

# STUDY ON ALGAL DIVERSITY OF BHIMA RIVER AT MACHNUR BANDHARA, MACHNUR IN MANGALWEDHA TEHSIL, DIST. SOLAPUR. MAHARASHTRA .

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## Abstract:-

Biodiversity of algal group from various marine and fresh water bodies is one of the important aspects of research in ecological studies. This investigation mainly deals with the preliminary observation and compilation of algal diversity from Machnur bandhara . This bandhara/ wire is important fresh water reservoir in Mangalwedha Tehsil of Solapur district. The present investigation was carried out from February 2017 to January 2018. Total five class of algal was noticed during study period. The 50 different algal members were found which belongs to five algal classes i.e Chlorophyceae, Charophyceae Bacillariophyceae, Euglinophyceae, Cyanophyceae. These five classes of algal members were use to help in maintenance of healthy ecosystem of this water body . Algal diversity in lake and different water bodies plays an important role in conservation of the diversity.

**Key words:** - , Algae, Biodiversity, Machnur reservoir

## 1. Introduction:-

Rivers and Lakes are one of the important water bodies and mostly used for drinking water, fisheries and for irrigation in agriculture practices. The ecosystem of many lakes, are on threat of eutrophication (Scheffer, 1998). Algal diversity in lake have very crucial role in their conservation. Healthy lake indicates balanced abundance and diversity of algae. Algae is the group of aquatic plants having wide range of diversity. These groups show tremendous diversity in their structural appearance and have top position in water ecosystem. The biological characteristic of aquatic ecosystem may lentic or lotic having great importance of algal members. It initiates food chain as producer which affects quality of water. Quantity and distribution of micro and macro-organisms which are depend on it directly or indirectly. Seasonal biodiversity of algal members from various fresh water bodies from different region was reported by several phycologist. Rath and Adhikari (2005) studied the algal flora of chilka lake. Also many researchers studied about the limnological , ecological and algal diversity of fresh water bodies from Maharashtra

The algal diversity of temporary water pools around Bombay was studied by Gonzalves and Joshi (1943). Pingle (2005) have observed the algal flora at Pashan Lakes. The study of filamentous algal diversity at Gangapur dam in Nashik district (M.S.) was studied by Thakur and Behare (2008) Mahadik and Jadhav (2014) has done the prilimonly analysis on algal diversity on ujani reservoir but according to the review of literature this water body has not been studied yet in algal diversity point of view thus to investigate and bring its algal flora in light it's decided to work on algal diversity of this region

## 2. Material and Method :

### 2.1. Sudy area ;

Machnur is famous pilgrimage point situated near the bank of Bhīma River and lies in Mangalwedha tehsil of Solapur district. Geographically it situated in 17.34'01.0" N latitude and 75° 33'28.9"E longitudes. The region comes under arid dry weather with average temperature 27° C average precipitation 583.4 mm. For the current investigation mainly three sites were selected for the sampling surrounding the reservoir ,Site first S1 is near the famous jatashankar temple while the another site S2 is situated near the Machnur fort river point and last site S3 is near the bandhara wall.

### 2.2 collection of algal samples:

The floating and submerges microscopic algal sample was collected in acid washed sterile plastic container by using standard plankton net with 30cm diameter and 1 meter length, while filamentous algae are collected through picking by hands and other algal bloom attached with the rocks were collected by scalpel and forceps and stored in different bottles as per standard methods (APHA, 2005) from representative sites. Collected samples were preserved in 4% formalin for further taxonomic studies. The observation of specimens were done as per APHA(2005) and Trivedi and Goel(1986). The current investigation is carried out by collecting samples for twice in each season (pre-monsoon ,Monsoon and post-monsoon period ) for Feb 2017 to Jan 2018.

### 2.3 Observation and identification of of algal samples:

Fresh as well as preserved algal forms were observed thoroughly The algal collections were observed under the phase contrast microscope (Nikon Eclipse 80i) and morphological characteristics of the algae were carefully studied using standard texts, keys and monographs given by Prescott (1951), Sarode and Kamat (1984), Cox (1996), Prasad and Shrivastava

(1992), Prasad and Misra (1992), Philipose (1967), Rath and Adhikary (2005) and the keys of Desikachary (1959). Identification was made with help of publications appeared in journals from time to time.

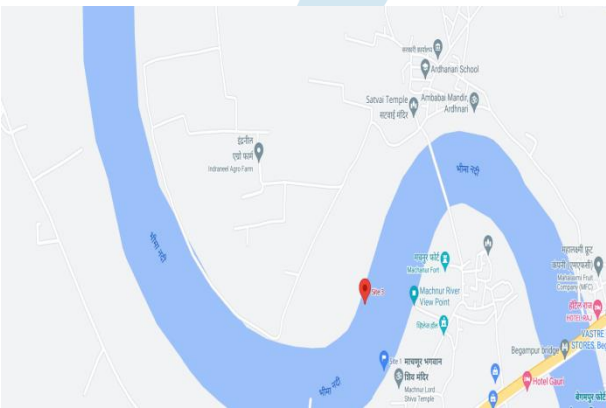
Sampling site-1 Jatashankar temple

collection of algal specimen



Site of Machnur on google map

view of siddheshwar temple. Machnur



Machnur Bandhara- sampling site 3

River veiw point- sampling site 2



**3. Result and Discussion:-**

The identified algal genera are depicted below in table no3.2, In total there are 50 Genus of algae were identified from all three selected stations. According to the observations it is found that study site have many algal members of different genera. From this algal population 50 members were identified up to genus level from selected stations in which the Class- chlorophyceae and Class -Cyanophyceae both have 16 genera of algae , Class-Bacillariophyceae with 14 genus ,class :-Charophyceae and class Euglenophyceae both with 2 genus.

The members included in each class are as follow:-

**1) CLASS :- CHLOROPHYCEAE:-** *Spirogyra, Cladophora, Gonium, Oedogonium, Pediastrum, Ulothrix, Pandorina, Chlorella, volvox, Oedogonium, Zygnema, Ankistrodesmus, Scendesmus, Closterium, Micrastearis, Netrium*

**2)CLASS :-CHAROPHYCEAE :-**  
*Chara, Nitella*

**3)CLASS :- BACILLARIOPHYCEAE**  
*Cymbella,, Fragilaria,, Gomphonema, Gonium, Gyrosigma, Mastogloia, Navicula, Nitzschia, Pinnularia, Pleurosigma, Rhopalodia, Stauroneis, Surirella*

**CLASS - EUGLENOPHYCEAE:-**  
*Euglena, Phacus*

**CLASS- CYANOPHYCEAE :-**  
*Anabaena,, Aphanocapsa, ,Arthrospira, Calothrix, Chroococcus, Spirulina, Cyndrospermum, Gloeocapsa, Gomphosphaeria, Homoeothrix, Merismopedia, Microcystis, Nostoc, Oscillatoria, Phormidium, Scytonema*

Table 3.1:- Percent composition of Algae

Sr.no .	Class	No. Of Genus	%
1	Chlorophyceae	16	32%
2	Charophyceae	2	4%
3	Bacillariophyceae	14	28%
4	Eglenophyceae	2	4%
5	Cyanophyceae	16	32%

Figure 3.1 Percentage composition

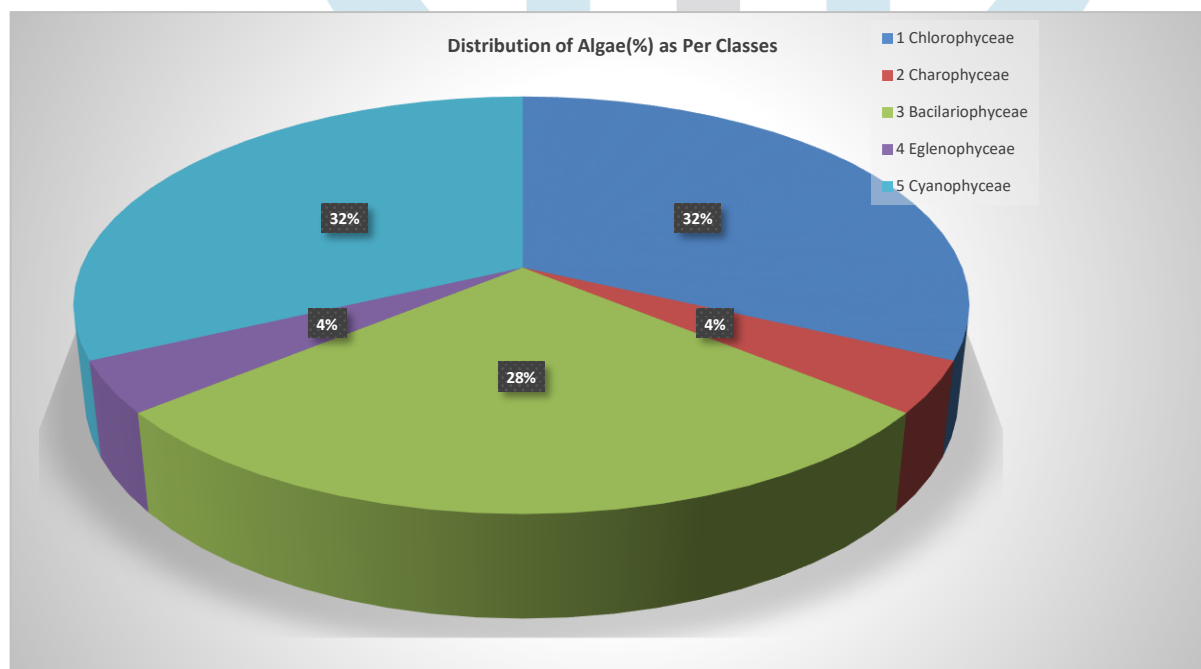


Table No:- 3.2  
Seasonal Variation of Algal Genera.

Algal species	Pre - monsoon	Monsoon	Post monsoon
<b>1) CLASS :- CHLOROPHYCEAE</b>			

1	<i>Spirogyra</i>	+	+	+
2	<i>Cladophora</i>	+	+	+
3	<i>Gonium</i>	+	+	+
5	<i>Oedogonium</i>	+	+	+
6	<i>Pediastrum</i>	+	+	-
7	<i>Ulothrix.</i>	+	+	+
8	<i>Pandorina</i>	+	+	-
9	<i>Chlorella</i>	+	+	+
10	<i>volvox</i>	+	+	+
11	<i>Oedogonium</i>	+	+	+
12	<i>Zygnema</i>	+	+	+
13	<i>Ankistrodesmus</i>	+	+	+
14	<i>Scendesmus</i>	+	+	+
15	<i>Closterium</i>	+	+	-
16	<i>Micrastearis</i>	+	+	+
17	<i>Netrium</i>	+	+	+
<b>2) CLASS :-CHAROPHYCEAE</b>				
1	<i>chara</i>	+	+	+
2	<i>Nitella</i>	+	+	+
<b>3) CLASS :- BACILLARIOPHYCEAE</b>				
1	<i>Cymbella</i>	+	+	+
2	<i>Fragilaria</i>	+	+	+
3	<i>Gomphonema</i>	+	+	+
4	<i>Gonium</i>	+	+	+
5	<i>Gyrosigma</i>	+	+	+
6	<i>Mastogloia</i>	+	+	+
7	<i>Navicula</i>	+	+	-
8	<i>Nitzschia</i>	+	+	+
9	<i>Pinnularia</i>	+	+	+
10	<i>Pleurosigma</i>	+	+	+
11	<i>Rhopalodia</i>	+	+	+
12	<i>Stauroneis</i>	+	+	+
13	<i>Surirella</i>	+	+	+
14	<i>Synedra</i>	+	+	+
<b>4) CLASS - EUGLENOPHYCEAE</b>				
1	<i>Euglena</i>	+	+	+
2	<i>Phacus</i>	+	+	+
<b>5) CLASS- CYANOPHYCEAE</b>				
1	<i>Anabaena</i>	-	+	+
2	<i>Aphanocapsa</i>	+	+	+
3	<i>Arthrospira</i>	+	+	+
4	<i>Calothrix</i>	+	+	+
5	<i>Chroococcus</i>	+	+	+
6	<i>Spirulina</i>	+	+	+
7	<i>Cylindrospermum</i>	+	+	+
8	<i>Gloeocapsa</i>	+	+	+

9	<i>Gomphosphaeria</i>	+	+	+
10	<i>Homoeothrix</i>	+	+	+
11	<i>Merismopedia</i>	+	+	+
12	<i>Microcystis</i>	+	+	+
13	<i>Nostoc</i>	+	+	+
14	<i>Oscillatoria</i>	+	+	+
15	<i>Phormidium</i>	+	+	+
16	<i>Scytonema</i>	+	+	+

+ = Present & - = Absent.

The present investigations showed that the algal members shows seasonal fluctuations during study period. The study period is divided according to the seasons Pre- monsoon , Monsoon, Post - monsoon most of the algal genera shows there presence in all seasons accept some like *Pediastrum*, *Pandorina*, *Closterium* the chlophyceae member and a Bacillariophyceae member *Navicula* which shows absence in post monsoon season. Though the presence was detected in season they may shows variation in their abundance as per seasons . Similar result was reported by Sarwade and kamble (2014) and Shrivastava et.al.,

#### 4) Conclusion:-

Distribution pattern of algal members were strongly influenced by environmental factors. Algal members are primary producers of aquatic ecosystem and are used for biomonitoring the water body stoermer (1977) . The presence of algal members like *Oscilotoria*, *scendesmus* , *Navicula* shows organic richness of water body (Palmer 1969) The preliminary analysis of selected study site shows rich algal diversity showing presence of both pollution and good health indicating algal genera which is matter of interest for further investigation in future.

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