

Teacher's Guide

Grade 5: Changes in Ecosystems



TEKS 5.9 Organisms and Environments: The student knows that there are relationships, systems, and cycles within environments. The student is expected to:

- C) predict the effects of changes in ecosystems caused by living organisms, including humans, such as the overpopulation of grazers or the building of highways.



Background Information: This unit reinforces the understanding of systems and relationships within environments. Students observe how organisms live and survive in their ecosystem by interacting with the living and non-living elements. They learn about the harmful impacts of human activities on different ecosystems and also the ways in which humans can minimize the damage caused.



Prerequisite Knowledge: Prior to this year, students know that the living environment is composed of relationships between organisms. They are able to gather evidence to show the interdependence among living organisms, such as energy transfer through food chains, and animals using plants for shelter. Students are able to compare and give examples of ways living organisms depend on each other and their environments, such as food chains within a garden, lake, or wooded area. Students should understand that changes in an organism's habitat are sometimes beneficial to it and sometimes harmful. They are able to describe environmental changes, such as floods and droughts, where some organisms thrive and others perish or move to new locations.



Common Misconceptions: Students may think that ecosystems experience very little change over time. Natural disasters, environmental changes, and human activity will impact and alter an ecosystem.

It is common for students believe that organism can change their food at will based on the availability of particular resources. It is important for students to understand that environmental changes such as floods, drought, or fire will require the organisms in that ecosystem to adapt or relocate in order to survive.



Essential Questions:

- 1) Why might an ecosystem change as the populations of different species increase and decrease?

When there is plenty of sunshine and water, plants grow and the producer population increases. The increased producer population results in more consumers, as well as predators populations. If the plants that are being eaten decreases, there will not be enough food for the consumers and that population will decrease. When the primary consumers decrease, so does their predators. As the populations of organisms change, so does the ecosystem.

- 2) How does altering one part of an ecosystem affect the whole system?

Organisms interact with the living and nonliving parts of the ecosystem in order to survive. When one part of an ecosystem is altered or destroyed, it impacts everything in the ecosystem. A healthy ecosystem is able to maintain itself, but when one part of the ecosystem is altered, everything is affected.

- 3) In what ways can humans change an ecosystem by introducing or removing different elements?

Drastic changes such as farming, using pesticides, or building highways can have a significant impact on an ecosystem. Ecosystems naturally create a balance over time, unless there are drastic changes made to that ecosystem. Changes in the ecosystem can affect native animal and plant species and permanently alter that system.

- 4) How can humans help to conserve ecosystems and the plants and animals that live in them?

By reducing the use of natural resources, along with reusing and recycling waste, humans can conserve ecosystems and the animals that live in them.



Notes: