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Zooplankton Diversity of Junona Lake of Chandrapur District (M.S.), India

Harney N. V.
Department of Zoology
Nilkanthrao Shinde Science & Arts College, Bhadrawati, Dist. Chandrapur (M.S.) India.
narendra_harney2008@rediffmail.com

Abstract: *Zooplankton diversity is one of the most important ecological parameters as these are the intermediate link between phytoplankton and fish and plays a key role in cycling of organic materials in an aquatic ecosystem. Due to their short life span, the zooplankton community often exhibits quick and dramatic changes in response to the changes in the physico- chemical properties of the aquatic environment. Zooplankton are important biotic components influencing all the functional aspects and play a vital role. This research paper deals with the study of Zooplankton diversityof Junonalake located near Chandrapur city of Maharashtra State, during the period June 2023 to May 2024. During study in Junonalake 27 different species of Zooplanktons were recorded. The recorded zooplankton speciesare classified as Protozoa, Rotifera, Cladocera, Copepoda and Ostracoda*

Keywords: Zooplankton, Junona lake, Zooplankton diversity

I. INTRODUCTION

Zooplankton are highly sensitive toenvironmental variation as a result change in their abundance, species diversity can provide important indication of environmental change or disturbance. In any aquatic ecosystem zooplankton not only take part in transferring food cycle from primary to secondary level but also switch over conversion of detritus matter into edible animal food.

Among these microscopic organisms, zooplankton are the free floating and microscopic animals found in all the aquatic ecosystem's of the world. The zooplankton serve as an important source for sustainance of fisheries resources as they are used as source of food for fish. Zooplankton fauna depends on the availability of phytoplankton as food present in aquatic ecosystems.

The zooplanktons are classified into Protozoa, Rotifera, Cladocera, Copepoda, and Ostracoda. Many Researchers have investigated zooplanktons of water bodies both in India and abroad. The Zooplankton community fluctuates according to Physico-chemical parameters of the environment. The composition and structure of zooplankton fauna depends on the characteristics of water bodies. During last 20 years Indian studies on zooplankton are undertaken by researchers, Gajbhiye and Desai (1981), Chauhan (1983), Sharma and Thilak(2000), Kumar (2001), Kedar (2002), Jeelani et al (2005), Suresh *et al,* (2009), Baghela (2006), Sharma (2007,2009), Thilak (2009), Suresh, et al (2009), Dutta and Verma (2010),Joshi (2011),Bazmi, et al (2011), Sehgal, *et al*., (2013), Murkute and Chavhan (2016), Jadhav *et al*, (2012), Kadam and Tiwari (2012), Thirupathaiah*et al,* (2012), Kamble *et al,*(2013), Pawar and Pejawar (2014), Sarwade and Kamble (2014), Dede and Deshmukh (2015), Mahajan and Harney (2016), Pawar and Pejawar (2017) and Darvekar and Raut(2022), Angadi et, al.(2024).

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II. MATERIALS AND METHODS

The Junona lake is the principal freshwater bodies situated south side and the area of this lake is spread over near about 300 acre, 12 km away from the Chandrapur city, located in the Chandrapur district of Maharashtra state, India. It is

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situated at about 677 m. above mean sea level and is at 79˚23'35.97" E longitude and 19˚55'29.92" N latitude. The water of this lake is primary used for washing, bathing and fishing activities.

The sampling of zooplankton in both these lakes was carried out for a year span from June 2023 to May 2024. Water samples were collected in morning hours between 8 am to 10.00 am every month for a year span. The data was recorded seasonally as Summer, Winter and Monsoon. The zooplankton samples were collected by filtering 100 litres of littoral water through plankton net made up of bolting silk cloth no.22 and collected samples were fixed in 4% formalin on the spot. The Zooplankton are identified with the help of Standard literature Edmondson(1963), Pennak (1978) , Tonapi (1980), Dhanapathi (2000) and APHA (2005).

III. RESULT AND DISCUSSION

Zooplankton form a major link in the energy transfer at secondary level in aquatic food webs between autotrophs and heterotrophs (Deivanai et al., 2004). In addition they act as indicator of water quality, eutrophication and the level of water of pollution (Sharma, 1983).

In all about 27 different species of zooplankton were recorded in Junonalake during three seasons. The species belongs to Rotifera, Copepoda, Protozoa, Cladocera and Ostracoda groups in both the lakes. According to diversity, Rotifers indicated maximum diversity during the study period followed by Protozoa, Cladocera, Copepod and Ostracoda. Occurrence of indicator species like *Filinialongiseta* and *Brachionusforficula*indicates this lake is near to eutrophication.

In Junonalake 8 different species of protozoa are observed, 09 different species of Rotifera are observed, 06 different species of Cladocera are observed, 03 different species of Copepoda and 1 species of Ostracoda are observed and presented in Table No. 1.

Due to their short life cycles rotifers respond quickly to changing environmental conditions and their species compositionand standing crop indicatesthe quality of water in which they are thriving (Chandrasekhar and Kodarkar, 1995; Dhanpathi 1974, Arora, 1962).In any aquatic ecosystem limnological characteristics can affect both fauna and flora. Biodiversity contribute both directly and indirectly to human needs like food. In last decade people interfere with ecosystem and over exploitation of natural resources resulting in biodiversity loss. The present qualitative studies done for a year showthat both lakes arerich in biodiversity of zoo plankton.In the present study dilution of water caused by rain water results in low population of protozoa in monsoon and maximum in summer season indicates a positive relation to temperature and also may be due to lower dissolved oxygen content in the summer season. Similar observation recorded by Kedar (2002) who recorded minimum population in rainy season in rishi lake of Karanja lad.

Mulani et al. (2009) reported 6 genera of Protozoa, 36 genera of Rotifers, 5 genera of Cladocera, 8 genera of Copepoda, 3 genus of Ostracoda, 2 genus of larvae, 2 genus of Brachiopod, 2 genus of Oligochaeta and 2 genus of Nematoda in Panchganga, Kolhapur. Darvekar and Raut (2022) recorded 13 species of Rotifera, 08 species of Cladocera and 05 Species of Copepoda from Ramdeshwar lake, Ramtek. Paulose and Maheshwari (2008) recorded 49 Protozoa in Ramgarh lake of Jaipur and Ahangar et al (2012) recorded6 species of Protozoa at Anchar lake of Kashmir supporting our findings. Cladocera are primary consumers and feed on microscopic algae and fine particulate matter in debris which is influencing transformation of matter and energy in benthic forms. The Cladocera are most useful zooplankton and form the most dominant group of fish food organisms. The rotifers play an important role in aquatic environment as scavengers. Copepoda are one of the major zooplankton in freshwater and occur in all types of water bodies. They are called water fleas. Ostracods commonly known as seed shrimps belong to class crustacea are found in wide variety of aquatic habitat. The Ostracoda occur in both standing and running waters. The Ostracoda serve as very good food for fishes and aquatic organisms (Tonapi, 1980).

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Table.1.: Zooplankton diversity in Junona lake

Sr. No	Groups	Name of species
1	**Protozoa**	*Difflugialobostoma*
2		*Paramoecium spp.*
3		*Urocentrum spp.*
4		*Vorticella spp.*
5		*Actinophyris sol.*
6		*Amoeba spp.*
7		*Arcella vulgaris*
8		*Centyropyxis spp.*
1	**Rotifera**	*Brachionusforficula*
2		*Filinialongiseta*
3		*Keratellatropica*
4		*Monostyla bulla*
5		*Lecane bulla*
6		*Polyarthra vulgaris*
7		*Rotarianeptunia*
8		*Brachionuscalyciflorus*
9		*Brachionusfalcatus*
1	**Cloadocera**	*Bosmina longirostris*
2		*Chydorussphaericus*
3		*Ceriodaphnia spp.*
4		*Macrothrix rosea*
5		*Moinadubia*
6		*Allonella nana*
1	**Copepoda**	*Nauplius larva*
2		*Diaptomus spp.*
3		*Cyclops spp.*
1	**Ostracoda**	*Cypris spp.*