



Lesson: What is an Ecosystem?

Grade Level: K-12

Activity Duration: 45 minutes

Objectives:

- Students will identify the key components of an ecosystem
- Students will understand how different components contribute to an ecosystem
- Students will be able to identify key elements for the survival of animals in Yellowstone
- Students will identify several different ecosystems in Yellowstone National Park

Kit Materials:

- "Ecosystems" poster
- "Ecosystem Cycles" poster
- "Food Webs" poster
- "Food Chains" poster
- "Energy Pyramids" poster
- Yellowstone ecosystem image
- Carnivore skull and tracks (e.g. bobcat, bald eagle, or mountain lion - depends on kit)
- Omnivore skull and tracks (e.g. snowshoe hare, pronghorn, or mallard duck - depends on kit)

Classroom Materials:

- Whiteboard or poster paper
- Markers

Lesson Procedure:

1. Have students identify all of the visible components in the Yellowstone ecosystem poster. Older students can get more in-depth in this section, discussing more detailed aspects of an ecosystem. Younger students can focus more on just what they see in the image.
2. As a class, make a list (or picture) of the things that all *primary producers* need. Show them the image of the primary producer and have them think of some primary producers in the Yellowstone ecosystem that you are studying (e.g. grasses, berries, etc.)
3. Then, ask the class to consider what types of animals might eat those products. What do we call an animal that only eats plants? For older students, ask them to consider the nutrients that may reside in those foods.
4. Show students the picture of the *primary consumer*, and show them the omnivore skull and tracks. Ask them to consider some aspects of that animal that lend themselves to the animal being an omnivore. Then, ask them to consider what types of animals might like to eat them.
5. Show students the picture of the *secondary consumer*. Explain to them that these consumers can eat omnivores, but can also be eaten by bigger animals.
 - a. Do these animals get extra nutrition from eating an omnivore? How?
6. Show students the picture of the *tertiary consumer* and the carnivore skull and tracks. Ask them to name some aspects of the skull and tracks that lend themselves to being a predator.
7. Ask students to come up with an animal in Yellowstone that does not have any predators (e.g. grizzly bear or bald eagle). Why doesn't the animal have predators? What does it like to eat?
8. Emphasize that an ecosystem not only involves these animals, but also all of the things with which they interact.
9. Have each student pick an element from the ecosystem image (this could be an animal, a plant, or something like sunlight). Go around the room and have each of them explain how their element contributes to this particular ecosystem.
10. Divide students into 5 groups. Ask each group to think of a plant or animal that does NOT exist in this ecosystem. Have each group share their invasive species, and discuss as a class how this species would disrupt the Yellowstone ecosystem in question.
11. For a follow-up activity, ask each student to design their own ecosystem drawing, with all of the elements labeled.