
How small is the big problem? Small microplastics < 300 μm abundant in marine surface waters of the Great Barrier Reef Marine Park

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Abstract

Particle size plays an important role in determining the behaviour, fate and effects of microplastics (MPs), yet little is known about MPs in-situ. Using a modified manta net, we demonstrate that MPs were present in all marine surface water samples, with a mean sea surface concentration of 0.23 ± 0.03 particles m^{-3} . Microplastics were mainly blue, clear and black fibres and fragments, consisting of polyethylene terephthalate, high-density polyethylene and polypropylene plastic polymers. Tourism and marine recreation were considered the major contributing sources of MPs to surface waters around the Whitsunday Islands. Between 10 and 124 times the number of MPs exist in the 50 μm – 300 μm size class, compared with the 1 mm – 5 mm size range, indicating the global abundance of small MPs in marine surface waters is grossly underestimated and warrants further investigation. Research into the occurrence, characteristics and environmental fate of MPs

Keywords: Great Barrier Reef marine park, marine surface waters, microdebris, microplastics, size distribution, tourism

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