Table of Contents

Resources

Locations

Animals

Unsustainable Palm Oil

By Eleanor

Every day, Laskar Harianja would go outside in tall boots and work hard on his pineapple plantation. But, one day, Laskar, a single father raising a young girl, looked at his plantation in horror. A fire that had started from clearing peatland to make way for a palm oil plantation had destroyed the entire farm. Laskar Harianja is one example of the negative impacts that come as a result of unsustainable palm oil collection.

Palm oil is a very useful oil that is collected from trees on plantations. It comes in clumps of large, red-brown seeds. The oil inside those seeds is palm oil, used in 50% of what the average American consumer buys, from chocolate to shampoo. It is also used in ice cream, cookies, biofuels, agro-chemicals, soap, detergent, candles, noodles, cereal, bread, biscuits, makeup, and other products. Palm oil is solid at room temperature, making it easy to use. The palm oil industry is growing with a growing population. It is mostly harvested in Indonesia and Malaysia, but plantations are worldwide. From 2004-2014, palm oil production globally doubled. It is predicted to double again by 2021.

Palm oil is used in so much, but, if it is harvested unsustainably, it causes great damage to the environment. Palm oil is collected sustainably if it follows “standards around deforestation, lawfulness, transparency and social impact” (The Guardian). Basically, for every tree cut down to make space for a palm oil property, a new tree must be planted elsewhere. Additionally, the growth of the oil can include no pesticides and the formation of plantations has to follow guidelines around communities, habitats and deforestation. In 2013, only 16% of palm oil was harvested sustainably and in 2015, people consumed 60 million tonnes of the oil. By 2050, it is expected that 240 million tonnes of palm oil will be needed to satisfy the humans on Earth. Indonesia claims it can “reach a goal of sustainably producing 40 tonnes a year by 2020.” This may not happen, but even if it does, it won’t be enough. Unsustainable palm oil has caused a lot of problems, and with the growing demand, it is important to make sure more palm oil is harvested as sustainably as possible.

Deforestation, habitat loss and pollution emissions are all results of unsustainable palm oil collection. Greenpeace, a large environmental organization, made a deal with an Indonesian palm oil and paper company, Asia Pulp and Paper (APP), that the company would restrain deforestation to help slow climate change. But, to create a new palm oil plantation, APP cut

down trees that were part of endangered tigers natural habitat, forcing the animals to move. Some tigers died. APP's sustainability chief denied that the company had ever made a deal with Greenpeace. Additionally, an endangered species, Bornean Orangutans, have lost 60% of their population since 1950. Unsustainable palm oil is considered a major factor of this loss, because so much of their habitat is being deforested.

APP and most other palm oil companies make plantations for their product by clearing forests and/or peatland. This is very unsustainable. Peatland is a boggy land filled with carbon dioxide and when cleared, it releases all that stored CO2 and methane into the air. When trees are burned, they also give off greenhouse gases and sometimes, the fires spread. This wrecks communities and farms, like Laskar Harianja's. The deforestation has also destroyed key locations in Indonesia. From 1990 to 2010, the country's palm oil industry destroyed □ of the nation's forests. Forest fires to clear trees in Indonesia gave off emissions that at some points were greater than all of the United States's pollution emissions at that time. Over 10% of deforestation in Malaysia and Indonesia in the last 20 years was to create new palm oil plantations. Palm oil companies argue that the Indonesian industry employs 4 million people and "more than 100 million Indonesians live on $2 a day or less"(New York Times) which means that the palm oil industry is helping provide jobs to poor Indonesians. Obviously, the work is needed. Palm oil is only bad if it is collected unsustainably.

Additionally, many industries and banks have influenced the unsustainable collection of palm oil. It isn't just the palm oil industry's' fault that their product is unsustainable. Many companies have well over ½ of their palm oil from unsustainable sources including General Mills (though they are attempting to be 100% sustainable by 2020), Ricoh, Walmart, and Pepsico. Nestle's Kit Kats were attacked by Greenpeace because their palm oil was from Sinar Mas, an unsustainable palm oil group. Additionally, banks have been a big part of the palm oil problem. An Indonesian palm oil industry which has grown bigger over the last decade, Rajawali, was invested in by several banks and then failed to follow sustainability policies. In 2014, Bank of America and Credit Suisse were among many to give money to Rajawali to create new palm oil plantations. However, to do so, Rajawali burned down rainforests and cleared over 40 square miles of peatland. Credit Suisse's sustainability policy clearly states that they wouldn't promote companies who acted in rainforest areas, like the one burned down for Rajawali's plant. On their website, they also state that their "operations worldwide have been greenhouse gas neutral since 2010". This is clearly untrue because the unsustainable deal with Rajawali was in 2014. Bank of America said in 2004 that they wouldn't invest in companies that destroy "tropical moist forests". In September, 2016, Rajawali made another deal. They took a loan of $192 million from Bank Negara Indonesia to double their unsustainable palm oil plantations in Papua and Kalimantan, two Indonesian islands.

The unsustainable collection of palm oil has had many negative impacts. The palm oil industry has caused deforestation, habitat loss, and pollution emissions and many industries have knowingly supported this. We can try to limit our use of Sinar Mas, Walmart, and more unsustainable sourcing companies' products. Try to buy from resourceful and sustainable

companies. For example, we can use L'oreal shampoo rather than the other oily kinds. Also, we can make sure the word gets out about unsustainable palm oil. We can fix the palm oil problem, so let's get started.

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Solar Energy vs. Fossil Fuels

By: Owen

Climate change is warming the Earth, making it hotter and hotter. Burning fossil fuels is the cause of global warming and climate change. What is solar energy, why do humans use fossil fuels, good and bad things about solar energy, and we can do many things about this.

First of all, what is solar energy? Solar energy is energy that comes from the sun. When the sunlight from the sun hits something like a solar panel, the solar panel changes the light and heat into energy that we can store and use later. The scientists that help "Greenhouse Solar Farm" explains, "Solar energy is, simply, energy provided by the sun. This energy is in the form of solar radiation, which makes the production of solar electricity possible." The sun is the most abundant energy source that humans can get to.

Second, humans use fossil fuels because they are very cheap compared to buying solar panels or getting a hydro pump. But really using alternative energy sources are cheaper in time. Humans burn fossil fuels because it is very cheap. All you do is take/dig it out of the ground and burn it. Rinkesh states, "Fossil fuels are available all over the world and the methods to extract energy from them are also not that expensive."It couldn't be simpler. But on the downside it hurts the environment since fossil fuels hold a lot of carbon dioxide. When fossil fuels are burned it releases all the carbon dioxide that it has held for millions of years. We are putting too much carbon dioxide in the atmosphere at once.

Thirdly, there are some bad things and some good things about solar energy. One bad thing is how transferring sunlight into energy costs a lot of money and some people think it is not worth spending that money. Also, one panel the size of an adult hand has enough energy to light up a light bulb and some people don't think that is enough. Some people think that solar energy does not generate more energy than fossil fuels. Nick Gromicko states that solar panels are "inconsistent and unreliable." But over time, using solar panels will save you back that amount of money that you spent on solar equipment and after that it will start to save you more and more money. Even though a solar panel doesn't generate that much energy, the energy could build up when it is noon and people don't really use electricity at that time. Fossil fuels make the earth warmer. After a while it would store so much energy that you could have electricity on a cloudy day or even a rainy or snowy day.

Lastly, we can do many things about this and some people want to but at the same time doesn't want to do it. They want to have it easy. Something you can do is put up solar panels on the roof of your house. Since almost all energy comes from the sun, the sun helped the plants grow that eventually turned into fossil fuels. Also, since the sun is the most abundant source of energy, you always have it in the sky. You can store this energy to use it if it's cloudy day and you are not getting a lot of solar energy. Uncloudy days outnumber the cloudy days by far so you don't even have to worry about it.

The Earth is getting warmer because of global warming. We can use other alternative

energy sources such as solar instead of burning fossil fuels. It might not generate that much energy quickly but it can generates enough energy for one house. We can do many things about global warming. We can use solar energy and other alternative sources. We can save our planet from getting too warm but many of us are not doing anything about it.

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Global Desalination

By Jamie

In the next few years, experts say that Saudi Arabia alone could need 52% more freshwater than is currently being produced. Numbers like that exist in multiple countries around the globe. The practise of removing salt from ocean water, or desalination, deserves the utmost quality of research, as it is essential to the continuation of prosperous mankind and the earth as a whole.

Desalination is the process of removing salt from seawater. This can be accomplished through many methods that have continuously emerged from laboratories all over the world since before the 1700s. Captain James Cook popularized one of the first methods of desalination in the mid-1700s, when he discovered that ships could tow icebergs across the oceans to a desired location, then melt the icebergs into potable, or drinkable, water on land. This is a primitive method compared to today's processes, but it was a revolution that acted as a catalyst for today's quite advanced methods. The two most used methods today are reverse osmosis and flash distillation. Reverse osmosis works by filtering seawater through microscopic pores that the dissolved salts stick to, but allow water to filter through. Flash Distillation works by first pressurizing the seawater, lowering its boiling point, then heating up the water and vaporizing it. Hours later, they allow the vapor to cool, leaving only the salt behind. Both of these methods are used industrially on a large scale all over the world.

The need for desalination depends on the climate, with arid places such as Saudi Arabia needing incredible amounts of fresh water to keeps their country "afloat." Experts predict soaring desalination costs within the next few decades, but the Saudis' aren't willing to sit by while the collective need for freshwater is increasing. Saudi Arabia holds the largest amount of desalination plants with over $20 billion worth of desalination plants crisscrossing the desert nation. The Balochistan Times in Pakistan wrote "[The] Arid Saudi Arabia could need more than $53 billion in water sector investment supported by private funds as demand grows" ("Arid Saudi could need '$50 billion' in water investment"). Severe drought provides a need for desalination all over the globe, even while places as close as Florida and California are doing extensive research into desalination. The need for desalination is high, and the world's people need to be doing what they can to meet it.

The price of desalination varies by method. The two most used methods of desalination, reverse osmosis and flash distillation, are also the most cost effective on the levels that are needed in today's world. Reverse osmosis (RO) is generally cheaper to build, but requires heavy maintenance. A desalination company in Tampa Bay was forced to "add $8-million, and possibly up to $20-million, to [their] plant's costs" when the recently acquired aging site's RO system malfunctioned. Portability is a factor that's being looked into for commercial purposes. APEC Water is a company that's creating Reverse Osmosis systems for homes and offices. Systems like these run for around $200-350. Distillation takes up 60% of the desalination market, mostly for industrial purposes as the price needs to be justified by the size of the plant. The price of desalination will continue to go down over time, making it more affordable. Therefore, the popularity will go up. It's just a matter of time.

Outsourcing desalination to the private sector is a method some countries are utilizing to lower the stress on their government. In Saudi Arabia, the government has been forced to outsource the production of desalination plants to private entities. SWCC, the Salinated Water Conversion Corporation, has taken control of some of the country's most necessary plants. The SWCC is one of the biggest private desalination company in the world, with 28 plants. There are a large handful of other private water companies. Consolidated Water (CWCO) is a company that's public on the stock market. CWCO is based in the Cayman Islands and has locations in the Cayman Islands, The Bahamas, The British Virgin Islands, Belize, Indonesia, and Mexico. In some regions, private companies are taking charge of the desalination push and it's up to citizens to help fund these companies along with their governments.

It's logical that some of the hottest countries in the Middle East need the most funding, whether it's local or foreign. Saudi Arabia is widely known to spend the most on desalination, but some of the countries around it have an intense need for clean drinking water too. Of the 12,500 plants open worldwide as of 2012, 60% operate in the Middle East. In the occupied Palestinian territory of Gaza, a desalination plant opened early 2017. It was funded by the international organization UNICEF and is operated by the U.N. According to Fox News, when they ran the story on January 19, 2017, "U.N. official Robert Piper says [the] opening is "'one step forward on a very big journey.'" This is an example of a poor, war-torn country receiving financial aid from an international organization. Although, in this particular case, Gazans were involved in the project. This plant also benefits their economy as it creates hundreds of jobs for the Gazan population. This story shows how some groups are recognizing the future crisis halfway across the world that would affect every other region on Earth.

A world without water is hard to imagine for us lucky enough not to already face that reality everyday. Organizations and governments worldwide are working to introduce an effective and efficient solution to the freshwater crisis. Although corporations and state funded researchers are leading the desalination push, an important role for the general population to play is always existent. The responsibility of funding some of the smaller companies with more of a grassroots upbringing with new and exciting technologies falls to us as investors, whose money can bring the future into the world's backyard.

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Biofuels

By Rigo

Scientists theorize that humans use of fossil fuels is the greatest cause of global warming or climate change. Biofuels are a good alternative to help resolve this; biofuels can be used just as many ways as fossil fuels.

Biofuels are fuels extracted from living matter; basicly, a "living fuel" that doesn't add to the current CO2 in the atmosphere. Biofuels take recent CO2 in the atmosphere and when burned release the same amount, if not less. Biofuels are a safer alternative to fossil fuels. Biofuels can be burned without adding CO2 to the atmosphere.

Fossil fuels are fuels that take millions of years to form and are mined and burned to produce electricity. Fossil fuels are inefficient and release CO2 that was stored millions of years ago. This is the energy that we have been using for a long time. Scientists believe that fossil fuels are one of the greatest contributors to climate change. Fossil fuels send a lot of CO2 into the atmosphere. Fossil fuels are not necessary and can be replaced.

Biofuels are difficult to make and take up a lot of farm space, but that is just one con among the many pros. Biofuels are very resourceful, but they take up a lot of space. To make enough for all of us would be a farm big enough to see from space. Thankfully, there are other ways to make biofuels.

Biofuels can be used for the same things as fossil fuels. Biofuels could power a car or house. Fossil fuels are used in everyday lives and as scientists theorize fossil fuels are a big contributor to climate change. What people don't realize is that biofuels are a good, clean, efficient energy source. "The International Energy Agency has a goal for Biofuels to meet more than a quarter of world demand for transportation fuels by 2050 to reduce dependence on petroleum and coal"(intro International Energy Agency) (Wikipedia 24 Jan. 2017).

Biofuels can be made from multiple things. Biofuels can be made from many things, such as allergy, vegetable grease, human waste/sewage, and wood. Biofuels can be made in any way that we can afford. Most of the things biofuels are made from are able to grow in farms. Biofuels could be something as simple as a wood log, or as complex as algae.

Biofuels are an infinite resource because we can grow them. Biofuels are something that we can make ourselves. Unlike fossil fuels wherever they take millions of years to form. Biofuels are a great alternative to fossil fuels.

If we all worked at it, we could run completely on biofuels. Biofuels are a great

alternative to fossil fuels and we should use them more. One of the things we can do is to buy a car that runs on vegetable grease. It is a thing, yes, and we can invest in Biofuels.

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Overfishing of Tuna

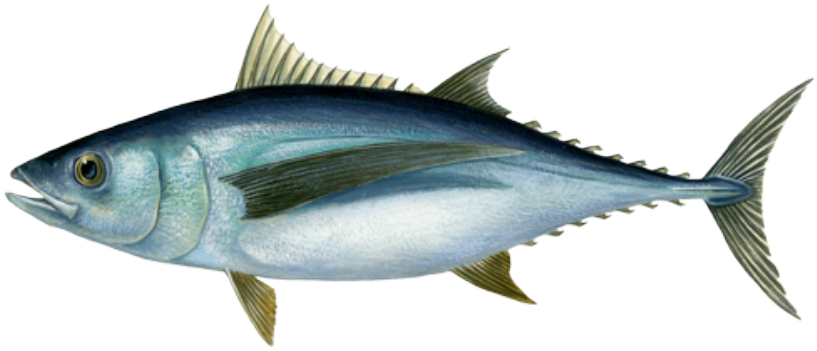
By Daniel

The bluefin tuna's population has decreased 97% over the last 50 years, and some scientists predict most of the fish we commonly eat and know could be gone in the next 50 years.

Overfishing is impacting the tuna's population, causing a lot of animals in the Pacific Ocean ecosystem to die.

Overfishing is not only possible, it is happening! Overfishing causes the population of the tuna and some other fish to decrease. Some examples are swordfish, salmon and shark. Because we fish a lot and we fish faster than how fast the tuna and the other fish give birth to their babies, tuna's population was decreased 97 percent during the last 50 years. This is a very serious issue. Because of the decrease of the population, the tuna's price has increased more than 20 times from 1976 to 1997. According to World without fish, many scientists think overfishing will have a great effect. "Most of the fish we commonly eat, most of the fish we know, could be gone in the next fifty years" (xi, Mark Kurlansky)

Tuna is a nearly endangered fish. "This includes salmon, tuna, cod, swordfish, and anchovies"(xi, Mark Kurlansky). We use tuna to make sushi, especially bluefin. It is not so big but not so small, it is bigger than sardines, but smaller than dolphins. It eats sardines, herring, and mackerel. The color of the bluefin tuna is dark blue above and gray below. Pacific bluefin tuna is smaller the the Atlantic bluefin tuna. In the eastern Pacific, bluefin tunas live from Baja California as far north as the Gulf of Alaska. They rarely go further north than Oregon. In the western Pacific, bluefin tuna can be found as far north as Russia's Sakhalin Island and as far south as New Zealand. They usually live in warm water. There are also other kinds of tunas, such as skipjack tuna, yellowfin tuna, and bigeye tuna.



Overfishing is bad, and it can occur in water bodies of any size such as ponds, rivers, lakes, and oceans. It can result in resource depletion, reduced population, and some species such as shark or tuna can't sustain themselves. This has also affect ecosystem. 40 percent of the fish we catch are through a method called bycatch. Bycatch is when you want to catch fish specie A, but you catch fish specie B. You need to throw it back to the ocean, and some of it already died.

But the governments of the world didn't really care about overfishing in the 20 century. The government tended to care more about mammals. Some scientist think that overfishing is not a big issue, but the fisherman think that overfishing is a big issue, "The truth is: scientist are sometimes wrong and fishermen are sometimes wrong" (52, Mark Kurlansky). Some reefs are dying because of overfishing, and of course climate change. Reefs are also dying because bleaching, damage from trawling, and tourists.

Because of overfishing, species are moving out or into some areas, and that is not good. But some of the fisherman in Spain thought that it was fisherman in Finland overfishing, not them self, and this is not real because almost everyone said the same thing. At 2002, even the government start to care about this, there is still only 1 percent of ocean is protected.

Overfishing is causing some problems to the ecosystem of oceans, "All the life on earth is interconnected, and altered circumstances will change the order of life at sea, which will also change the order of life at land" (xvii, Mark Kurlansky). All of this can and will have an enormous impact on our lives. If most of the fish we commonly eat has been gone, such as tuna, swordfish, and salmon, many other fish that depend on these fish will also be in trouble. This includes dolphins who depend on tuna. When all the fish like tuna were gone, some mammals would die of very quickly, such as the dolphin. And when the large bottom fish dies out, the small fish will go deep so the seabird can't eat them, and this will cause the seabirds die. This is already happening now! In the end there will only be a few survivors left. Jellyfish will be one of the survivors. The land base animals will also be affected.

Overfishing is very bad and dangerous, and we need to solve the issue. Some people think you should stop eating fish, but actually instead you should eat fish, but only good fish. But what is good fish, "Beware of fish that is very inexpensive… Beware of new types of fish that are suddenly being seen everywhere" (150, Mark Kurlansky). But you have to stop eating some endangered fish, "Never eat any kind of shark… Never eat bluefin tuna" (160, Mark Kurlansky). You can also write letters to some people, but make sure to be respectful. You can also become involved in environmental groups.

Overfishing is affecting the ecosystem and the life of other animals. It is a very serious problem, it will affect ocean, sky, and land and make animals in ocean such as tuna distinct. Overfishing and bycatches will make a bunch of animals in the ecosystem die, include us. We should do some things about this. You can eat good fish, but only good fish. You can write letter about this, and never eat bluefin tuna and shark. You can go to a environment group. You can also make signs. Beware of fish that is inexpensive. Let's do this and save our world.

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World without fish, public library, book

https://en.wikipedia.org/wiki/Overfishing wikipedia, overfishing

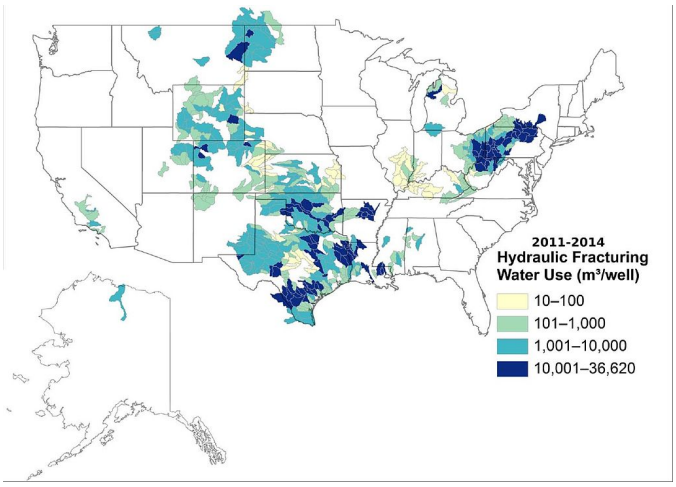
Fracking and its Effects on Health and the Environment

By Iris

Sarah lived peacefully with her family on a farm for many years until a neighboring farmer decided to take up the business of fracking. She and her family became severely ill because of poisoning in their water and air and developed a disease called “Shale Gas Syndrome”. They were forced to leave their home and filed many lawsuits against the fracking company, all of which failed. Hydraulic fracturing, or fracking, contributes to the death of hundreds of animals each year and causes humans to get diseases like cancer and anemia. The fracking of shale gas negatively affects both people and the environment and must be stopped.

Millions of years ago methane gas and shale rocks entered the Earth in different forms. They both started as organic-rich mud, buried at the bottom of the ocean. Then, over millions of years, “heat and pressure transformed the mud into shale and the organic matter into gas” (“Fracking 1”). This gas was then trapped in the ground. It stayed there for hundreds of thousands of years, until humans started to interfere.

Fracking is the process of extracting methane gas from shale formations in the Earth. Large holes, or wells, are drilled into the ground. On average they are around “7,500 feet below the surface” (Loris 2). Water mixed with sand and other chemicals is then injected through the well at a high speed so that the pressure cracks open the rocks and the methane is released. Fracking is being performed all over the U.S. and some of Europe, but most commonly in a rock formation called the Marcellus Shale. It is 90,000 square miles and contains 141 trillion cubic feet of natural gas. It stretches from upstate New York, through most of Pennsylvania, and into parts of West Virginia. To the west it touches parts of Ohio. This area is rich with natural gas and is one of the best places in the world to drill for methane.



Although fracking is an efficient way of getting natural gas out of the Earth, it is usually followed with grave consequences. Fracking has been known to cause air pollution, water pollution, diseases, and even earthquakes. Also, methane is one of the main greenhouse gases and "is 25 times more potent in trapping heat in the atmosphere than carbon dioxide" (Hoffman 2). Although fracking is done many feet below underground aquifers, in some places it has polluted the water with toxic chemicals and natural gas causing terrible diseases including many different types of cancer. Also, because fracking uses water to crack open the rocks, fracking industries are getting some of the water back at the end of the operation which has been mixed with chemicals and brines from the dirt and rocks underground. They now cannot use it as drinking water and need to find somewhere to put it. Usually the water is put into a storage well which is around the depth of underground aquifers. This is another place where water contamination can occur.

In addition to polluting drinking water, fracking can also pollute the air. Breathing in polluted air can cause shale gas syndrome which includes many symptoms ranging from vomiting to the loss of the victim's sense of smell, vision, or hearing. One of the most disputed things among scientists is whether fracking can cause earthquakes. Many times, fracking operations have had to stop due to an increased amount of seismic activity. Some people say that the earthquakes that can follow fracking are fake or that they are happening because of some other cause. However, scientists have proven that when water is pumped into the ground, it can somehow disrupt the Earth and cause an earthquake. Many scientists believe as Sandra Steingraber does, that "The available evidence overwhelmingly indicates that fracking is incredibly harmful"(Doctors speak out: For the sake of human health ban fracking 2). Steingraber is a PhD, biologist, author, and the co-founder of Concerned Health Professionals of New York.

Although fracking can have many harmful effects, it also has some benefits. It employs many people because it needs many services like construction teams to build the well and truck drivers to carry water. According to Nicolas D. Loris, fracking has "created hundreds of thousands of jobs in the U.S."(Loris 2). Before fracking, there had not been many ways to get fossil fuels without having to buy them from the Middle East or other oil rich countries. This put the U.S. in debt to those countries which was hard for the U.S. economically and also posed national security risks. But, thanks to fracking, the U.S. now has its own fuel for energy so it doesn't have to rely on oil from other places. Fracking can also gain money for poor states or

towns. If someone realized that their land is a natural gas gold mine then they could make a fortune out of it. Many people also support fracking, not only because of its benefits, but because they don't agree that the bad things are happening. Although some people are in favor of fracking, the majority of educated scientists agree that fracking's costs outweigh its benefit. Most people, even if they aren't scientists, believe that destroying our planet and maybe even killing somebody is much worse than just having a little less money and energy.

There are several alternatives to fracking and even different methods of fracking that can significantly lower the health and environmental risks that come out of it. First, instead of using water to frack the rocks, it is possible to use liquified propane gas. It has the same effectiveness as water, but doesn't return to the surface after it has done its job. This means that it doesn't have to be put into a storage well and saves that space as well as not posing the risk of polluting the atmosphere. Although liquified propane costs more than water, it can be reused so, in the long term, it saves money.

Another alternative to fracking is renewable energy. Renewable energy can be used for the same things that natural gas is used for such as heating or air conditioning someone's home. Buildings can use ground source or air source heat pumps to keep a constant temperature. Although underground heat pumps still use drilling, this drilling process is much shallower than the wells used in fracking. Renewable energy could cause someone's heating bill to drop by 75%. And according to Keith Barnham,"if these renewable resources were to enjoy the same level of government support as fracking they would provide more jobs and reduce energy costs lower than fracking could ever achieve"(Barnham 1).

Fracking must be prohibited and restrained or else many people could get sick or die. The environment could also be irreversibly affected and damaged. We can help stop fracking by calling a local representative like Elizabeth Warren or go to secure.foodandwaterwatch.org to sign a petition to ban fracking nationally. You can also donate to and support renewable energy, which wouldn't help directly, but would impact people's opinions on it versus fracking.

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Lyme Disease

By Malcolm

Lyme disease is a serious disease that can increase rapidly due to Global Change. “In the United States, Lyme disease accounts for more than 90 percent of all recorded vector-borne illness” (“Gale Encyclopedia of Science 1”).

A vector borne illness in an illness that is spread through arthropods such as spiders, ticks, and insects. Lyme disease (*Borrelia burgdorferi*) is a disease that is spread through Deer tick (*Ixodes scapularis*) bites. Deer ticks are found mostly in the North East region of the United States. Deer Ticks, also known as Black Legged Ticks, live for about 2 years.

Deer ticks are not active under 32 F (0 C). Rising temperatures will mean that Deer ticks are active for more of the year, and that leads to more Lyme cases.

Lyme disease is spread when Deer ticks bite humans. Deer ticks feed on animals such as mice, chipmunks, and other rodents, who are carrying Lyme disease. They then bite humans and stay “attached for 36 to 48 hours” (Encyclopedia Britannica”). Lyme Disease is prevented by cutting off its sources by preventing Deer ticks contact with carriers.

One way to cure Lyme Disease is to stop where it comes from. As explained before, Deer ticks get Lyme disease from rodents. Some predators of rodents are foxes, and coyotes, and humans are killing them off. Also, due to deforestation, those predators will have nowhere to live so they are leaving on their own, “And rodents thrive in the fragmented, disturbed landscapes that, thanks to human activity, now characterize large sections of the Northeast” (Moises Velasquez-Manoff). On the bright side, without any forests, the ticks won’t have anywhere to live. So killing off big predators is the worst case scenario because they kill the rodents carrying the disease.

The symptoms of Lyme disease have 3 stages. “Lyme disease occurs in three stages: early localized, early disseminated, and late disseminated” (Healthine). In the first stage, infected people develop a Bulls-Eye rash (*Erythema migrans*). It is the biggest indicator of Lyme disease. It will go away after 4 weeks. In the second stage, symptoms may include chills, fever, enlarged lymph nodes, sore throat, vision changes, fatigue, muscle aches, headaches, and the sense of not feeling well. Symptoms from stages 1 and 2 may overlap. Stage 3 symptoms may include, severe headaches, arthritis, heart rhythm disturbances, brain disorders, short term memory loss, mental fogginess, and numbness. If Lyme disease goes untreated, then death will occur.

Global change is dramatically changing our earth due to climate change, pollution, and as

humans progress. It affects the food chain close to Lyme disease mostly with deforestation. Deforestation is killing deer ticks and the animals that they feed off of and the animals that feed off those animals. Lyme disease is spreading because they get it from rodents who thrive in fragmented areas. Scientists debate the rise in Lyme Disease, “Many wildlife biologists suspect that it is partly driven by an out-of-whack ecosystem”(Moises Velasquez-Manoff 2).

Because Lyme disease is usually treatable when detected, there has not been much public outcry to cure it, especially since advanced medicine is stopping it from being fatal most times. However, from 1999-2003 the death count was 114 and most of these deaths were because people who didn’t receive treatment. The treatment of Lyme varies for different ages. The cure is simple. Doxycycline for Ages 8+, and amoxicillin for women who are nursing or kids who are 7 years or younger. These are both taken by swallowing pills. Both are not specifically used for Lyme disease.

Due to climate change, the vector borne Lyme disease could increase and spread more rapidly. With warming temperatures and deforestation ramping upward, we need to help stop it. We can prevent Lyme by raising awareness about it and always checking ourselves when we get out of the woods and wearing long sleeves and pants when we go in.

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Drought in California

by Chase

Imagine that you are an animal and everyday when you wake up, you go to the creek to get water. All is well until you go to the creek one day and there is no water. This is exactly what has been happening to animals all around California. A severe drought in California has leaded to crop failure and a huge lack of water is affecting animals, humans, and failing crops.

The main cause of the drought in California is “La Nina” and “The Blob.” El Nino is a group of warm air hovering above the surface of the East Pacific Ocean. It doesn’t affect the citizens, but it does direct storms away. The weather pattern is so severe, some scientists know it as “The Ridiculously Resilient Ridge” (Mieszkowski). The ridge causes storms to change paths to Alaska. The ridge usually goes away during the winter, but for an unknown reason it has stayed throughout the past few years. California usually relies on the water they get in the winter, but without it, they have no water. Another reason that California is in a drought is that a mass of warm water referred to as “The Blob” has drifted close to the west coast. It usually moves around but, it has stayed in the same location for 3 ½ years. The blob is also a contributor to directing rain storms to Alaska.

The drought in California has caused farmland to dry up and has forced companies and people to use less water. Farmers rely mainly on water to grow their crops. Without it, they can’t water their crops so they can’t make money. Farmers then pump water from the ground to get water, but it isn’t sufficient. By 2014, farmers lost about $810,000,000! That number is going to increase greatly. With the lack of rain, lots of farmland dries up and farmers cannot plant crops.

Another way the drought is affecting people is that certain animals have been coming to neighborhoods to search for food because they can’t find any in their natural habitat. Also, the state of California has forced people to let their lawns die because it uses a lot of water that can

be used for more important things. “With California in its fourth year of a severe, hot drought, the Governor’s Drought Task Force continues to monitor and identify communities and local water systems in danger of running out of water. As of August 26, approximately 2,257 wells statewide have been identified as critical or dry, which affects an estimated 11,285 residents.” (Klusinke) Many people in California have slightly suffered from lack of water, but because America is wealthy, it is much easier to get water to people. If drought this severe were to occur in a poor country, people would not be able to access water and possibly die of thirst.

Many plants, trees, and other types of agriculture are dying due to the lack of water. Also, huge forest fires are starting due to the drought in California. Huge amounts of water usually get transferred around the state. One example is The State Water Project. It supplies water for about 750,000 people in California, but in the recent years, they have not received enough water so they are forced to stop shipping it. Plants can’t be watered. Furthermore, since crops can’t be grown, the price of fruits and vegetables are rising. In 2015, the prices of vegetables went up about 35%.

Forests are very vulnerable to forest fires. California has become very dry so it is easy for things like trees to catch on fire. A man from California supposedly started a huge forest fire. This is a big deal because the fires are impossible to control. Over the summer of 2016, about 1,500 people had to flee their homes and 26 million trees were burned. According to scientists from California University, “California hasn’t been this dry in 500 years” (Fears).

Animals living in california have been forced to share their food and flee their habitat to find water. Animals are very vulnerable during a drought. Small animals are at a greater risk because they can’t move their habitat as easily. It is hard for animals to find water and those who do have water have to share with other animals. According to Jason Holley, “Animals are going to have to get by with less and adapt” (Worlander). Water is just their first problem. When you’re an animal, you need to find food as opposed to buying it. Since plants can’t grow, animals starve. To prevent this, animals have been going into public places and digging through trash for food. This disturbs people and they are getting angry. One group of animals that is getting affected in the drought is animals from the Mojave Desert Region. Fish there live in marshes that are drying up. Unlike other animals, they can’t move so they die. One fish species that is in this situation is the Shoshone PupFish. Also, endangered species such as the Amargosa Vole are dying due to lack of water and their habitats (marshes) are being destroyed. Squirrels and hummingbirds are not endangered, but due to a lack of food for them, the population in California is going way down.

Crops are failing and water in California is scarce due to the massive drought in California. The main cause of the drought is a weather pattern that creates a ridge called El Nino that directs storms away and a group of warm water that also directs storms away known as “The Blob”. Many plants can not get water and are dying and massive forest fires are starting due to the dryness of the area. Animals in California have been forced to flee their homes and share their water. There is not much we can do to help prevent a drought, but we can help get water to the people who need it. Some ways to save water if you are in a drought are: use a broom to

clean your driveways or sidewalks, check pipes for leaks, and only run the dishwasher when it is full. Also, if your county is in a drought, a good way to save water is to water your lawn less. Each time you water your lawn, a lot of water is used. If you find out exactly how much water you need, you can save a lot of water. Saving water is very important and could ultimately help save the environment!

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Deforestation and its Effects on the Amazon

By: Natalie

"After surveying 2000 species of plants, birds, beetles, ants and bees across more than 300 diverse sites in the Brazilian Amazon, researchers say that deforestation has, without a doubt, caused a strong loss of biodiversity" (Mathewson 1). Deforestation impacts the many diverse ecosystems within the Amazon and the problem is being intensified by companies from all over the world. Deforestation also contributes to carbon dioxide accumulation in the atmosphere.

The Amazon is one big system containing many smaller systems. Most of the smaller ecosystems either contain trees or a body of water. The trees have many smaller organisms living on and in them to create their own ecosystem. Lakes and rivers are similar, they have many fish and algae living inside them to create their ecosystem. There are also "over 1,400 species of birds in Bolivia" ("Guess Who's Cutting Down the Trees Now" 2).

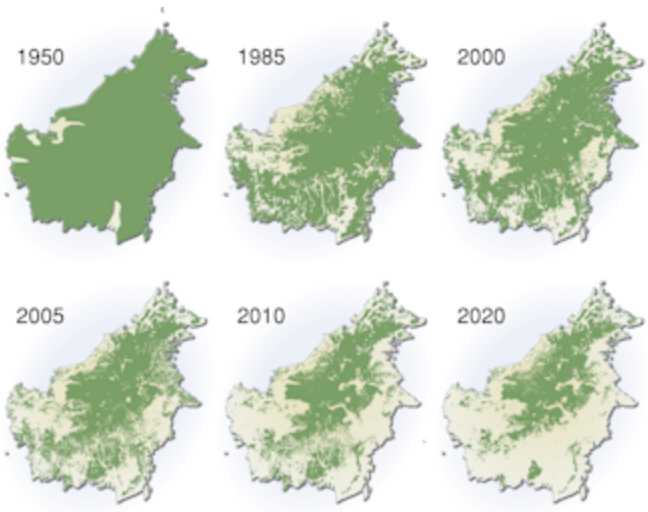
It's not just the one specific ecosystem inside the Amazon, but all the ecosystems as a whole of the Amazon that gets affected by deforestation. Deforestation, or slash and burn, is a huge loop of cause and effect. When a tree gets cut down it could fall into a river and create a dam, which will cause water not to flow as heavily into the river. This, in turn, can cause the organisms living in the river to lose their habitat and die. With so much of the Amazon being deforested, many ecosystems are being destroyed. "In the Brazilian Amazon, annual forest loss from all causes rose from less than 3 million acres in 1991 to an average of 4. 8 million acres during [1995 to 1997]--the equivalent of seven football fields a minute" ("Fragments of the Forest").

Many valuable resources are leading people to the Amazon. "The cattle sector of the Brazilian Amazon, incentivized by the international beef and leather trades, has been responsible for about 80% of all deforestation in the region" ("Deforestation of the Amazon Rainforest" 1). In addition, timber is a very profitable resource. "In 1996 alone, Asian companies invested more than 30 billion dollars in the Brazilian timber industry" ("Natural History" 2). However, the most valuable resource is the vast forest that is getting cut down which stores a huge amount of the Earth's carbon.

The Amazon is sometimes called the Earth's lungs. This is due to the many plants and animals inside it. The Amazon is essentially breathing in a lot of the carbon dioxide (CO_2) that humans release into the atmosphere. It is important that the Amazon stay intact because it helps control the amount of CO_2 released into the air. CO_2 levels contribute to global warming and will only continue to worsen if the Amazon deforestation continues. According to Eugenio Arima, assistant professor at Hobart and William Smith Colleges, "Brazil is overall the fifth or sixth largest emitter of carbon dioxide and by far the most important source is deforestation" (Cimitile 2). The Amazon helps keep the Earth clean and balanced.

Many companies in lots of countries around the world are contributing to the deforestation of the Amazon, "Companies from Malaysia, Indonesia, China, South Korea, and Singapore are stripping the Amazon's most valuable timber in record time" (Fragments of the Forest 1). Most companies are logging illegally like Agropecuaria Santa Efigenia Ltd. sold over $7 million of illegal timber. This is a huge problem considering that most of the illegal timber is in the protected areas of the Amazon. With legal deforestation also contributing, the rates are getting even higher.

Deforestation rates of the Amazon have gotten popular over time (from 1970 - 2012), gone down, and are now slowly increasing again. "Deforestation of the Brazilian Amazon started on a large scale in the 1970s and peaked in 2004 before government restrictions curbed land clearing practices there. But deforestation has increased in other Amazonian countries in recent years" ("Increased Deforestation Could Substantially Reduce Amazon Basin Rainfall" 1). Out of all the countries that the Amazon is in, Bolivia has the highest rate of deforestation, clearing a swath of forest about ⅔ the size of Delaware (Nearly 1,400 square miles). However, the yearly rate of deforested trees used to be worse. About a decade ago, an area the size of Maryland was clear-cut every year. Many diverse ecosystems are getting immensely impacted by deforestation, every single day.



Deforestation in the Amazon was and still is a massive issue. The Amazon is too precious to destroy, but sadly, so many companies are abusing the Amazon that it's falling faster than anyone is willing to believe. The amount of carbon that is being released into the atmosphere is impacting the world around us immensely. There are many things we can do to protect the Amazon. For example, we could reduce our paper, wood, oil, and beef consumption. Also, we can invest in rainforest communities and grassroots organizations working to protect the Amazon, such as Greenpeace. If we can do at least one of these things we could possibly save the Amazon.

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Indigenous Tribes Threatened by Amazon Deforestation

By: Olivia

Some people believe that “the Amazon rainforest is the greatest expression of life on Earth” (Rainforest Warriors: How Indigenous Tribes Protect the Amazon). Due to the logging of the Amazon, the population of indigenous people has declined greatly.

The key aspect of global change affecting the indigenous people of Brazil is deforestation. Logging has been popular in the Amazon rainforest and has been going on for many years. Indigenous tribes in the Amazon live among these trees. Also, the people logging trees occasionally carry disease which can spread and kill the indigenous people. There is a massive green island that is home to ten legal indigenous territories. The forest is home to 7,000 Kayapo Indians. The Kayapo tribes fought for and won recognition in the 1980’s. In July of 2013, several Kayapo Indians destroyed illegal mining equipment. At least ¼ of forest carbon is on native land in Brazil. Expanding tribe’s land rights is the most beneficial way to protect forests and keep carbon out of the atmosphere. 58% of carbon emissions come from deforestation in Latin America. Forest carbon is the total storage of carbon in forest ecosystems. If there is no protection, the carbon could be released into the atmosphere as CO2. Alan Frechette explains, “When communities have secure forest rights, not only are forests better protected, but communities fare better”.

The tribes being affected most by deforestation are the Awa-Guaja, Kayapo and Yanomami. They live in the Amazon rainforest in Brazil. The logging is destroying their homes and diseases brought by outsiders are killing them. When the trees are cut, it exposes them to the outside world. The main disease indigenous people are being killed by is smallpox.

The indigenous population is dropping dramatically. In the early 1990’s the indigenous population was around 600,000. Whereas in the early 21st century there were fewer than 200,000 left. There are now around 360 members of the Awa-Guaja tribe. This tribe is facing near-certain extinction. There have been reports of death, which have been of respiratory disease and contracted tuberculosis among the indigenous people, the deaths have been caused from tuberculosis. At the time of Columbus there were 3-6 million indigenous people and now less than 500,000 are alive. “In contrast, the [population of non-ingenious Brazilians in] the Amazon is exploding.” ⅓ of the indigenous groups we knew about in 1900 are gone. Now, around 280,000 live in reserves. In the late 15th century the total number of indigenous people was around 6 million. Now there are around 2-3 dozen Ava-Canerios Indians. There were around 3 million indians in 1500. Slavery, smallpox, and systematic slaughter left 220,000 Indians in the

vast Amazon. Tribes like the Yanomami, Ticunas and Macuxi have about 10,000 people each. Tribes like the Awa-Guaja have about 100 or less people. Some tribes are now extinct. The Ava-Canerios survive by raiding isolated farms. In 1980, settlers attacked one of the last Ava-Canerios villages, killing about 10 people. Two years earlier, settlers attacked another Awa-Guaja village. Most Indians fled, but one boy around 8 years old was impaled on barbed wire and turned into an Indian trading post. Another tribe, the Kawahiva tribe have lived in Brazil since 1750.

These tribes reside in houses that are close together and simply made. Tribes have intimate relationships with forests and wildlife. 31% of forests in indigenous reserves have been illegally logged. Members of these tribes have reported food shortages, due to lack of habitat. The forests may grow back, but if everyone in the Awa-Guaja tribes dies, they will not. From 1996-2010 the deforestation has gone up an alarming amount. The Yanomami tribe is supposed to be protected, but loggers come and deforest anyway. Farmers follow loggers and cut down trees. The Yanomami tribe resides in vine and leaf houses with thatched roofs. The Awa-Guaja, Yanomami and other tribes live in villages. Some tribes travel and create villages elsewhere. These tribes, on a daily basis, eat a variety of things found in the rainforest. The Yanomami, Kayapo and Awa-Guaja on a daily basis eat nuts, fruit, seeds, grubs, honey and vegetables, such as plantains, cassava and corn. They either grow the food or find it in the forest. They also hunt monkeys, deer, tapirs, fowl and armadillos. The Yanomami people are hunters, collectors and fishers. The Kayapo people raise bees. The Kawahiva tribe survives by hunting, fishing and gathering fruit, much like the Yanomami.

The rate of deforestation in the Amazon has increased greatly and affected the indigenous population of Brazil. Due to this deforestation, the indigenous tribes of the Amazon have been suffering. The Brazilian government needs to regulate logging, to protect the Awa-Guaja, Yanomami, Kayapo, Ava-Canerios, Ticunas, and Macuxi and many more tribes. We need to make safe places for them, like reserves and prevent people from transmitting disease to these tribes.

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Deforestation and Animal Habitats in the Amazon

By Lola

Hundreds of years ago humans didn't worry about losing animals, there was millions of them, but since around the 1950's humans have been impacting animal life by the cause of deforestation. Deforestation is happening all around the world. A major location where deforestation is greatly impacting animals and life is in the Amazon rain forest. The amazon is losing more and more animals each year because of deforestation due to humans. If humans don't stop cutting down trees in the amazon soon, all the animals will go extinct.

The amazon is a tropical forest located in Brazil. It is one of the most famous forests in the world, though it is full of animals, biologists are yet finding new species. The amazon is habitat to hundreds of animal species, including endangered species, which was mentioned in the WWF article,"Many of the world's most threatened and endangered animals live in forests".It is one of the most natural places left in the Earth.

Lot's of deforestation is happening in the amazon, hurting the amazon's ecosystem. Deforestation is the action of clearing a wide area of trees. Humans are one of the main causes for deforestation. They cut down hundreds of thousands of trees each year. As Emilie U. Lepthien mentioned in her book," Rainforests once covered an area almost twice as large as the continental United states. Today only about half of that forested land remains. And every year more and more forested land is lost"(26). And the amazon is one of the places where deforestation is happening.

Deforestation has been happening mostly because of human actions. One human activity that causes deforestation is illegal logging, when people illegally cut down trees for money, trade, or for themselves. Along with illegal logging, industrial activities also affect the ecosystem by for example cutting timber and clearing a large area of trees to do so. Another cause of deforestation are large-scale agriculture or small scale agriculture. Other reasons deforestation happens is of course cattle-ranching, which was pointed out by Rhett Butler,"By the 2000s more than three-quarters of forest clearing in the Amazon was for cattle-ranching".

Deforestation is a very negative cause, it destroys forests and harms animals. when trees are cut down, animals that live in those trees lose their habitat. When that happens they are often unable to subsist in the small fragments of forested land left behind. They become more accessible to hunters and some eventually go extinct. As Susan Hecht mentioned,"Deforestation can result in extinction as many unique species exist in small isolated geographic locations in the world".

When earth loses more and more animals it disturbs the whole food chain. Some might think that it isn't that much of a big deal if one animal becomes extinct . However it's actually a big problem because if an animal gos extinct the animal that eats that animal then has no food and may also extinct because of starvation. So then the animal that eats *that* animal

has no food either, and that may happen throughout the whole food chain with a result of no animals are left.

We should definitely care about deforestation happening in the amazon because the amazon provides a lot for animals *and* humans. The amazon is not just a forest, it is full of life and animals. In fact many of the world's most threatened and endangered animals live in the amazon rainforest. As the "world wildlife" organization acknowledge, "Deforestation is a particular concern in tropical rainforests because these forests are home to much of the world's biodiversity". The amazon also provides offerings that lots of people rely on, including food fresh water, clothing, traditional medicine and shelter.

If you want to help the amazon and *even other* deforestation locations and save hundreds of species then here are some things you can do to help decrease deforestation.

- Go paperless
- Recycle and buy recycled products.
- Look for Forest Stewardship Council (FSC) certification on wood and wood products.

Because of deforestation by humans, the amazon is losing more and more animals. The amazon is home to lots of animal species. It provides many necessary things for animals and human beings. But deforestation is harming the amazon *and* its animals, leading them to extinction. Are we going to let hundreds of innocent species be harmed by deforestation or are we going to do something about it? It is not too late to help the amazon from getting destroyed, so if we want to save animals from extinction we must act now.

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The Great Barrier Reef vs. Climate Change

By Samantha

The Great Barrier Reef is an amazing ecosystem that is in grave danger. Over the past few years the reef has been having more coral bleaching events than ever recorded. Climate change, including warming waters are making the Great Barrier Reef die off.

Climate change is happening because of human development. Humans are causing climate change by releasing greenhouse gases into the atmosphere and warming the climate. This is causing problems in places such as the Great Barrier Reef. Many things can cause damage to natural things, but climate change is still the main problem that needs to be stopped before we lose the chance. Many things are harming the Great Barrier Reef including fishing nets being dropped and dragged across it and boat traffic above it. But, UNESCO says that,"Climate change remains the most serious threat"(From Bad to Worse 1-2).

The Great Barrier Reef is mostly being affected by climate change. Things affecting the reef include, warming waters and severe storms. These are coming from global warming and therefore will be hard to stop. These two things are the main reason why the Great Barrier Reef is in danger. The Cihan News Agency states that,"Human induced climate change has been increasing the frequency of mass coral bleaching"(Cihan news Agency 1).

The Great Barrier Reef is an amazing reef that is very special compared to others. The great Barrier Reef is located in Queensland Australia which is North-West Australia. The Reef is the biggest in the world and sketches about 2,300 kilometers in length and it's area is 350,000 kilometers. The reef is actually about 2,900 smaller reefs all clumped together. The reef is sometimes bleached because of warming waters, which are a part of climate change. The reef's future may not be bright. The Great Barrier Reef Marine Park authorities say that,"Even with the recent management initiatives to reduce threats and improve resilience, the overall outlook for the Great Barrier Reef is poor, has worsened science 2009 and is expected to further deteriorate in the future"(From bad to Worse 1).

Humans are harming the reef by building coal mines near the reef and releasing harmful chemicals into the water. The Queensland state government has allowed the development of one of the world's biggest coal mines just a mere 200 miles from the Great Barrier Reef. This will pollute the water and air near the reef and cause more coral bleaching to the fragile reef. Also, chemical runoff from the mines and coastal sediment are causing the Great Barrier Reef to be in

even more danger than it already is. They are also constructing two natural gas plants within the boundary of the reefs area, which would eliminate seagrass and cause more boat traffic over the reef. These two plants are being funded by the US export-import Bank. These things are horrible for the reef. Ian Chubb, a former Australian chief scientist, said,"There are effects already. This year saw the most significant coral bleaching event never recorded for the reef"(Michelle Innis 1).

The Great Barrier Reef has amazing creatures that only live in that part of the world. But, if the reef is destroyed these animals will have no place to live. Two endangered species that live on the reef are Dugongs and Loggerheads (also known as Caretta caretta.) Dugongs are called sea cows because they graze on some types of seagrass. If the Great Barrier Reef is destroyed then these animals may become extinct. The pollution from chemical runoff is not helping. People are trying to save these creatures, but it might not be enough. The Biological Diversity has said that,"The center also works to protect other Great Barrier Reef species. Besides our work to protect loggerhead sea turtles" (Biologicaldiversity.org 3).

Humans are not really helping the Great Barrier Reef. They are doing *some* things, but they are adding more to the problem than trying to reduce the problem. There are billions of dollars being spent to save the reef. But people are also building coal mines near the reef and having boats zooming over the reef all day. The things we are doing are not enough. During a review by the Australian Institute of Marine Science they said that,"Current efforts to protect the reef from land-based pollution won't be enough. Targets set by the Queensland and federal governments for runoff reductions by 2018 won't be met, just as they weren't met in 2013"(From bad to worse 1).

Humans can do many things to prevent this problem that they are not doing right now. People can reduce greenhouse gases so that the temperature does not become warmer. This relates to the reef because as the temperature grows so does the warmness of the water. The warmer waters cause the reef to have severe bleachings more often. People can also stop developing power plants so close to the reef. If people stopped chemical runoff into the waters than this would be less of a problem. The other thing is to have less tourists, because they will sometimes damage the reef by breaking off pieces of coral for souvenirs. Boats that take tourists to the reef can sometimes drop anchors on the reef and hurt it. The reef is in danger and it is all humans faults. It may not survive. The Cihan News Agency says that,"Severe bleaching events however may take highly impacted coral reefs up to 10 years to recover"(Wide Scale Coral 2). If humans stopped putting greenhouse gasses into the atmosphere the waters would not warm and the coral would not be bleached. This is one thing people can do to save the reef.

The Great Barrier Reef is in danger because of climate change and humans are not doing much to stop it. The Great Barrier Reef is a unique reef that is in a lot of danger. The warming waters are bleaching and killing the coral because of human activity. Animals are being threatened and the coral is dying. Humans have been building coal mines near the reef and are the main reason why it is dying off. You and I may not live close to the reef, but we can help save it everyday. We can reduce our use of fossil fuels and buy energy star appliances. It is the

warming climate that is hurting the reef, so do whatever you can to help keep our planet from warming up even more.

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Florida and Rising Sea Levels

By James

If you are considering buying a home on one of Florida's nice beaches you should reconsider. Many homeowners will continue to sell or move out of their homes because the sea level in Florida is rising. Also, a lot of people are burning unnecessary fossil fuels that is causing the enhanced greenhouse effect and causing floods.

If homeowners do not sell their land, they will have to buy a new home somewhere else. By 2050, parts of Florida may be flooded and under water. Flood insurance right now is $129 per year. Florida is losing millions of dollars a year just to pay for flood damage. If people continue to burn fossil fuels at that rate, parts of our country will be underwater. Florida, in particular, is at risk because it is the southernmost part of the continental U.S.A. Also, major populations of humans and animals will also be affected.

People are burning fossil fuels- causing the enhanced greenhouse effect. When factories and large stores are being built, a lot of CO2 is being released into the atmosphere. When factories and large stores are being built, a lot of CO2 is being released into the atmosphere. When that happens, the storms get bigger and that is when Florida’s coastline is endangered.

The sea level is rising in Florida fast and that is causing homeowners trouble along the coast. In 1900, the sea level was 4-5 meters above sea level. The sea level now is 10-11 meters above sea level. By 2100, the sea level will rise about 3 ft and flood some of Florida's coast. If the sea rises only 9 meters (29.5 ft), the southernmost part of Florida will be flooded. (The Sea Level Rise Viewer)

Major populations of animals and humans could be destroyed in Florida by global warming. Hollywood, Miami, Everglades national park, and Homestead in a few years could be flooded completely. The median projection for when sea level rise reaches 5 ft at Miami Beach is 2170 (very likely range, 2120 - 2200).

Also, major populations of animals in the waters are being affected by the changes in Florida's biosphere. The warm temperatures on land and in the water is affecting the animals. The animals in the sea will be affected because of the coral bleaching and the loss of coral habitats. For the animals on the land, some of them will no longer have a habitat that they can live in within their historic range in Florida.

The enhanced greenhouse effect is affecting Florida's coastline in many ways. Some of the ways that it is affecting Florida's coastline is that when people burn fossil fuels (Coal Oil and Natural gas) the storms get bigger and when the storms and the waves get too big then they will flood Florida's coast. If too many waves flow over the barrier, that stops them and many cities like Jacksonville and Miami will be completely gone.

Flood insurance may come in handy if your home gets destroyed by a flood. Flood insurance is a thing that you buy so if you home gets flooded the company that you bought it from will help you pay for the damage done to your property that you want fixed. If you do not have flood insurance, no one will be able to help pay for the damage done to your house. Flood insurance will not cover 100% of your needs if your house gets flooded. Your flood insurance will cover most damage from rain, but if your home is filled with water because of the rising lakes, rivers, streams, and oceans, it will not pay for everything you would like to get fixed or replaced. Also, the most common flood insurance is offered through the federally regulated program, the National Flood Insurance Program (NFIP).

If people continue to burn fossil fuels at the rate that they are, parts of our country will be underwater. Florida in particular is at risk. By 2050, parts of Florida may be flooded and under sea level. Flood insurance right now is 129 dollars a year. Florida is losing millions of dollars a year just to pay for flooding. So hopefully you'll be smart about where to buy your home or where to vacation in Florida.

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How Our Use of Carbon Effects Maldives

By Bonnie

If we don't stop reducing our use of carbon, the Maldives 350,000 islanders will turn into the first refugees due to global warming. A refugee is a person who is forced to leave their country due to war, natural disaster or many other various reasons. The use of carbon and melting glaciers are leading to many nations like the Maldives to be fully submerged under water.

The Maldives is a nation-island with many low-lying atolls (an atoll is a ring-shaped reef, island, or chain of islands formed of coral), located off the coast of Asia and in the Indian Ocean. Male is the capital of Maldives. The Maldives has a population of 350,000 people, most of the people are descendants of Sinhalese people who came from Sri Lanka. Maldivians speak Maldivian Dhivehi. The Maldives has a Republic Government and most of Maldivians belong to the Sunni divisions of Islam.

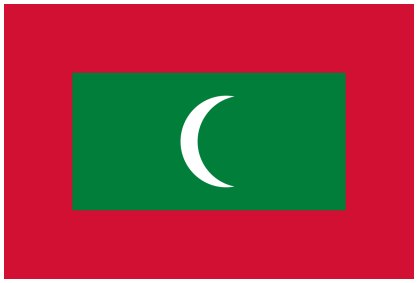
Mohamed Nasheed, the president of Maldives, is, "considering Australia as a potential new home for the Maldives' 350,000 citizens"(Boyle). The sea level rises are causing Maldives to be relocated to a potential new home, Australia. The rising sea levels are caused by the carbon dioxide that is released into the atmosphere, trapping more heat on the planet, causing the oceans to get warmer and expand. It is also caused by ice caps and glaciers melting, from Earth, trapping more heat, from us burning fossil fuels, and releasing carbon dioxide into the atmosphere. Fossil fuels are coal, oil, and natural gas formed by the remains of dead plants and animals, which are pulled up from the ground and burned for energy.

The effects from sea level rise could cause Maldives to be completely submerged in 30 years. President Nasheed says that, "there is a window of opportunity of about seven or eight years." (Doherty). The rise of sea levels got so severe that the Maldives had to construct a $60 million sea wall around the capital of Male so the island can stand well above sea level.

According to Martha Ignacio, tourism claims to be a big help on saving Maldives. But we can help save Maldives in our own home without spending too much money. Jim Gard'ner says that we can use thermal drapes to keep in the warmth instead of using the heater which releases carbon dioxide. We can also install carpet on wood floors and insulate our ceilings, which can also help reduce the use of carbon, and it is a lot cheaper than going to Maldives.

Due to how much carbon we use and the melting glaciers, the 350,000 Maldives' citizens could be submerged fully underwater, and the people could become the first climate refugees. We all contribute to climate change and the people of Maldives and many other nations are

suffering from what we are doing and what we have done. We can all help reduce our use of carbon, by doing things as simple as walking or biking to work or school. You can also plant trees and plants, because the plants take some of the carbon dioxide out of the atmosphere. Things we can all do at home or at school is to recycle and reuse the paper, so trees won't have to be cut down. We can not only help save our country but we can help save the world too.



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Sea Level Rise and Pollution in Shanghai

By Nathan

With only three feet of sea level rise, the entire city of Shanghai will be underwater. Shanghai is not the capital of China, but it is like the New York of China, the economic capital of the country. There are many people living there, tall buildings, businesses, universities and visitors. All of these things will be affected by sea level rise. In addition, pollution is harming Shanghai's residents and visitors. These problems are made worse by climate change.

Sea level rise might not affect most of the people around the world in their everyday life, but it is a serious problem in many of coastal cities and countries. Some scientists estimate that in 2050, Shanghai will be underwater along with New York, London, and Mumbai. Shanghai is only "a beach away" from the sea. After just a few inches of sea level rise, half of the city will flood.

Another big problem that affects Shanghai is air pollution. In the winter months, from November to February, the air is healthy to breathe for only 30 days. Shanghai releases □ of China's carbon emissions. Also, Shanghai releases 650 PM2.5 (CO_2 in China) per hour. PM or particulate matter is a mixture of solids and liquid droplets floating in the air. The impact on its citizens is such that Shanghai's air pollution is 592 per hour on average. This level exceeds the "bad zone" which is 500. That's nearly the same. All the electricity Shanghai uses is from burning fossil fuels.

These statistics affect the people. Shanghai is a very big city where 24,153,000 people live. People are affected by sea level rise and air pollution all over the world, but especially in Shanghai. People are angry about their health and their homes. They complain about their government. China's government consists of the National People's Congress (NPC), a President, and a State Council. Decisions are made from the top-down, which allows the government to act quickly on important matters like climate change, if they wish. However, China's investment in fossil fuels is so great, they are unlikely to change. China has a high need for electricity. Investment in clean energies like nuclear is a solution China's government should consider.

Climate Change is already doing a lot of damage to Shanghai. Sea level rise and air pollution are a serious problem. The government has the ability to reduce its carbon emissions if

it wishes. If we can release less CO2, I'm sure we will have a wonderful planet. As the world's most populated country with a rich history and culture, China needs to do its part in this cause.

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Invasion! How Jellyfish Are Taking Over Our Oceans

By Charlotte St.

The coast of Namibia has always been best known for its anchovies and sardines. But, about six years ago, jellyfish invaded and brutally changed the ecosystem. Dr. Andrew Brierley, of the University of Andrews, said in an NPR podcast, "you could almost imagine walking across the ocean's surface on jellyfish," (Brierley 1). Thriving jellyfish are slowly invading and destroying ocean ecosystems around the world.

Jellyfish are interesting creatures, and it's necessary to learn about them in order to be able to address the problem. Jellyfish, or medusozoa, are bizarre creatures. They have no brains, blood, or central nervous system, and just drift where the current takes them. Though they seem powerless, they have a powerful, even fatal sting, and some species can even live forever. They have a low metabolic rate (how much energy is spent in a matter of time) and can survive in "dead zones", parts of the ocean with little or no oxygen. One of the only cases of jellyfish population decline in the modern age was in the Adriatic Sea, where there was an increase in oxygen that the jellyfish could not survive in. To add to the resistance of jellyfish, the creatures only have 158 natural predators, and 124 of those are fish. Evidently, these animals are prosperous.

There are many reasons that scientists think jellyfish are thriving. One reason is overfishing. People have overfished so many big fish (like trout), that now smaller fish are being targeted, such as anchovies and sardines. These smaller fish are jellyfish's competitors, and because of their decline, jellyfish's populations are increasing. Another theory is because of warming waters. *In The World Without Fish*, a book by Mark Kurlansky, the author explains that warmth stimulates jellyfish and makes them grow faster. Lisa-ann Gershwin, of the book *Stung!*, says the same thing. Faster growth means more jellyfish, so this might be the cause of their increase. There are other opinions, like the changing currents and that the blooming is a natural occurrence, but they are mentioned much less. One just has to choose for themselves which of these reasons seems the most plausible.

Thriving jellyfish are negatively impacting our planet. Fishermen, sea animals, and normal consumers alike all owe problems to jellyfish. The invertebrates clog fishing nets, sometimes capsizing fishing boats. They harm ocean ecosystems by eating fish eggs, 'sweating' acid into the oceans, and "degrading ecosystems" all around the world, according to Lisa-ann Gershwin, the author of '*Stung!*'. They get sucked into power plants, causing blackouts. And do not forget the powerful sting! Jellyfish, with up to 100 foot tentacles, can produce a sting that can cause dizziness, nausea, the feeling of impending doom, and even ***death***. As you can see, the

increase in jellyfish population is definitely a problem for the environment or for the human population.

Solutions are always the hardest part of solving problems, but this problem is almost beyond control. Jellyfish are harming the Earth, that much is true. But humans are far from having a good solution. Some experts suggest eating them. Jellyfish, apparently, have a bland taste and a slimy texture, but that doesn't stop people from liking this bizarre food. According to The Salt, some fishermen of the coast of North Carolina ship nets full of jellyfish to the South East Asia Global Market, which has high demand for the creatures. "The Jellyfish industry has been about the best thing that's happened to us," confesses Howell Boone, a shrimp trawler. Steven Giese, another South Carolina trawler who hopes to open a jellyfish processing plant, says, "in one jellyfish season, a fisherman can make as much money as he makes in three or four shrimp seasons," (Bland 1). Though this does seem to work, "there's no silver bullet that's going to fix the problem," declares Enric Sala, from National Geographic, and he's right. We humans just have to sit and wait for a good solution.

Jellyfish's thriving populations are negatively impacting the ocean environment. Scientists debate on why, but they do know that this is a bad thing. There's not much that humans can do, however, outside of adding more jellyfish to their diet. As there's not much we can do, the problem is bound to get worse. But as Enric Sala of National Geographic so aptly states, "just be careful on the beach and don't let them sting you," (Sala 2).

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Penguins in Antarctica

By Mia

Stephanie Jenouvrier, a biologist with the Woods Hole institute says, “at least two-thirds of the colonies (penguins) are projected to have declined by 50% or greater from their current size by 2100”. The warming temperatures in Antarctica have been increasing almost twice as fast as usual due to global warming. Penguins can’t reach their food due to the population decrease of their prey, are facing a declining population due to warming weathers, and are being pushed out of their habitat due to ice melting.

Climate change is affecting penguins’ food by lowering the prey population. Warming seas decrease the population of penguins’ food. This change in the penguins diet makes it harder for penguins to survive into adulthood. Warming seas and temperatures cause sea ice to retract, which makes it harder for penguins to get food.

Global warming is decreasing the penguin population in Antarctica. Warming temperatures make it harder for penguins to survive into adulthood. Due to warm temperatures in the poles, snow and ice in Antarctica is starting to melt. The water from the melting snow and ice creates puddles. These puddles are bad for penguins laying eggs on the ground, because unborn penguins without their waterproof feathers get in their eggs, which kills them before they hatch.

Climate change is harmfully affecting Antarctic penguins habitat. Due to the rising temperature, Antarctica’s rare ecosystem might be harmed. While over the last 40 years, most of the world increased by 1.4 degrees, the poles heated up by 3.5 degrees, more than twice as much. Polar ice has been retreating for a while because of global warming. The decrease in ice has had a harmful effect on the wildlife living in Antarctica. Emperor penguin colonies are in decline from 250 to 10 pairs (of penguins) because of rapid sea loss. Due to the increase in temperature and shrinking ice shelves, penguins are being pushed out of their natural home on the peninsula and going to the Ross sea, one of the last refuges in Antarctica for the penguins.

The rising temperatures in Antarctica have a negative effect on the penguins living there. Researchers project that 30% of current Adélie colonies may be in decline by 2060. 60% of the population is also at risk; researchers project that the population will be dwindling. Climate change is affecting penguins food by lowering their population, decreasing the population, and harmfully affecting the habitat they have adapted to. We can help stop the increase in

temperature by using the option of green energy by choosing it from their energy company. We can also use fluorescent light bulbs instead of incandescent ones. By doing simple things like this, people can help to stop global warming in their own way.

Antarctic peninsula are experiencing population drop, but are also projected to experience the greatest frequency of unusual climate this century because of warming sea temperature.

Stephanie Jenouvrier, a biologist with the Woods Hole Institute says, "at least two-thirds of the colonies (penguins) are projected to have declined by 50% or greater from their current size by 2100". The warming temperatures in Antarctica have been increasing almost twice as fast as usual due to global warming. Penguins can't reach their food due to the population decrease of their prey, are facing a declining population due to warming weathers, and are being pushed out of their habitat due to ice melting.

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Climate change is harmfully affecting Antarctic penguins habitat. Due to the rising temperature, Antarctica's rare ecosystem might be harmed. While over the last 40 years most of the world increased by 1.4 degrees, the poles heated up by 3.5 degrees, more than twice as much. Polar ice has been retreating for a while because of global warming. Up to 60% of Adélie penguin habitat could be unusable for them.

The decrease in polar ice that broke off into the ocean has had a harmful effect on the wildlife living in Antarctica. Due to the increase in temperature and shrinking ice shelves, penguins are being pushed out of their natural home on the peninsula and going to Ross Sea, one of the last refuges in Antarctica for the penguins.

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Polar Bears vs. Melting Ice

By: Charlotte Sm.

For thousands of years, polar bears have been critical to the economies and cultures of the Arctic people. Now, 30% of polar bears will disappear by 2050. This is due to melting ice and loss of habitat ranges.

Polar bears are carnivorous marine mammals. Male polar bears are about 7.5 to 8.5 feet long and weigh about 1,300 pounds. Females are smaller and are about 6.5 feet long and weigh 330 to 550 pounds. They both have thick, yellowish fur that covers the black skin underneath, and this keeps them warm in the cold waters of the Arctic. They have very sharp teeth and claws that help them catch their food, a small type of seal that is called a ring seal and a larger seal called the bearded seal. They have very keen eyesight and good sense of smell, which helps them catch seals. They can even smell seal dens that are covered in snow! Since polar bears are mammals, they can't stay underwater for very long. They are very good swimmers, but can only swim with their front paws, and can't dive very deep. Now, melting ice is making bears have to swim longer distances. "The population has declined, and the bears' physical condition has deteriorated," (The New York Times Company). In the South Beaufort Sea and Hudson Bay, polar bears are becoming skinner and are in worse condition than usual going into winter.

Most polar bears live on ice caps above the Arctic Circle. They are also known to live in places where the ice freezes in the winter, such as Alaska, Canada, Greenland, Norway and Russia. They are commonly seen towards land, where they spend most of their time. Although, because the amount of sea ice is decreasing, polar bears are spending more and more of their time on land instead of their real homes, ice caps. Some polar bears are leaving their quickly melting homes to go to the Alaskan-Arctic community of Kaktovik to look for food such as whale bones. As the New York Times points out, "but to the scientists watching the bears in Kaktovik, there is no question that the bears aren't picking the whale bones by choice, they are there because their natural habitat is in decline, a fate that awaits untold numbers of other bears" (New York Times).

Polar bear's main source of food are seals. They usually eat ringed and bearded seals by catching them on ice when they come up for air. Since the ice is melting, polar bears have to swim longer distances. For instance, one female was tracked swimming 249 miles nonstop to find ice and use it as a platform to catch seals. Gregory Thiemann, a polar bear expert at York University in Toronto, Canada is worried about polar bears. Thiemann says that, "an environment that is rapidly changing because of climate warming means that bears will likely have to spend more time in the water," which he thinks could be bad for bears. Now, because of this change, polar bears are now trying to eat snow geese. In Kaktovik, Alaska, they are eating whale bones left by whale hunters. Although, the New York Times Company says, "the polar bear is basically designed to convert seal fat into insulation and flesh" (New York Times, pg. 1). Some scientists are hopeful that finding other animals will solve the problem of not being able to

get their main source of food, seals, but most scientists agree that usually animals take thousands of years to adapt to big changes, so the process will take generations and generations to adapt to this change.

The biggest global change problem that is affecting polar bears is melting ice. This is because of global warming. If humans keep burning fossil fuels at the rate that we are doing now, the Arctic will totally disappear during the summer and build itself back up during the winter. This is bad for humans, because the Arctic plays a very important role in cooling Earth. This is especially bad for polar bears because as Steve Amstrup, a chief scientist for Polar Bears International, a conservation organization says, "as the sea ice goes, so does the polar bear" (New York Times, pg. 2). Additionally, the freezing of the Arctic came later than normal this year, and in November 2016, the Arctic lost more than 19,000 sq. miles of ice, something that the National Snow and Ice Center in Colorado called "almost unprecedented" (New York Times pg. 2). Also, since polar bears aren't good at killing seals while in water, this means that polar bears will have to swim longer distances just to find a rest stop. Additionally, swimming in the freezing waters of the Arctic can make polar bears get tired and lose weight. As Erica Goode for the New York Times puts it, "ice that was once visible from Kaktovik, Alaska, even during the summer, is now hundreds of miles away" (The New York Times). Overall, less ice means fewer places to rest, catch seals, and less energy for polar bears to swim.

Since more polar bears can't find food, their population is being greatly affected and decreasing. There are about 22,000 to 25,000 polar bears living in the wild, however, if more and more ice melts, the polar bears could drown just swimming for food. The International Union for Conservation of Nature's Red List (I.U.C.N R.L) predicted that 30% of polar bears will die by 2050. Although that may not seem like a lot, that would mean that there would only be about 16,000 polar bears left. Rosa Meehan, a division chief for marine mammals management of the Fish and Wildlife service said, "polar bears are facing a pretty rough road, the thing we need to do is look to the global community to seriously address and mitigate climate change" (New York Times). The polar bear population has actually risen because hunters used to hunt and poach polar bears for their fur. In 1973, five Arctic countries agreed to restrict hunting. Although, because of the rapidly melting Arctic, many biologists believe that there will be a huge drop in population.

Even though climate change is a big problem facing polar bears, there is still so much that humans can do to help. The United States Department of Interior put polar bears under the Endangered Species Act, but polar bears can come off of it if the climate and ice situation improves. This has to happen quickly if polar bears will have any chance of recovering. As officials wrote in a statement released by the Fish and Wildlife service, "it cannot be overstated that the single most important action for the recovery of polar bears is to significantly reduce the present levels of global greenhouse gas emissions" (New York Times).

A loss of habitat and hunting ranges to polar bears is due to melting polar ice caps. Human's reliance on fossil fuels is endangering polar bears. As more greenhouse gases in the atmosphere are trapping the Earth's heat, more ice caps that polar bears call home are melting. This means that polar bears have to swim longer distances just to find food. Also, polar bears are more likely to drown because they don't have enough energy with no food to catch. We can help reduce greenhouse gas emissions by reducing people's carbon footprint. Things such as turning off lights when not needed, turning off the water while brushing teeth, walking instead of driving, turning off lights when not needed, etc. Doing all these things will help reduce the usage of fossil fuels so it will reduce greenhouse gases in the atmosphere, which would therefore trap

less heat in the atmosphere so polar ice caps will not melt as rapidly and suddenly. Let's help save the polar bears!

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The Florida Burmese Python

By Gabe

During a hot day in Florida, a worker walked to fix something and then he heard a sound in the bushes. Right then, the head of a 16-foot Burmese Python popped out of the bush. The worker then called his friend and they killed the python. Later, after they killed the python the workers cut open its stomach and found the hooves of a deer. Now the Burmese python is one of the most invasive species in Florida and it is all due to exotic pet trade.

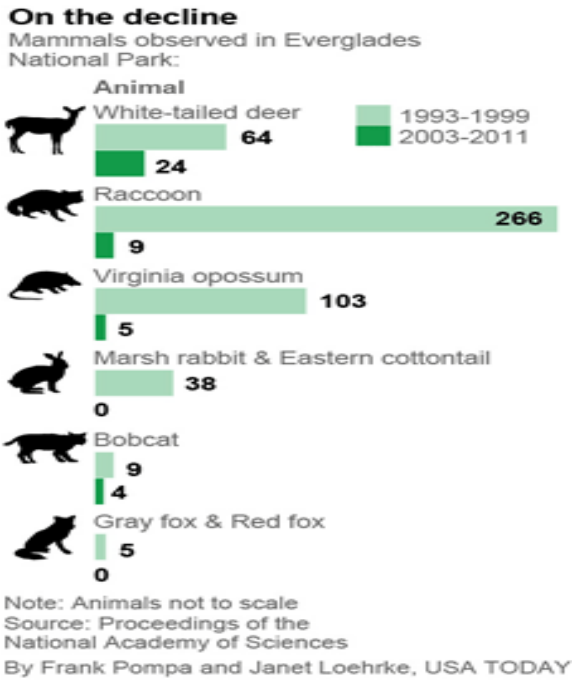
The Burmese python's native environment is in south and southeast Asia.They are found in tropical and subtropical environments, where it is damp and moist and are usually found near water source. They will eat birds, mammals and crocodilians. Physically, the adult Burmese python is usually 10-16 feet long, though the longest ever recorded was 23 feet long. Their scientific name is *Python Bivittatus* in Asia it is called the Asian rock python. Humans have been known to harvest the pythons "for food, skin for use in the leather industry, medicinal purposes, and the pet trade"(1) (Stuart et al.). In the wild, they can live up to 20-25 years. Mr.Snow, a federal biologist in the Everglades national park said "We've found everything, from very small mammals--native cotton mice, native cotton rats, rabbits, squirrels, possums, raccoons, even a bobcat, most recently the hooves of a deer… and at least one big alligator,"(3) (Andrew C Revkin 1).

The way that the Burmese python got to Florida was via the exotic pet trade. The exotic pet trade is when people want a pet from another country. The people go to a pet store and ask if they can put an order in for the foreign pet that they want. When they get the pet, they bring it home and and take care of it. In Florida, some of the Burmese pythons that are out in the Everglades come from owners that had released their python illegally or sometimes the pythons escape. Now, Florida's response is that people have to get a permit to keep there large reptiles in their house. Usually, it costs about 100-200 dollars per permit.

The Burmese python has had major effects on the Florida Everglades. The Burmese python has a major effect on the Florida ecosystem is the decrease number of middle sized mammals. They are eating the animals that eat turtle eggs, for instance raccoons and weasels. As a result, the turtles species is growing rapidly, while the animals that eat the turtle eggs are slowly decreasing. Another major effect the burmese python has on the ecosystem is that their population is growing. This will speed up the process and might eventually make some of these middle sized mammals endangered in the Florida ecosystem.

One negative effect that Burmese Pythons have on Florida is that they are feasting on middle-sized mammals and birds. As a result, the Burmese python species is slowly growing and some of its only predators are alligators and humans. Most of the time it is hard for an alligator to win against these 12-foot reptiles. It is hard for humans to find them because of the camouflage that the Burmese python have. Also, they are affecting the ecosystem that Florida has. By eating the mice, squirrels, and rabbits, some big birds like hawks and eagles might not have enough food to eat, which will affect the reproduction rate of these birds. Michael Dorcas, a professor of

biology at Davidson College says, "These were once very common animals in the Everglades, and now they're gone,"(2) (Elizabeth Weise) . What this shows, is that some of the animals like rabbits are becoming more rare. To add on to that, the Burmese python is eating endangered species like the Key Largo woodrat.



How can we try and stop the Burmese python? One of the ways we can stop the burmese python invasion is if you are in Florida and you see a burmese python in or around your yard you should call 1-888-I'VE-GOT-1 or you can go to their website. Once you call, trained professionals will come and take the snake away. Another way to get rid of the burmese python is to eliminate their food sources. If you live in Florida, put mouse traps out so that the pythons can not find food in your house. Though in Florida they have had snake hunts for the Burmese pythons and cash prizes are awarded to the team who catches the most Burmese pythons.

Due to the exotic pet trade, the Burmese python is one of the worst invasive species in Florida. As the Burmese python population grows, animals like mice, rabbits and some birds species will have to be added to the endangered species list in Florida.

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Lionfish

By Zach

Imagine a world where there is only one fish that you ever eat, see, or hear about. Well that horrible world is becoming a reality. The pteris, or more commonly known as the lionfish, has been slowly taking over the eastern North American coast for over 15 years! They have been destroying ecosystems and doing it quickly.

The lionfish used to live only around the Indo Pacific Ocean, but recently they have been spreading like wildfire through the south and central areas of the Atlantic Ocean. Lionfish were originally brought here by some unsatisfied pet owners who dumped them into the sea off the coast of Florida, and the lionfish bred from there. Scientists have uncovered this through using the DNA of the lionfish to pinpoint family trees. Lionfish have been found in numerous locations and can live in a wide variety of habitats, as stated by the Florida Fish and Wildlife Conservation Commision: “Lionfish have been found in shallow waters and in depths up to 1,000 feet and in temperatures as cold as 48 to 50 degrees. Although they have been found as far north as Rhode Island in the summer, they do not survive the winter there. They can survive low salinities for short periods of time.”

Once the lionfish managed to get into the Atlantic Ocean, they wasted no time eating and breeding. Pteris will eat anything they can fit into their mouths that’s also no more than half their body size. A lionfish’s stomach can expand 30 times its normal size and many have been found to exceed that limit, often causing liver disease. They aren't picky eaters and will eat a variety of ocean species including fish, juvenile lobster, squid, seahorses, invertebrates, shrimp, and juvenile octopi.

Additionally, lionfish don’t have to hunt for their prey because the American fish don't recognise them as a predator. In fact they will approach the pteris because they think they will protect them from other threats, as explained by an article on www.lionfish.co written by Scott Harrell: “The native species that invasive lionfish are feeding upon do not recognize lionfish as a predator and flee. In fact, just the opposite has been shown to be true. Small fish will often congregate around a lionfish, most likely believing that the lionfish’s long spines, fin rays and feathery pectoral fins offer them shelter and protection from predators. However, when the lionfish is ready to eat, these fish are herded into alcoves where they cannot escape. Lionfish use lighting fasts strikes and gulp down dozens of whole fish at a time. Science has demonstrated

that a single lionfish can reduce native marine creatures by 80% to 90% in its range within just 5 weeks."

The reason lionfish have been invading so successfully is because they breed like crazy. Female lionfish release egg masses (ew) every 4 days and lay 2 million eggs a year. A lionfish also lives for 15 years. Doing the math, 2 million times 15, we get a staggering 30 million eggs per female lionfish! Now, that gives you a reason to be scared here! The book, "Killer Fish" by Andrew Solway supports the idea lionfish breed quickly with: "Lionfish spawn in groups, with the males fertilizing the female's' eggs as soon as they are released. The eggs are covered in a jelly-like coating that swells in the water to form a ball. The lionfish eggs take one to two days to hatch. When the young first emerge they are only about 0.04 inches long, but they grow quickly, doubling in size the first day or so."

So far the lionfish being here has been catastrophic. Scientists have estimated that a single lionfish can decrease a reef's population by 80-90%.

The pteris epidemic has been a real trouble for governments across the affected sea and they all have been doing whatever they can to stop it. They have been at work for a while now trying their best to find a cost-efficient solution for the lionfish invasion and "most scientists agree, it is unlikely that the lionfish invasion of U.S. waters can be reversed. Any large-scale attempts to remove the existing lionfish from U.S. Atlantic waters appear impractical and would be very costly," as said by the NOAA Ocean Service Education. The governments have been doing a variety of things, from selling them to restaurants to motivate people to buy and want them and to have a use for dead lionfish bodies, to planning to construct killer robots to go into the deeper oceans that we can't go down to.

This epidemic of the pteris, has been slowly growing for the last 15 years along the eastern coast of North America. If we don't do something and soon, then the oceans will join the forests, the atmosphere, and the arctic in the realm of the dead ecosystems.

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Manatees

By Maddy

Manatees might become extinct because of climate change. As reported by Martine De Wit of the Florida Fish and Wildlife Conservation Commission, “They seem to be in good condition, they’re big healthy animals, and suddenly, they get an acute shock and a lot of them drown on the spot” (Orttung). The Manatee population is quickly decreasing because of climate change and if we don’t stop it, they will become extinct.

Manatees are large, gentle animals that are distantly related to cows and usually found in slow moving lakes or rivers. Manatees have a large, flat, paddle-shaped tail and two flippers that usually have 3-4 nails on each. They have a very wrinkly face and some whiskers on their snout. The average manatee is about 10 feet and weighs 800-1200 pounds. They are very slow and most of their time is spent eating, resting, and traveling. They are also herbivores, so their essential diet is submerged, emergent, and floating plants. Even with this diet, they can consume 10-15% of their body weight.

Climate change is affecting manatees in two main ways- rising waters and red tide. When the waters around Manatees rise, Manatees rise with it. Because of this, Manatees get lifted away from their food, the seaweed, such as duckweed, on the ocean floor. According to biologist Holly Edwards, “The water is going to get deeper. And when you get deeper, you get more turbid water and less seagrass” (Orttung).

In addition, Manatees are also in danger of red tide, defined by Dictionary.com as “a brownish-red discoloration of marine waters caused by the presence of enormous numbers of certain microscopic flagellates, especially the dinoflagellates, that often produce a potent neurotoxin that accumulates in the tissues of shellfish and other sea animals” (Dictionary.com”). Red tide produces a poison called brevetoxin which infects Manatees nasal passages, lungs, liver, and brain. They also cut off sunlight and oxygen by covering the surface of the water. When this happens, it causes the seaweed and seagrass to die.

There are many animals other than Manatees which are affected by red tide. Almost all types of fish such as salmon are affected in red tide infested waters. Most animals die, and red tide does not affect any living thing positively, other than itself. Red tide also affects seabirds, specifically the double crested cormorants, all shellfish. It also can badly hurt and kill marine mammals such as dolphins, and can also negatively affect humans by poisoning their skin and if they were to drink this water, it could cause them to be very sick or even cause death.

Almost all Manatee habitats are the same with four main things. All manatees habitats are in pretty warm water, around 68 degrees Fahrenheit and they are almost always found in slow-moving rivers that are found in inlands. A manatee’s habitat usually contains a few seagrass beds and some freshwater vegetation, such as duckweed.

Because of climate change, the manatee population is decreasing rapidly. If no one is doing anything to stop it, soon, the manatee population will become extinct. Climate change is

hurting and killing manatees in two ways, rising oceans and red tide. This can affect them and their habitat. There is not much to do for rising oceans except stop climate change all together. To stop red tide, we need to stop dropping trash into water that is inhabited by manatees and other animals. Also, we need to protect manatees and take them to a place where they can be fully protected and where there is almost no chance of anything infecting the water. Manatees need to be protected so they can have a chance of surviving.

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