

Preliminary Assessment of Seagrass Diversity and Meadow Structure in the Kuchchaveli Coastal Region, Trincomalee, Sri Lanka

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Seagrass meadows are ecologically important shallow coastal ecosystems that support marine biodiversity, stabilize sediments, enhance coastal productivity, and provide essential nursery habitats for fish and invertebrates. However, limited information is available on the species composition and spatial distribution of seagrass communities along the eastern coast of Sri Lanka. This study presents a preliminary field-based assessment of seagrass cover, species diversity, and meadow structure in the Kuchchaveli coastal region, Trincomalee. Five line-intercept transects were established perpendicular to the shoreline at 250 m intervals, with each transect extending 50 m seaward. Quadrat photographs were used to estimate percentage cover. The overall mean seagrass cover was $46.8 \pm 12.4\%$. Among the recorded species, *Oceana serrulata* (formerly *Cymodocea serrulata*) had the highest mean cover ($21.6 \pm 7.8\%$), followed by *Cymodocea rotundata* ($16.4 \pm 6.2\%$) and *Enhalus acoroides* ($8.8 \pm 4.1\%$). Based on relative species-cover proportions, the Shannon-Wiener diversity index (H') was 1.04, and Simpson's diversity index ($1 - D$) was 0.63. Species co-occurrence and variation in meadow form indicate spatially heterogeneous habitat conditions, although the roles of sediment type, depth, and hydrodynamics require further investigation. This study establishes baseline ecological information for a poorly studied seagrass habitat on Sri Lanka's eastern coast. It provides a scientific foundation for long-term monitoring, habitat restoration, and marine spatial planning.

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