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Study of rotifers in waterbodies of Dharni, Melghat.

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ABSTRACT

Water is important natural resource for the survival of all living beings. Zooplankton constitutes an important link in food chain as grazers (primary and secondary consumers) and serves as food for fishes directly or indirectly. Rotifers were found to contribute to the zooplankton richness and plays a key role in the trophy-dynamics, ecological energetic, cycling of material and aquaculture productivity due to incredibly high reproductive rate characterized by parthenogenetic production During the course of an extensive faunistic survey of lentic ecosystems , twelve species of rotifers have been recorded for the first time. Taxonomic notes with a key for their identification are appended and their role as indicators of eutrophication is discussed.

Keywords: Rotifers, bioindicators, Melghat Region

INTRODUCTION

The rotifers make up a phylum of microscopic and near-microscopic pseudocoelomate animals. Most rotifers are around 0.1-0.5 mm long, and are common in freshwater throughout the world with a few saltwater species. Rotifers get their name (derived from Latin and meaning "wheel-bearer"; they have also been called wheel animalcules) wheels of cilia, known as corona, used for locomotion and sweeping food particles towards the mouth. The mouth is generally anterior and the digestive tract contains a set of jaws (trophi) to grasp the food particles and crush them. A number of studies have evaluated rotifer species as indicator of eutrophication (Sladecek 1983,Takmura *et al*., 1989, Verma and Munshi 1987, Dhanapati 1997).

Rotifers were found to contribute to the zooplankton richness and plays a key role in the trophy-dynamics, ecological energetic, cycling of material and aquaculture productivity due to incredibly high reproductive rate characterized by parthenogenetic production (Herzig,1983) , high fecundity, short development period and assimilation efficiency, and were found to be dominant group amongst other zooplanktons, Rotifers comprises an integral pail in aquatic food chain their role as link between non planktons and carnivorous zooplanktons is well established (Sunkad and Patil, 2004). They play key role in cycling of organic matter (Mishra and Saxena, 1998). Many species of rotifers are primary consumers and feed on phytoplankton's, particulate organic matter, free swimming algae. Rotifers can populate vacant niches with extreme rapidity and convert primary production into a form usable for secondary consumers producing up to 50% of the total plankton biomass (Nogrady *et al.*, 1993).

Rotifers are valuable live food for larval fish and crustacean culture. Several characteristics of rotifers, including their nutritional quality, body size and relatively slow motility have contributed to their usefulness as good prey for active larvae. According to (Nikolsky,1963) rotifers act as basic food for fishes at early stages of their external feeding hence it forms several links in food web and occupy diversity of tropic levels in aquatic ecosystem. Rotifers exhibits remarkable.

METHODOLOGY

The water samples for rotifer analysis were collected simultaneously in all sampling points. Collection of surface water sample was mainly done using a plastic bucket, polyethylene bottles, collected samples were so handled that it was not deteriorated before it is analyzed. Samples collected strictly as per the instructions given in a book "Standard Methods for the Examination of Water and Wastewater. 20th Edition, Edited by Tenore S. Clescerei, Arnold E. Greenberg, Andrew D. Eaton (1998)" for collection and preservation of samples. During investigation, sampling period was of one year, January 2019 to December 2019. The samples are well mixed and stored in two liter plastic cans. Sample collection was usually completed during hours between 6.00am to 9.00 am. The sampling sites were chosen and three sampling stations were fixed during the complete study for collection of biological samples.

Rotifers were collected from following sampling stations through the year

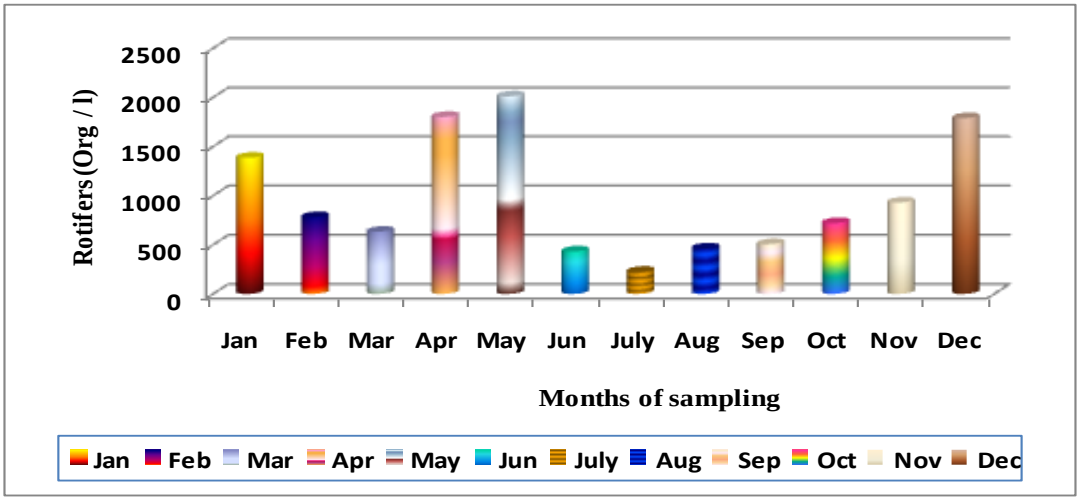
RESULTS AND DISCUSSION

Rotifer exist under wide range of environmental conditions such as dissolved oxygen, temperature and salinity etc., they play an important role indicating the presence or absence of certain fish species or in determining the pollution. During work exhibited a heavy bulk of total rotifers all through the period of investigation, the month May exhibited maximum (2010 org/1) at station I and minimum (197 org/1) in the month of July at station II, rotifers per liter respectively. Brachionus species show decreases in March than Feb, about constant in April and May, shows decreasing trends from June to August (rarely found in August), strengthen in September and shows increasing towards December, January .Keratella at all spots shows near about constant population from February to July, Rarely found in August and September, few in October and about constant in November, December and January.

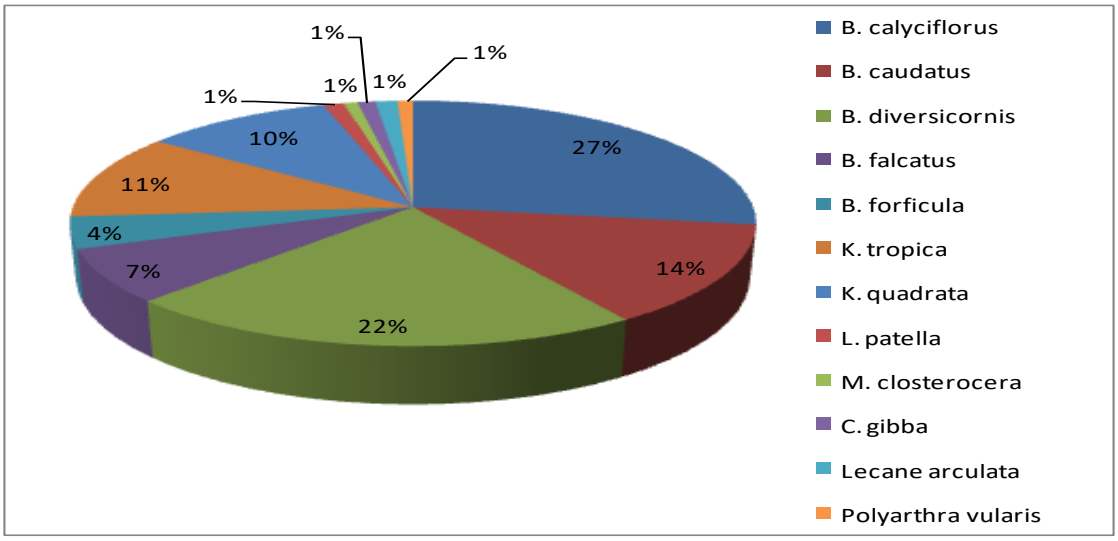
The rotifers were observed average in summer but a sharp decrease in their number was noticed on the onset of rainy season reaching to its minimum in July. During winter, again a slight increase in abundance of rotifers was seen. This type of seasonal fluctuation is in confirmation with the findings of Seenayya, (1973) and Davis, (1976). Zooplankton established peak in May, June & December. This anomaly could be due to the feeding habits of the Zooplankton along with the high nutrient level. This is well in agreement with the observations of Davis, (1976); Sharma and Sahai, (1990); Adholia and Vyas, (1993); Bais and Agrawal, (1995). Minimum density of zooplankton in monsoon months may be due to the influx of rainwater and dilution effect as reported by Chapman (1972) and Davis (1976).

In present study Rotifera was represented by 12 species of 7 genera and were found to be maximum in

the month of May .This type of specific distribution indicated that higher temperature and less nutrients and low oxygen content favored them to flourish.



Monthly variation of rotifers



Percentage distribution species of rotifers

Conflicts of interest: The authors stated that no conflicts of interest.

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