REVIEW OF RESEARCH

# STUDY ON ZOOPLANKTON DIVERSITY OF RISHI LAKE, KARANJA (LAD), DIST. WASHIM, MAHARASHTRA, INDIA

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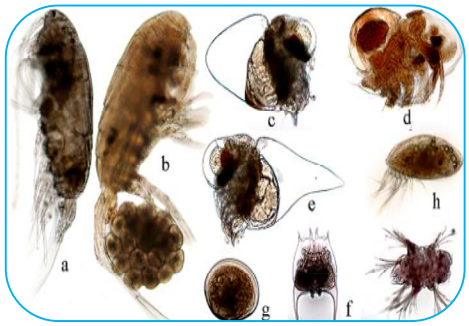


**ABSTRACT:**

*The study was conducted during February 2014 to January 2016 to analyse the zooplankton status of Rishi lake of Karanja (Lad), Dist. Washim, Maharashtra, India. During the period of investigation, fifty one species belonging to five groups were identified. The maximum number of individuals was observed during winter and lower by summer and monsoon. The Rotifers were obtained in maximum quantity while Cladocera and Copepoda showed the moderate population. The present investigation suggested the potential nutrient content in Rishi lake of Karanja (Lad), Dist. Washim, Maharashtra, India.*

**KEYWORDS**: *Zooplankton, Rishi lake, Karanja (Lad), Washim, Maharashtra,*

## INTRODUCTION:

Among entire aquatic biota, the zooplanktons are one of the important biological indiactor that represent the health of water body. Zooplankton is small creatures suspended in the water section Pawar (2016). Like phytoplankton, these species have created components that shield them from sinking to more profound waters, including drag-initiating body structures and the dynamic flicking of limbs, for example, radio wires or spines. Staying in the water segment may have its preferences as far as sustaining, yet this current zone's absence of refugia leaves zooplankton powerless against predation Taruni and Manoj (2017). Accordingly, a few species, particularly Daphnia sp., make every day vertical relocations in the water segment by latently sinking to the darker lower profundities during the day and effectively moving towards the surface during the night Sivalingam (2018). Likewise, on the grounds that conditions in a lentic framework can be very factor crosswise over seasons, zooplankton can change from laying standard eggs to resting eggs when there is an absence of nourishment, temperatures fall beneath 2 °C, or if predator plenitude is high. These resting eggs have a diapause, or torpidity period that ought to permit the Narasimman et al. (2018).

In this concern, the study was conducted during February 2014 to January 2016 to observed the zooplankton status of Rishi lake of Karanja (Lad), Dist. Washim, Maharashtra, India.

## MATERIALS AND METHODS

Rishi lake is located between 77° 29' E and 20° 29' N at 1318 feet above mean sea level. During monsoon reservoir gets enough water but in post monsoon period particularly March and April water level is very much reduced. The reservoir is surrounded by red laterite soil and black cotton soil. The inland reservoir is fed by seasonal drainage to its periphery and nearby local streams and springs.Water samples were collected from the dam early in the morning from 07.00 a.m. to 08.30 a.m. (APHA, 1998) in the first week of each season for two years from Monsoon 2016 to Summer 2018. Each of the 1 lit samples collected was centrifuged to concentrate the

plankton organisms. These samples were made up 100 ml after removing the surface water in the centrifuge tube. Phytoplankton was studied for qualitative details. Observations were made using a microscope with 40x magnification (Trivedy and Goel 1986).

## RESULT AND DISCUSSION

During the period of investigation, fifty one species belonging to five groups were identified. The maximum number of individuals was observed during winter and lower by summer and monsoon. The Rotifers were obtained in maximum quantity while Cladocera and Copepoda showed the moderate population. The Rishi lake represented rich zooplankton diversity. Biodiversity for the most part alludes to the assortment and inconstancy of life on Earth. Biodiversity normally quantifies variety at the hereditary, the species, and the environment level. Earthly biodiversity will in general be more prominent close to the equator, which is by all accounts the consequence of the warm atmosphere and high essential profitability. Biodiversity isn't uniformly dispersed; rather it shifts extraordinarily over the globe just as inside locales. Among different variables, the decent variety of every single living being relies upon temperature, precipitation, elevation, soils, geology and the nearness of different species (Arora and Mehara, 2009).

**Table 1: Zooplankton groups with their respective genera composition**

| ***A] Rotifera*** | ***B] Cladocera*** |
|---|---|
| 1. *Ascomoypha saltans* | 1. *Bosmina longirostris* |
| 2. *Asplanchna prodota* | 2. *Ceriodaphnia laticaudata* |
| 3. *Brachionus bidentata* | 3. *Chydorus spharicus* |
| 4. *Brachionus calyciflorus* | 4. *Dadaya sp.* |
| 5. *Brachionus caudata* | 5. *Daphnia laevis* |
| 6. *Brachionus plicatilis* | 6. *Leydigia acanthocercoides* |
| 7. *Cephallodella forficulla* | 7. *Macrothrix sp.* |
| 8. *Colurella obtusa* | 8. *Moina brachiata* |
| 9. *Conochilus unifornis* | 9. *Moinodaphnia macleayli* |
| 10. *Epiphanes senata* | |
| 11. *Euchlanis sp.* | ***C] Ostracoda*** |
| 12. *Filinia longiseta* | 1. *Condona ohioensis* |
| 13. *Gastropus minor* | 2. *Cyclocypris sp.* |
| 14. *Gastropus stylifer* | 3. *Cyprinotus glaucus* |
| 15. *Harringia rousseleti* | 4. *Cypris subglobosa* |
| 16. *Hexarthra mira* | 5. *Stenocypris sp.* |
| 17. *Horella brahmi* | |
| 18. *Keratella coachlearis* | ***D] Copepoda*** |
| 19. *Keratella hiemalis* | 1. *Cyclops sp.* |
| 20. *Keratella quadrata* | 2. *Diaptomus edax* |
| 21. *Keratella tropica* | 3. *Diaptomus marshianus* |
| 22. *Keratella vulga* | 4. *Eucyclops agilis* |
| 23. *Lacane luna* | 5. *Nauplii sp.* |
| 24. *Lepadella ovalis* | 6. *Senecel calanoides* |
| 25. *Limnias melicerata* | |
| 26. *Monommata grandia* | |
| 27. *Monostyla lunais* | |
| 28. *Monostyla mucronata* | |
| 29. *Notholca acuminate* | |
| 30. *Philodina roseola* | |
| 31. *Trichocerca sp.* | |

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Among these, the aquatic biodiversity can be defined as the variety of life and the ecosystems that make up the freshwater, tidal, and marine regions of the world and their interactions. Aquatic biodiversity encompasses freshwater ecosystems, including lakes, ponds, reservoirs, rivers, streams, groundwater, and wetlands. As a important part of this, Zooplanktons are very diverse organisms and can be categorised in many ways (Kedar *et al.,* 2008)

**Figure 1: Quantitative zooplankton composition at Rishi lake**

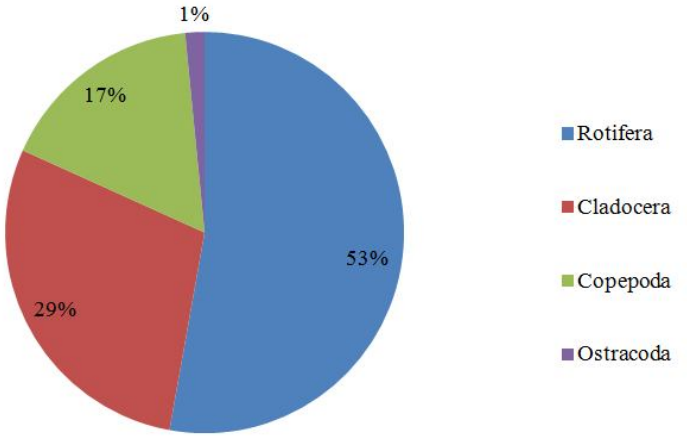
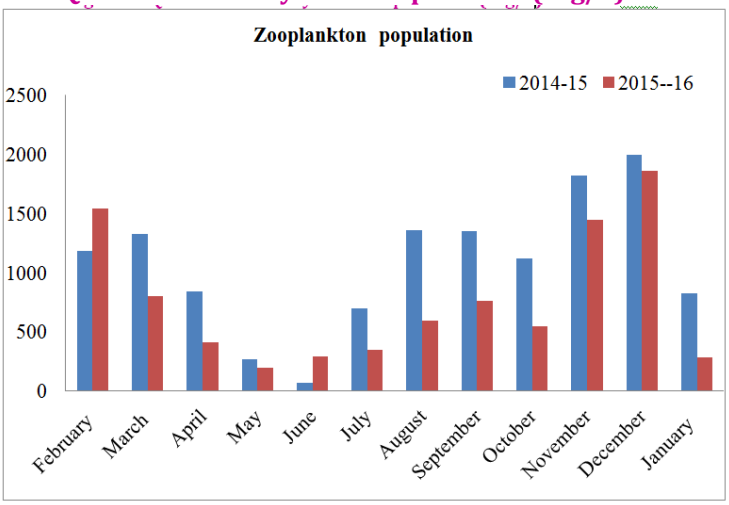



**Figure 2: Quantitative analysis of zooplankton (org/L) at Rishi lake**




According to Rajashekhar et al (2010), the zooplankton is a categorization spanning a range of organism sizes including small protozoans and large metazoans. It includes holoplanktonic organisms whose complete life cycle lies within the plankton, as well as meroplanktonic organisms that spend part of their lives in the plankton before graduating to either the nekton or a sessile, benthic existence. Although zooplankton are primarily transported by ambient water currents, many have locomotion, used to avoid predators or to increase prey encounter rate. During the period of investigation, species belonging to four groups namely Rotifera, Cladocera, Ostracoda and Copepoda were identified. The maximum number of individuals was observed during winter and lower by summer and monsoon. The Rotifers were obtained in maximum quantity while Cladocera, Copepoda and Ostracoda showed the moderate population.

The observed species composition was found to be in well agreement with many of previous studies that mainly deals with zooplankton diversity of lake ecosystem. These recent studies mainly included Sadashivappa *et al* (2011), Patra *et al* (2011), Bhoopendra *et al* (2012), Shukla and. Hassan

(2013), Dutta (2014), Nair *et al.* (2015), Anand *et al* (2016), Kadam (2016), Sivalingam *et al.* (2016), Krishna and Kumar (2017), Narasimman *et al*. (2018), Sivalingam (2018), Manickam *et al.* (2015) and name a few.

## CONCLUSION

In brief concluding the present study, fifty one the species belonging to four groups namely Rotifera, Cladocera, Ostracoda and Copepoda were identified. The maximum number of individuals was observed during winter and lower by summer and monsoon. The Rotifers were obtained in maximum quantity while Cladocera, Copepoda and Ostracoda showed the moderate population. The present investigation suggested the potential nutrient content in Rishi lake of Karanja (Lad), Dist. Washim, Maharashtra, India.

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