

And Then There Were None

Subject: Science, Social Studies

Duration: One class period

Location: Classroom / Outdoors

Key Vocabulary: Endangered, threatened, extinct, population

Related Activities: The Advertising Game; Population Interaction; Where Have Our Plants and Animals Gone?; Survival: Risky Business

Florida Sunshine State Standards: SC.G.2.2



Objectives. The student will be able to: a) define the terms threatened/endangered/extinct, b) analyze the impact of humans on other living things as a result of human social, economic, and political activities, and c) name three endangered species living in South Florida national parks.

Method. The students will play a game which portrays how animal populations are reduced by human impacts.

Background. South Florida national parks are home to a tremendous diversity of plants and animals. Many of these habitats are being destroyed or altered by humans. Diversion of water, construction of roads, agricultural pollutants, and many other factors affect the ecosystem and the plants and animals that live here. As habitats are destroyed, danger of extinction increases for these plants and animals. Today, South Florida's national parks are home to fourteen threatened or endangered animal species. Refer to the "Natural History" section of this guide for more information.

Materials

- Blackline masters - "I Am" and "Survival Factors"
- Masking tape
- Six small slips of paper (or tokens) for each student, to represent populations of organisms

Suggested Procedure

1. Copy and cut the blackline masters into cards (you may want to laminate them). Cut six small strips of paper for each student (or use tokens).

2. Have students stand in a large circle. Tape one of the "I AM" cards with the name of an animal or plant to their shirts. If there are more than 31 students in your class, some plants and/or animals may need to be used more than once. The plants and wildlife listed on the blackline master "I Am" are mostly endangered species or ones that could become endangered. They are all native to South Florida.

3. Distribute the 6 pieces of paper (or the 6 tokens) to each student. Tell them that the papers/tokens represent a population of organisms (an organism is any living thing). Review the population concept. Remind them that a population is all organisms found in a specific area; there are plant and animal populations;

and the size of a population is determined by the number of individuals. The populations represented by the slips of paper/tokens given to the students, are all the same size. Each slip of paper/token represents hundreds of organisms.

4. Tell the students that you are going to read some statements. Give them the following instructions:

- A. Everyone stand up in a circle.
- B. I am going to read some “survival factors.”
- C. Each time I read a statement that limits or reduces your chances of survival, put one of your slips/tokens on the floor in front of you.
- D. Whenever I say, “Human Population Growth is increasing,” everyone turns in a slip/token.
- E. When you have two slips/tokens left, sit down on the floor and say, “I’m in big trouble.”

5. Draw the “survival factors” from a box or hat and read them off one at a time. Continue to draw factors until everyone is sitting. During the game ask questions such as: How many of you have slips left? How many have none? Is this game life-like? Why or why not? What are the important ideas in this game?

6. Write the words **EXTINCT** and **ENDANGERED** on the chalkboard. Tell students that their populations became endangered when they became small in number. Endangered refers to any population of plants or animals in danger of extinction, but there are still some left. Extinction is final. It means the plant or animal is “gone forever.”

7. Ask students to close their eyes and imagine a famous landmark like the statue of liberty being torn down or losing a favorite possession that was never found. If they can imagine that then they have some idea and feeling about extinction.

8. Tell students that there is an official list of endangered species. Plants and animals are placed on this list after careful study and review by the Office of Endangered Species, U.S. Fish and Wildlife Service. Tell them that there are now fourteen endangered species living in South Florida’s national parks. However, there used to be more. Due to protection for animals like the bald eagle, the alligator, the brown pelican and the arctic peregrine falcon, their populations have recovered to sufficient sizes for these species to be taken off the endangered list.

Evaluation

What are factors that influence the survival of populations of plants and animals in South Florida national parks? Can you think of some factors that this game did not consider? Does this game contain any facts? What are they? Are they accurate? How could you find out? Did populations have any choices? Why or why not? How could this game be changed to make it even more like real life? How would you change this game to have winners? (Does this game have any winners?) Do populations lose this game by chance?

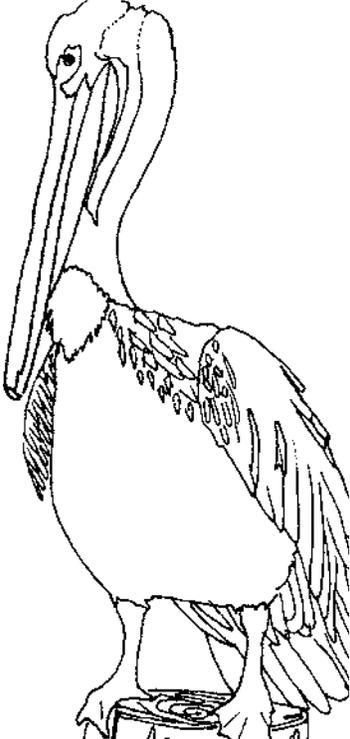
Extension

Have students come up with a list of survival factors that would increase each population’s chance of surviving. For example, an oil company has come up with a new way of transporting oil that greatly reduces the chance of oil spills.

“I AM” Cards

I AM a Florida Panther (Mammal)	I AM an Indigo Snake (Reptile)
I AM an American Alligator (Reptile)	I AM a Red Cockaded Woodpecker (Bird)
I AM an Atlantic Ridley Turtle (Reptile)	I AM a Pink Shrimp (Crustacean)
I AM a Green Turtle (Reptile)	I AM a Key Largo Cotton Mouse (Mammal)
I AM a Hawksbill Turtle (Reptile)	I AM a River Otter (Mammal)
I AM an Arctic Peregrine Falcon (Bird)	I AM a Key Largo Wood Rat (Mammal)
I AM a Brown Pelican (Bird)	I AM a Southern Bald Eagle (Bird)
I AM a Cape Sable Seaside Sparrow (Bird)	I AM a West Indian Manatee (Mammal)
I AM an American Crocodile (Reptile)	I AM a Snail Kite (Bird)

“I AM” Cards

<p>I AM a Green Anole (Reptile)</p>	<p>I AM a South Florida Slash Pine (Plant)</p>
<p>I AM a Largemouthbass (Fish)</p>	<p>I AM Turtle Grass (Brackish/saltwater aquatic plant)</p>
<p>I AM Sawgrass (Plant)</p>	<p>I AM a Gumbo Limbo Tree (Plant)</p>
<p>I AM a Red Mangrove (Plant)</p>	<p>I AM a Great Egret (Bird)</p>
<p>I AM a Cypress Tree (Plant)</p>	<p>I AM a Scarlet King Snake (Reptile)</p>
<p>I AM a Clamshell Orchid (Plant)</p>	
<p>I AM an Apple Snail (Mollusk)</p>	
<p>I AM a Tree Snail (Mollusk)</p>	
<p>I AM a Schaus' Swallowtail Butterfly (Insect)</p>	

SURVIVAL FACTORS

<p>A major road is built across your habitat dramatically increasing traffic.</p>	<p>A poacher has shot you illegally.</p>
<p>Recreational power boaters ignore the posted speed limit in your habitat.</p>	<p>Not enough fresh water has reached the Florida Bay estuary, making it too salty for you to survive.</p>
<p>Mercury contamination in the water is ultimately affecting your food source.</p>	<p>An oil tanker has spilled thousands of gallons of oil into Florida Bay.</p>
<p>Your habitat and lumber are used for construction paper.</p>	<p>Agricultural fertilizers have washed into the Everglades.</p>
<p>A hardwood hammock is cleared, destroying your habitat.</p>	<p>Pesticides have polluted Everglades water.</p>
<p>People have released fish from their aquariums into the Everglades and they are overpopulating your habitat.</p>	<p>An oil company is paid to test the effect of oil drilling off the Florida Keys.</p>
<p>Fire has burned the pinelands.</p>	<p>New zoning allows development nearby but protects your critical habitat.</p>
<p>A four year drought has affected the water level in Lake Okeechobee and the Everglades.</p>	<p>The exotic melaleuca tree has encroached into your habitat.</p>
<p>The East Everglades restoration project restores the flow of water to an area that has been dry for some time.</p>	<p>Drought and fire.</p>
<p>Your habitat is threatened by oil drilling in Big Cypress National Preserve.</p>	<p>You have been logged for building materials and furniture.</p>
<p>Human population growth increases.</p>	<p>Because you are rare and beautiful, you have been gathered or stolen by collectors.</p>
<p>Silt from agriculture pollutes the water entering Lake Okeechobee and the Everglades.</p>	<p>In the past, you were hunted for your plume feathers which were used in ladies' hats.</p>