

Unit Summary

	Cluster 1: Organic Remains (Lessons 1–2)	Cluster 2: Nature’s Recyclers (Lessons 3–11)
Overview	Students discuss what the term “waste” means, examine a “mystery bag” filled with examples of natural waste, and speculate about why the world is not covered in organic remains. They arrange illustrations showing the progressive decomposition of several organisms, or parts of organisms. They suggest reasons for why the organisms decompose.	Students consider some examples of nature’s recyclers such as dung beetles, earthworms, and fungi. They observe how composting worms turn dead plant matter into nutrient-rich castings. Then they plant seeds in organic material and perlite to see if the organic material helps plants grow better. With fungi they observe mycelium growth, make spore prints, and identify the parts of mushrooms. They conduct an experiment to study bread mold growth and graph their results. The class also takes a field trip to look for evidence of decomposition.
Science Content	<ul style="list-style-type: none"> Nature’s waste and remains don’t just pile up. They decompose. 	<ul style="list-style-type: none"> Nature’s recyclers—scavengers, fungi, and bacteria—feed on dead organisms and waste. They carry out the process of decomposition.
Science Center	<ul style="list-style-type: none"> Examine samples of natural waste. Observe the changes that take place in a rotting log terrarium over a period of several weeks. 	<ul style="list-style-type: none"> Observe hermit crabs and crayfish. Look through books on earthworms, composting, and fungi. Examine inorganic and organic planting materials more closely with magnifying lenses. Observe changes to the mushroom plug and mycelium. Record questions about mushrooms on paper mushroom stalks. Research the answers and write them on the caps.
Family Links	<ul style="list-style-type: none"> Find and describe an example of natural decay in the neighborhood. Look for evidence of organisms in it. 	<ul style="list-style-type: none"> Search for earthworms in their natural habitats around one’s neighborhood. Set up and maintain a worm bin at home. Search for signs of mycelium, mold, or mushrooms in their homes and neighborhoods
Further Science Explorations	<ul style="list-style-type: none"> Review and discuss “What is alive?” Investigate what happens to samples of organic remains if left in nature. Begin a “Waste-Free Lunch” program at school. Examine a rotting log and look for evidence of organisms living on or within it. Observe what happens to pieces of fruit left outdoors for one week. 	<ul style="list-style-type: none"> Search for earthworms around the school grounds. Compare night crawlers to composting worms. Use the mini worm bin and the class worm bin to develop student-driven investigations. Vary the design of the decomposition cups. Develop a school-wide composting program. Compare healthy and unhealthy plant samples. Get involved with the Farm-to-School program. Compare fungi to plants and animals. Create new investigations with the mushroom plugs. Grow mushrooms from a kit. Use different variables for bread mold growth. Make a model of a fly agaric mushroom’s fruiting body.
Cross-Curricular Extensions	<p>Language Arts: Read books such as <i>The Giggler Treatment</i> and <i>Who’s Been Here?</i></p> <p>Mathematics: Calculate the impact of not using one grocery bag per month. Calculate how much garbage one person throws away in a week, a year, and in their lifetime.</p> <p>Music: Play songs about decomposition and recycling.</p> <p>Physical Education: Participate in a “nature’s waste” scavenger hunt.</p> <p>Social Studies: Research Native American middens and shell mounds.</p>	<p>Art: Draw beetles; paint mushrooms.</p> <p>Language Arts: Read books such as <i>Diary of a Worm</i> and <i>The Magic School Bus Meets the Rot Squad</i>. Write similes about fungus mycelium.</p> <p>Mathematics: Practice measuring area with pattern blocks. Calculate mold growth in centimeters. Calculate how many spores a mushroom can produce. Measure the diameter and area of mushroom caps. Collect data to calculate mean mold growth. Calculate median and mode.</p> <p>Music: Play songs about worms and nature’s recyclers.</p> <p>Social Studies: Research scarabs in ancient Egypt. Discuss the causes of the Irish potato famine.</p> <p>Technology: Use software to make graphs of bread mold growth.</p>

Cluster 3: Recycling Nutrients (Lessons 12–15)

Students analyze the results of their planting experiments and conclude that castings provided additional nutrients to the plants. They discuss the food chain, the food web, and the roles of nature’s recyclers. They play a game in which they act out the process of nutrient recycling. Last, they put together a Mobius strip to model how nutrients are passed from one living thing to the next.

Overview

- Nature’s recyclers return nutrients to the soil (or water) for use by plants and other organisms

Science Content

- Examine the plants from the planting investigation.
- Create and display bar and line graphs.
- Make collages of organisms that represent producers, consumers, and recyclers.
- Make models of food chains and connect them to models of food webs.

Science Center

Family Links

- Research a regional plant crop and what enriches the soil it is grown in.
- Test how plants grow under stress.
- Consider the different kinds of teeth of carnivores and herbivores.
- Discuss the basic food groups for humans, and what nutrition each group provides.
- Discuss examples of human impact on nutrient recycling.
- Research other cycles that occur in nature, such as the water cycle.

Further Science Explorations

Art: Create a poster illustrating the nutrient cycle in a particular biome. Investigate M.C. Escher’s “Mobius II” as well as other examples of his artwork. Design brochures that compare recycling in nature with recycling by people.

Language Arts: Write a recipe for growing healthy plants. Write a short story or poem that traces the path of a nutrient through the nutrient cycle. Read books like *Wolf Island* or *Sea Otter Inlet*.

Mathematics: Create bar or line graphs to show individual data collected on planting growth. Use geometry skills to create additional Mobius strips.

Music: Write recycling lyrics and attach them to a common melody. Play songs that talk about the food chain.

Technology: Research examples and other activities about food chains and food webs on the Internet.

Cross-Curricular Extensions