

The Flow of Energy Through Food Webs

Teacher Facilitation Notes

In General . . .

- Project the slide deck in edit mode—do not show it as a slideshow.
- Hide the speaker notes before projecting. (View/Show Speaker Notes)
- Hide the toolbar. (Click on the up arrow at the right end of the tool bar.)
- Call on students to read the various content shown on slides.
- For each investigation, assemble the needed materials for each group and place in a central location for ease of distribution.
- Duplicate copies of the data sheets for each student.

Materials Needed:

Explore: What is a food web?

Student Data Sheet, 1 per student Pencil, 1 per student

Explain: The Cycling of Matter and Flow of Energy

Data Sheet, 1 per student Pencil, 1 per student

Evaluate

Quiz, 1 per student

Other Materials

Science Notebook, 1 per student Pencil, 1 per student

Engage: What is a Food Chain? What is a Food Web?

- Introduce the title slide and discuss.
- Brainstorm the needs of plants and animals. Write the terms on the board as the students name them.
- Ask students what they know about food chains and food webs. (They should know food chains, as they were studied in 3rd grade. They may have little knowledge of food webs.)
- Call attention to the definition of food chains and then watch the video.
- Call on volunteers to fill in the blanks in the sentences—type in student answers or let students come to the computer and type in the answers.
- Discuss the flow of energy in the illustrated food chain. Make sure that students understand that an organism gives energy to the next organism in the chain. (The arrows point in the direction of the flow of energy.)
- Read the final slides about food webs. Discuss as desired.

The Flow of Energy Through Food Webs

Teacher Facilitation Notes, p. 2

Explore: The Flow of Energy Through Different Parts of Food Webs

- Use the slide to introduce Food Webs. Discuss the idea of how energy might flow through organisms in an environment and what roles different organisms might have in a food web..
- Show the slide for Observation Station #1. Read the introduction and discuss the pictured food chain as desired. Ask questions such as:
 - What provides the energy that drives the food chain? (sun)
 - What organism is a producer? (You might have to point out that the seeds come from plants that are producers. The seeds themselves are not technically producers.)
 - What organisms are consumers?
- Allow time for students to answer the questions on their data sheet. (If desired, don't duplicate the data sheets for these observation stations. Students can answer the questions in their science notebooks.)
- For Observation Station #2, students can answer on their data sheets, or you can type in their answers directly in the table on the slide. Show the answer key if desired.
- For Observation Station #3, read and discuss the information about the sun's role in a food web. Students can answer the questions on their data sheet or in their science notebooks. Show the answer key if desired.
- For Observation Station #4, read and discuss the information about producers. Students can orally identify the pictured producers or circle the pictures on their data sheet. Show the answer key if desired.
- For Observation Station #5, read and discuss the information about consumers. Students can orally answer the questions as you type their answers in the text boxes or they can follow the directions on the data sheet to identify the herbivores, carnivores, and omnivore. Show the answer key if desired.
- For Observation Station #6, read and discuss the information about decomposers. Students can orally name the 7 decomposers or write them on their data sheet. Tell students that an easy way to remember what organisms are decomposers is the abbreviation FBI (f-fungus; b-bacteria; and i-invertebrates, like worms). Show the answer key if desired.
- For the final slide, drag and drop the pictures to the correct column of the table. Discuss as desired.

The Flow of Energy Through Food Webs

Teacher Facilitation Notes, p. 3

Explain: The Cycling of Matter and Flow of Energy

- Read and discuss the explain slides as desired.
- Work with the class to complete the diagram. Drag and drop the boxes as needed.
- Have the students complete the data sheet. Discuss as desired.

Elaborate: The Importance of Food Webs in an Ecosystem

- Read and discuss the introductory slide.
- Watch the video.
- Have students answer the quiz questions in their science notebooks. Check their answers and discuss.
- Study the grasslands food web. Discuss the effects of removing various organisms from the food web.
- Call on students to tell what they ate for breakfast, lunch, and dinner the day before. Create various food chains based on their consumption.
- OPTIONAL: Have students create a food web in their science notebooks combining different food chains of food that students ate.
- On the Flippity site, show the term. Call on students to define it. Then use the flip arrow (the second arrow under the card) to show the definition. Have students compare their definition to this one. Continue for all 15 vocabulary terms.
- If desired, click on the MORE tab at the top of the page. Then click on "Send Side 1 terms to Snowman". Divide the class into two teams and play this game by following the standard rules for Hangman. You can also play any of the other games listed under the MORE tab if desired.

Evaluate

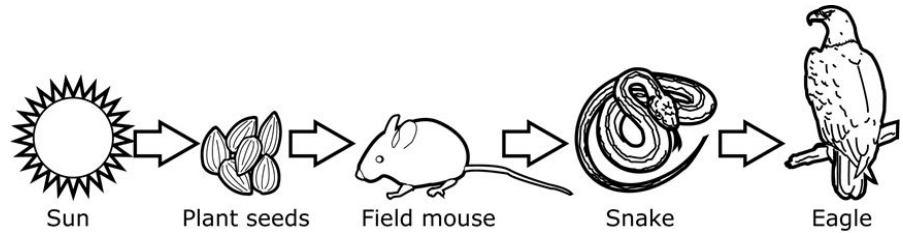
- Let students complete the quiz independently.
- Discuss evaluation activities as desired.

The Flow of Energy Through Food Webs

Name: Key

Explore: The Flow of Energy

Observation Station #1

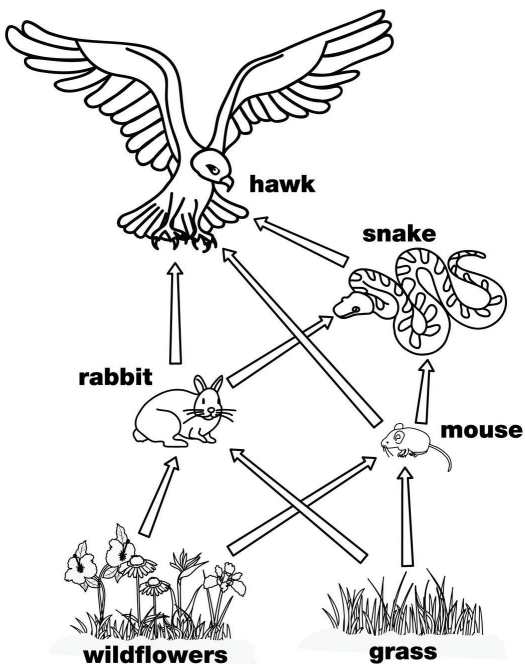


1. How does the eagle get energy to survive in its ecosystem? _____
The eagle gets energy to survive in its ecosystem by eating the snake.

2. Where does the plant get its energy to grow and produce its own food?
The plant gets energy to grow and produce its own food from the sun.

3. Which organism provides energy for the snake? _____

Observation Station #2



Organism Supplying Energy	Organism Using Energy
wildflowers	rabbit
wildflowers	mouse
grass	rabbit
grass	mouse
rabbit	hawk
rabbit	snake
mouse	snake
mouse	hawk
snake	hawk

The Flow of Energy Through Food Webs

Name: Key

Explore: The Flow of Energy

Observation Station #3

1. How does a producer (green plant) use energy from the sun? _____

A producer uses energy from the sun to make its own food.



2. In what part of the plant is the sugar produced? _____

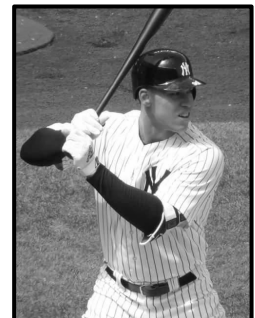
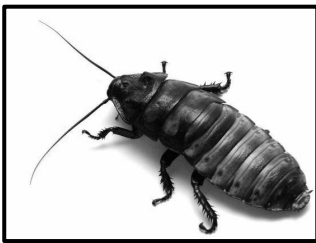
Sugar is produced in the plant's leaves.

3. What is the role of the sun in an ecosystem? _____

The sun provides energy for producers to make their own food.

Observation Station #4

Draw a ring around the pictures that show producers in an ecosystem.



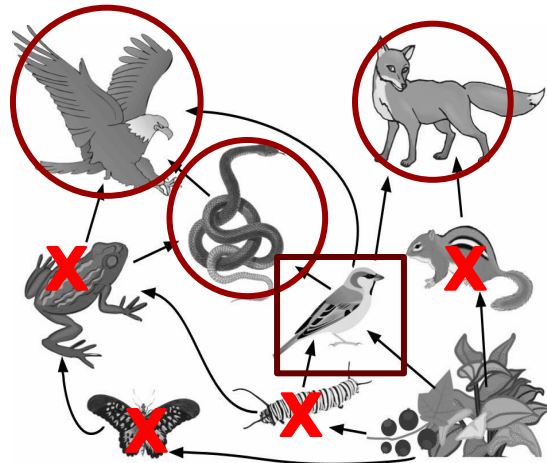
The Flow of Energy Through Food Webs

Name: _____

Explore: The Flow of Energy

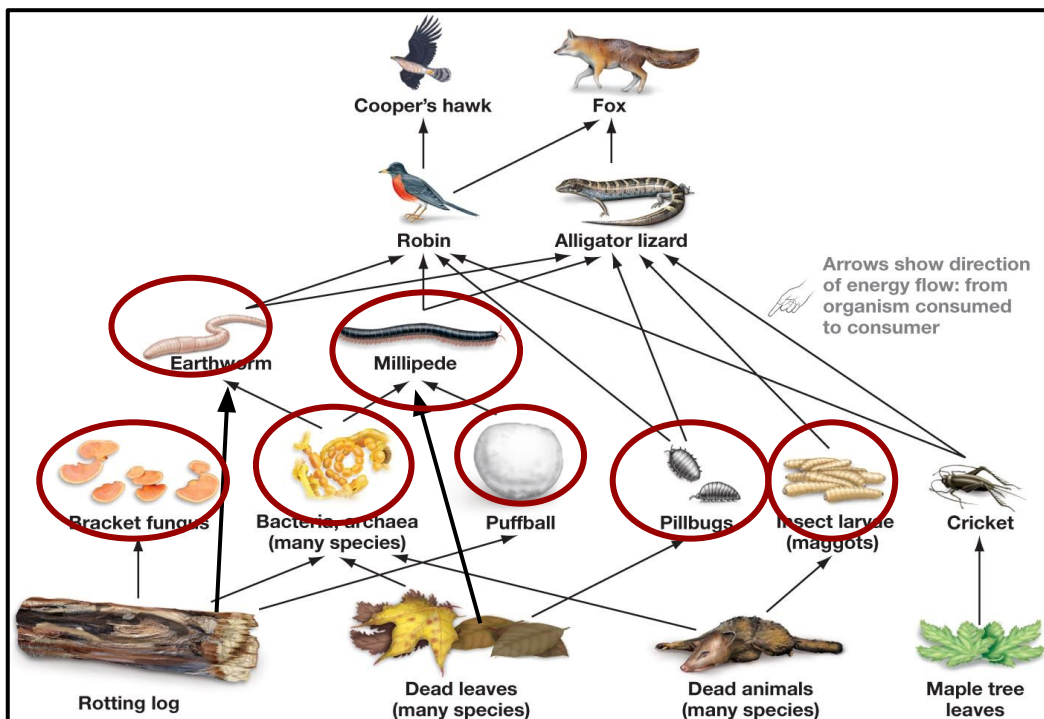
Observation Station #5

1. Put an X on all the organisms in the diagram that are herbivores.
2. Draw a ring around all the organisms in the diagram that are carnivores.
3. Draw a rectangle around the organism in the diagram that is an omnivore.



Observation Station #6

Draw a ring around the decomposers pictured in this food web.



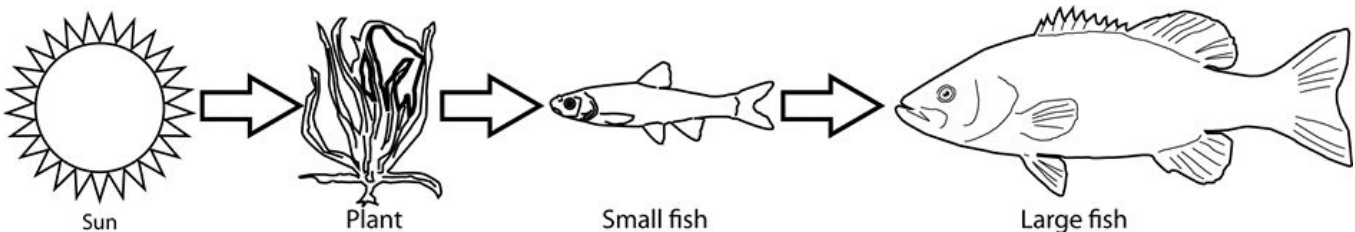
The Flow of Energy Through Food Webs

Name: Key

Explain: The Cycling of Matter and the Flow of Energy

Directions: Study the list of organisms found in a forest ecosystem. Identify each organism as a *producer*, *consumer*, or *decomposer*.

1. Earthworms decomposer
2. Deer consumer
3. Bacteria decomposer
4. Mice consumer
5. Pine trees producer
6. Grass producer
7. Bears consumer
8. Rabbits consumer
9. Bushes producer
10. Cardinals consumer
11. Frogs consumer
12. Mushrooms decomposer



13. Study the food chain pictured above. Describe the flow of energy from a producer to a consumer in this food web. _____

Energy flows from the plant to the small fish. Energy flows from the small fish to the large fish.

The Flow of Energy Through Food Webs

Name: Key

Evaluation

Use the food web pictured here to answer questions 1-5.

1. Which things come from producers?

Leaf litter and grass seed

2. Which organisms are consumers?

Worm, mouse, shrew, rabbit, owl, and fox

3. What organisms give energy to the owl?

The shrew and the mouse

4. To what organisms does the mouse give energy? _____

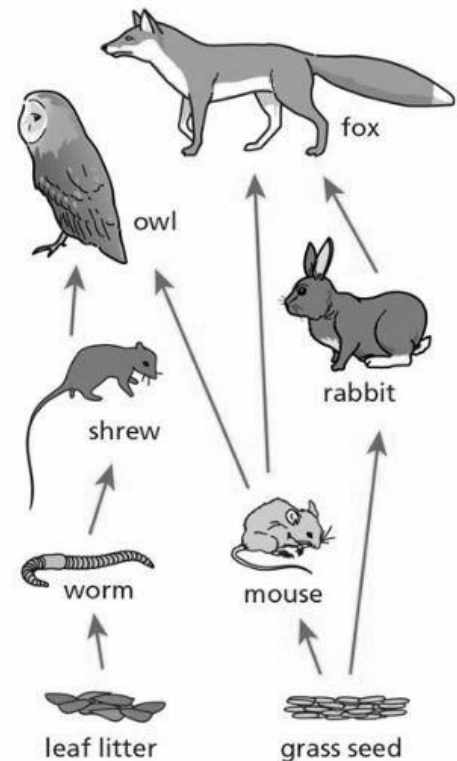
The owl and the fox

5. From what organisms does the fox directly get its energy? _____

The mouse and the rabbit

6. The original source of energy in almost every food web on Earth is the sun. How does the flow of energy first enter these food webs?

- F** Plants take in light and use it to make their own food.
- G** Consumers absorb solar energy to keep their body temperature steady.
- H** Decomposers break down waste materials and dead organisms.
- J** Energy from the sun causes water to evaporate and enter the atmosphere.



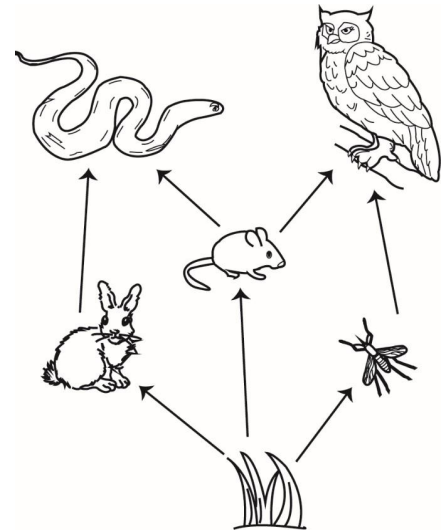
The Flow of Energy Through Food Webs

Name: Key

Evaluation

The diagram shows a woodlands food web. Use the diagram and your knowledge of science to complete the C - E - R below.

Question: Which organism provides food and energy for the mouse?	Claim: Grass provides food and energy for the mouse.
Evidence: In the diagram, the arrow is pointing from the grass to the mouse.	Reasoning: In a food web diagram, the arrows point from the energy suppliers to the energy consumers.



8. In the food web above, the mouse would be identified as a-
- F producer
 - G consumer
 - H decomposer
 - J carnivore
9. In the food web above, which organisms receive their energy directly from the producer? Mark all that apply.
- A The grass
 - B The rabbit
 - C The mouse
 - D The housefly
 - E The snake
 - F The owl

The Flow of Energy Through Food Webs

Name: _____

Explore: The Flow of Energy

Observation Station #3

1. How does a producer (green plant) use energy from the sun? _____

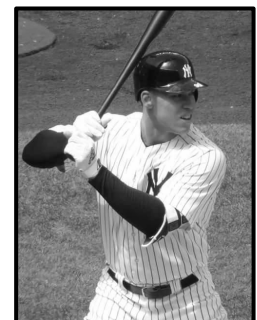
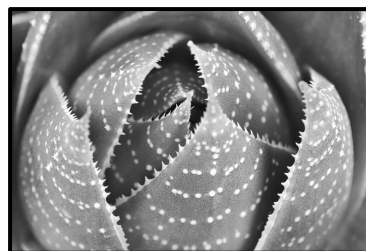
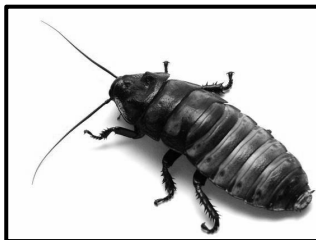


2. In what part of the plant is the sugar produced?

3. What is the role of the sun in an ecosystem? _____

Observation Station #4

Draw a ring around the pictures that show producers in an ecosystem.



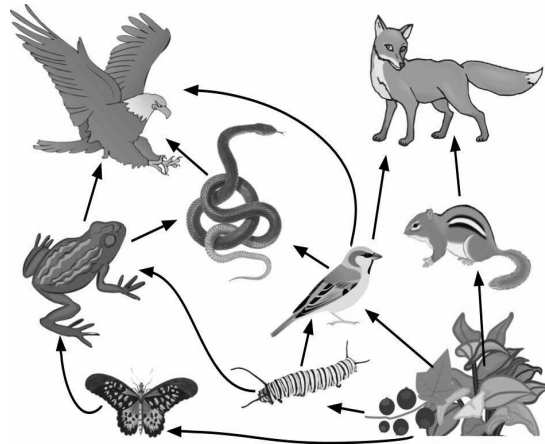
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Explore: The Flow of Energy

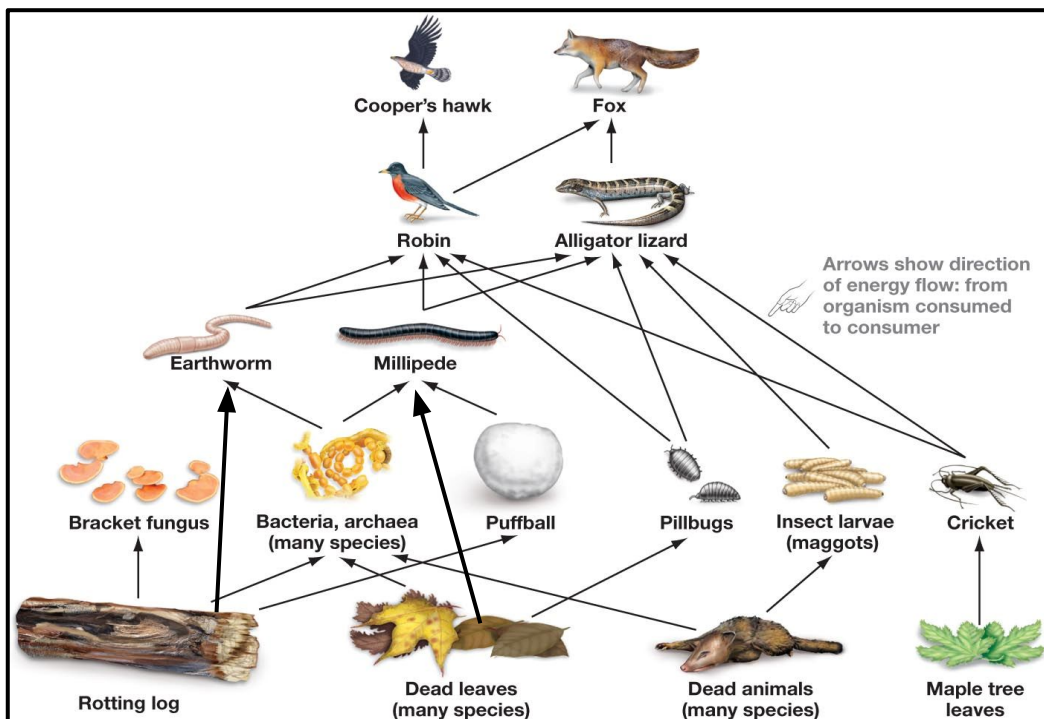
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Observation Station #6

Draw a ring around the decomposers pictured in this food web.



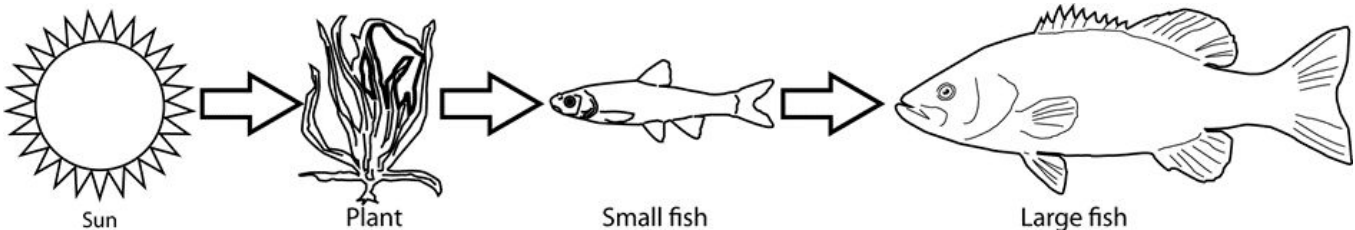
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11. Frogs _____
12. Mushrooms _____



13. Study the food chain pictured above. Describe the flow of energy from a producer to a consumer in this food web. _____

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Evaluation

Use the food web pictured here to answer questions 1-5.

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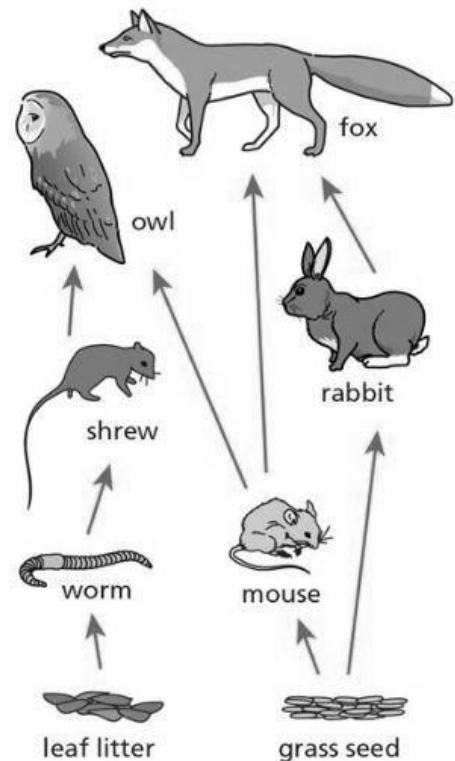
3. What organisms give energy to the owl?

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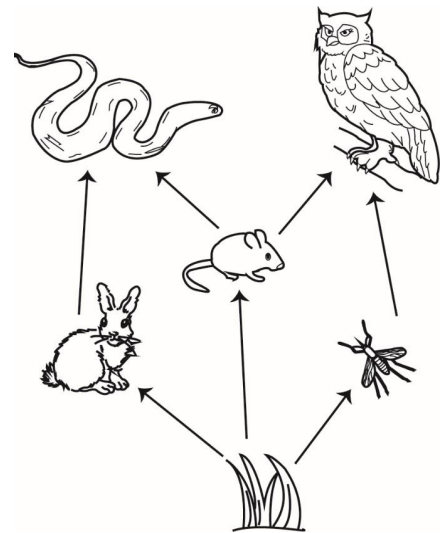
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