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A STUDY ON ZOOPLANKTON DIVERSITY OF VELAIR FRESH WATER LAKE, WARANGAL DISTRICT, TELANGANA

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ABSTRACT:

Zooplanktons are the most fascinating group of micro organisms found in aquatic bodies. They play a vital role as primary consumers. The zooplanktons have great significance in biology of the organisms, especially for the fishes. The present study was aimed to investigate the seasonal variation in zooplankton diversity of Velair Lake, located in Warangal district, Telangana. The study was carried out for a period of one year from June 2016 to May 2017. This lake has rich number of species biodiversity of aquatic animals. Four different groups of zooplanktons were identified in this study which include Rotifera, Cladocera, Copepoda and Ostracoda. Total 18 species of zooplankton were identified which include of 10 species of rotifer, 4 species of cladocera, 3 species of copepod and ostracoda 1 species. The zooplankton community was maximum in summer season, minimum in monsoon season. The composition of zooplankton rotifers was dominant (59%) followed by cladocera (21%), copepod (15%) and ostracoda (5%).

KEY WORDS: Velair Lake, Zooplankton Diversity

INTRODUCTION:

Zooplanktons are the smallest organisms present in almost all the water bodies and they can be observed only through microscope. Zooplankton community distribution depends on some of the complex factors viz, change of physico-chemical parameters of water and vegetation cover. In a fresh water system, the zooplankton forms are important group and constitute basic link of the food chain. Planktons are very sensitive to the environment they live in and any alteration in the environment leads to the changes in the plankton communities in terms of tolerance abundance, diversity and dominance in the habitat (Mathivonam, 2007). In ecologically zooplankton is one of the most important biotic components influencing all the functional aspects of an aquatic ecosystem such as food chains, food webs, energy flow and cycling of matter (Park and Shin, 2007). The zooplanktons are classified in various groups viz., Rotifera, Cladocera, Copepoda and Ostracoda. Planktons can determine the trophic status and quality of water of lakes and reservoir (Ganapati, 1962). A number of studies were carried out on the condition of ecology and freshwater bodies in various different parts of India but in some parts of Telangana, the ecological studies of freshwater bodies especially zooplankton studies is very scanty. Present study on Zooplankton diversity abundance and seasonal variation in Velair fresh water lake of Warangal District, Telangana.

MATERIALS AND METHODS:

The present investigation was carried out from June 2016 to May 2017 located in velair village, warangal district, Telangana. This fresh water lake is mainly used for drinking and fish culture, agriculture and irrigation. Water samples were collected monthly basis from the lake for a period of one year. The plankton samples were collected during morning hours in between 7.00 A.M to 10.00 A.M by a plankton net made up of boiling silk (NO.25, mesh size 55 μ). The samples were then transferred to narrow mouth plastic bottles, preserved in 5% formalin and brought to laboratory. Zooplankton samples were identified and counted under microscopic using Sedgwick Rafter Cell Method. Zooplanktons were identified with the help of Tonapi 1980. The results of zooplankton count were expressed as org/lit.

RESULTS AND DISCUSSION:

Zooplankton species composition and their number in three different seasons were presented in Table.1&2, Fig-1. Four different groups of zooplankton were identified in this study which includes Rotifera, Cladocera, Copepoda and Ostracoda.

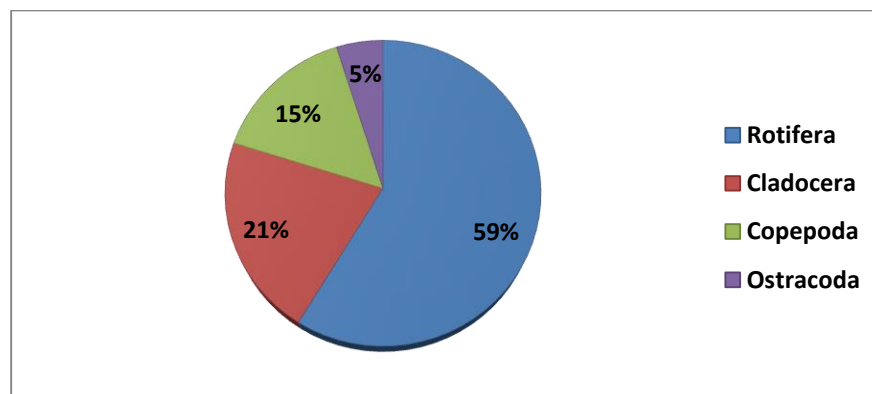
Table 1: Showing the zooplankton diversity in 2016-2017

S.no	Group	Monsoon				Winter				Summer			
	Rotifera	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
1	<i>B.Caudatus</i>	5	10	11	10	10	9	12	11	11	9	10	8
2	<i>B.angularis</i>	9	9	10	5	6	10	9	5	10	11	9	8
3	<i>B.falcatus</i>	2	10	2	9	10	2	8	2	7	8	6	9
4	<i>B.diversicornis</i>	9	11	5	7	9	7	4	11	8	5	9	5
5	<i>K.tropica</i>	8	11	10	7	9	11	8	9	11	6	8	2
6	<i>K.colcherias</i>	5	7	4	9	5	7	9	8	5	10	9	8
7	<i>Lecane lunaris</i>	9	3	8	5	3	3	3	2	3	6	10	7
8	<i>Lecanemonostyla</i>	5	4	10	8	10	9	7	5	12	9	8	10
9	<i>Filina longisepta</i>	6	5	11	9	6	9	8	12	8	6	4	8
10	<i>Cephalodella gibba</i>	3	10	9	6	8	11	10	9	10	11	6	8
	Cladocera	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	April	May
11	<i>M.brachiata</i>	7	6	4	8	4	10	8	3	4	11	3	9
12	<i>M.macropa</i>	9	6	8	10	9	8	5	10	7	9	2	4
13	<i>Bosmina longirostris</i>	5	7	9	11	7	6	13	9	3	8	5	8
14	<i>Daphnia sps</i>	4	9	5	10	9	4	3	2	9	7	6	8
	Copepoda	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	April	May
15	<i>M.lucarti</i>	9	11	3	3	5	3	6	9	5	8	9	6
16	<i>M.hyalinus</i>	6	9	5	6	9	3	5	4	6	9	10	5
17	<i>Tropocyclops prasinus</i>	7	5	6	8	9	10	8	3	9	8	2	10
	Ostracoda	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	April	May
18	<i>Stenocypris Species</i>	8	7	4	2	8	5	7	6	9	7	8	6

Table-2: Numerical abundance of zooplankton of Velair Lake

S.no	Zooplankton	Monsoon	Winter	Summer	Total	Percentage
1	Rotifera	296	306	318	920	59%
2	Cladocera	118	110	103	331	21%
3	Copepoda	78	74	87	239	15%
4	Ostracoda	21	26	30	77	5%

Fig-1: Monthly total percentage of zooplanktons during 2016-2017



ROTIFERA:

The Rotifers play a vital role in the tropic tiers of fresh water impoundments and they serve as living capsules of nutrition (Suresh Kumar et.al.,1999).Rotifer species as best indicators of different kind of aquatic pollution(Mahajan 1981).The species Rotifers found during the period of investigation the minimum number of Rotifers were observed in monsoon and maximum in summer season.

CLADOCERA:

Cladocera during the study period the highest population observed in monsoon season, lowest population observed in summer season. Similar observations are in the present investigation Balakrishna et al,(2013).Population of cladocera in different water bodies have been reported by Nayar (1971), Murugan et al.,(1998).

COPEPODA:

Copepod constitutes dominant plank tonic group of both freshwater and marine habitats. They play vital role s primary consumers in the aquatic ecosystem. About 120 species of free living freshwater copepod are known from India (Uttangi, 2001).Maximum population observed in summer season, minimum population observed in winter. Similar observations are in the Chuhan (1993).According to DAS et al (1996) copepods favor more stable environment and generally regarded as pollution sensitive taxa as they disappear once water gets polluted.

OSTRACOD:

Ostracods are bivalve crustaceans are found in both freshwater and marine water. The present study the maximum ostracods were observed maximum in summer, minimum was observed in monsoon season. Similar observations are in the Bahera et.al.,(2004).

CONCUSION:

The present study reveals the zooplankton species during the one year. It was rotifer (59%),cladocera(21%),copepod(15%) and ostracoda(5%).The rotifer is dominant followed by cladocera, copepod, ostracoda. The rotifer and population is recorded high. The lake ecosystem is suitable for fish culture. This is indicating that the selected lake is not polluted and rich diversity of planktons. As this lake is a good productive this indicates suitability for raising sustainable crop of planktivorus fishes and in addition to sources of drinking water.

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