



DIVERSITY OF ZOOPLANKTONS IN KORADI LAKE, DISTRICT-NAGPUR, INDIA

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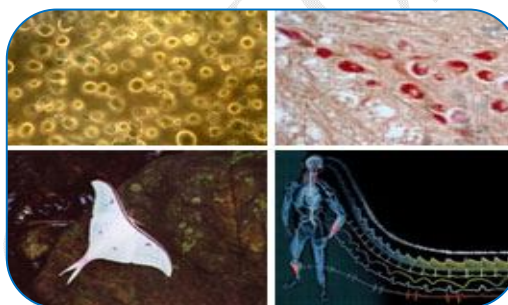
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ABSTRACT :

The study of freshwater bodies has gained much attention in recent years due to its importance in aquaculture, ecological, agricultural and recreational potential. The lakes and reservoirs, all over the country without exception, are in varying degrees of environmental degradation. The population explosion during last century without corresponding expansion of civic facilities converted, lakes and reservoirs as a sink for contaminants.

These water bodies harbors wide array of aquatic organisms like planktons, aquatic weeds etc. Planktons form a very important part of fresh water community and contribute significantly to aquatic productivity. Therefore, the information about plankton is essential to understand the functioning and trophic dynamic of different water bodies. In addition certain planktonic organisms are valuable indicators of trophic status of various aquatic biotopes.

Koradi Lake is a water body situated beside famous Koradi Devi temple. This reservoir is used for fishing and domestic purpose by the temple authorities and people living in this area. In view of this, we try to investigate the present status of this reservoir.



KEYWORDS : Biotopes, trophic status, Phytoplankton, Zooplanktons, Eutrophication.

INTRODUCTION

Freshwater bodies have great aquaculture ecological and recreational potential, therefore such water bodies are becoming a symbol of environmental status. For any nation its aquatic ecosystems, lakes, rivers, dams and coastlines are the national wealth and constant efforts are made to exploit them for the benefit of its population. Fresh water, its availability, equity and sustainability are posing a global challenge and there is an all-round acceptance of the fact that world is facing fresh water crisis (Kodarkar, 2003).

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Zooplanktons are common in the pelagic and littoral regions of ponds, lakes, large rivers, and oceans. In freshwater, these assemblages are dominated by the rotifers (Wallace and Snell 1991) and two groups of microcrustaceans—the four orders of cladocerans (Dodson and Frey 1991) and the class Copepoda (Williamson 1991). The knowledge of their abundance, species diversity and special

distribution is an important in understanding the tropic progression of water bodies (DattaMunshi, 1995).

Koradi Lake is a water body situated beside famous Koradi devitample, this lake is created as water reservoir for thermal plants present in this area. Water from the pench dam is brought to this reservoir and then used by thermal plants. Beside this, the reservoir is also used for fishing and domestic purpose by the temple authorities and people living in this area. In view of this, we try to investigate the present status of this reservoir.

MATERIAL AND METHOD

The Koradi Lake is situated in koradi, 0.5 km from Nagpur- Chindwada highway and about 7 km away from Nagpur city. Three sampling spots were selected at reservoir consecutively based on different characteristics such as bundh area, aquatic vegetation etc. The selected sampling spots were named as KS1, KS2 and KS3 from which monthly samples were collected for a period of one year, from September 2011 to October 2012.

Planktons were collected by filtering 30 liter of water through bolting silk cloths no.25 (mesh size 64mm) from litoral and open water zones and preserve it in 4%formalin, quantitative analysis was done by counting planktons in Sedgwick Rafter cell. Detailed taxonomic identification of zooplanktons was carried out by referring Edmondson (1959), Michael (1973), Pennak (1989), Kodarkar (1999) and Danpanapati (2000).

RESULT AND DISCUSSION

(A) Zooplanktons

During the present investigation of lake, two main zooplanktonic groups were observed, i.e. Rotifers and Arthropoda. Among Rotifers, 9 species were observed and identified, of which *Brachionusfalcatus*, *B.bidenta*, *Keratellatropica*, *Trichocercacylandrica* and *Asplanchna* occurred as most abundant species. The Arthropods again categorized into three main taxa, i.e. Cladocera, Copepoda and Ostracoda. Cladocera were represented by 6 species, Copepoda by 3 species and Ostracods by 2 species. (Fig.1 and 3)

Most abundant species in Cladocera were *Moinabrachiata*, *Diphanosoma*, *Moinodaphnia*, *Cydrus*, *Alona* and, in Ostracods, *Cypris* while in Copepoda were *Diaptomus* and *Cyclops*.

During observation, little variation and species differentiation of zooplanktons were observed in the selected sites of reservoir. Monthly variations in composition of different zooplanktons species in one of the site of the lake is given in table

Seasonal Composition of Zooplanktons (no./lit) at Koradi Lake, (KS1)

	Taxa	Jan	Feb	Mar	April	May	June
	<i>Brachionusfalcatus</i>	35	27	40	32	17	25
	<i>B. bidenta</i>	15	11	07	09	12	04
Rotifera	<i>B. quadricornis</i>	08	10	00	05	07	06
	<i>Trichocercacylindrica</i>	12	15	06	09	10	08
	<i>Filinia longiseta</i>	03	03	00	00	02	04
	<i>Keratellatropica</i>	45	38	25	32	25	23
	<i>Keratella spp.</i>	23	25	12	09	18	17
	<i>Monostylaspp</i>	07	04	00	01	02	03
	<i>Asplanchna spp.</i>	13	06	11	04	10	14

	Cladocera	Jan	Feb	Mar	April	May	June
	<i>Moinabrachiata</i>	24	20	12	15	18	13
Arthropoda	<i>Diaphanosomaspp</i>	18	20	08	12	17	17
	<i>Moinodaphniaspp</i>	17	18	05	06	10	05
	<i>Ceriodaphniaspp</i>	09	04	03	00	03	03
	<i>Chydorusspp</i>	08	03	07	02	06	06
	<i>Alonaspp</i>	02	02	00	00	00	01
	Copepoda						
	<i>Diatomusspp</i>	30	14	17	34	42	56
	<i>Cyclops spp</i>	15	12	28	17	08	10
	<i>Nauplius spp.</i>	07	08	10	10	22	12
	Ostracoda						
	<i>Cyprisspp</i>	38	38	21	22	15	26
	<i>Eucyprisspp</i>	07	13	04	11	09	09

In the present study, Rotifers and Cladocerans dominated in the reservoir. Rotifers were represented by 9 species throughout the investigation and Cladocerans were represented by 6 species. Copepoda group was represented by 3 species and only two species of Ostracods were reported.

Among Rotifers *Brachionusbidentata*, *Keratellatropica*, *Lecanearculata* and *Asplanchna* occurred as most abundant species. Rotifers were reported as 1st in order of population density.

During the present study Cladocera stand 2nd in order of population density. Most abundant species of Cladocera were *Diphanosoma*, *Alona* and *Moinamicrura*.

Among total zooplankton population Copepoda is reported as third in order of abundance. Most abundant species reported were *Diatomus* and *Cyclops*.

During present investigation among total zooplankton population Ostracoda is reported as fourth in the order of abundance in Koradi Lake. Most abundant species found was *Cypris*.

Maxima of zooplankton during the January and February can be attributed to the favourable temperature and availability of abundant food in the form of bacteria, nanoplankton and suspended detritus. Dominance of rotifers, especially abundance of pollution indicator species such as *Brachionus* and *Keretella spp.* indicates the eutrophic nature of the reservoir and unsuitability for human used. Relative abundance of cladocerans indicates the good productivity of the pond for aquaculture and fishery.

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Zooplanktons of Rural Koradi Lake, District- Nagpur

