Zooplanktons as bioindicators of pollution in fresh water lakes of Hyderabad

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__Abstract :__

Water quality in tropical reservoirs can be indicated by using specific species of cyclopoid as indicators .In this review,the concept behind Bioindicators and plankton, with particular emphasis on their potential to be used as Bioindicators for water quality assessment . The zooplankton were identified to genus or species level under a **foldoscope**.

Introduction   :

Bioindicators are living organisms such as plants, planktons, animals, and microbes, which are utilized to screen the health of the natural ecosystem in the environment. They are used for assessing environmental health and biogeographic changes taking place in the environment. Each organic entity inside a biological system provides an indication regarding the health of its surroundings such as plankton responding rapidly to changes taking place in the surrounding environment and serving as an important biomarker for assessing the quality of water as well as an indicator of water pollution .

Since planktons are profoundly sensitive to natural change they are best markers of water quality and particularly lake conditions. One of the reasons planktons are being considered in lakes is to monitor the water quality of the lake when there are high centralizations of phosphorus and nitrogen; these centralizations may be indicated by certain planktons reproducing at an increased rate. This is evidence of poor water quality that may influence other organisms living in the water body. In addition to being a health indicator, planktons are also the fundamental sustenance for many larger organisms in the lake. Thus the plankton is key to the aquatic organisms, as both an indicator of water quality and as the main food source for many fishes . (Thakur et al. 2013) .

Plankton also plays an important role in biological deterioration organic matter; but if plankton populations are too large this creates other problems in managing the water body. Fish at this critical stage of ecological process play an important role by grazing the planktons. The two roles played by fish are very crucial as they help in maintaining the proper balance of planktons in the pond and convert the nutrient available in wastewater into a form which is consumable by humans. (Pradhan et al. 2008) .

Methodology :

In situ physical and chemical measurements, water samples for analysis and quantitative zooplankton samples were taken from the two reservoirs The transparency of the water column checked by readings of the Secchi Disk and depth measurements will be performed.

Semi-quantitative samples of zooplankton were collected using plankton net of 68 μm mesh aperture, by vertical hauls. The collected volume of water will be calculated by multiplying the area of the net mouth by the trawl depth. After sampling, the material is preserved in 4% formaldehyde solution.

The zooplankton were identified to genus or species level under a **foldoscope**.
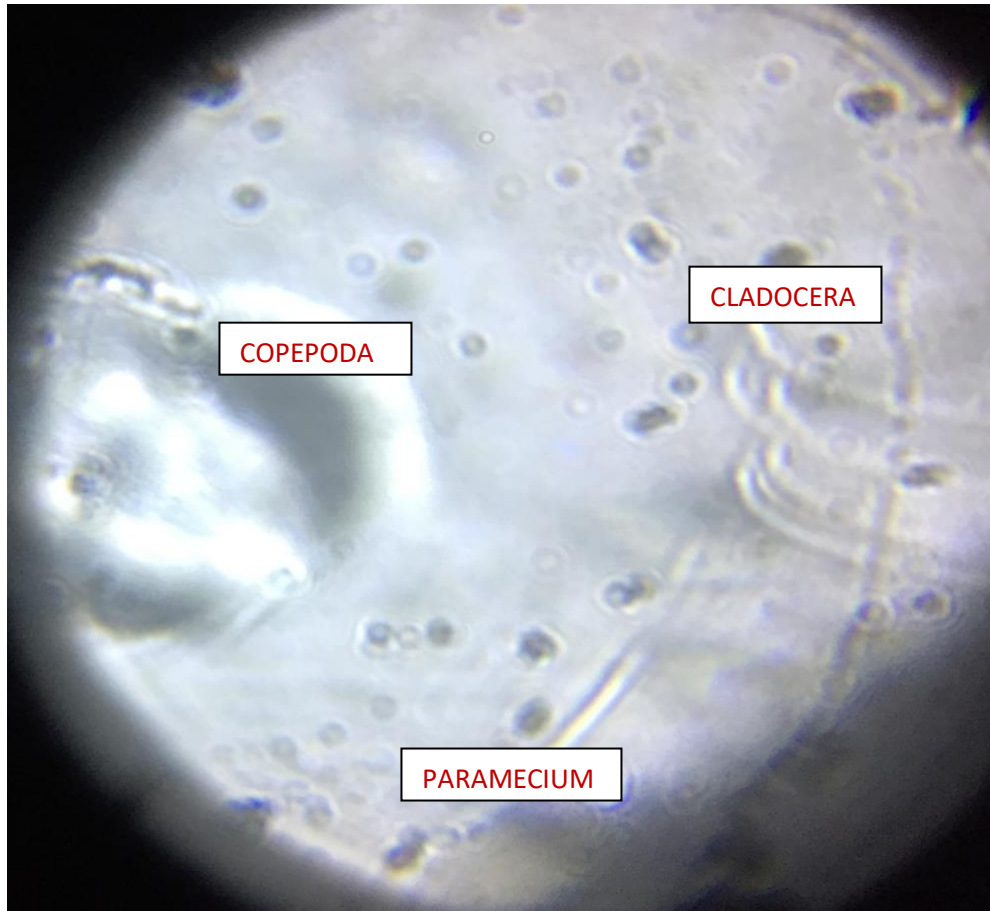
Results

OSMAN SAGAR SAMPLE
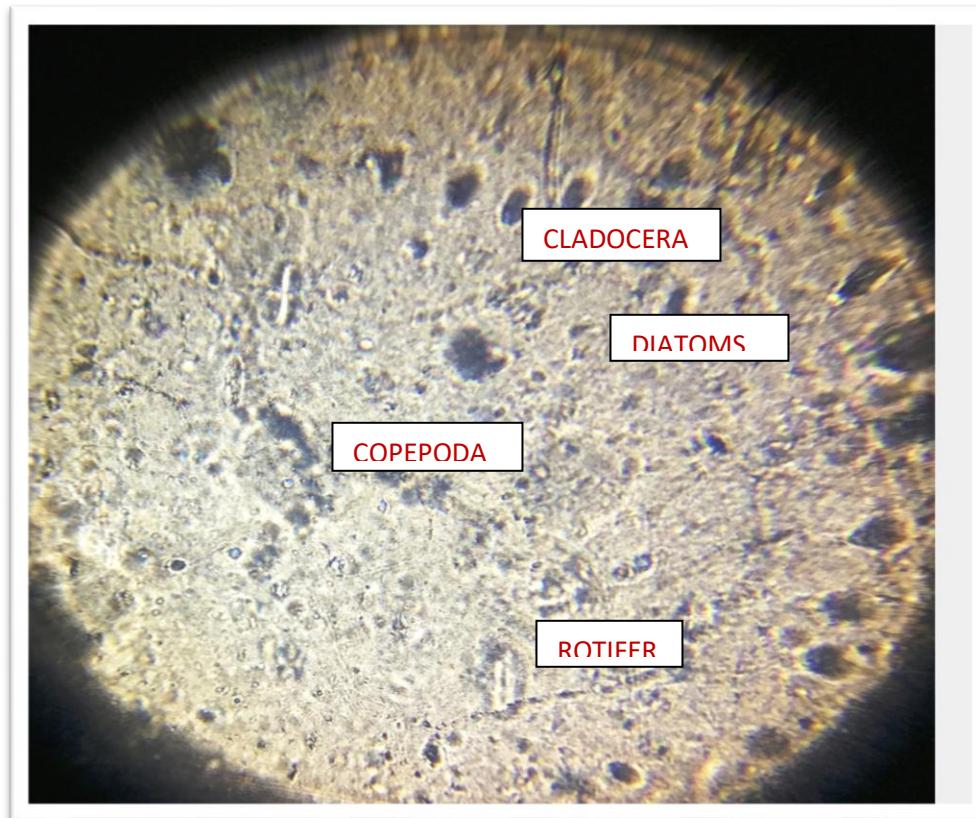
Legend for figure :

The following zooplanktons were seen in osman sagar sample

- COPEPODS
- CLADOCERANS
- ROTIFERS
- DIATOMS

<u>HIMAYATSAGAR SAMPLE</u>

<u>Legend for figure :</u>

The following zooplanktons were seen in Himayatsagar sample

- COPEPODS
- CLADOCERANS
- ROTIFERS

The presence of cladocerans shows that the samples are polluted.

Discussion :

Zooplanktons are minute aquatic animals that are non motile and drift easily in water column of ocean,seas and fresh water bodies.usually they move in the sunlight zone where food resources are abundant and they also found in deep ocean water.

Since zooplankton plays important role in food web by linking the primary producers (by consuming phytoplankton, mainly various bacterioplankton and sometimes zooplankton) and higher trophic levels. The fresh zooplankton comprise of protozoa, Rotifers, Cladocerans, Copepods and Ostracods.

Variations in the populations of animals may indicate harmful changes caused due to pollution into the ecosystem. Changes in the population density may indicate negative impacts to the ecosystem. Changes in populations may be a result of the relationship between populations and food sources (Plafkin et al. 1989). These studies demonstrated that the predominant planktons and their regularity are exceptionally variable in diverse water bodies relying upon their supplement status, age, morphometry, and other location variables. Hence, they are also used as indicators of the trophic state of lakes (Thakur et al. 2013) .

The present study was taken to analyse the zooplanktons present in osman sagar and Himayat sagar lake using foldscope and also how these zooplanktons are acting as bioindicators .The study shows the presence of copepods,cladocerans,diatoms,rotifers and paramecium.

The presence of cladocerans shows that the waters are polluted.

Refrences

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