



STUDIES OF MACRO BENTHOS IN RAMSAGAR LAKE ARMORI, DIST- GADCHIROLI (M.S.)

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ABSTRACT: Benthological variables are particularly useful in measuring the water quality and such biological monitoring can provide resolution in space and time .pollution is a major cause of environmental deterioration. The use of macro benthos as bio indicator. The distribution, density and biomass of benthic organisms depend upon physicochemical characteristics' of water .the use of macrobenthos as bioindicator in the assessment of water quality realized better understanding in the field of limnology as compared to biotopes characteristics .insects and molluscs are the tolerant species in the changing condition of water ecosystem .The present study is carried out to study macro-benthos in ramsagar lake in the year 2020-2021. In present investigation ,total 18 species from four major group were observed viz.Gastropoda, nematoda, oligochaeta and insect. In gastropods 07 species were recorded, nematode 02 species recorded, oligochaeta 02 species and insect 07 species were recorded.

Key words: - Macro-benthos, limnology, Ramsagar lake, water quality, bio indicator

INTRODUCTION :

Benthic organisms which inhabit on the bottom of water body .this group of organisms recognizing as very important group in detecting the water quality and these organism move away from pollution site .they have show sensitivity to pollution .they can be relatively easily collected handles and identified .they are important linked with food web of fishes and also play an important role in mud water exchange of biological nutrients .Many of benthic forms are detritivores and depend to a large extent on organic detritus as food .as the detritus reach the bottom ,it enters a web of energy transfers that sustain the benthic community ,thus the benthic macro invertebrates play a key role in the mineral recycle and , in turn serve as food of fish .

Benthological variables are particularly useful in measuring the water quality and such biological monitoring can provide resolution in space and time, Tittizer and Kothe (1978) and Price (1978),

better understanding in recent years about benthos and its environment results of their exploitations from water bodies .Water body leading to enrichment of the nutrient level beyond proper line .The present study was carried out to study macro benthos in Ramsagar lake during 2020-2021..

MATERIALS AND METHODS:

During the period of investigation benthic samples were collected with the help of tray tyre sampler .samples transferred into laboratory in polythene bag and water benthic organisms floats on the surface and are pick up with the help of dropper and prserved in 4% formalin and identified as per Edmondson (1959), Tonapi (1980) and Pennak (1989).

OBSERVATION AND RESULT:

In present investigations total 18 species from four groups were observed viz.Gastropoda, nematoda, oligochaeta and insect. In gastropods 07 species were recorded, nematode 02 species recorded ,oligochaeta 02 species and insecta 07

species were recorded. Gastropods consists of 06 species, which are *Bellamya bengalensis* (Lamarck), *Gyraulus convexisculus* (Hutton), *Indoplanorbis exustus* (Deshayes) were dominantly observed. However *Thiara tuberculata* were least in appearance the benthic macro invertebrate represented in the table 1 and photo plate 1.

DISCUSSION:

Benthic organisms are of great ecological significance because they constitute the food of fish and their productivity plays an important role in sustaining food chain and food web. Benthos plays an important role in the secondary productivity of fresh water lakes through exchanging of allochthonous and autochthonous materials in a lake ecosystem. In present investigations total 18 species from four groups were observed viz. Gastropoda, nematoda, oligochaeta and insect. In gastropods 07 species were recorded, nematode 02 species recorded, oligochaeta 02 species and insecta 07 species were recorded. Similarly Gorai et al., (2005) reported four groups of benthic organisms consisting gastropoda 03 species, insects larvae (01) species, oligochaetes (08) species. Zade and Sitre (2012) recorded nematode 01 species, oligochaetes 09 species, insects 01 species and gastropods 02 species at Urban lake. Shriniwas (2004) recorded total 13 species of macrobenthic invertebrates belonging to three major groups. Annelids, Arthropods and Mollusca have been encountered in the littoral zone of Banjara lake. Tijare (2012) recorded 11 species of gastropods in some lentic water bodies of Gadchiroli district. Benthic macroinvertebrates can be used as a barometer of overall biodiversity in aquatic ecosystem.

The abundance of benthic fauna greatly depends on physical and chemical property of substratum (Paul and Nandi, 2003). The study of aquatic ecosystem without the study of benthos is incomplete. Many benthic forms are

detritivores and play a key role in the mineral recycling of organic matter, and many benthic insects larvae and oligochaeta are the major food sources for small and big bottom feeders. (Anitha, 2002), aquatic invertebrates serve as a primary food source for many fishes. They are the preferred indicator of long term water quality due to their limited mobility.

Ramakrishna (2014) noted that taxonomic breakdown of the macro invertebrate indicated the dominance of diptera, followed by Annelida and Mollusca. The chironomid larva, culex larva and anopheles larva can renew their oxygen supply directly from the atmosphere, they are thus unaffected by oxygen depleting waste. Walmiki (2016) reported taxonomic groups were observed among the benthic organisms and at site 1 showed the highest species richness while commonest taxons observed where gastropods, oligochaeta and polychaetes in lake Vembanad at Kottayam, Kerala. *Oligochaetes tubifex* and *lymnodrilus hoffmeisteri* are known to be good indicators of pollution. Group nematode only represented by 2 species. The species belonging to phylum Nematoda are *Rhabdolimus minor* and *Diplogastor* factors, similar observations made by, In the present study, the benthos is dominated by Gastropods and insecta groups in the littoral zones rich aquatic vegetations. Insecta dominated in diversity throughout the study period followed by Gastropods species, Oligochaeta and Nematoda species as evident in present study it seems that seasonal abundance of benthos is strongly influenced by composition of sediments in terms of proportions of slits, mud and clay.

CONCLUSION:

To summarize on the basis of water quality and the benthic macro invertebrate show variation in their numbers. Paul and Nandi (2003) suggested that the abundance of benthic fauna greatly depends on physical and chemical property of

substratum .aquatic invertebrates serve as primary source for many fishes .They are preferred indicator of long term water quality due to their limited mobility.

Conflicts of interest:

The authors stated that no conflicts of interest.

REFERENCES:

- Anitha, G. (2002): Hydrography in relation to benthic macro-invertebrates in Mir-Alamlake, Hyderabad, Andhra Pradesh, India. Ph.D. Thesis. Osmnaia University, Hyderabad. A.P. India.
- Anandan, K., Varshney, P. K., Jaiswar, A. K., and Prakash, C. (2016). Macrobenthos of intertidal zone of Versova along the coast of Mumbai. *J. Indian. Fish. Assoc.* 30, 9–17.
- Anilkumar, P. R. (2017). Macrobenthos of the North Western Continental Margin (200-1000m) of India with Special Reference to Polychaetes. Doctoral dissertation, Kochi: Cochin University of Science and Technology.
- Apte, D., Bhawe, V., Pitale, R., Nagale, P., Bhawe, A., and Prabhu, S. (2018). Rapid Biodiversity Assessment of Ansure Creek, Rajapur, Ratnagiri, Maharashtra. CMPA Technical Series No. 47. New Delhi: Indo-German Biodiversity Programme, GIZ-India.
- Abessa, D. M. S., Rachid, B. R. F., Zaroni, L. P., Gasparro, M. R., and Pinto, Y. A. (2019). Natural factors and chemical contamination control the structure of macrobenthic communities in the Santos Estuarine System (SP, Brazil). *Comm. Ecol.* 20, 121–137. doi: 10.1556/168.2019.20.2.3
- Agravat, P. A., and Raval, J. V. (2019). Diversity of marine gastropod at four selected Saurashtra coast and its distribution along Veraval coast of . *Int. J. Sci. Basic Appl. Res.* 9, 48–59. doi: 10.13140/RG.2.2.21856.51206
- Chandrashekhar, S.V.A.(1994):Macrozoobenthic fauna as indicator of pollution in HussainSagar , Hyderabad. *Oikoassay*, 11(1and 2): Pp. 13-15.
- Gorai, A.C., Rekha, Gupta, P .Chattarj and T. Chatterjee (2005): Studies on the macro-zoobenthos of two fresh water ponds, Dhanbad, Jharkhand, India. *J. of Aqua. Biol.* 20 (2): Pp. 58 - 62.
- Myllinski, E. and Ginsburg W . (1977):Macroinvertebrate as indicators of pollution. *J. AWWA.*69: Pp. 530-534.
- Paul, S. and Nandi N.C. (2003): Studies on intertidal macro-zoobenthos of Hugli river in and around Calcutta in relation to water and soil conditions, Zoological Survey of India Occasional paper No.213.2 and 136
- Pennak, R.W . (1989): Fresh water invertebrates of the United States 3/e. 628: John Wiley and Sons Inc., New York.
- Price, D.R.H. (1978): Fish as Indicator of water quality. Paper presented at the international symposium on biological indicators of water quality in new castle. *Proc. Indian Acad. Sci.* (63): Pp.57 – 66
- Ramakrishna, S: Assessment of macro benthic organisms in relation to physico-chemical parameters of water at Hebbal lake, Banglore, *Global Journal for Res. Ana*(2014): 3(7): 11-12
- Sarkar, S.K.(1989): Seasonal abundance of benthos macrofauna in a fresh water pond . *Envi. And Ecol.*:Pp. 113-116.
- Sharma, S, Joshi V, Kurde S and Singhvi MS : Biodiversity of benthic macroinvertebrates and fish communities of Kishanpura Lake, Indore. Madhya Pradesh, *J. Aqua. Bio.* (2007): 22 (1): 21- 24

- Tijare, R.V. (2012): Biodiversity of Mollusca present in some lentic water bodies of Gadchiroli District, M.S. India. J. Bionano Frontiers Spe.Issu. Vol. 5(2-1): Pp.55-56
- Tittizer, T. and Kothe P. (1978): Possibilities and limitations of biological methods of water analysis. Paper presented at the international Symposium on biological indicators of water quality a new castle.
- Tonapi, G.T. (1980): Freshwater animals of India, An ecological approach. Oxford and IBH Publishing Company, New Delhi.
- Vasisht, H.S. and Bandal, R.S. (1979): Seasonal variation of benthic fauna in some North Indian lake and ponds. India. J.Envi. 6(2:) Pp. 33-37.
- Walmiki Nitin, Sharma Deepti and Kubal Priti :Aquatic Diversity with Reference to Phytoplankton, Zooplankton and Benthos in lake Vembanad, Kottayam, Kerala, India, Research Journal of Marine Sciences (2016): 4(3): 1-10
- Zade, S.B. and Sitre S.R. (2012): Biodiversity of benthic macroinvertebrates in a polluted Urban lake of Nagpur M.S. India .J. Bionano Frontiers Spe.Issu. Eco Reso: Pp.67-69.

Table.1: Diversity of macrobenthos in Ramsagar lake

Sr.No.	Name of Macro benthos
A)	Gastropoda
1.	Pila spp.
2.	Bellamya bengalensis(Lamarck)
3.	Gyraulus convexisculus (Hutton)
4.	Indoplanor bisexustus (Deshayes)
5.	Helix pomatia
6.	Thiara tuberculata (Muller)
7.	Tegula brunnea
B)	Nematoda
1.	Diplogaster factor
2.	Rhabdolimus minor
C)	Oligochaeta
1.	Limnodrilus hoffmeisteri
2.	Tubifex tubifex(Muller)
D)	Insecta
1.	Aedes egypti
2.	Notonecta spp.
3.	Dineutus spp.
4.	Culex larva
5.	Trichocorixa verticalis spp.
6.	Chironomous spp.
7.	Anopheles larva

Plate.1: Diversity of macrobenthos in Ramsagar lake

