ASSESSMENT OF PHYSICO-CHEMICAL PARAMETERS OF FRESHWATER LAKE AMBONA, UMARKHED DIST. YAVATMAL

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ABSTRACT

All the freshwater resources are polluted due to discharges from agricultural, domestic and industrial wastes because; the waste water is not treated before discharge. Advanced water treatment methods are necessary to prevent such waste water. The physical chemical and biological characteristics of a water body define the water quality. The correlation between different parameters gives an effective index of water quality. Co-efficient of correlation is an index of the degree of association between two continuous variables. Present study indicates the co-efficient correlation between physico-chemical parameters and plankton's.

Keywords: *Phytoplankton, Zooplankton, Ambona Lake*

Introduction

Water resources are polluted because interference of Humans in addition of waste to the water or changing the physical, chemical and biological characteristics of water. The quality of water is an index to provide a complete picture of various water bodies. Because of drinking polluted water, health related issues arises like water borne diseases such as cholera, typhoid. Like that overuse of water and polluted water destroys the natural environment and increasing risks for many species of life. The water quality and quantity is deteriorating nowadays because of rapid industrialization, urbanization and increasing population growth. Most countries are aware of the necessity of freshwater requirement for life on the earth. Agriculture is the big reason for water pollution because every country using agricultural fertilizers and pesticides that gets contaminated with the ground water as well as surface waters. High levels of nitrates and phosphates in water stimulate the growth of algae leading to deoxygenation which can change the water body towards eutrophication. This can affect the metabolism of the organisms present in water.

In India lake pollution is severe problem due to addition of high amount of pollutants. Thus there is need of continuous monitoring of these water bodies. Recent works on ecological study carried out by Khatavkar et al (1989) on limnological aspects of lentic fresh water bodies of Kolhapur; Tripathi and Pandey (1989) on Chandari pond and Rao and Durve (1984) on Lake Rangasagar, Udaipur Rajasthan and Mathivanan V.; Vijayan P.; Sabhanayakm, S. and Jeyachitra, O. (2007) on Cauvery river with reference to pollution.

Materials and Methods

The water quality parameters of the Ambona Lake were monitored in the period of Dec 2019 to Feb 2020. Sampling at four points in the lake was carried out on the day of sampling. The physico-Chemical parameters of waters studied were water temperature, transparency, color, turbidity, pH, Dissolved oxygen, alkalinity, free CO2. Nitrogen and chloride. The analysis of water samples was done according to APHA (1998). The chemical parameters except pH (Units) were expressed in mg/lit. Samples of phytoplanktons were collected on monthly basis from sampling stations for study. Filtered samples were fixed and preserved by adding Lugol's Iodine for phytoplankton.

Results and Discussions

The three months observations on Ambona Lake indicated that the lake is most disturbed due to activities of domestic animals and pollution from agricultural run-off. From Dec 2019 to Feb 2020 investigations were carried out to know the physico-chemical and biological condition of the lake. The lake water shows alkaline nature with narrow range of pH. In February the low values of dissolved oxygen was recorded. The amount of free CO2 was

very low may be because of photosynthetic activity or free CO2 combines with water molecule. Phytoplanktons were maximum in entire assessment period, which indicates the temperature transparency, turbidity, alkalinity were favourable in their existence. Water containing pH value of more than 9 or less than 4.5 not suitable for use (Salla and Ghosh, 2014). PH is most important in determining the corrosive nature of water. Minimum pH value, maximum is the corrosive nature of water. PH was positively correlated with electrical conductance and total alkalinity (Gupta, 2009). Planktons play an important role in the food chain of aquatic ecosystems. The planktons form the basic level of food chain and hence the energy transfer is of great importance to the aquatic ecosystems. Oxygen containing in the water is important for many organisms and dissolved Oxygen affect many nutrients in water and therefore the periodicity of aquatic ecosystem (Azmi et al., 2015). Its correlation with water body gives direct and indirect information e.g. bacterial activity, photosynthesis, availability of nutrients, stratification etc. In summer months, the amount of dissolved oxygen lowers due to increase in temperature and also because of increased microbial activity (Patil et al., 2012). Nitrogen cycle represents the transfer of nitrogen to and from atmosphere, biosphere and hydrosphere. Man's interference with nature influence on the water quality by use of fertilizers such as ammonia and nitrogen compounds. Correlation studies between phytoplanktons exhibited the positive correlation with transparency and negative correlation with chlorides. Chlorophyceae was the most dominant group of the total phytoplankton.

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