



Observation on the collection of zooplankton in Lakhani lake, district Bhandara, Maharashtra (India)

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Abstract

Zooplankton composition of Lakhani Lake, of Bhandara district (India) has been studied for a year. A total of 21 species were identified. 9 of them belonging to Rotifera, 8 to Cladocera, 3 to Copepoda and 01 to Ostracoda. The study of zooplankton diversity would be very useful in preparing the biodiversity atlas of the planktonic species as well as in future environment impact assessment studies.

Keywords: Bioindicator, Cladocera, Eutrophication, Lakhani lake, Rotifera, Zooplankton

Introduction

Bhandara district is popularly known as 'Lake District'. It possesses more than 15000 lakes and reservoirs. Studies on freshwater biodiversity of Bhandara district are scarce. Zooplanktons occupy an important position in the trophic structure and play a major role in the energy transfer of an aquatic ecosystem.

Anthropogenic activities at the basin of lake and nearby agricultural runoff increased the organic load, which considerably alter their physico-chemical characteristics and accelerate the process of eutrophication, which alter food chain sequences leading to production of commercially less valuable higher trophic organisms (Rao, 1982). One of the main difficulties in studying loss of biodiversity due to eutrophication is the absence of previous records of species composition. The present work was undertaken to study the zooplankton composition of Lakhani Lake, Lakhani of Bhandara District. Notable contributions on zooplankton of fresh water

ecosystem are available due to Sharma (1996), Kodarkar (1999) and Kudari *et al.* (2005).

Materials and Method

Lakhani Lake is about 100 year old, situated in the urban area, surrounded by nearby agricultural land. The water body is organically enriched with anthropogenic activities as well as agricultural surface runoff. Samples were taken monthly for a year by plankton net of bolting cloth of 25 μ . The samples were preserved in 4% formaline and observed and identified by using the literature of Ward and Whipple (1959), Micheal and Sharma (1988), Dhanapathi (2000) and Sehgal (1983).

Result and Discussion

Zooplankton recorded from Lakhani Lake, Lakhani belong to Rotifera, Cladocera, Copepoda and Ostracoda. The lake was dominated with Rotifera followed by Cladocera, Copepoda and Ostracoda. A total of 21 species were identified, 9 of them belonging to Rotifera, 8 to Cladocera, 3 to Copepoda and 1 to Ostracoda.

The Lakhani lake is largely colonized by submerged and emerging macrophytes, which

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almost completely occupy its surface area. Littoral rotifers, members of Cladocerns and ostracods favour this kind of environment (Rocha *et al.*, 1995). Out of 9 species of rotifers, 5 species belongs to Brachionidae and one species of Lecanidae and one from Asplanchnidae. Brachionus was the prominent genus represented by 07 species i.e. *Brachionus calyciflorus*, *B. Calyciflous amphiceros*, *B. falcatus*, *B. quadridentatus*, *B. bidentata*, *Platyonus patulus* and *Keratella tropica*. Genus Brachionus is one of the most ancient genus of monogonont rotifers and is represented by 46 species in India (Sharma,

1983). The genus Brachionus is the index of eutrophic waters (Sladeczek, 1983) and its abundance is considered as a biological indicator for eutrophication (Nogueira, 2001). The species *B. calyciflorus* is considered to be a good indicator of eutrophication (Sampaio *et al.*, 2002). According to Liu Fengqui (1996), the small population of Copepods is directly proportional to the large population of the Rotifer species appeared in waters with high eutrophication. The dominance of Rotifer species indicates organic pollution due to direct entry of untreated sewage from catchments area (Arora, 1966).

Table:1. Diversity of Zooplankton from Lakhani Lake, Maharashtra (India)

Rotifera	Cladocera	Copepoda	Ostracoda
Family: Brachionidae <i>Brachionus calyciflorus</i> <i>B. calyci. amphiceros</i> <i>B. falcatus</i> <i>B. quadridentatus</i> <i>B. bidentata</i> <i>Platyonus patulus</i> <i>Keratella tropica</i>	Family: Sididae <i>Diphanosoma sarsi</i> <i>Diphanosoma excisum</i> Family: Macrothricidae <i>Macrothrix</i> spp. <i>Ilyocryptus</i> spp. Family: Chydoridae <i>Chydorus</i> spp. Family: Daphnidae <i>Ceriodaphnia cornuta</i> <i>Simocephalus</i> spp. Family: Moinidae <i>Moina micrura</i>	Family: Cyclopidae <i>Mesocyclop</i> spp. <i>Ectocyclops phaleratus</i> Family: Diaptomidae <i>Heliodiaptomus viduus</i>	Family: Cyclopidae <i>Cypris</i> spp.

About 600 species of fresh water Cladocerans have been reported (Korovchinsky, 1996) to occur throughout the world and in India 110 species have been recorded (Patil and Goudar, 1989). In the present study 08 Cladoceran species are recorded. According to Uttangi (2001) Cladocerans prefer to live in clear water. In the littoral zone, the Chydorus species usually associate with macrophytes, periphyton or sediment. The Cyclopoids Copepods were recorded during early winter may be due to the water with heavy algal blooms (Meshram, 1996). Ostracod gave very little contribution in the

zooplankton diversity and occurs occasionally. The present study indicates that the water body is highly eutrophic and a sustainable and holistic management planning is necessary for conservation of this lake.

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