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ASSESSMENT OF WATER QUALITY OF LAKE KUTLUQ KHULTABAD (AURANGABAD DIST.)

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Research Article

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ABSTRACT

Lake Kutluq shows periodic infestation by Pistia. sp. For last three-four years. The physic-chemical parameters of this lake were studied for the last three-four years. Dissolved oxygen, hardness, temperature, chemical oxygen, phosphate demand, calcium, silicates were the different parameters studied during this period. The phosphates were always to be of the higher range i.e. (0.0486 mg/L to 0.250 mg/L). Lower values of phosphates coincided with free growth of Pistia. sp. while higher values coincides with decaying of Pistica. sp. and its sinking with rainfall. Calcium, silicates and hardness do not show any type of relation with the growth of Pistia. sp. whereas dissolved oxygen drops down to nearly zero with full growth of the species of Pistica in the lake.

KEYWORDS: Lake Kutluq, *physic-chemical parameters, Pistia. Sp.*

Introduction

Lake Kutluq is about 17 km from Aurangabad. It is very ancient lake which is well known. It shows presence of various protozoans, zooplanktons, algal growth, macrophytes, phytoplanktons, etc. It gets periodically infested by Pistia. sp. i.e. Pistia, Stratiotes. It stands spreading from the end of October and by December; the complete lake is fully covered with the species. Its existence is till March and even in April, and then Pistia. sp. starts decaying and by the rainy season sinks down to the bottom of the lake. While the remaining months the lake remains clear and clean till September.

It starts appearing in the end of October. This cycle of appearing, disappearing and re-appearing was observed four three to four years. Therefore to observe the physico-chemical parameters the study was carried out.

Materials & Methods:

The lake is of Historic importance as it is found in a very historic place in Khultabad. It is one of the oldest lakes from Aurangabad. During rainy season many small streams joins the lake and thus more water is added to the lake.

Water samples from the lake were collected seasonally from June 1999 to July 2002. The physico-chemical analysis of the water samples studied and performed as per the standard procedure described in APHA[1] (1981).

Results & Discussion:

During the present study the phosphates from lake were found to be always higher (0.0450 mg/L to 0.250 mg/L). The values of phosphates from lake showed a peculiar trend[2]. They were maximum during monsoon (0.200 mg/L) and then decreased in post-monsoon and winter, while in summer values of phosphates were the lowest (0.0450 mg/L). Higher values of phosphate coincided with decaying of Pista. sp.

and its sinking with rainfall and hence can be attributed to the release of phosphates from decaying matter[3,4].

In majority values phosphorus is normally the limiting elements. An increase in phosphate will result in an increase in the productivity.

The aquatic needs (delicate) plant are best known to absorption nutrients from water about 7 – 8 times higher than the required by the plants maximum production and therefore has the consumption of major nutrients than phytoplankton[5]. During the present study it was observed that the lowest value of phosphate (0.450 mg/L) coincides with fully grown Pistia. sp.

Calcium, silicates and hardness do not grow similarly pattern. Observation was made during present study as oxygen drops down to zero with full growth of Pistia. sp.

The macrophyte acts as pollution indicators of water bodies. They play an important role in energy input, nutrients and recycling of nutrients in water bodies[6]. The present study suggests the significant role of Pistia. sp. in the removal of nitrates and phosphates.

Therefore purposeful construction of wetland ecosystem is a technology in which shallow water bodies are specifically engineered using macrophytes for water quality treatment.

Table 1: Physicochemical Parameters of lake Kutluq

Season	Temperature	Hardness mg/L	Ca mg/L	Sio3-Si mg/L	PO4-P mg/L	DO mg/L
Summer May 1999	37.0	189	48.50	61.0	0.0450	0.02
Monsoon August 1999	30.0	122	32.59	20.1	0.250	10.0
Winter January 2000	36.0	154	40.00	25.60	0.137	1.3

The Pistia. sp. stratiotes in a macrophyte which is very commonly and often grown in this lake. Due to the growth the phosphate can be reduced and free the lake.

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