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STUDY OF ZOOPLANKTON DIVERSITY OF LOWER TERNA RESERVOIR, DISTRICT OSMANABAD, M. S. INDIA

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Abstract- Zooplanktons are primary consumer of aquatic ecosystem. They are important food source of fishes and also maintain biotic and abiotic environment of aquatic ecosystem. Lower Terna Reservoir is the main water source of Latur and Osmanabad district. The study of reservoir in relation with zooplankton is more important, because the communities surrounding the reservoirs are most depended upon reservoir for irrigation and fisheries. In present investigation, occurrence of zooplankton as well as seasonal change in zooplankton during June 2015 to May 2016 is noted. The Zooplankton is identified in four classes viz, Rotifera, Cladocera, Copepoda and Ostracoda.

Keyword:- Zooplankton diversity, Lower Terna Reservoir, District Osmanabad.

INTRODUCTION

Limnology is the study of freshwater bodies like river, ponds and lakes. In the branch of limnology, physico-chemical and biological characters of water are also studied. The main purpose of limnology is the balance biological material in the natural water for living organism i.e. plankton (Henses 1887 and Fritsh 1967).

The main aspect of limnology is to understand the structure and function of freshwater. The productivity and functional relationship of water resources is affecting on physico-chemical and biological factors of aquatic ecosystem. (HBN Hynes, 1970)

The main aspect of hydro biological study is the analysis of physiochemical and biological parameter and to find out correlation between biotic and abiotic factors. This helps for the utilizing the water bodies in right manner, like maintenances and management of water bodies and also conserve the aquatic biodiversity. The regular study of hydrobiology is essential for increasing productivity and conservation and also study of pollution if any. There is helpful for proper development of agricultural and industrial activities domestic usage.

Freshwater zooplankton is one of four selected bioindicators (benthic diatom, zooplankton, littoral macro invertebrate and benthic macro invertebrate), uses for assessment in ecological health monitoring (EHM) activity of the MRC member countries since 2004.

Most of the zooplankton are depends on phytoplankton as a food and some of the fishes are depends on the zooplankton as a food.

The study of plankton diversity is very important because the water of Lower Terna Reservoir is mainly used for drinking purpose in a many villages of Osmanabad district and Osmanabad city also. The Terna reservoir is the main water source of Osmanabad as well as Latur district. Because in this water reservoir, water is available in all seasons throughout year. It is useful source of water as well as fish culture, from society many interferer in the Terna reservoir and it result out the fluctuation in physico-chemical as well as biological character of water reservoir. All this things are considered for present investigation.

The productivity of a water reservoir is correlated with the density of plankton. Similarly zooplanktons are at secondary level, and transforms food energy synthesized by the phytoplankton to higher level of food chain. These

planktons are sensitive to environmental variations so they show high diversity with seasonal fluctuation. (Dr. AmbiliNath, Neethu R.V., Revathy J.S., 2015). The plankton population in maintain health and quality of water reservoirs (Prasad and Singh, 1958). The phytoplankton serves as a food for development and growth of zooplankton (Hutchinson, 1967).

The Zooplankton population of Lower Terna reservoir includes, Rotifera, Cladocera, Copepoda and Ostracoda. Present investigation was carried on by collecting water samples from reservoir from four different stations in airtight and opaque plastic containers. The Zooplanktons are collected from the reservoir separately.

Zooplankton is kept in sedimentation columns after adding 4% formalin solution. The drop count method (Welch, 1952) is used for quantitative and qualitative analysis of phytoplankton and identifications of them were made by standard methods (Adoni, 1985, Philipose, 1959, and Prescott, 1970).

RESULT AND DISCUSSION

The main hypothesis of the given paper is to study of the zooplankton diversity of Lower Terna reservoir as well as study of physico-chemical properties of Terna reservoir. The richness of zooplankton are depends upon physico-chemical and biological properties (Sukunon, 1980). The study of zooplankton is one of the advance processes of water pollution. The some species of zooplankton are biological indicator to indicate health of that waterbody (Goel et al, 1986).

Latreille 1802, 1829, sladecek 1983, Kobayashi et al 1983, Mc Coutey and Kaiff 1981, Jhingron 1991, they have researches worldwide about zooplankton diversity. The change of physico-chemical factors are directly effect on phytoplankton and zooplankton in different seasonal changes, (Joshi (1987), Ramanibai and Ranichandran (1987), Sharma and Renu Sharma (1992).

The result of the present study is summarized in Table-01. The all 4 stations on reservoirs shows 21 different species in different classes are Rotifera, Cladocera, Copepoda and Ostracoda. From Rotifera & different species are investigate, Cladocera by about four different species, Copepoda are represent by six different species and Ostracoda by about three different species in Terna reservoir. The presence of Cladocera, Copepoda and Rotifera in Terna reservoir indicates that there is presence of rich organic material and phytoplankton. Also water of Lower Terna reservoir is polluted. The physico-chemical and biological (Phytoplanktonic growth) is most important for ecological pyramid for aquatic life (Singh C.S. et al 1983, Harshey D.K. et al 1984)

Table-01 Observation Table for Zooplankton obtained at various stations for Period June2015- May16

Station	Station-A	Station-B	Station-C	Station-D
Zooplankton	**2389**	**3059**	**2800**	**3029**
Rotifera	**985**	**1580**	**1126**	**1237**
Brachionus angularis	119	248	131	142
Brachionus forficula	130	265	155	172
Brachionus quadridentatus	109	131	123	149
Brachionus caudatus	107	121	137	162
Anuraeopsis navicula	96	101	113	126
Keratella cochlearis	157	256	176	180
Keratella tropica	134	231	159	171
Filinia opoliensis	133	227	132	135
Cladocera	**424**	**464**	**511**	**538**
Daphnia carinata	111	131	129	128
Ceriodaphnia cornuta	98	120	132	115
Ceriodaphnia reticulate	99	110	113	132
Moina brachiata	116	103	137	163
Copepoda	**701**	**685**	**835**	**888**
Mesocyclops leuckarti	132	135	144	147
Mesocyclops hyalinus	113	135	131	148
Neodiaptomus lindbergi	91	103	131	150
Nauplius larvae	133	107	143	162
Cyclops sp.	139	114	164	152
Navicula larvae	93	91	122	129
Ostracoda	**279**	**330**	**328**	**366**
Cypris sp	102	125	121	134
Cyclocypria Kinkaidia	84	110	103	118
Cyprinotus salinus	93	95	104	114

Population of Zooplankton in the working area are in order of Dominancy among the species with regards to number as follows **Rotifera** > **Copepoda** > **Cladocera** >**Ostracoda**.

Distribution of phytoplankton abundance varies with different stations as per table 2 and figure 2.

Table-02 Station wise Diversity of Species of Zooplankton

Station	Station-A	Station-B	Station-C	Station-D
Zooplankton	**2389**	**3059**	**2800**	**3029**
Rotifera	**985**	**1580**	**1126**	**1237**
Cladocera	**424**	**464**	**511**	**538**
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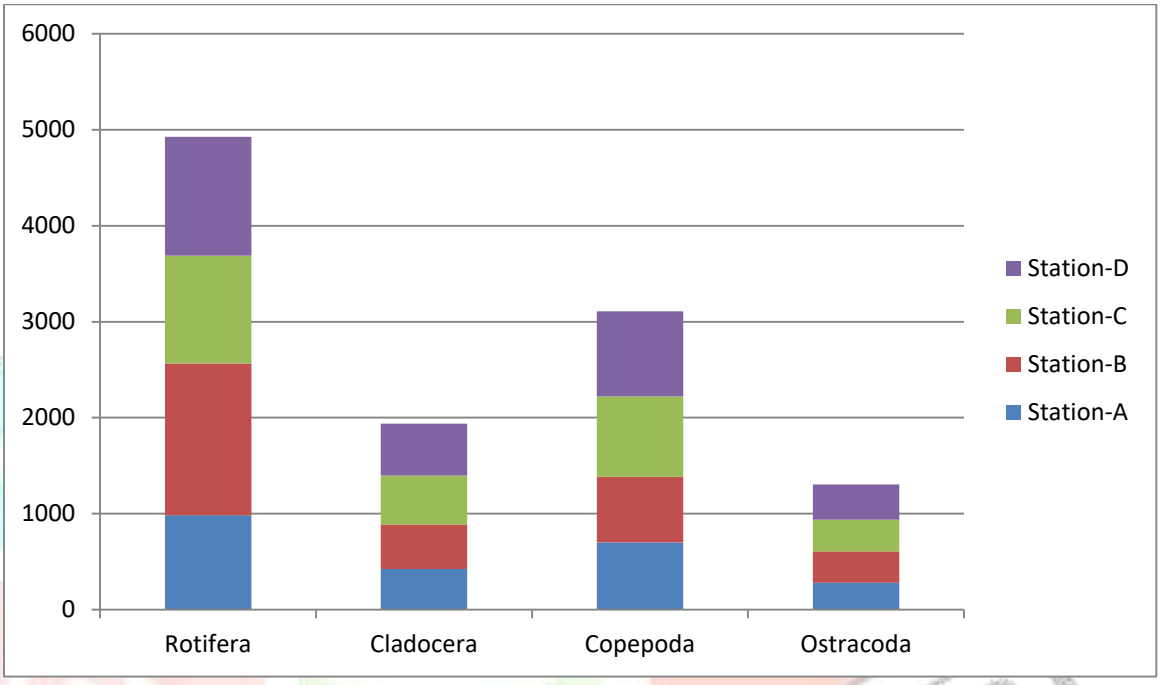

Figure.1 – Station wise diversity of species of Zooplankton

Zooplanktons are also play an important role as indicator of water quality. The production of zooplankton is depends up on temperature and phytoplanktonic growth (Gannon and Stemberger, 1978).

It is concluded that the fluctuation in species diversity of Zooplanktons are depends upon variation in physico-chemical factors as well as Phytoplankton richness. Species diversity is the important indicators for effective tools in environment monitoring. In four sites of Terna reservoirs, species belongs to Rotifera, Cladocera, Copepoda and Ostracoda as a Zooplankton forms.

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