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Plankton Study of Aundha Lake of Aundha, Hingoli District (M.S.) India

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Abstract

The present paper deals with the plankton diversity of Aundha lake near Aundha dist Hingoli Maharashtra in the year 2018. The water spread of the lake is about 45 hectors. The phytoplankton represented by Chlorophyceae, Bascillariophyceae, Cyanophyceae and Euglenophyceae and zooplankton represents species of rotifer, copepods, cladocera and ostracoda.

Keywords: Plankton diversity, phytoplankton, zooplankton, Aundha lake, water quality.

INTRODUCTION

Planktons react quickly to environmental change because of their short life cycle. The species composition of planktons in water body therefore serves as good indicate of the quality of the water. In that water body, because of their rapidly fluctuating populations which may often attain high densities, planktons may strongly influence such as physico-chemical and aesthetic aspects of water quality as pH, DO, Colour, taste and odour. Certain text may even provide clues to the origin and recent history of water body. The disadvantage of the small size of planktons in the respects is their vulnerability towards currents in rivers they may be carried for away from their site of origin.

The Aundha lake is situated near Aundha about 1.5 k.m. away in Dist. Hingoli. Aundha lake is formed as result of construction of medium lake across the river Purna. The water spared area is 45 hectors, with storage capacity of about 1.791 Mcum. As the lake has a fairly developed fishery, therefore the present study on Plankton on this lake was undertaken during the Year 2018. To acquire some knowledge on the biological productivity of this water body.

MATERIAL AND METHODS

Hydrobiological investigations were carried out during the year 2018; Monthly samples were taken from the surface at four different stations. Phytoplankton were collected by Van-Dorn sampler and counted by using Sedgwick-Rafter(S-R) cell. Identification was made by APHA [1] and IAAB-1998 Jhingarn at et. 1989. Zooplankton sample were collected by using a plankton net made boten silk with a mesh of 150 nm. The zooplankton samples were preserved in 4% formalin. The different species of zooplankton isolated and temporary slides were prepared. Zooplanktons are identified by sing IAAB publication and relevant available standard literature

RESULT AND DISCUSSION

Phytoplankton

The phytoplankton population was represented by Chlorophyceae, Bascillariophyceae, Cyanophyceae, Euglenophyceae (Table 1) the other groups though represented. Where scarce and number and poor in forms and hence not considered in the present study.

Chlorophyceae

It was the most significant contributing about 29.58% of the total annual production. It exhibited maximum density during April and May inhibiting maximum population during summer and minimum during winter (Table 1) this group was represented by species of *chlorella, chlamydomonas, chadophora, closterium, helimeda.*

Bascillariophyceae

This was also an important group of phytoplankton encountered having a contribution of 36.44% of the total annual production. Its maximum value was noted in the months April (Table. 1) However, its maximum density was noticed during summer season. The group was represented by species as *bascillario, diatoms, vragillaria, navicula, nitzschia* and *synedra,*

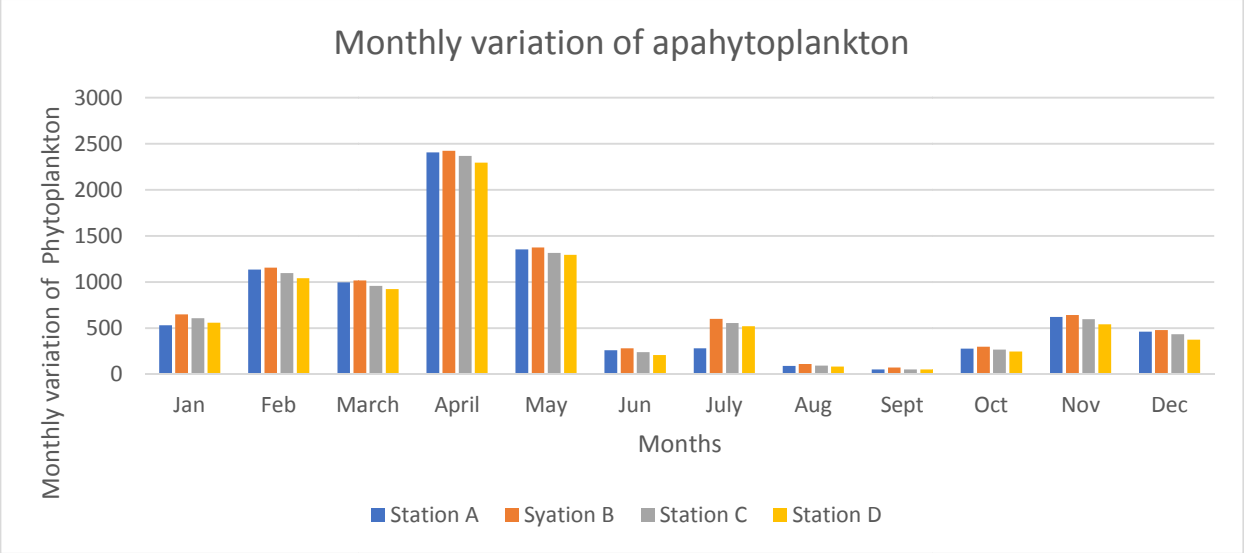
Cyanophyceae

This was also an important group having contribution of 13.27% to the annual production exhibited the highest density during the month of April and May. Maximum density during summer and minimum during rainy season were found and represented by *anabaena, anacystic, merismo pedia, microcystis, nostoc, oscillatoria, phomidium.*

Euglenophyceae

It contributes 20.69% of the total phytoplankton production and was represented by Euglena sp. Seasonal variation of phytoplankton along with temperature changes may be due to oxygen and CO_2 variations along with other chemical characteristic of water. Tripathy and Pandey [13] have reported that besides oxygen and CO2 variations and physico chemical characteristic like temp. Ph, chloride Alkalinity calcium magnesium, nitrates and sulphates in different seasons which affects growth of diatoms species, several another have been emphasized the importance of water temperature in the periodicity of blue green algae [4,5,10,11] the present investigation a direct relationship between dissolved oxygen and phytoplankton was observed Mathew [8] has reported positive relationship with oxygen content.

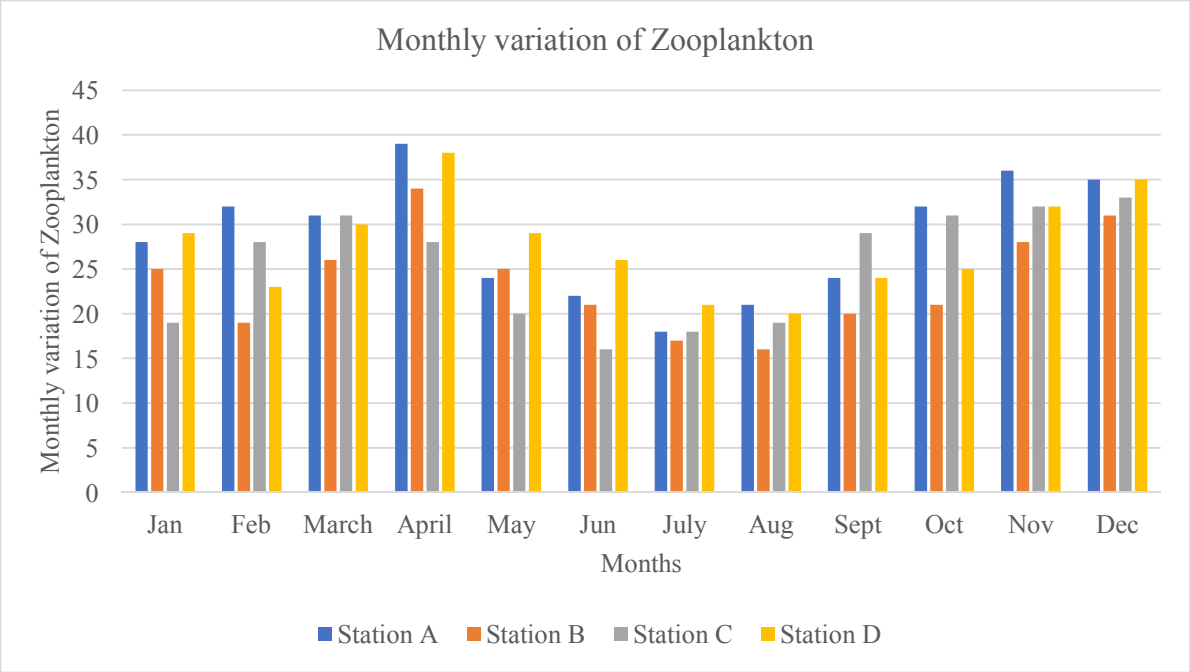
Year-2018													
Months	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
Sample Site A													
Chlorophyceae	150	360	275	900	440	50	120	20	10	55	200	30	2610
Bacillariophyceae	40	455	300	935	495	10	320	30	15	200	240	195	3235
Cyanophyceae	140	130	110	180	220	10	100	15	10	10	105	115	1145
Euglenophyceae	300	190	310	390	200	190	40	25	17	12	75	120	1869
Total	630	1135	995	2405	1355	260	580	90	52	277	620	460	8859
Sample Site B													
Chlorophyceae	155	365	280	905	445	55	125	25	15	60	205	35	2670
Bacillariophyceae	45	460	305	940	500	15	325	35	20	205	245	200	3295
Cyanophyceae	145	135	115	185	225	15	105	20	15	15	110	120	1205
Euglenophyceae	305	195	315	395	205	195	45	30	22	17	80	125	1929
Total	650	1155	1015	2425	1375	280	600	110	72	297	640	480	9099
Sample Site C													
Chlorophyceae	145	355	270	895	435	45	115	20	10	50	195	28	2563
Bacillariophyceae	40	450	292	927	470	12	307	31	12	192	233	177	3143
Cyanophyceae	140	127	109	168	221	13	96	15	10	11	98	111	1119
Euglenophyceae	282	165	287	378	191	169	36	27	18	14	72	116	1755
Total	607	1097	958	2368	1317	239	554	93	50	267	598	432	8580
Sample Site D													
Chlorophyceae	127	332	251	867	429	36	104	18	12	42	173	24	2415
Bacillariophyceae	35	426	281	907	443	10	292	29	11	181	209	138	2962
Cyanophyceae	136	129	115	172	240	15	93	12	11	14	93	103	1133
Euglenophyceae	261	154	276	349	182	145	30	22	17	10	65	109	1620
Total	559	1041	923	2295	1294	206	519	81	51	247	540	374	8130



Zooplankton

Zooplankton numbers and diversity in the reservoir water were low (Table 2) twelve species were present with their species of rotifers, six species of copepods and their species of cladocera. Total zooplankton number ranged from 283 to 342 individual L-1.t

Year- 2018													
Months	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
Sample site A													
Ostracoda	7	8	3	1	7	9	11	14	9	5	4	6	84
Rotifera	9	11	14	20	9	7	4	5	7	9	8	7	110
Copepoda	5	8	13	17	7	3	1	1	4	11	11	13	94
Cladocera	7	5	1	1	1	3	2	1	4	7	12	10	54
Total	28	32	31	31	24	22	18	21	24	32	35	36	342
Sample site B													
Ostracoda	6	5	1	3	10	11	9	12	7	3	2	2	71
Rotifera	7	9	12	16	6	4	3	2	5	7	10	9	90
Copepoda	7	3	10	14	8	5	2	1	1	2	9	6	68
Cladocera	5	2	3	1	1	1	3	1	7	9	10	11	54
Total	25	19	26	34	25	21	17	16	20	21	31	28	283
Sample site C													
Ostracoda	4	7	4	1	6	12	14	16	10	2	2	3	81
Rotifera	4	7	9	14	8	1	2	1	6	10	11	6	79
Copepoda	8	10	16	12	4	2	1	1	5	9	8	10	86
Cladocera	3	4	2	1	2	1	1	1	8	10	12	13	58
Total	19	28	31	28	20	16	18	19	29	31	33	32	304
Sample site D													
Ostracoda	7	6	2	4	11	12	10	13	8	4	3	3	83
Rotifera	8	10	13	17	7	5	4	3	6	8	11	10	102
Copepoda	8	4	11	15	9	6	3	2	2	3	10	7	80
Cladocera	6	3	4	2	2	3	4	2	8	10	11	12	67
Total	29	23	30	38	29	26	21	20	24	25	35	32	332



The zooplankton principally; rotifer > cladocera > copepod > ostracoda. Rotifers were represented by the species belonging to the genus branchionus (B. *falcatus*, B. *forcipulata*, B. *plicetities* spp.) Filinia (F. *longiseta*, F. *terminalis* spp.) Keratella (K. *cochlaeria*, K. *serrulata*, K. *tropica*, K. *vulgaris*). Copepods by canthocymptus spp., Cyclops spp., *diaptomus spp. Limnocalanus spp., Mesocyclops spp., Neo diaptomus spp. Cladocerans* by daphania (D. *pulex* and D. *carinata)*, *Monia spp., Alora spp., Bosmania spp. Ceriodaphnia spp.* are noteworthy. In zooplankton naupi were encountered throughout the year. The zooplankton naupi were encountered in table (2). Zooplankton drastically produced in the month of April 2018. Copepods decreased remarkably in the month of April 2018.tremendous increase in the of rotifers quantitatively during the month of April.2018. Number of cladocerans was high in the month of December 2018 and low in Aug 2018.

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