



More Than Plastics: How Rapa Nui is Receiving the World's Trash

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Report 2 of 3



Report 2

How Is Plastic Transported to Rapa Nui?

As Claudio Tuki, local fisherman and artist said, “The island knows everything, there is plastic”. What do we currently know about the plastics problem at Rapa Nui, where does it come from?

What makes this island particularly interesting in terms of plastic transport is that Easter Island and its Ecoregion (EIE) (area within 200 nautical miles of both Easter Island and the uninhabited Salas y Gómez island) are situated within the South Pacific Gyre (which is a plastic convergence zone due to surface current systems) (see Figure 1 for an illustration of current system which surround Rapa Nui)[1], [2], [3]. This means that there is a higher concentration of surface plastics surrounding this island and how even when beaches are cleaned, more will continue to arrive the next days when wind and wave conditions push this plastic ashore (). It is estimated that on average 25,000 microplastics per km² (sized 0.33 mm to 200mm) floats near the surface [3].

Since there is no plastic factory that makes this plastic on the island, there are 3 main ways which the plastic enters the island (see Figure 2 below for an illustration). The first is directly from tourists and imports from mainland. Where plastic imports come from is difficult to trace. However, in terms of land emissions, a recent study has found that the shortest terrestrial origin with an approximate transit time under 2 years (how long it is likely to take to travel from land to EIE) is likely to be from countries in the South Pacific basin since it would take hundreds of years for plastic to travel between oceans (although inter-ocean exchange is still possible) [3]. It is important to recognize the closest origin of plastic emissions when discussing plastic management strategies and policy decision making for enacting real change on local scales such as for the EIE.

The second method is from the ocean which brings this accumulated legacy plastic which was present in the ocean already (from where and how long is uncertain) since it is in a plastic convergence zone.

The third method is from commercial fishers who mistakenly or illegally dump this plastic near the island which will then enter the ocean and be brought back to the island from currents, wind and waves (). A recent study has determined two potential hotspots of interests from intensive commercial fishing zones: Fishing Zone Central Pacific (FZ-CP) and Fishing Zone Peru (FZ-P) (see white contour in Figure 3) [3]. These areas have been found “strongly connected” to marine regions within the Easter Island Exclusive Economic Zone (EEZ) which may also explain the high degree of recognizable fishing plastics washing ashore Easter Island [3].

It should also be noted that it is difficult to trace small broken plastics (such as microplastics) to its origin. Since they are weathered, discolored, brittle from being in the environment for long periods of time, they are missing labels, and manufacturer logos/identifications when they are small enough. Larger, macroplastics are easier to trace to their potential sources since they are bigger and provide clues to their original origin (see Figures 4 and 5 for pictures of microplastic fishing gear found on Rapa Nui). For large plastics (macroplastics) to arrive on Easter Island still in tact, this is a potential indicator that this plastic was in the ocean for shorter time and could indicate it comes from a closer region such as fishing zones in the High Seas (though there are other factors such as the plastics becoming smaller from crashing against volcanic rocks along the coast of the island which may break the large pieces of plastics into smaller pieces).

Think of it this way: imagine you are taking a bath in dirty water with plastics already floating in the tub (think of these as legacy plastics that have been in the water for an uncertain period of time with uncertain origin), then more plastic is dumped into your tub (could be from commercial fisheries or large coastal cities on land for example). When you move around in the tub, some plastics may momentarily move away from you though they will continue to move back like the waves of an ocean. For small island developing nations, it does not matter where this plastic comes from as they are still sitting in this plastic-filled bathtub with nowhere to go.

Oceanic plastic transport is complex and there are still many mysteries surrounding it, which is why it is important to continue to research it and ask the difficult questions especially when considering the changing ocean climate with climate change. It is easy to feel overwhelmed by such a complicated problem, at the end of the day it is important to uplift your community and to continue to act with compassion and humility for the world we live in and to not lose hope.

- In terms of plastic composition, fisheries plastics is the highest reported plastic source in terms of composition. High fraction of plastics which are degraded or broken, whether this plastic is already degraded from being in the ocean or if it becomes degraded from hitting the rocky volcanic shores of Rapa Nui is still being investigated. Local sources of plastic have been reported to be minor (~5%) which is



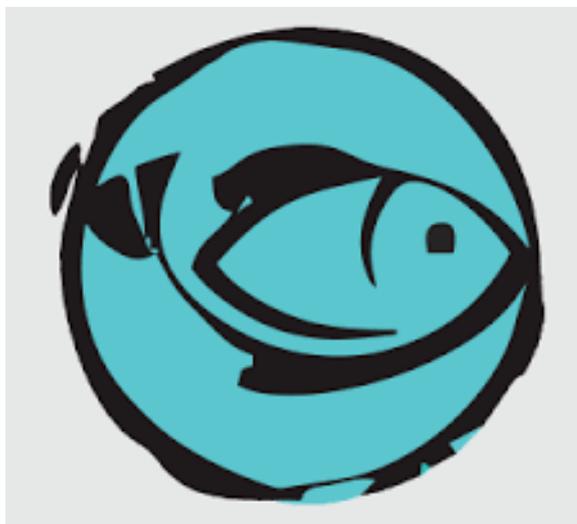
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3 source of litter on EIE

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