MARINE DEBRIS MONITORING AND ASSESSMENT USING STANDING-STOCK SURVEY METHOD AT SELECTED RECREATIONAL BEACHES ALONG PAHANG COASTLINE

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ABSTRACT

Marine debris is becoming one of the major problems for the communities residing along coastal and marine environment, affecting the beaches aesthetic value and economic. Marine debris can be found in most beaches not restricted to Malaysia, but other international coastal areas. This research is conducted to determine major types and possible source of marine debris, to study the relationship of seasonal pattern to debris density within Pahang coastline and to study the debris density changes between northern and southern of Pahang beaches. The study was conducted on 2 selected beaches located both of northern and southern of Pahang. NOAA marine debris monitoring protocol which is the standing-stock method used to collect relevant data. Beach profiling using Total Station Theodolite was conducted to monitor the beach profile and relationship with debris concentration. Data collected were then subjected to statistical analysis using one-way ANOVA focusing on spatial differences where two groups were determined based on their location within northern and southern Pahang coastline. Debris density recorded on monthly basis for over a period of 10 months with seasonal variation separated into Northeast (Oct-Mar) and Southwest Monsoon (May-Sept). Results within 8 months monitoring revealed a decreased in trendline of debris concentration due to seasonal change (monsoon). Findings further reveal an increment in trendline between different beaches where sites closer to the river, Cherok Paloh beach (0.269 ± 0.18) and Air Leleh (0.300 ± 0.18) beach have higher debris concentration than Gebeng beach (0.035 ± 0.02) and Batu Hitam beach (0.07 ± 0.018). Plastic is the most abundance debris observed and recorded in all monitoring sites throughout the sampling campaigns. In conclusion, results show significant relationship between debris concentration with seasonal pattern and spatial difference. Several trends identified such as accumulating rate along the shoreline decreased during Southwest Monsoon and concentration is higher in heavily developed areas.

Keywords: Marine debris, Plastic, Standing-stock, Beach pollution, Pahang coastline

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