

ENDANGERED SPECIES

ARE HUMANS THE CAUSE OF ALL THIS DESTRUCTION?



POACHING

PALM OIL

WILDFIRES

INTRODUCTION

For the past eight years, the sixth graders of Cold Spring have studied sustainability. Each year we choose a topic, research it, interview some experts, write a research paper, and then we choose a project and showcase it at what we CSSers call "The Expo." The last part couldn't happen this year due to obvious reasons -- it would be a social gathering, and well, we don't go into school physically anymore. Even though we are in a pandemic our class and teachers, with the help of our art teacher Meghan, have found a way to present our projects online: an online booklet/magazine to show our projects-- what we call an eBook.

The topic for my eBook is endangered species. I have always loved animals and they have always been an interest of mine. They are a part of my life, I have a dog, a cat, some fish, and some gerbils. I love my pets a lot, but what has interested me more are endangered species. The past winter, I got to have one of the most amazing experiences of my life as I got to go to Kenya and go on safari. We saw lions and leopards and warthogs and wildebeests.

Recently, our class has been trying to figure out how to put our own spins on the eBooks and not just copy and paste our whole research reports. Art and photography have also been interests of mine. In this booklet, I have added some of my drawings and many of my photos from Africa. I have been researching endangered species since the beginning of January and it is jaw dropping and often sad to hear about the many ways that animals are affected by humans. You will read about animal cruelty, poaching, and other awful things here, but also about leaders who are trying to stop these things. We humans have only been around for only 1/20,000 of the Earth's life, yet we have changed the world more than any other creature for better or for worse.





HISTORY OF ENDANGERED SPECIES

Since the 1900's and before, we have been polluting the air, putting trash in the oceans, and poaching hundreds of thousands of animals. Right now, the extinction rate of animals is 100-1,000 times higher than the background extinction rate, or the rate for which animals normally go extinct. A mass extinction is currently underway, all because of us. Our species has been on this planet for such a short time compared to the 4 billion years that the earth has been around, yet we have changed it so much. We are killing animals, but we have many people who are trying to save them. In this report, you will learn about the awful things that are happening to the environment, but also ways that we are helping to save it and the animals on it. We can do that in many different ways; you will read about sniffer dogs in Kenya who help to track poachers by their smell or government actions that can help to preserve a species as well as many other important people who contributed to the efforts of saving the earth. Furthermore, though most consider extinction to be permanent, you might be surprised to hear that not everyone agrees.



THE SIX MASS EXTINCTIONS



THE SIX MASS EXTINCTIONS

Humans have been living in relative harmony with animals for tens of thousands of years, until now, when we are the ones who could bring animals' demise. Animals are always at a small risk of extinction, but as you read before, the background extinction rate has gone up by one hundred to one thousand fold. This wasn't caused by a volcanic eruption or an asteroid; this was caused by our actions. You might not have known this, but in the past, extinction rates have gone up also, but not for the same reasons, and we call it a mass extinction. A mass extinction is when the extinction rate is so high that a majority of the species goes extinct. We've had a mass extinction at least five other times in history, and we might be at the beginning of a sixth one right now. The five other extinctions devastated the Earth and one of them nearly wiped out all life. They were the first mass extinction, the Ordovician Mass Extinction, the second mass extinction, the Devonian Mass Extinction, the third and arguably the most devastating, the Permian Mass Extinction (The Great Dying), and the fourth, the Triassic-Jurassic Mass Extinction. Then we have the most recent mass extinction, the Cretaceous-Tertiary (or the K-T) Mass Extinction. You might be familiar with the last one, the K-T mass Extinction, as it was the most recent and the most famous. The KT Mass Extinction took place 66 million years ago, when the asteroid hit, killing all the dinosaurs. The other famous mass extinction was the End Permian Extinction also known as The Great Dying-- you can probably tell from the title what it was. The Great Dying was 250 million years ago, and by the time the extinction was over only around $\frac{1}{3}$ of all life on land was still around, only 5% of life in the seas survived, and there were barely any trees left. According to *National Geographic* it killed a whopping 90% of the planet's species. Back to now, the sixth mass extinction, otherwise known as the Anthropocene Extinction. All the other mass extinctions were caused by volcanic eruptions, asteroid impacts, or, as you will read later on, climate change. Last part sound familiar? The Anthropocene Extinction (that we are in now), started about 10,000 years ago, which probably seems like a long time, but if you compare it to the other mass extinctions, it's incredibly short. To give you an idea of geological time, the Great Dying mass extinction spanned a period of 15 million years. All the extinctions took millions of years to recover from. The animals on this planet are going extinct fast, one of the fastest extinction rates in the history of the world.

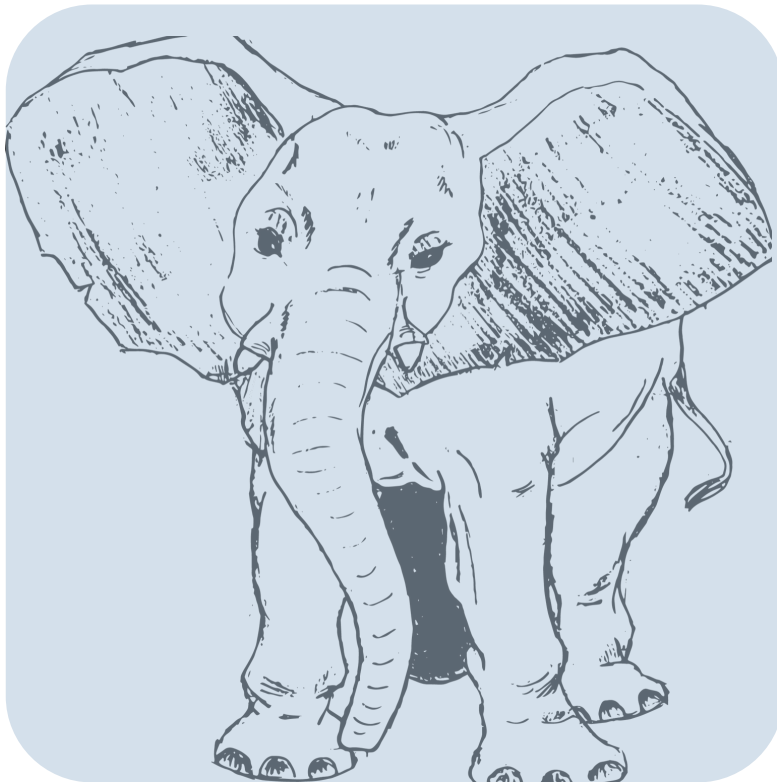
POACHING



POACHING

Poaching has been devastating for many animals including elephants, rhinos, and pangolins. Just in the past decade there have been around 9,000 rhinos poached, and only 1 - 5% of poachers get caught. In many cases, like for African elephants, poaching has been the primary reason for their endangerment. More than 100,000 African elephants were killed between 2014 and 2017. Poaching has also been catastrophic for the rhino population; more than one thousand rhinos get slaughtered every year. In 1960 there were 2000 northern white rhinos worldwide, but now poaching has reduced its numbers to only two, and they are both female. Poaching is not only for ivory and rhino horn. Another creature that gets killed from poaching is the pangolin. A pangolin is an anteater-like animal with scales covering its body. People hunt pangolins for their scales because in traditional Chinese medicine, dried scales are believed to have medicinal properties, and in other places, like Ghana, a country in West Africa, the scales are believed to give protection from witchcraft and are used for other purposes.

If you're thinking that poaching only affects animals, you would be wrong. In Africa between 2009 and 2016, nearly six hundred rangers were shot and killed by poachers, just trying to save the wildlife.



Trapping is another source of direct harm to animals. Animals in the wild eat specific diets found in nature, and they all need space to roam, or fly, or swing from trees. If the captured animals can even survive the transport, where they are stuffed into suitcases, boxes, and sacks, they suffer and often die prematurely in their new unnatural environment.

Luckily, there are many organizations trying to stop poaching and trapping in countries like Kenya, Tanzania, Uganda, and Mozambique. Starting in 2011, there have been dogs trained to sniff out poachers. These dogs get trained for two years before their handlers deploy them. (Handlers are the people who go with the sniffer dogs.) Although these dogs are helpful in the arrest of many poachers, it costs around \$15,000 to train and deploy each dog.



LAND USE & DEFORESTATION



LAND USE & DEFORESTATION

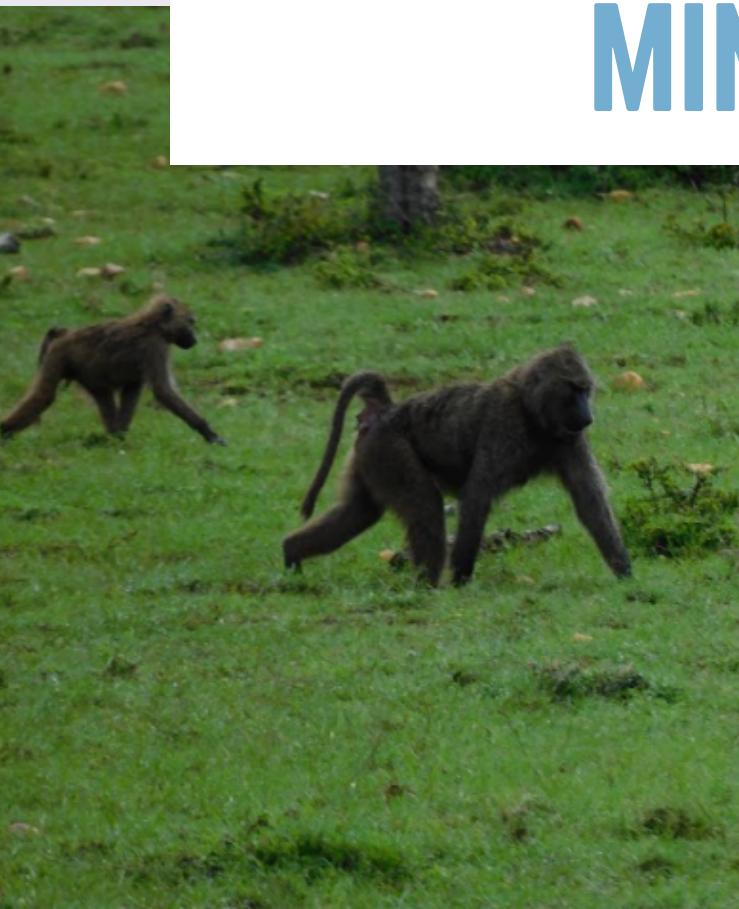
The agricultural business spans across the world. According to *Green America*, a non-profit organization, agriculture covers over 1/3 of the Earth's land. That's a lot. Especially if you consider that animals cover basically 100% of the globe. Animals are being pushed out of their habitats by worldwide industrial monoculture plants like corn and soybeans. Nearly 1/3 of all biodiversity loss to date has been linked to animal agriculture.

Deforestation is another aspect of land use that contributes to the endangerment of species worldwide. Deforestation is not just for using the lumber from trees; in fact, the number one reason for deforestation is for clearing land for agricultural purposes. According to Conservation International, 36 football fields worth of forests are being hacked, burned, and destroyed every minute!





PALM OIL & COLTAN MINING

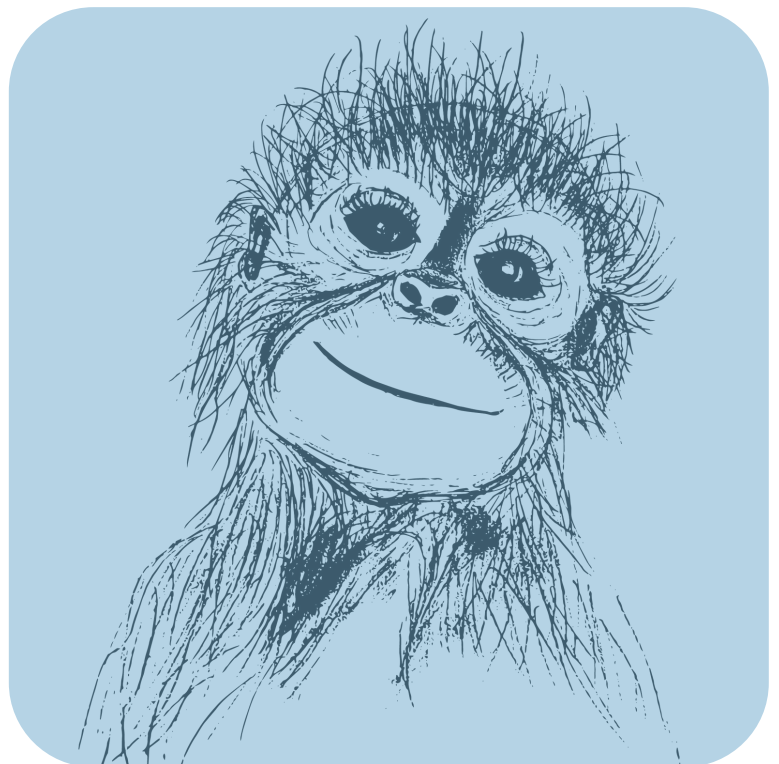


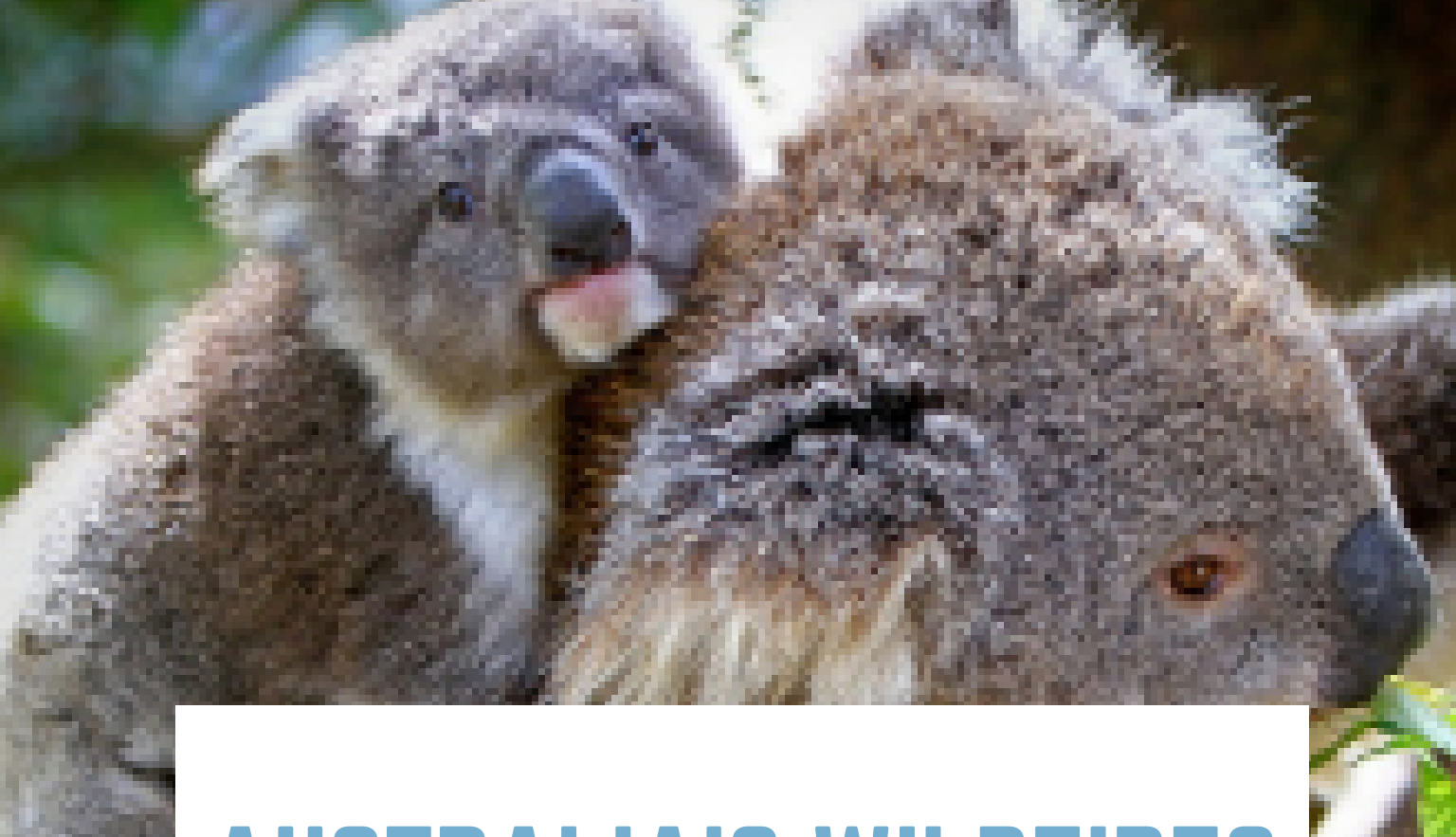
PALM OIL & COLTAN MINING

Recently trees have been destroyed to clear land for agriculture as you already know, but not the normal, small- farm agriculture-- for oil palm tree plantations. These plantations spread miles and miles with trees getting killed every minute-- just for a type of oil.

Palm oil is used for processing food and for cooking oil, and is made out of the fruit from oil palms. Palm oil has taken over the food industry; almost anything you would find at the supermarket contains it. But not for just foods as even products like shampoos and conditioners rely on palm oil in their ingredients. Look around your house and you will find it in anything, from pizza to margarine or lipstick. If you're thinking, "Why are you telling me this?"-- it is because palm oil has endangered orangutans. How can cooking oil make a species endangered? Let me tell you how. Since the palm oil industry is thriving so much, we have palm oil plantations around the globe, including many in Indonesia and Malaysia. And it's just the orangutan's luck that that's where they live. Around 80% of the world's orangutan population is in Indonesia.

Another dilemma, like the dilemma of the orangutans, is found in the Congo Basin, a key habitat for mountain gorillas and chimpanzees. And it turns out, the Congo Basin is also a key habitat for important minerals like some gold and tin, but mostly coltan. Coltan is a mineral found in transistors, which are things in electronics that you probably own, like mobile phones and computers. We don't think twice about using our mobile phones. We don't even think once about it. To tell you how bad it is, the Grauer's gorilla, a critically endangered species, has lost more than 75% of its population in the past twenty years, partially due to mining for cell phone materials. The gorilla population is on the brink of extinction.





AUSTRALIA'S WILDFIRES



AUSTRALIA'S WILDFIRES

While deforestation is often due to human activity, it can also be the result of natural causes. As you may know, Australia is in deep trouble with wildfires blazing throughout the country, killing animals, plants, people, and burning down hundreds of houses. Fires have been burning through Australia since late September 2019, and are still an enormous threat to every animal in the country. Scientists estimate that by the time that all the fires have died down and stop burning, more than one-third of all the koala population will have died. No one knows for sure if all of the species are gone, but because of the bushfires there are 24 bird species, seven frogs, and 27 mammal species believed to be extinct.



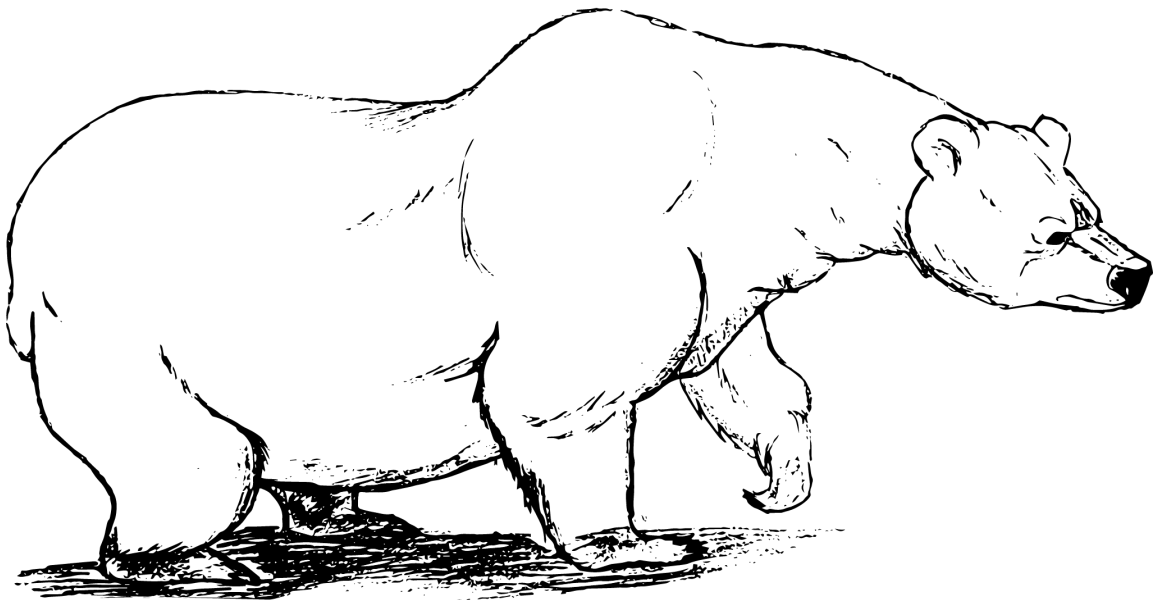


CLIMATE CHANGE



CLIMATE CHANGE

Perhaps the most significant reason for animal endangerment, is climate change. According to a still ongoing temperature analysis that is conducted by scientists at NASA, the climate has changed by around two degrees Fahrenheit since 1880, two-thirds of that since 1975. This may not seem like much, but can be catastrophic to the balance of the ecosystem and the animals in it. There is global warming now, but climate change was not always warming; for example, in the 2nd mass extinction, global cooling was the cause of all the destruction. Just when life began to move to the land, plants decided to move to the land too. In the end, plants caused this mass extinction. When the plants moved to land they took away the greenhouse gases so rapidly that the temperatures dropped drastically causing the 2nd mass extinction to occur and up to 80% of all species died.



Endangered Species Act

**WORLD WILDLIFE FUND AND
THE ESA**

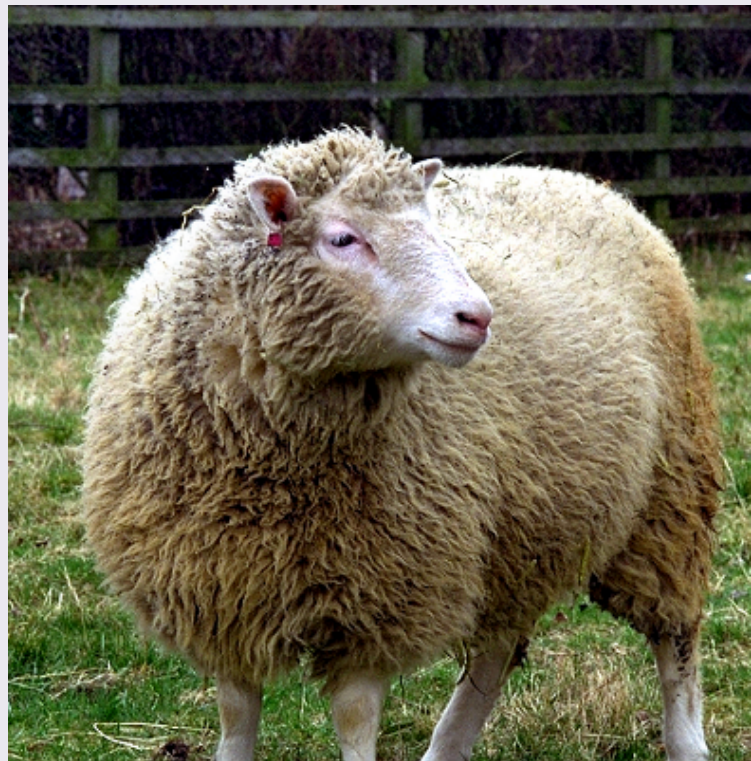


WWF & THE ESA

Now that you have heard how impactful humans can be, and you've heard of some of the awful things that are happening to the environment because of us, here are some of the leaders and groups that are trying to stop the actions of poachers, trappers, and others who are harming the environment and the well-being of the animals. These organizations are changing the world. Let's start with the World Wildlife Fund (WWF). You've most likely heard of the WWF, founded in 1961 when 16 conservationists signed a declaration that came to be known as the Morges Manifesto (it was signed in Morges, Switzerland). They protect animals by helping to stop poaching, oil fracking, logging, and other causes that could lead to habitat loss or extinction. Another thing that WWF does is notifying the public about the threat of extinction, and how someone like you or me can help stop it. For example, we can help tigers by donating money, volunteering, or telling congress to create new laws to protect animals. One of WWF's goals is to double the big cat population by 2030, a goal they can accomplish if everyone does a little bit to make a change.

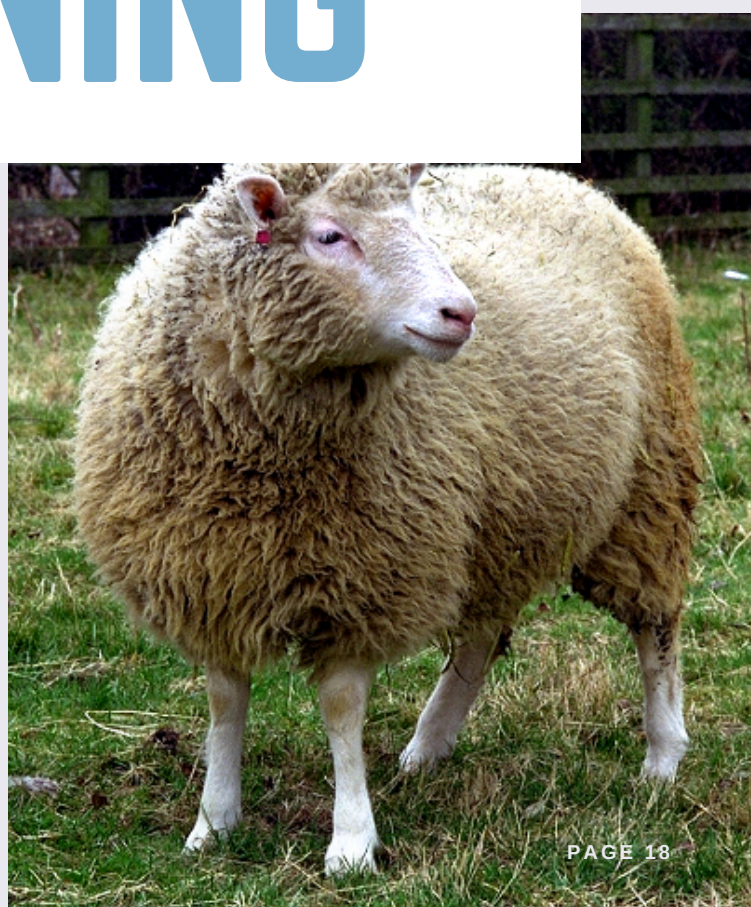
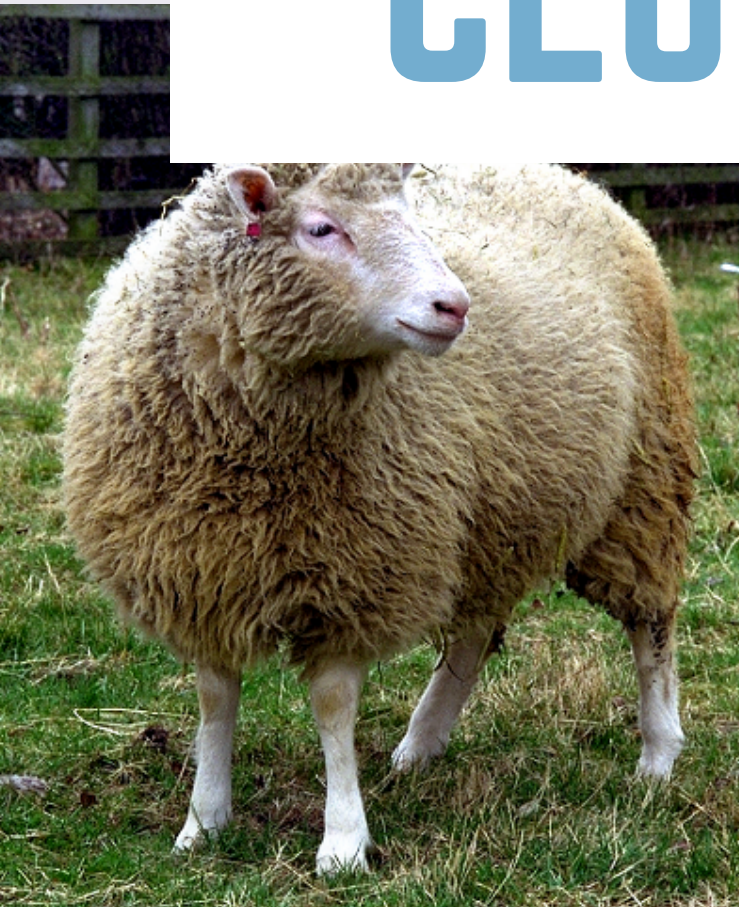
The Endangered Species Act (ESA) though, is just for the US. There are environmental protections all over the world. There is the Species At Risk Act (SARA) for Canada and The Red List is international. There are advantages to both the ESA and SARA. The decision for listing animals on the ESA depends only on the species population and does not include the amount of money it would take to recover a species as one of its factors for deciding. This is good for the animals because they would save any species, not just the species that are cheap to recover, but for SARA they can base the decisions with a financial standpoint, which can be good for the economy. The people who generally have the most power are the government officials. Starting way back on the 28th of December, 1973, president Richard Nixon signed a law/agreement called the Endangered Species Act (ESA) in his signing statement he wrote, "Nothing is more priceless and more worthy of preservation than the rich array of animal life with which our country has been blessed. It is a many-faceted treasure, of value to scholars, scientists, and nature lovers alike, and it forms a vital part of the heritage we share as Americans." When congress passed the ESA, they recognized that our natural heritage is of "aesthetic, ecological, educational, recreational and of scientific value to our nation and to its people". The ESA was made to protect and recover species at risk and the ecosystems in which they live. You can list a species in the ESA as either endangered or threatened. "Endangered" means that a species is in danger of extinction. "Threatened" means it could become endangered in the foreseeable future. To determine whether a species should be listed or not, five factors are considered: how much damage is done to their habitat, over use for commercial, recreational, scientific, or educational purposes, disease or predation, if the species has a protection already, and other natural or manmade causes for its endangerment. The ESA is broken into eighteen sections each working together to help the species not go extinct by reducing the threats of their survival, helping to stabilize populations, and eventually help species recover to the point where nature can take its course and where we will no longer have to list the species. For example, section nine states that it is against the law for any person to "take" individuals, the word "take" means harassing, harming, pursuing, shooting, wounding, killing, trapping, capturing, or collecting any of the species.

Endangered species recovery is hard work and requires lots of time and resources. It takes a long time for a species to be on the brink of extinction, but it also takes a long time to bring them back. Many of the recovered or mostly recovered species are the species that were listed half a century ago. The ESA has become one of the most important environmental laws in history.



Dolly the Sheep 1996-2003

CLONING



CLONING

Most people think that extinction is permanent, but there have been researchers that think otherwise. I'll give you a hint: clones. Researchers have been collecting blood and freezing it as well as collecting endangered animals cells in an attempt to save the species at some point. Cloning animals is not a viable option right now because it costs many thousands of dollars, and even when cloning familiar species, the success rate is very low. The success rate of cloning wild animals is less than 1%. It wouldn't make sense, for example, to clone cats because it costs over \$30,000 and the rate of success is still less than 5%. The first cloned animal was Dolly, the sheep who was successfully cloned and lived from 1996 and 2003. Even though it's not a very good option right now, cloning could be helpful in the future, when technology has advanced, to boost dwindling populations.



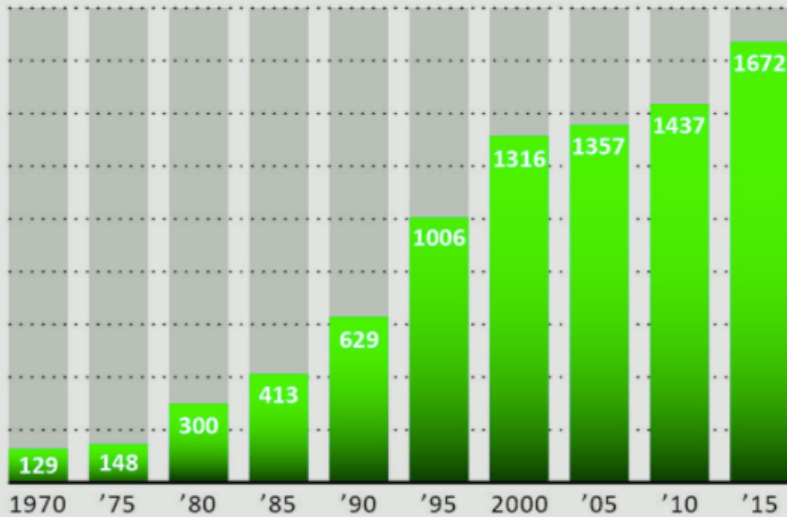


WHAT YOU CAN DO TO HELP ENDANGERED SPECIES

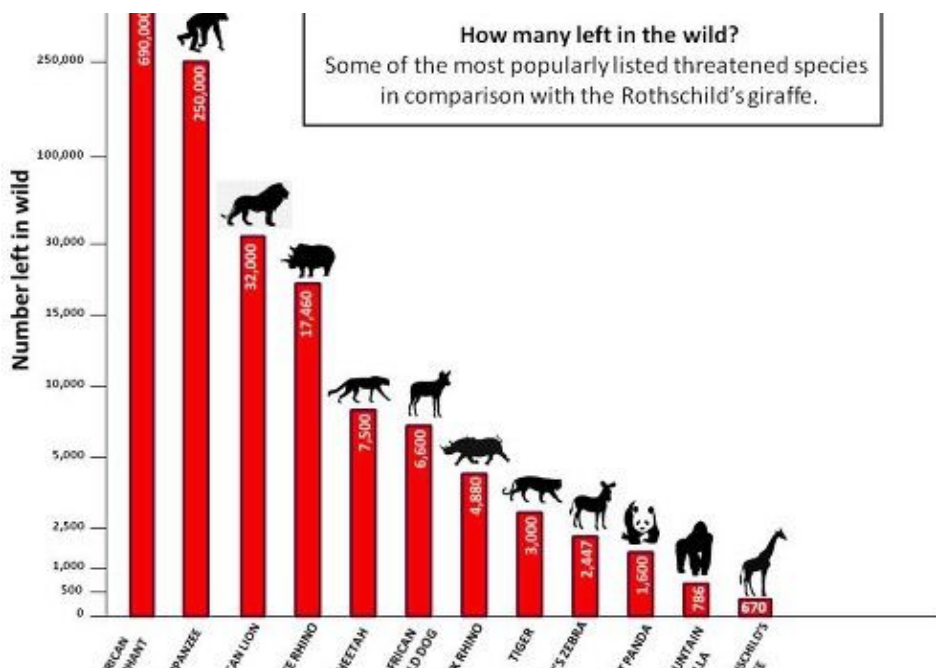
There are many things you can do to help save animals-- simple things like planting some trees, which, if you plant enough trees will help to diminish your carbon footprint, and can provide a home to local wildlife or you could volunteer at a local animal shelter. If you want to help animals around the world, another great thing you can do is to donate money to Defenders of Wildlife, WWF, or another charity. Another way you might be able to help a little is by recycling your mobile phone before you buy a new one. Please don't just put it in the recycling bin in your cabinet as there are specific places that you can go to to recycle your phone. Many non-profit organizations and local communities have places where you can recycle your phone. To find a location for a drop off bin for phones and rechargeable batteries, you can use a website called Call2Recycle. Enter your ZIP code at Call2Recycle.org and it will show you places all over the U.S. Last but not least, it might not be something as obvious as donating money, but probably the most important thing you can do is educate others about the perils of habitat loss, and how every day our country is bringing animals one step closer to extinction.

GRAPHS PAGE

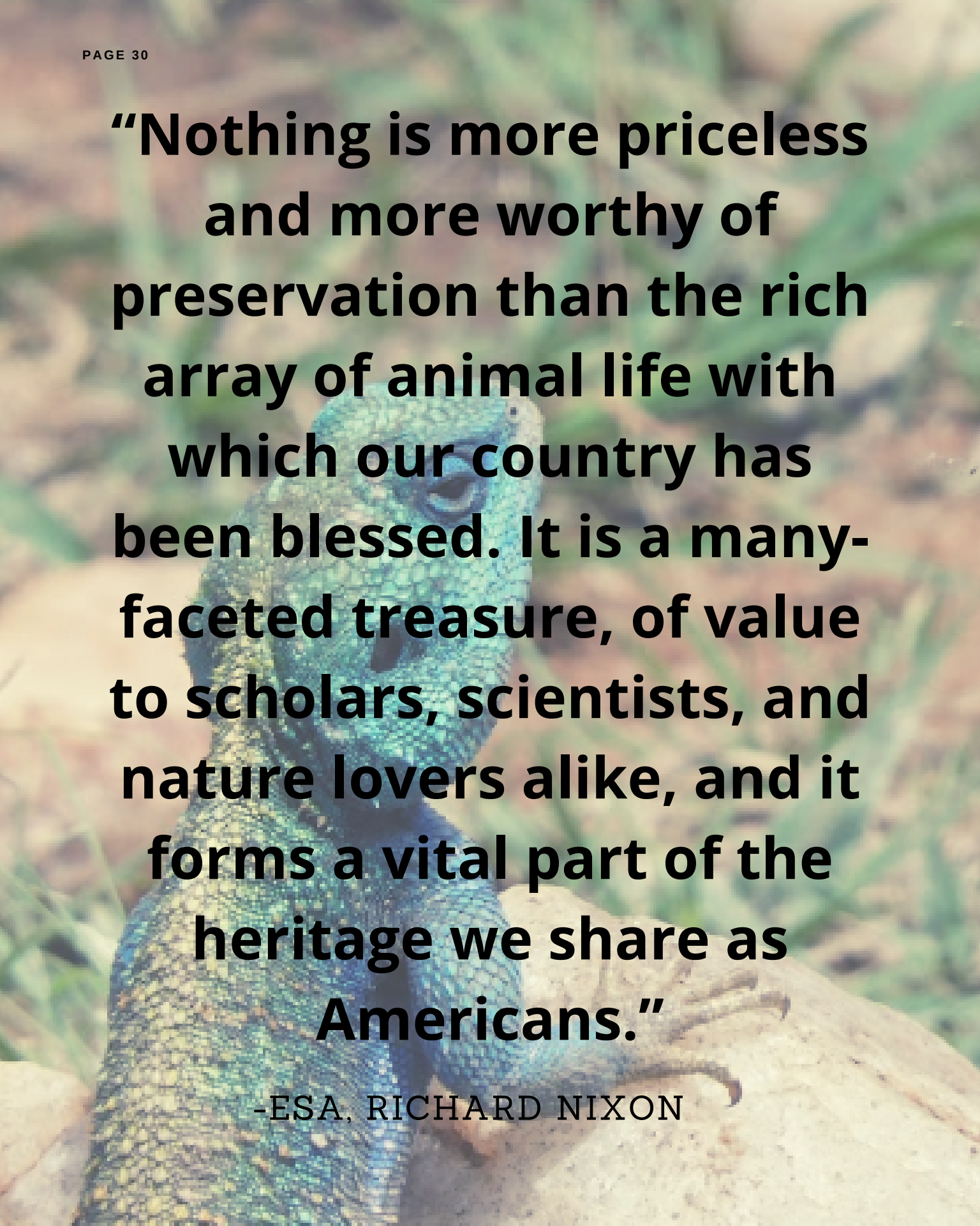
ENDANGERED AND THREATENED ANIMAL SPECIES LISTED FOR U.S. PROTECTION



Source: U.S. Fish and Wildlife Service, 2015



Rothschild Giraffe

A close-up photograph of a blue lizard, possibly a spiny-tailed lizard, perched on a light-colored rock. The lizard's body is covered in small, bumpy scales and has a vibrant blue color with some darker spots. Its head is turned slightly to the right, and its eyes are visible. The background is a soft-focus natural setting with green foliage and brown earth.

**“Nothing is more priceless
and more worthy of
preservation than the rich
array of animal life with
which our country has
been blessed. It is a many-
faceted treasure, of value
to scholars, scientists, and
nature lovers alike, and it
forms a vital part of the
heritage we share as
Americans.”**

-ESA, RICHARD NIXON