# Phytoplankton diversity from some water bodies of southern part of Bankura town, West Bengal

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## Abstract

From this present investigation total of 27 phytoplankton taxa representing four classes namely Cyanophyceae (3), Chlorophyceae (18), Bacillariophyceae (4), and Euglenophyceae (2) are identified from several water bodies including domestic wastewater and ponds. Oscillatoria limosa, Cladophora glomerata, Anabaena circinalis are among the abundant from those sites and Tetraedron trigonum, Pleurotaenium trabecula, Eunotia pectinalis are found to be rare.

## KEYWORDS: Bankura, Biodiversity, Phytoplankton

## INTRODUCTION

Phytoplanktons are the major primary producers in the aquatic ecosystems as they formed as base of aquatic food chain (Saravanakumar et al. 2008) and are an important food source for other organisms like zooplanktons, rotifers and fishes etc. They include free floating planktonic forms. These free floating forms constitute the major flora of any water ecosystem including other benthic and attached algae. Several works have been done by several authors investigating the phytoplankton from water bodies besides firm lands (Mukhopadhyay et al. 1997; Chakraborty et al. 2004; Das et al. 2011, 2015) and from industrial waste (Ghosh & Keshri 2011) from this state.

Bankura district is situated in the eastern part of India and is a part of lower edge of Chota Nagpur Plateau. Soil is of laterite type mixed with sand and rock, brownish red in colour. Several ponds and temporary water bodies are there which are potent during few days after the rain and remain dry in the summer. Investigations on phytoplankton diversity in relation to physic-chemical parameter in this region are very few (Das et al. 2018) but study of zooplankton and water chemistry was done in recent years by several workers from this region (Bhattacharjee et al. 2013; Dutta & Patra 2013; Majumder & Dutta 2014).

## MATERIAL AND METHODS

**Study Area:** All the samples were collected from small water bodies on the bare land of southern part of just outside of the town. The period of collection of the

phytoplankton specimens were periodically during September 2018 to February 2019. Temperature, pH of water and brief ecological notes were taken during the field study. Samples were preserved in 5% formalin in polythene bags. Observations were made under Olympus GB microscope using GWF as mounting medium. Lugol's iodine solution was also used to preserve the samples. Detailed ecological notes on the samples collected from 8 different study sites are given in the Table 1.

Study sites	Altitude	Co- ordinates	рН	Temp (°C)	Habitat
Site 1	252 ft	23°13′27″N 87°2′30″E	7.5	25	Brown powder mass with thin filamentous mass on the soil and on the surface of aquatic weeds under water.
Site 2	252 ft	23°13′85″N 87°1′52″E	7.5	26	Whitish filament on the surface of aquatic stem under water and phytoplankton samples from water
Site 3	253 ft	23°13′54″N 87°1′24″E	7.5	31	Powdery mass and filaments along with semi aquatic weeds from a shallow waterbody.
Site 4	252 ft	23°14′17″N 87°2′57″E	7.9	25	Green filaments in the surface of the wet soil
Site 5	255 ft	23°14′00″N 87°2′43″E	7.9	28	Small water body with dark green patches with aquatic weeds.
Site 6	255 ft	23°13'45"N 87°2'42"E	7.5	25	Light green filaments on the water surface along with whitish green filament and dark powdery mass.
Site 7	255 ft	23°13′17″N 87°2′57″E	7.5	31	Brownish mass on rock surface under water.
Site 8	254 ft	23°14′4″N 87°1′58″E	7.9	26	Bright green powdery mass on soil under water from a small pond.

Table 1. Details of the study sites including altitude from sea level, co-ordinates,	water	pН,
water temperatures and short ecological notes.		

**Result and Discussion:** The species wise diversity and availability from different study sites represented in the Table 2. Relative abundance of the total phytoplankton species available from the study sites are also shown in the Graph 1. Total 27 phytoplankton species were found and identified by several monographs (Turner 1892; Hustedt 1930; Desikachary 1959; Prescott 1962; Philipose 1967; Das & Keshri 2016). Among them class Chlorophyceae represented by maximum number of 18 genera, Cyanophyceae by 3 genera, Euglenophyceae about 2 genera and Bacillariophyceae 4 genera.

From the Table 1, average water temperature was found between 25-31°C from different sites. Shallow wet lands exhibit higher water temperature than the water body like big ponds. The water pH was 7.5-7.9 i.e. neutral to very slightly basic throughout the area. The area was nearly bare land without any big trees nearby but aquatic weeds, grasses etc. growing comparatively low lands.

SI	Name of the phytoplankton species	Site 1	Site 2	Site 3	Site 4	Site 5	Site 6	Site 7	Site 8
1.	Anabaena circinalis	-	-	-	-	36	71	-	12
2.	Ankistrodesmus falcatus	-	-	-	-	28	-	-	-
3.	Bulbochaete satigera	-	-	-	-	-	-	-	17
4.	Chara braunii	5	-	-	-	-	-	5	3
5.	Chlorella vulgaris	-	43	-	33	-	-	-	-
6.	Chroococcas limneticus	-	-	-	-	5	-	-	-
7.	Cladophora glomerata	55	-	-	27	30	-	-	-
8.	Closterium parvulum	-	-	-	-	1	-	-	1
9.	Coelastrum microporum	40	-	-	-	-	24	-	-
10.	Coleochaete islamii	-	-	-	-	-	12	-	27
11.	Cymbella acuta	-	-	7	-	-	-	-	12
12.	Euglena acus	-	-	2	-	4	-	-	1
13.	Eunotia pectinalis	-	1	-	-	-	-	-	-
14.	Hyalotheca dissiliens	-	-	16	33	-	-	-	-
15.	Nitella mucronata	-	2	-	-	-	-	-	4
16.	Nitzschia sigma	-	-	-	-	3	-	11	2
17.	Oedogonium fragile	-	-	-	-	-	-	-	11
18.	Oocystis elliptica	-	-	-	-	8	-	-	-
19.	Oocystis pusilla	4	-	-	-	-	12	-	-
20.	Oscillatoria limosa	67	-	72	52	-	-	43	-
21.	Pediastrum tetras	-	-	-	-	-	16	-	-
22.	Phacus acuminatus	-	-	-	-	7	-	-	-
23.	Pleurotaenium trabecula	-	2	-	-	-	1	-	-
24.	Rhizoclonium lapponicum	-	-	-	-	18	13	35	-
25.	Scenedesmus bijugatus	-	12	-	-	-	-	-	-
26.	Scenedesmus obliquus	-	16	-	-	-	16	-	8
27.	Tetraedron trigonum	-	-	-	-	2	1	-	-

## Table-2: A complete list of phytoplankton availability from different sites (in 0.02ml):



Graph-1: Relative abundance of different species of phytoplankton available

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