

Microplastics found deep in sand where turtles nest

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Microplastic pollution on a beach in Cyprus. Credit: Jessica Arrowsmith

Microplastics have been found deep in the sand on beaches where sea

turtles lay their eggs.

University of Exeter scientists found an average of 5,300 particles of plastic per cubic metre at depths of 60cm (2ft) on beaches in Cyprus used by green [turtles](#) and loggerheads.

At the surface, up to 130,000 fragments of plastic were found per cubic metre—the second-worst level ever recorded on a [beach](#) (the worst was in Guangdong, South China).

Researchers say that if conditions worsen such pollution could eventually begin to affect hatching success and even the ratio of male and female turtle hatchlings.

"We sampled 17 nesting sites for loggerhead and [green turtles](#) and found microplastics at all beaches and all depths," said Dr. Emily Duncan, of the Centre for Ecology and Conservation on the University of Exeter's Penryn Campus in Cornwall.

"Microplastics have different physical properties to natural sediments, so high levels could change the conditions at hatching sites, with possible effects on turtle breeding.

"For example, the temperature at which the egg incubates affects the sex of the hatchling—with females more likely in warmer conditions.

"More research is needed to investigate what effects microplastics have on turtle eggs."

Microplastics—defined as less than 5mm in diameter—come from numerous sources including discarded plastic items that have broken apart, microbeads from cosmetics and microfibres from clothes.

Of the microplastics categorised in this research, nurdles (pellets used in the production of plastic products) and hard fragments broken from larger items were the most common.

"Unlike the beaches in China where the highest levels of microplastics have been recorded, these beaches in Cyprus are located far from industrial practices and aren't visited by [large numbers](#) of people," said Professor Brendan Godley, leader of the University of Exeter's marine strategy.

"Therefore it seems that microplastics are arriving on ocean currents. In this case, our analysis suggests most of it came from the eastern Mediterranean basin. This is also true of the large plastic items found on the beaches in Cyprus in large numbers."

The findings support the theory that beaches act as a "sink" for marine microplastics, becoming key areas for contamination.

The research, is based on 1,209 sediment samples taken from 17 turtle nesting beaches in northern Cyprus.

The paper, published in *Marine Pollution Bulletin*, is entitled: "The true depth of the Mediterranean plastic problem: Extreme [microplastic](#) pollution on marine turtle nesting beaches in Cyprus."

More information: Emily M. Duncan et al, The true depth of the Mediterranean plastic problem: Extreme microplastic pollution on marine turtle nesting beaches in Cyprus, *Marine Pollution Bulletin* (2018). [DOI: 10.1016/j.marpolbul.2018.09.019](https://doi.org/10.1016/j.marpolbul.2018.09.019)

Provided by University of Exeter

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