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ZOOPLANKTON DIVERSITY IN BACK WATER OF KRISHNA RIVER NEAR ALAMATTI VILLAGE, VIJAYAPUR (DISTRICT) KARNATAKA, INDIA

Prof. Smt. K. G. Hiremath
Associate professor, Department of Zoology
M.G.V.C first grade College Muddebihal, Vijayapur (Dist), Karnataka, India.

ABSTRACT:

A study on zooplankton species and diversity in Krishna river Alamatti village Vijayapur(Dist), Karnataka, India was conducted to check the status in the area and provide new insights in to its ecology. Samples were collected during September 2018 to March 2019. A total 32 species were found in this river. Among these, rotifers comprise 22.80%, cladocera 22.50%, copepods 25.3%, ostracoda 14.60% and protozoan species 13.25%. Some of the dominant zooplanktons present throughout the year. The season wise zooplankton analysis showed an average abundance of species in water and maximum occurrence in summer due to the different environmental and inflow characteristic of the water body.

KEYWORDS: *Krishna river, zooplankton, Alamatti.*

INTRODUCTION

Zooplanktons are the smallest organisms present in almost all the water body and they can be observed only through microscope. They invariably form an integral component for fresh water communities and contribute significant to biological productivity. Zooplankton acts as main sources of food for many fishes and plays an important role in early detection and monitoring the pollution of water. Zooplankton community distribution depends on some of the complex factors namely carried out on the condition of ecology and fresh water bodies in various parts of India but in change of climatic conditions, physical and chemical parameters and vegetation cover. Most of the planktonic organisms are cosmopolitan in distribution. A number of studies have been carried out on the condition of ecology and fresh water bodies in various parts of India but in Karnataka Krishna river near Alamatti is not investigated. So the present investigations made on attempts to study the zooplankton species in Krishna river. The zooplankton represents assemblage of taxonomically unrelated microscopic organisms with common ecological habitat which are drifting in the epilimnion of aquatic environment (Jadhav *et al,* 2012). They act as food chain organisms on which fisheries sustain as a major business and play a key role in energy transform from primary to higher level in the ecosystems. The most significant feature of zooplankton is its immense diversity over space and time (Sehegal *et al,* 2013). In India and abroad studies on riverine zooplankton are under taken by irrigators like (Bazmi Shaukat Hussain *et al*, 2011), Dutta and

Verma (2010), Jandal *et al* (2010), Pace *et al* (1992) etc. as no previous studies were reported on Krishna river in Alamatti village, Vijayapur (Dist), Karnataka, India of ecological importance therefore it has been investigated by us.

AIMS AND OBSECTIVES

There are no reports on the diversity of zooplankton in back water of Krishna river near Alamatti village, Karnataka, India. Therefore the present investigation was initiated to record the diversity in the Krishna river. Samples were collected during September 2018 to March 2019 is considered for the investigation of zooplankton.

MATERIALS AND METHODS

Krihsna river is located near Alamatti village to which Lalbahadur Shastri dam is constructed in north Karnataka, Vijayapur(Dist), India. Some of the benefits getting from the reservoir storage are irrigation, hydropower generation, fisheries, drinking water supply and industrial use.

SAMPLE COLLECTION OF ZOOPLANKTON

Water sample were collected randomly in different locations of the reservoir during early hours of the day morning 7am to 9am, to a period of 7 months from September 2018 to March 2019. The samples were pooled together to consider a final sample for analysis. The plankton net is made by the nylon silk which is used for collection of zooplanktons. It is a conical shaped and reducing cone with the bottle with its end. Ten litters of water sample were filtered out through the net. After transferring the sample in airtight plastic bottles, it would keep carefully with labeling and preserved immediately using 4% formalin. Later the collected samples were brought to the laboratory and analyzed qualitatively under microscope for different types of zooplanktons and identified using various authenticated monographs. After an accurate identification of each genus, the density of zooplankton was calculated as per the Lackey's drop method.

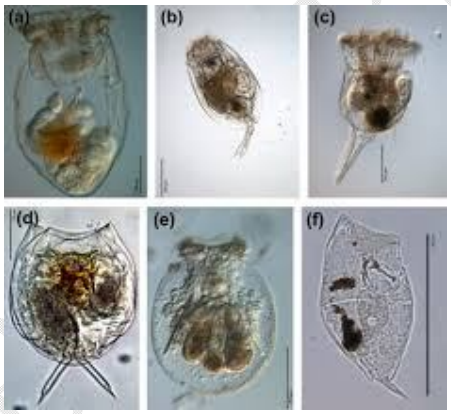

Fig.1 Rotifers

Fig.2 Verticella

Table-1 Occurance of Zooplankton in Krishna river at Alamatti, Vijayapur (Dist), Karnataka, India

Sl.No	Group	Species
1	Protozoa	*Chrysamoeba* *Amoeba proteus* *Volvax* *Pelomyxa palustris* *Bursara sps* *Paramoesium caurdatum* *Stentor sps* *Vorticella sps* *Prorodon sps* *Chilodonnella sps* *Tetrahymena sps*
2	Rotifera	*Cocconeis sps* *Lecane luna* *Brachionus calyciflorus* *Hexarthra sps* *Filinia longiseta* *Brachionus angularis* *Brachionus candatus* *Philodina sps* *Keratella topica* *Ascomorpha sps*
3	Cladocera	*Bosmina longirostris* *Simocephalus sps* *Moina sps* *Sida crystallina*
4	Nematoda	*Heterodera sps*
5	Copepoda	*Calanus* *Cyclops* *Diaptomus* *Copepod nauplinus*
6	Ostracoda	*Stenocypris*
	Total recorded ferms	32

DISCUSSION

Zooplankton organisms occupy a central position in the food web of aquatic ecosystem. They do not only form an integral part of the lentic community but also contribute significantly the biological productivity of the fresh water ecosystem. Zooplankton groups are a characteristic indicators of water quality, eutrophication and pollution level and are an important link in the aquatic food chain. They also supports the economical important for fish population. They are the mode of energy transfer between phytoplankton and fishes. The study of zooplanktonic composition, abundance and seasonal variations is helpful in planning and successful fishery management. The zooplankton serve an important aquatic organisms which play a vital role in energy transfer of aquatic ecosystems (Altaff,2004). The major

group of zooplankton observed during the present study were protozoa, Rotifera (Fig-1), Cladocera, Copepoda, ostracoda and Nemetoda (Table-1). The protozoans are the smallest of aquatic organisms in the zooplankton communities. The rotifera are tiny wheel animals considered as natural water purifiers as they perform clean up services in slow moving aquatic environments. In the present study group of rotifers was represented by *Ascomorpha, Brachionus caudatus, Lecane luna* etc. protozoans were represented by *Bursaria, Pamaceum stentor, Vorticella (Fig-2), Prorodon* etc. copepoda by *Nauplius*, *Cyclops* and *Diaptomus,* while Cladocera by *Moina,Simocephalus* etc and Nematoda by *heterodera* and Ostracoda by *Stenocypris sps*.

RESULT

In this investigation the occurrence of zooplankton groups was Copepoda, Rotifera, Cladocera, Ostracoda, Protozoa and Nematoda. Total recorded forms were 32. Rotifera are considered as the most important soft bodied invertebrates and they play a major role in aquatic food chain and major food for fishes. In Rotifera zooplanktons like *Brachionus caudatus* and *Brachionus angularis* found to be present throughout the year where as Cladocera was represented by *Simocephalus expinosus*, *Bosmia longirostris, Monia sps, Diaphosoma sps.* According to observations the *Brachionus sps* are very common in temperate and tropical waters, indicate alkaline nature of water. excess growth of Rotifers in reservoir indicates eutrophic conditions. Presence of Rotifers is also an indication of eutrophication. Cladocerons are belongs to an order Cladocera found as small crustaceans commonly they are called by water fleas, around 620 sps have been identified so far. In the present study Cladocerons were abundant when the food supply was maximum. During summer their population was moderate due to dense growth of Rotifers and thus avoiding competition. It was found that the temperature of the primary factor affecting the occurrence and distribution of Cladocerons. Copepods constitutes a major zooplankton community occurring in almost all water bodies, which serve food for many fishes and play a vital role in ecological pyramids. The important factors which controlled the distribution of Copepods were rainfall, river discharge and decreased abundance due to increased turbidity. In our studies the Copepods recorded were *Cyclops scutifer, Nauplius and Diaptomus.* Ostracods are bivalve crustaceans found in fresh water. In the present investigation only one species was found which was represented by *Stenocypris.* Protozoa are the very diverse group of unicellular eukaryotic organisms. We have recorded *Paramecium caudatum, Stentor sps, Verticella sps, Bursaria sps, Prorodon sps, Amoeba proteus, Tetrahymenia sps and Chilodonnella sps.* In this observation the density of zooplankton showed distinct seasonal variation. All the groups had shown their won maximum and minimum peaks in which the density of Rotifers was maximum during summer and minimum in rainy season. But the densities of highest groups in rainy season were Cladocerons and Copepods, which were lowest during summer season. However in winter season Ostracods showed their maximum population and minimum during rainy season. The protozoan density was highest in rainy season and low in summer.

CONCLUSION

The overall observations in this investigation reveals that the fluctuation of zooplankton occurs in the study area and normally in rainy season there was a less population due to the dilution factors and its effects leads to less photosynthetic activity by primary producers. The population raises a bit higher level during winter season due to favorable environmental conditions and presence of excess food in the form of bacteria and suspended detritus. In summer water flow is less and availability of food is more due to decomposition of organic matter and the density of zooplankton might be high due to less predators.

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