



Food Webs: Interconnectedness of Organisms in Ecosystems

Lesson Overview: Food Webs

Grades 6-8

Big Idea/Learning Goal

Organisms in ecosystems depend on each other to obtain energy to survive through complex ecological relationships.

Essential Questions

- How do different organisms obtain energy to survive, grow, and reproduce?
- How is energy transferred in ecosystems through food webs?
- How do different organisms influence food webs?

Objectives

- Students will **investigate** how different organisms obtain energy
- Students will **identify** producers, consumers, and decomposers in their schoolyard.
- Students will **model** the interrelationships of ecosystems.
- Students will **describe** how energy flows through food chains and food webs.
- Students will **manipulate** ecological relationships in Food Web Systems activity.

Background

All organisms need **energy** in order to survive, grow, and reproduce. They obtain this energy in a variety of ways. Ultimately, the energy in an ecosystem comes from the sun, and flows through an ecosystem from one organism to another through complex ecological relationships. Some organisms can use the sun's energy to produce their own food; while others like humans need to eat food in order to gain energy.

Okaloosa County has many unique habitats in which producers, consumers, and decomposers live and interact. In order for organisms to survive, they must obtain energy from either the sun or by consuming or decomposing other organisms through a **food chain**. Each step of the food chain provides energy for the next step. The arrows show the direction of energy flow from one to another.

Sun → Grass → Grasshopper → Toad → Hawk → Fungi

The grass uses the sun's energy to produce its own food. The grasshopper eats the grass, the toad eats the grasshopper, and the hawk eats the frog. After the hawk dies, it provides energy to decomposers, such as fungi, which break down the organism and return its nutrients to the system.

Through this activity, students will use EOL Species Cards to build their own food chains and the EOL Food Web Tool to explore how food chains overlap into larger food webs.

Assessments

- Ongoing discussions and questioning
- Food chains and food webs
- Backyard Food Web assignment

Activities

1. Producers, Consumers, Decomposers
2. Food Web Systems
3. Food Chains and Food Webs
4. Food Chains Rummy

Vocabulary

Carnivore: An animal that eats meat

Consumer: An organism that obtains energy by consuming another organism; includes carnivores, herbivores, and omnivores

Decomposer: An organism that obtains energy by breaking down dead organic material

Energy flow: The transfer of energy through a food chain from one organism to another

Food Chain: The flow of energy in an ecosystem beginning from the sun to a primary producers (plant) to a consumer to decomposers

Food Web: Overlapping food chains in an ecosystem that create a complex web of interconnectedness and energy flow

Herbivore: An animal that eats plant materials

Inference: A conclusion reached based on evidence and reasoning from observations

Observation: The process of carefully examining or looking at something in order to gather information

Omnivore: An animal that eats both plant materials and meat

Predator: An organism that hunts another organism

Prey: An organism that is hunted by a predator

Producer: An organism that obtains energy through photosynthesis: sunlight, carbon dioxide, and water

Next Generation Science Standards

Performance Expectations

MS-LS1-6. Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms.

MS-LS1-7. Develop a model to describe how food is rearranged through chemical reactions forming new molecules that support growth and/or release energy as this matter moves through an organism.

MS-LS2-1. Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.

MS-LS2-2. Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.

MS-LS2-3. Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.

MS-LS2-4. Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.

Science and Engineering Practices

Asking Questions and Defining Problems

Developing and Using Models

Constructing Explanations and Designing Solutions

Engaging in Argument from Evidence

Obtaining, Evaluating and Communicating Information



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