Defenders of Wildlife

Global Warming & Wildlife

Wildlife impacted by global warming and ways you can help

Life on Earth exists in delicate balance. The taking of food, shelter, and resource required for life to persist is offset by renewal, growth, and time. Unfortunately for us all, climate change threatens this balance. In the last century, Earth's average temperature increased by 1° F. The hottest year recorded since 1880 was 2005. This may not seem like a lot but the impacts have already been felt and it is clear that further warming could have serious consequences for wildlife.

Looking to the future, scientists predict a 2-10° F increase in temperature within this century. A few potential results of this change include an increase in storm frequency and severity, up to 2ft rise in sea level, and a loss of up to 85% of coastal wetlands. Extreme and fragile places, like the Arctic and Antarctica, experience the first and most drastic effects. The Arctic is heating 2 times as fast as the rest of the world. Sea-ice, the defining environmental characteristic of this region is 40% thinner and melt-rivers are 3-9% fuller. Permafrost that used to last over 200 days has been reduced to 80 days per year in half a century. Environmental change causes habitats to shift. Animals will be forced to adapt, move, or die. Over a million species could go extinct in the next 50 years if we do not act now to stop global warming and protect wildlife. We have a lot to learn and a lot to do. Following are just a few examples of how wildlife is affected by global warming.

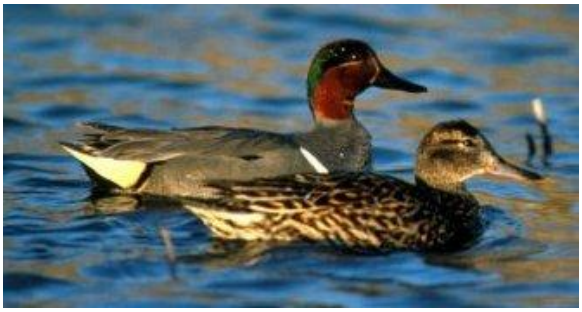
The skinny on polar bears

Polar bears eat ringed seals that they hunt from the ice. In this part of Arctic, ice melts completely each summer, so the bears come at the end of July and fast until the ice freezes again in November. The bears must store enough fat to survive months of fasting before the ice breaks up. Recently, the spring thaw occurs nine days earlier than it has in the past and the bears are arriving onshore about 40 pounds lighter. These skinny bears have 10% fewer cubs. Many bears starve to death, lose cubs to malnutrition, or resort to cannibalism.

Penguins trapped by ice

Global warming is melting icebergs, leaving penguins in a tight spot. In 2004 a 1,200 square mile iceberg trapped 3,000 nesting pairs of Adelie Penguins on Cape Royds in Antarctica. The penguin mothers' seasonal trip of about 1.24 miles to the ocean for food turned into a 112 mile hike. Nearby 50,000 penguin pairs on Cape Bird had to make a 60 mile trip. Long trips are dangerous for chicks, because the father, who cares for the chicks in the mother's absence, must fast. If he gets too hungry he will abandon the nest.

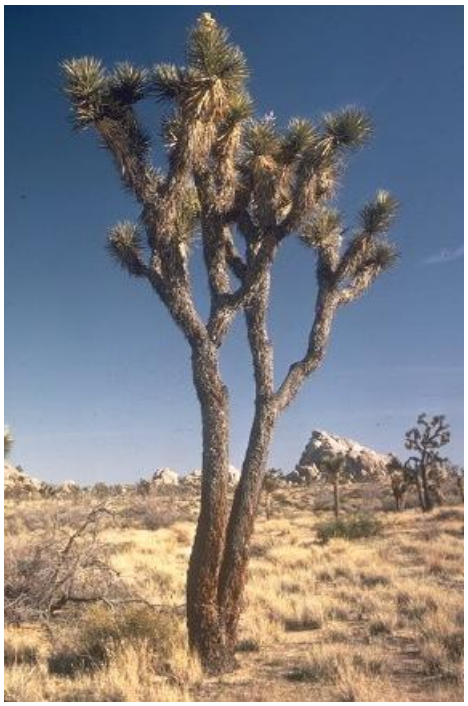
Water birds without a home



Sloping hills spattered with shallow ponds characterize the prairie pothole region of the central United States and Canada. Even though this area accounts for just 10% of North American waterfowl breeding habitat, 50 – 80% of all continental duck production occurs here. Climate models predict half the pothole ponds will disappear in the next 100 years. The remaining ponds will support only 40-50% of the birds they do now. In addition to loss of habitat, ducks have less nesting success, increased infant mortality and make fewer nesting attempts during drought.

Just north of this region, Canada's Arctic Tundra is the annual destination for 8-10 million geese, roughly two-thirds of the world's geese, nearly all sandpipers, and countless ducks. In this frozen land they nest and rear their young before returning to south. While the tundra may partially thaw at certain times, global warming causes more tundra to thaw for longer periods of time. Since the 1970's the tundra has gone from over 200 days of permafrost to less than 80 each year. Longer periods of thaw allow forest vegetation to displace tundra vegetation and the geese must search for suitable nesting habitat elsewhere. Models predict the net loss of 35-52 percent in tundra by 2070-2099 will be accompanied by a 50 percent decline in the Artic goose population.

Joshua trees unable to adapt

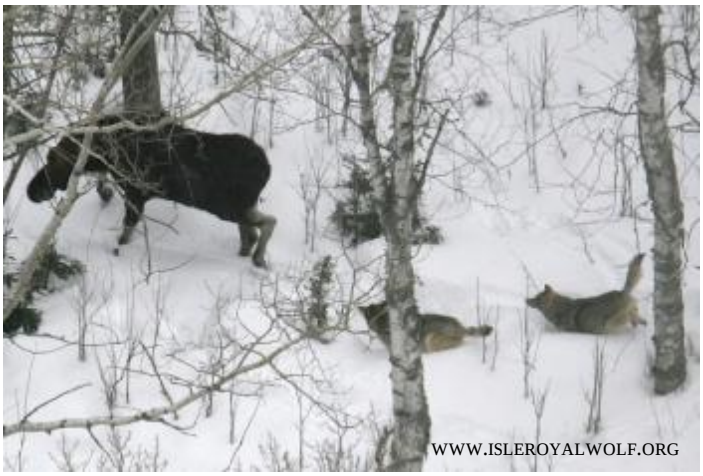


Mormon settlers crossing the desert Southwest in the 19th century felt scattered sprawling figures beckoned them forward, and named these spiky plants for Joshua. They are only found in California, Nevada, Arizona, and Utah. Though they can reach heights of 30 feet or more and have incredible branching structures, Joshua Trees are not actually trees but a kind of succulent called Yucca.

Joshua Trees fulfill critical habitat needs for many different animals including a special little yucca moth. The moths and Yucca enjoy a 40 million year old relationship. The moths fertilize the Joshua Trees and lay eggs in the fruits. Joshua Trees also provide protected nesting sites for desert lizards, resident and migratory birds.

Global warming threatens to push suitable habitat north faster than they can reproduce and disperse into those areas. Under optimal conditions Joshua Trees reproduce by seed, or by sending out shoots. However, they do so slowly and under specific conditions. For example, they only flower after an adequate frost, which makes them vulnerable to global warming. In addition, native plant communities weaken with habitat changes and become susceptible to invasion by non-native species like Brome grasses. These grasses grow, seed, and dry out rapidly; filling in what would naturally be open space. As a result fires cover larger areas and burn hotter damaging delicate root systems and inhibiting regeneration. Global warming impacts to the Joshua tree spells change for the entire ecosystem.

Wolves-Isle Royal National Park



Isle Royal National Park is a collection of 400 islands totaling 132,081 acres spread over 850 square miles of Northwestern Lake Superior. Wolves arrived in the 1950's and shortly thereafter came moose. On the island, wolves, moose, and balsam fir dominate the ecosystem. Over 40 years of research on Isle Royal illustrates the impacts climatic change is already having on wildlife.

Global warming increases extreme weather patterns translating into periods of record hot, dry years alternating with periods of record snowfall at Isle Royal. Hot and dry means more moose die from a combination of malnutrition, increased energy spent keeping cool, and reduced food supplies, because heat stressed balsam fir are less productive. Weak moose are easy prey to predators and disease. In 1998 tick infestation continued through a warm winter. The next year only 100 calves were born. Eventually, any loss sustained by the moose population transfers to wolf populations who depend on moose as their primary food source.

At the other end of the spectrum, severe winters like the early 2000's impact moose survival by improving wolf hunting success. In high snow, moose, especially the calves are easier to catch because they move poorly and moose encounter wolves more often as both choose to travel in less snowy coastal areas. Pups stay with the pack longer in severe weather and, as the average pack size grew from 4.5 to 12, they had 3 times more success. The success, however, is short-lived. In the years following large moose kills there are fewer calves and less food for the wolves. As extreme weather patterns increase, so will the repercussions on the moose and wolves of Isle Royal.

Desert bighorn dying for a drink

Desert bighorn sheep inhabit the steep, rocky terrain of the Sonoran, Mojave, and Great Basin deserts. Groups number less than 100 individuals and are dispersed in patches of vegetation across the entire range. Western temperatures recently topped the 100 year average by 2-3^{o} F and California's precipitation declined 20 percent. As a result the plants and water sources upon which the bighorn depends are disappearing. Bighorn populations are being stranded in no mans' land. A recent study confirms that only 30 of California's 60 bighorn groups remain. Those left face extinction in the near term due to continued habitat loss and decline in genetic diversity.

All is not lost!

Global warming is a problem that we can solve. Scientists suggest that global warming can be slowed and maybe even stopped in the next century, if we begin to address its causes today. We certainly have the technology, money, and intelligence to figure that out.

The fate of the world's wildlife lies in our capable hands. We have to implement solutions that address the consequences of and prevent further contribution to global warming. It is like driving down a mountain and realizing that you are speeding towards a cliff. The car must be slowed and redirected to ensure the safety and well being of the passengers. Just as the car can not be stopped in an instant, climate change will not stop over night and as the journey down the mountain must continue to reach our destination, we must continue to eat, recreate, and live. We just have to change direction. We will do this by reducing those things that are causing global warming and working together to support global solutions so that we can all ride to safety.

Working together we can protect wildlife

- **Communicate with your elected officials.** Ask them to support research and legislation that improve fuel efficiency standards, and strengthens land manager and owners' ability to protect wildlife threatened by global warming.
- **Buy Green Power**. Check out the Department of Energy's green pricing page (www.eere.energy.gov/greenpower) to find out options in your area.
- **Retire your car**. Or at least give it a day off. Every gallon of gas saved keeps 20 pounds of CO_2 out of the atmosphere.
- **Speak out for better fuel economy standards**. The U.S. could cut emissions by 600 million tons per year if vehicles averaged 40 miles per gallon.
- **Buy good wood.** Look for Forest Stewardship Council (FSC) logos on wood products. LSC makes sure trees are grown and harvested in a way that protects wildlife and soil quality.
- **Light bulbs, thermostats, and washing machines matter.** Reduce annual CO_2 emissions by using compact florescent bulbs, cold water to wash clothes, and lowering thermostats 2^{o}.
- **Buy organic and buy local.** Chemical fertilizers and insecticides as well as transportation and production costs require use lots of energy.
- **Welcome wildlife into your garden.** Create habitat by planting native plants.
- **Coordinate an activist event.** Visit wildlife refuges, zoos, and parks. Get together with friends to discuss global warming, or even watch a movie like Inconvenient Truth.
- **Reach out to your community**. Defenders of Wildlife can help you take the wildlife protection message to organizations and events in your community.
- **Write a letter to the editor of your local newspaper.** Raise awareness in the media and the public by highlighting Global Warming, wildlife, and habitat in your local paper.
- **Volunteer for wildlife.** Participate in volunteer activities with Defenders, local, state, or federal land and wildlife management agencies, universities, and other groups to support climate change research and wildlife conservation.

Never forget that your voice matters. Visit www.defenders.org for more information about threats facing wildlife and ways you can get involved.