



STUDIES ON DIVERSITY OF ZOOPLANKTON IN VELGURE LAKE NEAR AHERI, DIST. GADCHIROLI, MAHARASHTRA, INDIA

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Abstract:

In the recent years environmental monitoring through regular assessment of water quality has become a crucial factor in the exploitation or conservation of aquatic resources. As zooplankton being in the centre of aquatic food webs, influenced strongly by bottom and top processes and are often used as model for ecological paradigms. The study of zooplankton in view of their composition, abundance and seasonal variation help in planning and successful fishery management. Velgure lake under study has an area of 31 hectares. It is 25 kms away from Aheri town on Mulchera road. It is belonging to Water Irrigation Department and used for aquaculture as well as irrigation purpose. The samples were collected during the period of one year i.e. January -2008 to December 2009. The main objective of the study is to observe the zooplanktonic status of the lake. During study, 45 zooplankton species were recorded, out of which group Rotifera was represented by 26 species, Cladocera by 11 species, Copepoda by 05 species and Ostracoda by 03 species. In Rotifera, Brachionus spp showed their dominance.

Keywords: Zooplankton, Velgure lake, Aheri

Introduction

Zooplanktonic organisms play a very important role in the trophic dynamics and the energy transfer in aquatic ecosystem. They also play a crucial role in the fish productivity in aquatic ecosystem. The zooplankton includes a varied assemblage of taxonomically unrelated microscopic organisms and broadly included the members from Protozoa, Rotifera, Copepoda, Cladocera and Ostracoda.

Zooplankton as indicators are extensively used in environmental management like Environmental Impact Assessment (EIA), biological indication of pollution and biological monitoring. Furthermore, zooplankton occupies a key role in the ecological pyramids and their role in trophodynamics is noteworthy (IAAB, 1998).

Several researchers have used the different zooplankton groups to evaluate the trophic status and pollution potential of the freshwater bodies all over the world. Zooplankton are also used as biological indicators for eutrophication.

The present study deals with the assessment of zooplankton characteristics of Velgure lake near Aheri. As the lake under study is interior, no reports are available on such study. Therefore, the lake is undertaken for investigation.

Materials and Methods:

The samples of zooplankton were collected at monthly intervals from January -2008 to December-2009. The plankton net of mesh size 56µm, made up of bolting silk cloth swept through subsurface and samples were collected

during 8.30 to 9.30 a.m. Samples were preserved and examined under a binocular microscope with different magnification and identified with the help of pertinent literature, Edmondson (1959), Dhanpati (2000).

Results and Discussion:

The study of freshwater fauna specially zooplankton even in a particular area is extensive and complicated phenomenon due to environmental, physical, geographical and chemical variation involving ecological extrinsic and intrinsic factor.

Total 45 species of zooplankton were recorded from all the three sites of the pond, with similar distribution. The present study of zooplankton population abundance showed that Rotifera (26 species) dominated the water body followed by Cladocera, Copepoda and Ostracoda. Similar findings has been reported by Femeska and Lewkowier (1966) and Schindler and Noven (1971) they have noted the enormous growth of Rotifers in the Lakes and reservoirs at Ortario. Pande *et al.*, (2007) reported that Rotifers occurs more predominantly than Cladocera and Copepodes. Kamble and Meshram (2005) studied zooplankton from Khatijapur tank near Achalpur, Amravati and found dominance of Rotifers followed by Copepods, Cladocera and Protozoans at all the three sites of the pond. Choube (1991) and Jayabhaye & Madalpure (2006) also reported Rotifera as most dominant group in their studies on different water bodies of India.

Temperature plays a conspicuous role in the diversity and biomass of rotifers in tropical shallow freshwater bodies. In the present investigation, group Rotifera was dominant. The higher concentration of Rotifers was found during winter season and least appearance during monsoon. Edmondson (1965) observed that high Rotifer population in winter could be attributed with the favourable temperature and availability of abundant food in the form of bacteria, nanoplankton and suspended detritus. Among Rotifera, *Brachionus* species were dominant and represented by *Brachionus falcatus*, *B. forficula*, *B. plicatilis*, *B. calyciforus*, *B. angularis*, *B. havanaensis*, *B. quadricornis*. Mahajan (1981) recorded dominance of *Brachionus* species in zooplankton. Somani and Pejaver (2003) recorded 7 species of *Brachionus* making as significant genera in Masunda Lake Thane, Maharashtra.

Most of the Cladocerans are primary consumers and feed on microscopic algae and fine particulate matter in the detritus thus influencing the cycling of matter and energy in benthos. Cladocera is an important component of zooplankton and form the most dominant groups as food for fish (Rao and Choubay, 1987).

The group Cladocera is represented by 11 species. Among Cladocera, *Simocephalus spp.*, *Moina brachiata*, *Alonella nana*, *Chydorus* species were shown dominance over other species. Rajan *et al.*, (2007) reported 05 species of Cladocera in three polluted water bodies of

Virudhnagar district, Tamilnadu. Balamurugan *et al.*, (1999) reported 7 species of Cladocerans and Biswas and Konar (2000) reported six species of Cladocerans from river Damodar in West Bengal.

Copepoda are mainly represented by the species of Cyclopoids and Calanoids. They formed major bulk of total zooplankton following Cladocerans. Copepods are important contributors of zooplankton population dynamics and are almost universally distributed. They constitute an essential link in aquatic food chain. The Copepoda diversity was represented by 05 species with abundance of nauplius larvae and was found to be dominant during summer season. Ugale and Hiware (2005) reported 03 species of Copepoda in Jagatungasamudra reservoir, Kandhar.

Among Crustacea, Ostracoda was the least group available in the lake. The Ostracoda group is represented by *Cypris spp.*, *Stenocypris spp.* and *Eucypris spp.* Pailwan (2005) recorded 3 species of Ostracoda from perennial tanks of Kolhapur District. Pawar and Palle (2005) reported four species of Ostracoda in Pethwadaj dam, Nanded, Maharashtra. Ansari and Raja (2007) reported only one species of Ostracoda in two freshwater bodies of Aligarh, Uttar Pradesh.

In the present investigation the Rotifers were found to be dominant and Ostracods in less numbers, Nasar (1977) recorded similar observations in the freshwater pond in Bhagalpur during the study of seasonal productivity of zooplankton.

Table 1: Diversity of zooplankton in Velgure lake near Aheri Dist. Gadchiroli, Maharashtra

S. N.	Rotifera	S. N.	Cladocera
1	<i>Polyarthra vulgaris</i>	1	<i>Pseudosida bidentata</i>
2	<i>Keratella tropica</i>	2	<i>Simocephalus vetulus</i>
3	<i>Keratella varga</i>	3	<i>Moina brachiata</i>
4	<i>Brachionus falcatus</i>	4	<i>Bosmina longirostris</i>
5	<i>Brachionus forficula</i>	5	<i>Macrothrix rosea</i>
6	<i>Brachionus plicatilis</i>	6	<i>Macrothrix laticornis</i>
7	<i>Brachionus calyciforus</i>	7	<i>Kurzia latiseimia</i>
8	<i>Brachionus angularis</i>	8	<i>Pleuroxus procurvus</i>
9	<i>Brachionus havanaensis</i>	9	<i>Chydorus sphaericus</i>
10	<i>Brachionus quadricornis</i>	10	<i>Alonella nana</i>
11	<i>Asplanchna brightwelli</i>	11	<i>Moina dubia</i>
12	<i>Platytias patulus</i>	S. N.	Copepoda
13	<i>Platytias quadricornis</i>		
14	<i>Cephalodella gibba</i>	1	<i>Diaptomus forbesi</i>
15	<i>Lecane luna</i>	2	<i>Halicyclops spp.</i>
16	<i>Monostyla bulla</i>	3	<i>Eucyclops prionopborus</i>
17	<i>Synchaeta pectinata</i>	4	<i>Cyclops spp.</i>
18	<i>Rotaria citrinus</i>	5	<i>Mesocyclops leucarti</i>

19	<i>Rotaria neptunta</i>		Nauplius larva
20	<i>Rotaria rotatoria</i>	S. N.	Ostracoda
21	<i>Philodina spp.</i>		
22	<i>Filinia opoliensis</i>	1	<i>Cypris spp.</i>
23	<i>Filinia longiseta</i>	2	<i>Stenocypris spp.</i>
24	<i>Trichocerca longiseta</i>	3	<i>Eucypris spp.</i>
25	<i>Tricocerca cylindrica</i>		
26	<i>Lepadell aovalis</i>		

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