Chapter Science Investigation Name _____

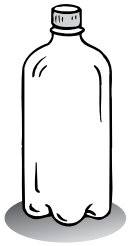
Making an Ecosystem

What You Need

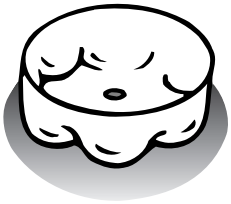
gravel

water with no chlorine

Use tap water. After the students have left their ecosystems out for two days, the chlorine will have evaporated from the water.



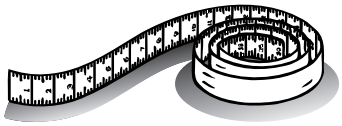
2-L plastic drink bottle



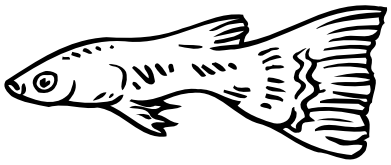
bottom of another bottle (There must be a small hole in it.)

fish food

two small elodea plants



meter tape



small guppy

1 fishnet

Find Out

Do this activity to see how plants and animals get what they need to live and grow from an ecosystem.

Process Skills

Constructing Models
Observing
Communicating

Time

- 40 minutes the first day
- 10 minutes a day for three weeks

What to Do

1. Wash the gravel until the water is clear. Remove the label from the bottle, then put a layer of gravel about 3 cm deep into the bottle. Gently bury the roots of the elodea plants in the gravel. Fill the bottle almost to the top with water.

2. Place the bottle where it will get light, but not direct sunlight.

3. After two days, use the fishnet to put the guppy gently into the bottle. Fit the bottom of the other bottle over the top of your ecosystem, and put one flake of fish food in your ecosystem through the hole in the top. You will need to feed the guppy one flake twice a week.

4. Set up three observation charts, one for each week. **Observe** your model ecosystem each day for three weeks and **record** what you see.

Daily Observations of an Ecosystem	
Week:	**Observations**
Day 1	
Day 2	
Day 3	
Day 4	
Day 5	

Conclusions

1. How did the plants get food?
Answers will vary. Children may say they used the sunlight to make food.

2. How did the plants help the guppy?
Answers will vary. Children may say they made bubbles that put air into the water. The guppy needed the air to live.

New Questions

1. What other things might also live in your ecosystem?
Answers may vary but students might note algae.

2. What changes might occur in your ecosystem if you added other living things to it?
Answers will vary but should include that additional organisms would give and take from the ecosystem to meet their needs. A snail would break down waste materials to be used by the plants. A snail also would contribute carbon dioxide to the system. Additional plants would contribute oxygen.

Name _____

ACTIVITY

Observing Part of an Ecosystem

What signs of animals did you find?
Students may see spiders' webs, ant hills, and the animals themselves.

What did you **observe** when you looked at topsoil with the hand lens?

Students should see different kinds and sizes of materials in the topsoil.

Draw pictures of the plants and animals you observed.
Classify them as living or nonliving.
Record how many of each plant and animal you saw.

Plants	How Many _____	How Many _____	How Many _____
Animals	How Many _____	How Many _____	How Many _____

Name _____

Conclusions

1. How many different kinds of nonliving things did you have in your ecosystem? What nonliving things did you have the most of?
Answers will vary but might include soil, rocks, sand, glass, plastics, and so on.

2. How many different kinds of living things did you have in your ecosystem? What living things did you have the most of?
Answers will vary but might include grasses and other plants; insects such as grasshoppers and beetles; seeds, earthworms, and so on.

3. Is anything in your ecosystem eating something else? How can you tell?
Answers will vary but might include evidence of organisms eating the plants and grass, opened seeds, or decaying plant and animal matter.

Asking New Questions

1. What other things might live in the ecosystem you observed?
Animals and other nocturnal life-forms could live there. Worms, birds, rodents, lizards, and other organisms could also live there.

2. Could you live in this ecosystem? Could a polar bear? Why?
It would be impossible for you or a polar bear to live in such a small space. It may be too warm for the bear year round.

Name _____

ACTIVITY

Making a Food Chain

Think of a food chain. What plant is in the food chain? Which animals are in the food chain? In the chart, **draw** or **write** the names of the plant and animals in the food chain.

Food Chain

Plant	**Animal**	**Animal**	**Animal**

Why did you choose the plant and animals in your food chain?

Students should indicate the producer/consumer relationships among the plant and animals they chose.

Name _____

Conclusions

1. Why did you have to use the names of both plants and animals for your food chain model?
A food chain always begins with a plant producer that is consumed by at least one animal consumer.

2. What different names did your classmates choose for their models?
Answers will vary but should include names of both plants and animals.

3. Would your food chain model still be a "chain" if you had used plant names only?
No. A food chain must include both plants and animals.

Asking New Questions

1. What would happen to your model if you removed one of the middle links from the chain?
The model would fall apart. The model would no longer represent a food chain.

2. In a real food chain, what happens to the consumers if all the producers disappear?
They will eventually die.

Name _____

ACTIVITY

Watching Worms

How did the worm move on the waxed paper the first time? The second time?
Students may say that the worm's body seemed to ripple and that it moved very slowly across the paper.

Draw a picture of the worm. Show the wiry hairs you saw with the hand lens.

How did the worm move on the soil the first time? The second time? Students may observe that the worm could move more easily through the soil.

Name _____

Conclusions

1. Over which surface does the worm move better?
soil

2. What adaptation helps an earthworm move over surfaces?
wiry hairs

3. Were your observations the same the second time you made them?
Student responses may vary. Results of similar scientific investigations seldom turn out exactly the same because of differences in the things being investigated or methods being used, or because of uncertainty in the observation. Students may wish to repeat the activity several times to improve the accuracy of their data.

Asking New Questions

1. Do you think the earthworm behaved the same in the box with soil as it would in its natural habitat?
Yes, because earthworms live in soil.

2. How are an earthworm's wiry hairs like the fins of a fish?
Both are adaptations that help an organism move.

