



OregonLive.com

Everything Oregon

Fishing for plastic in a peaceful sea: a journey through the Pacific Ocean 'garbage patch'

By **Scott Learn, The Oregonian**

on February 06, 2013 at 6:00 PM, updated February 11, 2013 at 9:49 AM



Enlarge

Special to The Oregonian

The SSV Robert C. Seamans, a Sea Education Association research vessel, traveled from San Diego to Honolulu late last year, cutting through a section of the North Pacific Gyre with high levels of plastic pollution. Photo by Jonathan Waterman, special to The Oregonian.

Plastics at SEA voyage gallery (9 photos)

As a marine biologist, and a veteran of some 800 research dives, Thom Young had heard quite a bit about the Pacific Ocean's "garbage patch," the quiet spots in the North Pacific Gyre where plastic accumulates amid rotating currents.

On a **Plastics at SEA** voyage late last year, Young, a 33-year-old from Milwaukie, and 37 other crew members got to experience it firsthand.

The crew sampled the ocean for plastic over 36 days and 2,600 nautical miles, sailing and motoring from San Diego to Honolulu on the **Sea Education Association's** 134-foot research vessel. They used plankton nets, dip nets, visual surveys and water sampling to track plastics in a thin transect of the gyre.

The final count: 3,489 pieces of larger "macrodebris," microscopic plastic pieces in every water sample and 66,077 small but visible pieces, the **fragments that swirl onto Oregon beaches by the thousands.**

Every net tow contained plastic. Every piece had some variety of sea life aboard.

Scientists estimate -- very roughly -- that two patches in the North Pacific Gyre contain about 100 million tons of garbage, primarily plastic. Researchers will tap the expedition's data to study the large and small creatures that cling to the pieces and the ultimate fate of plastics in the ocean.

View full size

Thom Young

Jonathan Waterman

Young, now pursuing urban organic farming, grew up in Milwaukie, but with strong family ties to the sea. His father and great-grandfather were commercial fishermen off the Oregon coast. A grandmother has a cabin along Gleneden Beach, south of Lincoln City. His twin brother, Kyle, is a Coast Guard helicopter pilot.

The crew included two others from the Portland area: Andrew Felcher, a hospitalist in Portland, and Emilee Monson, energy and environment educator at the Oregon Museum of Science Industry.

Young talked about the trip last week:

Why did you want to go?

To know more about what form the "garbage patch" takes and what problems it might pose. I'm also in the middle of a career change and it was a good little escape. Being in the middle of the ocean in one of the most remote places in the world gives you wonderful time for reflection.

People picture the garbage patch as a giant pile of floating junk. Is it like that?

No. Unless you were really paying attention, on most days you couldn't see the plastic. It's broken down into smaller pieces that weren't visible from the deck of the ship, and the average piece was smaller than a pencil eraser. We did see quite a few plastic bottles floating by, but it wasn't a regular event.

The Oregon Museum of Science and Industry features the plastic collected in this photo in demonstrations in the Earth Science Hall from 10 a.m. to 5 p.m. Fridays and Saturdays. Emilee Monson of OMSI, who was on the Plastics at SEA trip, and volunteers use the tiny fragments, collected in a pint jar, to help teach about plastic pollution in the North Pacific Gyre. The sessions include digitally projected satellite images, ocean currents and wind patterns to show how it gets there. Visitors can also examine plastic fragments washed up onto Oregon and Washington beaches.

Jon Waterman

Why worry about bits of plastic?

The small pieces we found were the size and shape of a lot of plankton, which form the basis of the food web. Any seafood that we're harvesting from the ocean is ultimately consuming plankton, either directly or indirectly, so it's possible that a lot of fish or other organisms are ingesting plastic. Plastic sponges up toxins, like DDT and PCBs, and those toxins could potentially start to accumulate and

magnify. It's also possible for plastics to obstruct the guts of some organisms.

What about the microscopic plastic pieces the crew found?

The microplastics pass through the systems of any organism in the water. There's no way they can avoid ingesting them or "breathing" them in through their gills. That means they're becoming in one way or another part of the whole food web. We don't know if they're harmlessly passing through the respiratory system or guts or causing physiological changes. But there are a lot of hypotheses out there that are alarming.

What's the source of the plastic?

One of the first things that comes to mind for some people is tsunamis and hurricanes. But probably a lot of it is coming from coastal watersheds collecting debris that's not handled properly on land and ends up being carried out through rivers and streams to the ocean.

Can we clean up the mess?

It would take an incredibly fine mesh net to sift out the plastics, and we would also be sifting out all the life in the ocean -- it would be a biological disaster. The only way this can be resolved is by cutting off the supply source, because what's out there will stay out there for as long as nature allows it.

How long will the plastic last?

We know it's photodegrading. UV (ultraviolet) light is fracturing it, and we're getting smaller and smaller pieces. But they're still (essentially) the same chemical structure. They're not biodegrading into just nutrients, like what you would have in a compost pile. They're still plastic.

View full size

The sky on Day 14 of the expedition.

Kellie Jensen

Is it beautiful out there?

It is. There's sort of a placid serenity and tranquility to it. It's known as the doldrums or horse latitudes. Most days it just felt like this huge, peaceful lake.

What surprised you on the trip?

One day we had windrows (steady winds that pushed debris into parallel strips on the ocean). We saw (polystyrene) foam, floating chunks of white and blue plastic, plastic bags. We did a net tow in one of those windrows and collected over 24,000 pieces of plastic, a concentration of over 12 million pieces of plastic per square kilometer. That was the day when this problem was more in our face than at any other moment.

How was it spending 36 days with 38 people on a 134-foot boat?

You learn very quickly how to cooperate. You learn to find the tiny spots on the ship where you can have some solitude and privacy. Most of us got along really well. In some cases you just have to swallow your pride and bite your tongue and get the work done.

What's it like counting little plastic pieces?

This trip shows just how tedious scientific research can be. There were times when we literally spent 6 hours on end just picking at plastic and counting it. It was depressing at times; other times we'd pick at plastic and sing.

Has the trip affected how you use plastic?

I was pretty aware of the problem before I went in the trip. Last year, my wife (Alia Al-Humaidhi) and I decided to try to not to throw away any garbage. We were able to avoid most plastic just by buying food at the source, by sourcing it directly from farmers.

What gives you hope this problem can be dealt with?

There are quite a few cities starting to implement public policies, (such as) plastic bag bans. I'm hoping that will spread to areas we might not be as comfortable with, to all the packaging we're using for food. I don't know if I really believe most people will start caring enough to change their daily behavior. But public policies can help.

-- **Scott Learn**; Twitter: [@slearn1](#).

© 2013 OregonLive.com. All rights reserved.