Environment Conservation Journal 11(1&2) 75-77, 2010
(ISSN 0972-3099)

Potential importance of Cyanophytes for sustainable development and exploitation in West Nimar of M.P., India

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Received: 11-10-2009 **Revised: 05-12-2009** **Accepted: 15-01-2010**

Abstract

The present paper deals with aquatic biodiversity of Cyanophytes at Khargone, Madhya Pradesh (India). During the course of study a total of 26 algal taxa belonging to 16 genera are reported in the water samples collected from various ponds and reservoirs.

Keywords: *Blue green algae, Cyanobacteria, Fresh water algae, Myxophyceae*

Introduction

Biodiversity is the variety and variability of organisms present on planet earth. Variation is one of the features in the process of evolution, which is occurring continuously in nature. It is the biodiversity that provides the basic resources for sustaining human race. Today in India, we are loosing our biodiversity at a greater rate, the reasons being the overpopulation, deforestation and pollution. Due to this about 55 percent of Indian fresh water species are threatened. Besides this a large number of plant and animal species are on the way of extinction. India is facing an alarming danger to the loss of aquatic biodiversity. Therefore it becomes essential to conserve these species from extinction and there is no option except to develop research strategies and public policies, which can help us in conserving the aquatic biodiversity.Various workers have contributed valuable information on aquatic biodiversity of India (Pandey and Purushothaman, 2005; Ahmed and Siddiqui,1990; Bilgrami and Munshi, 1979).The present study has been focused upon the algal communities in various ponds and reservoirs situated in and around Khargone.

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Materials and Method

The water samples were collected on monthly basis from Virla reservoir during the year 2007-08. The water samples were then analysed for various physico-chemical parameters following the standard methods as suggested by APHA (1998), Khanna and Bhutiani (2004) and Trivedi and Goel (1986). Identification of blue green algae was done with the help of standard literature (Smith,1950; Desikachary, 1959; Prescott, 1969 and Mahajan, 2005).The algal samples are deposited in the Botany Department of Govt. P.G. College, Khargone for future record.

Results and Discussion

The results of various physico-chemical parameters of Virla reservoir is given in Table 1 while the list of different species of cyanophytes observed during course of study is given in Table 2. From Table 2 it is revealed that 26 members of Cyanophyta (BGA) belonging to 16 genera were reported during course of study. Important taxa are *Anabaena*, *Aphanothece Arthrospira*, *Gloeocapsa*, *Merismopodia*, *Phormidium*, *Oscillatoria*, *Spirulina*, *Lyngbya*, *Microcystis*, *Nostoc*, *Cylindrospermum* and *Rivularia.*

As regards the physico-chemical characteristics of the water samples it has been noted that Blue green algae (BGA) develop in summer (June) due to high temperature as has also been pointed out by Ganapati (1960) and Seenayya (1972). High pH and bicarbonate also favour the blue-green algae. In contrast to this decrease in the concentrations of phosphate and nitrate was observed at the time of gradual disappearance of these groups of algae. The abiotic factors such as temperature, pH, nitrates, phosphates and bicarbonates generally affect the distribution of BGA with the range of chemical tolerance. Hence it can be concluded that chemical status of the water appears to be the most vital factor significantly influencing the general distribution of aquatic flora.

Table 1: Physico-chemical parameters of water sample collected from Virla reservoir of Khargone

S.No.	Parameters	Summer	Monsoon	Winter	Average
I	**Physical:**				
1.	Temperature (^{O}C)	22	20	17	19.66
2.	Turbidity (J.T.U)	200	350	100	216.66
3.	Conductivity(μmhos/cm)	0.41	0.36	0.33	0.36
II	**Chemical:**				
4	pH	8.30	7.50	7.20	7.66
5	Chlorides (mg/l)	39.76	45.00	36.50	40.42
6	Nitrates (mg/l)	0.14	0.33	0.25	0.24
7	Phosphates (mg/l)	0.22	0.35	0.26	0.27
8	Bicarbonates (mg/l)	158.60	150.00	138.00	148.86
9	Total solids (mg/l)	220.00	275.00	175.00	223.33
10	Total hardness (mg/l)	108.00	135.35	112.00	118.45

Table 2: List of different species of Cyanophytes reported from Khargone

S.No.	Name of species	S.No.	Name of species
1	*Anabaena ambigua*	14	*Johanbaptista* sp.
2	*Anabaena subcylindrica*	15	*Lyngbya lutea*
3	*Anacystis nidulens*	16	*Merismopodia punctata*
4	*Aphanocapsa littorale*	17	*Merismopodia convolute*
5	*Arthrospira massertii*	18	*Microcysris aeruginosa*
6	*Aphanothece microscopica*	19	*Microcystis viridis*
7	*Chroococcus limneticus*	20	*Nostoc linckia*
8	*Chroococcus minutus*	21	*Oscillatoria princes*
9	*Cylindrospermum* sp.	22	*Oscillatoria formosa*
10	*Gloeocapsa rupestris*	23	*Phormidium purpurescens*
11	*Gloeocapsa stegophila*	24	*Rivularia bacearіana*
12	*Gloeotrichia raciborkii*	25	*Spirulina mahajanii*
13	*Gomphospaeria* sp.	26	*Spirulina major*

Acknowledgement

Authors are grateful to Dr. N.K. Soni, Principal, Govt. College, Khargone, Dr. R.R. Kanhare, Professor of Zoology and Principal, Govt. P.G. College, Barwani and Principal Govt. College, Sehore, M.P. for providing us the necessary facilities and encouragement.

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