What is in an Ecosystem?
Classroom Activity

An ecosystem is an environment of any size in which living (biotic) and nonliving (abiotic) things interact and affect one another. An ecosystem may be very simple, such as a community of lichens growing on a rock, or very complex, such as the coastal sage scrub ecosystem.

SYNOPSIS

There are two parts to this activity. First, students will play a game similar to musical chairs in which they are components of an ecosystem. In the second part, students will role-play a living or nonliving element to learn how the components of an ecosystem interact.

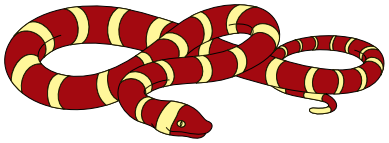
OBJECTIVES

Students will be able to:

- describe how living and nonliving things interact with each other
- describe how the food chain is affected if an element is disrupted or removed

VOCABULARY/CONCEPTS

- interaction
- ecosystem
- food web
- interdependence



MATERIALS

- ball of yarn
- safety pins or string
- classroom chairs (one per student less one)
- food web cards (photocopy and cut cards)
  one copy of pages 4-6
  two copies of page 7

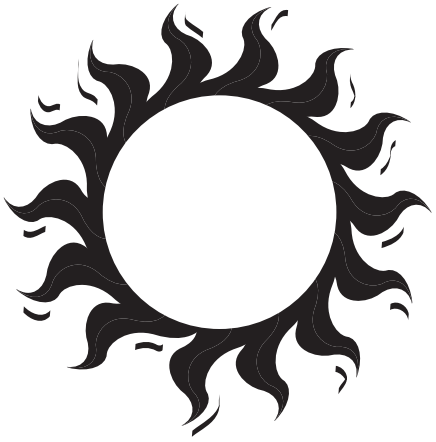
PROCEDURE - Part 1

1. Define the term ecosystem with the class.

2. Brainstorm with the students about the components of an ecosystem. Start with the familiar components found in any backyard (e.g., sun, plants, animals, air, water, and soil).

PROCEDURE (continued)

3. Record students' list on the chalkboard. Organize specific items into general categories. It may be necessary to define the terms living and nonliving with the class. Discuss with the students the importance of plants and the fact that they are the primary source of energy and matter entering most food chains.



EXAMPLE

Ecosystem

Living	Nonliving
plants	land
animals	air
	water
	sunlight

4. Pass around the interactions web cards and pin them to the students' shirts. After each student knows which ecosystem component he/she represents, form a large circle with classroom chairs. Use one chair less than there are students.

5. Have the students sit on chairs. One student is left standing in the center of the circle. As a quick review of the terms living and nonliving, have the "nonliving" students stand up and then sit down. Repeat for the "living" students.

6. The standing student is the "caller" who gets this ecosystem moving. The caller says: "living", "nonliving", or "ecosystem."

7. When living or nonliving is called, those students representing that component must leave the chairs and move to a newly vacated chair. The caller should also move to a chair. When all chairs are taken, the one student left standing is the new caller.

8. When the caller calls "ecosystem," all students representing all of the components must move to a new chair. This illustrates the fact that it takes the sum total of living and nonliving components to make up one healthy and complete ecosystem.

PROCEDURE - Part 2

To end the ecosystem game and to show how the living and nonliving components interact, the students will create an interaction web.

1. Have each student stand in a circle in front of a chair.

2. The teacher connects the interaction web together by having the students hold the yarn. First string together the nonliving parts (land -- air -- water -- sunlight) then the living parts (plants -- earthworms -- insects -- wood rat -- birds -- owls).

3. Once the web is in place, choose a student to tug on the yarn. The tug represents one component of the interaction web being altered; all of the students should feel the tug on the yarn.

4. To demonstrate extinction, choose the owl to become extinct and have "owl" students drop the yarn. What happens to the other ecosystem components? Now, eliminate the earthworms. Was the interaction web disturbed? This is evidence that all parts of the ecosystem are important.

5. Collect the ball of string and review.

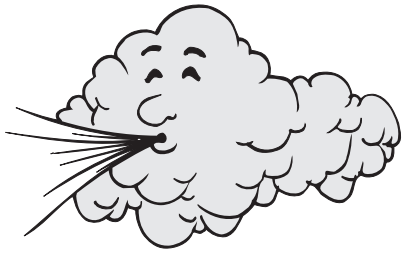
CHECK FOR UNDERSTANDING

- Have several students explain why they felt the tug on the yarn when the owl and the earthworms were removed.
- Ask students how living and nonliving things interact with each other.

EXTENSION

To demonstrate an alteration within an interaction web, have students determine which elements would be absent in a drought. These students take their chairs and return to their desks. (Water elements leave since lack of water signifies a drought.) Next, those students who believe their element is affected by drought explain why and return to their desks. (Plants and animals cannot survive without water.) Now, with only three nonliving components remaining (air, land, sunlight), ask these students if they are still part of a complete ecosystem (no). Have them sit at their desks. Since all of the components are back at their desks, the interaction web is again complete, including all living and nonliving parts. Ask students what they have created. The answer - an ecosystem!

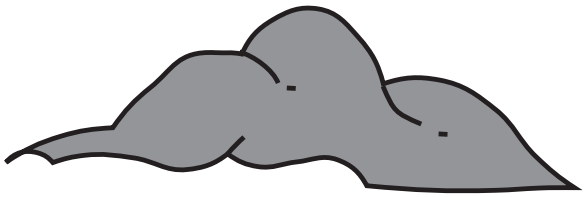
OWL



AIR

PLANTS

SUNLIGHT



LAND

WATER

PLANTS

PLANTS

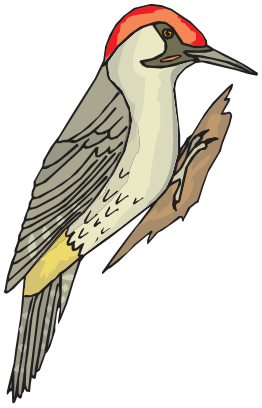
PLANTS

PLANTS

PLANTS

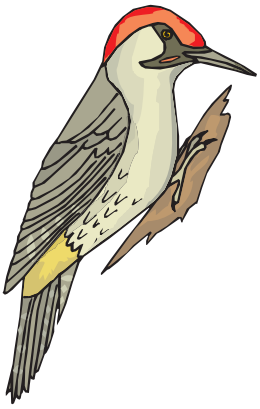
PLANTS

WOOD RAT



BIRD

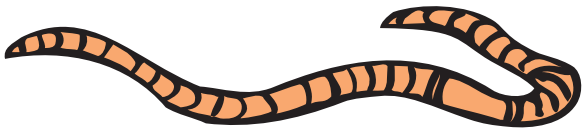
WOOD RAT



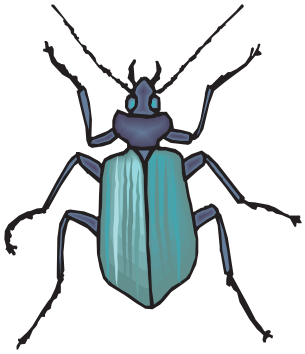
BIRD

PLANTS

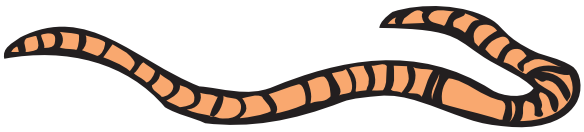
PLANTS



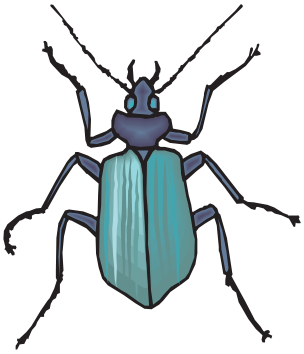
EARTHWORM



INSECT



EARTHWORM



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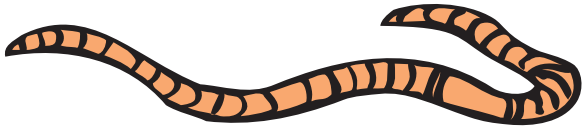
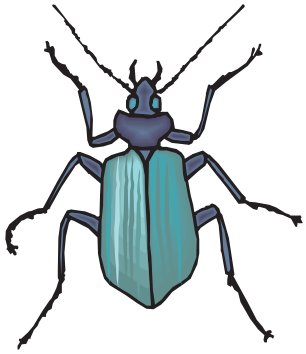


EARTHWORM



INSECT