

TRASH AND OUR OCEANS



Plastic Facts

Americans used about 50 billion plastic bottles of water last year. Less than one-third to one-fourth of those bottles were recycled. The rest ended up in landfills or as litter in the environment.

Plastics in the environment never fully decompose. Instead, they break down into smaller and smaller pieces – eventually into microplastics – that remain in the environment.

Because of their small sizes, toxic microplastics in aquatic environments blend with plankton at the base of the food web. These microplastics are consumed and work their way up into larger and larger consumers, including humans.

An estimated 9 million tons of plastic enter the oceans every year. Plastics in the oceans are so pervasive that a plastic bag, like those offered at grocery stores, has even been found even at the deepest point in any ocean: the Mariana Trench, 36,000 feet below the surface of the Pacific.

By the year 2050, by weight, there may be more plastic in the ocean than fish.

A recent study in Ireland reportedly found microplastics in 3 of every 4 deep-water fish sampled in the northwestern Atlantic. Those fish are eaten by tuna, dolphins, swordfish and seals, as the contamination moves up the food chain.

Another study found that 267 species worldwide – including 44 percent of sea birds and 43 percent of marine mammal species – are impacted by marine debris. Sea turtles are known to swallow plastic bags, mistaking them for jellyfish.

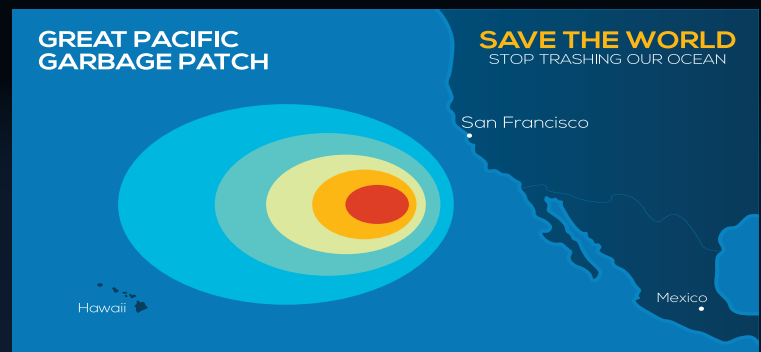
The U.S. National Oceanic and Atmospheric Association (NOAA) estimates that plastic in our oceans kills at least 1 million sea birds and 100,000 mammals each year.

Recycled plastic bottles don't become new plastic bottles; they can only be "down-cycled" into lower-quality materials.



WHAT IS THE GREAT PACIFIC GARBAGE PATCH?

The Great Pacific Garbage Patch (GPGP) is the largest of the five offshore plastic accumulation zones in the world's oceans. It is located halfway between Hawaii and California.



PLASTIC ACCUMULATION

It is estimated that 1.15 to 2.41 million tons of plastic are entering the ocean each year from rivers. More than half of this plastic is less dense than the water, meaning that it will not sink once it encounters the sea.

The stronger, more buoyant plastics show resiliency in the marine environment, allowing them to be transported over extended distances. They persist at the sea surface as they make their way offshore, transported by converging currents and finally accumulating in the patch.

Once these plastics enter the gyre, they are unlikely to leave the area until they degrade into smaller microplastics under the effects of sun, waves and marine life. As more and more plastics are discarded into the environment, microplastic concentration in the Great Pacific Garbage Patch will only continue to increase.

ESTIMATION OF SIZE

The GREAT PACIFIC GARBAGE PATCH (GPGP) covers an estimated surface area of 1.6 million square kilometers, an area twice the size of Texas or three times the size of France.

Due to seasonal and interannual variabilities of winds and currents, the GPGP's location and shape are constantly changing. Only floating objects that are predominantly influenced by currents and less by winds were likely to remain within the patch.

Facts

- A minimum of 100 million marine animals die each year from plastic waste alone.
- The oceans are losing mussel mass. One effect of greenhouse emissions is increased ocean acidification, which makes it more difficult for bivalves such as mussels, clams and oysters to form shells¹⁴, decreasing their likelihood of survival, upsetting the food chain and impacting the multibillion-dollar shellfish industry.
- 100,000 marine animals die from getting entangled in plastic yearly – this is just the creatures we find!
- 1 in 3 marine mammal species get found entangled in litter, 12-14,000 tons of plastic are ingested by North Pacific fish yearly.
- In the past 10 years, we've made more plastic than the last century. By 2050, the pollution of fish will be outnumbered by our dumped plastic.
- Pollution is in fashion (literally). With each load of laundry, more than 700,000 synthetic microfibers⁷ can be washed into our waterways. Unlike natural materials such as cotton or wool, these plasticized fibers do not break down. One estimate puts the number of plastic microfibers in the ocean at 4 billion per square kilometer.
- The largest trash site on the planet is the Great Pacific Garbage Patch, twice the surface area of Texas, it outnumbers sea life there 6 to 1.
- China is ranked #1 for mismanaged waste and plastics. However, the US is in the top 20 with a more significant waste per person contributions.
- 300 Million tons of plastic gets created yearly, and this weighs the same as the entire human population, and 50% is single-use only.
- There are 5.25 trillion pieces of plastic waste estimated to be in our oceans. 269,000 tons float, 4 billion microfibers per km² dwell below the surface.
- Tons of trash sits on the bottom. As unsightly as ocean pollution is, what we can't see may be worse: Scientists estimate that some 14 million metric tons of ocean garbage⁹ actually rests on the seafloor, meaning we're unlikely to ever be able to clean it up.
- Indonesia and India top the trash tally. More plastic in the ocean comes from Indonesia and India than anywhere else⁶ – together,

they contribute more plastic to the world's coastal environments than the next seven countries combined, including the United States, which ranks third on the list.

- 70% of our debris sinks into the ocean's ecosystem, 15% floats, and 15% lands on our beaches.
- In terms of plastic, 8.3 million tons are discarded in the sea yearly. Of which, 236,000 are ingestible microplastics that marine creatures mistake for food.
- Plastics take 500-1000 years to degrade; currently 79% is sent to landfills or the ocean, while only 9% is recycled, and 12% gets incinerated.
- 1950-1998 over 100 nuclear blast tests occurred in our oceans.
- We're making a racket down there. Noise pollution generated by shipping and military activity can cause cellular damage to a class of invertebrates that includes jellyfish and anemones.¹⁵ These animals are a vital food source for tuna, sharks, sea turtles and other creatures.
- 500 marine locations are now recorded as dead zones globally, currently the size of the United Kingdom's surface (245,000 km²).
- 80% of global marine pollution comes from agriculture runoff, untreated sewage, discharge of nutrients and pesticides.
- 90% of the worldwide ocean debris comes from 10 rivers alone.
- Oil spills aren't the big(gest) problem. Headline-grabbing oil spills account for just 12 percent of the oil in our oceans. Two to three times¹ as much oil is carried out to sea via runoff from our roads, rivers and drainpipes.
- Even nutrients can become harmful! When dumped at sea in large amounts, agricultural nutrients such as nitrogen can stimulate the explosive growth of algae. When the algae decompose, oxygen in the surrounding waters is consumed, creating a vast dead zone that can result in mass die-offs of fish and other marine life.
- The number of dead zones is growing. In 2004, scientists counted 146 hypoxic zones¹¹ (areas of such low oxygen concentration that animal life suffocates and dies) in the world's oceans. By 2008, that number jumped to more than 400.¹² In 2017, in the Gulf of Mexico, oceanographers detected a dead zone nearly the size of New Jersey¹³ – the largest dead zone ever measured at the time.

