



SEASONAL INVESTIGATION OF PHYTOPLANKTON POPULATION IN RIVER PENGANGA AT KODSI NEAR KORPANA, DIST. CHANDRAPUR, (M.S.)

P. B. Chatap¹, C. N. Dongarwar² and P. M. Telkhade³

¹Department of Zoology, Janata Mahavidyalaya, Chandrapur (M.S.)

^{2,3}P.G. Department of Zoology, Dr.Khatri Mahavidyalaya, Tukum, Chandrapur

Corresponding Email: pravinchatap1981@gmail.com

Communicated : 19.01.2023

Revision : 22.02.2023 & 07.03.2023

Accepted : 29.03.2023

Published : 30.05.2023

ABSTRACT:

The work carried under this title is based on the Qualitative and Quantitative analysis of Phytoplankton diversity in River Penganga at Kodsi Near Korpana. Penganga is the major source of water for Drinking, Domestic and Agricultural Irrigation purpose. In a fresh water ecosystem, phytoplankton is a free floating, microscopic and macroscopic suspended, motile and non-motile unicellular organisms, some are filamentous or colonial algal organisms and are very sensitive to changes in the environmental conditions. Phytoplankton composition in water is one of the important parameter for any aquatic ecosystem and which impact the water quality. The present investigations have been studied for about 12 month duration from January 2015 to December 2015 at selected Sampling Sites at Kodsi near Korpana. Quantitative analysis of plankton was done by Sedgwick Rafter Cell method. Present survey total 45 phytoplankton species were identified, species belongs to four major groups like Chlorophyceae, Bacillariophyceae, Myxophyceae, Euglenophyceae. In the present study, phytoplankton density maximum during winter season, moderate during summer and minimum during monsoon season are found.

Keywords :- River Penganga, Phytoplankton, Sedwick Rafter cell, algae, Seasonal Diversity.

INTRODUCTION :

Life without water' is beyond the imagination. The Riverine biotic factors are well adapted to survive according to flowing status of water. The Rivers are indicator of the society standards and accelerated pace of development. In India, the major reason of water pollution is unwise management and over-exploitation of the resources. Korpana taluka is well known as industrial zone. Penganga River enters into Chandrapur district from taluka Korpana and reach into the River Wardha. Plankton are the free floating micro-organism in different water bodies. To know the primary productivity of any fresh water body, quantitative analysis of phytoplankton is important. Phytoplankton abundance in fresh water aquatic system will reflect the average ecological status of water and therefore, it act as biological indicator of water quality. Recently many researchers have studied

the phytoplankton abundance in river water in different regions like Humane (2020) studied on Floristic biodiversity of aquatic flora of Bhandara District (M. S.). Patki (2017) studied on diversity of plankton in Wardha River at Pulgaon, Wardha. Belkhode and Sitre (2016) studied phytoplankton diversity of Dham river in Wardha district of Maharashtra state. Kumar et al., (2012) observed the fluctuation in phytoplankton diversity in the Sabarmati River at Ahmedabad, Gujrat. Bhave and Borse (2001) have done work on season wise fluctuation in physical, chemical parameters and their effect on plankton in Aner River water Jalgaon. Bhatt and Negi(1985) studied on water quality and phytoplankton diversity in RiverKosi of Western Himalaya. Bhowmick and Singh (1985) studied on phytoplankton population in relation to physico-chemical factor of River Ganga at Patna. River water is mostly used for domestic, agricultural

and industrial purpose so it is needful to monitor the water quality of Penganga river with respect to their biological parameters.

MATERIAL AND METHODS :

Samples for planktonic study were collected monthly from each site. The samples were collected in the morning hours between 8.30 to 10.30 am. 50 liter of water sample was filtered through the plankton net made of bolting silk number 25 with mesh size 50 μ . The collected samples were allowed to settle down by adding Lugol's iodine. Sample was concentrated up to 50 ml depending on the number of plankton and preserved in 5% formalin for further investigations. Qualitatively planktons were identified up to the species level under trinocular microscope (Labomade Model DG Pro. 2 attached to computer), using pertinent literature (Edmondson, 1959, Michael, 1984). Quantitative analysis of plankton was done by Sedgwick Rafter Cell method following, Saxena(1987) and Kodarkar(1992). The results expressed as plankton indL-1.

RESULT AND DISCUSSION :

In the present investigation, total 45 species of phytoplankton recorded with four major groups i.e. Chlorophyceae, Bacillariophyceae, Myxophyceae and Euglenophyceae. Similar observations made by, Sohani (2015) reported that forty eight genera of phytoplankton were reported which contain twenty Chlorophyceae, nineteen Bacillariophyceae, eight Cyanophyceae and one Euglenophyceae in river Narmada at Jalud, Mandleshwer, Indore.

In the present investigation, phytoplankton density maximum during winter season, moderate during summer and minimum during monsoon season. Similar trend noted by, Das and Datta (2011) reported that phytoplankton species maximum was during winter season and minimum recorded during monsoon season and further stated that the phytoplankton density was maximum during the winter season due to

low temperature and showed negative relationship between water temperature and plankton. In present investigation, total 21 species of group Chlorophyceae was recorded and it was the most dominant group among all the phytoplankton qualitatively and quantitatively. Similar observations made by, Sawaneet al., (2006) reported that the dominance of Chlorophyceae was during winter season in river Erai near Chandrapur. In present investigation, total 11 species of group Bacillariophyceae was recorded and it was the second dominant group among all the phytoplankton qualitatively and quantitatively. Similar observations made by, Belkhode and Sitre (2016) observed and identified 9 different species of Bacillariophyceae in Dham River In Wardha District, Maharashtra. In present investigation, total 11 species of group Myxophyceae was recorded and it was the third dominant group among all the phytoplankton qualitatively and quantitatively. Similar observations made by, Sarwade and Kamble (2014) observed and reported total 19 species of Cyanophyceae member in Krishna River, Sangli, Maharashtra. In the present investigation, Euglenophyceae was represented by only two species i.e. Euglena and Phacusspecies. Similarly noted by Malik and Bharti (2012) was similar recorded 7, species belong to Cyanophyceae in Sahastradhara stream at Uttarakhand.

CONCLUSION :

Rivers are most productive ecosystem on the earth for biodiversity which provides favourable environment that supports development of flora and fauna. It is one of the significant natural resource which comes into the service of humans in many parts of world. Phytoplankton plays an important role in the primary productivity to provide food to aquatic life, it is a significant component of aquatic flora. They provide food for many aquatic lives especially

fishes, macro invertebrates and play an important role in maintaining proper equilibrium between biotic and abiotic parts of the water ecosystem. The phytoplankton have been used to indicate the water quality status, such kinds of investigation form a baseline for monitoring a water body for future and effective for conservation and management.

REFERENCES:

- Belkhode and Sitre (2016):phytoplankton diversity of Dham river in Wardha district of Maharashtra State, India. *Indian Journal of Fundamental and Applied Life Sciences* . Vol. 6 (1): pp. 10-13
- Bhatt, S. D. and Negi U. (1985) : Ecology of the Limnoflora in the River Kosi of the Kumaun Himalaya (U. P.), *Proc. Natl. Sci.* 50(4): pp.395-405.
- Bhave, S. K. and Borse P. V. (2001) : Seasonal variation in temperature, dissolved oxygen, pH and salinity and their influence on plankton in Aner river water Jalgaon, Maharastra. *J. Pollution Research*. 20 (1):pp 79-82.
- Bhowmick, B. N. and Singh A. K. (1985) : Phytoplankton population in relation to physico-chemical factors of river Ganga at Patna., *Record 11 of 37., Life science 1985-1989, Ecology Abstract, Accession No. 1572137*
- Das, H. and Dutta A. (2011) :Diversity And Abundance of Plankton In Pagladia River of Assam International Referred Research Journal,Vol.III, pp:1-3.
- Edmondson, W. T. (1959) : Freshwater Biology. II Ed. John Willey & Sons, New York.
- Humane, P.T. (2020): Floristic biodiversity Of aquatic flora Of Bhandara District (M. S.) *International Journal Of Researches In Biosciences, Agriculture And Technology* 1(8): 15-19.
- Kodarkar, M. S. (1992): Methodology for water analysis, physico-chemical, biological and microbiological. Hyderabad, Indian Association of Aquatic Biologists (I.A.A.B.) Publ.
- Kumar, Vinit, MohmadAhzat, Kulkarni M. (2012):Spatial variation in phytoplankton diversity in the Sabarmati River at Ahmedabad, Gujrat, India, *Annals of Env. Sci.*vol. 6,pp.13-28
- Michael, P. (1984) : Ecological Methods for Field and Laboratory Investigations., Tata McGraw Hill Publishing Company Limited., New Delhi.
- Patki, A.K. (2017): Diversity of plankton in Wardha River, Pulgaon. *IJRBAT,special issue (2),vol.-* V,pp.253-254
- Sarwade, A.B. andKamble N.A. (2014).Plankton diversity in Krishna river, Sangli, Maharashtra. *Journal of Ecology and the Natural Environment* 6(4) 174
- Sawane, A. P., Puranik P. G. and Lonkar A. N. (2006) : Preliminary study on the seasonal distribution of plankton in Irai river at Irai dam site, District Chandrapur, Maharashtra., *Indian J. Environ. and Ecoplan.* 12 (1): 207-212.
- Saxena, M. M. (1987) : Environmental analysis, water, soil and air., Agro Botanical Publishers, India. 1- 176.
- Sohani, S. (2015): Diversity of Fresh water Algae in river Narmada at Jalud (Mandleshwer) Indore, India *Research Journal of Recent Sciences* Vol. 4(IYSC-2015), 14-17