

Grassroots Environmental Education, Inc.
Kids Discovery Series
Module Four: Climate Change & Animals
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What do butterflies, turtles, and polar bears have in common? The answer is they – and all other animals – are being affected by climate change. In this module, we'll learn about these animals, how climate change is creating problems that threaten their survival, and how you can help.

We have already talked about how people's use of fossil fuels is making gases build up in the atmosphere, which is making the climate change. Average temperatures measured over a year are getting warmer everywhere on the globe - that's why it's called "global warming." Warm temperatures can seem like a nice thing at first - who wants it to snow all the time? But making the global temperatures warmer than they're supposed to be, even by raising the global temperature just 2 degrees, can cause really big problems for our environment.¹

Let's see how climate change is affecting animals by visiting polar bears on the north pole, sitting on the beach in Florida with sea turtles, and flying all the way across the country with monarch butterflies.

Polar Bears

Our first stop is the north pole, in the Arctic Circle. The north pole is like no other place on earth.² For one thing, there isn't actually any land there; it's all floating sea ice.³ It's so big that it seems like its own continent. And it's also cold, REALLY cold! Temperatures can get down to minus 40°F in the winter, and only up to 32°F, freezing temperature, in the summer.

It's a unique place to be, but not an easy place to live. The polar bears would agree. They use all that sea ice as their hunting grounds for food, especially their favorite meal – seals.⁴ Food gives the polar bears the energy they need to survive. But it's getting much harder for them to find and catch their food.

Just like ice melting on a hot summer day, the warming temperatures due to climate change are causing the arctic ice to melt much faster than normal. Some scientists say the ice is melting at an alarming rate.

To make matters worse, the warming of the planet isn't happening in the same way everywhere: scientists have found that the north and south poles are actually warming faster than the rest of the globe.⁵

Melting ice means that polar bears are losing their habitat, or their natural home.⁶ It means they don't have enough ice to travel on to hunt for their food. Polar bears are at risk for survival, and suffer from many of the same health effects humans do when they are starving.

Sea Turtles

Our next stop is Florida, where we can warm up on a relaxing beach. Imagine that it's nighttime, there are bright stars in the sky and the salty ocean breeze feels just right! On this warm night, female sea turtles swim to the exact same beach where they hatched more than ten years before!⁷

The turtles crawl along the sand under the cover of darkness. Eventually, they stop crawling and start digging a hole in the sand with their back flippers. Then, they lay their eggs in the hole, cover them with sand, and crawl back to the ocean.⁸ The problem is what happens to the eggs.

While the gender of human babies is up to chance – whether they will be male or female – the gender of baby sea turtles is actually influenced by the temperature of the sand around the eggs. Warmer global temperatures means that the sand is also getting warmer. In the case of sea turtles, warmer sand means that more of the eggs will hatch as female.⁹

The problem with too many female turtles is that there won't be enough male turtles for the females to mate with. That means not enough baby turtles being made in the future.

Monarch Butterflies

Our last stop takes us all across North America, from the mountains of Mexico to the northern parts of the United States and even into Canada, following the migration of monarch butterflies.

Monarch butterflies are big, and their wings are outlined in black, with bright orange in between. You have probably heard about how they start out as caterpillars, spin their cocoon, and then transform into butterflies. But what's just as cool as their transformation is that they fly thousands of miles with their thin and fragile wings.

It's actually the butterfly's family relay-race to make this big journey in a year.¹⁰ The great-great grandparent butterflies spend the winter in Mexico, and then their babies fly north, until they stop and have more babies who fly even farther north. This pattern repeats until the butterflies get to Canada at the end of the summer. Then the butterflies born in Canada fly all the way south back to Mexico, where they spend the winter. And then the journey begins all over again.

But climate change is making this trip more complicated, because butterflies are sensitive to climate.¹¹ They use changes in temperatures, like when it gets cold, as a sign to fly south.

Since climate change is shifting the seasons, this confuses the butterflies. By making it stay warmer later in the year, the butterflies aren't flying south as soon as they should.¹² Then it gets cold very quickly, and the butterflies can freeze before they can get to Mexico for the winter.

Conclusion

Animals can't solve this problem that we made for them, so it's up to us to help fix it! You can help!

- Plant plants that attract butterflies to your yard, like milkweed, and help scientists learn more about butterfly migration by taking notes on the butterflies you see.¹³
- Visit zoos and aquariums, as they support and participate in programs to protect wildlife.
- Learn about organizations, like the *World Wildlife Fund*, that are helping to save animals by monitoring polar bears, tracking sea turtles, and protecting butterfly habitats.
- Work with your family to use less energy, by turning off lights and keeping your house a little warmer in the summer and a little cooler in the winter. Did you ever think about how you could use renewable energy for your house?
- Tell people how climate change and animals are connected; spreading the word and raising awareness can make big differences, especially when people hear that you care. Actually, just remember that we are all connected!

Climate change has a lot of impacts, but that doesn't mean we're helpless to stop it. Learning about climate change, using less energy, and supporting people who are coming up with solutions can help protect these animals and our planet.

Review Questions:

- 1.
- 2.
- 3.

Sources

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2. "[5 things you didn't know about the north pole,](#)" Published by NOAA, December 20, 2018.
3. "[Which pole is colder?,](#)" Published by NASA Climate Kids.
4. "[The Polar Bear,](#)" Published by Kidzone.
5. "[Recent Arctic amplification and extreme mid-latitude weather,](#)" by Judah Cohen, James A. Screen, Jason C. Furtado, Mathew Barlow, David Whittleston, Dim Coumou, Jennifer Francis, Klaus Dethloff, Dara Entekhabi, James Overland & Justin Jones. Published in Nature Geoscience, August 17, 2014.
6. "[Polar Bears and Climate Change; What Does the Science Say?,](#)" by Roz Pidcock. Published by Carbon Brief April 3, 2015.
7. "[How Do Sea Turtles Find the Exact Beach Where They Were Born?,](#)" by Carrie Arnold. Published by National Geographic, January 16, 2015.
8. "[Sea Turtles: Reproduction,](#)" Published by SeaWorld Parks & Entertainment.
9. "[How do sea turtles hatch?,](#)" Published by NOAA.
10. "[Monarch Butterfly Migration and Overwintering,](#)" Published by the US Forest Service.
11. "[Monarch butterflies and climate change,](#)" Published by the World Wildlife Fund.
12. "[How climate change affects the monarch butterfly, and what we can do about it,](#)" by David Wolfe. Published by the Environmental Defense Fund, May 26, 2016.
13. "[Track Monarch Butterfly Migration,](#)" Published by Journey North.

Other Resources

"[Vulnerability of Marine Turtles to Climate Change,](#)" by Elvira Poloczanska, Colin Limpus, Graeme Hays. Published in Advances in Marine Biology, 2009.