

# What's Eating You?

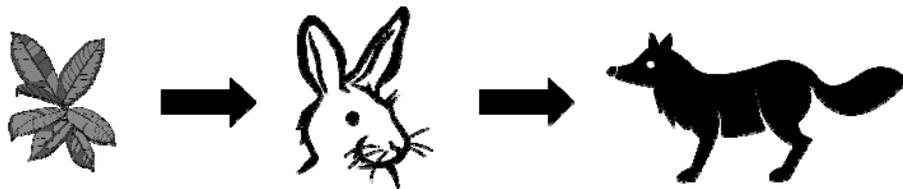
---

<b>Strand</b>	Living Systems
<b>Topic</b>	Producers, consumers, and decomposers; and food chains
<b>Primary SOL</b>	3.5a The student will investigate and understand relationships among organisms in aquatic and terrestrial food chains. Key concepts include a) producer, consumer, decomposer.
<b>Related SOL</b>	3.6 The student will investigate and understand that ecosystems support a diversity of plants and animals that share limited resources. Key concepts include a) aquatic ecosystems; b) terrestrial ecosystems.

## Background Information

Every living thing needs energy in order to live. Animals get energy from the food they eat. Plants use sunlight, water and nutrients to get energy (in a process called photosynthesis).

A food chain shows how each living thing gets food, and how nutrients and energy are passed from creature to creature. Food chains begin with plant life which gets energy from the sun, and end with animal life. Some animals eat plants and some animals eat other animals. A simple food chain could start with plants, which are eaten by rabbits. Then the rabbits are eaten by foxes. Each link in this chain is food for the next link.



All living things fall into one of these three categories.

Producers are any kind of green plant. Green plants make their food by using sunlight for energy to make sugar. The plants use this sugar, also called glucose, to make many things such as wood, leaves, roots, and bark. Trees, such as oaks or dogwoods, and plants such as grasses and bushes are examples of producers.

A consumer is any organism that can't make its own food. Consumers have to feed on producers or other consumers to survive. Deer are herbivores, which means that they only eat plants (producers). Bears are another example of consumers. Black bears are omnivores and scavengers, like skunks and raccoons, which means that they will eat just about anything. In a forest community, black bears will eat blueberries, bugs, acorns, and many kinds of nuts.

A decomposer is an organism that primarily feeds on dead organisms or the waste from living organisms. Decomposers take all the dead animals and plants (consumers and decomposers) and break them down into their nutrient components so that plants can use them to make

more food. In a forest, one decomposer is shelf fungus that grows on the sides of trees. It grows into the tree and decomposes it slowly. In the forest, decomposers eat and digest dead logs and leaves and over many years, turning them into dirt that is wonderful for plants.

## Materials

- Book about food chains
- Bingo cards – one per student
- One copy of the Virginia Animals for Food Chains page – cut apart
- Pictures or the names of producers, consumers, and decomposers
- Internet and library access
- Art supplies to create their food web waterfall books (construction paper, yarn, scissors, etc.)
- Index cards (four to six per group)
- Paper clips (three to five per group)
- Science journal

## Vocabulary

*producer, consumer, decomposer, food chain*

## Student/Teacher Actions (what students and teachers should be doing to facilitate learning)

### Introduction

1. Ahead of time, make copies of the blank bingo cards, one for each student. Also find images or the names of producers (green plants), consumers (animals), and decomposers to use during the bingo game.
2. Select a book about producers, consumers, and decomposers and about food chains to read to the class to introduce the concepts.
3. Cut apart the Virginia Animals for Food Chains page for student teams to select one animal to use in Activity 2.

### Procedure

1. Read the book to the class about producers, consumers, and decomposers and use the book to conduct a discussion. Ask, “*What do all organisms need to live?*” (energy) Discuss how organisms get that energy and transfer the energy. (Producers get the energy from the sun, consumers get the energy from consuming producers or other consumers, and decomposers break down the complex organic compounds in the dead materials (dead leaves, wood, etc.) into simple nutrients.)
2. Ask, “*Why would we call green plants producers?*” (Green plants make their food by taking sunlight and using the energy to make sugar. This process of using the sun's energy to convert minerals (such as magnesium or nitrogen) in the soil into green leaves, or carrots, or strawberries, is called photosynthesis. Plants are called producers because they are able to use light energy from the sun to produce food (sugar) from carbon dioxide and water.) “*Name some producers.*” (e.g., grass, trees, flowers, etc.)

3. Ask , “What does the word “consume” mean?” (to use up, to eat) “What would a consumer in the animal kingdom do?” (Consumers need to eat to get their energy. There are many different types of consumers. Some eat only plants (a consumer eating a producer), others only meat (a consumer eating a consumer), and some both.) “Name some consumers.” (e.g., deer, squirrel, hawk, cow, etc.)
4. Ask, “What is a decomposer?” (Decomposers can be little tiny organisms like bacteria, or earthworms, or mushrooms and molds. Decomposers are a specific type of consumer. They need to consume other organisms, but they are different from other consumers because instead of using the energy to put into their own body, they use a lot of it to break up dead matter. The dead matter could be from either a producer or a consumer. They are what turn your compost pile that started out as garden clippings and food, back into the minerals that make up soil. )
5. Ask, “What do all living things need in order to live?” (Every living thing needs energy in order to live. Animals get energy from the food they eat. Plants use sunlight, water and nutrients to get energy (in a process called photosynthesis). Energy is necessary for living organisms to grow.)
6. Ask, “What is a food chain?” (A food chain shows how each living thing gets food, and how nutrients and energy are passed from creature to creature. Food chains begin with plants getting energy from the sun, and end with animals getting energy from eating plants or other animals. Some animals eat plants, some animals eat other animals. Each link in the chain is food for the next link.)
7. Ask, “How do producers, consumers, and decomposers fit into a food chain.” (Plants are producers, getting their energy from the sun. Animals are consumers and get their energy by eating plants, eating other animals that eat plants, or both. When animals and plants die, decomposers break down the remains. Nutrients are added to the soil which plants use to grow.)
8. Share several pictures or information about different plants, animals, and decomposers, and have the students determine where they would fit in a food chain and what would be the other organisms in the food chain.

#### Activity 1

1. Give each student a blank BINGO card.
2. Using markers or ink pens, have the students write a P, C, or D in each blank square. (If students need more exposure to the vocabulary, instead of writing P, C, or D in each blank square, you can have them write Producer, Consumer, or Decomposer.) Students should use the P (Producer) eight times on their board, the C (Consumer) eight times, and D (Decomposer) eight times.
3. Have students put away the markers or pens and use a pencil to play the game.
4. Either hold up a picture of a producer, consumer, or decomposer; or name one of them (e.g., apple tree, acorn, bird, deer, chipmunk, etc.). Students will write the name of what they see or hear in a square that has the proper label in it.
5. They achieve BINGO when they have filled in five squares in a row across, down or diagonally; or if they have filled in all four corners.

6. Variations of how to play the game could include:
  - a. Have the students each fill in a BINGO card, collect all the cards, and re-distribute them so that they are not using the card they made.
  - b. Instead of having students write the name of the animal or plant on the BINGO card, cut up and distribute small pieces of paper. For each animal or plant, have them write the name on a piece of paper and place it on the bingo board. This would allow for reuse of the boards.

### Activity 2

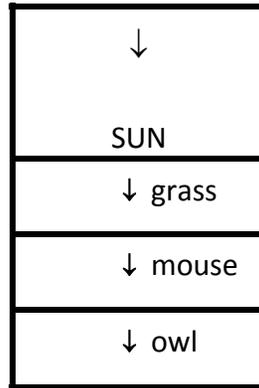
1. Divide the class into groups of two to three students.
2. Have each team draw a Virginia animal.
3. Each team will need to research information about what the animal they selected eats and what eats their animal.
4. They will then research information about the things their animal eats in order to build a complete food chain.
5. From the information gathered, each group will put together a food chain for their animal. Remind students that producers get their energy from the sun, and consumers eat producers or other consumers who eat producers.
6. Have each group construct an actual chain using index cards and paper clips.
7. Give each group time to explain their animal's food chain to the class.
8. As a class, have students choose one card to remove from a food chain that has been created. Discuss what might happen to the other parts of the chain.

### Assessment

- **Questions**
  - Why are producers important in a food chain?
  - What is the role of a consumer in a food chain?
  - Why do we need decomposers?
- **Journal/writing prompts**
  - What happens when something is removed from a food chain? What long-lasting impact would it have?

- **Other**

- Using one of the food chains from Activity 2, have students make a waterfall book (one in which the paper protrudes in increments from the sheet before) of the chain. Proper sequence should be maintained as they write the names of the chain's elements on the protruding edges. Have the students glue a picture of each element on its page or draw a picture and write at least two facts about that element.



### **Extensions and Connections (for all students)**

- Have the students look at the food chains that they made to see if there are any links between them (e.g., Squirrel's food chain can link with the hawk's food chain since hawks eat squirrels, etc.). By combining them, the students will be setting up food webs.
- Take a class field trip to a local garden or wetland ecosystem.

### **Strategies for Differentiation**

- Pictures that students have drawn can be put on strips and chained together to illustrate a food chain. Encourage long food chains. Discuss what happens if one of the links is broken.
- Take a walk around the school. List the consumers, producers and decomposers found. Make a class food chain from these findings. This could also be done with teams and allow the teams to report their findings to the rest of the class.

# Producers, Consumers, and Decomposers BINGO

<b>B</b>	<b>I</b>	<b>N</b>	<b>G</b>	<b>O</b>
		<b>FREE</b>		

## Virginia Animals for Food Chains

<b>Black bear</b>	<b>White-tailed deer</b>
<b>Gray squirrel</b>	<b>Red-tailed hawk</b>
<b>Black snake</b>	<b>Grasshopper</b>
<b>Largemouth bass</b>	<b>Ring-necked duck</b>
<b>Snail</b>	<b>American bullfrog</b>
<b>Channel catfish</b>	<b>Bluegill</b>
<b>Box turtle</b>	<b>Copperhead snake</b>
<b>American crow</b>	<b>Red fox</b>
<b>Big brown bat</b>	<b>Raccoon</b>
<b>Barn owl</b>	<b>Red-spotted newt</b>
<b>Common five-lined skink</b>	<b>Green salamander</b>
<b>Black vulture</b>	<b>Blue jay</b>
<b>Canada goose</b>	<b>Cardinal</b>