International Journal of Entomology Research
www.entomologyjournals.com
ISSN: 2455-4758
Received: 08-11-2022, Accepted: 24-11-2022, Published: 10-12-2022
Volume 7, Issue 12, 2022, Page No. 40-41

Study of phytoplankton diversity of Gharni reservoir, Dist Latur (M.S)

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Abstract
An attempt has been made to study the phytoplankton diversity of Gharni reservoir. The Sample were collected from Gharni reservoir of Latur district. Study was undertaken during the period of June 2021 to May 2022. phytoplankton population was composed of 20 species belonging to four groups were recorded. Out of these species, 10 species of Chlorophyceae, 4 species of Cynophyceae, 3 species of Bacillariophyceae and 3 species of Euglenophyceae. Among the phytoplankton chlorophyceae was found to be dominant during study period.
The maximum count of phytoplankton was recorded during the months of February to May and minimum count was recorded during the months of June to September due to high temperature and low turbidity in summer season and vice versa.

Keywords: phytoplankton diversity Gharni reservoir

Introduction
The Phytoplankton are the important base of food web of an aquatic ecosystem. Phytoplankton acts as an live food For zooplankton and fishes. It help generation of potentially functional aquatic community. The phytoplankton study is very useful tool for the assessment of biotic potential and contributes to overall estimation of basic nature and general economic potential of water body. Pawer *et al*. (2006) [4].
In the present investigation an attempt has been made to find diversity of Phytoplankton of Gharni reservoir of Latur district (M.S).
The Gharni reservoir is medium type of reservoir in Latur district. The reservoir was constructed on Gharni river. The reservoir is located at latitude 18°22' 30" and longitude 76°49' 15". The total water spread area of the reservoir is 949 ha at FRL and the catchment area of 243.66 sq.km.

Material and Method
Phytoplankton sample collection was carried out from three sampling stations designated as S-1, S-2 and S-3 for a period of one year from June 2021 to May 2022.
The sample were collected by using plankton net made of bolting cloth with mesh size 40 meshes /cm. 5% Formalin was used for fixing and preserving plankton. Desikachary (1959) [1], Tripathi and Pandey (1990) [7] were used to identify the phytoplankton. Trivedy and Goel (1984) [8] was followed for Drop count and enumeration of phytoplankton.

Result and Discussion
Phytoplankton species of Gharni reservoir comprised of 20 species of which 10 species of Chlorophyceae, 4 species of Cynophyceae, 3 species of Bacillariophyceae and 3 species of Euglenophyceae were found. Productivity of phytoplankton shows fluctuation seasonally. Total number of Phytoplankton and monthly variation are given in table 1.

Table 1: Monthly variation of Phytoplankton in the Gharni Reservoir of Latur District

Sr. No.	Months → Components ↓	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
	Sample Sites S-1												
1	Chlorophyceae	98	63	35	31	82	120	187	185	230	227	265	285
2	Cynophyceae	41	25	20	23	62	105	141	106	125	128	125	161
3	Bacillariophyceae	60	45	24	18	41	65	120	100	127	109	100	76
4	Euglenophyceae	20	12	16	12	25	34	37	41	51	74	61	60
Total		219	145	95	84	210	324	485	432	533	538	551	582
	Sample Sites S-2												
1	Chlorophyceae	85	76	58	41	109	155	161	184	215	180	204	247
2	Cynophyceae	51	40	48	39	68	84	125	105	95	127	173	100
3	Bacillariophyceae	57	27	35	35	59	65	75	90	86	100	90	94
4	Euglenophyceae	35	15	21	09	35	51	62	30	42	80	89	70
Total		228	158	162	124	271	355	423	409	338	487	556	511
	Sample Sites S-3												
1	Chlorophyceae	100	70	40	35	110	107	155	205	180	225	170	198
2	Cynophyceae	40	38	25	28	61	60	109	100	125	126	129	108
3	Bacillariophyceae	32	26	22	25	30	52	84	92	102	100	95	107
4	Euglenophyceae	26	21	18	23	21	35	67	51	55	85	90	85
Total		198	155	105	111	222	254	415	448	462	536	484	498

Chlorophyceae

During present study the density of Chlorophyceae ranged from 31 units/liter in September to 285 units/liter in the month of May, at S-1.

41 units/liter to 247 units/liter at S-2 in the months of September and May 35 units/liter to 225 units/liter at S-3 in the months of September and March.

In case of Chlorophyceae, *Chlamydomonas conferta, Chlorella conglomerata, Chlorella valgaris, Oedogonium patulum, Spirogyra, Scenedesmus armatus, Ankistrodesmus flacatus, Cosmarium contractum, Pediastrum duplex* and *Ulothrix zonata* were recorded in all months. Total 10 species were recorded during study period. Their number was high in summer and low in monsoon months.

Singh V. P. (1960) [6] observed that the green algae are abundent whenever water temperature is high. Rodhe W. (1948) [5] reported that the factors such as high temperature, low nitrates and bright sunlight are favorable conditions for high population of green algae.

Cynophyceae

During study period the density of Cynophyceae ranged from 20 units/liter in August to 161 units/liter in May at S-1, 39 units/liter to 173 units/liter in the months of September and April at S-2 and 25 units/liter to 129 units/liter at S-3. during the months of August and April. The Cynophyceae species *Microcystis, Anabaena constricta, Nostoc* and *Oscillatoria chlorina* were recorded throughout study period, Cynophyceae were found minimum in rainy season and maximum in summer season.

Fritsch F. E. (1907) [2] has stressed more on the significance of bright sunshine than temperature in the production of blue green algae.

Bacillariophyceae

Bacillariophyceae ranged from 18 units/liter to 127 units/liter at S-1 in the months of September and February 27 units/liter to 100 units/liter at S-2 in the month of July and March. In the mansoon months phytoplankton density were found minimum due to high turbidity and minimum sunlight and in the summer months phytoplankton density were found maximum due to high transparency of water and bright sunshine. Bacillariophyceae ranged from 25 units/liter to 129 units/liter at S-3 in the months of August and April. In case of Bacillariophyceae *Bacillaria paradoxa*, *Navicula gracilis* and *Nitzschia* were recorded throughout study period.

Euglenophyceae

Euglenophyceae ranged from 12 units/liter to 74 units/liter at S-1 in the months of July and March. 09 units/liter to 89 units /liter at S-2 in the September and April. 18 units/liter to 90 units/liter at S-3 in the months of August and April. *Euglena acus, Euglena stellata* and *Euglena viridis* were found during study period. Maximum density of phytoplankton were found during study period in the reservoir because long sunshine period, low turbidity and increased salinity. Decrease in phytoplankton population during monsoon months due to heavy rain and high turbidity result in less light penetration which decrease the photosynthesis of phytoplankton. Laskar and Gupta (2013) [3] reported that heavy rainfall and turbidity are responsible for decrease of phytoplankton population during monsoon months.

Acknowledgement

The author are thankful to the Principal Mahatma Basweshwar Mahavidylaya, Latur for providing laboratory and library facilities during the study period.

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