

Going...Going...Gone!

Subject: Science, Math

Duration: 45-60 minutes

Location: Classroom

Key Vocabulary: Organism, population, extinction

Related Activities: Where Have Our Plants and Animals Gone?; And Then There Were None; The Incredible Shrinking Habitat; Who's Killing Our Fish?; Population Interaction

Florida Sunshine State Standards: SC.4.L.17, SC.5.L.15, SC.6.L.14



Materials

One set per six students:

- Permanent marker
- 3 pairs of scissors
- Construction paper - 3 sheets of different colors
- One plastic lid, rimmed
- One paper fastener
- One safety pin
- One container, e.g., shoe box, which represents the lake
- One die/dice (optional)

Objectives: The students will be able to: a) list two of the factors involved in the extinction of small populations, and b) differentiate between an individual organism, a species, and a population.

Method: Students will play a game which demonstrates extinction in small populations.

Background: Species become extinct for a variety of reasons. Some are not able to adapt to changes in their environment; others may lose their habitat. Extinction is part of the natural process. Today, however, the rate of extinction is much greater than it has ever been. Human's intervention has led to destruction of habitat and overharvesting of certain species. This can lead to a much more rapid extinction of species than would occur in the natural course of events.

Suggested Procedure

1. Divide the class into groups of six. Have each group of six gather the materials listed above. Then divide each group into teams of two.
2. Each team of two is to cut out six uniformly shaped fish from one of the sheets of colored construction paper. The fish should fit in the box. The six fish of the same color represent one species. For example:
BLUE = Bass
GREEN = Sunfish
RED = Spotted Gar
3. Show the students how to construct a spinner: Use a permanent marker to divide the upper surface of a lid into three equal sections. Label the sections **KEEP**, **RELEASE**, and **SORRY, NO LUCK**. Insert a metal paperclip through the closed end of the safety pin, push the clip through the center of the lid, and spread its ends apart.

4. Object of the game: Teams must attempt to predict how many fish can be removed (how many times they need to spin) before the population becomes extinct. Ask the students what this prediction is based on. Is it the mathematical probability of how frequently the spinner lands on each of the three sections? Realistically, when all but one fish of a certain color is removed, the population is extinct. Why is this so? (Because no reproduction can take place.)
5. Review the rules: Decide who goes first by rolling a die. Each player takes a turn. If the spinner lands exactly on a line, the player spins again. Each player fishes for his/her team's color of fish. When the spinner lands on **KEEP**, remove a fish and keep it for lunch. When it lands on **NO LUCK**, no fish is caught, and when it lands on **RELEASE**, remove the fish but return it to the "lake" (box). Explain that this catch and release method may help to keep this population of fish from going extinct.
6. The game is over when one team has removed all six of its fish. The first team to remove all of its fish is the loser. Why? (Because it has helped that population of fish in the lake to become extinct.)

Evaluation

Use these types of questions to discuss the activity:

- Did the team that removed all of its fish first win this game? Why or why not?
- What caused the extinction of the species?
- What are some possible effects the extinction of a species could have on other fish populations? How could you have prevented a species that went extinct from going extinct? Are there some other ways?
- Describe the difference between an individual organism, a species, and a population.
- Describe two reasons for concern when a population becomes extinct.
- What are two factors that might make a population decrease?
- What are two ways humans might make a population increase?

The following are several events that occur in nature. Have students circle the worst one and explain why.

- Organism Death
- Population Extinction
- Species Extinction

