

Stay Clean - Go Green

Boyd County 6th Grade
Environmental Journal

Issue 1

18 January 2021



CO2 eEissions Cause and Effects

By: Gracen Eckert, Madelyn Brown, and Adam Bernt

What would you do if you were struggling to feed your family everyday? Polar bears, penguins, and other animals are facing these struggles everyday due to global warming caused by CO2 emissions.

What are CO2 Emissions?

A lot of people don't know what this is, but CO2 emissions are emissions stemming from the burning of fossil fuels and the manufacture of cement. They include carbon dioxide producing during consumption of solid, liquid, and gas fuels as well as gas flaring.

Why CO2 Emissions are Bad

CO2 emissions are bad because they cause climate change by trapping in heat, and contribute to respiratory diseases from smog and air pollution. CO2 emissions are creating climate change and polluting the environment. We need to use less fossil fuels to help create a cleaner and safer environment to live in.

CO2 Emission Facts

- Fossil fuel combustion has the highest rate of use in this country.
- Coal is the largest fossil fuel source of CO2 emissions.
- In 2018 alone 34.6 billion tons of CO2 emissions are just from fossil fuels.
- Since 1840 there has been 35 billion tons of CO2 emissions added to the yearly emissions.
- Volcanoes admit 1 billion tons of CO2 emissions each year.

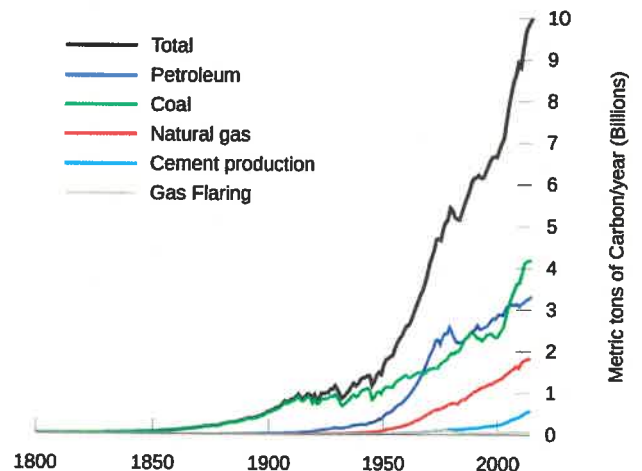
Cutting Down on Carbon Dioxide Use

There are many ways to cut down on the use of carbon dioxide. One way is to use renewable resources instead of using nonrenewable ones.

Another way is to use biofuels instead of regular fuels. One last way to save the amount of CO2 you use is to use less electricity in your home.

The Good and The Bad

Carbon dioxide, a greenhouse gas that traps heat helps earth hold the energy it has retrieved from the sun so it doesn't all escape back into space. If it weren't for carbon dioxide, Earth's oceans would be frozen solid, BUT the heat that is trapped is causing climate change, making temperatures rise and is destroying places like Antarctica with snow, ice, and glaciers. If we dont stop using greenhouse gasses, animals such as polar bears and penguins will lose their food supply, and habitats.



The graph above shows how CO2 has gotten into our air and how bad it has gotten since the 1800's.



This is what a city might look like when there's too much carbon dioxide in the air.

The Animals Need Help

Glaciers and ice on lakes and rivers have melted earlier than it's supposed to. This is caused by global warming or CO2 emissions. This is a big problem because it puts the arctic and polar animals in danger, for the polar bears they lose their homes because the ice caps melt. Then they cannot eat because the seals use the ice to raise their young and seals are the main prey of polar bears. Penguins are dying because the temperatures are rising and the krill they eat can't survive in hot water.



What We Could Do to Stop This

If we stop using things that cause greenhouse gasses and global warming polar bears, penguins, and other animals won't lose their habitats and won't have to struggle to take care of their family.

References:

United States Environmental Protection Agency, "greenhouse gas emissions,"

<https://www.c2es.org/content/regulating-industrial-sector-carbon-emissions/#:~:text=There%20are%20many%20ways%20to,use%20and%20recycling%20of%20materials>.

Hannah Ritchie and Max Roser, "CO2 emissions",

<https://ourworldindata.org/co2-emissions>

Christina Nunez, "Cause and Effects of Climate Change,"

<https://www.nationalgeographic.com/environment/global-warming/global-warming-overview/>

The Pollution of the Ocean

By: Bo Hipke and Bryer Almgren

When you think of the beach you may think of palm trees and tropical fish. In some places that's not how it really is. Billions of pounds of trash are being dumped into the ocean each year. Birds, fish, and other animals are dying each day and it's all because of the pollution in the ocean.

Different Types of Pollution

There are many types of pollution. Many are deadly to the ocean and the ocean animals, like oil spills, dumping garbage, sewage, and human and animal waste. Oil spills destroy the sight of most animals and the sunlight gets blocked so animals can die from hyperthermia. Dumping garbage is even worse, and trash is dumped in the ocean on a daily basis. Feedlot waste is often dumped into the ocean which is bad for the animal's oxygen. Human and animal waste are probably the worst thing yet. The animals and human waste just float in the ocean where it is dumped making dead zones where animals can't live. As bad as this sounds there are people trying to help.

People That are Trying to Help

The Ocean Cleanup is a site that cleans up plastic, trash, and all of the garbage in the ocean. They designed a floating device that captures small and huge pieces of trash, plastic, etc. Ocean Conservation is another organization that has cleaned up more than 338,401,499 pounds of trash, and they have more than 16 million volunteers that have joined.

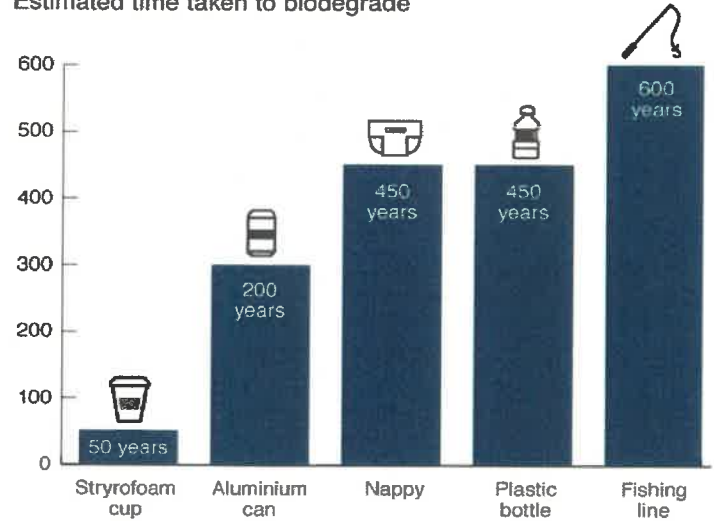


This picture shows pollution that is rushing into the ocean by a thing called a pollution pipe.

This is a chart of how long it takes for some things that can be harmful to decompose.

How long til they're gone?

Estimated time taken to biodegrade



Exact time will vary by product type and environmental conditions

Source: NOAA / Woods Hole Sea Grant

B | B | C

Pollution in the ocean is killing animals everyday. The Ocean Cleanup is really helping the ocean, and people are still polluting the ocean. People need to realize that our ocean is dying and if the issue is not dealt with now, the effects will be irreversible.

References:

A&E Television Network, "Water and Air Pollution,"
<https://www.history.com/topics/natural-disasters-and-environment/water-and-air-pollution>

Denchak, Melissa NRDC.org, "Ocean Pollution: The Dirty Facts"
<https://www.nrdc.org/stories/ocean-pollution-dirty-facts>

Plastic Pollution

By: Madilynn Nolan and Kaylee Warnke

Did you know that the plastic bottle you got at lunch will take the next 450 years to decompose? Plastic can stay in the environment for up to 1,000 years, threatening wildlife and spreading toxins. This polluting cycle can be stopped by one step, recycling.

Recycling

Only 25% of the plastic used in the U.S. is recycled. With all the plastic not being recycled it is ending up in the environment which is spreading many harmful chemicals. Since the 1950's 8.3 billion tons of plastic have been produced worldwide. Just one ton of plastic being recycled saves 5,774 kWh of electricity, 685 gallons of oil, 98 million Btus of energy, and 30 cubic yards of landfill space. Green Toys is a company that takes recycled plastic and makes toys for kids.

Most of the plastic used is single use plastic. 100 billion plastic bags get used by the U.S. alone each year. There are 6 million plastic bottles that end up in landfills everyday. Only 9% of plastic is recycled, 12% is burned, and the remaining 79% ends up in landfills or in our environment. Recycling plastic will conserve our natural fossil fuels.

How Plastic is Recycled

The first step in recycling is collection. This is when the plastic gets to the recycling facility. Next the plastic is sorted by type of plastic, color, or even how it was made. Then they wash the plastic. Washing it removes the impurities and gets rid of the other things that aren't plastic. Resizing is the next step. It is done by shredding the plastic into small particles. The plastic then gets compounded. That happens by getting melted into pellets which then can be made into other things. Once plastic is recycled it can be made into new bottles, plastic lumber, picnic tables, lawn furniture, playground equipment, recycling bins and so much more.

Some people think that recycling is too expensive however, according to the U.S. Environmental Protection Agency it only costs \$50-\$150 per ton. We need to start recycling

because one plastic bag takes 10-20 years to decompose. Plastic use isn't just going to stop. It isn't just affecting humans, 267 species worldwide are being affected by plastic pollution.

Plastic Products Recycling Process



Plastic

Plastic pollution is a big problem. More people need to be recycling as wildlife and humans are being affected. Everyday people are seeing plastic polluting our environment more. Take action and help recycle to save all humans, wildlife, and our environment.

References:

"How Long Does it Take for Garbage to Decompose?"

<http://storage.neic.org>

Condor Ferries "Ultimate Roundup of Marine Pollution Facts."

<https://www.condorferries.co.uk/>

Recycling Coalition of Utah "Plastic Saves"

<http://utahrecycles.org>

Ecotricity "How Does it Take Garbage to Decompose"

<https://www.ecotricity.co.uk>

Knoblauch A., Jessica "Environmental Toll of Plastics"

<https://www.ecotricity.co.uk/>

Mwamba, Seno "10 Plastic Pollution Facts That Show Why We Need To Do More" <https://www.globalcitizen.org/>

Green Toys www.greentoys.com

Earth Day www.earthday.org

Plastic Oceans "The Facts Are Overwhelming"
www.plasticoceans.org

Gibbens, Sarah "You eat thousands of bits of plastic every year"
www.nationalgeographic.com

Container Recycling Institute "Down the Drain"
<http://www.container-recycling.org/>

Cooper, Rachel
"Plastic pollution affecting wildlife at an all-time high"
www.climateaction.org

Green Peace www.greenpeace.org

Green Tumble <https://greentumble.com>

Recycle Your Plastics
<https://www.recycleandrecoverplastics.org/>

This is Plastics <https://thisisplastics.com/>

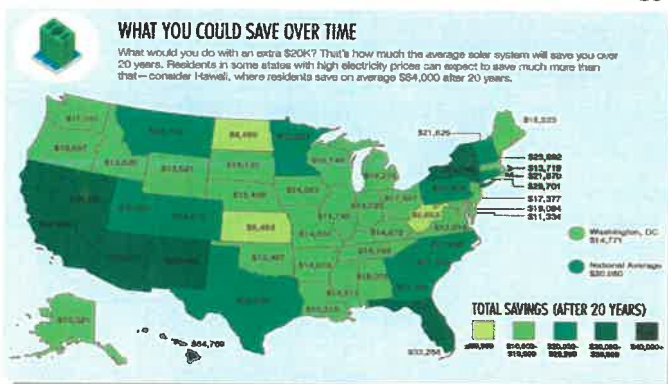
Solar Power: Pros and Cons

By: Grace Finnegan and Alana Widstrom

Have you ever had a power outage? If so, you know how difficult it can be when you don't have electricity. No need to panic, we have a solution - solar power! This high tech way to get electricity involves solar panels and the sun's rays. Solar power is a renewable energy that is better for the environment.

The Cost Of Solar Panels

Not many people have installed solar panels on their roof, so they don't know how much it costs. It may be believed that installing a solar panel is too expensive. Surprisingly, it only costs \$3.60 - \$3.83 to buy and install a solar panel. The total cost may be bigger if you install more solar panels, but the cost of one is about \$4. If you changed to solar power you could save \$15,426. There are many other benefits of solar energy.



This graph shows how much money you can save in each state if you switch to solar power.

Good For The Environment

Solar panels are better for the environment than normal electricity. Although solar panels don't pollute the air, someone may say that installing and moving them does cause pollution. Yes, it does pollute the air, but not as much as when you use electricity to heat your home. Moving a solar panel from one place to another will not pollute as much as heating your home 24/7, which sounds good to some people.

Heating in the Dark

Sleeping without heating does not sound fun to most people. Someone may say that this happens when you use solar power since there is no sun at night. Solar panels store energy throughout the day so you can have electricity throughout the night. Getting electricity to your home when there is no sunlight is not easy, however.

Some people may think that solar panels don't work at night, however, they do. There is a new type of solar cell. It builds up sunlight throughout the day and generates electricity at night. This is one way how solar energy is more efficient.

Surviving The Storm

Many people have storms and want their solar panels to survive. People may be concerned about their solar panels breaking in a storm. Usually insurance policies cover damage, but the possibility of your solar panel breaking is slim to none. This is because of the way that they are built. Solar panels are made from solar cells that are silicone. Silicone solar cells absorb sunlight and create an electric current. The cells are then connected to make one solar panel. If this is not enough to convince you to use solar energy, there is money making involved as well.

The Art Of Solar Farms

Solar farms can make you tons of money. Landowners can rent their land to a solar farmer for \$3,140. In Rhode Island, the rental price is \$13,800. If you moved to New Mexico, the price can go as low as \$530. Making money is only one of the many perks of using solar energy.



Solar panels are creating energy for this house.

Pros of Solar Power

Solar power is good for the environment. It is a renewable energy that does not pollute the air. Solar panels are not expensive and are durable. Solar farms make money and produce electricity for homes. Solar energy is a renewable resource that is good for the environment. Maybe now you will consider using solar power.

References

Conners, Deanna, Producing Solar Power at Night
<https://earthsky.org/human-world/solar-power-photovoltaic-production-at-night>

The Climate Reality Project, How are Solar Panels Made Anyway?
<https://climaterealityproject.org/blog/how-are-solar-panels-made-anyway>

Solar Nation, How Much Does a Solar System Cost These Days
<https://www.solar-nation.org/how-much-does-a-solar-system-cost-these-days>

Wisconsin Center for Environmental Education, Facts About Solar Energy: Solar Electricity,
<https://www.uwsp.edu/cnr-ap/KEEP/Documents/Activities/Energy%20Fact%20Sheets/FactsAboutSolarElectricity.pdf>

Pierce, Erin R., Top 6 Things You Didn't Know About Solar Energy,
<https://www.energy.gov/articles/top-6-things-you-didnt-know-about-solar-energy#:~:text=Solar%20energy%20is%20the%20most.by%20Bell%20Laboratories%20in%20195>

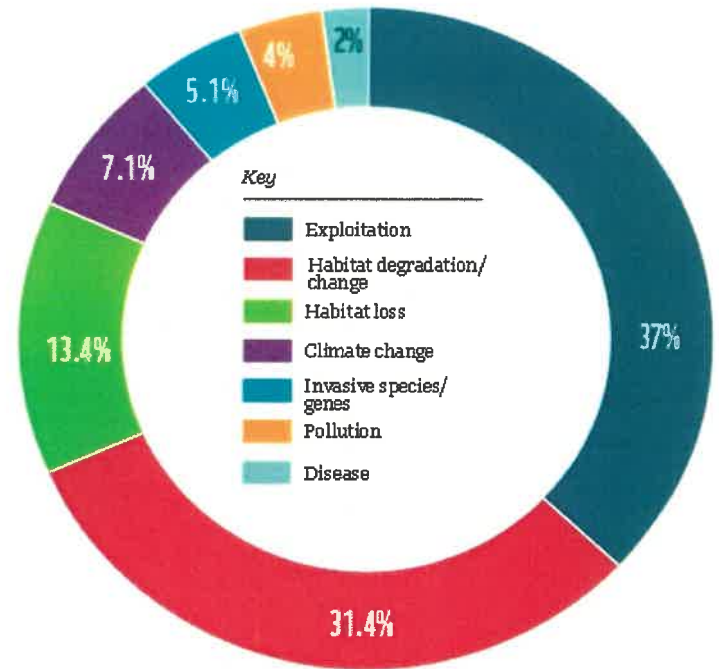
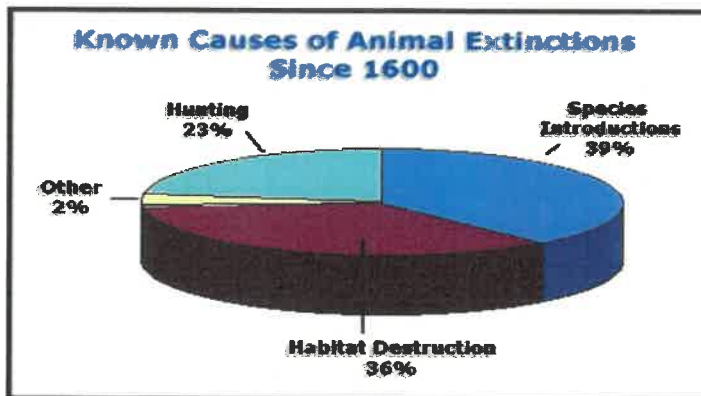
Animal Habitat Loss

By: Cheyenne and Alaina

How would you feel if suddenly everything you worked for and owned vanished before your eyes? Approximately 30,000 species per year, about three every hour, are being driven to extinction by this. Wildlife habitats in the world are being driven to extinction at an alarming rate of approximately 5,760 acres per day or 240 acres per hour. If we want our animal species to thrive for years to come we need to stop destroying their habitats now.

Our Animals are Disappearing

The leading cause of extinction in animal species is habitat loss. Habitat loss has many causes including land conversion for development for growing populations, mining for materials, harvesting lumber for paper products and of course agriculture. This impacts 80% of global species who call the forest home. Approximately 15 billion trees are cut down each year. According to a study about tree density published, in nature the number of trees worldwide has decreased by 46% since the start of civilization. Deforestation causes 137 species of animals going extinct every day, which adds up to 50,00 species disappearing before us every year. If we don't stop converting land and destroying their homes our world could look different in the not so distant future.



Protect Our Animals, Protect Our Ecosystem

There are many animals affected by deforestation and many other things. Giant pandas, tigers, whales, dolphins, Asian elephants, Amur leopard, Marine turtles and many more are affected by this. Around half of the world's original forests have disappeared, and they are still being removed at a rate 10 times higher than any possible level of regrowth. Tropical forests contain at least half of the Earth's species, the clearance of some 17 million hectares each year is a dramatic loss. If we want to save our animals we need to take better care of our ecosystem to protect animal habitats.

Act Now to Protect Our Animals

Everyday more and more of our animals are disappearing before us because of habitat loss. Deforestation isn't just removing trees it's removing animal habitats. If we act now we can save more species that could potentially go extinct.

Environmental Issues
Stay Clean-Go Green

January 2021
Issue 1 Vol. 1

Boyd County 6th Grade

References:

Carissa Bishop, "What causes habitat loss",
<https://blohttps://zooatlanta.org/what-causes-habitat-loss/q.nationalgeographic.org/2019/09/25/the-global-impacthttps://>

The national wildlife federation, "habitat loss",
<https://www.nwf.org/Educational-Resources/Wildlife-Guide/Threats-to-Wildlife/Habitat-Loss>

American bird conservancy," Habitat loss",
<https://abcbirds.org/threat/habitat/>

WWF, "habitat loss",
https://wwf.panda.org/discover/our_focus/wildlife_practice/problems/habitat_loss_degradation/

Deforestation in the Nation of South America

By: Kaci Koenig and John Reiman

Amazon Animals

When you think of the Amazon forest you usually think of sloths, monkeys, jaguar cubs, and cute little kinkajous. Research says 3.5 to 7 billion trees are cut down every year. Today only about 8% of the rainforests are left. Experts estimate that the last remaining rainforests could be destroyed in as little as 100 years.



Jaguars are one of the endangered animals of the Amazon Rainforest.

Deforestation Damage

Deforestation is the clearing, destroying, or removal of trees through deliberate means. It can happen in any area with many trees, but the majority of it is happening in the Amazon Rainforest. It has been estimated that 20% of the Amazon Rainforest has disappeared in the last 50 years.



This bulldozer is clearing the trees out of the way.

Effects of Deforestation

Deforestation is bad because many animals depend on the forest. Another effect of deforestation is that many greenhouse gases are released. Trees absorb and store carbon dioxide. When forests are cleared they release this carbon dioxide.

Leading Cause of Deforestation

Different things can cause deforestation. Although deforestation results in nature, it is mostly humans who cause it. According to the Food and Agriculture Organization (FAO), agriculture causes most deforestation. New construction also contributes to deforestation, though not as much as agriculture does.

Other Causes of Deforestation

Another leading cause of deforestation is road and infrastructure construction. Other than construction of roads to carry timber, dam construction, and mining, cause deforestation. Mining can impact the area's water drainage and it can pollute water with run-off from the mines.

Losing the Animals

Supporters of deforestation say that it would allow for the opportunity to let animals graze. It would also give the chance to let more crops grow. However, it contributes to the extinction of wildlife. When forests are cut down, trees aren't the only things that are lost, but countless species of wildlife that make their home in the forest. With no other place to go, they will be forced to move to places that aren't suited for their needs. In fact, there has been a huge decline in the amount of wildlife in specific areas that have been completely cleared.

Endangered Species

One of the most endangered species is the Harpy Eagle. The Harpy Eagle is the largest eagle in the Americas. It has a wingspan of six and a half feet. They only reproduce one chick every two or

Environmental Issues

Stay Clean-Go Green

January 2021
Issue 1 Vol. 1

Boyd County 6th Grade

three years. Another endangered species is the Jaguar. Deforestation rates are high in South America. This means many threats for Jaguars. They're at risk from poaching, despite the fact that it is illegal. Deforestation means less prey, which means that the Jaguars begin to hunt livestock which leads to the people hunting the Jaguars. Both the eagle and the jaguar are near threatened with their population decreasing.



The Harpy Eagle is one of the most endangered species in the rainforest.

How You Can Help

Deforestation endangers many animals and their habitats. If you want to keep the rainforests thriving for years to come, you can help stop deforestation by choosing recycled or responsibly produced wood products.

References:

Conservation.org <https://www.conservation.org/stories/11-deforestation-facts-you-need-to-know>

Friedman, Janicej <https://www.conservationinstitute.org/solutions-for-deforestation/>

Pachamama.org <https://www.pachamama.org/effects-of-deforestation>

Conservation.org <https://www.conservation.org/places/amazonia>

Miller, Brandon <https://greengarageblog.org/17-important-pros-and-cons-of-deforestation>

RainforestActionNetwork <https://www.ran.org/the-understory/how-many-trees-are-cut-do-every-year/>

TreeFoundation <https://treefoundation.org/education/forest-facts/>

Suarez, Nick <https://www.dailymail.co.uk/sciencetech/article-7428339/How-worlds-rainforests-left-threatened.htm>

YouMatter <https://youmatter.world/en/definition/definitions-what-is-definition-deforestation-causes-effects/>

Eniscuola.net <https://www.eniscuola.net/en/argomento/rain-forest/deforestation/the-causes-of-deforestation/http://www>

Panda.org https://www.panda.org/discover/knowledge_hub/where_we_work/amazon/amazon_threats/other_threats/amazon_mining/

Pegasusfoundation.org <https://www.pegasusfoundation.org/effects-of-mining-environment-wildlife/#:~:text=Habitat%20Loss,miners%20to%20go%20to%20work.&text=Some%20mining%20methods%20cause>
<https://www.wwf.org.uk/learn/effects-of-deforestation>

Greenpeace.org <https://www.greenpeace.org/usa/forests/solutions-to-deforestation/#:~:text=You%20can%20make%20a%20difference.the%20movement%20to%20protect%20forests>

Why Wind Power is Important

By: Peyton Wickersham and Addi Janousek

Facts About Wind Power

Did you know that there are 58,000 wind turbines in the U.S.A. We should switch over to wind power. Turbines are getting bigger and better and we don't even realize it. Turbines do way more than we know. Turbines make 8% of electricity, so it is supplying that many people with electricity, and not wasting nonrenewable resources to make the electricity for them.

The Wind Turbines.

Wind Turbines will make electricity when wind speeds reach 6 to 9 mph. The wind turbines will shut down when winds reach 55 mph.

Where Wind Turbines Go to Die

Wind turbines go to Casper, Wyoming when they die. The wind turbines are non recyclable so they just sit in a landfill. The wind turbine blades are chopped into 3 pieces then they are stacked and then buried. Scientists are working on a way to recycle them. They are thinking since the wind turbine blades are made of fiberglass one way to recycle them would be to make them into fiberglass shingles.

Flying Animals are Hitting the Wind Turbines.

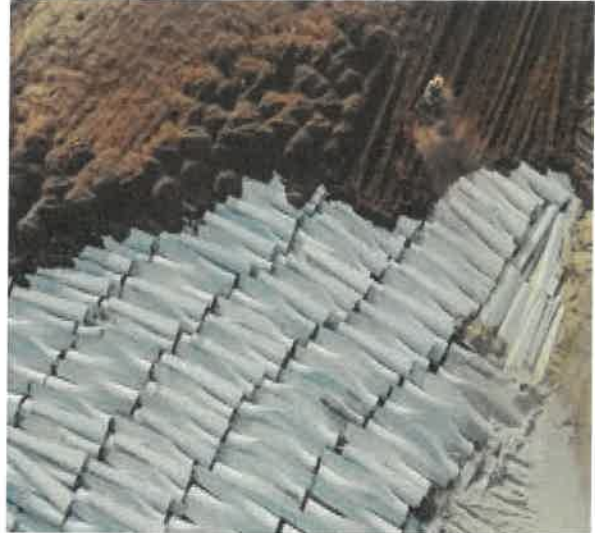
This may be true, but people are trying to fix that. One way is with the use of ultrasound acoustic deterrents aimed at bats to avert them wind turbines. 140,000 to 500,000 birds die getting hit by wind turbines. In order for birds to not hit the wind turbines they can just build wind turbines where they do not fly.

Wind Turbines Blocking Visuals and Breeze

Wind turbine blades are 190 feet long so it's pretty easy for the blades to hide the sight of nature. In the Netherlands many of their windmills still function because their windmills are 375 meters apart. The windmills also hog the breeze. The turbine towers are 295 feet tall - about the height of the Statue of liberty. The

down hill wind speed can decrease for 50 kilometers straight!

Dead Wind Turbines



Flock of Birds by Turbines



Wind Turbines



Environmental Issues

Stay Clean-Go Green

January 2021

Issue 1 Vol. 1

Boyd County 6th Grade

Wind Power is Important to the Earth

Wind power is important because it is a renewable resource. People need to make a couple tweaks and wind turbines will be the next generation of energy and electricity.

References:

Hartman, Liz Environmental Impacts and Siting of Wind Projects <https://www.energy.gov/eere/wind/articles/top-10-things-you-didnt-know-about-wind-power#:~:text=Wind%20turbines%20are%20big,level%20where%20it%27s%20even%20windier>

U.S. Energy Information Administration, History of Wind Power <https://www.energy.gov/eere/wind/history-us-wind-energy>

American Wind Energy Association, Basics of Wind Energy <https://www.awea.org/wind-101/basics-of-wind-energy>