

Committee: Environmental Commission

Issue: Resolving the issue of the Great Pacific Garbage Patch

Student Officer: Ioanna Karali

Position: Deputy President

PERSONAL INTRODUCTION

Dear delegates,

My name is Ioanna Karali and am an A' lyceum student, attending Pierce the American College of Greece. It is my utmost honor to be serving as a deputy president in this year's 5th ACGMUN in the Environmental Commission, and I am more than confident that we will work great together having a fruitful and yet exciting conference.

I was first introduced to MUN in 3rd gymnasium with the 4th ACGMUN serving in WHO. Since then, I tried to play an active role in this community and now I can proudly announce my second student officer position. Unfortunately, though, my involvement aligned with the pandemic and thus I have only experienced online conferences. Therefore, I can completely feel and understand the possible frustration of having yet another online MUN. However, covid restrictions are only here to help minimize damage.

This is exactly what the environmental commission fends for: human sacrifice for the general prosperity of our world. Through this committee, we all have the chance to get informed of current vital problems and find appropriate solutions. We can learn how to put aside some luxuries to help with the ongoing crisis that our environment is in. Plastic overuse, exploitation of resources and of course the great pacific garbage patch are all great examples of this issue. Our oceans, our wildlife, our earth is at stake and through this MUN we can raise awareness as well as get a glimpse of how the real UN deals with such problems.

I hope that you find my study guide helpful for your research and I fully trust that you go on and assess your countries' policies, come up with innovative resolutions and have a broad view of this crucial issue. I wish you all the best with your preparation and anticipate our collaboration. Moreover, if you find yourself in need of further clarification or have any questions whatsoever, please feel free to contact me through my email, I.Karali@acg.edu

Best regards,

Ioanna Karali

TOPIC INTRODUCTION

It has become a known fact that human exploitation of resources and the endless production of waste, comes to the expense of our oceans, endangering all wildlife. However, to what extent do we understand that pollution?

The Great Pacific Garbage Patch (GPGP) also known as The Pacific Trash Vortex is a term used by the media, often depicting an inaccurate image. Due to general misleading references, it is often thought to be an “island” composed of litter, such as bottles, bags etc. However, that is not the case. The true meaning behind this term is marine debris gathered in the center of the North Pacific gyre, due to the circling motions of currents and winds leading them there. The said marine debris consists of microplastic that is undetected by satellites and of course the naked eye, along with the minority of more visible trash. Since tides are responsible for the extent and exact place of this “patch”, its location depends on the season and weather, thus it is impossible to pinpoint an exact place on the map. Regardless, it is generally defined between the states of Hawaii and California.

This said pacific trash vortex is the biggest landfill in the entire world and is estimated to be thrice the size of France. So, when mentioning potential consequences, one could say that it has numerous. Endangerment of marine wildlife, interference in the natural food chain, reduction of oxygen production and harmful emissions are only a fraction of the reverberations caused by the GPGP. Hence, it is exceedingly important that all factors leading to this should be eliminated and further action should be made to contain the damage.

Deplorably, apart from the notorious GPGP there are other garbage patches around the globe, less extensive but still contaminated with such microplastic. More specifically, there are five gyres in all oceans, that with the same circling motioned currents capture marine debris inside them. Luckily, they haven’t yet been polluted to the same extent, therefore no actions have been implemented.

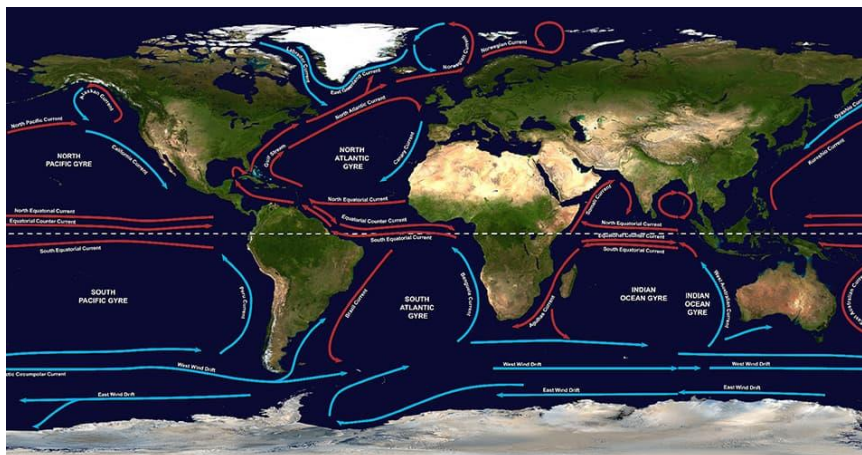


Figure 1: Image is depicting the five gyres around the world¹

DEFINITION OF KEY TERMS

Currents

“Ocean currents, abiotic features of the environment, are continuous and directed movements of ocean water. These currents are on the ocean’s surface and in its depths, flowing both locally and globally.”²

Gyre

“A gyre is a circular pattern of ocean currents. There are five gyres in total, the North and South Pacific Subtropical Gyres, the North and South Atlantic Subtropical Gyres, and the Indian Ocean Subtropical Gyre.”³

Marine debris

“Marine debris is litter that ends up in oceans, seas, and other large bodies of water.”⁴

Microplastic

“Microplastics are tiny plastic particles that result from both commercial product development and the breakdown of larger plastics. As a pollutant, microplastics can be harmful to the environment and animal health”⁵

North Pacific subtropical gyre

“The North Pacific subtropical gyre is located between Japan, Taiwan, and the east coast of China. It is the one accommodating the Great Pacific Garbage Patch.”⁶

Vortex

“A mass of fluid (such as a liquid) with a whirling or circular motion that tends to form a cavity or vacuum in the center of the circle and to draw toward this cavity or vacuum bodies subject to its action.”⁷

¹ "What is a Gyre?" NOAA's National Ocean Service, oceanservice.noaa.gov/facts/gyre.html.

² "Ocean Currents." National Oceanic and Atmospheric Administration, www.noaa.gov/education/resource-collections/ocean-coasts/ocean-currents/.

³ "Gyre." Cambridge Dictionary | English Dictionary, Translations & Thesaurus, dictionary.cambridge.org/us/dictionary/english/gyre.

⁴ National Geographic Society. "Marine Debris." National Geographic Society, 9 Oct. 2012, www.nationalgeographic.org/encyclopedia/marine-debris/.

⁵ "Microplastics." National Geographic Society, 28 June 2019, www.nationalgeographic.org/encyclopedia/microplastics/.

⁶ Also, Undefined. "Gyres Definition | Gyres Ocean | Subtropical Gyre & Subpolar Gyre." Shark Tank Updates, 29 Mar. 2021, biznewske.com/gyres-ocean/#South_Pacific_Subtropical_Gyre.

Photodegradation

“Process by which pesticides are broken down by the action of light, particularly sunlight.”⁸

BACKGROUND INFORMATION

The Discovery of the GPGP

Captain Charles Moore is a marine scientist that specializes in water contamination and ocean pollution. His mission began with the Algalita Marine Research Foundation that he founded back in 1994 to improve water quality to regions in need. However, after a trip through the North Pacific Subtropical Gyre in 1997, he unintentionally discovered a sea flooded with plastic and debris.

After this significant discovery of the GPGP, he changed his goals and concentrated on his new finding. In 1998, a year after the expedition, he returned to conduct thorough research on the trash vortex. He found out, that the patch was growing at a fast pace in regards to extending and density. He immediately started raising awareness, making public speeches, articles etc. and completely altered his foundation to further research in the garbage patch.

Causes

The main root of this problem is the general ocean pollution. Once the waste is dumped into the sea, it is bound to submerge into one of the gyres and often stay there for a significant amount of time. How does debris end up in oceans, though?

An average human produces 1.5 tons of individual waste annually⁹, which most of the time cannot be recycled and ends up in landfills or thrown in public places. Then through sewage litter and/or weather implications, it is driven into the ocean, where currents lead it to the patches. Additionally, there are a lot of unlawful shipping companies and large corporations that tend to throw their waste in oceans as an easier solution, along with the usual shipwrecks that greatly contaminate the region.

⁷ "Definition of VORTEX." Dictionary by Merriam-Webster: America's Most-trusted Online Dictionary, www.merriam-webster.com/dictionary/vortex.

⁸ "Photodegradation." ScienceDirect.com | Science, Health and Medical Journals, Full Text Articles and Books, www.sciencedirect.com/topics/chemistry/photodegradation

⁹ "How Much Trash Do You Produce in a Week?" Greenpeace Australia Pacific, 28 Mar. 2019, www.greenpeace.org.au/blog/trash-selfie/.

Consequences

The Pacific Trash Vortex is extremely harmful to the environment and bears a lot of consequences for the health and well-being of all biodiversity. It is a widely known fact that plastic cannot biodegrade but photodegrade instead. That means that due to the sun's rays and the overall heat, it breaks down into extremely small fragments, which are unnoticeable with the naked eye, called microplastics. These said microplastics do not necessarily float to the surface, but rather 70% sink to the bottom of the ocean¹⁰. As a result, they contaminate and endanger entire ecosystems, tamper with the production of oxygen and produce high levels of chemical toxicity.

Microplastic is so minuscule that it cannot be distinguished by the small filter-feeding fish, meaning fish that filter organic matter or minute organisms from a current of water that passes through part of their system, like whales, which consume it and thus become contaminated. Apart from a large percentage of them dying from the plastic's toxicity, the majority are then eaten by other animals, evident in the ecosystem's food chain. Consequently, they all digest some form of plastic and soon die. In this vicious cycle, humans play a significant role, as they also digest that befouled food. Furthermore, every garbage patch has some litter that have not yet been photodegraded and a lot of fishing gear, such as nets. These are often mistaken for prey and get eaten by turtles, seals, sharks etc. that suffocate by them or are entrapped and injured by them due to the fishing nets.

Except for the wildlife, oceans also provide the highest percentages of oxygen through their plants and plankton. However, because of the debris covering the surface, they have no access to the sun and cannot photosynthesize. Hence, the largest resource of oxygen threatens to be eradicated. What makes the situation even worse is, that plastic has the ability to summon the toxic chemicals stranded at sea and collect them in one place. Thus, they become a strong source of harmful emissions.

Current situation

Due to the Patch's location, away from all coastlines, it is considered to be in international waters and so no country has taken responsibility. Such action is to be expected, since it was estimated that for 1% of the garbage to be picked, they would

¹⁰ National Geographic Society. "Great Pacific Garbage Patch." National Geographic Society, 9 Oct. 2012, www.nationalgeographic.org/encyclopedia/great-pacific-garbage-patch/.

need close to a year, approximately 67 ships¹¹ and special techniques so as to not capture the wildlife along with the microplastic. Hence, any country attempting it, would eventually bankrupt.

The same goes for attempts made by NGOs. Even though they are willing to help and have come up with innovative ideas such as project KAESAI, it is extremely hard to receive funding, bring the equipment into the Pacific and not harm further the marine life. The project KAESAI suggested that big nets captured the debris and recycle them, something that scientists found impossible along with the majority of other ones.

MAJOR COUNTRIES AND ORGANIZATIONS INVOLVED

United States of America

The GPGP is near the USA's region, and even though they take no responsibility, they have acknowledged the problem. The USA has founded their first environmental intelligence commission, the National Oceanic and Atmospheric Administration (NOAA) that has made the NOAA prevention, which was signed by the government, the reduction act, talking about reducing waste and the exploitation of resources and conducted marine debris research. Additionally, they collaborate with the Environmental Protection Agency (EPA).

Australia

Australia has remained active upon the matter, as well as addressed and acted upon ocean pollution. They have proposed the Threat Abatement Plan which reviews existing policies and examines joint agreements. Moreover, they introduced the National Waste policy that aims to reduce plastic waste, encouraging recycling and product responsibility and finally they established the Caring for my Country program that mostly monitored clean-up activities and informed the public.

France

France utilizes the method of removal by suction that was first introduced in 1967 by the French after the Torrey Canyon Spillage. This is a method that every government can use to clean up oils from the sea and thus from the GPGP. However, it needs a lot of funding something that a lot of countries lack. How this procedure functions is with the help of "straws" that are placed in the contaminated surface and soak the

¹¹ National Geographic Society. "Great Pacific Garbage Patch." National Geographic Society, 9 Oct. 2012, www.nationalgeographic.org/encyclopedia/great-pacific-garbage-patch/.

first “coat” of chemicals. Through repetition, the majority of the said oils or chemicals, in general, are extracted from the oceans.

China

As China has the second largest economy, it has a great contribution to the percentage of ocean pollution and water contamination. Even government officials have recognized the environmental crisis at hand. 'Our environmental quality is only improving in certain areas, but overall the environment is still deteriorating,' Vice Minister of Environmental Protection Zhang Lijun told state media. Thus, they have implemented new state and province laws about the contamination of their rivers, coasts and oceans and have new regulations to control and thus prevent further pollution.

Indonesia

Recognizing this issue, the Indonesia government published in 2017 the national plan to fight marine pollution as they have a new goal of reducing it by 70% until 2025. So, it has started a lot of initiatives and along with the reduction of waste in tourist areas. In 2020 they introduced a new regulation that stated that all industries shall reduce the plastic used in their packaging by at least 30% in ten years and introduced a new policy against the utilization of single used plastic

The Ocean Clean-up

So far, the ocean cleanup organization is the only one suggesting an innovative and yet feasible solution of taking action. It was founded in 2013 by the Dutch inventor Boyan Slat. More specifically, they have created fake coastlines inside the gyres that trap the litter and lead them to their ships. From there they go on recycling what they can with a zero-waste policy.



Figure 2: This image depicts the process of collecting the debris. Natural forces sweep the trash into the barrier that because of the anchor moves slowly and captures them all.¹²

KANSAI project

The Kansai project is the first to develop a plan on collecting the microplastic, by huge, regulated nets and then proceed to turn it into power. However, scientists argued about the feasibility and the economical capacity of delivering this mission. Even though theoretically it was an innovative solution, it was never tried as it had a lot of drawbacks including the additional endangerment of marine life.

Algalita marine research foundation

It was the first foundation to discover the GPGP and act on raising awareness along with thorough research on the minuscule compartments of the debris. It has made revelations including the density of the patch and the depth that the microplastic goes into the sea water.

The United States Environmental Protection Agency (EPA)

The US EPA implemented the Shore Protection Act (SPA) in 1988, which banned all waste dumping in the oceans along with the prohibition of transport of municipal waste within coastal waters. This has proven prevalent, seeing that this act disallows any further trashing near coast lines which could add fuel to the existing fire of problems.

RELEVANT UN RESOLUTIONS, TREATIES AND EVENTS

14th Goal for Sustainability

As the UN tries to accomplice sustainable development, it has set some goals to achieve until 2030. So, in response to the 14th goal calling upon sustainable and conservative usage of the ocean's resources and marine life, they have established the ocean conference. The first time it was held was in 2017, with Fiji and Sweden co-hosting, where they agreed on the declaration of "Our Ocean, Our Future: Call for action", which mainly focused on successful partnerships and the identification of means to implement sustainability. The second conference took place in 2021, co-hosted by Kenya and Portugal, where they set the ground for further research and finding solutions.

¹² "Ocean Cleanup Attaches Parachutes to Trash-collecting Barriers to Maintain Steady Speeds." New Atlas, 19 Aug. 2019, newatlas.com/ocean-cleanup-parachutes-plastic/61119/.

Trash Isle

The organizations LADbible and Plastic Oceans Foundation submitted a declaration of independence in the UN, demanding that the Great Pacific Garbage Patch is considered a new country named Trash Isle. They wanted that recognition so as to become a member of the UN and be protected by the UN's environmental Charter, which clearly states that all other nations are obliged to help another country member in environmental crisis. "All members shall co-operate in a spirit of global partnership to conserve, protect and restore the health and integrity of the earth's ecosystem"

Fortunately, this application was approved with the spokesman of the secretary general, Stéphane Dujarric, being an official citizen. Today it has its own flag, passport and currency called debris, and is the 25th smallest nation. Currently it a country with over 140.000 citizens¹³ and it is up for discussion on whether it will be an official UN member.

5th session of the UN's Environmental Assembly

The 5th session of UNEP (United Nation's Environmental Assembly) takes place online on 28 February to 2 March online in Nairobi, to agree on policies for sustainability. So, we are yet to be informed about further actions by the UN, which has declared that the meeting sets sight about a new treaty.

Finally, the UN has encouraged all NGOs' actions and solutions, especially the ocean clean up and has provided additional funding.

PREVIOUS ATTEMPTS TO SOLVE THE ISSUE

As already mentioned, apart from the ocean clean up no further action in collecting the debris has been implemented. However, some attempts do deserve recognition despite their inability to solve the issue at hand.

The KAESAI project

The KAESAI project was another suggestion proposed but it wasn't feasible according to specialists. There are a lot of initiatives, about recycling methods, individual responsibility and education that is either introduced by governments such as China, Australia, New Zealand etc. or NGOs such as green peace, national ocean service and more.

¹³ "Come Join The Trash Isles!" Trash Hero World | We Clean, We Educate, We Change, trashhero.org/would-you-be-for-citizen-to-the-trash-isles/.

Diverting waste dumping

Governments have tried to tackle this issue by making goals in ameliorating our environment through controlling their dumping of waste and reducing the single use plastic. Shipments are now greatly monitored to avoid accidents as well as illegal actions by corporations and new agreements have been signed about the ocean pollution. The greatest achievement though is that almost all countries have recognized the problem.

POSSIBLE SOLUTIONS

As the GPGP is a multidimensional issue that has originated from years of abuse and misutilization of the environment, it is expected that drastic change should be made to reduce the debris at sea and ensure no further pollution plastic waste will be accommodated. Therefore, two spectrums need to be covered in any resolution: prevention and immediate action.

Prevention

Prevention can be achieved through the implementation of new eco-friendly protocols for each government. They could include new recycling methods, such as the “waste-to-energy power plants” in Sweden, which uses non-recycled waste to regenerate electricity for up to 250.000 households reducing waste and harmful emissions. Additional protocols could be the banning or the adding of extra taxes to discourage the usage of plastic and the introduction of biodegradable materials by making them more accessible to the general public.

Another possible solution could be establishing an independent unit to assess the eco-friendliness of big corporations and countries, reporting back to the UN. Then sanctions could be in order, for those who illegally and/or irresponsibly dispose of waste. In the end, raising awareness, as well as educating the public are vital aspects for the eradication of ocean pollution.

Immediate action

Since there is a huge part of the ocean flooded with microplastic, it is of great essence, that it is extracted without endangering further the whole ecosystem there. Fortunately, the ocean cleanup organization has found the only effective way to collect microplastic so far and so, it is important that the UN encourages this NGO and further funds it, to continue its mission. Furthermore, as more efficient ideas are needed, competitions and grounds for further research should be organized to motivate innovative thinking.

These of course are only a fraction of solutions, and more clauses are expected for the problem to be utterly eliminated.

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