



# Zooplankton diversity and their monthly variation in Chakki Talab, Bodhan, Telangana

Lingampally Vasudha<sup>1\*</sup>, Solanki V.R. <sup>2</sup>, S. Sabita Raja<sup>1</sup>

<sup>1</sup>Department of Zoology, Nizam College, Osmania University, Hyderabad, India.

<sup>2</sup>Department of Zoology, University College of Science, Saifabad, Osmania University, Hyderabad, India

\*Corresponding author: [vasudhav.lingampally@gmail.com](mailto:vasudhav.lingampally@gmail.com)

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## ABSTRACT

Chakki talab is one of the lakes in Bodhan, Telangana, India. Most of the lakes in India are under threat from nutrient overloading, leading to their eutrophication which is responsible for deterioration of water quality. In fresh water bodies zooplankton play an important role in maintaining the ecological balance and are used as potential bioindicators for assessing water quality, biological monitoring and changing trophic condition. In this regard the zooplankton diversity of Chakki talab was evaluated on monthly basis for one year, October 2015 to September 2016. In the present investigation the percentage abundance of zooplankton was Rotifera > Ostracoda > Protozoa > Copepoda > Chironimids > Cladocera. The abundance of Rotifera throughout the study period reflects the increase in entry of nutrient load into the Chakki talab through nonpoint sources. Keeping in view the present ecological status of Chakki talab, continuous surveillance is recommended.

**Keywords:** Zooplankton, bioindicators, Eutrophication, Chakki talab, Bodhan.

## INTRODUCTION

Zooplankton represent a highly diverse and complex heterotrophic plankton. Zooplankton are one of the most important biotic components occupying the base of aquatic food chains influencing all the functional aspects of an aquatic ecosystem (Supritam pal et al.2015). Multiple studies have made a consistent and crucial realization that zooplankton taxa are rapid responders to many environmental stressors, such as hydrological changes, climate changes and anthropogenic activity-induced water pollution (Duggan et.al.,2001; Pawlowski et.al.2016). In fresh water bodies zooplankton play an important role in maintaining the ecological balance and are used as potential bioindicators for assessing water quality, biological monitoring and changing trophic condition (Solanki et.al.2016).

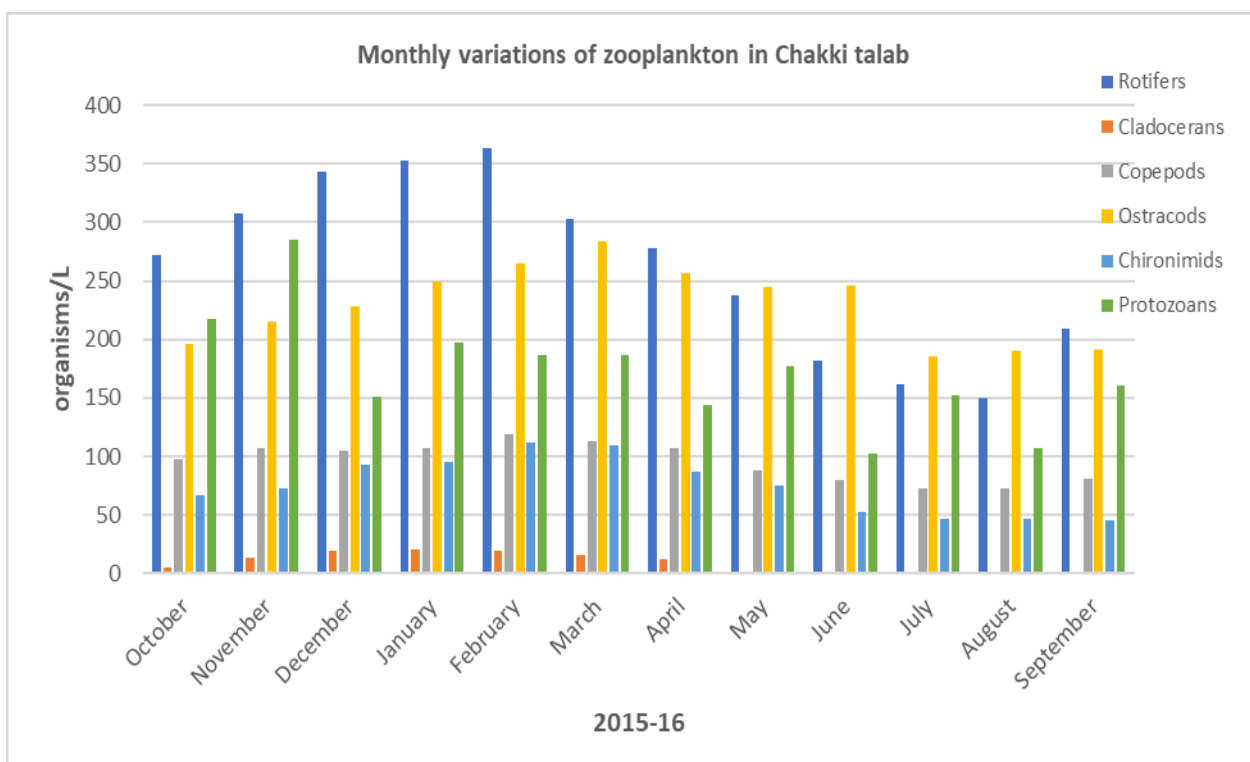
Bio-monitoring zooplankton communities has become a widely accepted and irreplaceable aspect in ecological conservation and management of aquatic ecosystems (Wei Xiong et al. 2020). Therefore, the present work was done to determine the monthly variations of zooplankton, the potent biological indicators to know the ecological status of Chakki talab, Bodhan.

## MATERIALS AND METHODS

Chakki talab is one of the prominent lakes located on the south side of Bodhan town near residential localities. The Sampling and investigation during the present study was carried out according to standard methods. For zooplankton study water samples were obtained by passing 50L water through plankton net. Utmost care was taken to keep water undisturbed at the time of sampling. The collected samples were preserved by adding 4% formalin solution. Identification of zooplankton was done with the help of fresh water biology Edmondson, 1965. Counting of organisms was done using Sedgwick-Rafter counter and the dilution technique. The population density of zooplankton is represented per litre of water.

## RESULTS AND DISCUSSION

The observed Rotifer genera were *Brachionus*, *Keratella*, *Proales*, *Lecane*, *Monostyla*, *Epiphans* and *Asplanchna*. They were found to be maximum in the month of February while minimum in the month of August, 2016 (Graph 1). Ostracoda, in the present study was represented by *Cypris*. *Cypris* was found throughout the study period and was abundant during the month of March and minimum during July, 2016. Protozoans were dominated by ciliates. They were found in maximum number during February and minimum during July, 2016. Copepoda is represented by *Cyclops* and *Nauplius* larvae which were found throughout the study period. Their density was maximum in the month of February and minimum in the month of July, 2016 (Graph 1). The *Chironomid* larvae (Diptera) were found to be maximum during February and minimum during the month of September, 2016. The Cladocerans were represented by two genera, *Daphnia* and *Ceriodaphnia*. These Cladocerans were found throughout the investigation period. Cladoceran density was maximum during February and minimum during the month of July, 2016 (Figure 1).



**Figure 1: Monthly variations of Zooplankton in Chakki talab**

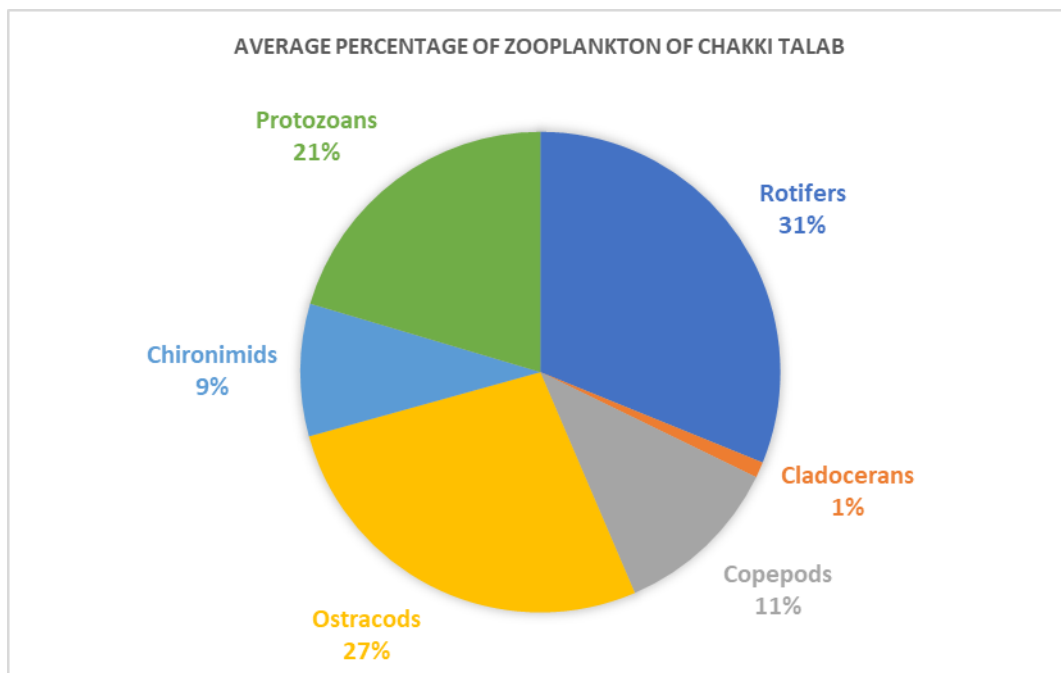


Figure 2: Average percentage of Zooplankton of Chakki talab

In the present investigation the percentage of abundance of zooplankton was Rotifera >Ostracoda> Protozoa > Copepoda > Chironimids >Cladocera (Figure 2). This pattern of monthly fluctuation of zooplankton might be due to the influence of abiotic components existing in Chakki talab. Moreover, the abundance of Rotifers throughout the study period reflects the increase in entry of nutrient load into the Chakki talab through nonpoint sources.

## CONCLUSION

In the present study, monthly variation and abundance of Zooplankton of Chakki talab was observed. The consistent abundance of Rotifers, considered as potent biological indicators of eutrophication, throughout the duration of the investigation signifies an increase in the influx of nutrient load into Chakki talab from nonpoint sources. Keeping in view the threat of cultural eutrophication, continuous surveillance of Chakki talab is recommended to assess and address the potential impacts of excessive nutrient enrichment on the cultural and ecological aspects of the water body.

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**Correspondence** and requests for materials should be addressed to Lingampally Vasudha.

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