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Zooplankton diversity of Keenjhari Lake district Thatta

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Abstract

The goal of this study was to learn more about the zooplankton diversity in Keenjhar Lake. Keenjhar Lake is a tropical, man-made lake. It is around 120 kilometers, Outside of Karachi, at a distance of 24°47' N latitude and 68°02' E longitude (Ayoade and Aderogba, 2020). "Keenjhar" and "Sunheri," or "Green" and "Golden," respectively, two natural lakes were joined to create the lake. By blowing up the dividing hills in 1958, Keenjhar and Sunheri, two tiny depressions, were combined to create the "Kalri Lake.". Zooplanktons are significant fauna in water bodies that operate as pollution bio-indicators and play a direct part in the food chain. There were a total of 9 different zooplankton species found. There were 06 Rotifera species, 01 Copepoda species, and 02 Cladocera species discovered among them. *Brachionus calyciflourus* (Pallas, 1834), *Brachionus bidentata* (Ahangar and Farooq, 2012), *Lecane leontina* (Aziz1 *et al*., 2014), *Trichotria tetractis* (Ehrenberg, 1830), and *Trichocerca pusilla* (Ehrenberg, 1830) were among the rotifers found (Jennings, 1903). *Moina micrura* (Lashari *et al*., 2021) was found in Copepoda, and *Ceriodaphnia quadrangular* (Müller, 1785) and *Diaphanosoma birgei Ascomorpha saltans* (Lashari *et al*., 2021), were found in Cladocera (Korineck 1981). Rotifera species are the most common zooplankton species, indicating that the lake water is contaminated.

Keywords: Rotifera, Copepoda, Cladocera, Diversity, Zooplankton and Thatta

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Introduction

Zooplankton is a vital component of aquatic wildlife and a key component of the aquatic food chain. It also ensures that the aquatic ecosystem's biotic and abiotic components are in perfect balance. Freshwater zooplankton is made up of three primary kinds of Rotifers, Copepods, and Cladocera's are invertebrate creatures. They are widespread they play a critical part in the transfer of energy in all varieties of aquatic ecosystems. and the biomarker of pollutants. It has a middle place in the food chain, with many of them feeding on bacteria and algae, which are then eaten by a variety of invertebrates, fish, and birds (Zhang Honggang and Cui Baoshan). The variety of Understanding zooplankton and their ecology greatly aids in our comprehension of the fundamental makeup and overall functioning of aquatic environments. The population of zooplankton in a water body is also influenced by physical and chemical variables. The zooplanktons of several fresh water sources were studied by a number of researchers (Lashari *et al*., 2021) Investigated the variety of zooplankton in the river Kayadhu in Hingoli, Maharashtra. Rotifer Checklist was made by Lashari *et al*. (2014) after researching the population of rotifers in the Washim region. Pawar and Dabhade investigated the qualitative diversity of the rotifer population in the freshwater Katepurna reservoir in the district of Akola, Maharashtra, India (Lashari *et al*., 2008). Zooplankton diversity is a useful indication of changes in water resources since it reflects the quality of the water. 7. (Lashari *et al.,* 2008) conducted study in Washim, Maharashtra, India, to examine the zooplanktons of the freshwater environment. Because daily pollution is rising and has a direct influence on aquatic life, aquatic life biodiversity protection is a critical issue. Pollution and human activities have put biodiversity at jeopardy in recent years. Because biodiversity conservation is critical, it is necessary to maintain current knowledge on all aquatic species variety (Sunder *et al*., 2018). Because planktons are the primary source of food for economically significant fishes as well as recreational fishes the pace of fish stocking is determined by the density of planktons in a body of water.

Materials and methods

Zooplankton diversity is a useful indication of changes in water resources since it reflects the quality of the water. Korai *et al*. (2008) conducted study in Washim, Maharashtra, India, to examine the zooplanktons of the freshwater environment. Because daily pollution is rising and has a direct influence on aquatic life, aquatic life biodiversity protection is a critical issue. Pollution and human activities have put biodiversity at jeopardy in recent years. Because biodiversity conservation is critical, it is necessary to maintain current knowledge on all aquatic species variety.

The concentrated zooplankton samples were moved to a new container with care. 2 to 3 drops of glycerin were

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applied to 5 ml of 4 percent formalin. To prevent zooplankton aggregation, a sprinkle of detergent powder was applied. The samples were gathered in separate glass phials with labels that included the name of the location, the date of sampling, the time of sampling, and other information. The researchers used a compound microscope to identify the zooplankton. Sorting and counting are also done with a dissecting microscope. Glass slides were used to hold the specimens while they were examined at magnifications ranging from 25 to 100X. Williamson (Korai *et al*., 2010), Dodson and Frey (Lashari, 2002) Tonapi (Lashari *et al*., 2008), Dodson and Frey (1991), APHA (1985) and Battish's systematic key were also employed, along with conventional identification methods and monographs. Population size was calculated using Lackey's drop count method from 1938.

Results and discussion

22 recorded zooplankton species identified from Keenjhar Lake (Lashari *et al.,* 2012) discovered 15 different species of Zooplankton. During the whole research period, Rotifer's population was dominating among familiar Zooplankton. The mean density of reported Protozoans ranged starting 2 org./L to 31 org./L at various sample locations. The largest density of protozoans was found in August, even as the lowest density was found in August (rainy season). Protozoan density varies seasonally the average value (Zaheer Khan *et al*., 2014). The graphic depicts the seasonal variation in Rotifer density. Throughout the investigation, the mean observed density of Cladocerans ranged from 4 to 84 org./L. In August, when they were at their densest, they were at their highest density. In May, when it was summer (rainy season). The graphic depicts the seasonal variation in Cladocera density. The reported average Copepod density over the study period was in the range of between 6 and 42 org./L. The month of May (summer) was this group's highest density, (Shahina and Azmi, 2019) whereas the month of August (rainy season) had its lowest density). Graphic depicts the seasonal variation in Copepoda density. Zooplankton density was found to be highest in the summer, intermediate in the winter, and lowest during the rainy season. Table 1 shows the seasonal average of reported Zooplankton density in Keenjhar Lake research area.

Zooplankton in Keenjhar Lake that have been spotted on record.

Protozoa	Genera	Species	Cladocera	Genera	Species
1	Arcella	Dentata caudatum	1	Alona	Rectangula
2	Paramecium	Dentata caudatum	2	Bosmina	Longirostris
			3	Ceriodaphnia	Reticulata
3	Vorticella	Dentata caudatum	4	Daphnia	Rarinata
			5	Moina	Brachiata
Copepoda	Genera	Species	Rotifera	Genera	Species
	Cyclops	Bicupidatus	1	Asplanchna	intermedia
	Macrocylops	Albidus	2	Asplanchna	intermedia

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Protozoa	Genera	Species	Cladocera	Genera	Species
			3	Asplanchna	intermedia
			4	Asplanchna	intermedia
			5	Asplanchna	intermedia
			6	Asplanchna	intermedia
			7	Asplanchna	intermedia
			8	Asplanchna	intermedia

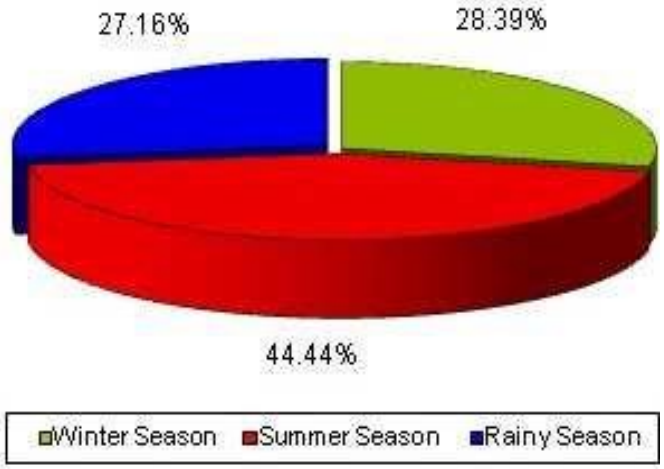


Figure1: Zooplankton density varies seasonally (Protozoa).

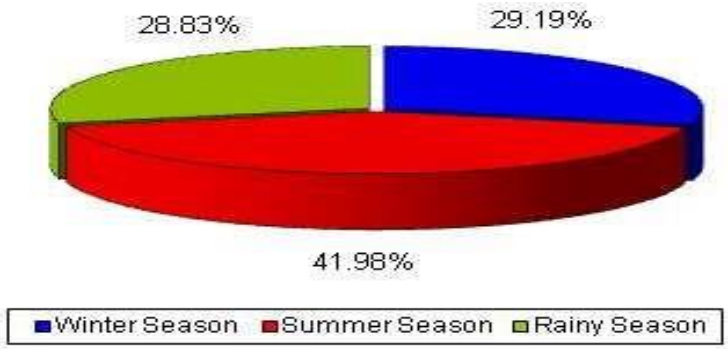


Figure 2: Zooplankton density varies seasonally (*Rotifera*).

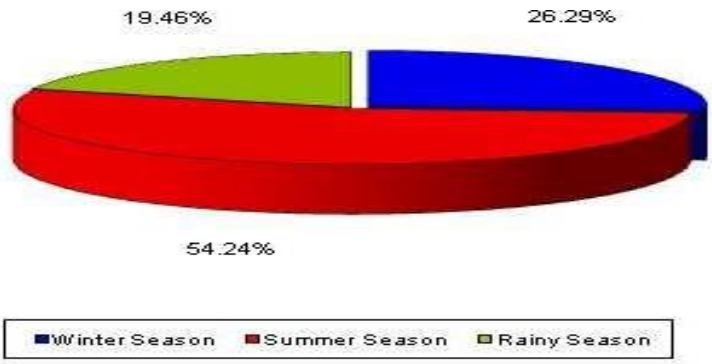


Figure 3: Zooplankton density varies seasonally (*Cladocera*).

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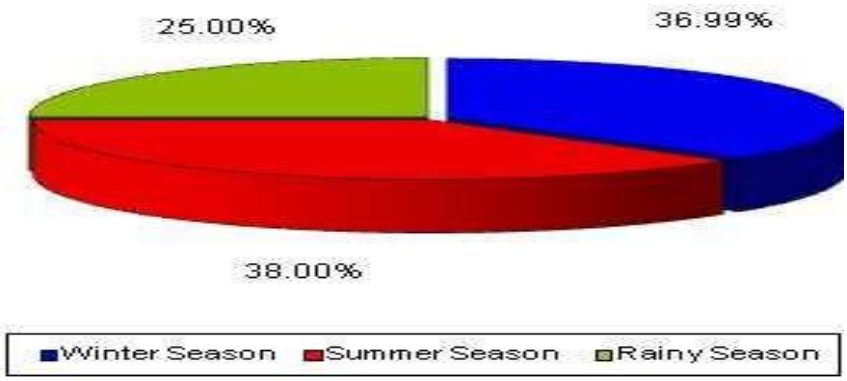


Figure 4: Zooplankton density varies seasonally (*Copepoda*).

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