

## The Yellowstone Food Web: Understanding the Flow of Energy

**Grade Level:** 5

**Sessions:** 1-2

**Session Time:** 45-60 minutes

### Standards:

- **WY \*5-PS3-1** *Use models to describe that energy in animals' food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun.*
- **NGSS 5-LS2-1**. *Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.*

### Overview:

Students will learn about ecosystems, predators, prey, and energy through the case study of the Greater Yellowstone Ecosystem. Students will practice diagramming and labelling by creating a food web.

### Objectives:

1. Diagram the flow of energy between animals in an ecosystem.
2. Categorize animals as predators and prey.
3. Explain the way in which the sun's energy flows through all plants and animals in an ecosystem.

### Guiding Questions:

1. How do plants create energy?
2. How do animals get energy?
3. How does energy flow through an ecosystem?

### Vocab:

- **Energy:** The ability to do work
- **Ecosystem:** A group of organisms that all live in the same area and interact with one another
- **Organism:** A living thing
- **Food web:** An interconnected diagram of the flow of energy between many organisms in an ecosystem
- **Food chain:** A linear diagram of the flow of energy from one organism to the next
- **Predator:** An animal which eats other animals

- **Prey:** An animal which is eaten by other animals
- **Photosynthesis:** The process through which plants convert the energy of the sun into food

### **Context:**

The Greater Yellowstone Ecosystem is a wildly diverse natural habitat home to hundreds of species of plants and animals. In this lesson, students will begin to get a sense of how these varied species interact and rely on one another for energy.

### **Sources:**

- <https://www.nps.gov/yell/learn/nature/red-squirrel.htm>
- <https://www.nps.gov/yell/learn/nature/snowshoe-hare.htm>
- <https://www.nps.gov/yell/learn/nature/white-tailed-jackrabbit.htm>
- <https://www.nps.gov/yell/learn/nature/montane-vole.htm>
- <https://www.nps.gov/yell/learn/nature/bison.htm>
- <https://www.nps.gov/yell/learn/nature/mule-deer.htm>
- <https://www.yellowstone.org/meet-a-few-of-yellowstones-lesser-known-animals/>
- <https://www.nps.gov/yell/learn/nature/fish-ecology.htm>
- <https://www.nps.gov/yell/learn/nature/elk.htm>
- <https://www.nps.gov/yell/learn/nature/river-otter.htm>
- <https://www.nps.gov/yell/learn/nature/marten.htm>
- <https://www.nps.gov/yell/learn/nature/coyote.htm>
- <https://www.nps.gov/yell/learn/nature/canada-lynx.htm>
- <https://www.nps.gov/places/000/lamar-valley-predators-and-prey.htm>
- <https://www.nps.gov/articles/yell-wildlife-bear-food-habits.htm>
- <https://www.nps.gov/yell/learn/nature/plants.htm>
- <https://www.nps.gov/yell/learn/nature/greater-yellowstone-ecosystem.htm>
- <https://www.nps.gov/yell/learn/nature/cyclesprocesses.htm>

### **Activity:**

Students will learn about the food web by labelling and diagramming their own Yellowstone food web.

### **Procedure:**

1. Introduce students to the idea of ecosystems and energy by defining key terms such as predator, prey, energy, and ecosystem.
2. Ask students how they think energy from the sun is used by plants.

3. Explain to students that energy moves between organisms through their food.
4. Ask students to share how they think energy from the sun gets used by animals in the ecosystem.
5. Apply learned concepts through the Yellowstone Food Web worksheet (see pages 4 and 5)

**Extension Activity:**

Students research an organism of their choice that exists in the Greater Yellowstone Ecosystem (and is not already included in the activity) and adds it to their food web.

**Outcomes:**

1. Students successfully diagram a food web.
2. Students explain how energy from the sun fuels every organism in the ecosystem.



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# Yellowstone Food Web

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Write in the name of the animal or plant beneath each picture. (Hint: Wolf, Sedges, Mule Deer, Elk, Snowshoe Hare, Grasses, Yellowstone Cutthroat Trout, River Otter, Pine Nuts, Grizzly Bear, Bison, Lynx, Mayfly, Red Squirrel, Pine Marten, Coyote). Then draw arrows showing how energy moves through the food web.



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# Yellowstone Food Web

Name: ANSWER KEY

Date: \_\_\_\_\_

Write in the name of the animal or plant beneath each picture. (Hint: Wolf, Sedges, Mule Deer, Elk, Snowshoe Hare, Grasses, Yellowstone Cutthroat Trout, River Otter, Pine Nuts, Grizzly Bear, Bison, Lynx, Mayfly, Red Squirrel, Pine Marten, Coyote). Then draw arrows showing how energy moves through the food web.

