Biodiversity Assessment of Algae in Chilika Lake, East Coast of India

J. Rath and S.P. Adhikary

Post Graduate Departments of Botany & Biotechnology
Utkal University, Bhubaneswar - 751004

1. INTRODUCTION

Chilika is the largest brackish water lagoon in Asia situated in the east coast of India between 19°28' and 19°54' N latitude and 85°06' and 85°35' E longitude. The lagoon is an estuarine one and supports an unique assemblage of marine, brackish water and freshwater species. Algal flora of Chilika lake has been studied several times during the last century. Most of these works were repetitive in nature and none of the authors have studied the algae of the lagoon in every season covering the entire catchment area in a particular year. Further, there is also no report available containing information about all the algal forms including both macro- and micro-algal species occurring in the Chilika lake during a particular time covering a year, and also no detail taxonomic account of each of the species available. Therefore, the algal forms occurring throughout the lake in different seasons for two consecutive years were surveyed with a view to study the different algal forms occurring in the lake. Macro-algae as well as phytoplankton were collected in several collection trips during 2000-2001, analyzed and an authentic algal distribution map of the lake was prepared.

2. MATERIALS AND METHODS

Study of algal diversity in Chilika lake was carried out for two consecutive years during 2000 and 2001. All the intertidal regions along the shore line including periphery of the islands, rocks, pebbles, logs and fishing nets etc. of all the four sectors were surveyed in all the three seasons. Macroscopic algal samples were immediately preserved after collection in 4% formalin on the spot. Micro-algae were collected from 24 stations covering all the four sectors of the lake (Fig. 1) at regular intervals using a 10 mm and 20 mm mesh size KC Denmark phytoplankton net. These were not preserved using
any preservatives, as they are quite sensitive to these chemicals leading to bleaching of pigments. Thus they were placed in an ice carrier and analyzed soon after reaching the laboratory. Sample number was given to each species following the first letter “C” as Chilika lagoon, the sectors (S, Ce, N, O) as, Southern, Central, Northern and Outer channel sectors respectively, then the first letter of the collection site, sample no. and date of collection in sequence.

Figure 1: Map of Chilika lake with station locations.

Herbarium of all the macro-algae was prepared and kept in the herbarium of the P.G. Department of Botany, Utkal University, Bhubaneswar. Photographs of all the species and microphotographs of the microscopic forms were taken in a Meiji ML-TH-05 trinocular research microscope fitted with F-50 Nikon camera. Camera lucida diagram of each of the microscopic forms and hand drawing in case of macro-algal form were drawn. Measurement of length and breadth of the microscopic forms was recorded with standard Erma micrometers. The morphological features of each species was compared with the standard keys and literature available in monographs and research publications (Biswas, 1932; Subrahmanyan, 1946; Prescott, 1954; Desikachary, 1959; Paragallo, 1908; Desikachary, 1989; Desikachary et al., 1990, 1998; Cox, 1996; Thomas, 1997 and Krishnamurthy, 1999) and identification was made up to species level. All the species encountered in the study were listed with correct author citation and family name. Most commonly used synonyms and/or names appearing in recent literature have