



Biodiversity of Rotifers in Haranbari Dam in Nashik District, Maharashtra, India

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ABSTRACT

Rotifers are aquatic invertebrates, microscopic common in freshwater organism. Some rotifers are parasitic and some are free-living, some are living individually where as some in community. The present investigation study of monthly changes of diversity and density of Rotifers of Haranbari dam. The Haranbari dam is 36 km away from Satana (Baglan) taluka, Haranbari village is located between Ajande and Mulher, Nashik District, Maharashtra. The work was carried out for a period of one year from June 2021 to June 2022. During study period total 16 Rotifers species were found. According to seasonal changes, change in Rotifers diversity and density observed which is at high level in summer while in monsoon is at lowest level. 14 species observed in summer, 12 species in winter while lowest that is 9 species were recorded in monsoon season.

KEYWORDS: Haranbari Dam, Rotifers, Biodiversity.

1. INTRODUCTION

The zooplankton communities are important for their role in the energy transfer in an aquatic ecosystem. They provide food for fishes in freshwater ponds, lakes and play a major role in fish production. The occurrence and abundance of zooplankton depend on productivity of water body which in turn is influenced by biotic and abiotic factors. They link the primary producer, phytoplankton with higher large trophic level organisms. Zooplankton community responds to a wide variety of disturbances including nutrient over loading [1,2].

In aquatic ecosystem of world Rotifers play an important role among zooplankton community they provide food to many other animals. Rotifers are common in fresh water. They act as mediator in between microbial organism higher trophic level. The interaction of physical, chemical and biological properties of lake water causing positive or negative impact on population of Rotifers. Rotifers feed upon algae, organic particles, smaller animals etc. Larger animals like birds, insects, beetles, fleas, fungi, other Rotifers act as Predators to several adult Rotifers and their eggs. Rotifers comprise an important portion of the biomass of marine zooplankton. Nutrients in lake water, biotic and abiotic factors of nature influence on productivity of Rotifers. The fresh water zooplanktons are primary producers and are prey of higher consumers and maintains balance of ecosystem [3,4].

Rotifers were first studied by Leuwenhoek in the year 1703. Rotifers are pseudo coelomate living creatures, ranging from 50 to 2,000 µm in size. It is one of the oldest groups of invertebrates in nature [5]. The general body plan of a rotifer consists of three basic parts (corona, trunk and foot). In many species corona consists of trochus and cingulum (two rings of cilia that beat in an antitachronous pattern). The trunk is divisible into five parts namely mouth, mastax, stomach, intestines and anus while the foot consists of pseudo segments and toes [6,7]. They have achieved more significance in freshwater by residing in littoral, limnetic and benthic regions [8,9], and most of them are cosmopolitan in distribution [10,11]. The phylum Rotifera comprises approximately 2,030 described freshwater species from the world [12,13]. Rotifers have been divided into three classes: Monogononta (1,570 species) being entirely parthenogenetic, Bdelloidea (460 species), and Seisonidea with a few species (two known genera with three species). Former two have been recognized as freshwater classes and the latter one as marine [14,15].

The present study is undertaken to investigate the Rotifers Diversity in the Haranbari Dam water in Nashik District because Rotifer diversity is not reported earlier from these water bodies.

2. MATERIALS AND METHODS

2.1. Study Area:

Haranbari Dam:-The Haranbari dam is 36 km away from Satana (Baglan) taluka, Haranbari village is located between Ajande and Mulher, Nashik District, Maharashtra.

2.2. Study Period:

The study was carried out from June 2021 to June 2022.

2.3. Sample Collection and Preservation:

The water sample were collected from selected habitats for twelve months (one year) from June 2021 to June 2022. Samples were collected periodically during the first week of every month during morning hours (6:00 a.m. to 8:00 a.m.). The quantitative analysis, 100 lit of water was filtered through plankton net made up of bolden silk (150 μm) to collect rotifers. The collected plankton samples were transferred to polyethylene bottles (90 ml) and preserved with 5% of neutral buffer (10 ml) formalin (aqueous solution of formaldehyde). The plankton samples varied both qualitative (by-towing) as well as quantitative (by-filtering) analysis throughout the study period.

2.4. Biological Identification:

They were identified with the help of standard literature up to generic level. For identification of rotifer work [16,17] were consulted. Copepod were identified with the help of key provided [18,19]. Cladocera were identified with the help of key provided [20,21].

3. RESULT AND DISCUSSION

In present study total 16 Rotifers species were found. Out of that most abundantly occurred genera was *Brachionus sp.*, *Lepadella sp.*, *Mytilina sp.*, *Polyarthritus sp.*, *Rotaria sp.*, *Trichocerca sp.*. Some of the genera occurred in less number are *Anuraeopsis sp.*, *Cephalodella sp.*, *Cristaluta sp.*, *Conochilus sp.*, *Horaella sp.*, *Keratella sp.*, *Macrochaetus sp.*, *Platinius sp.*, *Platyias sp.*, *Trichocerca sp.* etc. (Table 1). Monthly population density of rotifer showed its peak during June 2021 while least density was recorded in June 2022.

Table 1: Biodiversity of Rotifers in Haranbari Dam

Rotifers Species Recorded	Winter	Summer	Mansoon
<i>Anuraeopsis sp.</i>	+	+	-
<i>Brachionus sp.</i>	+	+	+
<i>Cephalodella sp.</i>	+	+	-
<i>Cristaluta sp.</i>	-	+	+
<i>Conochilus sp.</i>	+	-	+
<i>Horaella sp.</i>	+	+	-
<i>Keratella sp.</i>	+	+	-
<i>Lepadella sp.</i>	+	+	+
<i>Macrochaetus sp.</i>	+	+	-
<i>Mytilina sp.</i>	+	-	+
<i>Polyarthra sp.</i>	+	+	+
<i>Platinius sp.</i>	-	+	-
<i>Platyias sp.</i>	-	+	-
<i>Rotaria sp.</i>	+	+	+
<i>Scaridium sp.</i>	+	+	+
<i>Trichocerca sp.</i>	-	+	+
Total	12	14	9

4. CONCLUSION

In the present study of Haranbari Dam it is observed that the diversity of Rotifers. According to seasonal changes, change in Rotifers diversity and density observed which is at high level in summer while in monsoon is at lowest level. 14 species observed in summer, 12 species in winter while lowest that is 9 species were recorded in monsoon season. The most dominant species was *Brachionus sp.*, *Lepadella sp.*, *Mytilina sp.*, *Polyarthrits sp.*, *Rotaria sp.*, *Trichocerca sp.*. The above study shows that the reservoir with the presence of these zooplanktons is good potential for fish production.

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