

**SEASONAL VARIATION IN SPECIES COMPOSITION,
ZONATION AND BIOMASS OF AQUATIC
MACROPHYTE COMMUNITIES IN THE
IRRIGATION TANKS OF SRI LANKA**

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REFERENCE ONLY

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ABSTRACT

The monthly changes in species composition, distribution of species and zonation and the biomass of species in aquatic macrophyte communities in irrigation tanks in the three climatic zones (described by Phillips 1980) of Sri Lanka were studied. The communities selected were located in Nidigama tank, Kekirawa; Wanaru wewa, Kurunagala ; Heiyanthuduwa tank, Biyagama and Lake Gregory, Nuwara Eliya. The species composition at each site was recorded in thirty randomly placed quadrats. The distribution of species and zonation patterns were recorded along two permanent transects (cover values at one meter intervals were recorded according to a modified Braun - Blanquet scale). For the determination of biomass, macrophytic species found within randomly placed, .25 square m. quadrats along a uniform depth line were harvested and the dry weight was estimated. The water depth, secchi depth, water temperature, turbidity, pH, conductivity, phosphate and nitrate levels of water, alkalinity dissolved oxygen, BOD, and chlorophyll-a values of waters were also recorded.

The Nidigama tank and the Wanaru wewa recorded a total of fifteen species belonging to twelve families and fourteen species belonging to thirteen families respectively, Heiyanthuduwa tank recorded a total of eighteen species belonging to 13 families and Lake Gregory recorded a total of ten species belonging to nine families.

The exposure of sediment during drought was mainly responsible for the changes in species composition in the communities of Heiyanthuduwa tank and Nidigama tank. The reappearance of species after drought depended on the germination of seeds and turions and also on the formation of land forms during the drought. The changes of pH is also important and in addition, the completion of life cycle and the

competition for light and space are the possible reasons for the disappearance of some species.

The occurrence of floating leaved forms beyond the submerged forms was observed in three study sites (except in Lake Gregory) and under water light penetration was responsible for this. The distribution of species and zonation pattern changed with the lowering of water level during the drought

The increase of *Hydrilla verticillata* biomass and decrease of *Nymphaea lotus* biomass in Nidigama tank was attributed to the increase of pH and DO. The change of the floating leaved forms dominated community into submerged forms dominated community was highly significant and was a reversal of the typical seral changes. The significant negative correlations of *Hydrilla verticillata* and *Potamogeton natans* of Wanaru wewa with phosphate and nitrate respectively, and the complete elimination of *H. verticillata* from the water mass after drought were striking features.

The biomass of macrophytes in the three climatic zones were not correlated significantly with rainfall values (or water depth) indicating that biomass was not affected by seasonal rainfall pattern.