



FIELD ENHANCEMENT 3

Forest Energy Scavenger Hunt

OBJECTIVES

Upon completion of this lesson, students will be able to:

- Classify organisms as producers, consumers, and decomposers.
- Explain that energy flows through producers, consumers, or decomposers.
- Identify trees as producers in a forest ecosystem.

SUBJECT AREAS

Science

LESSON/ACTIVITY TIME

- Total Lesson Time: 50 minutes
- Time Breakdown:
 - Introduction.....10 minutes
 - Activity25 minutes
 - Conclusion.....15 minutes

TEACHING SITE

Schoolyard, park, or school forest.

CLASSROOM LESSON CONNECTIONS

This lesson ties closely with Classroom Lesson 3, *Forest Energy Flow*.

NUTSHELL

In this lesson, students go on a scavenger hunt and play a game to learn about the flow of energy through a forest ecosystem.

BACKGROUND INFORMATION

Energy is the ability to do work. All living things need energy. We use energy for everything we do, including eating, running, thinking, and even sleeping. The sun is the source of energy on the earth. Plants use energy from the sun to change water and carbon dioxide into sugars (or food). This process is called **photosynthesis**. Because plants make their own food, they are called **producers**. Only plants can produce their own food. All other organisms must get their food from another source. Organisms that eat plants or other animals are called **consumers**. Herbivores are consumers that eat only plants. Carnivores eat only other animals. Omnivores eat both plants and animals. So, energy flows from the sun into producers and then into consumers and possibly more consumers.

One special kind of consumer is called a **decomposer**. All plants and animals die at some point. If it weren't for decomposers, the energy would get locked up in the dead organisms. But decomposers get energy by consuming dead plants and animals. Decomposers also break down dead material and release **nutrients** back into the soil so that new plants can grow.

To summarize, let's look at a food chain. A tree uses energy from the sun in photosynthesis to make food energy for itself. A deer (a herbivore) comes along and nibbles leaves from the tree. Later, a wolf (a carnivore) eats the deer. At some point the wolf dies. Bacteria and other decomposers break down the flesh and release nutrients back into the soil. Decomposers will also break down the tree when it dies and consume parts of the deer that the wolf left behind.

VOCABULARY

Consumer: An organism that can't produce its own food energy and must get it by eating producers or other consumers.

Decomposer: An organism that gets its food energy from dead parts of other organisms.

Energy: The ability to do work (e.g., grow, reproduce, move).

Nutrients: The minerals in the soil that a tree needs to live and grow.

Photosynthesis: The process a plant uses to combine sunlight, water, and carbon dioxide to produce oxygen and sugar (energy).


Producer: An organism that produces its own food energy by using sunlight, water, and carbon dioxide in the process called photosynthesis. Plants are producers.

PROCEDURE INTRODUCTION

1. Take your students to the area you have chosen for the scavenger hunt.
2. Begin the lesson with a series of questions to get students thinking about energy and its flow through forest ecosystems. **NOTE:** This information should be familiar to students who have completed Classroom Lesson 3, *Forest Energy Flow*. If not, you can have discussion with students to give them necessary background information.
 - Ask your students what energy is. (*Energy is the ability to do work. It is what we use to move, think, grow, etc.*) Every living thing uses energy all the time. Organisms get their energy in different ways.
 - Ask students how a tree gets energy. (*Trees use energy from the sun to make their own food through photosynthesis.*)

MATERIALS LIST

FOR EACH GROUP OF 2 TO 3 STUDENTS

- Copy of Student Pages  1A-B, *Energy Flow Scavenger Hunt*
- Pencil
- Clipboard or notebook to use as a writing surface

FOR THE CLASS

- Three index cards

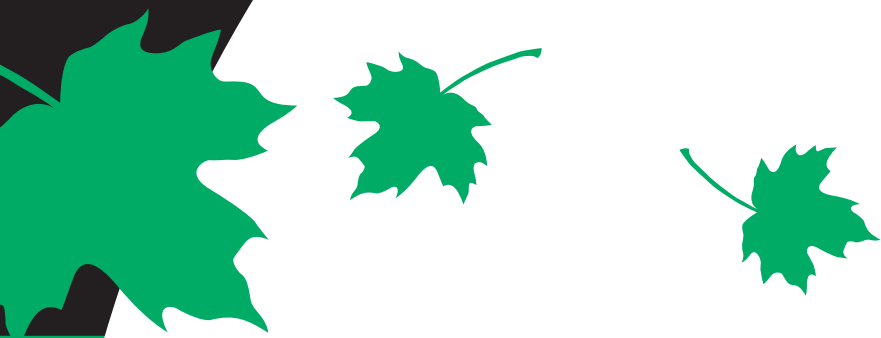
TEACHER PREPARATION

- Choose locations for the scavenger hunt and concluding game. The area for the scavenger hunt should contain trees, plants, insects, birds, etc. The area for the concluding game should be an open area where students can run safely.
- Write "Producer" on an index card. Do the same for "Consumer" and "Decomposer."

SAFETY PRECAUTIONS

Visit the teaching site ahead of time to locate any hazards such as hanging branches, protruding tree roots, holes, poison ivy, stinging nettle. Encourage students to walk, not run, at all times when in a forested area.

- Explain that organisms that make their own food are called producers. Ask students for more examples of producers. (*Any plant they list is a correct answer.*)
- Ask students if people make their own energy. (*No, people must eat food to get energy.*)
- Explain that organisms that need to eat other organisms to get energy are called consumers. Consumers might eat producers or other consumers. Ask students for more examples of consumers (*Anything that eats plants or other animals is a correct answer.*)



- Explain that all plants and animals die at some point. Decomposers get their energy from eating dead plants and animals. This way, nothing is wasted. The decomposers turn the organisms they eat into nutrients that producers can use. Ask for more examples of decomposers. (Bacteria, fungi, insects like beetles, and worms that eat dead material.)
- To summarize, ask students if they understand how energy flows through an ecosystem. (*Hopefully, yes. Producers produce food energy. Consumers eat producers or other consumers to get energy. Decomposers get energy from eating dead material, which releases nutrients into the soil so more producers can grow.*)

ACTIVITY

1. Now that your students know that energy flows through an ecosystem, explain that they will go on a scavenger hunt to find real producers, consumers, and decomposers. Divide your students into groups of two or three and give each group Student Pages **1A-B**, *Energy Flow Scavenger Hunt*, a pencil, and a clipboard or notebook to use as a writing surface.
2. Explain that each group will work together to complete the scavenger hunt. During the hunt, students will look for the producers, consumers, and decomposers listed on the energy flow diagrams. Show your students where to circle the name of the organisms they find on the Student Pages. They only need to find one decomposer in each box to complete the diagram. The object is to see how many diagrams they can complete.
3. Before sending students on the scavenger hunt, set boundaries for where they should and should not go.
4. After approximately 15 minutes, call students back together and ask each group to report on

which diagrams they completed. Discuss what they did and did not find. Ask why they may not have found some of the organisms. (*Some plants and animals may not have what they need to live in a certain area. Some animals, like snakes, are good at hiding.*)

5. Emphasize the role that trees play in the flow of energy in a forest. Trees dominate the forest ecosystem, and they play an important role as the primary producers in the forest. Many forest dwellers get their energy from trees or from animals that eat from trees. For example, deer eat leaves from trees, squirrels eat nuts from trees, and porcupines eat bark and wood from trees. All these animals have predators such as wolves, owls, and fishers. Other smaller animals such as beetles and millipedes get their food from trees, and animals like woodpeckers and wolf spiders hang out near trees to eat the beetles and millipedes.

CONCLUSION

1. Line up three index cards in the middle of a large open space. (The word “producer” appears on one card, “consumer” on another, and “decomposer” on the third.)
2. Divide your students into two teams and number the students on each team.
3. Have the teams stand on either end of the open space facing each other with the cards in the middle.
4. Ask one of the questions listed on the next page and call out a number. The person with that number from each team will run to the center and try to be the first person to grab the card with the correct answer. (The answer to every question is producer, consumer, or decomposer.) Give one point to the team that wins each round. The winner of the round puts the card back down in the center of the playing area and both players return to their teams.



Read the following questions in any order:

1. What type of organism can make its own food? **(Producer)**
2. What type of organism eats plants or animals to get energy? **(Consumer)**
3. What type of organism eats dead plants to get energy? **(Decomposer)**
4. What type of organism is mold? **(Decomposer)**
5. What type of organism is grass? **(Producer)**
6. What type of organism is a mouse? **(Consumer)**
7. What is an organism that recycles nutrients back to the soil? **(Decomposer)**
8. What is an organism that performs photosynthesis called? **(Producer)**
9. What is an organism that hunts for food called? **(Consumer)**
10. Which organism uses energy from the sun? **(Producer)**
11. Which organism can turn a dead tree into soil? **(Decomposer)**
12. Which organism eats living things? **(Consumer)**
13. What type of organism are you? **(Consumer)**
14. What type of organism are bacteria? **(Decomposer)**
15. What type of organism are ferns? **(Producer)**
16. What is an organism that is usually green called? **(Producer)**
17. What is an organism that nibbles on wood called? **(Consumer or decomposer)**
18. What is an organism that breaks down dead animals called? **(Decomposer)**
19. What type of organism is a mushroom? **(Decomposer)**
20. What type of organism is a dandelion? **(Producer)**

5. For the next round, read a different question and call out a new number. Continue to reuse the questions until all the students have several tries at choosing and answer. At the end announce the winning team.

SUMMATIVE ASSESSMENT

Give each student a piece of paper and some crayons. Ask them to draw and label one producer, one consumer, and one decomposer. Post the pictures on a bulletin board.

RECOMMENDED RESOURCES

●●● WEBSITE ●●●

Planetpals.com

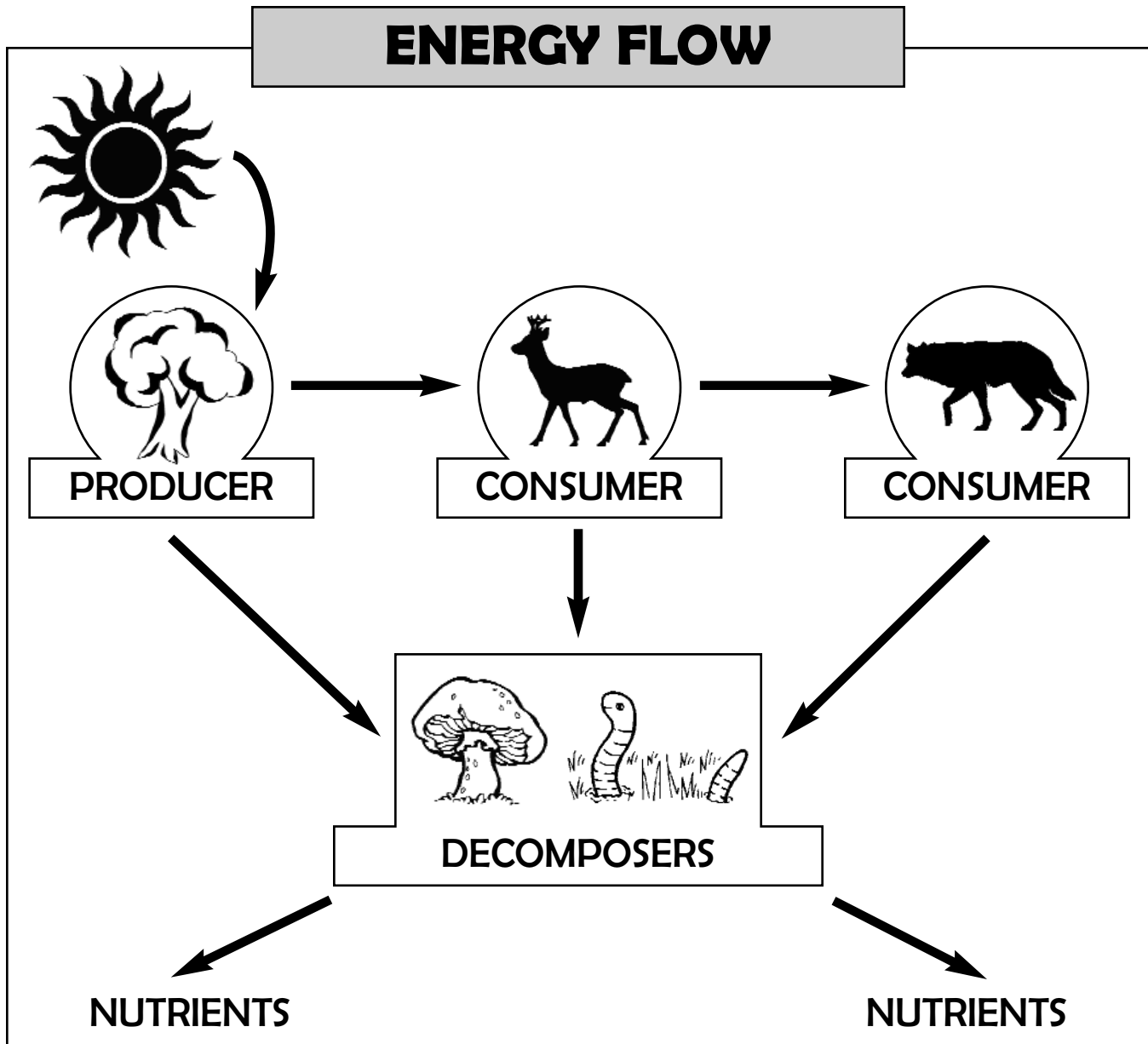
www.planetpals.com/foodchain.html

This site describes how food chains work, beginning with producers and going all the way through decomposers. Also contains colorful diagrams that illustrate the flow of energy through an ecosystem.

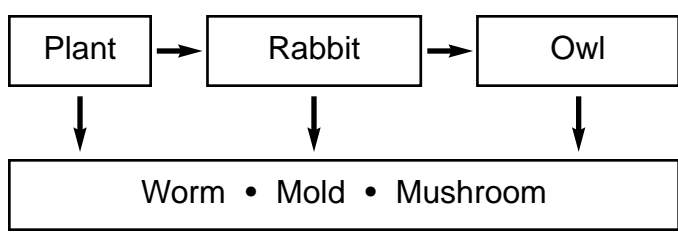
●●● MUSIC ●●●

The Sun's Chorus: Celebrating Sun, Air, Water and Soil. CD/Tape by David and Sarah Stokes with Ken Lonquist. The song "Dirt Made My Lunch" demonstrates that nutrients from the soil end up in the food we eat, no matter if it is a salad or milk. The song "Photosynthesize Me" gives credit to the sun for being the ultimate source of energy for the earth and describes how the sun's energy flows from organism to organism. To Contact David Stokes: 1111 East Brown Deer Road, Milwaukee, WI 53217. (414) 352-8562

ENERGY FLOW SCAVENGER HUNT



Circle all the critters you can find.



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