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Short Communication

Effect of dissolved oxygen on Rotifers of Chakki Talab, Bodhan, Telangana, India

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Abstract

The present investigation was designed to study the diversity and abundance of rotifers in relation to dissolved oxygen of Chakkitalab, Bodhan, Telangana. In the study period from October 2015 to September 2016 rotifers belonging to 7 genera were observed and a slight change in the dissolved oxygen level affected their density. The genera Brachionus and Keratella were dominant indicating the eutrophic status of Chakkitalab.

Keywords: Rotifers, dissolved oxygen, eutrophication, chakkitalab, Bodhan.

Introduction

In fresh water bodies the rotifer species composition play an important role in the ecological balance and are used as potential bio-indicators for assessing water quality, biological monitoring and changing trophic condition[1,2].

Rotifer distribution and diversity is influenced by deteriorating quality of water in freshwater ecosystems and eutrophication[3]. Enrichment of water bodies with nutrients is a growing global environmental challenge leading to deterioration of water quality of the water bodies worldwide. The domestic sewage and industrial effluents entering into natural water bodies change the water quality and lead to eutrophication[4]. In this regard the present investigation is done to study the impact of dissolved oxygen on Rotifers of Chakkitalab to assess its trophic status.

Materials and methods

Chakkitalab is one of the prominent lake located on the south side of Bodhan town near residential localities. The Sampling and physicochemical investigation during the present study was carried out according to standard methods[5].

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 Rotifers was done with the help of fresh water biology Edmondson[6]. Counting of organisms was done using Sedgwick-Rafter counter and the dilution technique.

The population density of rotifers is represented per liter of water.

Results and discussion

The dissolved oxygen levels of Chakkitalab varied from 4.1 to 6.8mg/L with an average of 5.40±0.96mg/L (Figure-1). In Bellal and Pandu lakes of Bodhan the dissolved oxygen levels ranged in between 4.40 to 13.70mg/L with an average of 8.41±3.05 mg/L[7] and 1.70 to 7.60mg/L with an average of 3.17±1.52mg/L respectively[8]. Low levels of dissolved oxygen in Chakkitalabis indicative of eutrophication which may be due to discharge of untreated domestic sewage.

Rotifer genera observed were *Brachionus, Keratella, Proales, Lecane, Monostyla, Epiphans and Asplanchna*. Rotifers were found to be maximum in the month of February 2016 while minimum in the month of August 2016. The order of dominance of Rotifer genera during the study period was as follows *Brachionus>Keratella>Proales>Lecane>Monostyla>Epiphans >Asplanchna* (Figure-2).

The rotifer genera observed in the present investigation showed a positive correlation with dissolved oxygen (Figure-3) as also observed by Pandey BN[9]. Certain species of rotifers have been reported as bioindicators of eutrophication[10]. The species of genera Keratella and Brachionus are pollution tolerant species and reflect accumulation of organic matter[11]. In eutrophic and mesotrophic lakes abundant population of *Brachionus*was reported[12]. *Brachionus* and *Keratella* were found to be abundant throughout the study period indicating the organic load in the water body which is a key source to eutrophication.

Conclusion

The dissolved oxygen levels in the Chakkitalab are nearer to the permissible limits but the abundance of the Rotifer genera Brachionus and keratella throughout the study period reflects the nutrient load of Chakkitalab.

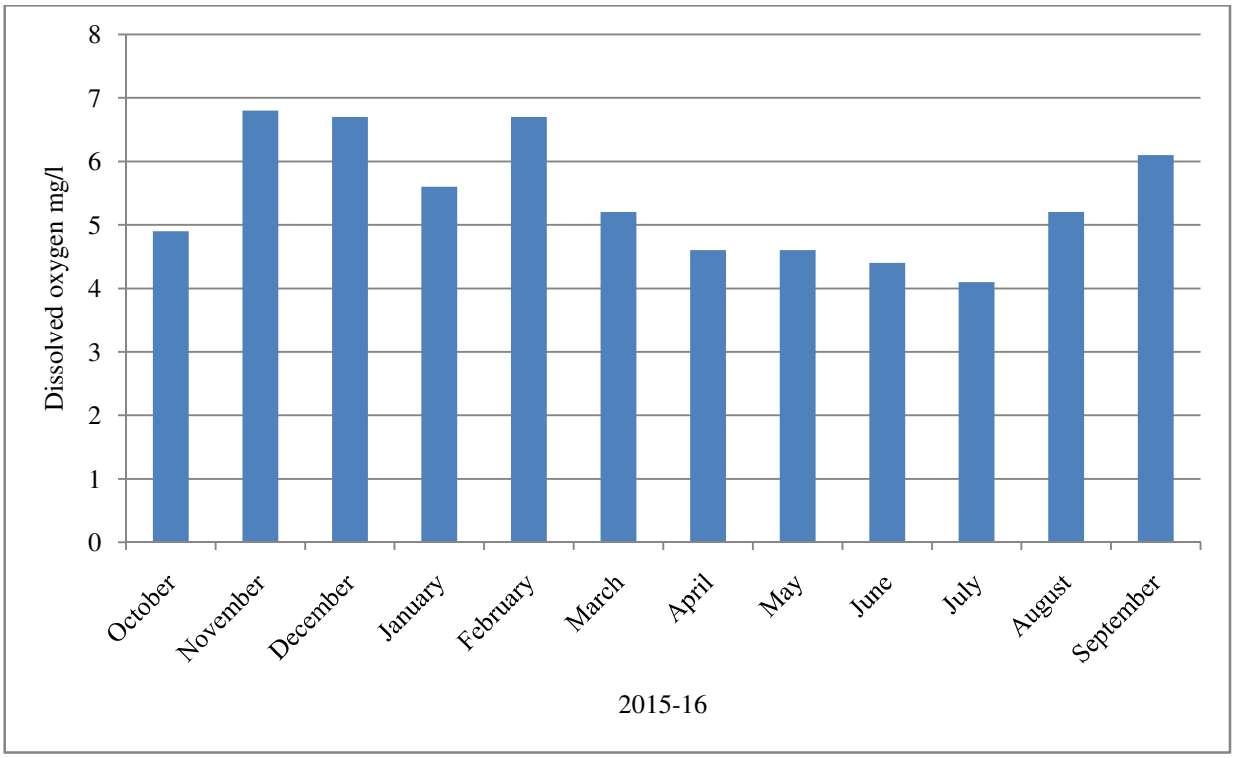

Figure-1: Monthly Variations of dissolved oxygen.

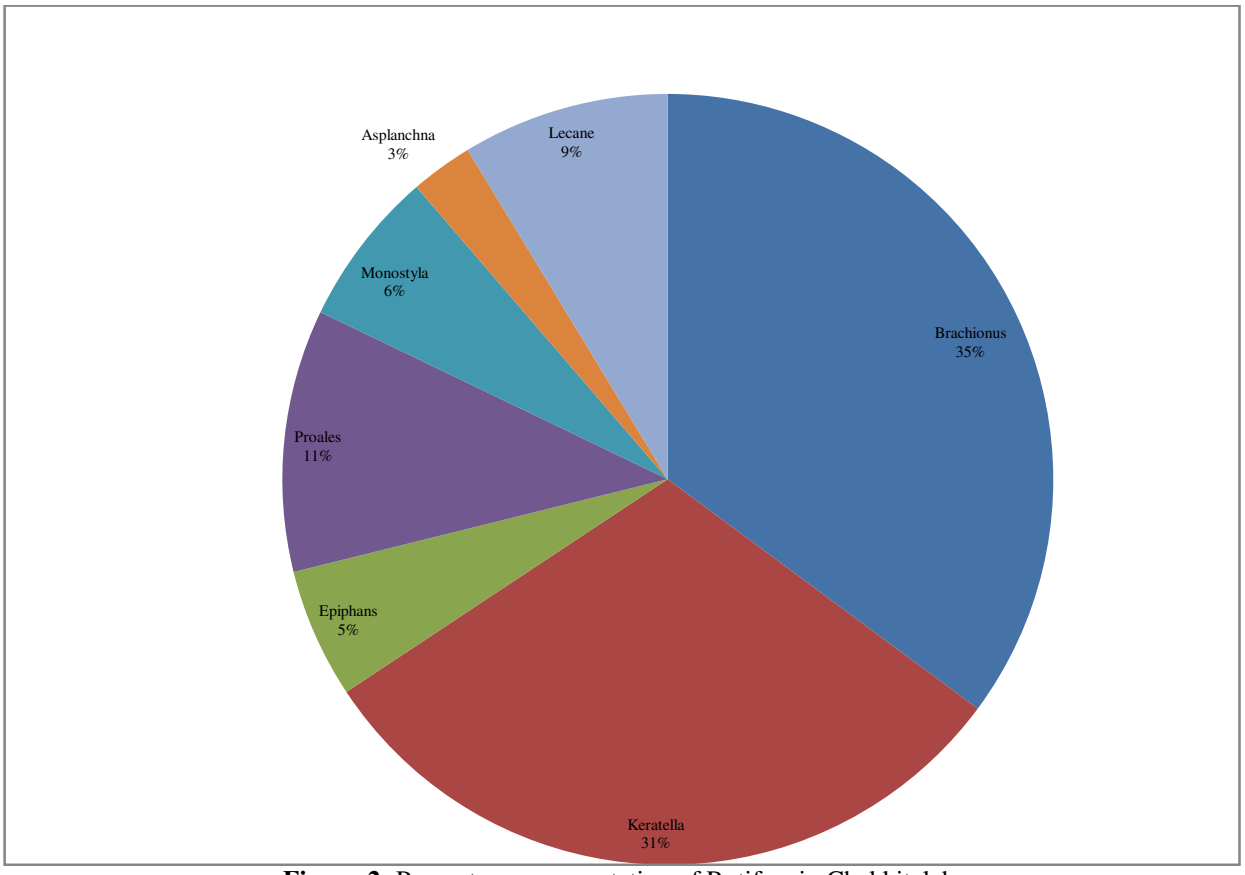

Figure-2: Percentage representation of Rotifers in Chakkitalab.

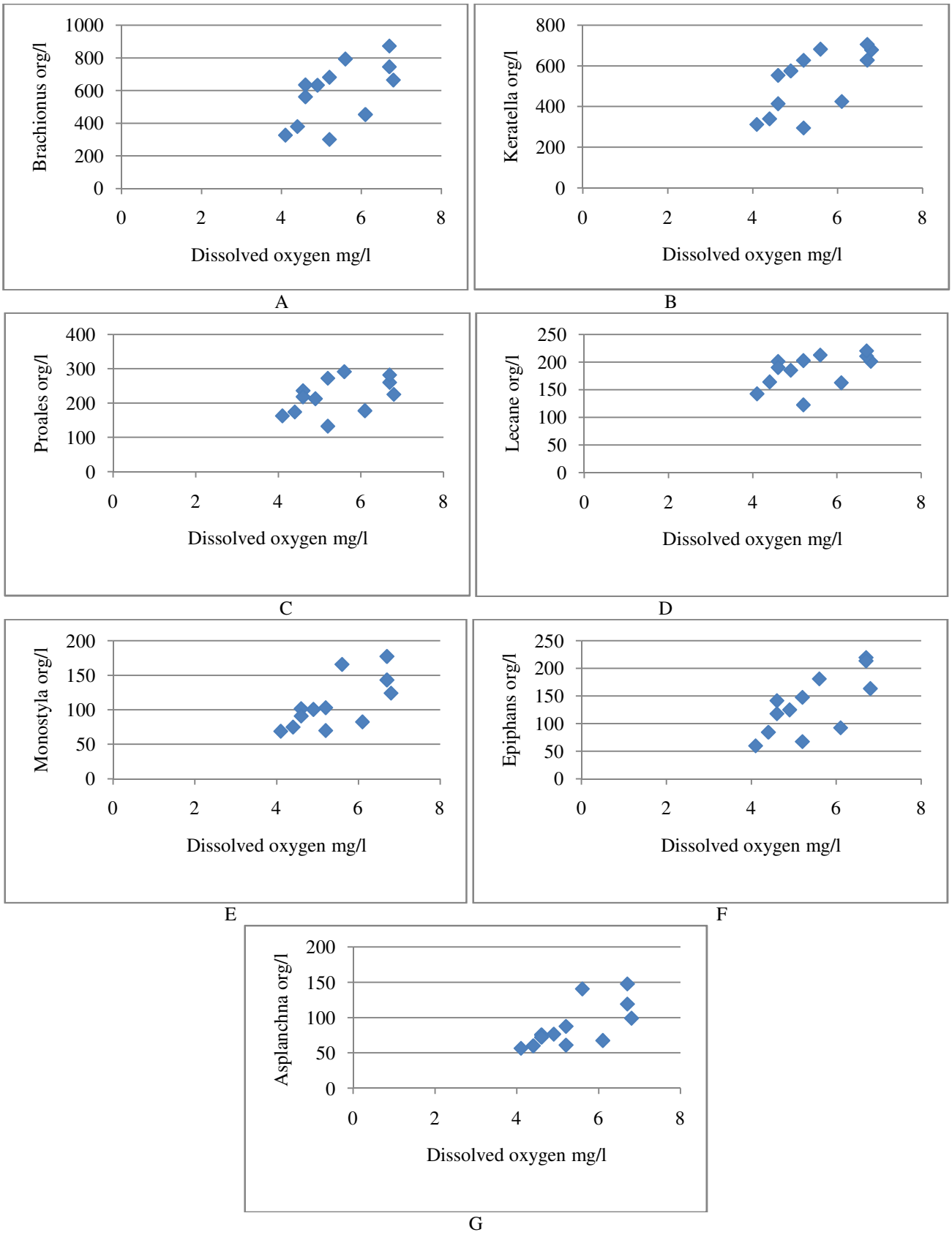

Figure-3A-G: Correlation between Rotifers and Dissolved Oxygen.

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