

Fourth Grade: Waste Managers in the Wild

Standard

S4L1. Obtain, evaluate, and communicate information about the roles of organisms and the flow of energy within an ecosystem. [GSE S4L1]

- a. Develop a model to describe the roles of producers, consumers, and decomposers in a community. (Clarification statement: Students are not expected to identify the different types of consumers – herbivores, carnivores, omnivores and scavengers.) [GSE S4L1a]
- b. Develop simple models to illustrate the flow of energy through a food web/food chain beginning with sunlight and including producers, consumers, and decomposers. [GSE S4L1b]
- c. Communicate a scenario to demonstrate the effect of a change on an ecosystem. (Clarification statement: Include living and non-living factors in the scenario.) [GSE S4L1c]
- d. Use printed and digital data to develop a model illustrating and describing changes to the flow of energy in an ecosystem when plants or animals become scarce, extinct or over-abundant.

Teaching Tips

Preparation Scope out a location for the nature walk, such as a wooded area on campus where rotting logs and leaf litter on the ground create an ideal habitat for decomposers. Alternative: collect rotting logs and the soil immediately beneath them from another location and transport to the schoolyard for students to observe. Print multiples of the 9 decomposer and 1 scavenger photo cards and assign one to each student, who will become the expert on identifying that type of organism and its role.

Directions for this lesson are written for adult use. Students will use the lab report template from the appendix, which has larger space for drawing and writing. Discuss safety.

Phenomenon: Present the phenomenon video without explanation before or after students view it. Play video with sound *off*.

What Do you Notice? Engage students in writing a tentative explanation (or making a labeled drawing) that tells what they observed.

What Do you Wonder? Engage students in asking their own questions, which will form the basis for student research.

Student Research After each student writes a question, consider placing each question on a sticky note, grouping them in categories, and allowing students to research in small groups according to their interests. A curated collection of articles or videos is provided for [jigsaw-style](#) research. Each student will summarize an article or video in a small group.

Zero Heroes Lesson Activity This lesson is a Field Investigation that takes place outside in the schoolyard.

Teacher-Directed Activity Conduct a Nature Walk to Look for Signs of Decomposition or Decomposers Before the walk, consider showing this video <https://www.scienceworld.ca/resource/introducing-decomposers/> and assigning students photo cards of decomposers as described in the directions on the next page.

Revised Explanation Allow students to return to and revise their initial explanations of the phenomenon. Clear up any misconceptions about how some materials can be disassembled and re-assembled while others cannot.



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The Phenomenon



play from 5:50 - 7:00 with NO sound - Harmony Square videos
<https://www.youtube.com/watch?v=JmSz7PGfcA>

What do you Notice? (tentative explanation)

Play the video from 2:19 – 2:30 with no sound. Engage students in writing about what they noticed when observing the phenomenon. This will serve as their tentative, initial explanation. At the end of the lesson, allow students to revise and refine their explanations to reflect what they have learned. Explanations may take the form of labeled drawings. Distribute copies of the Investigation lab report template in the appendix.

What do you Wonder? (student questions)

Engage students in asking their own questions about the unexplained phenomenon. These questions will form the basis for student research. Distribute copies of the student lab report template in the appendix.

Curated Articles and Videos for [Research Jigsaw](http://www.jigsaw.org) www.jigsaw.org

Articles to be read with students

- Recycling the Dead <https://www.sciencenewsforstudents.org/article/recycling-dead>
- Badger Burying a Cow <https://www.sciencenewsforstudents.org/article/industrious-badger-caught-burying-entire-cow>
- Mealworms Chow Down on Plastic <https://www.sciencenewsforstudents.org/article/mealworms-chow-down-plastic>
- Tiny Mighty Food Clean-Up Crews <https://www.sciencenewsforstudents.org/article/tiny-mighty-food-cleanup-crews>

Videos for Students to watch

- Decomposers vs Scavengers https://www.youtube.com/watch?v=qEXW2za_rfA
- The Role of Scavengers <https://www.nationalgeographic.org/article/role-scavengers-carcass-crunching/7th-grade/>
- The Value of Vultures <https://blog.wcs.org/photo/2021/06/10/the-value-of-vultures-tanzania-africa/>
- Fungi in the Forest <https://www.youtube.com/watch?v=IMW0mCcxUjw>

Investigation: Waste Managers in the Wild

Teacher resource to share with class before or after walk: PBS's [Decomposers and Scavengers](https://www.pbs.org/video/natureworks-decomposers-and-scavengers/)
(<https://www.pbs.org/video/natureworks-decomposers-and-scavengers/>)

Print the 9 decomposer cards that depict “FBI” species and 1 scavenger card; then designate each student an expert on one type. Experts carry their cards outside to consult. When a decomposer or scavenger is noticed, ask students to see if it is “theirs.”

- [Decomposer Photo Cards](https://www.scienceworld.ca/wp-content/uploads/attachments/resources/Decomposers%20Cards.pdf) <https://www.scienceworld.ca/wp-content/uploads/attachments/resources/Decomposers%20Cards.pdf>
- [All About Birds: Turkey Vultures](https://www.allaboutbirds.org/guide/Turkey_Vulture/id) https://www.allaboutbirds.org/guide/Turkey_Vulture/id

Take the class on a “scavenger hunt” nature walk to look for decomposers and scavengers. Use field microscopes or bring rotting log or soil specimens back to class to view under a microscope and look for bacteria.

Revised Explanation

Allow students to return to and revise their initial explanations of the phenomenon. Clear up any misconceptions about the size or function of fungi, bacteria, invertebrates, and scavengers. Prompt students to tell what the world would be like without any scavengers or decomposers to consume dead plants and animals. How are decomposers “waste managers”? What types of waste may they not be able to break down into soil?

