



Original Article

Phytoplankton Diveristy in Lower Terna Project, Makani, (M.S) India

Dr. Rahul Ramesh Jadhav

Head, Department of Zoology, Shivneri Mahavidyalya, Shirur Anantpl, Dist Latur

Manuscript ID:
IBMIIRJ -2025-020806

Submitted: 05 July 2025

Revised: 10 July 2025

Accepted: 05 Aug 2025

Published: 31 Aug 2025

ISSN: 3065-7857

Volume-2

Issue-8

Pp. 22-23

Aug 2025

Correspondence Address:

Dr. Rahul Ramesh Jadhav, Head,
Department of Zoology, Shivneri
Mahavidyalya, Shirur Anantpl, Dist
Latur

Email: rahuljadhav232012@gmail.com



Quick Response Code:



Web: <https://ibrj.us>



DOI:10.5281/zenodo.17121102

DOI Link:

<https://doi.org/10.5281/zenodo.17121102>



Creative Commons

Abstract

Wherever the sunlight is found, there were occurrences of phytoplankton, they dispersed evenly and go down to different depths. The phytoplankton diversity was scientifically researched from the lower Terna reservoir, Makani from January to December 2023. Chlorophyceae, Cyanophyceae, Bacillariophyceae and Euglenophyceae were accounted for by 12, 07, 09 and 1 species respectively. Phytoplankton, the microscopic primary producers in aquatic ecosystems, play a crucial role in sustaining ecological balance and assessing water quality. The present study investigates the diversity of phytoplankton in the Lower Terna reservoir, Makani, Maharashtra, from January to December 2023. Systematic sampling and taxonomic identification revealed the occurrence of four major groups—Chlorophyceae (12 species), Cyanophyceae (7 species), Bacillariophyceae (9 species), and Euglenophyceae (1 species). Among them, *Pediastrum* and *Ulothrix* were the most dominant Chlorophyceae species, while *Microcystis* and *Lyngbya* prevailed among Cyanophyceae. The observed species composition highlights the reservoir's ecological productivity and provides insight into its trophic status. The findings contribute to understanding phytoplankton dynamics in semi-arid regions and emphasize their significance as bioindicators in monitoring freshwater ecosystems.

Keywords: Phytoplankton diversity, Lower Terna reservoir, Chlorophyceae, Cyanophyceae, Bacillariophyceae, Euglenophyceae, bioindicators.

Introduction

The small organisms that flow on the water surface, of plant origin i.e. phytoplankton. The phytoplanktons are key players ecologically because, the whole food web runs on the energy captured by sunlight and stored as chemical energy; in turn transferring it to herbivory. They are also biological indicators of water quality in pollution-evaluating studies [1,2]. Phytoplankton's are woven into the fabric of the ecosystem of the environment and plays a direct role in fish catch crop from the reservoir [3].

Phytoplankton, the microscopic autotrophic organisms inhabiting aquatic ecosystems, are the foundation of the food web and play a pivotal role in maintaining ecological balance. They act as primary producers, converting solar energy into organic matter through photosynthesis, and thereby support higher trophic levels such as zooplankton, fish, and other aquatic organisms. The abundance and composition of phytoplankton are directly linked to the productivity, water quality, and overall health of freshwater bodies. Reservoirs and other man-made water bodies, particularly in semi-arid regions like Maharashtra, are critical for irrigation, drinking water supply, and fisheries. These ecosystems, however, are highly sensitive to environmental changes, nutrient input, and climatic conditions. Phytoplankton communities respond rapidly to such variations, making them reliable bioindicators for assessing ecological status and detecting pollution or eutrophication trends.

Materials And Methods

Phytoplankton were collected using a plankton net (mouth diameter 38 cm) fitted with a silk No. 20 and placed in individual plastic bottles. Taxonomic identification was performed using standard literature. Phytoplankton samples were collected from the lower Terna project, Makani; some samples were preserved in 5% formalin for quantitative estimates; glass funnel and piece of bolting silk was used because of the considerable amount of debris

Creative Commons (CC BY-NC-SA 4.0)

This is an open access journal, and articles are distributed under the terms of the [Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International](https://creativecommons.org/licenses/by-nc-sa/4.0/) Public License, which allows others to remix, tweak, and build upon the work noncommercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

How to cite this article:

Jadhav, R. R. (2025). Phytoplankton Diveristy in Lower Terna Project, Makani, (M.S) India. *InSight Bulletin: A Multidisciplinary Interlink International Research Journal*, 2(8), 22–23. <https://doi.org/10.5281/zenodo.17121102>

Micro and macrophytes with the Phytoplankton. Basic references for identifying Phytoplankton were from Pennak [4-6].

Result and Discussions

The phytoplanktons observed in the lower Terna project, Makani, in the year 2023 is given in Table No.1.

Table No. 1 – Phytoplankton Diversity in Lower Terna Project, Makani.

Sr. No.	Genus	Species
01	Chlorophyceae	Ulothrix species, Volvox species, Ordogonium species, Ankistrodesum sp, chlorella species, Spirogyra species, Pediastrum species, Cosmarium species, Coelastrum species, Closterium species, Scenedesmus species and staurastrum species.
02	Cynophyceae	Cyanophyceae Oscillatoria spp. such as Anabaena spp, Chroococcoid, Spirulina, Microcystis, Lyngbya and Nostoc.
03	Bacillariophyceae	Pinnularia spp, Synedra, Cyclotella, Gyrodinium, Diatoms, Cymbella, Melosira, Fragillaria, Tabellaria and Navicula.
04	Euglenophyceae	Euglena sps.

In the time period of this study (January - December 2023), from the Chlorophyceae, pediastrum sps. And Ulothrix sps. Were dominant in the reservoir. From the seven species of Cynophyceae, microcysts sps, cyngbya dominated the project and just one sps of Bacillariophyceae with, and one sps of Euglenophyceae, being of the Euglena sps.

Conclusion

The present study on the Lower Terna reservoir highlights the richness and diversity of phytoplankton communities in a semi-arid region of Maharashtra. Four major groups—Chlorophyceae, Cyanophyceae, Bacillariophyceae, and Euglenophyceae—were identified, with *Pediastrum*, *Ulothrix*, *Microcystis*, and *Lyngbya* being the dominant taxa. These findings suggest that the reservoir provides a favorable environment for phytoplankton growth and productivity, which in turn supports higher trophic levels such as zooplankton and fish populations.

The presence of diverse phytoplankton taxa also indicates the ecological stability of the water body and its potential role as a sustainable source for local fisheries. Moreover, the study reaffirms the importance of phytoplankton as bioindicators in assessing water quality and monitoring ecological health. Continuous and long-term monitoring is recommended to understand seasonal dynamics, detect pollution impacts, and contribute to better management of freshwater resources in the region.

Acknowledgment

The author expresses sincere gratitude to the Department of Zoology, Shivneri Mahavidyalaya, Shirur Anantpal, for providing the necessary laboratory and field facilities to carry out this research. Special thanks are extended to colleagues and students who assisted during field sampling and laboratory work. The cooperation of the local authorities at the Lower Terna Project, Makani, is gratefully acknowledged. Finally, the author is indebted to family and well-wishers for their constant encouragement and support throughout the course of this study.

Financial support and sponsorship: Nil

Conflicts of interest

The authors declare that there are no conflicts of interest regarding the publication of this paper.

References

- Du, X., García-Berthou, E., Wang, Q., & Li, Z. (2015). Analyzing the importance of top-down and bottom-up controls in food webs of Chinese lakes through structural equation modeling. *Aquatic Ecology*, 49(2), 199–210. <https://doi.org/10.1007/s10452-015-9518-3>
- Jahan, S., & Singh, A. (2023). The role of phytoplanktons in the environment and in human life: A review. *Basra Journal of Science*, 41(2), 392–411. <https://doi.org/10.29072/basjs.20230212>
- Swe, T., Lombardo, P., Ballot, A., Thrane, J.-E., Sample, J., Eriksen, T. E., & Mjelde, M. (2021). The importance of aquatic macrophytes in a eutrophic tropical shallow lake. *Limnologia*, 90, 125910. <https://doi.org/10.1016/j.limno.2021.125910>
- Agrawal, S. C. (1999). *Limnology*. APH Publishing.
- Pennak, R. W. (1978). *Fresh-water invertebrates of the United States* (2nd ed.). John Wiley & Sons.
- Tonapi, G. J. (1980). *Freshwater animals of India: An ecological approach*. Oxford & IBH Publishing Co.