

Microplastic Pollution in the Southern Ocean

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It is estimated that there are up to 5 trillion pieces of plastic in the oceans (Erikssen et al., 2014). Microplastic pollution (particles < 5mm) is recognised as a major problem in the world ocean, (Cozar et al., 2014). Antarctica is generally thought of as a pristine and isolated wilderness, free of most of the anthropogenic stressors found in populated regions of the world. However, recent studies in the Southern Ocean have reported microplastics in deep-sea sediments (Van Cauwenberg et al., 2013) and surface waters (Cincinelli et al., 2017). We present our predictions of microplastic contamination in the Southern Ocean, based on quantifiable data from research stations, cruise ships and fishing effort. Our findings suggest that at an Ocean basin level concentrations should be insignificant, but that at point sources the contamination may be high. We report the detection of the first microplastics in shallow benthic sediments close to a number of research stations on King George Island. Worryingly, our predictions of primary microplastic concentrations from local sources are five orders of magnitude lower than levels reported in published sampling surveys, some of which were comparable to levels found in highly populated areas of the world (Erikssen et al., 2014; Adventurescience, 2016). We speculate that plastic contamination originating outside the Southern Ocean is crossing the Polar Front and contributing to the problem.

Keywords: Antarctic, tourism, fishing, research, policy, pollution, marine

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Beyond 62°S: Plastic litter on the coasts of King George Island, Antarctica

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Plastic is an important and ubiquitous material in our economy and daily lives. However, plastic pollution is also disrupting the functioning of coastal and marine systems worldwide, including