SEALOEarth

Serene Environment And Life On Earth

A world in which all people participate in the stewardship of planet Earth.

SEALOEarth in Special Consultative Status with the United Nations ECOSOC since 2017

NEWSLETTER

Earth Day 2020

"In wildness is the preservation of the world."

~ Henry David Thoreau

INSIDE

We hope that you will enjoy reading this newsletter!

Leopard, Lioness, and Wildebeest. Photos credit: Praveen Siddannavar

The Giant Tortoise

Galapagos, Ecuador

Diego the tortoise. Photo credit: Galapagos National Park

Galapagos tortoises are the giants of the tortoise world. They are the longest-lived of all vertebrates, averaging over 100 years. The oldest on record lived to be 152. Some species of the world's largest tortoises exceed 5 feet in length and reaching 550 pounds. Naturalist Charles Darwin made his historic voyage in 1831 to the Galapagos Islands. A Galápagos tortoise can go without eating or drinking for up to a year because it can store food and water in its body. They are cold-blooded like other reptiles; they like to soak in the sun to warm up. Galápagos tortoises amble along at an astonishing 0.16 miles per hour (.26 kilometers per hour). (San Diego Zoo)

Giant tortoise species, along with the endemic rice rats, were the most historically decimated species in the Galapagos Islands. Humans, primarily buccaneers and whalers, exploited them as a food source during the 18th and 19th centuries. They were later harvested for oil. Today, limited poaching of tortoises still occurs in some areas. Introduced species (primarily rats, pigs, dogs, and the Solenopsis ant) prey on tortoises (particularly eggs and hatchling tortoises); others (goats, cattle, donkeys, and invasive plants) damage or destroy tortoise habitat. A total of 15 tortoise species have been identified. According to the IUCN Red List, six are considered Critically Endangered, three Endangered, three Vulnerable, and two Extinct. (Galapagos Conservancy)

The Giant Tortoise Restoration Initiative, led by the Galapagos National Park Directorate and the Galapagos Conservancy, began in 1965 with the aim of repopulating the islands' threatened tortoise species. At the time, only 14 tortoises — two males and 12 females — lived on Española Island. (NBC News, 2020)

Diego, a tortoise more than 100 years old, is credited with helping to restore the tortoise population in the Galapagos Islands, where a 40-year breeding program on Española Island ended in 2019. Thanks to this program, there are now 2,000 tortoises on the island. Diego was expected to be released to the native Española Island in March 2020 following a quarantine process. Happy retirement, Diego!

Washington Tapia. Photo credit: Galapagos Conservancy

The initiative's director, Washington Tapia, said that, "The island has sufficient conditions to maintain the tortoise population, which will continue to grow normally — even without any new repatriation of juveniles." (Press release, 2020). And while the tortoise population has made major gains, it has a long way to go to grow to the size of its original population: between 200,000 and 300,000 tortoises.

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Celebration of Earth

Westford, Massachusetts, USA

On April 22nd, 2020, the Earth Flag was hoisted at the home of Dr. Chaitanya Hiremath.

Earth Day Celebration was originally scheduled at the J V Fletcher library in Westford, Massachusetts on Saturday, April 25th 2020. Due to stay-at-home orders in response to COVID-19, the celebration was virtual using Zoom and was hosted by Dr. Hiremath. Prof. Robyn Henderson joined the meeting all the way from Australia, in the middle of the night. The Earth Day address by Mrs. Rebecca Ingerslev emphasized the importance of Earth Day to change our lives and our world forever. She then announced the winners of the contest. The certificates and prizes were mailed.

"***I hope that 50 years from now, when we celebrate the 100th anniversary of the Earth Day, first, we can all do it in-person and be together. And second, I hope that we can say we all took as many steps as we could, big and little, and that we were able to protect the Earth from the worst of ourselves by using the best of ourselves -- our caring, our commitment, and our work towards educating the future generations***."

-- Mrs. Rebecca Ingerslev

Global Essay Contest 2020

Around the World

In the early 2020 alone, SEALOEarth's global reach included countries such as, Brazil, China, Malaysia, India, Indonesia, Italy, Jamaica, Nigeria, Pakistan, Philippines, Republic of Korea, Russia, Saudi Arabia, Saint Lucia, Switzerland, United Kingdom, United Arab Emirates, and United States among others.

We received strong essays with great rhetoric, appeal, logic, reason, and emotions and really interesting topics. The essays were blind-scored by our international panel of judges from Australia and the United States. Mrs. Rebecca Ingerslev has motivated her students to participate in the contest, year after year.

Winners

"*Describe how we can open our heart and feel grateful for the beauty of this planet and its inhabitants."*

Juniors (ages 15-18)

Austin Smith (USA)	1st
Izzy Fantini (USA)	2nd

Honorable Mention

David Silvia (USA)
Hannah Ditmars (USA)
Joey Bienkiewicz (USA)
Madison McKeon (USA)

Essay prompt for 2021

"*How do we create a future in which both people and nature can thrive?*"

The deadline is March 1, 2021.

For more information, please visit:
http://sealoearth.org/essaycontest.html

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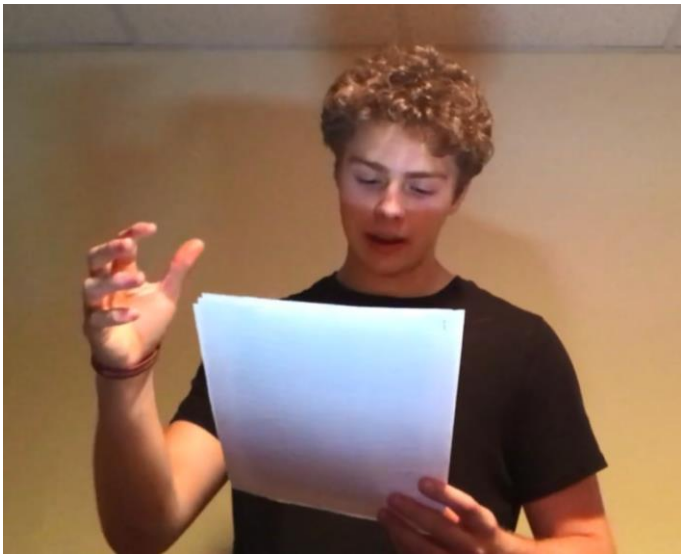

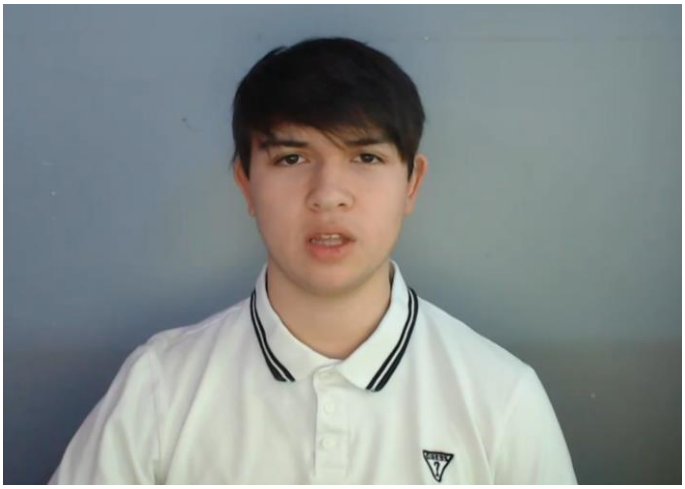

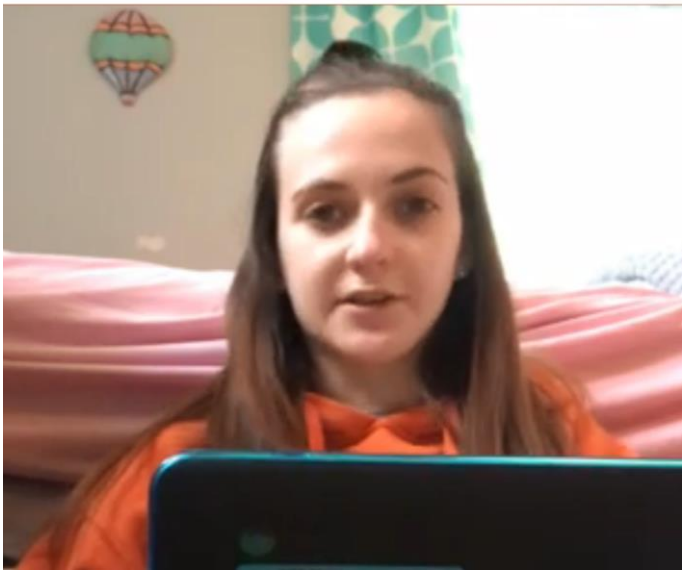

Photo credit: Videos sent by the contestants.

Species. Home. Family. Food. Hope 2020.

"It is our wish that every species on this planet has its own clean home, where it can raise its own family, happily, and there is sufficient food for all."

- DR. HIREMATH

Nature in your Neighborhood

Photo credit: Praveen Siddannavar

Maasai Mara, Kenya, Africa

Magical Mara

Praveen Siddannavar, India

Award winning

Natural history photographer

Wildlife conservationist

Maasai Mara National Reserve is located in southwestern Kenya, bordering the Tanzania in East Africa. The Maasai Mara National Reserve was established in 1961 as a wildlife sanctuary covering a small area of only 520 square kilometers; which was tripled to 1510 square kilometers by 1984. The reserve is dotted with many villages of Maasai tribes, and interestingly many Maasai's work for various lodges and camps as drivers and naturalists. The reserve is renowned for its large populations of the African Lions, Leopards, Cheetahs, Elephants, varieties of Antelopes like the Thomson Gazelles Impalas, and others. Wildebeest migration in Maasai Mara is one of the several natural wonders of the world. During the great migration approximately 1.7 million wildebeest and over 300,000 Zebras migrate into Maasai Mara from Serengeti. (Maasai Mara National Reserve)

Photo credit: Praveen Siddannavar

African Savannahs has amazing birdlife too with approximately 470 birds species of which many are migrants, however the birds which can be spotted most part of the year include vultures, marabou storks, secretary birds, hornbills, crowned cranes, ostriches, long-crested eagles, African pygmy-falcons and the lilac-breasted roller, which is the national bird of Kenya.

There is nothing ordinary about the plains of Maasai Mara, Kenya. Every frame holds the power of redefining the moment. From the million hues of gold and green grass to the dance between the prey and the predator, the story woven around the circle of life in the land where the sound of the million hooves and the whispered wind holds the power of taking you back in time.

During my recent visit to Maasai Mara, my wife and I witnessed a rare moment – "A Newborn in a Tangle of Legs and Trunks". We observed a herd of elephants scattered and seen grazing the fresh green grass around us. Trumpet calls - from a gentle hum to loud - all in one breath filled the air.

There was something amiss - for so many elephants, in unison, to trumpet. Elephants' trumpet calls normally indicate dramatic moments like greetings, social events like courtship, welcoming a newborn or signaling danger or even some disturbance.

Our local Maasai driver Sammy said there is a possibility of the birth of a newborn calf, a beginning of a new life. A life that would journey through the undulating land and be privy to lores of the old. It was a moment that every naturalist lives for - to witness the dance of the circle of life.

To our surprise about 15 elephants were seen in a huddle, moving forwards and backwards and flapping their ears back and forth. Between almost 24 legs and 12 trunks, we barely could see a tiny calf lying on the floor that was just born. The mother's placenta was still partly visible on the newborn, the trumpet calls continued. The air was abuzz with activity.

It is moments like these when everything else takes a backseat. Being privy to nature's cycle of life and witnessing the birth of a calf in a land, which has seen the stories of a million footprints, this, for us, as naturalists was a first.

We were given to understand that this moment in the maasai culture is considered to be very auspicious and Sammy narrated more on this.

Just like humans, the rituals of birth came into play - the constant trumpeting announcing the newest addition to the family; each elephant was seen gently touching the newborn male calf with their trunk - almost like a blessing and gently including the calves to mimic their actions - like an introduction. Each elephant was seen taking turns to welcome the newborn; helping and motivating the calf to stand on his feet.

The newborn was struggling to stand on his feet, he kept trying to get back up on his feet despite several failed attempts and most of the time, we saw him on the floor. However, each time he fell the rumbling & trumpeting was louder and the elephants reached with their trunks to comfort and help the baby stand on his feet.

The herd was extremely possessive and protective in shielding the mother and her newborn; one could barely see them amidst, through pillars of 24 or more legs and a dozen trunks. The exhausted mother was still bleeding but her family stood by her - gently nudging her, motivating her, coddling her - as we learnt, it's important for the mother to stay strong, since the calf will soon crave for his mother's milk.

Witnessing the rituals - which included burying the mother's placenta in the ground to ensure the scent of fresh blood and body mass doesn't attract the predators; we were absolutely spellbound to see the amazing bond between the elephants.

Photos credit: Praveen Siddannavar

The twilight was giving way and darkness was enveloping the land in its folds. We knew that it was time for Sammy to turn the 4x4 back to the camp.

Next morning, we decided to drive to the same location, as we were sure that the herd wouldn't have moved far with the newborn. Bathed in the morning golden light, the newborn was making his presence felt, under the constant encouragement of his herd and gently pampered by his mother, his steps were small, we could sense the imbalance but gradually he walked along.

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Praveen Siddannavar's images have also been exhibited both at national and international art galleries in London, New York, Portugal, Iraq, Dubai & India.

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Photos credit: Praveen Siddannavar

The Digital Environment

Austin Smith (17)

Massachusetts, USA

Simulations of the real world are created each day, but how can they be used to save the real one? The world is a magical and wondrous place that each and every human lives on, but the Earth itself is treated as an afterthought by far too many. As brought up by Kevin Anderson of the University of Manchester, the powerful people of the world are relying on technology that sucks carbon out of the air when that does not even exist currently ("The Race" 16:00-16:35). Although a quick fix to the problem sounds nice, we should take action instead of sitting around and waiting for someone else to fix the world's environmental issues. Using long existing technology, the problem could be taken on by people around the world. But what would work? That technology must get to the root of the issue, which is a matter of getting people to care. Video gaming, which is the biggest entertainment industry on Earth with 2.3 billion gamers ("With 2.3 billion gamers"), is the key in getting people to care about the Earth, as seen through the genres of survival-based and apocalypse-based games.

In order to truly make the inhabitants of Earth care about the planet it is crucial to directly present the connection between the environment and daily life, and survival video games are the perfect way to experience the beauty of the environment from the comfort of one's home. Whether it is survival in the wilderness against nature itself or against unknown creatures the most important part is the steps taken by the player to overcome problems. This mentality is crucial to fixing environmental issues as one of the best ways of going about dealing with climate change is through small steps taken by everyone. In addition, one of the most interesting types of games for players are those that focus on conservation of resources in order to survive as long as possible. Failure to properly maintain and sustain is what leads to doom in these virtual worlds. Real life is the same. According to Paul Stamets, a renowned mycologist, "Not only will we destroy the organisms, we'll destroy ourselves" ("Fantastic Fungi" 02:18-02:20). To destroy our resources is to destroy ourselves. No matter to what degree someone cares about the real environment in order to achieve victory they must accept this truth. The ideas of problem solving and resource management are crucial to saving the environment and these are both skills naturally taught to a player of a survival-based game.

Photo credit: Climateracefilm.org

It is a matter of making this gaming connection apply to the real world. Video games may seem like the most disconnected thing in modern life from nature, however gaming has evolved to a degree that these virtual reality experiences are nearly indistinguishable from real life. Gaming possess characters and stories that cause people to shed a tear. Emotional connection is crucial in making people care, as from what I've experienced a lack of investment or care leads to indifference and inaction. In addition to the benefits of survival games mentioned before, the player is rewarded for taking. In order to stop the destruction of the environment and by extension the destruction of future generations risk taking is of the utmost importance. Is the impact of this specific genre of

gaming enough though? One of the most sold games in history is one that focuses on survival: Minecraft. This blocky experience has been downloaded by 176 million people (Valentine). It is not the most graphically immersive survival game, but its key concept is that of creativity. In fact, Minecraft has been used in many schools around the country for educational purposes already, where on reason is for its ability to develop creativity (Aurora). Minecraft has captured the hearts of millions and has been proven to work in the educational field. This example of a video game that has touched the hearts of millions is representative that this entertainment genre can transcend past the basement of some gamer and be used to make people more inclined to help the environment.

Photo credit: Minecraft.net

Games that focus on sustainability are important, but those that are built on the collapse of society are vital in really getting people to care about the environment. These so-called apocalypse games portray worlds devastated by things like nuclear war and societal collapse. One thing that is consistent throughout the genre is that of environmental breakdown. In games such as Fallout the player is exposed to the visually barren and grey environment as much as they are the radiation from nuclear war. Using this imaginary of a scourged landscape is an effective way of shocking people into realizing just how beautiful nature is, and how much it is taken for granted. Louie Schwartz narrating over a beautiful scenery once said, “It’s a gift” (“Gratitude” 01:46-01:47). The gift of nature needs to be preserved in order to prevent the horrible and barren existences of the people in the Fallout universe, and allowing them to compare and contrast the real world’s beauty and even the real world’s pollution visually would at least cause them to think. Again, thinking is crucial as the first step to fixing a problem is acknowledging it. In addition, comparing and contrasting the real pollution to the destroyed virtual Earth strikes emotion. Just like thinking emotion is so crucial as the greatest way to have people act is through emotional investment, which is gained here through the preview of the future in Fallout’s wasteland if humans decide inaction is the route to take. Through the use of apocalypse style games people can better come to grasp and understand the grave consequences of what climate change can and will lead to, and lead them towards caring and wanting to help the environment.

Unlocking people’s hearts and minds through video games have been done for years, whether it’s through heart-wrenching stories or vast and interactive experiences. Getting people to really care about the environment is by far the most important step to maintaining and conserving our way of life. When a majority of the planet is working to solve a problem that is when things get done. It is like a band of people joining together to take down the final boss of a game, where the final boss for the people of Earth right now is climate change. Furthermore, the youth of the planet will be the ones to change it as they will be the ones to deal with it. Greta Thunberg, who is a teenager activist fighting against climate change, stated in an address to the United Nations in reference to the youth, “we who have to live with the consequences” (“Watch Greta Thunberg’s Impassioned Speech” 02:14-02:16). Video games are strongly tied into the youth culture be it mobile, console, or computer where 56% of teens aged 13-17 play video games for an average of two and a half hours a day (“With 2.3 billion gamers”). So subtly but strongly putting messages and mentalities to maintain our planet is crucial. Telling a member of the youth that they need to do this or that in my experience has led to fostering of hatred or indifference towards actually doing it. Hence, why the medium of gaming with subtle and effective messaging behind intriguing and engaging gameplay will allow the young generation to come to those conclusions on their own. Using everything they had been exposed to in countless hours of gaming to save the world from centuries of man-made destruction. All examples of games here were not

created with the intent to save the Earth, but contained so many subtle ideas crucial to doing so. The untapped potential comes in games designed specifically for that purpose, and that is a future development the planet itself would love to see.

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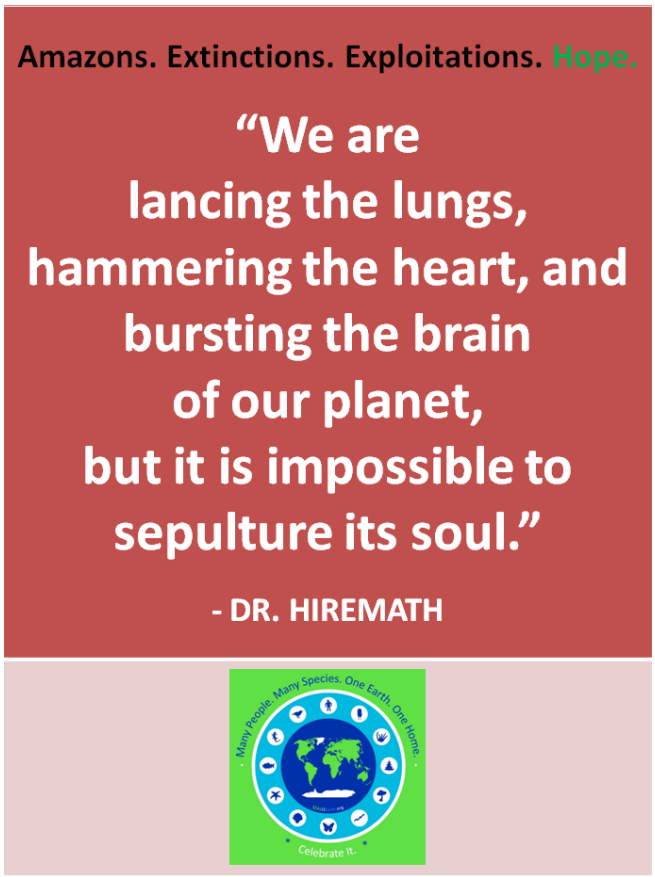

Fungi's Everlasting Effects

Joey Bienkiewicz (17)

Massachusetts, USA

"Food, medicine, textiles, fiber, packaging materials, biofuel" ("You Didn't " 00:00:06). Mushrooms are the key to a life beyond today's society. Every day the world becomes more polluted by the second, and nobody else is to blame besides the people living on Earth. Nature has gifted us with fresh water, clean air, and animals and plants to eat but all we've done is pollute our amazing little planet. For example, Christopher Carbone, a communication instructor and journalist for Fox News says "More than 95 percent of the world's population is breathing polluted air" (Fox News). This is disgusting. Absolutely disgusting. We are letting our generation and many more to come, slowly kill us. Through all this sounds horrible, there is always hope. As humans we should group together to start using mushrooms more because of its positive impacts such as being a substitute for biofuel, they could help big companies to construct infrastructural materials, and could stop contamination of modern medicines in water. However, with everybody's help we can use mushrooms to help improve the Earth as a whole and significantly limit pollution.

Mushrooms can be made into biofuel which would dramatically affect the percent of pollution in the world. Currently with such high air pollution, it could negatively affect us by irritating human's eyes, lungs, nose, and throat. According to Skeptical Science, "Fossil fuel combustion for energy and transportation is responsible for approximately 64% of human-caused greenhouse gas emissions globally, and more in developed countries (e.g. 80% in the USA)". With such a high number contributing to air pollution, someone needs to stop this. There are many great biofuels us humans could use that would better the Earth, but most of these materials take away from food production. However, mushrooms make an amazing biofuel that does not take away any food production due to its overwhelming yields. Mushrooms are a fungal phenomenon that could solve this concerning world problem. According to Professor He Jianzhong, "The production of biofuels using non-food feedstocks can improve sustainability and reduce costs greatly" (Gorey). With lowered production costs and non-food consuming types of manufacturing, this ideal concept is a total no brainer. Assuming lower costs, companies will have more funding for bigger environmental projects to help improve the world as a whole and with non-food consuming manufacturing, it saves the Earth by animals releasing less methane gasses and more food for people in need. Not only does this prevent methane gasses and lessen costs of other biofuels, but it is also a great replacement for gasoline. "Regularly the average American spends about 2 thousand dollars a year on gas" (Elliott). What if I told you would not have to modify your car, could pay less for gas, and make it more reachable for a larger audience of people trying to save the Earth? Overall, in the near future mushrooms will dominate in the biofuel game because of their amazing and eco-friendly attributes. Would you make the switch? Because anyone in their right mind definitely would.

The bacterium used to create biobutanol is isolated from waste after harvesting mushrooms. Photo credit: Kartinkin77/Shutterstock

Fungi's main role in life is to live, die, and regrow. As many would call this just basic nature, I would call it a form of recycling. In a world where left over non-biodegradable waste is left everywhere, I truly do not see us on this planet for much longer. Mass producing cement, bricks, and various other materials fumigate toxins into the air through their giant smokestacks. Cement and brick do not break down and leads to an abundance of unwanted material once it has become damaged or retired. We need to make a change and it has to happen now. Mycelium construction is a way to turn one of nature's gifts into something even more useful and effective. Though the formations of this material aren't easy, or even easy to understand, Critical Concrete explains it in an easier way. "Mycelium technology has a lot to offer. It mainly consists of a process where an organic substrate is inoculated and gradually digested by the mycelium, forming a solid mass. Later in this process, the biological activity of the mycelium is terminated and the final material is produced" (BUILDING WITH). Mycelium acts as glue that can bond independent mushroom materials together. With this special part of the fungi, it requires no external material to support the mushroom which keeps it clean and maintains its strength. Overall mycelium tech has much to offer. Since there is no dirty way of manufacturing the mushroom, it is 100% organic to the environment. This saves Co2 to be released into the air and proves that it is biodegradable. This means excess and thrown away mushrooms will decompose back into the Earth. This allows the mushroom recycling process to restart and little by little saves the planet from waste if big companies start this new method of infrastructure (BUILDING WITH). Not only do mushrooms provide an improved substitute for concrete and bricks but they can also be used to replace fiberglass insulation. Even the smallest amounts of fiberglass are dangerous to breathe in and cause irritation to eyes and lungs, it's also weather resistant. Since weather and natural causes cannot break it down it is classified as non-biodegradable (Phakos). On the other hand, mycelium insulation can be produced at a cheaper rate and less work goes into producing it. Unlike standard insulation, Mushroom insulation is nontoxic, fireproof, and much better for the environment (BUILDING WITH). Overall, I believe that switching from modern infrastructure to mushroom based infrastructure is the most logical choice. It prevents waste from being polluted over the world and it is a more eco-friendly alternative.

Photo credit: Furniture by Sebastian Cox and Ninela Ivanova made from woodchip waste and Fomes fomentarius mycelium (source: http://www.ninelaivanova.co.uk/mycelium-timber/)

Though reducing air and land pollution is heavily important, I believe that water pollution has an equal effect on how the world functions. Our planet blessed us with clean water from reservoirs and lakes. Therefore, you would think we would take care of it right? Wrong. Humans have contaminated the water in many ways, but one of the main reasons is water contamination. "USGS researchers analyzed samples for 21 different hormones and 103 pharmaceuticals at 1,091 sites around the United States" (Mammoser). Water contamination is a nationwide problem. Our beautiful oceans, lakes, and ponds are filled with medicines that are meant to be consumed, not dissolved into. Everyday people flush drugs down the toilet and don't think of the possible outcomes. Dr.

Ken Spoeth, the chief of occupational and environmental medicine for Northwell Health System states: “There is obviously real concern about it, meaning that it is reasonable to anticipate that there are likely going to be health consequences from these kinds of contaminants” (Mammoser). This. Effects. Everybody. Not only is this harmful to people, but it can also be harmful to ocean animals, livestock, and even your loving pets. The damage has been done, although, we can change this overtime. Hallucinogenic drugs such as psilocybin, which comes from a mushroom, can be used as a replacement for antidepressants and antianxiety medications. The same medications that are being flushed down toilets and released into our vast oceans. If the government decides to legalize “magic mushrooms”, then portions of medicines will stop flowing into water, contaminating it.

Overall, us people need to make a change and it needs to happen now. I'm afraid that if we don’t step up and protect our planet, then our future generations will be forced to live in a polluted world. Mushrooms are the key to bringing a new life to Earth. Mushrooms can create biofuels which can replace gas and stop polluting the Earth’s air. Mushrooms can build infrastructure and will one day replace building materials that will never break down. Mushrooms can replace such medicines that heavily damage the water when they dissolve into it. Overall mushrooms can do so many beneficial things that humans are not even informed about. I think it's time to make the switch and if we don't, then Earth will keep becoming more polluted by the day. With everyone's help we can restore Earth back to its natural beauty and stop pollution one step at a time.

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Worldwide. Concerted. Action. Hope.

“Just three-weeks of worldwide concerted action to tackle a global pandemic, which has resulted in clear blue skies, gives tremendous hope that we can revive our natural world to its glory.”

- DR. HIREMATH

The Importance of Our Oceans

Izzy Fantini (17)

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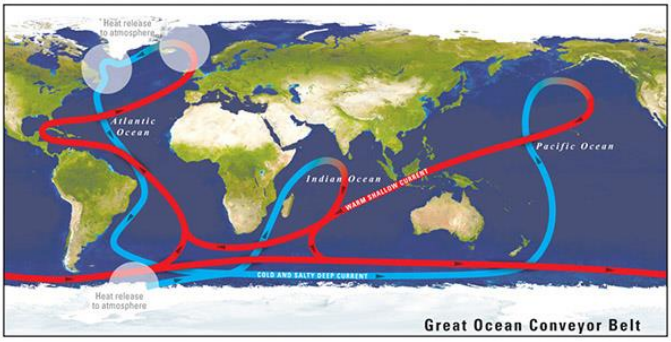
Have you ever touched the ocean? Have you ever felt the warm sand in between your toes and felt truly relaxed? Have you ever longed for a vacation in warm, beautiful water? If you answered yes to any of those questions, then you have a reason to be genuinely upset by what the pollution of this planet is doing to our oceans. The principal investigator of Zero Carbon Britain, Paul Allen, conveys the message, “We are changing things and you don’t need to be a scientist to see it’s changing” (The Race 00:23:39). To help save our oceans and the beautiful marine life that comes with it, the youth needs to have a fundamental education of how the world works.

Everyone learns the water and rock cycles, and what a food web is, but few people have a more in depth understanding of how the ocean is affecting our day to day lives. The ocean affects everything from what we eat to the money we spend, from what we wear to where we vacation, the weather we experience to the medicine you may need for survival. The ocean even affects how we breathe, because 71% of the world's oxygen comes from the ocean (Girardi “Importance”). It’s hard to blame people for not understanding the effect they and everyone they know have on the planet when they have no idea what they are affecting. Not only would a change in curriculum globally help to keep everyone informed about how the world they live in works, but it creates a sense of hope for our youth to create reforms to help our oceans continue to do their jobs. People are more likely to feel a need to help if they feel connected to the cause. Education is the basis for change. The curriculum in the Westford Academy Honors Marine Biology course leaves its students with an in depth understanding of how our world was created and how the oceans play a major role in it. Every high school student should be presented with a curriculum that emulates this course.

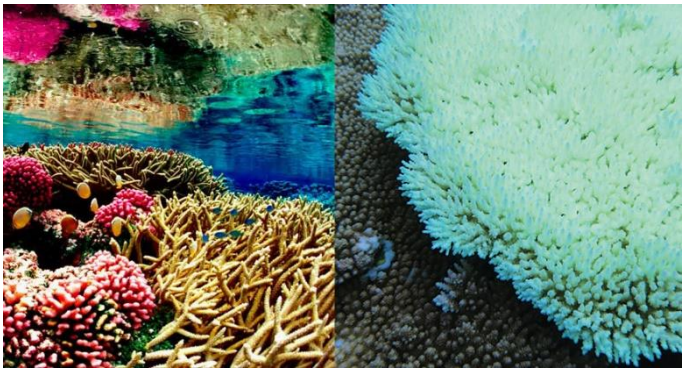


Global Conveyor Belt. Photo credit: Broecker. USGS.gov

A formal education would ensure our youth knows how we got our oceans. Our world started as a molten inferno, then water vapor was eventually introduced to these conditions in the forms of volcanic activity and comets, and Earth began to cool and then it proceeded to rain for one thousand years (Girardi “Importance”). As all this water collected into basins it formed the oceans we have today (Girardi “Importance”). Since the beginning of Earth, our oceans have been there. Scientists have spent entire lifetimes studying the oceans and there is still so much we do not know about them. What we do know is that our oceans affect every other aspect of our lives. In correspondence, we affect how hard the oceans have to work to do their jobs. A major job the ocean has is to circulate its water, and the Global Conveyor Belt is how the water travels (Girardi “Importance”). The water in the coldest parts of our Earth is very dense due to it having a high salinity and being very cold, and this dense and highly oxygenated water sinks to the bottom of the ocean and travels towards the equator where it eventually will become warmer and rise to the surface as it travels away from the equator (Girardi “Importance”). Not only does the Global Conveyor Belt help

to regulate the Earth's temperatures, but any alterations to it can result in rapid climate change, so as the icebergs melt and everything starts to warm up, there is not as much cold, dense water to spark the process of the Global Conveyor Belt (Girardi "Importance"). The Global Conveyor Belt also works with gyres to help keep the ocean healthy in terms of temperature and nutrients (Girardi "Importance"). A gyre is when two cold currents and two warm currents rotate in a circle and, do to continent placement and the Coriolis Effect, these gyres rotate to the right in the northern hemisphere and to the left in the southern hemisphere, and there is a gyre in each major ocean basin and as the Global Conveyor Belt and gyres work together to circulate water it creates upwellings (Girardi "Importance"). Upwellings are when rich nutrients are lifted up from the bottom of the ocean to keep marine life happy and healthy (Girardi "Importance").

The oceans and marine life also keep us happy and healthy. The oceans play a major role in the global economy and nearly everyone's diets. The oceans have important talents like cleaning the air of carbon dioxide and producing oxygen for us, and we also get important things like gas, pharmaceuticals, building materials, jewelry, and food from the ocean (Girardi "Importance"). The oceans can also be used for forms of transportation which helps with global trading and stabilizes our economy. One major animal that plays a role in the world's economy is coral. A coral is a calcium carbonate shell filled with a colony of animals known as polyps that are considered the backbone of the ocean (Girardi "Coral Bleaching"). These corals live in groups and continue to grow through their life time and create stunningly beautiful coral reefs (Girardi "Coral Bleaching"). According to the movie producer Louie Schwartzberg, "We will protect what we fall in love with" ("The Hidden Beauty" 00:01:09). The beauty of these reefs makes it incredibly easy to fall in love with them and recently they really need our help. Over 500 million people rely on reefs for food, jobs, and economy, and not only do coral reefs help a large portion of the world above the water, but 25% of all ocean life depends on the reefs for survival (Girardi "Coral Bleaching"). The Great Barrier Reef is considered the Manhattan of the ocean and is currently dying. A majority of the reefs on Earth are dying due to something called coral bleaching. Coral bleaching is caused by the rising water temperatures, which the average temperature of the oceans is about 17 degrees Celsius and when the water surrounding the reefs rises by 2 degrees or more the polyps release a stress response (Girardi "Coral Bleaching"). Polyps are a sessile animal, which means they cannot move from where they are and can only move small parts of their bodies known as tentacles to catch food. Since these animals are so small and vulnerable, they hide in their calcium carbonate shell during the day and use photosynthesis to eat off the microalgae that lives inside them (Girardi "Coral Bleaching"). The rising water temperature impairs the polyp's ability to photosynthesize, and the polyps kicks out the algae in an attempt to heal themselves, but the water temperature keeps increasing so the polyps never heal and essentially starve themselves to death (Girardi "Coral Bleaching").



Comparison of healthy coral & bleached corals.
Photo credit: Jim Maragos/U.S. Fish and Wildlife Service

Our world and all its natural beauty is overwhelmingly amazing. Having an understanding of how it was created and how it works creates a connection between the Earth and its inhabitants. A connection to a cause makes people more inclined to want to help. The planet is getting warmer and it cannot be ignored. Politicians tend to claim climate change is not real, but there is evidence and statistics and it is impossible to argue with facts and numbers. Not only would a required education allow people who know nothing about the oceans to become informed about it, but it would spark fascination in students who may not realize how easy it is to fall in love with the ocean. Education and fascination will motivate more people to become involved and create new

solutions to help the ocean. This will evolve a mindset that when people schedule a vacation to outstanding beaches they also stop and think about what they are traveling to.

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Animals into the deserted streets

In Just Three-weeks of Lockdown Around the World

Mountain goats were spotted on the streets of Wales.
Photo credit: Christopher Furlong/Getty

Deer were roaming out into the streets of Japan. Photo credit: Okadennis

African penguins were wandering into the street of Cape Town.
Photo credit: @SANCCOB

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The Interconnectedness of Humans: Climate Change

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One of the oldest studied and most intriguing marvels of our world is human culture and civilization; this marvel is very vulnerable to climate change. One of the newly popular terms for this is environmental racism. According to the Oxford reference, environmental racism is defined as the "Intentional or unintentional racial discrimination in environmental policy making, enforcement of regulations and laws, and targeting of communities" (Park and Allaby). In simpler words, areas with people of color are more likely to experience the effects of climate change (Newkirk). Findings indicate that polluters and pollution are disproportionately targeting minority neighborhoods (Newkirk). We have not been tending to our relationship with Mother Earth, and it has consequently become more and more unhealthy. We share this planet with so much diverse life: therefore, we should all feel partly responsible and mindful of the toxins and waste we contribute by educating ourselves, spreading awareness to others, and pressuring our governments to enforce stricter climate regulations. Otherwise, we are enabling the deterioration of our planet.

It can be difficult for one to imagine life outside their own community, but learning about different cultures and ways of life helps decrease the amount of misunderstanding and ignorance. Human culture is truly one of the many marvels of this world due to the fact that human behavior is so different and ways of life can vary so much. American director, Louie Schwartzberg voiced "Each [person] has an incredible story behind their face, a story that you could never ever fully fathom" (Gratitude: The Short Film [3:44]). This points out the notion that every person has a unique and worthy story. This is such a powerful message. Many people do not have the luxury of being able to travel to different countries, which is why schools should sufficiently educate their students about different ways of life. My freshman year, I had a great world history teacher. Instead of lecturing, she would engage us in simulations, videos, and even have us taste ethnic foods. Because she introduced these different cultures with such a personal understanding, I have a lot of appreciation for places I have never been to. By having this appreciation, I am able to recognize that we are all interrelated as humans, and it is our responsibility to help out our neighbors.

The Atlantic. Photo credit: Gerald Herbert / AP

Since the Industrial Revolution, the Earth has warmed by one degree Celsius (Ritchie). Major contributors to the earth's warming include burning of fossil fuels, carbon emissions, and greenhouse gases. These pollutants collect in the earth's atmosphere, trapping the heat. Because this heat is being trapped, the planet is getting warmer (Ritchie). Scientists have concluded that this increase in earth's temperature has led to hotter heat waves and more frequent droughts (MacMillan). Areas that lack the resources and political influence are often the areas that are treated the worst. An example being, in 1988, the residents of West Harlem were discriminated against by

environmental racism (Northridge and Shephard [731]). The Clean Water Act prevented the dumping of waste materials into the Hudson River, so New York City decided to instead construct the North River Water Pollution Control Plant on West Harlem's waterfront (Northridge and Shephard [731]). They let tons of waste trickle into West Harlem's water purely because of politics. The residents of West Harlem were rightfully angered by this, but they were not able to change shut the plant down once it became operational (Northridge and Shephard [731]). This is a clear case of environmental racism. Instances like this should not be based off of socioeconomics. Another example of environmental racism is the infamous Flint Water Crisis. Would Flint Michigan residents have gotten quicker and more aggressive aid if they were wealthy and white? They definitely would have. The majority of Flint residents is black and come from disadvantaged socioeconomic backgrounds. Whether or not racial inequality did in fact play a role in this disastrous event, thousands of residents were exposed to lead in their drinking water (A Question). Flint is an isolated incident that is part of a clear trend. Countless local water treatment plants in small, poor, and minority communities do not have the resources for expensive pollutant filtering equipment which means as many as 63 million Americans are vulnerable to unsafe drinking water (Philip et al.). These pollutants that people are contributing to the waters and atmosphere, are not always affecting them personally. It is often communities with less means that have to bear the burden of these issues.

Contaminated water runs toward the Grand Calumet River and Lake Michigan, the source of drinking water for East Chicago, Ind.. Photo credit: Michael M. Santiago / News21

Seeing as individual countries have enacted their own regulations and they are still not enough to combat climate change, there truly needs to be a global and collaborative approach (MacMillan). I believe to assume every country will use their resources to help combat climate change is risky and leaves too much leeway. It is extremely important that the general population knows how detrimental and irreversible climate change is. Classes like my freshmen world history class that teach a solid understanding of different cultures of the marvels of culture and behavior should be being emulated. One of the most important things we can do to all combat climate change, is to understand how we are contributing. Knowledge is power; and with this power, we will be able to force change whether or not all the countries officials are on board. By having a baseline understanding, we are able to spread this information to others and can make educated decisions that help reduce the size of our carbon footprint. This can be done in many ways including limiting our single use plastic, buying fewer materialistic goods, and voting for officials with clear climate change plans. We need to step back and ask ourselves is it really worth it to drive this planet into the ground because of our self-serving economic, political, and social reasons? We are all interconnected and everyone plays their own role.

The sooner we are able to come to the uncomfortable reality that our behavior has very real consequences, the better. We need to do all we can to combat climate change, not just for ourselves but also for others. It is our responsibility to preserve this earth and all the amazing marvels it has. Although some countries have taken action, not one can fix this themselves. So, it is important that we step back and really assess what we can do better at. Even though we are not the only living species on earth, we have contributed greatly to climate change. We have the means and brains to combat climate change, but do we have the hearts? I certainly hope so.

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Clear Blue Skies

In Just Three-weeks of Lockdown Around the World

The India Gate (New Delhi) before and after shows that the lockdown has drastically cut air pollution across the country.
Photo credit: Biplov Bhuyan and Pallava Bagla via Getty images

Peaks of mighty Himalayas now visible as far as 100 miles away for the first time in 30 years. Photo credit: iStock Photo

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Life Is Dying

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Imagine the most beautiful day you have ever had the chance of seeing. A happy blue sky with a yellow sun, grass so green it hurts to look at, chirping birds flying around the thriving trees, feeding their children and enjoying the day, along with you and every other living thing in the area. Or maybe a cool summer night, right after the golden sun has retreated into the blackness and the moon is trying its hardest to light up the night. Maybe you're taking a walk or riding a bike, feeling the warm air race around your face as you take it all in as the drone of crickets finds its way into your ears. Or maybe you've even been lucky enough to go to a beautiful, sandy white and baby blue colored beach, and plunge into another dimension. These wonderful times, however, will be coming to an end sooner rather than later, thanks to what we've done as a species. There is still a chance to save our wondrous home, but we must grasp this chance by the neck and try our hardest to do what we can to help. Without our help, life in the oceans will be suffocated by trash, while we, along with all the other land creatures, will suffocate under the smog we create. As a race, as a family, we must immediately take this chance to save our planet, our home.

Trash is something we take for granted, and the buildup of this trash has forced its way into the oceans so much, that there are literal islands of trash in the pacific, thus leading to the death of many animals, some of these animals being keystone species. What is a keystone species? A keystone species is a "species so valuable to ecosystem survival" ("Beavers, Wetlands, and Keystone Species" 00:01:38"). With an ecosystem being the habitat or place all these animals live in together, it is pretty dangerous, and sad, for an ecosystem to die. So why do we care? Because if we want to keep our race breathing on this planet, we must stop this madness. According to Paul Stammets, a renowned mycologist, "If we don't get our act together and come in commonality and understanding with those organisms that sustain us today not only will we destroy these organisms but we will destroy ourselves" (Fantastic Fungi, 00:01:32). There are also beautiful, natural wonders all around the world that we have the privilege of witnessing that are beginning to disappear already. Take, for example, the Great Barrier Reef near Australia. It is one of the seven natural wonders of the world, attracting thousands if not millions of tourists a year with its colorful beauty. The reef, however, is currently on its last legs, and is losing this color as it dies. And because everything in life is connected, because this reef holds many species and is basically a keystone species in itself, it would be a massive loss if it were to completely die. The takeaway, however, is that we must stop polluting the oceans, and in general, if we value our home, our animals with whom we share a deep connection in nature to, and our children's lives.

The Great Barrier Reef. CN Traveler. Photo credit: Getty

Unfortunately, the Great Barrier Reef is only one of a myriad of wondrous places that are beginning to lose their grip in this world. I had the chance to go to the Yosemite National Park recently, and words cannot describe the physical beauty of the landscape, and the wildlife all around you, it steals your breath away and immerses you in waves of emotion. It is enough to even move some to tears, but not if we don't switch the rails. After being dwarfed by such pretty nature, the thought of polluting would never even dare to pollute your thoughts, and if everybody came to have gratitude for nature after visiting something like Yosemite, maybe, just maybe we would have much more motivation to switch the rails. Nevertheless, we continue to ride these doomed rails. The Amazon Rainforest in South America, the largest rainforest in the world, home to a crazy amount of species, is becoming very fragile. "NASA reports that the Amazon's trees will start to die if the area's dry season lasts longer than 5-7 months—right now, the dry season clocks in at just a few weeks shy of that threshold" (Moss and Morton). This means that the trees will die off sooner rather than later, and that would be catastrophic to the world - The Amazon is a huge producer of oxygen, it purifies the air we breathe to stay alive, and if that's not enough, a crazy amount of animals rely on the trees in their ecosystem to stay alive. This means that several species will most likely die off, and additionally, because all of life is interconnected, this will be felt worldwide. One last wonder that is in danger is Denali National Park. "With its proximity to the fast-thawing Arctic, Alaska is already experiencing major changes in the form of coastal erosion, sea ice retreat, and permafrost melt. The state's many ice caps are receding at extraordinary rates, triggering landslides so intense they register on the Richter scale. Another devastating effect of higher temperatures: wildfires. Over the last ten years, fires have destroyed more forest in Alaska than any other decade recorded, and that number is expected to double by 2050" (Conde Nast Traveler). At this rate, the trees in the park will soon be nonexistent, hurting the ecosystem by a massive amount, and other dangers are already present, like landslides so big they registered on the Richter scale!


The Amazon. CN Traveler. Photo credit: Getty

Now what can we do to protect all of this beauty? Well, one thing we can do is to copy and amplify the success of others. We must find ways to elicit new types of power, one of which potentially being solar power. Nick Boyle, the CEO of Lightsource Renewable Energy, a private company who makes solar panels, has covered a reservoir of water with solar panels. It creates 6.3 megawatts of energy, 6.3 megawatts less of energy being used against us (The Race is On: Secrets and Solutions of Climate (2019), 00:12:40). Mike Blanch, the founding member of Westmill Energy Coop, has created a community of people who maintain a field of solar panels and windmills (The Race is On: Secrets and Solutions of Climate (2019), 00:13:50). The sense of community in preserving our home seriously improves morale, and also brings in more people to help the preservation. Furthermore, an unexpected source of carbon is the meat industry. When most people think of pollution, they think of plastic, and smog, and chemicals in rivers, but many will be dumbfounded to know that, according to Dr. Tony Curran, the meat industry produces about one third of all the carbon in our atmosphere (The Race is On: Secrets and Solutions of Climate (2019), 00:32:50). To those who didn't know, this is an enormous surprise - an entire third of all the poison in our atmosphere comes from the very thing that many of us eat every day! So, what can we do to fix this? The main thing Dr. Curran says to do is just to eat less meat, especially beef and lamb, due to the fact that they produce the most carbon. It's pretty simple here - the less meat we eat, the less carbon we produce. One more thing on the topic of food is

to mention is that in my school, I have noticed that a ridiculous amount of the foam lunch trays that a lot of schools use end up in the trash, and probably go to the landfills, where they just pollute the land and never degrade into soil. I decided to do some research and what I found was disturbing - according to styrogenie manufacturer Jason Womack, nearly 5.6 billion foam lunch trays are thrown away each year in the US alone. Billions of them, not even millions but billions! My idea to solve this is to convince schools across the nation, and hopefully world, to help clean up our home by switching to either biodegradable or reusable lunch trays. If we can start with the kids' lunches, maybe our children will have this gorgeous world for longer.

Now imagine the most beautiful day you remember again. Remember the happiness that came with it, and now imagine that day being covered by clouds of soot, brown water, trees on fire, and dead animals. The world in which we live in, is going up in flames with nowhere else to go. Only we can stop this, and we know exactly how. The only thing left to do now is to commit to our home, as a family, and wake up from this nightmare.

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StyroGenie

Foodservice Sustainability Solutions

USA

"*StyroGenie SG-1200 is a low cost, thermal densification machine that reverses the foam manufacturing process by removing the air and returning it to a liquid resin. The resin is then cooled and formed into small briquettes that are sent to FSS for resource recovery. FSS coordinates logistics for the block pick-up and shipping.*"

"*Briquettes are collected in two bottom trays. Up to 1,800 soiled trays are easily loaded through a large forward-facing door. A single Briquette represents over 900 polystyrene trays.*"

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Polluting the Ocean

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The amazing planet Earth has multiple landscapes that are homes to many types of animals. The Earth contains many beautiful locations, including forests, deserts, mountains, and beaches. Beaches are widely used as vacation destinations that everyone can enjoy. There is the warm sand, giant waves, and salty ocean water. The ocean water can be used to play in, like surfing or boogie boarding. Also, people can go swimming with friends, family, or animals. Many animals call the beach home including fish, whales, sharks, crabs, and seagulls. Similarly, plants like coral reefs and seaweed also use the beach as their home. The homes of these plants and animals are becoming polluted and are endangering everything living there. Trash is suffocating the animals. It is important to protect the environment to keep plants and animals safe. Citizens of the entire world need to work on keeping the Earth a cleaner place by reducing trash in the ocean.

Plastic makes up most of the trash that gets dumped onto beaches and into the water, leading to the death of many animals. Since plastic is not biodegradable, the sun breaks down the plastic into small pieces. Because these pieces are so small some animals will accidentally eat them. Laysan albatross will feed their chicks plastic thinking it's food (Benson). The chick's stomach will then fill up forcing the chicks to die due to starvation (Benson). Maggie Benson, the author of the website The Smithsonian: Ocean Find Your Blue writes, "Even in the protected waters of the Papahanaumokuakea Marine National Monument along the northwestern Hawaiian Islands, our trash threatens endangered species like Hawaiian monk seals and green sea turtles." This pollution in the ocean will keep killing species off one by one unless something is done to stop it. If we let pollution grow soon more important species will become extinct.

A Hawaiian monk seal hauls out on a mass of derelict fishing gear at Pearl and Hermes Atoll. Photo credit: NOAA

If any endangered keystone species were to become extinct due to trash, then a major change in the environment would appear. In Beavers, Wetlands and Keystone Species a keystone species is explained as a species "that plays such a large role that without it an ecosystem wouldn't be nearly as successful or balanced" (Beavers 00:02:35-00:02:43). Keystone species are important for the survival of all living organisms (Beavers 00:03:13). For example, sea otters are considered an important keystone species. Ecologist Robert Paine and research scientist James Estes decided to compare two locations to see how much of an impact sea otters make (Some Animals 00:12:24-00:12:27). The first location was the island Amchitka where sea urchins were common but on the

smaller side (Some Animals 00:12:29-00:12:36). The second location looked at was the Shemya islands which did not have otters (Some Animals 00:12:40-00:12:46). Without sea otters, sea urchins were able to overpopulate forcing kelp to no longer grow (Some Animals 00:13:01-00:13:16). Animals that ate kelp either had to leave or die off, all because the sea otters left. The Keystone species have such a major impact on all living things, not just their own lives. Pollution is leading to the death of these important species, changing environments completely.

Reducing the amount of plastic every person on this earth uses would benefit the environment greatly. Therefore, multiple towns, states, and countries have banned plastic bags. In the U.S two states, California and Hawaii, have completely banned plastic bags (A New Study). Four other states have mandatory recycling programs in place (A New Study). Reusable bags and water bottles should be used instead of plastic. The more people and places who take part in this act will work towards cleaner beaches and oceans. Since trash is on the sand and in the water, citizens can physically go to the beach and pick up trash. It may take time away from a fun day at the beach but every person should pick up a few pieces. No need to go out of the way and spend the whole time cleaning the beach, just a few pieces per person can make a difference.


Cleanup technology. Photo credit: theoceancleanup.com

Many large groups and corporations have started to make a difference. In the Netherlands, The Ocean Cleanup founded by Boyan Slat is an organization that is developing technology to remove pollution from the ocean (The Largest Cleanup in History). They aim to remove 90% of the total plastic pollution from the ocean and with their new technology 50% of the Great Pacific Garbage patch will be cleaned in five years (The Largest Cleanup in History). Donating to companies like The Ocean Cleanup is also a way to show support to making the Earth a cleaner place. Finally, complaining to companies that make objects like toothpastes with tiny plastic caps, could lead to a change (Benson). A change in how the product is made allowing less plastic to be used will reduce the amount of trash found on the beach protecting the endangered plants and animals.

The Earth is the only home plants and animals have, so we need to take care of it. If we don't the Earth will be destroyed in about 20 years ("The Race is On" 00:05:40). Trash is having a major impact on the environment and killing millions of species. We need to take better care of the Earth to protect its natural beauties, to protect plants and animals, and to protect ourselves. Despite these dangers we are still polluting the ocean killing off important keystone species, changing environments and making it hard for other plants and animals to live. Everyone needs to work together to make a change or else it is only going to get worse.

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