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LIMNOLOGICAL STUDIES RELATED PHYTOPLANKTON'S CHARACTERISTICS IN RAMSHILA POND AT GAYA DISTRICT.

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Abstract

The present investigation was carried out on certain limnological parameters and distribution of phytoplankton's characteristics of Ramshila pond at Gaya District in different times intervals. A total of 36 species of Phytoplankton's were indentified during research period. Among the identified phytoplankton species Cyanophyceae formed the dominant group, followed by Chlorophyceae Bacillariophyceae and Euglenophyceae . The limnological parameters such as, pH, temrature, alkalinity, calcium, phosphate, total hardness, dissolved oxygen, biochemical oxygen demand, sulphate, iron and Floride were estimated in the samples to evaluate their quality.Phytoplankton species Cyanophyceae formed the dominant group, followed by Chlorophyceae Bacillariophyceae and Euglenophyceae and concentration of DO, BOD, Total hardness, Calcium, sulphate, alkalinity, phosphate, iron and chloride are within permissible limits and Iron, phosphate are negligible in comparison to permissible limits .The proper treatment necessary before the use for drinking purposes and irrigation purposes.

Key words : Limnological Parameters, Phytoplanktons, Pond, Water quality,

Introduction

. Although considerable investigations have been made by the researchers but a little information is known about the systematic limnological studies in ramshila pond at Gaya. It is important to note that no qualitative, quantitative or ecological study on limnology was made so far from Ramshila pond Gaya . Ramshila has received various types of sewage i.e., domestic sewage, cattle waste etc. Hence an attempt into the limnological investigation in relation to the different physicochemical characteristics of water taken up in the present investigation. Information about Ramshila pond . These freshwater communities are extremely sensitive to environmental variations. Phytoplanktons are the microscopic free floating algal communities of water bodies and productivity of an aquatic system is directly related to diversity of phytoplankton. The phytoplanktonic study is a very useful tool for the assessment of water quality and productivity of any type of water body and also contributes to understanding of lentic water bodies . Phytoplankton includes several thousands of microalgae belonged to Chlorophyta (green algae), Cyanophyta (blue green algae), Bacillariophyta (diatoms), Euglenophyta (pigmented flagellate or phytoflagellated) etc. They respond quickly to environmental changes and are used to assess the ecological status of water body. In the present study an attempt has been made to assess the limnological studies of phytoplankton and their distribution and fluctuations in the hydrological variables in the pond.

Materials and Methods

Water samples were collected for the study from the ramshila pond .Samples were collected in plastic bottles for physico-chemical and biological analysis. Water temperature, pH, dissolved oxygen and free CO were determined on the 2 sampling spots and other parameters were analyzed in the laboratory. It is small, open, shallow, round shaped, fresh water pond. All collections were made between 7.30 am to 9.30 amduring the study period. Phytolankton samples were collected by filtering pond water through plankton net with 25 µm mesh size. The filtrate was immediately preserved in 4% formaldehyde. The phytoplankton samples were observed thoroughly under microscope and have been identified with the help of standard literature (Fritsch, 1935; Desikachary, 1959; Round 1971; Prescott, 1978 and Anand, 1998) and Physico-chemical parameters were analyzed in accordance with APHA et al. (2012), Sarmah & Goswami (2012), Mishra & Singh (2018) and Choudhary (2019)

Results

Our result reveled that concentration of DO, BOD, Total hardness, Calcium, sulphate, alkalinity, phosphate, iron and chloride are within permissible limits and Iron, phosphate are negligible in comparison to permissible limits . In Ramshila pond 36 species of phytoplankton members were identified in four classes of algae viz. Chlorophyceae, Cyanophycae, Bacillariophyceae and Euglenophycae. Among these Cyanophyceae includes 17 species followed by Cholorophyceae 13 species, Bacillariophyceae 4 species and Euglenophyceae 2species were Recorded.

Table 1: Different phytoplankton species in Ramshila pond.

S.n	Phytoplanktons (algae)	No of species
1	Cynophyceae	17
2	Chlorophyceae	13
3	Bacillariophyceae	4
4	Euglenophyceae	1

Table 2: : Showing different parameters of Ground water quality of Ramshila pond.

S n	Parameters	Sampling and Analysis			
		March	July	November	February
1	Temperature(ºC)	28	31	26	27
2	PH	7.6	6.5	6.5	7.6
3	Alkalinity (mg/l)	230	230	240	230
4	Phosphate (mg/l)	0.0	0.0	0.0	0.0
5	Iron (mg/l)	0.3	0.3	0.3	0.3
6	Nitrate (mg/l)	15	15	10	15
7	Nitrite (mg/l)	2.0	3.0	3.0	2.0
8	Chloride (mg/l)	300	220	300	300
9	Total Hardness (mg/l)	340	350	200	500
10	DO(mg/l)	3.1	3.2	4.2	2.1
11	BOD(mg/l)	2.0	2.1	2.6	2.4

12	Floride	0.0	0.0	0.0	0.0

Conclusion

In Ramshila pond phytoplankton species Cyanophyceae formed the dominant group, followed by Chlorophyceae Bacillariophyceae and Euglenophyceae .concentration of DO, BOD, Total hardness, Calcium, sulphate, alkalinity, phosphate, iron and chloride are within permissible limits and Iron, phosphate are negligible in comparison to permissible limits . The Proper treatment necessary before the use for drinking and irrigation purposes.

REFERENCES

1. APHA 1992, Standard methods for the examination of water and waste water. 16 th ed. American Public Health Association, New York.

2. APHA. Standard methods for the Examination of water and wastewater, 17thEdition.American Public Health Association, New York.

3. A Kumar and V K Prabhat (2017) ANALYSIS AND ASSESSMENT OF GROUND WATER QUALITY OF BARACHATTI BLOCK , GAYA DISTRICT, BIHAR (INDIA) ,G J R A ,volume -6,page 179- 180.

4. Analysis of Dye contaminated river water. Ind. J. Environ. Hlth.40 : 7-14 (1998). Gitanjali G, and kumaresan A (2006) poll res.25(3),583 ICMR. Manual of Standards of Quality of Drinking Water Supplies. Indian Council of Medical Research, New Delhi.

5. BIS. Indian Standard specication for Drinking Water, IS:10500, Bureau of Indian Standards, New Delhi (1998).

6. Dyaneshwari P and Meena D. Seasonal variation ion DO and BOD of some lentic water bodies of Kolhapur city.

7. Sinha D K and Saxena R, Indian J. Environ. Protect. 2006, 26, 163.

8. Veera Bhadram K, Ravichandra M and Prashanthi M, Nature Environ. Pollut. Tech. 2004, 3, 65.

9. Barkatullah University, Bhopal (1994). Nice Chemicals (p) Ltd. Cochin, Kerala. Patil P R; Patil S K and Dhandae A D. Studies on drinking water quality in Bhuswal corporation water supply (2002).

10.Sharma B K and Kaur H. Environmental Chemistry Third edition. Krishana Prakashan Media (P) Ltd, Meeret. Page11. No. Env. 30-32,Water 67-76 (1996-97). • Sud, Surender. Beware: Water is Fast Becoming Scarce Yojana 41 (8) : 47- 48 (1997).

11. Wood, R.B. and G.E. Gibson, Eutrophication and Loch Heagen. Water Res. 1974, 7, 163-287.

12. Hemasundaram, A. K. Dhanalakshmi, B. Prasad and N.V.S. Naidu, Assessment of water quality with regard to surfactants in pilgrim town - a case study of Tirupati. Ultr. Scient. Phyl. Sci. 2003, 15(2): 189-194.