STUDIES ON THE SEASONAL ABUNDANCE AND DISTRIBUTION OF ZOOPLANKTON OF RIVER GANDAK, HAJIPUR, BIHAR

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Abstract:
During the present investigation, water samples were collected from GANDAK RIVER during the month of 2017 September to 2018 August and examining the zooplankton abundance. The density of Rotifer was lowest (4U/L) August 2017 and highest was (146U/L) in May 2017. The highest Cladocera population are recorded (30U/L) in January 2017 March and lowest was (2U/L) in August 2018. The peak of the total Copepoda was lowest (2U/L) in September 2017 and highest (36U/L) in May 2018 of the year. The interpretation of zooplankton population dynamics assumes that the species co-exist and interact in space and time. During the present investigation the zooplankton showed a bimodal pattern of the fluctuations with the primary peak in monsoon and secondary peak in winter month during the study period.

INTRODUCTION

The Gandak river also known as Narayani river. Gandak is one of the major rivers in Nepal and India. It flows South-West into India and then turns South-East along the Uttar Pradesh - Bihar states border and across the Indo-Gangetic plain of Bihar state and eventually merges with The Ganga near at Hajipur or Patna. The river has a total catchment area of 46,300 sqkm out of which 7,620 sqkm is located in India. The total length of Gandak river is 630 km out of which 330 km flows in Nepal and Tibet. The Gandaki river basin is known to contain 1025 glaciers and 338 lakes. The Gandak river is mentioned in the ancient *Sanskrit* epic *Mahabharata*.

Zooplankton is microscopic organism. They are also very sensitive to environmental changes, therefore, they make ideal indicator organisms. Zooplankton, small floating or weakly swimming organisms that drift with water currents. The zooplankton community is an important element of the aquatic food chain. Pawar and Sharma (2001) work was started for the species richness and evenness were inversely related to the zooplankton biomass. The dominance of zooplankton in shallow water bodies represented rotifers, cladocera or copepoda varies according to the degree of organic pollution Rao and Durve, (1992) Verma and Munshi, (1995). Zooplankton showed abundance in all types of aquatic bodies and their vital role in the energy transfer at different trophic levels.

MATERIALS AND METHODS

Zooplankton Samples were collected from the station of Kaunhara Ghat Gandak river at the months of seasonal collection. Water sample were collected by using plankton net made up of silk using cloth by a- liter volume of water sample for zooplankton investigation during 9-11, the concentration of sample of the zooplankton was transferred in 5% formalin.

The quantative analysis of zooplankton was carried out with the help of S. R. Cell. It was observed and identified under research Binocular microscope by using standard key a literature of Kodarkar and calculated by using formula,

$$n = \frac{axc}{l}$$

Whereas,
n = no, of zooplankton / liter of water
a = no of zooplankton in / ml
c = ml of plankton concentrate
l = volume of original water sample taken

RESULTS AND DISCUSSION

Rotifer

Rotifer also called wheel animalcule. Rotifers are an important part of the fresh water Zooplankton, being a major food source and with many species also contributing to the decomposition of soil organic matter about 25 species are colonial, 11 species of rotifers were restricted to this habit. It lowest density (4U/L) in August 2017 and highest density (146U/L) in May 2017.

Cladocera

The cladocera are an order of small crustaceans commonly is an order of least. Most of the cladocera species are primary consumers food and microscopic algal and fine particulate matter in the detritus. It population density highest in January 2017 (30U/L) and lowest in August 2018 (2U/L).

Copepoda

Copepodas are sometimes used as biodiversity indicators. Copepoda are a group of small crustaceans found nearly every fresh water habitat (several) few workers had studied the seasonal variation of copepodas in Indian water bodies. It population density highest in May 2018 (36U/L) and lowest in September 2017 (2U/L).

According to the finding and results the present study reports the zooplankton community in winter season Gandak river of Hajipur region have resulted total few species in this groups. The quantitative and qualitative analysis of zooplankton was studied; they were belonging of three groups i.e. Rotifers, Copepoda and Cadocera.

The present investigation of seasonal distribution lowest density in September 2017 (2U/L) and highest (146U/L) in May 2017. Then the cladocera is highest density population (30U/L) in January 2017 and lowest in (2U/L) in August 2018. Then copepoda seasonal variations in abundance showed their lowest (2U/L) in September 2017 and highest (36U/L) in May 2018. The zooplankton showed a bimodal pattern of fluctuations with the primary peak in monsoon and secondary peak in winter month during the study period.

CONCLUSION

The zooplankton analysis shows that the plankton density was maximum in May 2017 in summer season due to temperature is favorable for phytoplanktonic growth as an abundance of food minimum lowest density found that cause by domestic sewage, industrial sewage concentration of water and rise in temperature.

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