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[**Nearshore spatio-temporal sea surface trawls of plastic debris in the Balearic Islands.**](#)

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Abstract: Nearshore sea-surface manta trawls were carried out monthly at seven sites along the coastline of Mallorca in the Balearic Islands in the Western Mediterranean Sea. Plastic marine debris was present in all trawls ($n = 63$) with an overall average abundance of $858,029 \pm 4,082,964$ items/km² (mean $\pm$ standard deviation) and weight of $4,520 \pm 22,806$ g(DW)/km² and the micro-plastic fraction (74%) dominating the size class. Polyethylene (LDPE and HDPE) was the most common polymer (70%) with high spatial heterogeneity, especially along the north-western coast. August showed almost two-fold as much plastic as the other months, and the number of items decreased significantly with distance from the coastline. A positive correlation was found with the fractal dimension of the coastline indicating higher coastal plastic debris retention in areas with a higher fractal dimension and backtracking simulations indicated that marine litter was mainly locally sourced. Overall results indicate a significant small scale variability of nearshore coastal marine plastic in the Balearic Islands.

Keywords: Marine debris, Floating plastic, Conservation, Western Mediterranean Sea, Sea-surface trawls, Microplastics, Fractal dimension, Coastal pollution