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Study of Population Density and Seasonal Variations of Microcrustaceans in River Burhi Gandak Near Muzaffarpur, Bihar

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ABSTRACT

This paper presents Cladocera and Copepods are microcrustaceans and present in fresh and marine water bodies. These microcrustaceans revealed a strong dependence of development on discharge patterns. Population density and seasonal variations of microcrustaceans were extensively studied on the Burhi Gandak River running across Muzaffarpur. Cladocerans & Copepods form a major group of herbivores microzooplankton. In the present study, Eco physiological knowledge about differences in metabolic and reproductive rates, feeding, selectivity, and element composition was compiled. A total no. of 5 species of Cladocera and 3 species of copepods were collected from the Burhi Gandak River during the study.

Keywords : Cladocera, Density, Microcrustaceans, Microzooplankton.

I. INTRODUCTION

Population density & Seasonal variation of microcrustaceans (Cladocerans & Copepods) were extensively studied on river Burhi Gandak running across Muzaffarpur. A total no. of 5 Sps. Cladocerans were collected from river Burhi Gandak. At Muzaffarpur, the highest density of total Cladocerans was observed in June 2022. While the lowest density was in September 2021. Monia dubia was the most dominant Cladoceran, its maximum density during the study was recorded in June 2022 (30 u/L), while the lowest density was in September 2021 (8 u/L) during the study. Daphnia Carinata was the second dominant Sps. of cladocera. Its maximum density (28u/L & 26 u/L) in June 2022 and May 2022, while, the minimum (8u/L & 10 u/L) in September & October 2021 during study. During the Study, 3 species of copepods were collected from the Burhi Gandak River. But at Muzaffarpur, they were sparsely presented due to a lake of pollutants. The causes of

variation in population density and seasonal variation were discussed in the available literature.

II. MATERIALS & METHOD

For the analysis of population density, samples were collected in plastic cans & added few drops of chloroform or Sulphuric acid as suggested by Golterman et al. (1978) and then brought to laboratory.

Table 1.

Organisms/Months	Jul10	Aug	Sep	Oct	Nov	Dec	Jan-11	Feb	Mar	Apr	May	Jun11
CLADOCERA												
Daphnia carinata	12	8	10	12	16	18	12	16	20	22	26	28
D.lumholtzi	10	6	6	6	x	x	x	x	8	10	10	12
Sinocephalus sp.	8	6	x	x	6	10	x	x	8	10	14	16
Monia dubia	16	12	8	10	14	16	16	12	14	18	20	30
Bosmina longirostris	x	x	x	6	8	8	10	x	x	x	12	x
Total:	46	32	24	34	44	52	38	28	50	60	82	38

III. RESULT AND DISCUSSION

A total of 5 Species of Cladocerans and 3 species of Copepods were found in River water. But at Muzaffarpur, Monia dubia was the most dominant Cladoceran followed by Daphnia Carinata which were followed by D. lumholtzi, Simocephalus, and Bosmina longirostris. Other than rotifers, the presence of Daphnia carinata is regarded as a pollution indicator by Dzyuban and Kuzantsovo (1978). During the study, it was not found a clear distribution pattern of the microcrustaceans. The species composition of microcrustaceans was different from zooplankton during sampling. All the microcrustaceans collected showed a distinct increase towards the surface niche at night hour in the river. In accordance to present findings VERMA (1967) and JANA (1974) found no distinct diurnal movement of Cyclops. The present findings is in the agreement with findings of Krishnamurthy and Viswaswara (1965), who reported that major groups of Cladocerans like Cyclops and Monia dubia are present in the middle layer of water during the day. It can be concluded that the physico–chemical conditions of water are of prime importance which plays an important role in the diurnal movement of zooplankton. Similar reports were given by Merrix- Jones et al., (2013). In addition, solar radiation may be a predictor responsible for variation in species composition (Pinel-Alloul et al. (2013).

IV. CONCLUSION

The qualitative analysis of microcrustaceans of river Burhi Gandak from Muzaffarpur revealed the presence of Cladocera and sparse copepods. From those cladocerans are best represented as no. of sps diversity and abundance, copepods in nauplius larva.

The dominance of zooplankton sps is highly variable in different types of aquatic systems according to nutrient levels, predators & other environmental factors which then affect other biotic components of the ecosystem.

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