Plastics

Plastic waste dumped in UK seas 'carried to Arctic within two years'

Analysis shows most UK plastic ends up in the Arctic, where it does 'extreme harm' to the fragile polar environment

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Plastic bottles and other rubbish and waste washed up on a British beach. Photograph: Daisy Corlett/Alamy

Plastic dumped into the seas around the UK is carried to the Arctic within two years, scientists have revealed, where it does "extreme harm" to the fragile polar environment.

Marine plastic pollution is a huge problem, with 5tn pieces of plastic now floating in the world's oceans. The plastic is frequently mistaken for food by fish and birds, causing damage to life throughout the seas.

But the fate of plastic pollution from the UK was little understood until Erik van Sebille, an oceanographer at Imperial College London, analysed the issue. "What we found, quite shockingly and unexpectedly, is that most UK plastic ends up in the Arctic. It does extreme harm there we think," he told the Guardian.

"The ocean currents are like conveyor belts moving UK plastic very fast up north, which is the probably the worst place for plastic to be at this moment," van Sebille said. The Arctic is already heating up very rapidly due to climate change and the ice cap is melting, putting wildlife and fish under pressure.

Previous research estimated that at least 1tn pieces of plastic had been frozen into the Arctic ice over past decades, making it a major global sink for plastic pollution, many times more concentrated than the well-known great Pacific garbage patch. With global warming expected to melt the entire ice cap eventually, that plastic would be released, making the pollution problem even worse.



The stomach contents of a northern fulmar containing plastic fragments, Cornwall. Photograph: FLPA/Alamy

"There is so much plastic in marine animals at the moment," said van Sebille. "Almost every fish and bird that has been cut open for science, we find plastic inside it. It is really hard to find an animal that doesn't have plastic inside it."

There is fast-growing evidence of direct harm to animals that eat plastics, including young fish starving, oysters stopping reproduction and birds being weighed down, van Sebille said. Furthermore chemicals in the plastic or absorbed by them add to the harm, he said: "The small pieces of plastic become very potent pills, full of toxic chemicals."

This affects the entire ecosystem, he said: "As soon as one group of animals gets impacted, then other species get impacted, either because they don't have food anymore, or because they are eating animals which have eaten plastic, so they get it inside them too." It is likely humans consume plastic when eating seafood too.

The new work is presented as part of the Royal Society's summer science exhibition and used the Plastic Adrift computer tool. It showed plastic pollution reaches the Arctic from the UK in two years and then circles the pole for many years.

"One of the arguments we often hear is that it is all China's fault and a lot of the plastic gets into the ocean from south east Asia," said van Sebille. "But UK plastic, even though it is less than from other regions, actually has a very big impact on one of the most vulnerable ecosystems in the world."

A study in 2015 found tiny plastic particles near the Svalbard archipelago in the Arctic circle, but its source was unknown. "We knew the plastic was there, but what we have now found is that a lot of it is from the UK and probably northwestern Europe in general," van Sebille said.



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Tackling the problem of marine plastic pollution requires action on several fronts, he said, including better filters in water treatment plants to catch microbeads and fibres from synthetic clothes. Landfill dumps around the world must also be moved away from coasts and plastics that biodegrade in the oceans need to be developed, as current versions only break down in composters, not in the sea.

But van Sebille said plastic should not be banned. "Plastic is one of the best materials ever invented." he said. "So don't demonise plastic, but instead really think carefully about whether is it useful in every single way we use it. Then ban specific uses of plastic, like microbeads" in toiletries and cosmetics.

The Royal Society's summer exhibition is in London, UK, and runs until Sunday 10 July. Entry is free.

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