DIVERSITY OF PHYTOPLANKTON IN AGRAHARAM LAKE OF KARIMNAGAR DISTRICT, TELANGANA STATE, INDIA

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Abstract: Phytoplankton in lake ecosystem acts as primary producers and form a bulk of food as well as host for zooplankton, fishes and other aquatic animals. Three major functions of lakes are maintenance of hydrologic flux, storage and biological productivity. Maintenance of healthy aquatic ecosystem is dependent on physicochemical factors of water and biological diversity of the ecosystem.

The present study is to reveal the phytoplanktonic biodiversity of Agraharam lake located in Vemulawada mandal, Karimnagar district of Telangana state, South India. In order to study the algal biodiversity two sampling stations were chosen. Algal samples were collected from two stations in sterilized bottles and were brought to the laboratory. All the collected samples were preserved in 4% formalin and were examined under binocular microscope for identification. Identification was done with the help of standard literature. The genera identified majorly belonged to the classes, *Chlorophyceae Cyanophyceae* and *Bacillariophyceae*. Observations revealed that *chlorophycean* members were dominant followed by *Cyanophycaean* and *Bacillariophycean* members.

Key words: Planktonic Diversity, Agraharam lake, Karimnagar.

Introduction: Studies related to aquatic and wetland flora and phytoplanktonic distribution were Globally studied earlier by Mirashi,1954, Sen and Chaterjee,1959; Vyas,1964; Mishra,1974; Phytoplankton functions as the primary producers in wet lands by fixing the energy and its subsequent transfer to higher trophic levels by (Wetzel, 1983). Phytoplankton in wetland ecosystem acts as primary producers and forms a bulk of food as well as host for zooplankton, fishes and other organisms (Waniek and Holliday, 2006).

Agraharam is a holy place in Vemulawada mandal of Karimnagar district in Telangana State. The lake is locally called as "Kandulonikunta." Lake was built by local people 200 years ago. Agraharam is a famous village localized by lord Hanuma who was the greatest devotee of Lord Sri Raama. This Lake is on the way of Karimnagar - Kamareddy. Also it is the small neighborhood village of Vemulawada mandal which is known as "Dakshina kaashi", as it is popular with the Lord Sri Raja Rajeshwara swami (Lord Shiva) Temple.

Source of water in the Agraharam lake is rainfall , utilized for agriculture purpose Depth of the lake is 10ft and width is 5.3kms. Nowadays, inflow of water has been decreased and current depth is nearly 4 to 6ft only. On this lake much attention was not paid by ecologists, botanists and specially algologists as such, and moreover the scientific approach was not holistic.

In the present study an attempt was made to measure the phytoplonktonic diversity of Agraharam lake.

Phycological analysis of water samples and periodic observations were made during the study period Aug-2013 to Nov-2013 and different groups of algae were identified. The algae prefers the habitat like free floating in the water column (Planktonic). These comprise the microscopic unicellular algae and colonial and filamentous algae, known as "Phytoplankton". These may be single celled or small colonial and filamentous species growing out in to the water column but attached to a substrate at one point. Algae are the important part of the food web and provide shelter to other organisms. These are the major part in aquatic ecosystems.

A number of investigations were carried out on seasonal Phytoplanktonic diversity of Kitham lake, Agra By Tiwari, A., and S.V.S. Chauhan. (2006). Phytoplankton diversity in relation to abiotic factors of a pond at Bagalpur, India. By Saha, L.C. and S.K. Choudhary. (1985). And Algal flora of Banjara and Nadimi lakes. By Johnson, M.E.C.(2006); Fritsch (1935); Iyengar and Venkatramann(1951) observed seasonal succession of the Coover river of Madras with special reference to *Diatomaceae*. In the present study algal flora and phytoplanktonic distribution of Agraharam lake was measured.

Material and Methods:

Study Site: Karimnagar district lies between 18°28′ northern latitude and 79°06' Eastern longitude. Agraharam lake , located at Agraharam village, vemulawada mandal, Karimnagar District, of Telangana state, India was chosen to study phytoplanktonic diversity.

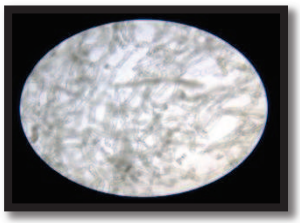
Sample Collection and Preservation: Algal samples were collected from surface and bottom of the lake in sterilized bottles by using algal samplers and preserved in 4% of formalin for further identification at Dept of Botany, Telangana University, Dichpally, Nizamabad.

Identification: The algal samples were further identified with the Standard literature and other related research books like Fritsch(1935), Presscott (1951), Desikachary, Venkatramann (1951) ,Smith (1950) and Philipose (1967). Microphotographs of identified algal genera were taken by the help of Sony 16 mega pixels digital camera attached to the binocular microscope. The algal Genera identified is presented in **Table -1** and few microphotographs are shown in **Fig -2**

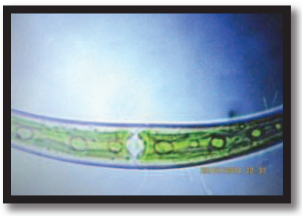
TABLE 1

CHLOROPHYCEAE	*Chlamydomonas, Chlorella, Volvox, Pediastrum, Hydrodictyon, Spiorogyra, Zygnema, Closterium, Cosmarium*
CYANOPHYCEAE	*Anabaena, Nostoc, Gleocapsa, Lyngbya, Oscillatoria, Microcystis, Scytonema*
BACILLARIOPHYCEAE	*Navicula Pinnularia, Cymbella, Mastegloea, Amphiplura*

FIGURE: 2
MICROSCOPIC VIEW OF FEW ALGAL GENERA IDENTIFIED IN AGRAHARAM LAKE
CHLOROPHYCEAE

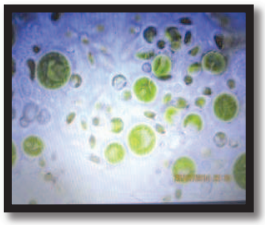


Hydrodictyon

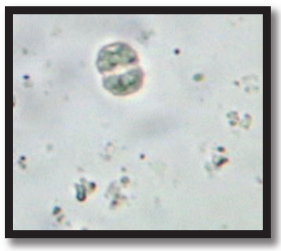


Closterium

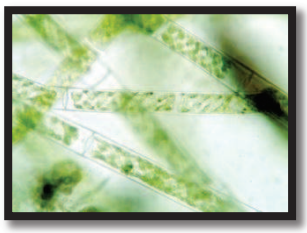
Scenedesmus



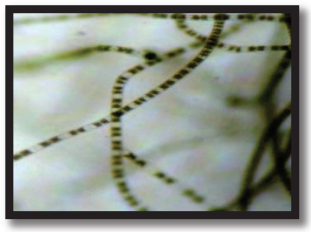
Chlorella



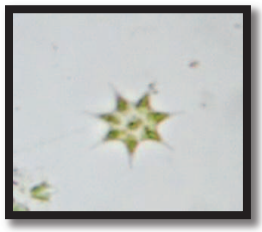
Chroococum



Spirogyra

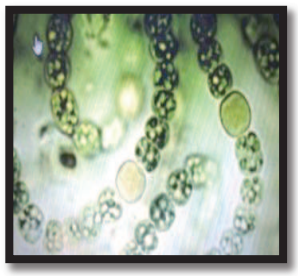


Zygnema

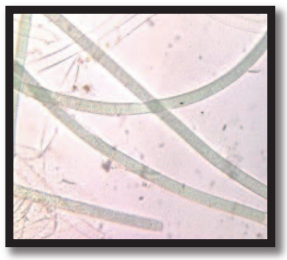


Pediastrum

CYANOPHYCEAE



Nostoc



Anabaena

Microcystis

Lyngbya

BACILLARIOPHYCEAE

Cymbella affinis

Pinnnularia stauroptera Grun.

Results and Discussion: The main groups of algae found in fresh water are green algae, diatoms, desmids, euglenoids, and *Cyanophycean* members. *Chlorophycean* members are *Chlamydomonas, Chlorella, Volvox, Pediastrum, Hydrodictyon, Spiorogyra, Zygnema, Closterium, Cosmarium* and *Cyanophycean* members like *Anabeana, Nostoc, Gleocapsa, Lyngbya, Oscillatoria, Microcystis, Scytonema* were abundant *Bacillariophycean* members present were *Navicula , Pinnularia, Cymbella, Mastegloea, Amphiplura* and *Euglenoids* like *Euglena, Phacus* were recorded during the study period.

The study has revealed that the selected lake had a diversified algal flora in which Chlorophycean members were dominant followed by Cyanophycean and Bacillariophycean members

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