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Mapping Seagrass Distribution and Determining Species Composition in the Jaffna Peninsula, Sri Lanka: A Spatial Analysis

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Abstract

Seagrasses are marine angiosperms that grow under partially or fully immersed conditions and make up a crucial component in the coastal marine environment. However, seagrass ecosystems are under severe threat by natural and anthropogenic activities, which need to be managed. The spatial distribution and the species composition of seagrasses of the Jaffna peninsula are poorly understood. Therefore, the objective of this study was to estimate the spatial distribution and estimate the species composition and abundance (Ground cover) around the Jaffna peninsula. The fieldwork for this study was conducted in 300 m intervals along the coast. The percentage cover of seagrasses was recorded using Coral Point with Excel Extension (CPCe version 4.1) software to estimate their distribution pattern through ArcMap (version 10.8). Out of the fifteen-seagrass species found in Sri Lanka, seven species from six genera were recorded in the study area: *Cymodocea serrulata*, *C. rotundata*, *Halodule pinifolia*, *Syringodium isoetifolium*, *Thalassia hemprichii*, *Halophila ovalis*, and *Enhalus acoroides*. Also, the study showed that the Western part of the Jaffna (9.77N, 79.90E-9.65N, 80.04E) has the highest seagrass cover (91.9%) and the Southern part (9.65N, 80.04E-9.52N, 80.49E) had the highest species diversity (1.75) according to the Shannon-wiener diversity index. An average of (0.88) seagrass species diversity was observed in the Jaffna peninsula. The distribution pattern of seagrass species showed that there is a significant difference ($p<0.05$) in the mean percentage cover among the different sites. Through the observations fishing practices, boating, Mariculture farms, and Boat anchorages are the main anthropogenic stressors around the coast, these findings give the essential baseline data, supporting the targeted conservation and management strategies to protect and sustain the seagrass beds important to Jaffna Peninsula's coastal ecosystem.

Keywords: *Anthropogenic impacts, Seagrass, Distribution, Diversity, Jaffna peninsula*

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