

**Grassroots Environmental Education**  
**Kids Discovery Series**  
**Module Three: Climate Change and Plants**  
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## **Introduction**

Can you imagine nature without any plants? It's hard to do, because they are everywhere we look, from the weeds growing in the cracks of sidewalks to beautiful spring flowers, from majestic oak trees to the rows of crops growing on farmlands.

Plants are important, that's for sure. Without plants we wouldn't be able to breathe. Plants take up carbon dioxide, a greenhouse gas, and put out the oxygen we need to breathe. You can think of this as plants breathing in carbon dioxide and breathing out oxygen. Plants also create habitats or homes, places where other animals live, like birds and squirrels and lots of exotic animals that live in rain forests.<sup>1</sup>

Plants also make food for us and other animals, like nuts, seeds, nectar and fruits. And they provide the raw materials for things you might not expect, like rubber, medicines, cork, plywood, spices and clothes.

So now let's look at how climate change is affecting plants in different ways, from our changing seasons to damaging weather events.

## **Changing Seasons**

The first way climate change is affecting plants is easy to see in your own backyard. Because climate change is making the earth warmer, the seasons – winter, spring, summer, and fall – are all changing at different times.<sup>2</sup> It's getting warmer earlier in the year than it used to, which means that spring flowers, like daffodils and tulips, are coming out of the ground earlier than even a few years ago.<sup>3</sup>

It's also staying warmer longer than it used to, which means a shorter fall and winter.<sup>4</sup> You can see this too when you look at trees in the fall; their leaves are changing color later than they used to. But this isn't just happening in your backyard; climate change is affecting plants all around the globe.

## How Forests Can Move

Because of the way sunlight hits the earth, it's cold at the poles and hot at the equator.<sup>5</sup> That means in North America, it's colder if you're in Canada and warmer if you're in Florida. Like humans, trees are most comfortable at certain temperatures- if it's too cold or too hot for too long, they can't grow well.

And because climate change is making temperatures warmer, for some species in some places, it's getting too warm for their comfort. In response, trees like pine trees and poplar trees are beginning to slowly move north to places with colder temperatures.

But, of course, trees can't actually get up and move like people and animals can. But what they can do is release their seeds, especially when they're stressed by changing temperatures. Their seeds can be carried by the wind, by birds that eat their fruit, or travel to far away places by sticking to the fur of animals.<sup>6</sup> If the seed happens to land in a place with nicer, cooler temperatures, the lucky seed germinates and grows well.

Now imagine this happening for a lot of trees, for a whole forest: the tree seeds grow well when they've been moved north, and over many years, the whole forest moves north.

## Adaptation

Being able to send seeds to a better climate is a type of *adaptation*.<sup>7</sup> Being able to adapt means that you can change things to handle the hard times in your life.<sup>8</sup> For some plants, the climate is changing too fast for them to adapt.

For other plants and animals, the fact that the forest is adapting to move north means that it's replacing other habitats and ecosystems, crowding them out.<sup>9</sup>

Both of these things – the plants being unable to adapt, and other ecosystems being crowded out by the newcomers – can mean that there are fewer types of plants and animals that live in different places, which isn't good for our overall environment.

## Fire

Lastly, climate change is making some areas much hotter and dryer than normal, which makes wildfires happen more often.<sup>10,11</sup>

Some plants have actually adapted to fire.<sup>12</sup> For example, some trees have grown extra thick bark to protect them from the flames and other trees, like the Lodgepole pine, need fires in order to make their pinecones burst open and release seeds.

But not all plants have these adaptations, so it's hard for the forest to recover completely.

Recently there were a lot of fires in Australia, and in the Amazon rainforest.<sup>12</sup> When those huge rainforest trees burn, they release carbon dioxide, a type of greenhouse gas. More greenhouse gas from wildfires means that the wildfires makes the climate change even more.

And these fires are bad for people too. Fires in California and Australia have caused people to lose their homes and suffer health effects from air pollution.<sup>14</sup>

## Conclusion

Plants are important for our lives, and plants can help us see what climate change is doing to our environment. It's important to protect plants, so here are some things you can do to make a difference:

- Help your family use less energy by turning off lights and keeping your house a little warmer in the summer and a little cooler in the winter.
- Plant a tree! Trees take carbon dioxide, a greenhouse gas, out of the air and use it to grow, which can help reverse climate change.
- Learn about conservation organizations, like national parks, the Sierra Club, Climate Kids, and many more that are teaching people about climate change and protecting the plants and our environment.
- Help scientists track the seasons so we can learn more about how climate change is affecting plants<sup>15</sup>

By respecting how plants play an important role in our environment, and learning how climate change impacts them, we're all a step closer to protecting our planet.

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## Review questions

- 1.
- 2.
- 3.

## Links for kids:

[Uses of plants](#)

[Plant habitats](#)

[Latitude and Temperature activity](#)

[Plant adaptations](#)

[Fire ecology](#)

## Sources

1. "[Plant Habitats Lesson for Kids](#)," Published on Study.com, August 10, 2018.
2. "[Climate change may bring big ecosystem changes](#)," by Alan Buis. Published by NASA, December 13, 2011.
3. "[Observed changes in false springs over the contiguous United States](#)," by Alexander Peterson and John Abatsoglou. Published in Climate Signals, March 25, 2014.
4. "[Phenology shifts at start vs. end of growing season in temperate vegetation over the Northern Hemisphere for the period 1982–2008](#)," by Su-Jong Jeong, Chang-Hoi Ho, Hyeon-Ju Gim, and Molly Brown. Published in Climate Signals, February 17, 2011.
5. "[Latitude, Longitude, and Temperature](#)," Published by National Geographic.
6. "[Divergence of species responses to climate change](#)," by Songlin Fei, Johanna M. Desprez, Kevin M. Potter, Insu Jo, Jonathan A. Knott and Christopher M. Oswalt. Published in Science Advances, May 17, 2017.
7. "[Plant Adaptations](#)," Published by Brain Pop Jr.
8. "[Plant Adaptations](#)," by Douglas Wilkin and Jean Brainard. Published by cK-12, February 24, 2012.
9. "[Shrinking tundra, advancing forests: how the Arctic will look by century's end](#)," Published by Science Daily, March 3, 2011.
10. "[Satellite Data Record Shows Climate Change's Impact on Fires](#)," by Ellen Gray. Published by NASA, September 10, 2019.
11. "[Wildfires and Climate Change](#)," Published by the Center for Climate and Energy Solutions.
12. "[Plant Adaptations and Fire](#)," by Ellen Kuhlmann. Published by the Washington Native Plant Society, October 13, 2015.
13. "[The Amazon is a key buffer against climate change. A new study warns wildfires could decimate it](#)," by Drew Kann. Published by CNN, January 10, 2020.
14. "[Australia's Fires Through a Californian's Eyes](#)," by Jill Cowan and Thomas Fuller. Published by the New York Times, January 9, 2020.
15. "[Feel like the seasons are all out of wack? You can help scientists prove it](#)," by Jeremy Deaton and Owen Agnew. Published on Popular Science, April 26, 2018.