Status of Aquatic Plants in Selected Tanks in the Anuradhapura District

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Anuradhapura is an ancient city of Sri Lanka, with many tanks infested by aquatic macrophytes. These aquatic plants play a significant role in freshwater ecosystems while providing many benefits to the surrounding community. The present study focused on the distribution of aquatic plants with reference to physicochemical parameters of water in four seasonal tanks; Thirappane, Maradankadawela, Galkulama, and Thibbatuwewa for a period of four months. In addition, the potential for utilization of aquatic plants and the problems due to heavy infestations were studied.

A 1m x 1m quadrate was used for sampling of vegetation at 5 m intervals along a 30 m transect and the physico-chemical parameters of water were studied. A survey was conducted on the uses and problems associated with water plants by interviewing 50 people in the surrounding community using a structured questionnaire. Data were analyzed using a one way ANOVA and a CCA (Canonical Correspondence Analysis).

Forty two plant species belonging to 35 genera and 25 families including one endemic were encountered. There were 15 submerged, 14 emergent, 7 free floating and 6 floating leaved plants. Maradankadawela tank ranked first in diversity and high species richness followed by Thirappane, Galkulama and Thibbatuwewa, tanks respectively. There was a significant difference ($p<0.05$) in pH (6.2-7), turbidity (2.6-5.4 NTU), conductivity (167-978 $\mu s\ cm^{-1}$), hardness(52-512 ppm), dissolved oxygen (3.2-6.4 $mg\ l^{-1}$) biochemical oxygen demand (0.6-1.6 $mg\ l^{-1}$) and phosphate level (0.04-0.24 $mg\ l^{-1}$) between the sampled tanks. Dissolved oxygen and pH showed a positive correlation whereas biochemical oxygen demand, hardness, turbidity and phosphate levels showed a negative correlation with plant diversity. *Ipomoea aquatica, Nelumbo nucifera, Bacopa monnieri, Nymphea pubescens, Eichhornia crassipes* and *Typha angustifolia* are mainly used by the people as a source of food, medicine, flowers, ornamental plants, bio-fertilizer and weaving materials respectively. Explosive growth of aquatic vegetation create problems such as sedimentation, unsuitability for domestic use, interference with navigation, effects on fisheries, blocking irrigation canals and evapotranspiration.

High species richness in Maradankadawela tank is probably due to its undisturbed habitat, while the lowest diversity in Thibbatuwewa tank is possibly due to anthropogenic activities. Further research on the relationships of plant assemblages and water quality are important to identify culture conditions for economically valuable aquatic plants. Serious consideration should be given to sustainable utilization of aquatic plants in order to derive maximum benefits from these natural resources, while reducing the problems due to heavy infestations.