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# Ocean Garbage Patch Still a Mystery



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Jeremy Hsu  
LiveScience Senior Writer  
LiveScience.com - Thu Aug 19, 2:24 pm ET

A vast patch of garbage spanning a swath of the Atlantic Ocean has long puzzled scientists who wondered where the plastic bits came from and why there's not more of it.

Now an exhaustive study, resulting in more than 64,000 bits of plastic collected from the Atlantic Ocean over two decades, has allowed scientists to "go through the garbage" and get to the bottom of some of the mysteries.

Scientists have been particularly mystified over why the concentration of plastic in the Atlantic has not increased during the past 22 years, despite both [plastic production](#) and plastic trash increasing during that time period. Still, they have their suspicions.

"I think it's certain that the plastic is breaking down into pieces smaller than what we capture in the net," said Kara Lavender Law, an oceanographer with the Sea Education Association at Woods Hole, Mass.

As bacteria and other organisms built up on the plastic, the added weight may have dragged the debris down to [lower ocean depths](#), according to Lavender Law and her colleagues in a study detailed in the Aug. 19 issue of the journal Science.

## Sizing up the trash

Ships towing long nets found the plastic pieces floating across hundreds of miles of the North Atlantic during the past 22 years. The nets only snag objects bigger than a third of millimeter, which can include plankton, seaweed and even tarballs from oil.

The sheer scale of the affected area could rival that of the "[Great Pacific Garbage Patch](#)," although Lavender Law cautioned that both regions remain poorly defined. For instance, the exact eastern boundary of the Atlantic region remains undiscovered.

"It's entirely possible that it reaches almost all the way across the Atlantic," Lavender Law told LiveScience.

The affected region in the western North Atlantic Ocean and Caribbean Ocean stretches east to west between Cuba and Virginia, where a combination of wind-forced ocean circulation and the so-called Coriolis Effect of the Earth's rotation keep the plastic circling almost endlessly.

## What lies on the surface

The term "[garbage patch](#)" does not necessarily mean a visible island of trash floating on the waves, researchers said. Only 62 percent of net tows by ships have contained detectable amounts of plastic.

"What we're collecting are really small fragments of plastic from larger consumer items," Lavender Law explained. "If you're on the deck of a ship, you normally can't even see the plastic pieces."

Each half-hour net tow typically turned up just 20 plastic pieces equivalent to about 0.3 grams in all. By comparison, a U.S. nickel weighs 5 grams.

The vast majority of plastic pieces caught in the net turned out smaller than 10 millimeters, Lavendar Law said. She pointed to a companion study published in this week's issue of the journal Marine Pollution Bulletin that includes all the details on the plastic pieces.

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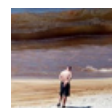
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But the unusual discovery of a five-gallon bucket harbored a special surprise - trigger fish, which normally live around ocean reefs. That suggested the fish had found both shelter and perhaps food from the accumulated plastic scum on the bucket.

The more common tiny pieces of plastic can also harbor colonies of bacteria that may not typically belong at the ocean's surface.

"We need to ask if microbes are able to use the plastic as food and degrade it, or if the plastic is acting as substrates for [microbial] communities living on them," Lavender Law said.

#### How trash travels

The origins of all the plastic remain largely unknown, because researchers currently cannot trace it back to the original location or even the original product that a plastic piece came from.

But ocean circulation studies that use satellite-tracked buoys have found that floating plastic can travel from Washington, D.C., or Miami, Fla., to the Atlantic garbage patch within just 40 days.

The amount of plastic reaching the oceans should have grown in recent decades, according to available data. The amount of buoyant plastics in U.S. Municipal Solid Waste increased by 24 percent between 1993 and 2008, and totaled 14.5 million tons in 2008.

That goes back to the case of the missing trash that should have boosted plastic concentrations in the Atlantic Ocean. Future ship surveys may find more of the plastic lurking in the lower ocean depths, or uncover more about how microbes break down the plastic.

"Understanding the size spectrum and the fate of the plastic is a very important direction to go," Lavender Law noted.

Much of that future research rests upon undergraduate students, who used tweezers to pick out the plastic from the goo pulled up by the plankton nets. More than 7,000 students took part in that painstaking work during the Sea Education Association's SEA Semester annual voyages, which last for a total of three months each year.

"I always want to make sure I give full credit to the undergrads," Lavender Law said. "Undergrads with or without science backgrounds can make real contributions."

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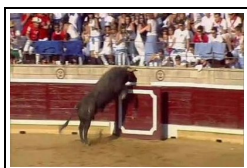
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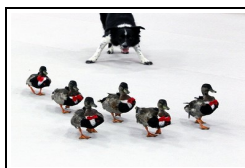
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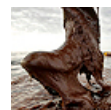


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**Bruce M** 50 seconds ago | [Report Abuse](#) 0 0

This is so boring, over ten years ago I read the same article not word for word but the same results.  
We all know plastics get hard and harder in direct sunlight and when you get a whole bunch of this garbage being smashed into itself out in the ocean during storms well what do you expect to happen. It gets busted up into little pieces, smaller and smaller until oops it's gone into the microscopic world. A whole lot better than the bio degradable plastics that desolve into the water by sunlight or by getting wet now you have a liquid that's getting into the water and even our drinking water, as for me I'd rather have the plastic that gets broken down over time by decomposition. A whole lot better for mother earth. Lets face it plastics are here to stay for we need them in our everyday life, we need to make better earth friendly plastics is all.

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**Frank** 53 seconds ago | [Report Abuse](#) 0 0

"only 62% of boats find plastic in the net." That is a huge number. Just another example of how we are destroying the planet.

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**Herbert Marshall** 13 minutes ago | [Report Abuse](#) 0 3

@ad hocghoul95, can you get food stamps online? did you know that food like seafood and steak are covered under food stamps? soft drinks, candy, breads, milk, cereals, fruits, and many more items are every american's nutritious rights to have. The truth is, one in every two americans qualify to get food stamps in this recession. Your family could get up to \$1000 a month in free food just by simply taking one minute to apply for it and see if you are eligible. go to a site like GetEbt.com and check if you qualify in seconds.

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**AgeLoving Com** 13 minutes ago | [Report Abuse](#) 0 4

↑↑ oh great article ,My boyfriend and i both think so ...  
↑↑ He is almost 11year older than me .i met him via  
↑↑ (a hot place) as my name says

↑↑ @@ love it

AS

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**Sally** 13 minutes ago | [Report Abuse](#) 3 0

I think we should dump all the trash into active volcanos. Instant incineration. Poof - it's GONE!

[Reply](#)

Sally 15 minutes ago | [Report Abuse](#)

2 1

Garbage.. where did it originate?... They tow it out on barges and dump it into the ocean. Cruise ships dump their garbage overboard. They've been doing it for years.... Wow... I'm a genius! Yes, it's down there in the ocean depths and it's polluting our planet. Kudos to whoever invented plastic - we're doomed.

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Veryupset 17 minutes ago | [Report Abuse](#)

1 2

Sooo we're finding out that some plastics can cause harm to your body and even cancer....BPA...so if the fishes and other things in the oceans, are eating the plastic....is it safe to assume that now they will have these harmful chemicals and if we eat them we will get sick and get cancer.....Just read an article too on how red meat cause colonorectal cancer.....we are killing ourselves. We don't need bombs or an apocalypse...its happening right now!!!! I'm just saying....

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Johnny Flash 27 minutes ago | [Report Abuse](#)

4 0

This is just now news? Our Oceanography professor had us researching "Plastic in the North Atlantic" in the late 80's and it seemed pretty well known at that time. The plastic comes from dumping trash in the ocean. Wow, go figure. hmmm, I wonder if the oil will get caught in the same ocean currents... naw, its just gone due to microbe activity, right?

[Reply](#)

Cgnzd Fdghmn

1 14

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Cult O'Personality 41 minutes ago | [Report Abuse](#)

7 8

Of course unemployment is going up. Of course the economy is circling the drain. The Democrats have done absolutely everything to make this worse. How?

When we desperately needed tax cuts to stimulate the economy they used the crisis to ram through their "Stimulus." They flushed \$1 Trillion dollars down the rat hole of left-wing interest groups, pet union bosses and parasites, while pretending that was going to "save or create" jobs

. Then they systematically crushed small business by taking over banks, car makers, and insurance groups, and rich Wall Street investors by subsidizing them at the your expense.

They stole \$500 Billion from Medicare, and massively increased medical insurance premiums for business and individuals, and started taxing health care- all to pay off their drug company and health insurance company lap dogs with Obamacare.

Then they paid off Goldman-Sachs, Countrywide (special shout-out to Democrat Chris Dodd) and the big banks with the Financial Bill.

Then they sat around and did nothing but rant again "tea-baggers" like everyday Americans were the problem.

Then they took food out of hungry, unemployed American's mouths by slashing \$12 Billion from Food Stamps to pay-off Government worker union's bosses.

Then they insisted that raising your taxes in January was the only way out.

Then the Blamed Bush because, well that is what they do.

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