Ecology of Phytoplankton in Tropical Waters: Introduction to the Topic and Ecosystem Changes from Sri Lanka

E.I.L. Silva

Institute for Fundamental Studies, Hantana Road, Kandy, Sri Lanka
✉ sil@ifs.ac.lk

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Abstract: Some aspects of ecology of phytoplankton in four distinct types of standing water bodies were diagnosed using the outcome of a long-term study conducted in Sri Lankan reservoirs on species composition and richness, temporal and seasonal patterns in relation to environmental variables. Nearly 150 taxa belonging to nine taxonomic groups were identified of which some have been reported in previous studies. The numerical analysis of the overall species lists shows that the taxonomic composition, species richness and sequential periodicity varies largely among different types of environments with higher resemblance for water bodies located at comparable eco-regions with similar morphological, hydraulic, hydro-chemical and trophic features. Relative abundance and species spectrum can be used to classify the water bodies into oligo-mesotrophic (large and deep canyon-shaped, newly built hydropower reservoirs), meso-eutrophic (dry zone irrigation tanks) and eutrophic-heterotrophic (urban water bodies) which show distinct annual trophic alteration influenced by monsoonal rainfall. Unlike in temperate regions, they exhibit non-rhythmic successional episodes, some prefer specific chemical environment and some taxa become more stable when essential nutrients are in surplus. The numerical dominance or biomass is not regulated by grazing but a large amount of phytoplankton biomass is lost during water release from the euphotic zone.

Key words: Tropical phytoplankton, pantropical, species richness, seasonality, Sri Lanka.