

STUDIES ON ZOOPLANKTON DIVERSITY OF KHANDALA DAM ARUANGABAD DISTRICT (M.S.) INDIA

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Abstract

Zooplankton form an important food components of fish fries and helps to transfer energy from primary producer to secondary and tertiary consumer levels in food web, considering the importance of zooplankton community in ecosystem worked has been carried out to investigate the diversity in zooplankton from Khandala dam during the period Jan -2010 to Dec-2010. During the study different species of zooplankton observed in different season. High dissolved oxygen contents and high level of nutrient in water dam increase the full growth of zooplankton in water. The zooplankton community of Khandala dam consists of various species belonging to rotifer, cladofera, copepod and ostrapoda among then the rotifers were found to be dominant group of zooplankton. Rotifers has the vital role to maintain the food chain in water bodies as they provide food for fishes in freshwater and helps in to increase the production of fishes. The attempt has been made to enlist and study of various species of zooplankton from Khandala dam.

Key words : Zooplankton, Khandal dam.

Introduction

The zooplankton are the important organism in aquatic ecosystem and are the natural source of food for higher organism of aquatic ecosystem like fishes hence they are called as energy transducers. The mainly useful for the

increase of fish production from Khandala dam. According to Hutchinson (1967). The productivity of water reservoirs depends upon of the occurrence of zooplankton also depends on the favorable environmental conditions Ram Kumar and Prasad (2004). Zooplankton are microscopic they occupy a central position between autotrophes and heterotrophes and forms vary

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important link in food chain of aquatic ecosystem. The zooplankton also play an important role on to act as a biotic component which influences all the functional aspect of an aquatic ecosystem like as in energy transfer food chains, food webs and also in cycling of matter. Dadhick and Saxena (1999), Sinha and Islam (2002). The are zooplankton are able to affect the entire described by different workers likes as Welch (1948), Ruther (1963), Govind (1963) Sharma and Dewan (1989), Singh and Desare (1980) Sharma and Mudgad (1992).

The present study deals with identification of diversity of zooplankton from Khandala dam during the period Jan -2010 to Dec-2010 during these study the major zooplanktons are identified are belongs to the group of rotifers, cladocera, copepoda and ostrapoda.

Material and Methods

Khandal dam is located near Vaijapur taluka Aurangabad district. Khandala dam is situated in Vaijapur city at the latitude 19°40' to 20°15' and North longitude 74°35' to 75°00' East which covers approximately 1511 sq km area all fall in survey on India Toposheet No 46L/16, the population is about 259601 according to 2001 census. The zooplankton samples were collected monthly during the period of during the period Jan -2010 to Dec-2010 in the morning between 8.00 am to 10.00 am as per the earlier workers Lind (1974) and Welch (1953). The concentrated zooplankton they were identified with the help of keys provided

by Tonapi (1998), Pennak (1978), Dhanapati (2000), Mishra and Tripathi (2001), Needdlam and Needlam (1962), APHA (1998) and Kulkarni and Anirudha (1998).

Results and Discussion

In the present study, the abundant of zooplankton were identified from Khandala dam during the period Jan -2010 to Dec-2010. Particularly zooplankton were identified are four group like rotifers, cladocera, copepoda and ostrapoda among these four groups the rotifers are the dominant group. The rotifers or wheel animalcules is are free living microscopic, soft bodies found in freshwater. Generally rotifers are solitary some are sessile and they indicate tropic status of water bodies, used as food for fishes in aquatic ecosystem and play a role in to increase fishery production many work has been taken place particularly to ecology of rotifers from various water reservoir on Indian subcontinents by Anderson (1889), Edmondson and Hutchison (1934), Dhanapathi (1974), Chandrashekhar and Kdekar (1995) and Pradhan and Chakrabaty (2006). During the study period large generic variation are observed in rotifers groups, total 12 species of rotifers were identified from different forms lies the maximum population of rotifers has reported during the summer season 2010 supported by Khan *et al.*, (1986), Sharma (1992), Michael (1968) and George (1966). The lower rotifers population were observed during the late monsoon as the water

Table 1 : List of zooplankton observed during study period Jan -2010 to Dec-2010.

Rotifers	Cladocera	Copepod	Ostrapoda
<i>Brachionus angularis</i>	<i>Bosmania sp.</i>	<i>Cyclops sp.</i>	<i>Cypris sp.</i>
<i>Brachionus rubens</i>	<i>Cerodaphnia sp.</i>	<i>Diaptomous sp.</i>	<i>Cyclopcyprus sp.</i>
<i>Brachionus calyciflorus</i>	<i>Daphnia sp.</i>	<i>Eucyclops sp.</i>	<i>Stenocypris sp.</i>
<i>Brachionus caudata</i>	<i>Leydigia sp.</i>	<i>Mesocyclops sp.</i>	
<i>Epiphanes senta</i>	<i>Monia Brachiata sp.</i>	<i>Phyllodiatomus sp.</i>	
<i>Filinia longista</i>			
<i>Keratell tropica</i>			
<i>Lapedella ovalis</i>			
<i>Monostyla lecana</i>			
<i>Trichocerca rotitus</i>			
<i>Trichocerca cylindrica</i>			

from Khandala dam diluted due to rains which decreases photosynthetic activities by the primary producers which affects on the rotifers population. Similar observation were also made by Bias and Agrawal (1993). The higher rotifers population during summer season may be due to high temperature, lower transparency and high availability of food, similar observation is made by Salve and Hiware (2010) many workers reported by the rotifers during their study from different water bodies. Chubey (1991) Ganapati and Pathak (1969) Sharma (1993) Moitra and Bhowmick (1968).

In the present study, the population of rotifers, cladocera, copepoda and ostrapoda are show season wise variation like higher during the summer and followed by winter and the population was lower during the monsoon period, as the alkalinity of water is increase in summer as well as presence of plenty of

dissolved oxygen and high hardness of water presence of the greater food causes increase in population of all these zooplankton according to Agrawal (1995). Similar results have also been suggested by the Ramakrishan and Sarkar (1982), Bhati and Rana (1987), Kumar and Datta (1994).

During the present study copepod are also found abundantly in summer season and their population is lower during monsoon period Sharma (1980) among four groups of study, the copepod is the second dominating groups of zooplankton the lower population of copepod the monsoon period due to dilution of water of dam by rain, and also due to high turbidity of water and less photosynthetic activities of primary producers similar results have been reported by Agrawal (1993).

In the present study cladocera are also found in high ranges during the

summer period particularly during months of April, May and June and also last during late monsoon period particularly during the months of August, September and October. Similar results have been observed by Sharma (1993), Ganapati and Pathak (1979). The present study ostrapoda groups of zooplankton shows the important link in the variations in their presence as their population was high during summer and lower during monsoon season.

Conclusion

The groups of zooplankton observed in Khandala dam was rotifers, cladocera, copepoda and ostrapoda are the dominating groups in aquatic ecosystem and particularly rotifers are to be good source of food for higher animals like fish. These rotifers are phytoplankton's feeders they fore it could be noted that high values of phytoplankton are beneficial for growth of higher aquatic animals is for well growth avoided and continuous biodiversity is also essential to sustainability of this precious water dam.

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References

Adoni, A. D. : Work book on limnology (Ed) Dept. of Environment. Govt. of India *Bandona printing service*, New Delhi (1985).

- Agrawal, N. C. and V. S. Bais : Seasonal variation of nutrient content in *Hydrilla verticollata*, *J. Freshwater Biol.*, **13** : 259-265 (1993).
- Agrawal, N. C. and V. S. Bais : Comparative study of zooplanktonic psectrum in the sagar lake and military enginnering lake *J. Environ. Biol.*, **16**(1) : 27-32 (1995).
- APHA, AWWA-WPCF : Standard method for water and waste water, *American Public Health Association on, Washington, D.C.* (1985).
- Bhati, and K. S. Rana : Zooplankton in relation to biotic component in the fort moat of Bharatpur. *Proc. Acad. Sci. India*, **57**(13) : 237-242 (1987).
- Choubey, V. : Studies on physicochemical and biological parameters of Gandhi Sagar reservoir *Ph.D Thesis Vikram University Ujain*, pp 1-244 (1991).
- Dadhick, N. and M. M. Saxena : Zooplankton as a indicators of trophical status of some desert water near Bikaner, *J. Environ. Pollut*, **6** : 251-254 (1999).
- Das, S. M. : Hand book of limnology and water pollution, *South asian Publisher pvt. Ltd. pp* 174 (1989).
- Dhanapati, M. V. S. S. S : Taxonomic note on the rotifers from India. IAAB publication Hyderabad pp 175 (2000).
- Edmonson, W. T. : Freshwater biology 2nd Ed. *John Wiley and sons Inc. New York.* 1-1248 (1959).
- Ganapati, S. V. and C. H. Pathak : Primary productivity in the Sangali reservior (a manmade lake) at Baroda. *Pro. Sem. Eco. and fish Freshwater Reservior ICAR at CIFRT Barrakpor* 27-29 (1969).
- George, M. G. : Comparative plankton ecology of five tanks in Delhi, *Hydrobiologia*, **27**(2) : 81-108 (1966).
- Hutchinson, G. E. : A practical on limnology vol II introduction to lake biology and limnology plankton *J. Willey and Sons New York, USA* (1967).
- Kodarkar, M. S., A. D. Diwan, N. Marugun, K. M. Kulkarni and Anirudha : Methodology for water analysis. IAAB publication Hyderabad pp 2 (1998).

- Kumar, S. and S. P. Datta : Population dynamics of Cladocera in a subtropical pond, Jermu, India, *J. Environ Hlth.*, **36**(1) : 19-23 (1994).
- Lind, O. T. : Handbook of common methods in limnology C.V. Mosby Co.. 2nd Edition st Louis (1979).
- Michael, R. G. and B. K. Sharma : Founa and India adjustment countries Indian Cladacera. *Zool. Sur. India* 1-261pp (1988).
- Mishra and D.N. Saxena : Rotifers their seasonal variation in a sewage collecting morar (Kalpi) river Gwalir India *J. Environ. Biol.*, **19**(4) : 363-374 (1998).
- Pennak, R.W. : Freshwater invertebrate of United States 3/c 628pp New York, John Willey and Son Inc., (1978).
- Ramkrishnam and S. K. Sarkar : Plankton productivity in relation to certain hydrobiological factors in Konar reservoir (Bihar) *J. In land fish Soc. India*, **14** : 58-68 (1982).
- Ruttner and A. Koliskn : Plantonic rotifers biology and taxonomy *Schw. Verlag. Stuttgevt* pp 146 (1974).
- Sharma, B. K. : Systematic distribution and ecology of freshwater rotifers west Bengal Aquatic Ecology *Ashish Publication House New Delhi* (1992).
- Tripathi, A. K. and S. N. Pandey : Water pollution *Ashish Publication House New Delhi*, 92-286 (1955).
- Trivedy, R. K. and P. K. Goel : Chemical and biological Methods for water pollution studies *Pollution Research*, **41**(2) : 79-83 (1984).
- Ward, B. H. and G. C. Whipple : Freshwater biology *John Willey and Sons Inc. USA* 1248pp (1959).