

**THE RELATIONSHIP OF MARINE DEBRIS AND SOIL PARTICLE
SIZE TO THE MICROPLASTICS ABUNDANCE ACCORDING
TO TIDES BETWEEN TANJUNG ARU BEACH AND
TELUK LIKAS BEACH IN SABAH**

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ABSTRACT

THE RELATIONSHIP OF MARINE DEBRIS AND SOIL PARTICLE SIZE TO THE MICROPLASTICS ABUNDANCE ACCORDING TO TIDES BETWEEN TANJUNG ARU BEACH AND TELUK LIKAS BEACH IN SABAH

Issues with regards to the presence of microplastics in our environments are alarming yet studies on these polymers were still lacking, especially in Malaysia. This study focused on the relationship of marine debris and soil particle size to the microplastics abundance according to tides between Tanjung Aru Beach and Teluk Likas Beach in Sabah. Samplings were done during neap tide and spring tide twice a month from January until March 2020. Unfortunately, due to the implementation of Movement Restriction Order (MCO) starting from 18 March 2020 because of the outbreak of Covid-19 pandemic, this study utilized only the first month data. The sampling method that was used in this study are line transect and quadrat sampling. The determination of marine debris abundance was conducted in-situ at respective study locations by using quadrats. Meanwhile, the microplastics abundance was determined via removal of impurities, density separation, drying, filtration, identification under the stereo microscope and lastly weighing. Sand particle size was obtained by using the UTS sieve shaker and some calculations. Result depicted that marine debris was more abundant at Teluk Likas Beach compared to Tanjung Aru Beach particularly during neap tide ($X^2 (36) = 46.165, p < 0.001$). Besides, there were more microplastics at Teluk Likas Beach compared to that of Tanjung Aru Beach especially during neap tide ($X^2 (36) = 61.714, p < 0.001$). Soil particle size (sand, silt and clay) at both study locations showed significant difference, where sand ($X^2 (36) = 61.714, p < 0.001$), silt ($X^2 (36) = 21.016, p < 0.001$) and clay ($X^2 (36) = 61.714, p < 0.001$). The microplastics abundance was not affected by both the marine debris abundance and soil particle size (sand, silt and clay) according to both tides in both beach locations. More future studies concerning microplastics are encouraged since this issue is very closely related to humankind and other living organisms.