

Division of Outdoor Experiences

Interconnections within Ecosystems

Grade Level: 5

Length of Program: 3, ten - minute sessions

Setting: Asynchronous Remote Learning

State Standards:

5: LS.1: Organisms perform a variety of roles in an ecosystem.

5: LS.2: All of the processes that take place within organisms require energy.

Themes:

Session 1: All ecosystems comprise a dynamic source of energy.

Session 2: All ecosystems comprise a dynamic flow of energy.

Session 3: All ecosystems comprise dynamic relationships.

Objectives

At the end of the program, student will be able to:

- Define and identify several ecosystems throughout the world and Ohio.
- Articulate the four major essentials for life that living organisms need to survive in an ecosystem.
- Explain the basic process of photosynthesis and identify its purpose in an ecosystem.
- Understand that all life needs a constant energy flow.
- Identify the difference between a producer, consumer, and decomposer.
- Identify and understand a trophic pyramid and the loss of energy from one consumer level to the next. (primary consumer, secondary consumer, tertiary consumer)
- Distinguish the different types of consumers, i.e. herbivore, omnivore, and carnivore.
- Recognize that energy flow is a cycle and can be replenished in part by scavengers and decomposers back into soil.
- Identify and define dynamic relationships within ecosystems, i.e., symbiotic relationships (mutualism, commensalism, parasitism, competition, and predation).
- Distinguish between an introduced and invasive species and how this affects the flow of energy and relationships in an ecosystem.
- Distinguish between a threatened and endangered species.

Vocabulary (key concept words only)

- Carnivore – An animal that eats only meat (animals).
- Commensalism – A type of relationship between two organisms where one is helped while the other is not affected.
- Consumer – An organism that cannot make their own food.

- Decomposer – An organism that breaks down organic matter from dead organisms into smaller molecules.
- Ecosystem – Is a community of interacting organisms and their environment.
- Endangered Species – When a species of organism is in such few numbers that it is in danger of vanishing (extinct).
- Herbivore – An animal that only eats plants.
- Invasive Species – An organism that is not native to an ecosystem and causes harm.
- Mutualism – A relationship between two organisms in which both benefit.
- Omnivore – An organism that eats both plants and meat (animals).
- Parasitism – A relationship between two organisms in which one is usually harmed.
- Photosynthesis – The process by which plants convert energy from sunlight into energy for food.
- Predator – An animal that hunts or eats other animals.
- Prey – An animal that is hunted or eaten by other animals.
- Producer – Organisms that use the sun’s energy to make their own food.
- Scavenger – An organism that feeds on dead organic matter.
- Trophic level – Is the group of organisms that occupy the same level in a food chain.

Program Outline:

Video A: Ecosystems & Their Source of Energy

- a. Define ecosystem and display different kinds of ecosystems.
- b. Define photosynthesis and explain the process.
- c. Identify the four basic essentials for life in an ecosystem, i.e., **food**, water, shelter, space.
- d. Explain energy sources by introducing the basic trophic types, i.e., producers, consumers, and decomposers.

Video B: Ecosystems & Their Flow of Energy

- a. Explain trophic levels and the flow of energy in an ecosystem, i.e., producer, primary consumer, secondary consumer, and tertiary consumer.
- b. Discuss the loss of stored energy from one level to the next in the trophic pyramid diagram.
- c. Define and identify trophic level consumers, i.e., herbivore, carnivore, scavenger, decomposer.
- d. Define predator/prey relationships, and food chains.
- e. Explain and display the complexity of food webs in an ecosystem.

Video C: Dynamic Relationships within an Ecosystem

- a. Define and explain by examples different symbiotic relationships, i.e., mutualism, commensalism, parasitism, competition, and predation.
- b. Define and explain the difference between introduced and invasive species and their effect on ecosystems.
- c. Define and identify threatened and endangered species in Ohio and the world.

Enrichment Activities:

- “Flow of Energy in an Ecosystem” worksheet
- “Source of Energy in an Ecosystem” worksheet
- “Dynamic Relationship within an Ecosystem” worksheet