

HYDROBIOLOGICAL STUDIES OF A FRESH WATER LAKE IN TELANGANA STATE WITH SPECIAL REFERENCE TO ALGAL DIVERSITY

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Abstract: The present work was undertaken to discern the algal diversity of a lake, komaticheruvu located in Medak district of Telangana State. A systematic survey was conducted for a period of one year and samples were collected during June, 2013 - May, 2014. The collected samples were preserved in the laboratory. Special emphasis was made to identify the taxa. Digital images of various taxa were taken with the help of a digital camera attached to the microscope and were then transferred to computer for further analysis.

A total of 35 species identified belonged to Chlorophyceae (15 species), Bacillariophyceae (8 species), Cyanophyceae (10 species) and Euglenophyceae (2 species). It was observed that Chlorophycean members were dominant followed by Cyanophycean and Bacillariophycean members.

The present investigation includes a systematic study on the algal biodiversity of Komaticheruvu in Medak district, which is an unexplored region enriched with great many number of algal species.

Key words: Algal diversity, Komaticheruvu lake, Medak district, Telangana State.

Introduction: Aquatic environment supporting hydrophytic vegetation is endowed with luxuriant growth of algae. Algal role in oxygenation of water, binding and removal of certain toxic substances are crucial for water quality improvement. The rapid rise in population and speedy industrialization on a large scale has placed an ever increasing demand on lakes, reservoirs, ponds and rivers for the provision of potable or drinking water, fish production as well as depositories or store houses of wastes and sewage effluents. It is the urgent need of the hour to conserve biological diversity.

Knowledge of ecology of lentic water bodies like ponds, lakes and reservoirs provide an important tool for their scientific management. Considerable amount of work has been done in India about systematic survey, distribution, productivity and ecology of algae in different habitats. (Pandey, 1973; Kumar et al. 1974; Prasad and Suxena, 1980; Mohan et al. 1989). A number of investigations were carried out on fresh water lakes of Peninsular and continental Antarctica. Hirano, 1965; Heywood, 1977; Longton, 1973; Seaburg et al. 1979; Iyengar and Venkatraman 1951 observed seasonal succession of the Coover river of Madras with special reference to diatomaceae. Cyanophycean diversity has been extensively studied throughout India. (Tiwari et al. 2001; Pattnaik and Adhikary, 2002; Chatterjee and Keshri, 2005).

Biodiversity of algae from various aquatic habitats of lentic environment has been studied extensively in India but only limited work was carried out in Telangana State. To fulfill the lacuna in this field, the present investigation was carried out by selecting Komaticheruvu in Medak District.

Materials and Methods: Medak, one of the 10 districts of Telangana State lies between 17° 27' and

18° 18' Northern latitude and 77° 28' and 79° 10' of Eastern longitude. Komaticheruvu is located in Kondapak mandal in Siddipet region of Medak District, which lies at 18.00 N, 78.53 E coordinates. Hydrobiological studies of Komaticheruvu lake with respect to algal biodiversity was not reported earlier. As this is the first report, monthly collection of algal samples were made for a period of one year from June, 2013 - May, 2014. Plankton were collected by filtering 20 liters of water through a plankton net made up of fine bolting silk meshes. Algal samples were collected in sterilized bottles and preserved in 4% formalin.

All the preserved samples were examined under research microscope and further identified with the help of standard literature on algae. (Fritsch, 1935; Smith, 1950; Prescott, 1951; Philipose, 1959; Desikachary, 1959 and Anand, 1989.)

Results and Discussion: List of algal flora identified from Komaticheruvu is depicted in Table 1:

In the present investigation a total number of 35 species of fresh water algae belonging to Cyanophyceae, Chlorophyceae, Bacillariophyceae and Euglenophyceae have been recorded. Out of 35, 10 species of them belonged to Cyanophyceae, 15 species belonged to Chlorophyceae, 8 species belonged to Bacillariophyceae and only 2 belonged to Euglenophyceae. Few of pollution tolerant species such as *Oscillatoria*, *Scenedesmus*, *Cosmarium*, *Closterium Anabaena* and *Gomphonema* were also present in this lake. Thus they can be considered as bioindicators of pollution. Algal diversity is an excellent indicator of water quality. When quality of water is good the species of algae that live in it will be diverse (Anonymous, 2006).

The results obtained confirm with the finding of earlier workers. Thirteen algal species under

Cyanophyta, Chlorophyta and Euglenophyta were documented from a reservoir in Srinagar (Gharwal), Uttaranchal.(Chaturvedi and Habib,1990)

Since nutrients are in appreciable amounts in this lake , it is understood and very clear that this lake is

undergoing eutrophication. The abundance and biodiversity of the algal forms indicate trophic status of water body and is eutrophic in nature.

CHLOROPHYCEAE	<i>Pediastrum duplex</i> , <i>Pediastrum simplex</i> <i>Chlorella vulgaris</i> , <i>Oocystis spp</i> , <i>Volvox spp</i> <i>Scenedesmus acuminatus</i> , <i>Euastrum spp</i> <i>Hydrodictyon reticulatum</i> , <i>Staurastrum spp</i> <i>Selenastrum bibraianum</i> <i>Closterium acutum</i> <i>Chlamydomonas spp</i> , <i>Cosmarium corda</i> <i>Pandorina morum</i> , <i>Ankistrodesmus falcatum</i>
CYANOPHYCEAE	<i>Chroococcus minimus</i> , <i>Gloecapsa spp</i> , <i>Microcystis aeruginosa</i> , <i>Anabaena spp</i> , <i>Oscillatoria amphigranulata</i> , <i>Anabaenopsis spp.</i> , <i>Nostoc</i> , <i>Spirulina spp</i> , <i>Cylindrospermum spp</i> , <i>Scytonema spp.</i>
BACILLARIOPHYCEAE	<i>Cyclotella spp</i> , <i>Synedra ulna</i> , <i>Navicula cuspidate</i> , <i>Pinnularis gibba</i> , <i>Cymbella affinis</i> , <i>Nitzschia acicularis</i> , <i>Amphora spp</i> , <i>Melosira spp.</i>
EUGLENOPHYCEAE	<i>Euglena acus</i> , <i>Euglena viridis</i>

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