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Original Research Paper

Zoology

DIVERSITY OF ZOOPLANKTONS IN AARAM RIVER FROM BAGALAN, DIST.-NASIK, (MAHARASHTRA)

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ABSTRACT

The paper deals with the zooplankton composition and seasonal variation in Aaram River near Satana village Taluka Bagalan, Dist. Nasik (M.S), during the period Nov.2015 to Oct.2016.A total 14 species were found in this river .Among these 4 Species belongs to rotifer, 5 species belongs to cladocera, 4 species belongs to copepoda and 1 species belongs to ostracoda. Numerically rotifers was dominant group throughout the study period .The study of seasion wise zooplanktons analysis showed an average abundance of species in winter season, lower in monsoon and maximum in occurrence in summer season due to different environmental condition of water bodies.

KEYWORDS :

Introduction:

For better understanding the role of zooplanktons as a function of ecosystem .The seasonal fluctuations of zooplankton population can be expressed by various quantitative parameters such as population density, biomass and biochemical compounds, According to (Riccardi and Mangoni 1999), each parameter emphasizes a certain characteristics, the knowledge of which is essential to evaluate the role of zooplanktons than other tropical and sub-tropical countries. Zooplankton by their heterotrophic activity play key role in the cycling of organic material in aquatic ecosystem and are used as bioindicators of environmental quality. The present paper deals with the diversity of zooplankton in Aaram River from Bagalan taluka.

Material and Method:

Aaram River located in Satana, Tal. Bagalan, in Nasik District. This river mainly used for irrigation. The water samples were collected early in the morning (9.30 am to 10.30 am) in the month of (Nov. 2015-Oct. 2016) for one year. Collected samples were preserved with 4% formalin solution. Zooplankton identification is done by following standard key of (Pennak 1978), (Edmondson 1992), (Battish 1992).The qualitative and quantitative analysis of the organism is carried out by Sedgwick Rafter Cell as per standard method.

Result and Discussion-

The present report of zooplankton diversity composition from Aaram River in Bagalan taluka, Dist. Nasik, India.The total14 species

of zooplankton were recorded from Aaram River. Among 14 species, 4 species of Rotifers, 4 species of Copepoda, 5 species of cladocera and 1 species of Ostracoda (Table 1).Seasonal variation of zooplankton recorded in table 2.

Rotifers-

Rotifers play vital role in trophic tiers of fresh water impoundment and serves as living capsule of nutrition (Suresh Kumar et.al 1999).In the present study 4 species of rotifers are identified. Taxonomic dominance has been reported in several water bodies (Kudari *et.al* 2005). This pattern is common in lakes, ponds, reservoirs and rivers(Neves 2003).The number of rotifers increased in summer, which may be due to the higher population of bacteria and organic matter of dead decaying vegetation , (Majagi and Vijay Kumar 2009).Planktonic rotifers have very short life cycle under favourable conditions of temperature, food and photo period

Copepoda-

Fresh water copepods constitute one of the major zooplankton communities occurring in all types of water bodies. The serve as food to several fishes and play major role in ecological pyramids .In the present study 4 species were recorded. Copepods show higher population density in monsoon season. This pattern of seasonal fluctuation of copepods has also been observed by (Mahor 2011) in trigha reservoir of Gwalior.

Abundance of copepods in summer and monsoon is due to the rich in organic matter supporting higher number of cyclopoid, thus suggesting their preponderance in higher trophic state of water. Abundance of parthenogenic form of copepod might be responsible for their low population density in winter season (Mustapha 2009)

Cladocera-

Cladocerans are most useful and nutritive group of crustaceans for higher number of fishes in the food chain. In the present study 5 species were recorded .The population density of cladocera is higher in winter season and lower in summer.

Ostracoda –

Ostracod represent very low density and population density as compared to other groups of zooplankton .In present study, 1 species of ostracoda were recorded. The population density is higher in winter and lowest in monsoon.

Among all zooplanktons, Cladocera has maximum diversity and population density an all the seasons. The dominance of cladocera in the river was due to the continuous supply of food material in which in turns indicates the eutrophic nature of the river. Average number of copepods were noticed during monsoon and summer, but were too less in winter season .As compares to rotifers and copepods, population density of cladocera and ostracoda was very low in all season and they did not show remarkable seasonal fluctuations .In this study ,all over population of zooplankton was high in summer and winter season, low in monsoon season. Copepods and rotifers were dominant over cladocera and ostracoda by population thought the year. Similar observations have been made by (Das 2002).Primary population is responsible for increasing the population density of zooplankton in summer season. Normally monsoon is associated with lower population densities due to its dilution effect and decreased photosynthetic activity by primary production .Similar results was reported by salve and (Hiware 2010) in Wan reservoir of Nagpur. The abundance of some zooplankton in aquatic food web has been reported to indicate eutrophication (Halbach *et.al* 1983).

The present study concluded the dominance of rotifers and Copepods indicating the eutrophication of Aaram water body.

Monthly Diversity of Zooplankton components during Nov. 2015-Oct.2016

Zooplankton Group	Nov 2015	Dec 2015	Jan 2016	Feb 2016	Mar 2016	Apr. 2016	May 2016	Jun 2016	Jul 2016	Aug 2016	Sep 2016	Oct 2016
Rotifera												
Branchionus ferticula	√	√	√	√	√	√	√	√	√	√	√	√
Branchionus calciriform	√	×	√	√	√	√	√	√	√	√	√	√
Keratella. sp	√	√	√	√	√	√	√	√	√	√	√	√
Filinia. sp	√	√	×	×	√	√	×	√	√	√	√	√
Cladocera												
Sidasp	√	√	√	√	×	√	√	√	×	×	×	√
Daphnia sp	√	√	√	√	×	√	√	√	√	√	√	√
Alonella	√	√	√	√	×	√	√	√	√	√	√	√
Alona	√	√	√	×	√	√	√	√	√	×	×	√
Moniasp	√	√	√	√	×	×	×	√	√	√	√	√
Copepoda												
Cyclope	√	√	√	×	√	√	√	√	√	√	√	√
Mesocyclope	√	√	√	√	×	×	×	√	√	√	√	√
Calanus	√	√	√	√	√	√	√	√	√	×	×	×
Nuplius larva	√	√	√	√	√	√	√	√	√	√	√	√
Ostracoda												
Cypris sp	√	√	√	√	√	√	√	√	√	√	√	√

Group wise seasonal population density of Zooplankton during Nov. 2015-Oct. 2016

Sr.no	Zooplankton Group	Nov. 2015 Oct. 2016			Total
	Season	Winter	Summer	monsoon	
1	Rotifera	490	735	311	1536
2	Cladocera	235	121	181	537
3	Copepoda	167	174	212	553
4	Ostracoda	143	140	95	378
	Total	**1035**	**1170**	**799**	**3004**

Reference

1. Battish. S.K. (1992). - Freshwater Zooplankton, sponsored by the university Grant Commiission, New Delhi.
2. Das S. K.(1992).- Freshwater production and zooplankton biodiversity in brakish water shrimp culture pond. J. Ecobiology, 14(4):267-271.
3. Edmondson, W.T. (1992), - Freshwater Biology, 2nd edition John Willey and Sons. London Pp, 657-734.
4. Halbach et.al (1983).Population ecology of rotifers as a bioassay tool for Ecotoreical tests in aquatic environment . Ecotoreical Environ. Safety, 7:484-513.
5. Kudari, V.A., Kadadevaru, G.G. and Kanamadu, R.D.(2005). Zooplankton Composition in some ponds of Haveri District, Karnataka. Zoo's Print Journal 20(12):2094-2099.
6. Majagi and Vijay Kumar (2009).Ecology and Abundance in Karanja reservoir. Environ.Monit Asses., 152:137-144
7. Mahor, R.K. (2011).Diversity and seasonal fluctuation of zooplankton in freshwater reservoir Tighra Gwalior (M.P.). Internat. Reffered Research Journal 1(17):47-48.
8. Mustapha M. K. (2009). Zooplankton assemblage of Oyum reservoir, Of Nigeria. Rev.Biol.Trop.(int). J. Trop.Biol., 57(4):1027-1047.
9. Neves, I.F., Rocha, K.F. and Pinto, A.A. (2003).- Zooplankton Community structure of two marginal lakes of the river Cauba (Manto Grasso, Brazil) with analysis of Rotifera Cladocera diversity Brazil. Journal of Biology.63 (3); 329-343.
10. Pennak, R.W. (1978) – Freshwater invertebrates Of United States. 2nd Edition, John Wiley and Sons Inc.pp,421.
11. Riccardi and Mangoni (1999),-Consideration on the biochemical composition of some fresh water zooplankton species .J.Limnology,58 (1):58-65.
12. Salve, B. and Hiware, C.(2010) .-Zooplankton Diversity of wan reservoir , Nagpur (MS) India. Trends Research in Science and Technology, 2(1):58-65.
13. Suresh Kumar, Altaff, R.K. and Raghunathan, M. B.(1999).- New record of Chydorid Cladoceron pleuroxy Aduncusjurine (1920), from chennai, South India, the description of the Development stages, J. aqua. Biol., 14(1&2):7-10.