

Learn the Terms

Grade 4

Focus on Concepts

- *species*
- *habitat*
- *ecosystem*
- *population*
- *nonnative species*
- *threatened*
- *endangered*
- *extirpated - extinct*
- *Endangered Species Act*

Many times the discussion of a new topic is accompanied by a group of new words. This activity will help students learn new terminology.

Objective

Students will be able to (1) define the terms used in discussions about endangered, threatened, and extinct species and (2) use the terms in a story.

Age

Grade 4

Time

One class room period of approximately 45 minutes.

Setting

The classroom, since a chalkboard is useful for displaying terminology. A pleasant outdoor setting would be nice on a dry, sunny day, provided a large writing surface (a white board or flip-chart and markers) is available.

Correlation

C: Life Science
D: Earth Science
E: Science and Technology
F: Science in Personal and Social Perspectives

Materials

- Paper cups, cupcake liners, or other appropriate small containers, enough for each student to have one with plenty of extras available
- Crackers (goldfish crackers or oyster/soup crackers), enough for each student to have ten crackers with plenty of extras available
- Cotton balls or marshmallows, enough for each student to have one
- Chalkboard, white board, or flip-chart (or any writing surface that can be visible to all the students)

Preparation

- Read the "Background Information" section found toward the beginning of this guide to familiarize yourself with the terminology used in this activity, pgs. 11-19 .
- Step #1 under "Procedure" should be completed prior to beginning this activity. Time: 5 to 10 minutes.
- Option: Graph population decline and increase as you read the story.

Procedure

1. Prepare cups of crackers (with ten crackers in each cup) for all the students.
2. Divide class into Groups A and B. Give each student a cup of crackers; be sure to ask them not to eat the crackers!
3. Write the following words on the board one at a time: *species*, *habitat*, *ecosystem*, *population*, *non-native species*, *threatened*, *endangered*, *extirpated*, *extinct*, and *Endangered Species Act*. (Illustrate the terms with the actions and discussions provided below. Definitions are provided in italics for your reference.)
4. Say, "All the crackers in your cup are the same kind of cracker; in other words, they are all the same species."

Species

A group of genetically related organisms that reproduce with one another and produce fertile offspring. Members of the same species are very similar in physical structure and behavior.

5. Mention and describe different examples of species to the class. Say, "We are all human beings. We are all members of the same species."

6. Develop a profile of a "cracker species" with your class and select an ecosystem for the species. The crackers can represent any species the class is already familiar with, or it can be a new imaginary species. Write the description of the species on the board as it develops. (Note: The "answers" in parentheses after the following questions are merely examples; encourage your class to create their own.)

- a. What is the cracker species called? (the cracker frog)
 - b. What does the cracker species eat? (bugs, snails, and crackers)
 - c. What eats the cracker species? (birds, alligators, and even students!)
 - d. Where does the cracker species live?
7. Use the species profile developed by your class to illustrate the remaining terms.
8. Say, "The paper cup represents the cracker species' habitat. Imagine your species can find food, water, shelter, and living space here. Another word for habitat is 'home.'"

Habitat

The place where a plant or animal lives or the place one would go to find it.

9. While developing the cracker species' profile, your class should have selected an ecosystem. Use your class's choice to illustrate the following.

Say, "The cracker species' habitat is found within the ecosystem. The air, water, soil, and any living things found here are all part of this ecosystem. The cracker species depends on all of these things that are part of the ecosystem for a healthy habitat and for survival."

Ecosystem

An ecosystem consists of all the living parts (for example, plants and animals) and nonliving parts (such as soil, water, and air) in any size area interacting among themselves and linked together by energy and nutrient flow.

10. Say, "All the crackers in your cups make up a population of the cracker species. You each have a healthy population of ten crackers in your cups."

Population

The number of a particular species in a defined area.

11. Have each of the students eat one cracker.

12. Say, "Now you each have a population of nine crackers." Tally up the total number of crackers in the class.

13. Explain to the students that events are taking place which will affect the species.

14. Give each student a cotton ball to place in the cups.

15. Say, "Something is happening to the ecosystem; a nonnative species has invaded the ecosystem and is taking over the cracker species' habitat. This species does not fit in and will upset the stability of the

ecosystem by out competing native species for food, water, and shelter.

Nonnative species

A species that does not naturally occur in a particular environment but has been introduced from another region or country, most likely by humans. Nonnative species do not have natural controls such as disease and predators to keep their populations under control.

16. Ask the students to eat three of their crackers (six crackers are now left). Tally up the total number in the class.

17. Ask, "How many crackers are left? Your cracker populations have declined because of the nonnative species; the cracker species is now threatened."

Threatened

Any species that is likely to become endangered within the near future—a species whose numbers are dropping.

18. Explain to the students that events are taking place which will affect the cracker species.

19. Say, "Poorly planned development and nonnative species are destroying the species' habitat."

20. Have group A members gently squeeze or crumple their paper cups. Make sure they do not crush their crackers. Explain that this action illustrates the destruction of habitat.

21. Ask those students with crushed cups to eat three more crackers (they now have three left). Make sure those who do not crush their habitat cups do not eat their crackers (they still have six crackers left). Have them tally up the class total.

22. Ask, "How many crackers are left? Some cracker populations have continued to decline because of

habitat destruction. The cracker species is now in danger of disappearing; it is endangered."

Endangered

Any species that is in danger of extinction throughout all or most of its range; a species that is in danger of disappearing from its ecosystem.

23. Explain that events are taking place which will affect the species.

24. Say, "Air and water pollution are harming the ecosystem. Although we cannot see these pollutants, they are still a threat."

25. Ask all the students to eat three crackers. (The students with crushed cups will have no crackers left; the remaining students will have three.)

26. Say, "Now the cracker species is missing from half of the classroom. The cracker species is extirpated from that half. The species still exists in the other half, but it is still endangered."

Extirpated

When a species is eliminated from a significant portion of its range but still survives in other areas.

27. Explain to the class that events are taking place which will affect the species.

28. Ask, "What will happen if populations of the cracker species continue to decline? There will be no more crackers, and the species will be extinct; it will no longer exist."

Extinct

When a species is no longer in existence anywhere in the world, it is considered to be extinct.

29. Say, "Let's pass a law to protect the remaining cracker species so they don't disappear and become extinct. The law that exists today which protects endangered and threatened

species in the United States is called the Endangered Species Act.”

Endangered Species Act

A law designed to protect endangered and threatened species and their ecosystems and to help prevent their extinction.

30. Say, “We can help save endangered and threatened species, and their ecosystems.”

Help the class develop a list of ways to help the cracker species and its ecosystem. Explain that these methods can also be used to help endangered and threatened species and ecosystems in Tennessee. Write their ideas on the board. (Refer to pages 19 and 149 of the “Background Information” section for ideas to help get started.)

31. As each idea is presented say, “We are repairing the cracker species habitat. Biologists call *repairing habitat* **Habitat Restoration**.

To symbolize repairing their cup, give each student a piece or pieces of tape to straighten their cups.

Say “Because we have restored the cracker species habitat they are making a comeback.” Then give each student crackers to add to their cups.

Say, “By restoring their habitat, we are restoring their ecosystem.”

32. Ask the students, “How can we help endangered and threatened species and their ecosystems in TN like we did for the cracker species?”

Explain that many people like biologists work everyday to bring back species and ecosystems in Tennessee. Each of us can help by conserving water, not littering, and recycling.

Discuss other options for habitat conservation and habitat restoration.

If available in the news, discuss other examples of habitat and species restoration in the local community or in the state.

Evaluation

- The following day mix up and write the following terms on the board; they occur in the following order: species, habitat, ecosystem, population, non-native species, threatened, endangered, extirpated, extinct, and Endangered Species Act.
- Read “The Cracker Frog” story (see next page) to the students. Ask the students to fill in the blanks in the story with the appropriate terms. (Remember that the cracker frog is a fictional species. This is a simplified story to illustrate the complex process of extinction.)
- Have each student make up an ending to this story, describing what steps they would take to save the cracker frog. Have the students share their story endings with the class.

The Cracker Frog

Once a tiny frog, the **Cracker Frog**, lived in a Tennessee swamp. He was small, dark, and slimy, about the size of a quarter, with beautiful yellow spots. The frog and all the other cracker frogs just like him were all members of the same _____. There were 100 cracker frogs in the local _____.

You could find cracker frogs living underneath muddy logs, where they found bugs and snails to eat. This place, the cracker frog's home, was its _____. The logs, bugs, water, air, plants, mud, and all the other creatures nearby were part of the swamp _____. The little frogs, although small and hidden, were very important to the swamp. They helped keep insect numbers down, and other creatures needed the frogs for food. Alligators and wading birds ate the cracker frogs, at least the ones they could find.

One summer a shopping center was built next to the swamp. During the construction, several springs that ran into the swamp were covered with dirt. The water from the springs no longer could get to the swamp, and the swamp began to shrink. As the swamp ran out of water, the cracker frogs began to disappear. Soon there were only 50 cracker frogs remaining.

Biologists from the U.S. Fish and Wildlife Service had been keeping track of the frogs. They knew that the number of frogs was dropping. They designated the cracker frog as _____. This meant that the cracker frogs and their swamp were now protected by law. This law is called the _____. The next summer came and went with very little rainfall. The swamp continued to dry up, and the cracker frogs could no longer find muddy logs to hide under or insects to eat. They were in danger of disappearing from the local swamp; they were in danger of becoming _____.

Other populations of cracker frogs also were in trouble. A rat, native to Europe, somehow found its way to the United States and began invading swamps everywhere. These rats are known as _____. The rats ate the frogs and took over the food and space from cracker frogs and other native species. Soon the frogs were in danger of disappearing from the entire world. The cracker frog would no longer exist; it would be _____. The U.S. Fish and Wildlife Service changed the designation of the cracker frog to _____.

To be continued . . .