Filamentous Epiphyte Diversity and Abundance on the Leaves of *Oceana serrulate* in Kayankerni Marine Sanctuary, Sri Lanka

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Seagrass leaves serve as important microhabitats for epiphytic organisms; however, knowledge on epiphytic algal communities in Sri Lankan in seagrass ecosystems remains limited. This study investigated the diversity, composition, and temporal variation of filamentous epiphytic algae associated with *Oceana serrulata* in Kayankerni Marine Sanctuary on the eastern coast of Sri Lanka. Sampling was conducted monthly from August 2024 to January 2025. Epiphytic material was collected from seagrass leaves and preserved in 5% formaldehyde. Ten randomly selected leaves per month were examined, and each leaf was divided into tip, middle, and basal sections for comparative analysis. Epiphytes were identified to genus level using standard taxonomic keys, and percentage epiphytic cover was estimated under 10×10 magnification. Diversity indices (Shannon–Wiener, Pielou's evenness, and dominance) were calculated, and temporal variation was assessed using one-way ANOVA on arcsine-transformed data. A total of six genera were recorded: *Ulva*, *Gayliella*, *Hydrolithon*, *Myrionema*, *Herposiphonia*, and *Calaconema*, with *Ulva* represented by three species. Overall epiphytic cover ranged from 10.8% in August to 0.95% in December, indicating marked seasonal decline. The dominant taxa were *Ulva* spp. (27.87%) and *Gayliella* sp. (26.63%) while *Myrionema* sp. consistently exhibited low abundance throughout the study period. Significant temporal variation ($p < 0.05$) was observed among several taxa, with pronounced changes during November. The Shannon–Wiener diversity index declined from 1.66 in August to 0.48 in January, accompanied by a reduction in evenness (minimum 0.35 in January) and an increase in dominance (maximum 0.76). Vertical distribution patterns indicated higher diversity in tip leaf regions compared to middle and basal sections. Overall, the results demonstrate clear temporal and spatial (within-leaf) variation in filamentous epiphytic communities on *O. serrulata*, highlighting strong seasonal control over seagrass-associated algal assemblages in the study area.

Keywords: *Seagrass, Filamentous marine algae, Diversity indices, Temporal changes in marine epiphytes*