



Abundance and distribution of anthropogenic marine litter in Hatiya and Nijhum Dwip Island, Bangladesh

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Abstract

Marine litter is commonly found throughout the oceans, and creates a significant threat to the marine ecosystem. The purpose of the study was to investigate the abundance and distribution of marine litter in Hatiya and Nijhum Dwip Islands, Bangladesh during the post-monsoon and to determine beach cleanliness using the clean-coast index (CCI). A 100-meter line transect was established at each beach, divided into five sections of 20 meters each and positioned perpendicular to the shoreline at the water's edge. A total of 11 types of marine litter were observed. Namar Bazar, Nijhum Dwip Sea beach showed a higher density of litter (0.30 items/m²) compared to Kamalar Dighi, Hatiya (0.13 items/m²). Over 70% of marine litter originated from land-based sources. Plastics were abundant litter at the Kamalar Dighi (46.66%) and Namar Bazar (61.29%). Different size ranges of marine litter were exhibited at the Kamalar Dighi (1.27-25.4 cm) and Namar Bazar (2-74 cm). Based on the mean CCI value, Hatiya and Nijhum Dwip beaches were classified as clean (2.4) and moderate (4.96), respectively. This study, therefore, suggested the conceptual policy framework including short-term (i.e., cleanness of beaches, create awareness, establishment of storages, etc.) and long-term management approaches that would be implemented for sustainable management of marine litter to ensure the conservation of marine biodiversity in the Hatiya and Nijhum Dwip Island.

Keywords: Marine litter, plastics, clean-coast index, beach, Bay of Bengal

Introduction

Marine litter is defined as “any materials (e.g. plastic, metal, paper, glass) which is persistent, processed or manufactured and abandoned in the coastal and marine environment” (UNEP, 2005). Litter settles down in marine environment from land and sea-based sources like rivers, illegal dumping, beach abandonment by visitors, disposal from ships, offshore installations, drainage systems, flooding, and wind action, all contributing to the transportation of marine litter (UNEP, 2012; Anfuso et al., 2015; Prevenios et al., 2018). The number of reports of marine litter contamination is rising these days all around the world (Schneider et al., 2018). For nations with low, middle, and high incomes, the buildup of marine litter along marine and coastal habitats has become a significant issue (UNEP, 2014; Jang et al., 2018). It is considered a major threat to biodiversity and one of the most serious problems affecting the coastal and