

## Weekly Concept Our Changing Earth



### Essential Question

What changes in the environment affect living things?



*Go Digital!*





# A Change in the Air



Earth is in a constant state of change. Some changes, such as a volcano erupting, may happen quickly. Other changes are gradual.

- ▶ One change scientists study is the impact of seasons on animals and plants.
- ▶ Each winter, for example, these Monarch butterflies migrate south to Mexico. They live in colonies like this one before heading north in the spring, when food is plentiful.

## Talk About It



Write words you have learned about the changing Earth. Then talk about one change you have wondered about.





# Vocabulary

Use the picture and the sentences to talk with a partner about each word.

## atmosphere



Clouds form in our **atmosphere**, the layer of gases around Earth.

Why is the Earth's atmosphere important?

## decays



When fruit **decays**, or rots, it is not very tasty and should not be eaten.

What does a banana look like as it decays?

## gradual



The release of sand in an hourglass is **gradual**, so that it takes one hour.

What is a gradual event or change you have seen?

## impact



A veterinarian has a big **impact** on the health of a pet.

Who has had an important impact on your life?



### noticeably

José's hair was **noticeably** shorter after his haircut.

What is a synonym for noticeably?



### receding

As I drove away, the mountain seemed to be **receding** in the distance.

If it was receding, was it getting close?



### stability

While his sprained leg healed, Stephan used crutches for **stability** when walking.

If a thing has stability, is it shaky or steady?



### variations

In the valley, there are many **variations** in the color green.

Where might you see variations in the color blue?

**COLLABORATE**

## Your Turn

Pick three words. Write three questions for your partner to answer.

**Go Digital!** Use the online visual glossary



# Forests on Fire




## Essential Question

**What changes in the environment affect living things?**

Read about the effects of forest fires on plants, animals, and people.





**A** few years ago, several red squirrels—an endangered species—had a temporary home at the Phoenix Zoo. Rescued from a ravaging wildfire that had already destroyed thousands of acres of land, the squirrels were waiting for the fire to be extinguished before being returned to the wild. Forest fires are part of nature, so it is important for us to understand not only how to fight fires, but also why they occur.

## Destructive and Productive

Like rainstorms, wildfires are a force of nature. However, unlike rainstorms, wildfires are almost always destructive. They consume everything in their way, including plants, trees, and animals. Sometimes, they take human lives and homes as well.

Like a big storm, the destructive power of wildfires is terrifying. On the other hand, naturally occurring wildfires are

also productive forces. Whether their flames race through a forest, a prairie, or acres of brush, these fires produce necessary changes in their environment. Like rain, they can allow new life to flourish.

## Benefits of Naturally Occurring Wildfires

A naturally occurring wildfire, sometimes called a forest fire, happens without any human cause. Three factors must be present for one to burn. These include fuel, such as dry grasses; oxygen, which is in our **atmosphere**; and a heat source to ignite the fuel. A lightning strike usually sparks a naturally occurring wildfire. The danger of fire is highest during a drought, when an area has experienced little rain.

Wildfires have happened throughout history, and they help to regenerate Earth and its species. When vegetation **decays**, wildfires clear it away so that new plant life can grow.



Open cone



New seedling



A young forest

**The black spruce tree needs a fire's heat to cause its cones to open and scatter seeds. Eventually, seedlings sprout, and a new forest will grow.**

Fire also releases nutrients back into the soil, making it more fertile. And by eliminating leafy canopies of mature trees, fire allows nourishing sunlight to reach a forest floor.

Often, this new plant life will be better adapted to fire than what existed before. Some species will have fire-resistant roots, leaves, or bark. Other species will actually depend on fire to reproduce and thrive.

## Stability and Diversity

Among its benefits, fire promotes **stability**. By eliminating invasive species that can take over an area, fire encourages the healthy growth of a region's own vegetation.

At the same time, fire promotes diversity. It ensures that plant life will exist at different stages of development. For example, a forest recently struck by fire will have new seedlings. Not far away, in a forest struck by fire twenty years earlier, there may be small trees. And nearby, there may be a forest of mature trees, untouched by fire for years.

These **variations** in plant life provide food and habitats for different kinds of insects, birds, and mammals. Woodpeckers eat insects in burned-out trees. Sparrows depend on seeds for food. Predators such as foxes are drawn by small prey. Forests at different stages attract a diversity of animals to a region.



## The Human Factor

Although wildfires have benefits, they also are feared and misunderstood. As a result, our government tried to suppress them completely throughout the 20<sup>th</sup> century. This policy had a negative **impact** on the environment.

The **gradual** buildup of decayed vegetation provided more fuel to feed fires. Consequently, wildfires became **noticeably** fiercer.

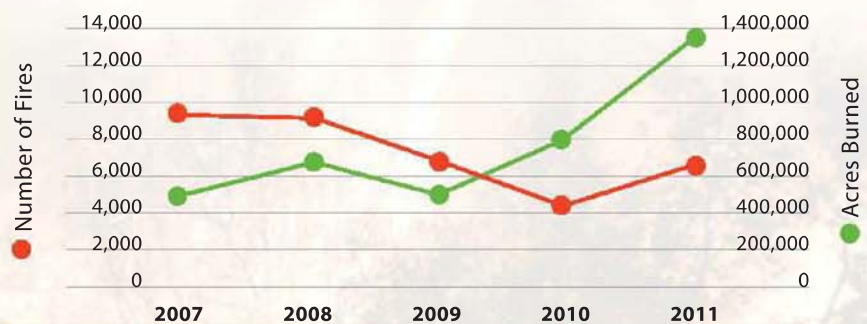
More recently, the government has used two different strategies to manage wildfires. One is to try to limit fires before they burn out of control. The other is to set small

“prescribed” fires to reduce the amount of fuel in the environment. Hopefully, the danger of catastrophic fires is now **receding**.

Unfortunately, human carelessness, such as a campfire left to smolder, also can start a fire. While a natural or prescribed wildfire can be beneficial, this is not true of fires that result from malice or mistakes. These happen at times and places that may cause irreparable damage to plant, animal, and human life. Fires cannot control themselves, so humans will always have to figure out how best to handle them.

**Whether wildfires are small or large, firefighters are needed to help contain them.**

**June U.S. Wildfire Activity (2007–2011)**



### Make Connections

Talk about how wildfires change the environment for plants. **ESSENTIAL QUESTION**

Why is it important for you to be careful around a fire of any kind, even in a home? **TEXT TO SELF**