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Zooplankton Diversty in Ajeet Sagar Dam, Khetri, Jhunjhunu, District, Rajasthan

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Abstract – Zooplankton plays an important role in determination of water quality which occurs in all types of aquatic ecosystems, they play a vital role in energy transfer in an aquatic ecosystem. The aim of present investigation is to know the diversity of Zooplankton groups found in ajeet sagar dam, Khetri, Jhunjhunu District, Rajasthan. In the present study 16 species of zooplankton were identified. The results of present study reveal that Cladocerons and Rotifera dominated in the water station A and B respectively.

Keywords: Zooplankton, Water Quality, Aquatic Ecosystem, Rotifera.

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INTRODUCTION

Zooplankton is one of the most important biotic elements affecting all the functional factors and plays a crucial role in the aquatic ecosystems food chain, nitrogen recovery and energy transfer ecosystem (Park et al., 2007). The population of Zooplanktons is characteristics indicator of water quality (Bhadane, RS.,2016) In addition, the population of zooplanktons is able to represent the existence and future state of every both the lentic and lotic aquatic bodies among all freshwater aquatic biota (Kumar et al., 2011).

The main objective of present investigation is to know the diversity of zooplanktons in ajeet sagar dam, Khetri, Jhunjhunu during June 2017 to December 2017.

MATERIALS AND METHODS

The water sample was taken from the surface (secchi disc transparency zone) of station A & B during morning between 7am to 12 pm. The Zooplankton net is made up of bolting silk (no. 25, mesh size 50µ) was used for collection of zooplankton. This net was conical and narrowed the cone to the end of the bottle. The net is horizontally and obliquely drawn into the surface water of the research region for the quantitative examination of zooplankton. For quantitative analysis, ten bucket full of water (one bucket = 10 liters) samples were collected from each sampling sites and filtered out through the net. After transferring the sample in air tight plastic bottles, it was kept carefully with labeling and preserved immediately using 4% formaldehyde. The net was hauled for a distance of ten meters.

After 1 ml of this concentrated zooplankton sample from each sample site have been returned to the laboratory, the microscope (40X) was observed (Olympus Cx21). Systematic identification and counting was done by using key given in (Needham and Needham (1962), Edmondson, 1959; and Battish, 1992].

RESULTS AND DISCUSSION

Present study shows the presence of 16 species, out of which 4 species belong to protozoans, 4 species of rotifera, 3 species of cladocera, 2 species of copepod and 3 species of Ostracoda. The group wise species and their percentage recorded in The ajeet sagar dam, Khetri are shown in Table 1-2, figure 1 &2.

In station A which is less disturbed, The total zooplanktons was 4035 No./l in 2017 .The total zooplankton population was dominated by cladocera (27%), rotifea (20%), Prtozoans (19%) , ostracoda (18%) and Copepoda (16%) . In present study cladocera was found first dominant group of zooplanktons in station A. Most of the cladocera species are primary consumers and feed on microscopic algae and fine particulate matter in the detritus. The similar results also reported by choubey,U., (1997) and Kulkarni, R et al. (2007) regarding to high density of cladacera. Kumar, L.S. & Kaur,H (2015) showed that cladocera was highest in population in Harsholav pond of desert area.

In station B which was more disturbed due to anthropogenic activity, The total zooplanktons was

3910 No./l in 2017.The total zooplankton population was dominated by rotifea (28 %), cladocera (23%), protozoans (19%),ostracoda (15%) & Copepoda (15%).The dominant order of zooplanktons in station B were rotifera>cladocera>protozoans>ostracoda>copepod however ostracoda and copepoda were almost similar. Dhanapathi, (2000) recorded a very short life cycle in favorable weather, food and photoperiod conditions. Since The Rotifers have shortened reproductive period and are increasingly growing in abundance under optimal environmental conditions.The presents results of zooplankton population at Station B also supported by Siddiqui and Khan (2002), Rajasekhar et al., (2009) , Rajagopal et al., (2010) and Bhadane, RS.(2016).

Table-1:- Monthly population of zooplankton of water at station A and station B (surface) in ajeet sagar dam, during June 2017 to December 2017.

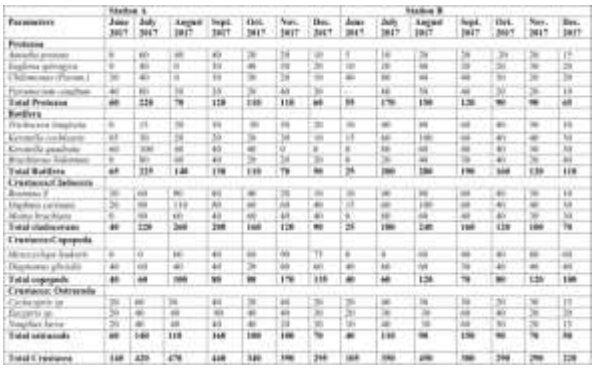

Table 2:-Total population of Zooplankton and Average population at Station A &B in 2017 (June – December)

	Station A		Station B	
Zooplankton	**2017**	**Percentage**	**2017**	**Percentage**
Total Protozoa	750	18.88%	740	18.92%
Total Rotifera	790	19.57%	1085	27.74%
Crustacean: Cladocera	1090	27.01%	895	22.89%
Crustacea: Copepoda	665	16.48%	590	15.08%
Crustacea: Ostracoda	740	18.33%	600	15.34%
Total Zooplanktos	**4035**		**3910**	

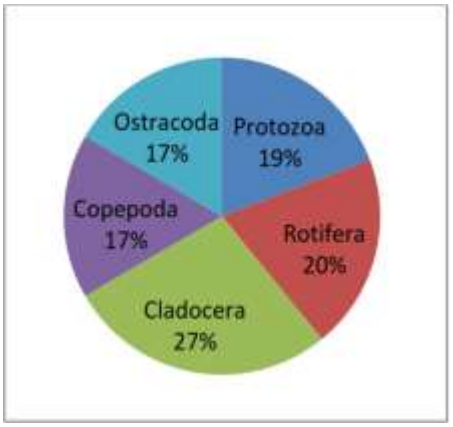

Figure-1: Zooplanktons Percentage at station A in 2017

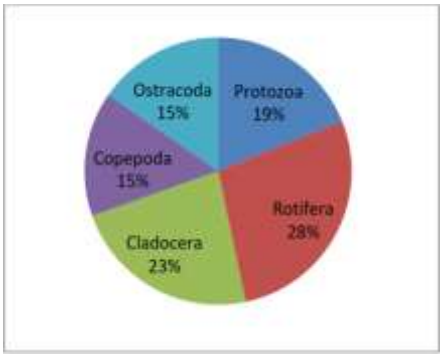

Figure- 2: Zooplanktons Percentage in 2017 at Station B

CONCLUSIONS

The present study reveals monthly variation in the diversity and distribution of zooplanktons in ajeet sagar dam. All Five groups of zooplanktons were recorded throughout the study period. The most dominant group was cladocerons and rotifers in Station A and Station B respectively. The appearance of rotors as the dominant category in marginally contaminated Station B can be attributed to desirable conditions and the excess of food in the form of bacteria and suspended waste in water.

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