STUDIES ON POLLUTION INDICATOR SPECIES AND WATER POLLUTION STATUS OF DERALA RESERVOIR, LOHA, DIST.NANDED, MAHARASHTRA.

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Abstract:

Hydrobiology is the science of life and life processes in water. One of the significant areas of current research is Eutrophication. Special attention is paid to biotic interactions in the reservoir. Biological assessment is a useful alternative for assessing the ecological quality of aquatic ecosystems. The study of phytoplankton is an important aspect of aquatic biology. Aquatic floral species are very sensitive and in a given aquatic body, these species serves as a indicator to pollution Phytoplankton species respond to physico-chemical factors and tend to represent variously in a given time. In present paper it was an attempt to study the group of such species and their seasonal presentation in relation to physico–chemical factors. Derala Reservoir Tq. Loha Dist Nanded was selected to analyze physico- chemical parameters in relation to pollution indicator species noted. This study was carried out during the period 2017-2018. The study revealed that there was significant seasonal variation in physico-chemical parameters, which correlates with the distribution of pollution indicator species .Most of the parameters in the present. Study were in acceptable range and from the result it is concluded that the reservoir remained semieutrophic.

Keywords Derala Reservoir, Physico-chemical Parameters, phytoplankton's.

Introduction:

Water is a vital resource used for various activities such as drinking, irrigation ,fish production, industrial cooling, power generation and many more other (Sathe et al.,2001)The increased anthropological influence in the recent years in and around aquatic system and their catchment areas have contributed to a larger extent to deterioration of water quantity and dwindling of water bodies leading to their accelerated Eutrophication (Bhatt et.al .,1999).Phytoplankton constitutes the very basis of nutritional cycle of an aquatic ecosystem .They form a bulk of food for all zooplankton ,fishes and other aquatic ecosystem dependents on the biotic properties of water and the biological diversity of the ecosystem (Harikrishnan et al.,1999) .The phytoplankton study is very useful tool for the assessment of water quality in any type of water body (Pawar et al.,2006) .Algae are natural pollution indicator of water and system growth of algae is usually limited by the small quantities of inorganic nutrients dissolved in surface waters .study on physic chemical and biological parameters of aquatic bodies has been done by many researchers in India (Pendse 2000 and Sivakumar et al.,2000).

The present investigation was carried out to study various physicochemical parameters and phytoplanktons of Derala Reservoir.

Study area:

The study area Derala Reservoir is present in the Nanded district of Marathwada region of Maharashtra and has a predominantly agrarian economy. Derala is a Village in Loha Taluka, Nanded District, and Maharashtra State. The area present undulating topography with uneven hills, plateau, gentle slopes and valley planes. Nanded is situated 650 km. away from Mumbai and 270 km. away from Hyderabad. Nanded has a uniqueness of its own due to its historical, social and political importance. Nanded is linked by roads to other urban areas by major state highways. The climate in Nanded district extreme with large variations in the temperature.

Materials and Methods:

Water samples were collected the in the one liter clean plastic bottles at monthly intervals during year 2017-2018 samples were kept in the ice box and transported in the laboratory. Initially the water samples were filtered through filter system to remove planktons and waste floating material and the filtered sample were used for the analysis of other physical and biological parameters. Algal samples were identified in the laboratory by using phase contrast microscope and by following algal taxonomic books .Few parameters like water Temperature ,pH, DO ,were recorded at the sampling site and other parameters like chlorides, phosphate, turbidity Total dissolved solids were estimated in laboratory using standard methods for the estimation of water(APHA 1992).

Results:

Distribution of Phytoplankton and their variation at different zones of a water body is known to be influenced by the physic-chemical parameters of water (Yeragi 2003).Environmental condition is the main controller for the formation of phytoplankton .Phytoplankton's were found to be temperature dependent particularly during summer and winter months .Phytoplankton's population of the reservoir showed bimodal pattern in summer and winter .Physical factors such as temperature ,pH, dissolved oxygen ,Free CO2 control phytoplankton's diversity and density .

The increase in the phytoplankton s density and diversity indicate that the pollution get rise in the given reservoir .Water temperature is one of the important physical parameter which directly influences some chemical reactions in a water body.

The seasonal variation was noted, water temperature was higher in summer and lower in winter season. Water became cleaner during summer and thus transparency was higher during summer and lower during rains. The phytoplankton's, blue green algae and diatoms like, Oscillatoria, Anabena, Microcystis, Navicula, Nitzschia, and green algae like, Pandorina, Ankistrodesmus, Chlamydomonas, also occur abundantly and frequently.

Conclusion:

In the present investigation the study were done to find out the various planktons of the Derala Reservoir. An attempt has made to find out the biological status and effects of this variance on the quality of water. It may be concluded that the variation in physic-chemical parameters are responsible for the fluctuation in the pollution indicator species diversity of the phytoplankton's of Derala Reservoir. Dominant species are reported to be most important indicators, as they receive the full impact of habitat and are effective to assess the changes caused by anthropological activities.

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