occurs when a species arrives and can persist in the absence of neighbours but not in their presence (Kraft et al., 2015). The interplay of competition- and filtering-driven fitness leads to the *ecological selection* of species, a concept that refers to changes in dominance and species composition due to survival selection on ecological time-scales driven by differences in species traits (Loreau and Hector, 2001; Litchman et al., 2015). The rate of competitive exclusion is slower for species with similar fitness (Kraft et al., 2015),

Results and Discussion

Synopsts of Phytoplankton

Synopsts of the number of genera and species in different classes of Algae, occuring in Benisagar Lake, Panna

Sl.No.	Name of Genera	Total No. of Genera	Total No. of Spectes
	(A) Cyanophyceae		
1	Oscillatoria	1	2
2	Anabaena	1	2
3	Spirulina	1	2
4	Nostoec	1	2
5	Lyngibya	1	2
6	Nostochopsis	1	1
	(B) Chlorophyceae		
7	Ulothrix	1	1
8	Cladophora	1	2
9	Pediastrum	1	2
10	Spirogyra	1	4
11	Oedogonium	1	3
12	Coleochaete	1	3
13	Closterium	1	2
14	Chara	1	2
15	Oocystis	1	1
16	Cosmerium	1	1
	(C) Diatom		
17	Nevicula	1	1
	Total	**17**	**32**

The following is the summary of the classes, genera and apecies of microflore, observed in Benisagar lake Panna.

Total number of classes	3
Total Number of Genera	17
Total number of species	32

Conclusion

Thus phytoplankton represents an important link in aquatic food chain and contributes significantly to secondary production in fresh water ecosystem. Phytoplankton also plays an important role as indicator of strophic condition in cold Temperate and tropical water (Sharma1998)

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