

**INFLUENCES OF RAINFALL, ATMOSPHERIC TEMPERATURE AND WATER LEVEL ON SUBMERGED AQUATIC MACROPHYTES' DIVERSITY IN IRRIGATION RESERVOIRS IN VAVUNIYA, SRI LANKA**

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Submerged aquatic macrophytes (SAM) live underneath the water surface and play a major role in ecosystem functions. SAM are susceptible to climatic change and human activities. Therefore, this study aims to find the influences of hydro – climatic factors on SAM diversity in irrigation reservoirs in Vavuniya. Most of these reservoirs play a major role in fishing and irrigation activities which also affect the SAM diversity and abundance in this region. Therefore, Thandikulam, Vavuniya and Mamaduwa reservoirs were randomly selected as the study sites and SAM were randomly collected from littoral peripheries by using rake, fortnightly from January to March 2020. Hydro-climatic data such as rainfall [RF] and atmospheric temperature [AT] were obtained from meteorology department and water level [WL] recorded by water gauge reading. Species identification were done by using standard guides and abundance were done by using quadrat (1m<sup>2</sup>). Total of 8 species were identified from these reservoirs and Shannon- diversity index (H) was estimated for each study sites. *Potamogeton sp*, *Aponogeton sp* and *Utricularia aurea* were common among Thandikulam and Mamaduwa reservoir. However, the abundance of *Utricularia aurea* was high in Mamaduwa reservoir. *Ceratophyllum demersum* abundance was very high in Thandikulam reservoir, but very low in Vavuniya reservoir. Thandikulam reservoir showed significantly ( $p = 0.043$ ) higher SAM diversity ( $H = 1.61$ ) than other reservoirs. Vavuniya reservoir showed the least diversity ( $H = 0.00$ ). Continuous removal of SAM via fishing gear in the littoral zone during higher WL (onset of RF) and over- extraction of water for irrigation (lower RF/ drought) may be the reasons for the lowest diversity in Vavuniya reservoir. SAM diversity showed an increasing trend with increasing RF and WL in all reservoirs. However, an increase in AT seems to suppresses the SAM diversity in all sites. These findings also co-inside with global literature and it revealed that hydro - climatic factors influence on the SAM diversity along with anthropogenic factors. Therefore, Continuous monitoring should be needed to understand the status of SAM distribution in this region.

**Keywords:** submerged aquatic macrophytes, reservoirs and hydro-climate