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Hydrobiological studies on monthly population of total Copepode zooplanktons and their correlation coefficient with some physico-chemical factors of Lony dam (Theothar) Rewa (M.P.)

Chandan Sharma[1*], Rohini Prasad Tiwari[2] and Kshipra Tripathi[2]
1, Department of Zoology, Janta P.G. College, Rewa (M.P.) - India.
2, Department of Zoology, Saraswati Vigyan Mahavidyalya Nirala Nagar, Rewa (M.P.) - India.

Abstract

The present investigation was made from march 2005 to feb. 2006 among Copepode, members of the species of *Cyclopoid, Paracyclops, clenoid Diaptomus* were found to be have common occurrence with a wide range of distribution in Littoral and Limnetic water at all the sampling station of Lony dam. The water transparency shown negative correlation with P^H value.

Key-Words: Copepode zooplanktons, Correlation coefficient, Lony dam.

Introduction

The Copepodes are the important group among zooplankton and form the nutritive group of Crustaceans for fish and influenced by negative environmental factor as caused by excessive human interference in water bodies but to a lesser extant than the Cladocerans. Copepodes are much more harder and strongly motile than all other zooplankton with their tougher exoskeleton and longer and stronger appandages. They have long developmental time and a complex life history with early larval stages difficult to distinguish. They are almost wholly carnivorous on the smaller zooplankton for their food needs. Among the three orders of copepods, *Cyclopid* copepods are generally predatory on other zooplankton and fish larvae. The *Cyclopoids* also fed on Algae, Bacteria and detritus. The second group of Copepods, *Clanoid* copepods change their diet with age, sex, season and food availability. The *Clanoid* copepodes are omnivorous feeding on Ciliates, Rotifers, Algae, Bacteria and detritus. Copepods in general can withstand harsher environmental conditions as compared to Cladoceran[1] Kalff (2002).

*** Corresponding Author**

Material and Methods

The three sampling sites A.B and E, were taken from Littoral zone an two sampling sites C and D were taken from Limntic zone. The water samples were collected from Lony dam (Theonthar), Rewa M.P. during first week of every month between 8:00 am to 12:00 noon from March 2005 to February 2006. The sample was taken in 125ml bottle which were preserved by adding 2ml of 4% formaline. The samples were taken in to Sedgwick raftler cell and identification of zoolplankton was carried out and counting was done in laboratory. According to Scourfield and Harding[2], Harding and Smith[3], Pontin[4], Tonapi[5], Pennak[6] , Standard Literature were used for identification of different species and the identified species were expressed in number per litre. In order to estimate the quantitative values of physic-chemical parameters the water samples were taken to laboratory and were analysed by applying the standard method. APHA[7], APHA[8] AWWA and WPCF[9], Travedi and Goel[10] (1986-87). Correlation coefficient were calculated for all the characters combination at Genotypic. Phenotypic and environment level by the formula given by Miller *et al.*,[11-12].

Results and Conclusion

The monthly population seasonal and spatial variation of total Copepode zooplankton of Lony dam from March 2005 to Feb. 2006 are given in table No. 1 and correlation coefficient among physic-chemical factors are given in table No. 2. Maximum population of Copepode zooplankton was observed in month of April and minimum population was in September and

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November. Maximum potential of Copepode zooplanktons were appeared in summer moderate in winter and minimum in mansoon season. Copepode zooplankton bulk of Lony dam have shown a positive correlation with water transparency and water transparency of this dam shown negative correlation with P^H value.

The present study has revealed that most of Copepode species inhabited in Limnetic water. The Copepode community is comprised of four species. Therefore the sampling station D had large number of species in comparative to sampling station A. B. E. and C.

Among Copepode members *Cyclopoid, Paracyclops, Clenoid and Diaptomus* where found to be have common occurrence with wide range of distribution in Littoral and Limnetic water of Lony dam. Copepode have showed a positive correlation with water transparency. The same view was also given[13]-[17].

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Table 1: Monthly data of total copepode zooplankton (Units/L.) of lony dam (2005-2006)

Month	Littoral sites			Limnetic sites		Mean value
	A	B	E	C	D	
Mar	02	03	02	02	05	2.8
Apr	06	05	07	06	04	5.6
May	05	03	04	06	06	4.8
Jun	02	01	03	03	01	2.0
July	02	01	01	02	07	2.6
Aug	04	01	02	01	01	1.8
Sep	01	01	01	02	02	1.4
Oct	02	02	02	03	01	2.0
Nov.	02	01	02	00	02	1.4
Dec.	03	04	02	05	04	3.6
Jan.	02	04	03	05	02	3.2
Feb.	0.1	01	01	02	05	2.0
Seasonal Variations						
Summer	3.7	3.0	3.2	3.4	3.2	3.3
Rainy	1.8	1.0	1.2	1.6	2.2	1.5
Winter	6.2	2.0	2.0	3.0	3.2	2.4

Table 2: Matrix showing the values of correlation coefficients data of physico-chemical factors and copepode zooplanktons of Lony dam 2005-06

	pH	Water temp.	Water transparency	Total hardness	Protozoans
pH	1				
Water temperature	0.541479	1			
Water transparency	-0.578583*	0.174943	1		
Total hardness	0.103077	-0.49643	-0.41763	1	
Copepode zooplanktons	-0.42627	0.164191	0.594715*	-0.61861	1

df = 10, * Significant at 5% level, ** Significant at 1% level, Table value of r (correlation coefficient) at 5% = 0.564, Table value of r (correlation coefficient) at 1% = 0.764, Ns insignificant

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