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Research Article

STUDY OF ZOOPLANKTON DIVERSITY IN CHITTAURA JHEEL OF DISTRICT BAHRAICH (U.P.), INDIA

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ABSTRACT

Zooplanktons are cosmopolitan in nature and they are found to inhabit all freshwater wetlands. The present investigation deals with the study of monthly changes of diversity and density of Zooplankton in Chittaura Jheel of district Bahraich (U.P.), India. The work was carried out for a period of one year from January 2018 to December 2018. The population status of Zooplankton of Chittaura Jheel considered four taxa protozoan, rotifers, crustacean and meroplanktonic organisms. Meroplanktonic organisms were the most dominant sp. which indicated this water body is most suitable for pisciculture.

Key Words:

Zooplankton, Chittaura Jheel and diversity

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INTRODUCTION

Zooplanktons are a diverse group of heterotrophic organisms that consume phytoplankton regenerate nutrients via their metabolism and transfer energy to higher trophic levels (Tripathi *et.al.*2006).It plays an important role in recycling nutrients as well as cycling energy with their respective environment. These are the main sources of natural food for fishes which is directly related to their survival growth and are base of food chains and food webs in all aquatic ecosystem (Pandey *et.al.*, 2007). They are essential food item of omnivorous and planktonivorous fishes and most essential for fish larvae culture (Khan & Ghosh 2001).Zooplankton vary from site to site with in the same location with similar ecological condition and as such both qualitative and quantitative studies of zooplankton in a water body are of great importance in managing successful pisciculture operation (Tripathi *et.al.* 2006). Zooplankton are often an important link in the transfer of energy from producers to aquatic carnivores (Singh *et.al.*2013). Zooplankton is a good indicator of changes in water quality because it is strongly affected by environmental conditions. Zooplankton community respond to a wide variety of disturbances including nutrient loading, acidification, sediment input etc. It is a well suited tool for understanding water pollution status (Tripathi *et.al.* 2016). The

Jheel provide the moisture near the agriculture side by percolation of the water being the eutrophic ChittauraJheel large number of migratory birds visit throughout the year, with this view the present investigation has been carried out regarding the diversity of zooplankton in Chittaura Jheel of district Bahraich (U.P.),India.

MATERIAL AND METHODS

Study Area: Chittaura Jheel is located Bahraich district (U.P.), India. It lies between 27.7525°N,81.4279°E.

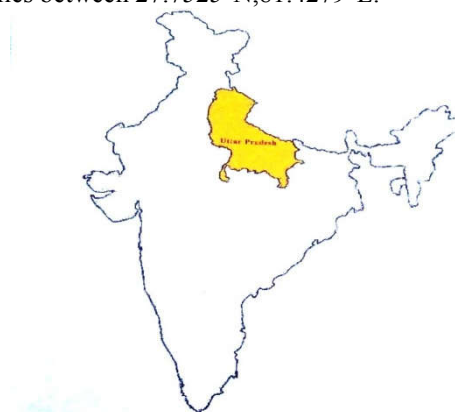


Fig 1 Location of study area in India

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It is situated about 8Km.from Bahraichcity, on Gonda road, near Chittaura village. A small river TedhiNadi flow from this Jheel (Fig.1 & 2).

Zooplankton Sampling: The study was conducted for a period of one year from January 2018 to December 2018. Zooplankton were sampled weekly from the site following standard methods of Simpson (2011). In order to study the zooplankton diversity samples were collected from surface water by filtering 50 litres of Jheel water through nylon bolting silk cloth. The samples were fixed using 4%formaline and the identification of zooplankton was done in laboratory Battish (1992), Edmondson (1959) and Sudha (2012).

RESULT AND DISCUSSION

Zooplankton population in Chittaura Jheel (Table 1 & 2) composed of four major taxaprotozoan, rotifers, crustacean and meroplanktonic organisms. The survey carriedout 18 genera with four species of protozoan-Difflugiasp., Arcellasp., Euglyphasp. and Loxodessp., three species of rotifers - Brachionussp., Philodina sp. and Rattulussp., five species of crustacean -Daphnia sp., Moinasp., Cyclopssp., Diaptomus sp. and Sidasp., Six species of meroplanktonic organisms - Ptychoptera sp. larvae, Chironomoussp. larvae, Dixasp. larvae, Psychoda sp. larvae. The result is quite clear that meroplanktonic organisms were the most dominating organisms and maximum in the month of May and minimum in the month of February. Similar result were obtained earlier Tripathi (2016). During the investigation present of zooplankton was maximum in the summer month (May) and minimum in the spring month (February). This is not conformity to the finding Eggleton (1931) and Devey (1945) who observed the maximum zooplankton in April and minimum in September in an American lake, while Srivastava (1956) and Tripathi (2006) observed maximum in the month of May and June and minimum in the month of February from a lake of Lucknow (U.P.) and Seetadwar lake of Shravasti district (U.P.), India. Michael (1969) concluded the peak period in the month of January and April but Mandal and Moitra (1975), Singh (2013) found maximum peak during summer month which is quite in conformity to the finding of this investigation. The differences in the occurrence of peak in zooplankton might be due to the different nature of the water bodies, difference in the composition of abiotic factors of water and soil and the variation in the productivity of different water bodies.



Fig 2 Location of study area in U.P. (Bahraich)

Table-1 Monthly fluctuation of Zooplankton (organisms/l.) in ChittauraJheel Of District Bahraich (U.P.), India (Data January 2018 to December_2018)

S.N.	Name of zooplanktons	Months											
		Jan	Feb.	Mar.	Apr.	May.	Jun.	July.	Aug.	Sep.	Oct.	Nov.	Dec.
1	Protozoan total Specimen	35	37	39	34	32	28	33	32	33	37	36	32
	Total genera	2	3	2	3	2	2	3	2	3	4	3	2
2	Rotifers total Specimen	30	28	27	25	24	20	22	23	27	33	32	29
	Total genera	2	1	2	2	1	1	1	2	3	3	1	1
3	Crustacean total Specimen	30	32	33	34	30	29	30	31	30	34	33	28
	Total genera	2	3	2	3	2	3	2	4	4	5	4	3
4	Meroplanktonic organisms total Specimen	40	44	43	38	30	38	27	38	40	46	44	41
	Total genera	2	2	3	4	2	1	2	4	6	6	6	4
Total Zooplankton		135	141	142	131	116	115	112	124	130	150	145	130 ⁷

Table 2 Month wise number of zooplankton (Data January 2018 to December - 2018)

S.No.	Months	Total Zooplankton
1	January	135
2	February	141
3	March	147
4	April	131
5	May	116
6	June	115
7	July	112
8	August	124
9	September	130
10	October	150
11	November	145
12	December	130 ⁹

Some workers such as Tripathi (2006), Pandey (2007) and Singh 2013) correlated bottom community with the fish productivity and accordingly this water body is most suitable for pisciculture.

CONCLUSION

The present study on Chittaura Jheel exhibits rich and diversified zooplankton which is dominated by meroplanktonic organisms throughout the study period which reveals that the Chittaura Jheel is very much suitable for pisciculture as zooplankton particularly meroplanktonic organisms are known to be the best food for the fish larvae for pisciculture. This study is a useful contribution to reveal the diversity of

zooplankton in Chittaura Jheel floodplains in general which on the other hand is useful in maintaining pisciculture in natural floodplain in particular. Thus keeping in view the importance of the study steps should be taken for the conservation and maintenance of the chittaura Jheel.

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