



Research Article

Diversity of zooplankton group rotifers of nighoj potholes (Kund) (M.S.) Parner taluka Ahamadnagar district (M.S.) India

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ABSTRACT

The phylum Rotifera is the most diverse and dominates the fauna of freshwater bodies. Rotifera is a Phylum of primary freshwater Metazoa. The Nighoj Kund is world-famous for naturally made potholes on the Rock River bed of Kukadi River. This pothole was recorded in the Guinness book of world record. The Kund is located at the Nighoj village, Taluka Parner District Ahmednagar. These potholes are spread on the kukadi river bed up to 3 km long and 10 to 15 Mts., widths and more than 30 Mts., in-depth. The results of the present study show that the Zooplankton Group Rotifers species diversity found from various sites of potholes or Kund water which is belonging to different families such as Asplanchnidae, (01 Specie) Brachionidae, (01 Specie) Trichotriidae (01 Specie) Trichocercidae, (01 Specie) Lecanidae (01 Specie) and Testudinellidae (01 Specie) all the species are belonging to order Ploima and Flosculariaceae. The present study is attempted to find out the diversity of rotifers of Nighoj Potholes (Kund) (M.S.) Parner Taluka Ahamadnagar District (M.S.) India

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1. Introduction

The freshwater bodies in the form of manmade reservoirs are extensively used by people for several purposes such as drinking, fisheries, irrigation and washing. All these activities have been resulted in altering the physicochemical nature and quality of water in the reservoir, which ultimately affects the diversity and density of biomass in the water body. The quality of available freshwater is the problem of greater and immediate concern. Zooplanktons are microscopic free swimming animal's which represent a major part of aquatic fauna and are known to be indispensable link between the primary producers and consumers of Lake Ecosystem (Malik DS and Shikha Panwar 2016). The present study is an attempt to investigate the status of a freshwater body of this region. Realizing the importance of freshwater biodiversity of insular habitats, the present study is an endeavor to document Eurotatoria from Andaman and Nicobar Islands (Bhushan Kumar Sharma 2017).

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Zooplankton occurs under a wide range of environmental conditions, yet many species are limited by dissolved oxygen, pH, salinity and other physico-chemical factors. Rotifers are most dominant. Also known as "wheel-animalcules" because of the presence of a characteristic 'wheel organ' these organisms can make rapid movements with the cilia making them appear and whirl like a wheel (Padate G. S. 2019). Rotifers, mostly monogononts, occur in all types of water bodies, worldwide. Rotifers play a pivotal role in many freshwater ecosystems (Hendrik Segers 2008). Zooplankton is one of the important ecological parameters in fresh water quality assessment. The rotifers play an important role as suspension feeders within the zooplankton community. The differences in periodicity and population density of different rotifer species are due to biotic interactions and nutritional content of the lakes (Shashikant R. Sitre 2013). The zooplankton constitute an important component of secondary production in aquatic ecosystems that play a key role in energy transfer from primary to higher level in the ecosystem (K. Sehgal and G. G. Phadke 2013). The qualitative and quantitative abundance of plankton in a water body are of great importance for imposing sustainable management policies as they vary from location to location and aquatic systems within the same location with similar ecological conditions (R. B. Patil 2018). The aim of present study is to evaluate biodiversity of zooplankton Group Rotifers of Nighoj Potholes (Kund) (M.S.) Parner Taluka Ahmadnagar District (M.S.) India representing summer, winter and monsoon seasons.

Materials and Methods:

Study Area:

The Nighoj Kund (Potholes) is located on the Basin of Kukadi River in the western part of the Parner taluka of Ahmednagar district (M.S.) India. It extends between 18° 56' 03" latitude and 18° 59' 33" N latitudes and 74° 14' 16" to 74° 19' 53" E longitudes.

Location of Study:

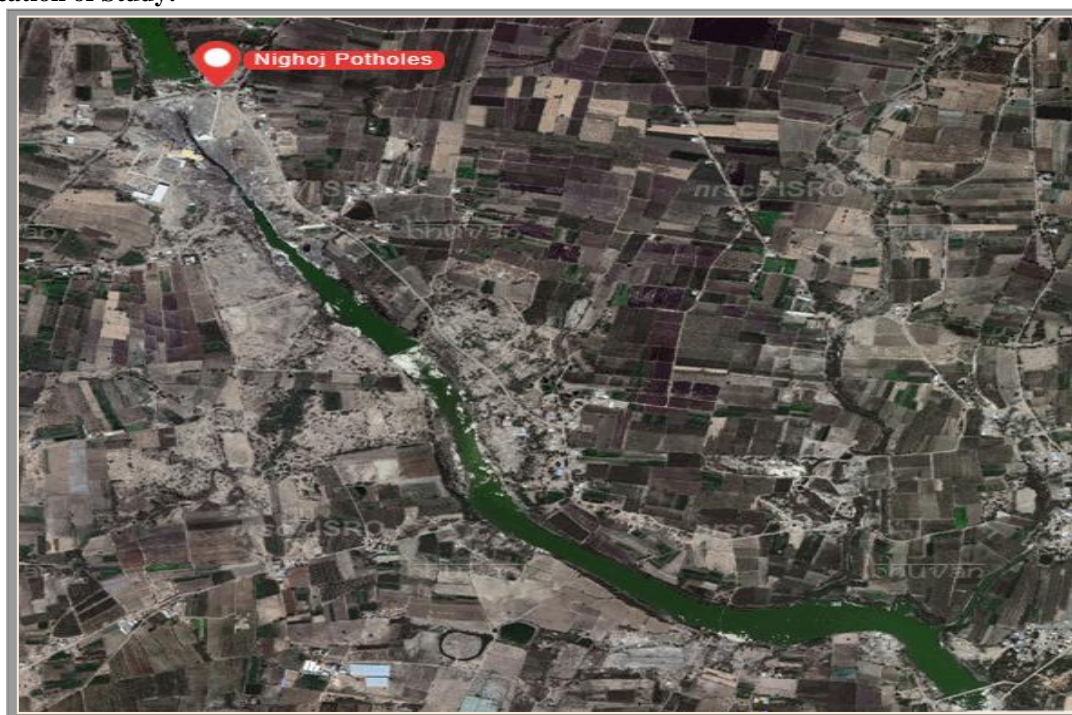


Fig No. 1: Image of Nighoj Potholes

Collection and Sampling of Rotifers

After the selection of the sampling site, the samples were collected from 04 different sampling sites. The water sample were filtered through the plankton net No.25 of bolting silk with mesh size 53 micron and the final volume was made to 100 ml. The samples taken in separate vials were fixed with 1ml of 4% formaldehyde at the site. A sampling of rotifers was carried out for a period of 01 years (March 2019 to February 2021). The collected species of rotifers were identified with help of standard keys given by Edmondson, 1959; Tonapi, 1980; Battish, 1992.

Results and Discussions:

Significantly the seasonal variations were noticed during the collection of Zooplankton Group Rotifers species from the sampling sites of Potholes (Kund). The study is conducted on 05 different selected sampling sites such as muddy, sandy, and rocky areas from which the 06 species of Zooplankton Group Rotifers were identified. The qualitative analysis of collected species of Rotifera is that the 06 rotifer species belonging to two orders, seven families, and seven genera were recorded during the study period from the study area. The information of collected Rotifera is as given bellows.

Table no 1: Classification of identified species of Rotifera from Nighoj Potholes.

Phylum	Class	Order	Family	Genus	Species
Rotifera	Monogonota	Ploima	Asplanchnidae	<i>Asplanchna</i>	<i>brightwellii</i>
			Brachionidae	<i>Keratella</i>	<i>Tropica</i>
			Trichotriidae	<i>Trichotria</i>	<i>Tetractis</i>
			Trichocercidae	<i>Tricocerca</i>	-
			Lecanidae	<i>Lecane</i>	<i>Bulla</i>
		Flosculariaceae	Testudinellidae	<i>Testudinella</i>	<i>Patina</i>

Photo Plate No.01

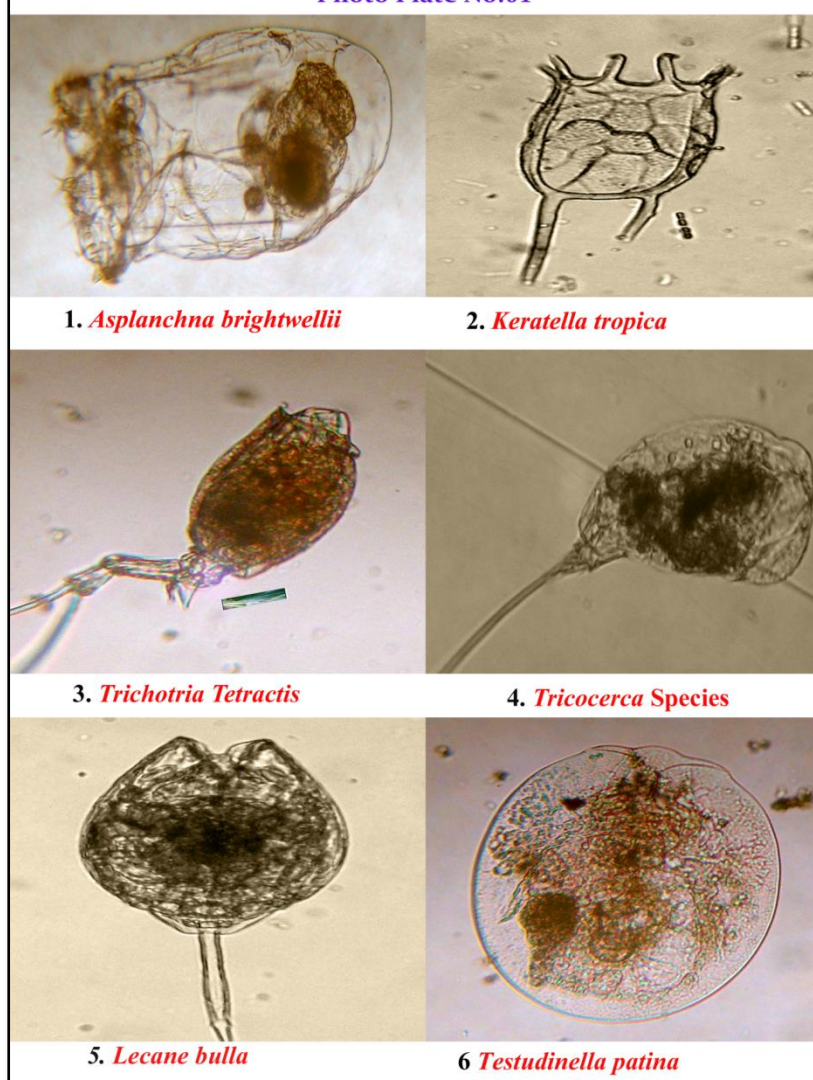


Table no 2: Morphological characteristics identified Genera of Rotifera from Nighoj Potholes.

Sr. no	Name of Genera	Characteristics
1.	<i>Asplanchna</i>	Rotifers with a highly variable shape. Mastax is incubated. The body is sac-shaped, large, and transparent. Corona is well developed. Foot, intestine, and anus are absent.
2.	<i>Keratella</i>	The dorsal surface of lorica exhibits a pattern of polygonal facets. The body consists of one, two, or no posterior spine and six anterior spines. The single posterior spine is usually median.
3.	<i>Trichotria</i>	Somewhat box-like and thick. Two spines are present at the foot base.
4.	<i>Trichocerca</i>	Cylindrical or asymmetrical body. The foot is short. The foot ends in two unequal spine-like toes. The toes are with spinules at the base.
5.	<i>Lecane</i>	The body is dorsoventrally flattened. The head is retractile. The body is with one or two ventral toes. The toes end in claws. The dorsal and ventral plates are slightly jointed.
6.	<i>Testudinella</i>	The lorica is dorso-ventrally flattened. The body is circular in shape. The opening of the foot is either ventral or terminal. The foot is long, retractile.

Discussions:

Zooplankton is a good indicator of changes in water quality because it is strongly affected by environmental conditions and responds quickly to changes in environmental quality. In the rural areas, people used unprotected water drawn from rivers, lakes, and wells for drinking and domestic purposes. Rotifers address its ecological importance in aquatic environments, filtering suspended material of different sizes and advocate new methods to obtain their food, to classify as generalists or specialists (Sonia and Ramanibai, 2012). Zooplankton is the intermediate link between phytoplankton and fish. Hence qualitative and quantitative studies of zooplankton are of great importance (Prasanna S Joshi 2011). Hence qualitative studies of zooplankton are of great importance. The status report on Indian faunal wealth published by the Zoological Survey of India revealed that nearly 20% of the total fauna in India are aquatic and the majority of them belong to freshwater (Anonymous 1991). Rotifer as the dominant groups of zooplankton and the number of rotifers was rich in summer season and less in winter season (Sontakke and Mokashe 2014). The present study is an attempt to investigate the status of diversity of Rotifera from Nighoj Kund water.

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