

Diversity of Phytoplankton in Yerracheruvu Siddipet District, Telangana

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Abstract: *Phytoplankton are the Autotrophic components of the plankton Community and a key part of ocean and fresh water ecosystems. Phytoplankton obtain their energy through Photosynthesis as do trees and other plants on land this means phytoplankton must have light from the sun, so they live in the well-lit surface areas of ocean and lakes. Phytoplankton form the base of marine and fresh water food webs and are key players in the global carbon cycle. Phytoplankton are diverse, varying from photosynthesizing bacteria to plant-like algae to armour-plated Coccolithophores. Important groups of phytoplankton includes Diatoms, Cyanobacteria & Dinoflagellates. Most phytoplankton are too small to be individually seen with naked eye. When present in high enough numbers some varieties may be noticeable as colored patches on water surface due to presence of chlorophyll and accessory pigments in some species. They provide food for many fish species and play a key role in aquatic food web. A total number of 10 species are identified from the Yerracheruvu. This was the systemic survey on the phytoplankton diversity of a Yerracheruvu lake of Siddipet District, Telangana State 502103.*

Keywords: Phytoplankton, Spirogyra, Nostoc, Volvox, Oscillatoria, Chlamydomonas, Diatoms, Cyanobacteria, Dinoflagellates, Anabaena, Red Algae, Brown Algae, Global Carbon Cycle, Autotrophic.

1. Introduction

Phytoplankton serve as the base of the aquatic food web providing an essential ecological function for all aquatic life. These are Autotrophic organisms. There are 20,000 species of phytoplankton distributed globally among 8 major taxonomic groups. They range in size from less than 1µm to greater than 100µm. The distinct phytoplankton groups have different primary function in the ecosystem. Regionally there are 143 species are present in India at all the latitudes between 11°N and 20°N. Seasonally, monsoon season recorded more number of phytoplankton (193) species. They are very sensitive to environmental changes and thus considerable potential value as water quality indicators. Phytoplankton provides the main food for fin, shell fishes & juvenile and can be used as indicators of the trophic status of a water body. Phytoplankton have been used as indicators of the eutrophication.

2. Material and Methods

In the present study we carried out phytoplankton during the year December 2022 - January 2023. Water samples are collected in different zones of the Yerracheruvu during an early hours of the day 7:00 am to 10:00 am, the phytoplankton net is made by the Bolting Nylon Silk (mesh size 20µ - 45µ) is used for collection of phytoplankton and which is in conical shape. Collected samples were examined under microscope at central research lab at Government Degree & PG College (Autonomous) Siddipet, Telangana, India 502103.

3. Procedure of Examination

1) Water samples are collected in different zones of the Yerracheruvu during an early hours of the day 7:00 am to 10:00 am, the phytoplankton net is made by the Bolting Nylon Silk (mesh size 20µ - 45µ) is used for

collection of phytoplankton and which is in conical shape.

- 2) The collected samples were sealed and examined within two hours.
- 3) 1 ml of sample is taken on the slide for keen observation under magnus microscope which has 200X focal length.
- 4) During the examination we observed various families of Phytoplankton's
- 5) The phytoplankton is calculated by using the formula (Formula 1.0 Mentioned below).
- 6) With this we conclude that the families Zygnematales dominant than the other species in Yerracheruvu lake of Siddipet District, Telangana, India 502103.

The result of the sample is calculated by using the Formula

$$\text{Cells/mL} = \frac{\text{Cell count} \times \text{Total area of chamber}}{\text{Bottom/Length of Strip of the Counting Chamber} \times \text{width of strip of the counting chamber} \times \text{Volume of the Counting chamber}}$$

Formula 1.0

On an average we examined 15 slides, during the keen observation the average result is given below

S. No	Family	Name of the Species	In Number
01	Zygnematales	Spirogyra	~50
		Cosmarium	~12
		Closterium	~17
		Others	>50
02	Chlamydomonaceae	Chlamydomonas	~20
03	Volvocaceae	Volvox	~10
		Others	~20
04	Other families	Others	~19

4. Results and Discussion

The present study reports the phytoplankton diversity community of YERRACHERUVU. In the investigation

period we identified around Ten species of phytoplankton from various families it includes Zygnematales, Chlamydomonoc eae, Volvocaceae and other family species

have been identified. During the present investigation Zygnematales was dominant among all the phytoplankton's.

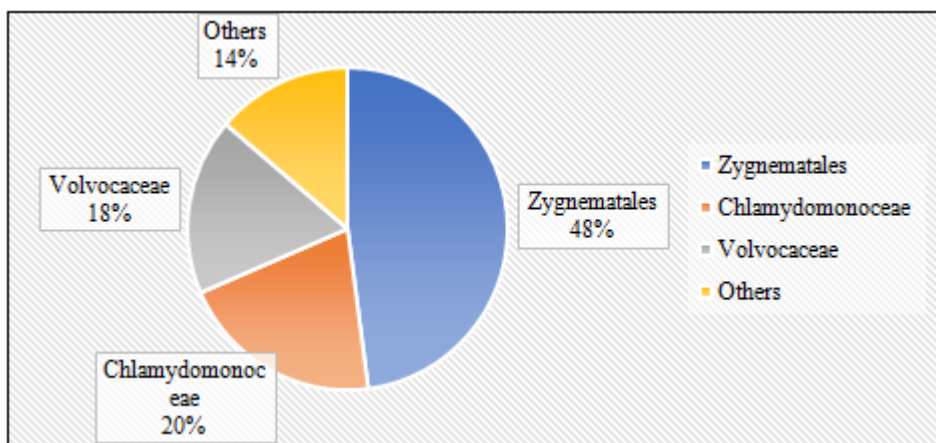
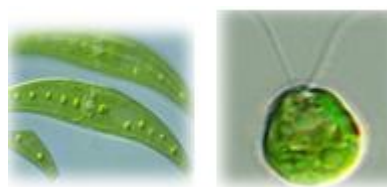


Figure 1.1

Phytoplankton plays a key role in aquatic food chain, energy passes into different trophic levels from planktons, hence these planktons are primary producers small fin and shell fishes feed on planktons due to microscopic in nature its easy to fed by filter feeders like mussels and bivalves. phytoplankton plays a major role in maintaining CO_2 in pond, the moment of planktons are observed during early hours because of low temperature these planktons are distributed at different trophic levels mainly present In photic zone.



Closterium Chlamydomonas

Phytoplankton

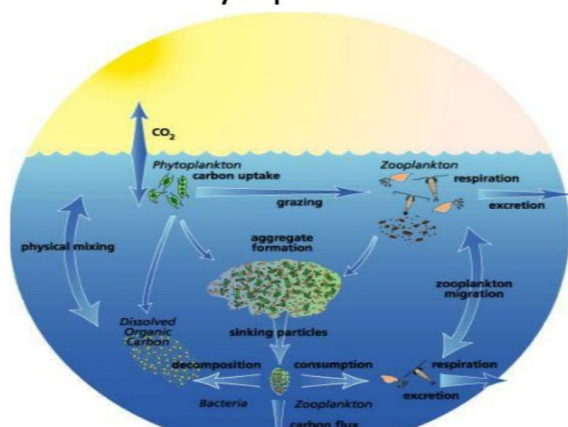
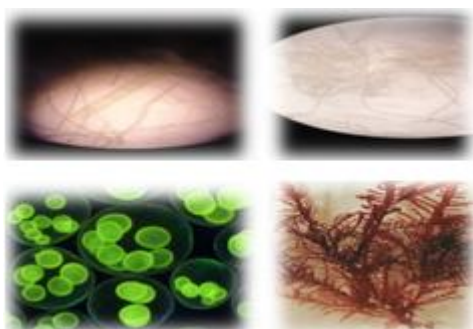


Figure 1.2



Spirogyra Cosmariumvolvox Gelidium species

5. Conclusion

Phytoplankton are most diverse microscopic organisms that live in water. They are key for aquatic ecosystem and productivity. The present study Article documents reports that the Zygnematales family of phytoplankton's are dominant than the other types of phytoplankton's are reported at Yerracheruvu lake of Siddipet District, Telangana.

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