

**Abstract of the PhD Thesis**  
**A COMPARATIVE STUDY ON THE FRESHWATER ALGAL COMMUNITY FROM MAIN RIVERS IN PALAKKAD DISTRICT**

Phytoplankton are the most beautiful and valuable components of aquatic ecosystem. They are indispensable regulators of water quality and quantity. In freshwater ecosystems, algae are taxonomically diverse, very resourceful and play an important role in worldwide ecology help to port organisms and generate oxygen into the environment utilized by organisms in all trophic levels. The algal study opens the possibility of fruitful combinations of physical, chemical, and biological measurements resulting in the relevant information. Analysis of water samples reveal the presence of total of 257 taxa belonging to 70 genera, 26 families, 9 order and 6 classes namely Chlorophyceae, Xanthophyceae, Bacillariophyceae, Euglenophyceae, Cyanophyceae and Dinophyceae were identified from the 10 stations. The Chlorophyceae, Bacillariophyceae and Euglenophyceae were the major group in the present study. *Micrasterias laticeps* var. *acuminata* is a new species to India and 11 species are new to Kerala. Out of the 257 taxa, 88 species to Chlorophyceae, 1 species to Xanthophyceae, 74 species to Bacillariophyceae, 69 species to Euglenophyceae, 24 species to Cyanophyceae and 1 species to Dinophyceae. The most frequent taxa belong to the class Bacillariophyceae are *Synedra ulna*, *Aulacoseira granulata*, *Navicula cuspidata* and *Fragilaria intermedia*. Quantitative analysis of phytoplankton also showed maximum at Malampuzha during May and least occurrence at stations Mukkali and Seenkara during the month of June. Highest Shannon index value was obtained from Malampuzha during May and least at Mukkali station during June. The same result is observed in Simpson diversity index and species richness. The CCA ordination plot explained temperature, pH and TDS have significant influence on abundance and composition of organisms during months in pre monsoon and have effect on the abundance of only Bacillariophyceae and Euglenophyceae. The taxonomy and ecology of freshwater algae revealed that the river ecosystem of Palakkad district is moderately polluted and high organic pollution occurs in some regions such as Malampuzha, Kalpathy and Kannnadi. Appropriate afforestation packages along the river basins, renovation of river margin vegetation, controlled mining of the sand, sustainable use of the resources of the river are crucial to conserve this freshwater body. The results are discussed and the major conclusions were given in the thesis as a separate chapter.

**Key words:** Algal diversity, Physico chemical parameters, Palakkad district, Pollution monitoring, Diversity indices