The Great Pacific Garbage Patch counts 1.8 trillion pieces of trash

By Amina Khan, Los Angeles Times, adapted by Newsela staff on 04.02.18
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Image 1. A piece of floating debris snagged during an ocean sampling operation. Photo from Ocean Cleanup/TNS.

The Great Pacific Garbage Patch is getting greater. Twice the size of Texas, the floating mass is up to 16 times larger than previously thought. According to scientists who performed an aerial survey, it is carrying about 79,000 metric tons of plastic.

The discovery was published in the journal Scientific Reports. The study reveals that this plastic blight in the Pacific Ocean is still growing at what the researchers called an "exponential" pace.

The Great Pacific Garbage Patch, or GPGP for short, is an accumulation of plastic products. It is found in the eastern Pacific Ocean. This is between California and Hawaii. Much of it is hidden from the naked eye, partly because some of the plastic has been broken down into smaller and smaller bits over time. (It is not, as its name may suggest, an island.) The concentration of floating plastic in the patch ranges from tens to hundreds of kilograms per square kilometer.

"It's quite frightening because we are so far from any mainland or island," said Laurent Lebreton. He led the study. He is also an oceanographer with the Ocean Cleanup Foundation based in the Netherlands. Out in the blue seas, the plastic is a jarring reminder of human impact.

The GPGP is just one of many large garbage patches in the ocean. Humans manufacturing and quickly discarding plastic products has caused the garbage patches to grow. Plastics are meant to last, and that's great for carrying your groceries in thin bags or holding a six-pack. It's not so great when those plastics end up in the guts of sea turtles or strangle birds. Recent studies show that biofouled plastic can attract fish and seabirds and end up in the food chain. The full effects of this aren't yet known. Scientists worry that this can lead to malnutrition and other problems, though. Large or small, plastics of all sizes can harm ocean life.

Researchers have tried to get a handle on how big of a problem the GPGP is. By dragging nets through parts of the patch, they are sampling the plastic they find. But this only gives a partial view. For one thing, even a team of boats can only see so much. For another, the net samplers they use are often too small to catch larger debris.

Lebreton and his colleagues decided to take a bird's-eye view. They conducted aerial surveys of the patch while also sending boats to sample the debris. They brought it all back to shore for analysis.

The researchers split the plastic they collected into four groups, from super tiny (microplastic) to large (megaplastic). Microplastics made up 94 percent of the estimated 1.8 trillion pieces of trash in the patch. But they only accounted for 8 percent of the total mass. More than three-quarters of the 79,000 metric tons of junk actually came from larger plastics.

Part of the reason that larger plastics outweighed the other categories lay in all the fishing nets that accounted for 46 percent of the garbage patch's mass. Fishing nets are made to be durable, which is great for catching fish. But that durability is not great when they're lost or abandoned. Since they're fairly cheap and easy to replace, those nets can then float through the ocean. The nets end up entangling and killing animals in their path.

Fifty plastic items had readable production dates: One from 1977, seven from the 1980s, 17 from the 1990s, 24 from the 2000s and one from 2010. (This doesn't mean that they were in the water that whole time, Lebreton was quick to point out. Some 386 pieces had words from nine different languages. A third of them were in Japanese and a third were in Chinese.)

The researchers think the patch may have grown in recent years in part because of the 2011 Tohoku tsunami, which reportedly washed 4.5 million metric tons of debris into the sea instantly. About 1.4 million of that could have been moved across the ocean surface.

The plastic that lived in the patch also shared certain characteristics, such as a small surface-to-volume ratio. Plastics with high surface-to-volume ratios, such as sheets and films, were probably biofouled or broken down into smaller fragments that did make it into the patch.

None of this, of course, counts all the plastics that may have sunk to the bottom of the ocean. "Levels of plastic pollution in deep water layers and the seafloor below the GPGP remain unknown," the study authors wrote.