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Diversity and Abundance of Phytoplanktons from Wetlands of Yellandu

K. Rajyalaxmi[1], M. Aruna[2]

[1, 2]Department of Botany, Telangana University, Nizamabad,(T.S.).India

Abstract: ***Phytoplanktons are primary producers of aquatic matter in the aquatic environment. Because of their photosynthetic activity they provide food to aquatic flora and fuana and they make the environment suitable for the existence of organisms by releasing Oxygen into the environment they constitute the main link in aquatic food chain. The present study focuses on the diversity and abundance of phytoplankton in three seasons. A survey was carried out in three wet lands of Yellandu region in district of Bhadradri kothagudem in Telangana state. Studies were under taken to document diversity and richness of phytoplanktons of the region. The investigation revealed that Yellandu wetland region sustains a very rich phytoplankton diversity and unique aquatic community. Collections from the study sites showed rich unicellular and filamentous algae belonging to various classes, such as Cyanophyceae, Chlorophyceae, Bacillariophyceae & Euglenophyceae.***

Keywords: Phytoplanktons, Yellandu lake, Challasamudram lake, Madharam lake

1. Introduction

Algae are Eukaryotic, primitive mainly aquatic plants they possess Chlorophyll a as their primary photosynthetic pigment and can manufacture their food through the process of photosynthesis, for these capacity algal members are considered as autotraphs. These are food for many small aquatic invertebrates and in turn, these small organisms are food for aquatic animals. Yellandu wetlands are body of fresh water with depth range from 30cm-160cm.lakes in Yellandu region is important site for wintering of the migrating birds and important natural resources for fish production in Yellandu. Yellandu is a town in Bhadradri kothagudem district of the telangana state, geographycally located at 17.59 41^{o} N latitude, 80.3224^{o} E longitude. Algal samples were collected from 3 wet lands located in Yellandu region named as 1. Yellandu lake, located at 17.6^{o} N latitude, 80.33^{o} E longitude. 2. Challasamudram, located at 17.5^{o} N latitude, 80.3^{o} E longitude. 3. Madharam lake 17.58^{o} N latitude, 80.34^{o} E longitude. Samples collected from different sites of these three lakes for a period of one year between June 2016 to May 2017. Earlier works of Chattopadyaya. C., Benerjee T.C.(2007) Chaudary, R. Pillai R.S.,(2009). Ghosh,S., Barinova,s., Keshri J.P.,(2012). S.K. Agarwal P.K. Singh, V.P.,(2007) on fresh water phytoplanktons of Indian states show that a large part of it is still unexplored.

2. Materials and Methods

Collection, Preservation and identification

The samples of the planktonic algal species were collected monthly from three selected lakes. Collections were made early in the sunrise by using planktonic mesh net, benthic algae collected with forceps, terrestrial members are collected by scalpel. Collection made between June 2016 to May 2017. Samples are stored in 4% aqueous solution of formaldehyde in laboratory for specific studies. The morphological studies were made in fresh material using light microscope and making their camera lucida drawings. Identification of the taxa was done using Fritsch (1961), Prescott(1962), Philipose (1967), Tiwari A,A Rana and S V S Chauhan (2003), Prasad and Misra (1992) and Desikachary (1959).

Table I: Documentation of Phytoplankton species found in the Wetlands of Yellandu

S.No	Algal species	Class	Yellandu lake	Challasamudram lake	Madharam lake
1	*Pediastrum meyen*	Chlorophyceae	**	**	*
2	*Pediastum duplex*	Chlorophyceae	-	-	**
3	*Oedogonium patulum*	Chlorophyceae	**	*	*
4	*Oedogonium grande*	Chlorophyceae	**	**	*
5	*Euastrum verrucosum*	Chlorophyceae	*	*	-
6	*Euastrum spinulosum*	Chlorophyceae	*	*	-
7	*Eustum quadriculatum*	Chlorophyceae	*	*	-
8	*Spirogyra varians*	Chlorophyceae	**	**	**
9	*Spirogyra acanthospora*	Chlorophyceae	*	**	*
10	*Spirogyra discoidea*	Chlorophyceae	**	*	**
11	*Closterium acerosum*	Chlorophyceae	*	**	*
12	*Clostrium tumidum*	Chlorophyceae	*	-	*
13	*Cosmarium auriculatum*	Chlorophyceae	*	*	-
14	*Cosmarium botrytis*	Chlorophyceae	*	*	-
15	*Chara vulgaris*	Chlorophyceae	**	**	**
16	*Chara glabra*	Chlorophyceae	**	**	**
17	*Chlorella vulgaris*	Chlorophyceae	*	**	*
18	*Chlorella ellipsoidea*	Chlorophyceae	*	**	*

19	*Chlamydomonas gliobosa*	Chlorophyceae	**	**	*
20	*Chladophora glomerata*	Chlorophyceae	**	**	*
21	*Microspora sps.*	Chlorophyceae	*	*	*
22	*Scenedesmus denticulatus*	Chlorophyceae	*	*	*
23	*Scenedesmus quadricauda*	Chlorophyceae	*	*	*
24	*Scenedesmus obiquus*	Chlorophyceae	**	**	*
25	*Tetraedron regulare*	Chlorophyceae	*	*	*
26	*Tetraedron quadratum*	Chlorophyceae	*	*	*
27	*Zygnema pectinatum*	Chlorophyceae	*	*	*
28	*Anabaena Constricta*	Cyanophyceae	**	**	*
29	*Anabaenopsis sp.*	Cyanophyceae	*	**	*
30	*Gloeocapsa atrata*	Cyanophyceae	*	**	*
31	*Gloeotrichia natans*	Cyanophyceae	*	**	-
32	*Oscillatoria Formosa*	Cyanophyceae	*	**	*
33	*Oscillatoria rubescens*	Cyanophyceae	*	-	*
34	*Oscillatoria tenuis*	Cyanophyceae	*	**	*
35	*Phormidium luridum*	Cyanophyceae	*	**	*
36	*Phormidium molle*	Cyanophyceae	*	**	-
37	*Lyngbya ceylanica*	Cyanophyceae	*	*	*
38	*Nostoc sphaerium*	Cyanophyceae	**	*	**
39	*Spirulina major*	Cyanophyceae	*	-	-
40	*Synechocystis aqualis*	Cyanophyceae	**	*	*
41	*Chroococcus minutus*	Cyanophyceae	*	*	*
42	*Hydrococcus sps.*	Cyanophyceae	*	*	*
43	*Cymbella parva*	Bacillariophyceae	**	*	*
44	*Cymbella cymbiformis*	Bacillariophyceae	*	*	*
45	*Gomphonema gracile*	Bacillariophyceae	**	-	*
46	*Gomphonema acuminatum*	Bacillariophyceae	*	*	*
47	*Navicula radiosa*	Bacillariophyceae	**	*	**
48	*Pinnularia gibba*	Bacillariophyceae	*	*	*
49	*Pinnularia viridis*	Bacillariophyceae	*	*	*
50	*Euglena caudata*	Euglenophyceae	*	*	-

*Present, ** Abundance, - Absent

Table 2: Species composition and percentage

Class	No. of Genus	No. of Species	Percentage
Chlorophyceae	14	27	54%
Cyanophyceae	11	15	30%
Bacillariophyceae	4	7	14%
Euglenophyceae	1	1	2%
Total	30	50	100%

3. Result

The algal members comprised of 30 genera of which 27 belonged to Chlorophyceae, 15 to Cyanophyceae, 7 to Bacillariophyceae and 1 to Euglenophyceae(Table-I). Overall species composition of this study was Chlorophyceae 54%, Cyanophyceae 30%, Bacillariophyceae 14% and Euglenophyceae 2%(Table-II). Highest number of species was represented by Chlorophyceae with 27 species, least number of species represented by Euglenophyceae with 1 species. Highest phytoplankton diversity found at Yellandu lake, high Cyanophycean species found at Challasamudram lake and poor diversity at Madharam lake.

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