A PRELIMINARY STUDY ON PLANT DIVERSITY IN DUNE SLACKS OF THE MANALKAADU DUNE COMPLEX, JAFFNA PENINSULA, SRI LANKA

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Dune slacks are damp depressions between coastal dunes where groundwater is often close to the sand surface, rising above it during varying periods of the year. These depressions can form naturally through wind erosion down to the water table or due to human activities such as excavation. These habitats support diverse vegetation distinct from typical dune flora. In Sri Lanka, the vegetation of dune slacks has not been extensively studied, and there are no published records of the unique plant species in these areas. This study aims to fill that gap by identifying and documenting the plants of the dune slacks in the Manalkaadu dune complex in Jaffna Peninsula, located in the country's northern province. The Manalkaadu dunes, stretching approximately 46 km from Katkovalam to Aliyawalai, were studied from September 2022 to December 2023. The study area was divided into nine sites: Katkovalam (A), Manalkaadu (B), Kudathanai (C), Ampan (D), Nagarkovil (E), Mamunai (F), Chempianpattu (G), Thalayadi (H), and Aliyawalai (I). In each site, one dune slack was selected to study the vegetation, and floral data were collected randomly using 1 m x 1 m quadrats with five quadrats per site. Plants was identified using standard floral keys and guides, and the diversity indices (Shannon-Wiener diversity index, species richness, evenness, and Simpson's diversity index) were calculated to assess biodiversity across sites. A total of 37 species of dune slack flora mainly herbs belonging to 34 genera and 26 families were identified, with Cyperaceae and Fabaceae being the most abundant families. Twenty families were represented by only a single species. The Shannon-Wiener diversity indices (H) ranged from 1.98 to 2.47, indicating moderate to high biodiversity, while cumulative species richness ranged from 11 to 21. Evenness ranged from 0.86 to 0.97, indicating a balanced distribution of species. Simpson's diversity index ranged between 0.09 and 0.17, with sites A, B, D, E, and G having the lowest values (0.09), indicating higher species dominance in these sites. Site C had the highest Simpson's diversity index value (0.17), suggesting varying species dominance across sites. According to the National Red List of Sri Lanka (2020), two species identified in the dune slacks are vulnerable (*Drosera burmanni* and *Murdannia striatipetala*), and five are nearly threatened (*Ceratophyllum demersum, Crotalaria medicaginea, Vigna trilobata, Najas marina, and Centranthera tranquebarica*). Dune slacks, being temporary wetlands, provide favourable environments for dune-dwelling species. The study recommends further research on dune slack ecosystems to better understand and manage these unique habitats.

Keywords: *Coastal sand dune, Dune slack, Dune slack flora, Floral diversity, Sri Lanka.*