

# Plastic crusades

Business



The Pacific Garbage Patch, far off the West Coast of the United States, spans approximately 270,000 square miles of ocean and consists of a staggering 4 particles of “pelagic debris” per cubic meter. The result of a number of powerful currents guiding ocean trash into one huge, dense and rapidly expanding “patch”, the Garbage Patch has been explored by a multitude of curious scientists seeking to make amends, one being Mary Crowley, head of the environmental nonprofit program, Project Kaisei.

Along with a few acclaimed researchers from the Scripps Institution of Oceanography, Crowley found that an alarming 9 out of 10 plankton-eating fish living far below the Patch had large amounts of plastic in their digestive tracts, and furthermore, a frightening percentage of fish constituting the majority of the global food supply consumed an average of 24,000 tons of plastic in the North Pacific region alone (Humes, 102). These plankton-feeders form an instrumental level of the ocean food chain, making up about 65% of total biomass; with such levels of plastic already existing in the bottom level of the food chain, these levels will only compound as they reach the fish that we humans consume. It will only be a matter of time until a major food source is contaminated, not to mention an astounding portion of our ocean water poisoned by leaking chemicals from slowly decomposing plastic particles, popularly known as nurdles. Nurdles, defined as tiny plastic beads easy to transport in bulk by the California Environmental Protection Agency, melt at a surprisingly fast rate and harm marine animals who mistake them for eggs or small food bits. Miriam Goldstein, Scripps Institution alumni, reports plastic clearly visible through the transparent bodies of jellyfish and “high concentrations of small plastic bits spread

across 1, 200 miles of ocean” that ultimately led them to the “ plastic chowder” called the Pacific Garbage Patch. She and her team proceeded to conduct a number of experiments focusing on the long-term effects of this vortex of garbage.

Instead of the common concern of plastics leaching toxins into the water, Goldstein wondered if the plastics were not giving off these chemicals but, in essence, attracting pesticides, fertilizers, and other pollutants known as POPs, or persistent organic pollutants that do not dissolve in water. Instead, plastics become “ sponges” for these POPs that keep them intact and consequently give them more time to be eaten by fish and other marine critters. And there’s another pressing issue that Goldstein addressed: if the phytoplankton that generate about half the oxygen we breathe live in the topmost layers of the ocean and now must exist amidst a sea of plastic debris, the effects of their decreasing numbers could have an impact possibly more damaging than deforestation. To add to these grim facts, the United Nations estimates that about 7 million tons of trash ends up in the ocean annually, 80% of said tonnage being plastic alone. The Ocean Crusaders program reports that 46, 000 pieces of plastic can be found in every square mile of ocean.

“ Ghost nets”, ripped from their boats or washed out to sea, trap nearly 100, 000 marine animals a year and float alongside suspended plastic bags that kill turtles who mistake them for jellyfish. 13, 000 tons of plastic enter the ocean daily, about two-thirds of ocean fish suffer from plastic indigestion and scientists have officially announced two hundred “ dead-zones” in which ocean organisms can no longer exist due to pollution. The known statistics <https://assignbuster.com/plastic-crusades/>

are horrifying enough, but the worst part of our plastic crisis is the lack of awareness in our homes and in our communities. In his wake-up call to modern society, Garbology, Edward Humes calls attention to the irony of the production of plastic. Years upon years ago, Humes states, plastic was manufactured to spare the natural world the burden of our ever-growing population. Piano keys no longer had to be made from the tusks of slaughtered elephants, scarce metals could be replaced by infinitely sculptable plastics and ladies' stockings could be extruded from nylon-spewing nozzles instead of silk-spinning caterpillars (Humes, 124).

A year's worth of plastics, he continues, could outweigh a navy of more than five hundred Nimitz-class aircraft carriers, each capable of carrying ninety aircrafts and five thousand crew and troops. The convenience, accessibility and easy disposal of plastic are what make it ultimately the most dangerous man-made pollutant based on the degree to which it has penetrated our natural world. Every year without fail, a massive portion of industrially produced plastic remains unaccounted for, lost somewhere between manufacture and consumer or simply never having made it to the recycling centers. The Environmental Protection Agency reports 13 million tons of plastic packaging as waste, leaving approximately 4 million tons in this gray area, this mysterious region of vanished trash. Just recently, actually, this enigmatic and elusive accumulation of trash has been discovered.

There are plenty of them and they're called oceanic garbage patches. So how did anyone locate these patches? They're allegedly invisible to satellite images and patrol boats alike, their masses of tiny plastic particles rolling with the waves and blending in with the sea. Tim Pritchard, a Trash Track <https://assignbuster.com/plastic-crusades/>

volunteer working with MIT researchers, helped head the efforts to locate these missing tons of plastic in his hometown, Seattle, Washington. The project boiled down to this: cell phones containing motion sensors that sent signals back to the nearest Trash Track center were “tagged” onto random pieces of trash on the streets, in homes and in large corporations. Garbage from wrapping paper to broken upholstery was tagged and placed exactly where it had been found.

The “smart trash” signals allowed teams to form computerized maps of large groups of trash which eventually led to the discovery of multiple oceanic garbage patches and also acted as an eye-opening display of how far trash can travel. Seattle residents saw that old sneakers had found their way 337 miles to an Oregon landfill, cell phones had been picked up as far as Miami, Florida, and a lithium battery had been disposed of in Minnesota, about 2,000 miles away. But more astonishing than these random pieces of trash covering vast distances where they finally came to rest in a landfill or take-back center were the staggering numbers of trash that ended up following swirling currents and wave patterns to find a home in various oceanic garbage patches. So there are the facts. Our past efforts have been valiant, yet for our accomplishments a vast expanse of oceanic plastic remains to be collected.

The endless multitude of studies to map out the magnitude of the problem at hand have provided useful information, yet said problem is yet to be resolved. We know that the state of our oceans is looking depressingly grim, even if we don't know the degree of their damage yet. But what are the steps forward? Returning to Mary Crowley, the answers lie in “mimicking <https://assignbuster.com/plastic-crusades/>

nature itself” (Humes 110). Norton Smith, consulting engineer and inventor aboard the Kaisei, was tasked with producing solutions. Cleanup methods are notoriously expensive, not to mention detrimental as nets meant to capture trash often destroy wildlife habitats.

Smith’s three prototypes, called The Lagoon, The Beach and Sweep and Pyramid, were designed to be easily assembled and to function sans fuel and without disrupting oceanic ecosystems. His most successful design, The Beach, was Smith’s attempt to model the physics of a beach, with plastic particles being washed ashore on a gentle incline: a roughly five-foot ramp with walls on all sides and an opening on one end leading to a small net to retain trash. It was attached to a weighted parachute that led the device directly to large clusters of garbage using the very currents that brought the trash there. The model functioned perfectly but, as both Smith and Crowley acknowledge, millions of these instruments would never be sufficient to eliminate ocean garbage without effort to stop trash entering the ocean as well. “ There’s a lot we don’t know yet,” said Miriam Goldstein on the topic of our oceans’ conditions, “ but we don’t need to know everything to know that we should stop putting trash in the ocean”.

The truth is, ocean pollution has been an issue for decades and, though widely acknowledged in communities and governments alike, little has been accomplished as a society. This crisis cannot be ended through a series of ingenious inventions nor in novel methods of rounding up oceanic plastic. A change in attitude, outlook and mentality in our modern society is the only thing that will spare us the depressing fate that awaits a race encircled by plastic-choked oceans. This is not a mission to preserve our glistening

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oceans or the fascinating wildlife that inhabit them. This is, in the words of Mary Crowley, “ a matter of survival”. References Amaral, Kimberly.

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