



Assessment of Debris Pollution on Selected Beaches of Jaffna District

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Beach debris consists of both natural and man-made materials that accumulate on shorelines, originating from land-based and marine-based items, and increases the threat along the coastal areas of Sri Lanka. The present study aimed to investigate the marine debris accumulation on selected beaches of the Jaffna coastal area of Sri Lanka. The belt-transect method was used for collecting samples from each beach: Casuarina, Chaddy, Kankesanthurai, Thumpalai, and Thalayadi, and sampling was done from January to April for three tidal levels using the OSPAR method. Results revealed the abundance of waste along the particular beaches; the highest concentration, 9.76 items m⁻² of the marine debris, was accounted for from Thumpalai beach, and the lowest marine debris concentration, 0.4 items m⁻² of marine debris, was recorded from Chaddy beach. The Clean Cost Index (CCI) of Chaddy beach was accounted as 8, and the CCI of Thumpalai Beach was accounted as 195.2, which was the highest CCI among other beaches. Specifically, the highest concentration of 1.89 items m⁻² Nylon polymer type of plastics was accounted for on Thumpalai beach. Further, debris was heavily accumulated along the high tide across all the beaches. According to the results, High Density Polyethylene (HDPE) and Nylon polymer types of plastic items were accounted as the dominant items in most beaches (HDPE>Nylon>PS>LDPE=PET=PP>OTHER>PVC). Also, the monsoon variation between January and April made the changes in plastic accumulation at the beaches. Except for Chaddy beach, the CCI values of other beaches range from 56 to 195.2, classifying them as extremely dirty. As plastic wastes were abundant on the beaches, authorities should introduce strict regulations to reduce plastic consumption and mismanagement.

Keywords: Beaches, CCI, Jaffna, Coastal area, Macroplastics