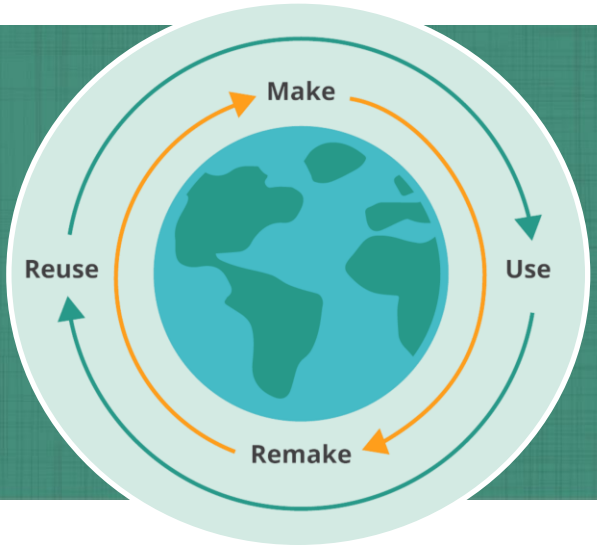
Plastics in Our Oceans



#Eco360
Activity
Grade Level: 9-12

Plastics in Our Oceans

Plastic pollution in oceans is a global crisis today. Poor waste management policies around the world have led to gigantic amounts of plastic waste ending up in our oceans. Plastic ends up in oceans either through land-based sources or through marine sources. Land sources include plastic discarded on land that is carried through water and snowmelt into sewers, streams, rivers, eventually making its way to oceans. Marine sources include plastic is discarded directly into water bodies, such as fishing nets, which stays in oceans over time. Plastics can stay in water as macro plastics or microplastics – where microplastics are defined as plastics less than five millimeters in diameter (approximately the size of a sesame seed) (National Geographic, 2019).

Microplastics - source (National Geographic, 2019)

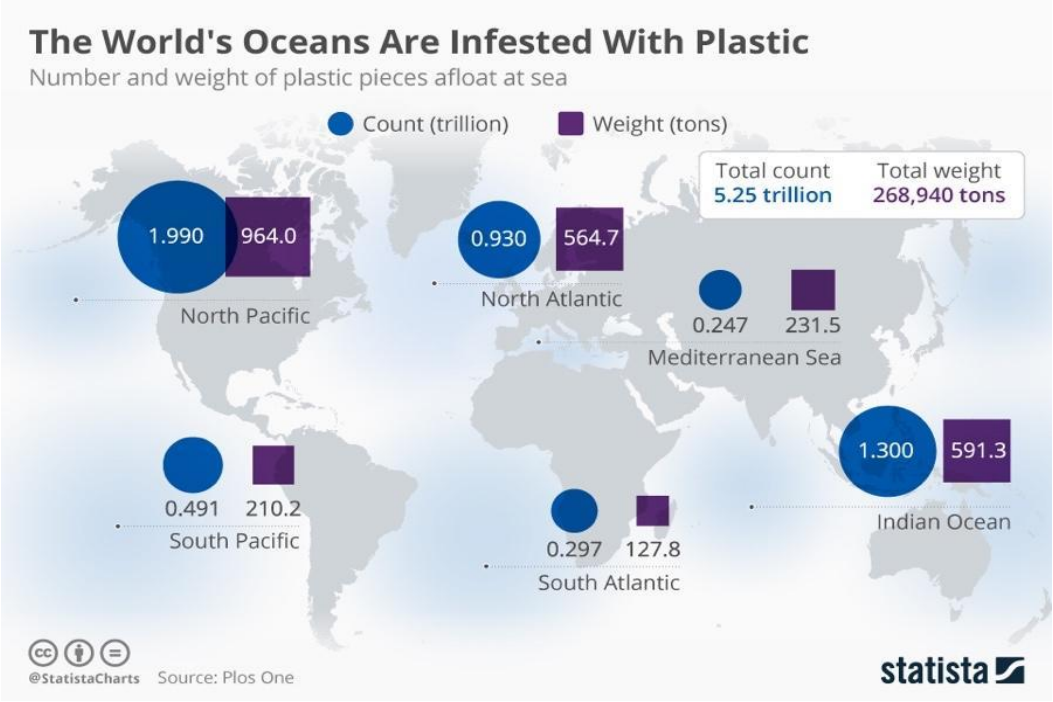
Marine plastics

- Over 300 million tons of plastic are produced every year for use in a wide variety of applications.
- At least 8 million tons of plastic end up in our oceans every year, and make up 80% of all marine debris from surface waters to deep-sea sediments.
- Marine species ingest or are entangled by plastic debris, which causes severe injuries and deaths.
- Plastic pollution threatens food safety and quality, human health, coastal tourism, and contributes to climate change.
- There is an urgent need to explore the use of existing legally binding international agreements to address marine plastic pollution.
- Recycling and reuse of plastic products, and support for research and innovation to develop new products to replace single-use plastics are also necessary to prevent and reduce plastic pollution.

Source: (IUCN, 2018)

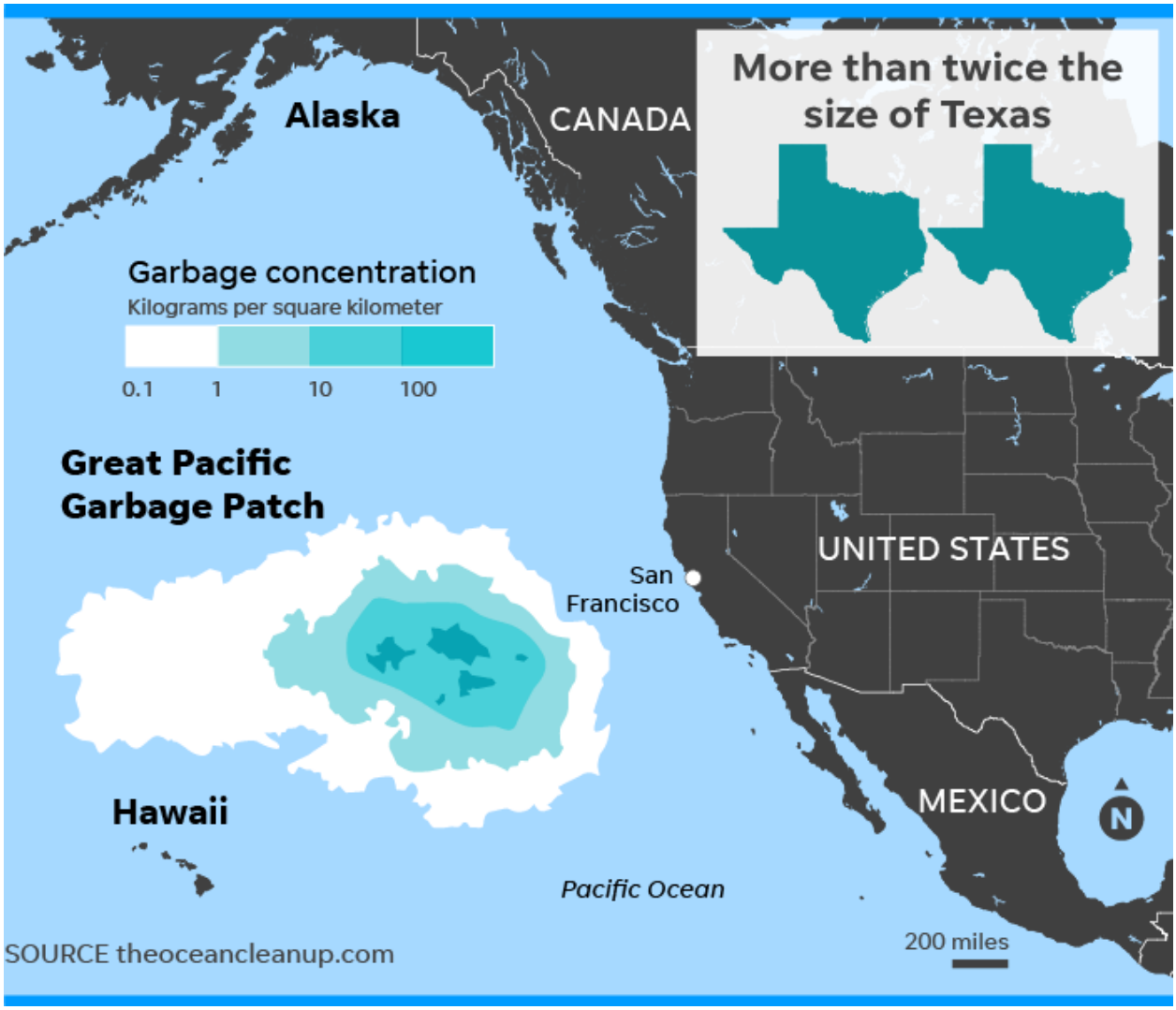
With time macro plastic in the environment also breaks down into small pieces and becomes microplastic. In addition to this, microplastics are also found in various consumer products as microbeads, which are small pieces of manufactured polyethylene plastic added to health and beauty products—such as exfoliants, cleansers, and toothpaste (National Oceanic and Atmospheric Administration U.S. Department of Commerce, 2021).

Currently, there are five giant patches of marine plastic in our oceans.



Source: https://www.statista.com/chart/8616/the-worlds-oceans-are-infested-with-plastic/

"These huge concentrations of plastic debris cover large swaths of the ocean; the one between California and Hawaii is the size of the state of Texas. Sea creatures eat or get ensnared in plastic debris and can be killed or maimed. Plastic that is consumed by marine organisms, as well as the toxins they absorb from the water, accumulate up the food chain making seafood potentially dangerous for humans as well. Scientists predict that if nothing changes in our plastic consumption habits, by 2050 there will be more plastic in the oceans than there are fish (by weight)" (Earth Day Network, 2018).



Source: (USA Today, 2018)

Impact of Plastic Waste on Our Oceans

The reason why there is a particular emphasis on studying and advocating against marine plastic pollution is that it disproportionately affects marine life in many ways. “Many marine organisms can’t distinguish common plastic items from food… Sea turtles specifically are highly susceptible. They both mistake plastic bags for jellyfish, and frequently are trapped in plastic debris, restricting their growth and movement. Plastic never fully degrades; over time it breaks into smaller and smaller pieces. Eventually, it becomes small enough to enter the bloodstream of marine organisms. Since the organisms cannot ever digest or process the plastic, it remains present until the organism is eaten. This passes all the plastic on to its predator, which is usually fish. If that fish is caught, then the plastics will be passed on to whichever human consumes it” (Earth Day Network, 2018).

Additional resources to learn about marine plastic pollution:

- Plastic Ocean, United Nations: https://www.youtube.com/watch?v=ju_2NuK5O-E&feature=youtu.be
- Oceans Plastic Pollution, Center for Biological Diversity: https://www.biologicaldiversity.org/campaigns/ocean_plastics/
- Plastic Pollution in the Ocean: https://www.youtube.com/watch?v=aFUHLtaTazQ&feature=youtu.be
- What really happens to the plastic you throw away, Ted Talk by Emma Bryce: https://www.youtube.com/watch?v=_6xlNyWPpB8&feature=youtu.be
- Tough truths about plastic pollution, Ted Talk by Dianna Cohen: https://www.youtube.com/watch?v=fddYApFEWfY&feature=youtu.be
- Plastics Breakdown infographic, One World One Ocean: https://oneworldoneocean.com/blog/the-plastics-breakdown-an-infographic/

Bibliography

Earth Day Network. (2018). *Plastic Pollution Primer and Action Toolkit.* Retrieved from Earth Day Network: https://www.earthday.org/wp-content/uploads/Plastic-Pollution-Primer-and-Action-Toolkit.pdf

IUCN. (2018). *Marine Plastics*. Retrieved from IUCN: https://www.iucn.org/resources/issues-briefs/marine-plastics#:~:text=strong%20and%20malleable.-,Over%20300%20million%20tons%20of%20plastic%20are%20produced%20every%20year,abundant%20items%20of%20marine%20litter.

National Geographic. (2019). *Great Pacific Garbage Patch* . Retrieved from National Geographic: https://www.nationalgeographic.org/encyclopedia/great-pacific-garbage-patch/

National Geographic. (2019). *Microplastics*. Retrieved from https://www.nationalgeographic.org/encyclopedia/microplastics/

National Oceanic and Atmospheric Administration U.S. Deparment of Commerce. (2021). *What are microplastics?* Retrieved from National Ocean Service: https://oceanservice.noaa.gov/facts/microplastics.html

USA Today. (2018). *World's largest collection of ocean garbage is twice the size of Texas*. Retrieved from https://www.usatoday.com/story/tech/science/2018/03/22/great-pacific-garbage-patch-grows/446405002/