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Research Article

Diversity of Zooplankton in Shanigaram Reservoir, Siddipet District, Telangana, India

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ABSTRACT

Zooplankton is an integral component of aquatic ecosystem and comprises of microscopic animal life that passively float or swim freely. In the present study the selected shanigaram reservoir for the purpose of the study. Zooplanktons are the smallest metazoans in all water bodies, ranging in size from about 0.05 to 10 mm. They provide food for many spices of fish and are therefore, vital role in the food web of ponds. A total of 16 Zooplankton taxa were observed in the lake and found dissimilarities in three seasons. During the study period the total numbers of 16 species are identified from the selected reservoir during the study period. *Rotifer*, *Cladocera*, copepod and *Ostracoda*. Seven number of *Rotifer* sp., Four number of *Cladocera* sps, three number of copepod sp. and Two number of *Ostracoda* sp. in the selected stations. In *Rotifers* were higher in pre-monsoon season *Cladocera* during monsoon season and *Copepods* in post-monsoon season were dominant taxa. This was the systematic survey on the fish diversity of this lake It is proposed that the scientific information on icthyofaunal diversity and distribution status will surely help in serving the future purposes of sustainable exploration and concurrent conservation of fish resources. This was the systematic survey on the fish diversity of the lake.

Keywords: Zooplanktons; *Rotifers*; *Cladocera*; *Copepods*; *Ostracoda*

INTRODUCTION

Zooplanktons form a major link in the energy transfer at secondary level in aquatic food webs between autotrophies and heterotrophy [1]. In addition they act as indicator of water of pollution. The zooplankton occupies an intermediate position in the food web in the aquatic ecosystem. of the total *Rotifer* count worldwide in 2030 only 360 species have been reported from India. The number of *Cladocera* species reported in India is 190 [2]. The global diversity of *Cladocera* is more than 600 species. The *Copepods* have the longest and the strongest appendages which help them to swim faster than any other zooplankton. They are very sensitive to environmental changes and thus are of considerable potential value as water quality indicating [3]. Zooplanktons provide the main food for fishes and can be used as indicators of the tropic status of a water body. Zooplankton has long been used as indicators of the eutrophication [4].

MATERIALS AND METHODS

In the present study we carried out of zooplankton and their seasonal variation during the year May 2017-June 2018. Water samples of were collected in different stations of the lake during an early hours of the day 7.00 A.M-10.00 A.M. The plankton net is made by the bolting nylon silk (No. 25 Mesh size 50 µ) is used for collection of zooplankton and which is conical shape and reducing con with the bottle t its end. Collected samples were transected to labeled samples were containing 4% formalin. Collected samples were brought by using various authenticated monographs. After an accurate identification of ach genus, the density of zooplankton was calculated as per the Lackey Drop method.

The density of zooplankton was expressed as organisms per liter using formula:

$$N = n \times v/V$$

N=Total no of organisms/Liter of water filtered.

n=No of organisms counted in 1 ml of sample.

v=Volume of concentrated sample (ml).

V=Volume of total water filtered/Liter (ml).

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RESULTS AND DISCUSSION

The present study report the zooplankton diversity community of Shanigaram reservoir. In the investigation period fifteen zooplankton were identified in this species of which Six of *Rotifer* four species of *Cladocera* Three species of Copepoda and two species of *Ostracoda* were identified. During the present investigation class *Rotifer* was dominated among the entire zooplankton group in all the research showed in Table 1.

Rotifers are regarded as bioindicators of water quality. *Rotifers* plays vital role in the tropic tiers of freshwater impoundments and serve as living capsule of nutrition [5]. In the present study they dominated with six species as compared to other groups of zooplankton. Taxonomic dominance has been reported in several water bodies [6]. This pattern is common in lakes, ponds, reservoirs and rivers [7]. Since the *Rotifers* have short reproductive stages they increase in abundance rapidly under favorable environmental conditions. The *Rotifer* group population shows highest during the pre-monsoon season, lowest during the post monsoon season. The similar observations were given by Sharma [8].

*Cladoceran*s are popularly known as water fleas as most of them move through the water with a series of hops and jumps. *Cladocerous* prefer to live deep water and constitute a major item of food for fish. The *Cladocera* group population shows highest during the pre-monsoon season, lowest during the post monsoon season. Zooplanktons are highly sensitive to environmental variation [9].

Free living *Copepods* are an essential link in the food chain occupying the intermediate tropic level between bacteria and algae n hand and small and large plankton predators on the other. Through they are well known as important intermediate hosts for helminthes parasites. The copepod group population shows highest during the pre-monsoon season, lowest during monsoon season. Similar observations were given by Kamble and Meshram [10].

Table 1: Seasonal distribution of zooplankton in Shaniagaram reservoir.

Group	Species	Monsoon	Post-monsoon	Pre-monsoon
Rotifera	*Brchionus falcatus*	220	231	269
	B. angularis	198	215	264
	Filinia longisepta	116	125	139
	Lecane monostyla	123	136	144
	Polyarthra remata	110	105	126
	Hexarthra sps	132	158	160
	Total	1011	1104	1230
Cladocera	*Daphniosoma*	118	120	142
	Lactona	95	96	107
	Cereodaphnia	383	322	373
	Alonella sps	134	130	128
	Total	730	668	750
Copepoda	*Mesocyclops sp*	385	371	352
	Diaptonus sp	83	105	118
	Heliodiaptomus	57	67	82
	Total	525	543	552
Ostracoda	*Cyprinotus sp*	285	384	402
	Stenocypris sp	184	176	145
	Total	469	560	547

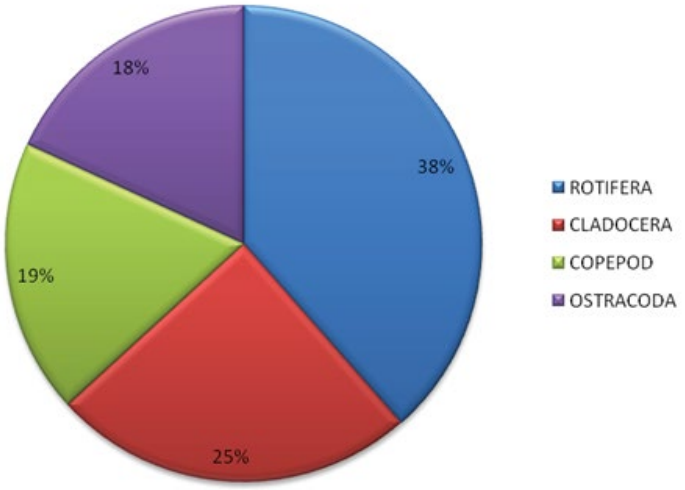

Figure 1: Seasonal average variation of zooplankton during the year 2017-2018.

Ostracoda commonly known as seed shrimps are small crustaceans having the bivalve carapace enclosing the laterally compressed body? They are found in a wide variety of aquatic habitats lakes, ponds, streams, swamps and especially shallow places; here weeds or algae are abundant. Majority of them are free living and a few are commensalisms on the gills of crayfishes and in the intestine of fishes and amphibians. The *Ostracoda* group population shows highest during the post monsoon season, lowest during the monsoon season (Figure 1).

CONCLUSION

In the present study, the zooplankton population of Shanigaram reservoir was observed that, the quantity of zooplankton found more during pre-monsoon season. The *Rotifers* were dominated among the population during pre-monsoon. The *Ostracoda* were comparatively in low profile in annul cycle.

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