Brunswick School Department
Science
Grade 6: Ecology and Ecosystems

Unit Overview

This unit explores the relationships between living and nonliving things in different ecosystems. The emphasis is on describing the conservation of matter and flow of energy into and out of various ecosystems, and on defining the boundaries of the system. Examples of Food Chain, Food Web, and Energy Pyramid models can be conceptual or physical. Another emphasis is on cause-and-effect relationships between resources and the growth of individual organisms and the numbers of organisms in ecosystems during periods of abundant and scarce resources.

Essential Understandings

- The movement of matter and flow of energy can be traced through an ecosystem.
- Producers make their own food, using energy from the sun.
- Consumers must find food in the ecosystem.
- Decomposers break down organic matter into simpler components.
- Herbivores eat plants.
- Carnivores eat animals.
- Omnivores eat plants and animals.
- Food Chains and Food Webs show the eating relationships between organisms and the flow of energy in the ecosystem.
- Organisms higher in the food chain require more energy to survive.
- Energy pyramids reflect the amount of energy used by different producers and consumers.
- Solar energy is the initial energy source for the. ecosystem

Priority Standardsand Performance Indicators

(as based on Next Generation Science Standards)

P.S. S-1 Demonstrate an understanding of energy and matter.
a. 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.

P.S. S-5 Demonstrate an understanding of stability and change
b. Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.

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c. Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.

Next Generation Science Standards Addressed in this Unit

MS-ESS2-1. Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process.

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

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

MS-LS2-5. Evaluate competing design solutions for maintaining biodiversity and ecosystem services.

Examples of Formative / Summative Assessments

- "Food Chain Energy" probe
- Flow of Energy web (food web)
- Labs,
- Quizzes,
- Exit tickets
- "No More Plants" probe

Sample Texts and Materials/Resources

- ScienceSaurus resource or other print resources similar to it
- Internet articles
- Kids Discover: Ecology
- Interactive web sites for photosynthesis, cellular respiration, populations and resources, ecology, ecosystems, cycling of matter, and flow of energy through ecosystems