

A Case Study :

Qualitative study of phytoplankton and zooplankton in upper lake, Bhopal

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Qualitative study of phytoplankton and zooplankton in the upper lake of Bhopal during July 2004 to June 2005, was studied. Phytoplankton composed of 9 species of Chlorophyceae, 5 species of Bacillariophyceae, 6 species of Cynophyceae, Euglenophyceae, Charophyceae and Zooplankton composed of 3 species of protozoas, 5 species of Rotifers, 8 species of Crustaceae and Meroplankton organisms mainly consisting of insects. The major phytoplankton and zooplankton species which created problem in the water treatment as observed were *Spirogyra*, *Ulothrix*, *Cyclotella*, *Syndera*, *Microspora* etc. Zooplanktons as indications of eutrophication as observed were *Daphnia*, *Amoeba*, *Euglena*, *Mesocyclops*, *Dapharosoma*. Meroplanktonic organisms decreased from upstream to down stream regions.

Key words : Phytoplankton, Zooplankton, Meroplanktonic, Upper lake, Ulothrix, Cyclops.

INTRODUCTION

The upper lake of Bhopal which is the largest reservoir is illmanaged, a large number of houses and slum dwellers are located on the lake site. Number of activities such as agriculture, sewage disposal, religious emmersion etc. are going on which result in accumulation of residual fertilizers, pesticides, waste water along with clay, paper wood, heavy metal etc.

The negligence of lake management results in its nutrient enrichment consequently blooming of algae and aquatic vegetations as well as eutrophication often interfere with the treatment procedures in the fourteen work units. Different organisms are retained in the sedimentation tanks creating its logging thereby increasing the cost of water treatment (Tamot and Bhatnagar, 1988). The phytoplanktonic forms of algae from different water bodies of M.P. have been described by various workers (Agarkar, 1967a,b; 1969; Desikachary, 1959; Mahajan 1987; Singh 1997, 1999; Singh and Singh, 2002). But still a lot remains to be done with respect to phytoplankton of water bodies located in far off places. Zooplankton is the intermediate link between phytoplankton and fish which are secondary producers in aquatic environment. It contains both herbivores and carnivores, the latter belonging to the tertiary producers, or even to some higher level of production. A knowledge of their abundance, composition and seasonal variation, therefore, is an essential prerequisite for any successful aqua culture programme. Among the zooplankton, rotifers are

apparently the most sensitive indications of water quality reported by (Sheeba *et al.*, 2004). Hence, qualitative study of phytoplankton and zooplankton is of great importance in the present contest of Bhopal, upper lake because this may help to assess the environmental degradation.

MATERIALS AND METHODS

One litre of water sample was collected from surface and kept for sedimentation in glass bottle. The algae samples were preserved in formaline and brought to the laboratory for study. Identification of phytoplankton and zooplanktons was mainly based on standard recent publication, standard books and monographs (Prescott, 1951; Desikachary, 1959; Adoni *et al.*, 1985; Palmer, 1980; APHA, 1985 and Battish, 1992.)

RESULTS AND DISCUSSION

Qualitative analysis of phytoplanktons and zooplanktons was made and members of Chlorophyceae, Cyanophyceae, Bacillariophyceae, Euglenophyceae, Charophyceae, Protozoas, Rotifera, Crustacea, and Meroplankton were identified.

Chlorophyceaes :

A. tinastrum, *Chlamydomonas*, *Closteridium*, *Cusmarium*, *Microspora*, *Spirogyra*, *Ulothrix*, *Oedogonium*, *Volvox*.