

# Virtual Ranger Program: Nature's Recyclers

National Park Service  
U.S. Department of the Interior



Shenandoah National Park

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<b>Summary</b>	Students will use this worksheet to follow along with the virtual ranger program about how nature recycles nutrients. This will guide students in various learning methods on the importance of the animals and fungi that help to clean up natural waste.
<b>Suggested Grade Levels</b>	6-8
<b>Objectives</b>	<ul style="list-style-type: none"><li>• Understand the importance of decomposers, scavengers, and detritivores in the ecosystem.</li><li>• Identify adaptations these organisms have for survival.</li><li>• Understand the adverse effect of human-related litter on animals and natural ecosystems.</li></ul>

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## Virginia State Standards

### *Strand: Living Systems and Processes*

- 4.2 The student will investigate and understand that plants and animals have structures that distinguish them from one another and play vital roles in their ability to survive. Key ideas include b) plants and animals have different structures and processes for obtaining energy.
- 4.3 The student will investigate and understand that organisms, including humans, interact with one another and with the nonliving components in the ecosystem. Key ideas include a) interrelationships exist in populations, communities, and ecosystems; b) food webs show the flow of energy within an ecosystem.

### Grades 6-12

- LS.5 The student will investigate and understand that biotic and abiotic factors affect an ecosystem. Key ideas include b) energy flow is represented by food webs and energy pyramids; and c) relationships exist among producers, consumers, and decomposers.
- LS.6 The student will investigate and understand that populations in a biological community interact and are interdependent. Key ideas include a) relationships exist between predators and prey and these relationships are modeled in food webs; and d) the niche of each organism supports survival.
- LS.7 The student will investigate and understand that adaptations support an organism's survival in an ecosystem. Key ideas include b) physical and behavioral characteristics enable organisms to survive within a specific ecosystem.
- LS.9 The student will investigate and understand that relationships exist between ecosystem dynamics and human activity. Key ideas include a) changes in habitat can disturb populations; and c) variations in biotic and abiotic factors can change ecosystems.
- BIO.6 The student will investigate and understand that modern classification systems can be used as organizational tools for scientists in the study of organisms. Key ideas include e) the functions and processes of protists, fungi, plants, and animals allow for comparisons and differentiation within the Eukarya kingdoms.

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**Vocabulary**

**Carrion** – Dead animal material

**Decompose / Decay** – To break down dead or rotting material

**Decomposer** – An organism that breaks down natural waste to use for nutrients

**Detritus / Litter (in nature)**– Dead plant material, or other waste products (leaves, droppings, etc.)

**Detritivore / Detrivore** – An animal that eats detritus/waste

**Fungi/Fungus** – A group of organisms that includes molds and mushrooms

**Mycelium** – A root-like structure of fungi that draws nutrients for growth and life

**Nutrient** – A substance that gives nourishment needed for growth and health

**Recycle** – Turning waste into something new and useful

**Scat** – Animal droppings

**Scavenger** – An animal that feeds on dead plant or animal material

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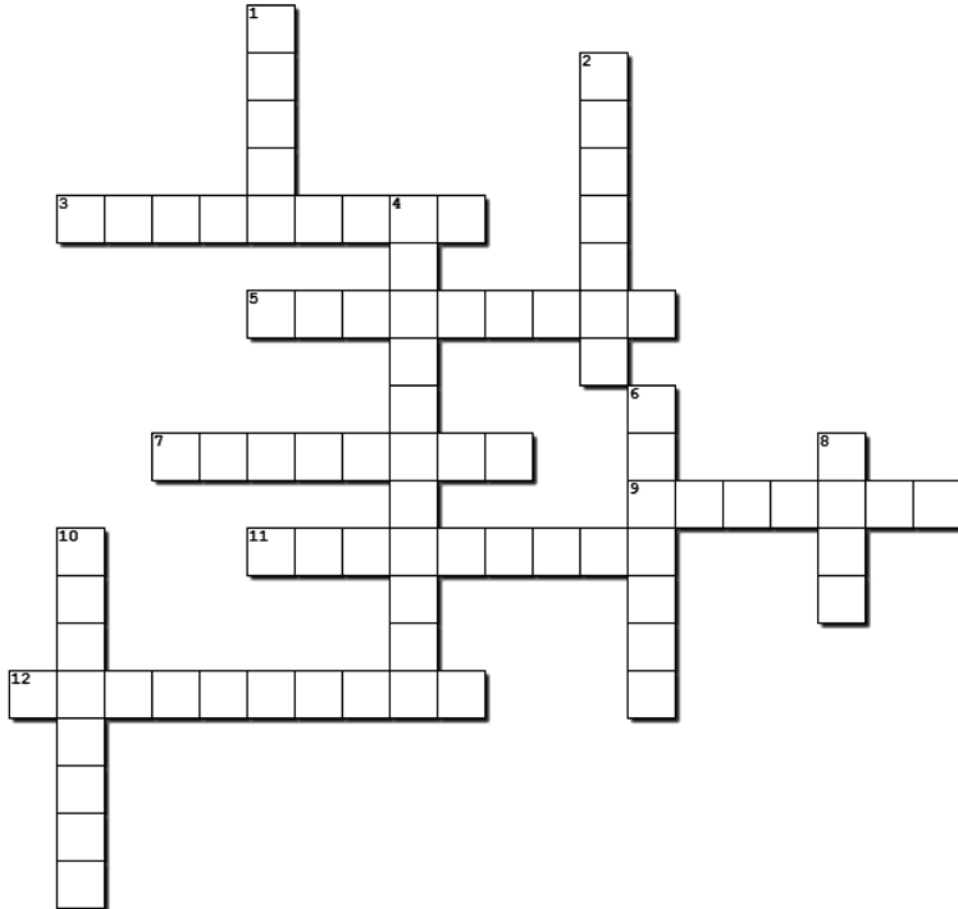
**Materials**

YouTube video: Shenandoah NPS / Virtual Ranger Program: *Nature's Recyclers*

Link: [Nature's Recyclers](#)

Duration: approximately 21 minutes

Complete the crossword puzzle below!



**Across**

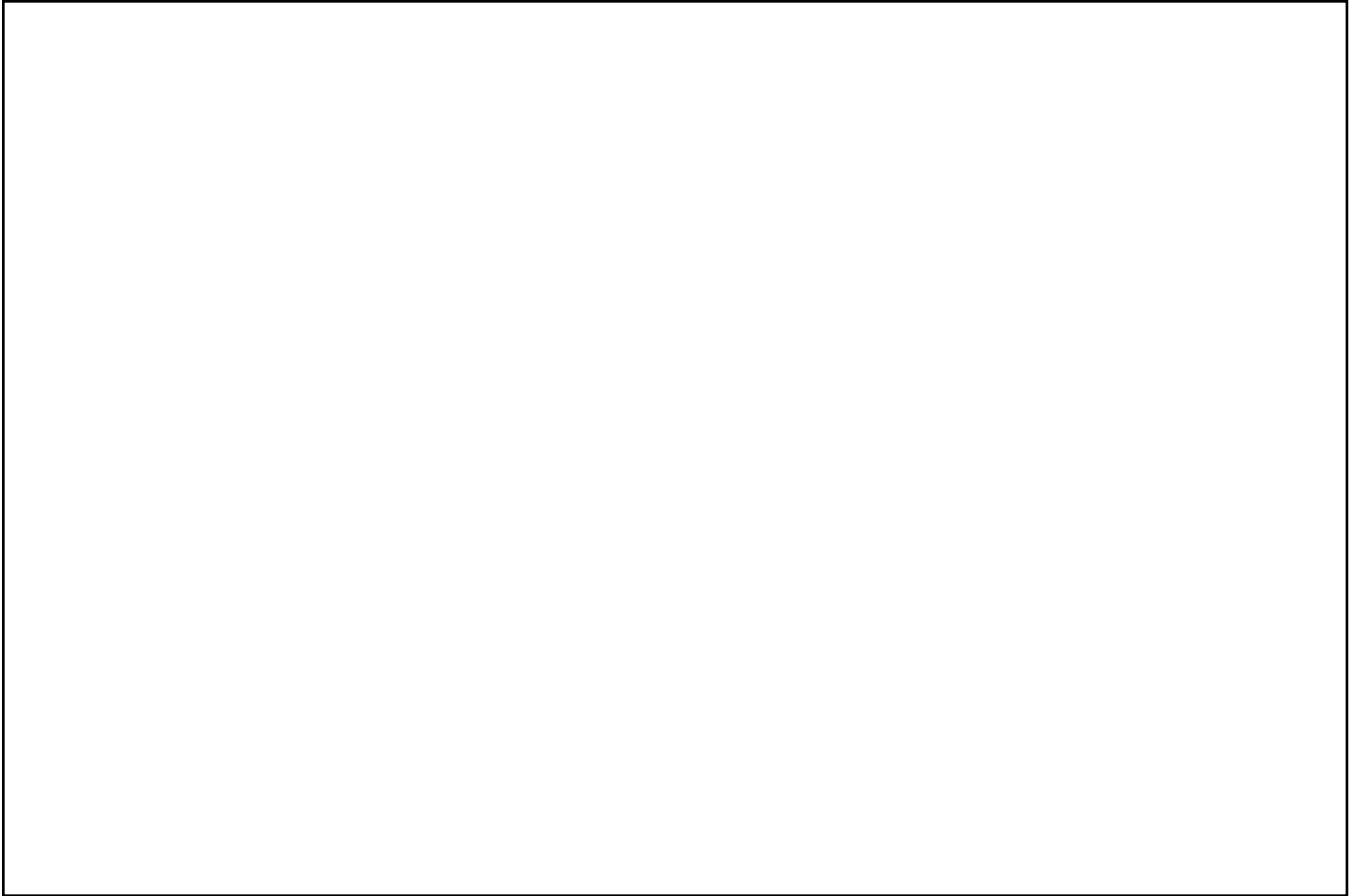
- 3. A many legged detritivore that mostly eats decaying leaves
- 5. A legless animal that wiggles through the soil eating microscopic bacteria
- 7. Dead plant material, or other waste products
- 9. Turning waste into something new and useful
- 11. An animal that feeds on dead plant or animal material
- 12. An organism that breaks down natural waste to use for nutrients

**Down**

- 1. A group of organisms that includes molds and mushrooms
- 2. A large bird that only eats carrion
- 4. An animal that eats detritus or waste
- 6. Dead animal material
- 8. Animal droppings
- 10. A root-like structure of fungi that draws nutrients for growth and life

Draw a scene of an ecosystem you might see in Shenandoah National Park. Be sure to include the following:

- Producer
- Consumer
- Carrion, Detritus, or Scat
- Decomposer
- Scavenger



Draw arrows to show energy flow between producers, consumers, and decomposers.

Describe an adaptation a scavenger or detritivore might have to gather and breakdown food:

Draw a line to match the organisms to the best example of its food type:

Millipede

Rotting Log

Black vulture

Animal droppings

Fungus

Leaf litter

Dung beetle

Carrion

Describe what might happen to an ecosystem if there were no natural recyclers present:

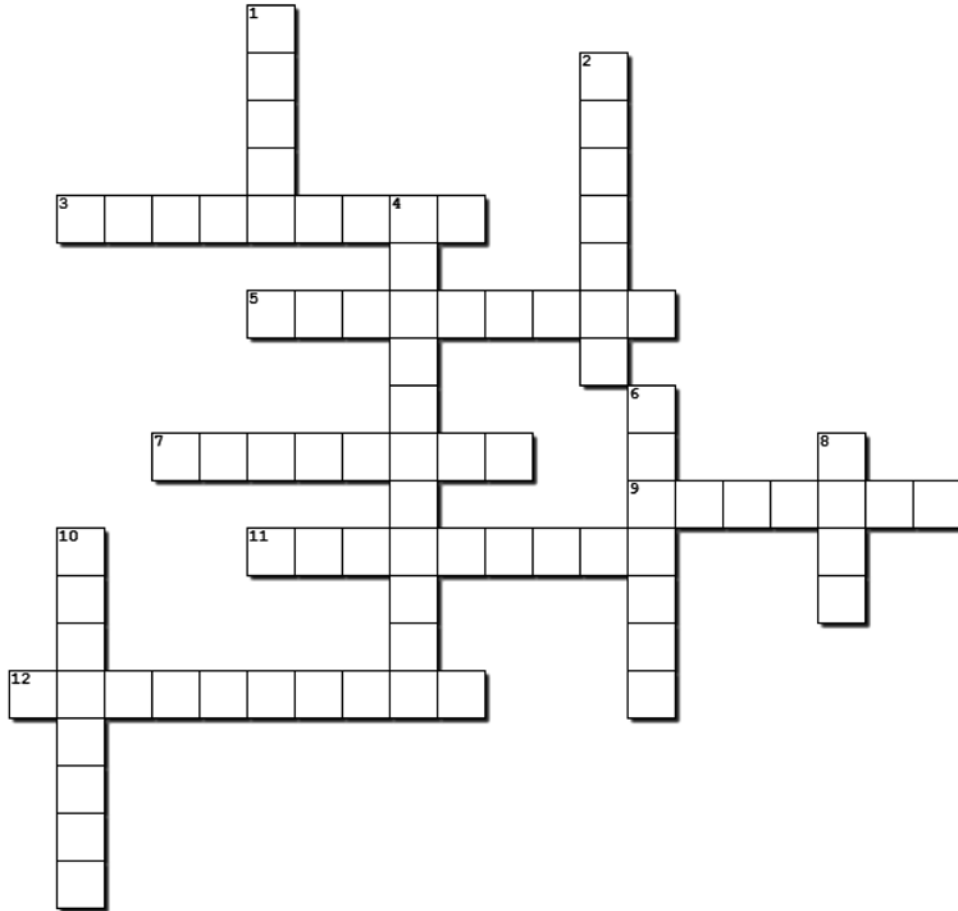
What's an example of recycling that humans do that is not mentioned in the video?

What's a job that people can have that fills a similar role to scavengers or decomposers?

Name a way that human garbage can directly affect the ecosystem if discarded there:

If you could be one of the scavengers or decomposers mentioned in the video, which one would you want to be and why?

Complete the crossword puzzle below!



**Across**

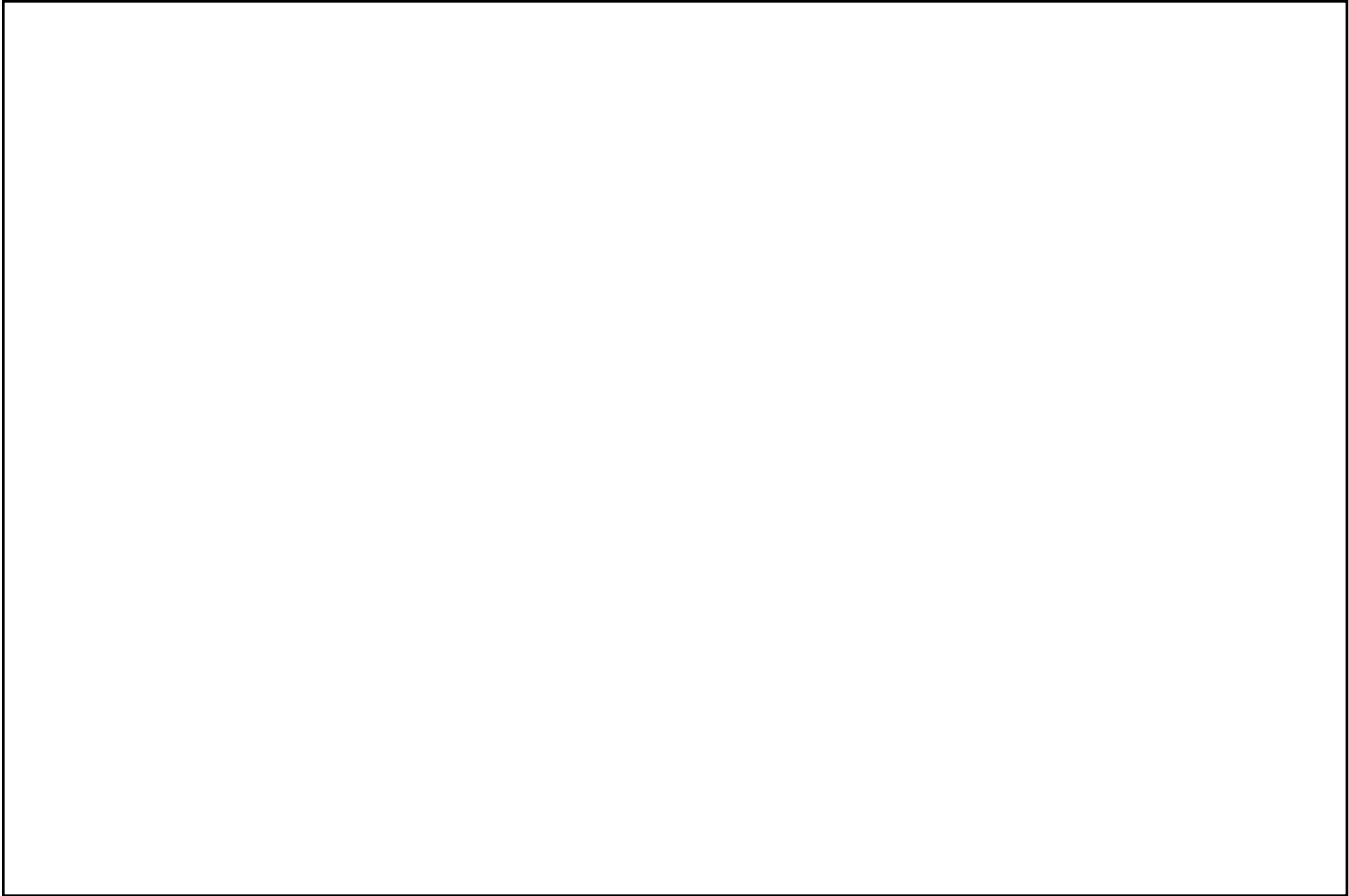
- 3. A many legged detritivore that mostly eats decaying leaves **Millipede**
- 5. A legless animal that wiggles through the soil eating microscopic bacteria **Earthworm**
- 7. Dead plant material, or other waste products **Detritus**
- 9. Turning waste into something new and useful **Recycle**
- 11. An animal that feeds on dead plant or animal material **Scavenger**
- 12. An organism that breaks down natural waste to use for nutrients **Decomposer**

**Down**

- 1. A group of organisms that includes molds and mushrooms **Fungi**
- 2. A large bird that only eats carrion **Vulture**
- 4. An animal that eats detritus or waste **Detritivore**
- 6. Dead animal material **Carrion**
- 8. Animal droppings **Scat**
- 10. A root-like structure of fungi that draws nutrients for growth and life **Mycelium**

Draw a scene of an ecosystem you might see in Shenandoah National Park. Be sure to include the following:

- Producer
- Consumer
- Carrion, Detritus, or Scat
- Decomposer
- Scavenger



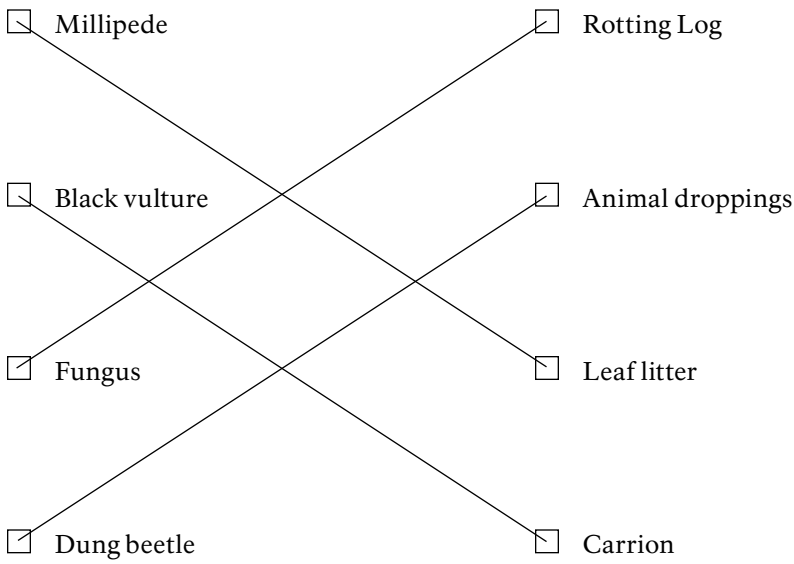
Draw arrows to show energy flow between producers, consumers, and decomposers.

Describe an adaptation a scavenger or detritivore might have to gather and breakdown food:

**Example:** The vulture has adapted to not have feathers on its head to avoid getting covered in bacteria while eating carrion.



Draw a line to match the organisms to the best example of its food type:



Describe what might happen to an ecosystem if there were no natural recyclers present:

**Example:** If no recyclers were present in an ecosystem, dead materials would not return to the soil as nutrients.

What's an example of recycling that humans do that is not mentioned in the video?

**Example:** Turning a 2 liter plastic bottle into a bird feeder is an example of recycling.

What's a job that people can have that fills a similar niche to scavengers or decomposers?

**Example:** A job that people can have that fills a similar niche is trash collecting or compost farming.

Name a way that human garbage can directly affect the ecosystem if discarded there:

**Example:** Animals can get tangled up in garbage, which can make it difficult or painful to move.

If you could be one of the scavengers or decomposers mentioned in the video, which one would you want to be and why?

**Example:** I would want to be a vulture so that I can fly above and find my food easier by using my sense of smell.