

The North Pacific Gyre
Sonya Mangat

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I have lived my entire life, which consists of over fourteen years, near the west coast of North America. So naturally, I got very used to the beach and the marine ecosystems of it. It all became very familiar to me- as familiar as the back of my own hand. Each and every single summer, ever since I can remember, my entire family, including myself, would drive up along the roads of the winding coastline. We would drive to find a nice and clean spot to go to that was along the beach. We would then unpack our car and continue to find an ideal spot to sit. A spot where my parents could enjoy the quiet serenity of the beautiful beach and enjoy the endless views of miles upon miles of clear blue water- the Pacific Ocean-. The faint glimpse of some islands in the very near distance. They would watch the sun dip in the sky, creating a kaleidoscope of colours- pinks, oranges, and purples. While they were doing this, my siblings and I would go up to our waists deep in the water, the seaweed lacing through our toes- something, I have always found eerie. We would always enjoy all of it- every single moment of it- not knowing that less than one thousand miles away was a virtual island of garbage, known as the North Pacific Gyre.

A Gyre is a term used to describe a place where debris collects. It occurs in the middle of an ocean. It is caused by the constant rotations of wind currents and ocean currents and creates a natural occurring, swirling whirlpool. It swirls slower at the core of the whirlpool, which leads to a buildup of a large amount of garbage. There are five major Gyres in the oceans of the world. They are the North Pacific Gyre, the South Pacific Gyre, the North Atlantic Gyre, the South Atlantic Gyre, and the Gyre of the Indian Ocean. The greatest of these Gyres is the North Pacific Gyre. It is also known as the Great Pacific Garbage Patch and it is the main Gyre that I will be focusing on in this essay.

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The North Pacific Gyre is dead smack in the very centre of the Pacific Ocean. It is almost a thousand miles off of both the coasts of California and of Hawaii. Most garbage that washes off the west coast of North America and the eastern one of Asia will end up in this Gyre. All the plastic spans an area of about five million square miles. That is about twice the size of the state of Texas. And at this moment in time, there is to be an estimation of eleven million tons of plastic in the Garbage Patch, and that amount is still continuing to grow. We know this is true as scientists have found it to be a significant amount larger than it was just a decade ago.

Most of all the debris in the Gyre is no larger than four-tenths of an inch and any piece of garbage bigger than that will eventually, over time, breakdown. This will happen due to sunlight exposure and the larger pieces will turn into smaller pieces, though they will continue to float in the ocean and they will never truly go away. These small pieces of garbage are usually mistaken for plankton by fish given their relative similarity in size. And, since there is about six times more plastic than plankton in the ocean, the fish that mistake plastic for their food – plankton- will usually end up eating the garbage. The animals can then die from consuming the plastic. The chemicals used to make the plastic can get absorbed into the bloodstream by the fish. This can lead to plastic poisoning, which can either be fatal or make the animal that consumes it very sick. The plastic and garbage can also stay in the digestive system of the animal since they are not able to properly digest the debris and are unable to get rid of the plastic garbage. This can lead to blockages of plastic in their digestive system; it can also make them unable to consume food and unable to get the energy from it that they need. Again, leading to another fatality.

All of these deaths in the marine ecosystems of the world will lead to a collapse of the ocean food chain. There will become more plankton because less of them are getting eaten by the fish that usually eat plankton, but instead are eating the plastic that they mistake for the normal food and end up dying. In addition, all of the animals that feed off of the fish can no longer eat the fish because the fish population is going down dramatically. This will lead to the death of the animals that are at the top of the food chain, which are the predators. [An example of a predator would be a killer whale or orca.] And lastly, back to the plankton. Since there are way more plankton, the plants that they eat will become lesser and lesser because so many plankton are feeding off of it. Soon, there will no longer be enough food to suffice the appetites of the plankton and they, too, will die. The now very unstable food chain of the marine ecosystem will also affect the land ecosystems because some land animals eat ocean creatures, such as the fish.

This consuming of plastic is not an anomaly. A group of scientists found plastic in almost ten percent of the fish they studied from throughout the North Pacific Gyre. Based on this study, researchers estimated that the fish in the North Pacific consume from about twelve thousand to twenty-four thousand tons of plastic each and every year. It is, also, estimated that over one hundred thousand marine animals die each year due to causes that are related to garbage.

Now for a solution: How can we, as people of the earth, solve this? The obvious answer would be to remove the garbage from the oceans, but it is not at all that simple. The pieces of plastic are far too small to pick out, so a net would be needed. A fine net that would be enough to remove the trash

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⁴would also remove the animals in the ocean with it. And if we were to remove all of the garbage from the gyre that is over a mile deep, it would, also, basically wipe the top layer of the ocean clean.

The only idea left to solve this problem of garbage piling up in the oceans is prevention. Since most of the plastic that ends up in the ocean comes as a result of the run off of places off the coast, if we pick garbage off of our beaches and coastal areas, we could lessen the amount of garbage that ends up in our oceans and prevent the buildup of garbage in gyres across the world.

That is where my impact comes in; every year, since I was about five years old and had started kindergarten, I have participated in the Great Canadian Shoreline Cleanup. It is an initiative that is led by the Vancouver Aquarium and WWF that focuses on the idea of educating and empowering us as inhabitants of this magnificent planet to make a difference through community cleanup events.

This year, the crew of our school's science newspaper, and other students of our school who want to, will be taking a trip to the beach on May 31st to spend the day cleaning up our coastline. And we plan to continue with the efforts in further years to come.

In conclusion, what I would like all of you to take from reading this essay is that even the smallest of efforts by a small five-year-old picking up garbage out of a creek behind her elementary school, can make a huge impact. Even if she was clueless to what she was really doing; to her it was just a fun break from learning in school.

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⁵ And just think, if none of us had ever littered on that beach, how much of a less amount of garbage would there be floating in the midst of the ocean? That is absolutely right, a lot less.

Bibliography:

<http://www.scienceoc.org/ocean-gyre-project/ocean-gyre-quick-facts/#sthash.6AKOsrCx.dpbs>

http://education.nationalgeographic.com/education/encyclopedia/great-pacific-garbage-patch/?ar_a=1

http://education.nationalgeographic.com/education/encyclopedia/great-pacific-garbage-patch/?ar_a=1

<http://science.howstuffworks.com/environmental/earth/oceanography/great-pacific-garbage-patch.htm>

<http://www.youtube.com/watch?v=y5y1W5xduiE>

<http://marinedebris.noaa.gov/info/patch.html>