

Going...Going...Gone!

Subject: Science

Duration: 30 minutes

Location: Classroom

Key Vocabulary: Native, Exotic, Endangered, Extinct, Competition, Alien

Related Activities: Unwanted Guest, Go Back Home, Fishy Business Break the Chain, Population Explosion, Everglades “Most Wanted”

Florida Sunshine State Standards: SC.D.2.2, S.C.G.1.2, SC.G.2.2, SS.B.2.2



Objectives. The students will be able to 1) define the terms native, alien, endangered and extinct; 2) explain the impact of exotic vegetation to natural communities; 3) name at least three native and three exotic species found in South Florida.

Method. The students will participate in an activity which mimics how wildlife populations are reduced by invasive alien species.

Background. People play a significant role in the movement of species around the world. While this distribution is sometimes accidental, certain industries (such as agriculture, horticulture and research) depend on the constant flow of new plants to areas around the globe. While the vast majority of these alien species remain in cultivation, the few that escape can become invasive and pose serious consequences to an ecosystem.

Of particular concern to South Florida are a number of alien plant species that threaten to overtake and displace native vegetation on a large scale. Melaleuca, Brazilian pepper, and Lygodium are but a few of the alien species that are capable of producing vast monocultures (communities comprised of only one species) over the landscape. These plants are able to successfully utilize limited resources to dominate natural communities. These invasions often result in a non-diverse monoculture that proves inhospitable to all but the heartiest of wildlife. The loss of these viable, healthy habitats continues to be problematic for a number of endangered species that depend on them, and may ultimately threaten them with extinction!

Suggested Procedure

1. Copy and cut the blackline masters into cards. Cut five strips of paper for each student.
2. Have students stand in a large circle. Tape the name of an animal or plant to their shirts (taken from the “I Am” blackline master). If there are more than 15 students in your class, some plants and/or animals may be used more than once. The plants and wildlife found on the blackline master “I Am” are all native species that are found in South Florida. Some are currently endangered.

Materials

- Blackline Masters - “I Am” and “Survival Factors”
 - Tape
- 5 small slips of paper or poker chips for each student

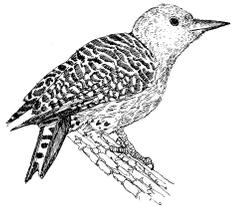
3. Distribute five pieces of paper to each student. Tell them that the papers represent a population of organisms. Review the population concept. Remind them that a population is all the organisms of a species found in a specific area; there are plant and animal populations; and the number of individuals determines the size of a population. The student populations are all the same size. Tell them that each slip of paper represents hundreds of organisms.
4. Tell the students that you will be reading 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 on the floor in front of you.
 - d. Whenever I say, "new alien introduction", everyone puts a slip down.
 - e. When you have two slips left, sit down on the floor and say, "I'm in big trouble!"
 - f. When you're sitting, keep playing until you are out of slips completely.
5. Continue to play until everyone is sitting. Discuss the game, asking questions such as: "How many of you have slips left? How many have none? Is this game like what happens in nature? Why or why not? What are the important ideas about 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; there are still some left. The students who had two slips or less were endangered. Extinction is final; the plant or animal is "gone forever." The students that lost all their slips became extinct.
7. Ask students to close their eyes and imagine a famous landmark like the Statue of Liberty being torn down or losing a favorite toy that was never found again. If they can imagine that, then they have some idea and feeling about extinction.
8. Tell students that because of the effects they've just demonstrated, there are a number of alien species that are illegal to own in Florida. Plants are placed on this list after careful study and review by many groups including the Florida Department of Environmental Protection, the Florida Department of Agriculture and Consumer Services, and the U.S. Department of Agriculture.

Evaluation

Summarize the lesson with a discussion. Use these kinds of questions:

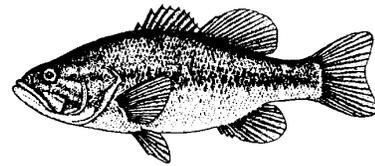
What are some of the factors that influence the survival of both native and alien species in South Florida? Can you think of some factors that this game did not consider? Does this game contain any facts? What are they? Are they accurate? How could you find out? Did populations have any choices? Why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

I Am a Red-Cockaded Woodpecker



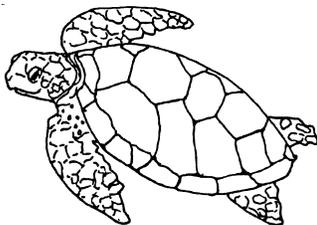
**I am endangered.
I nest in old, living pine trees.
I feed on native fruits and insects.**

I Am a Largemouth Bass



**As an adult, I live in open waters.
My babies hide in native aquatic plants.
I am very popular with fishermen.**

I Am a Loggerhead Sea Turtle



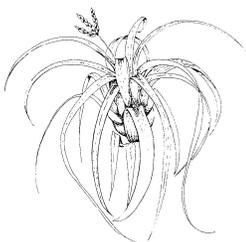
**I am endangered.
I live in the ocean.
I nest on the beach.**

I Am Sawgrass



**I grow in open, sunny environments.
I need lots of water to survive.
I am shelter to many animals.**

I Am a Cardinal Air Plant



**I live on cypress trees.
I am a bromeliad.
I don't like shade.**

I Am a Fox Squirrel



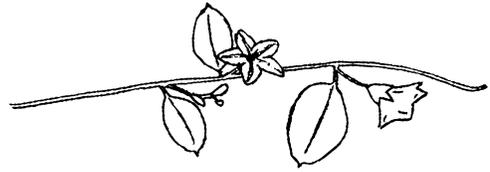
**I am endangered.
I live on cypress trees.
I sometimes nest in bromeliads.**

I Am an American Crocodile



**I am endangered.
I nest on the beach.
I need open areas to warm myself.
My young live among the mangroves.**

I Am a Pineland Jacquemontia



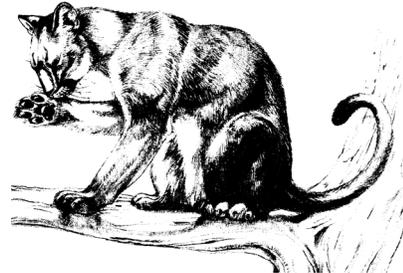
**I am a very rare plant.
I need sunlight to grow.
I live only in pinelands.**

I Am a Slash Pine



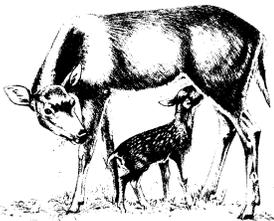
**I need sunlight to keep growing tall.
I need fire to keep me healthy.
Many animals use me as a home.**

I Am a Florida Panther



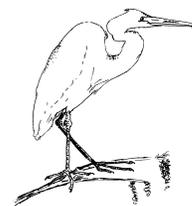
**I am endangered.
I stalk deer in open prairies.
I spend my days in cool hammocks.**

I Am a White-Tailed Deer



**I feed in open prairies.
I find shelter in hammocks and
pinelands.**

I Am a Great Egret



**I hunt in open waters.
I often nest in mangroves.
I spend lots of time in the sawgrass.**

I Am a Zebra Longwing



**I am an insect.
I feed on nectar from flowers.
I am Florida's state butterfly.**

I Am Periphyton



**I am a combination of alga.
I thrive in the shallow waters.
I grow around plants like sawgrass.
I need sunlight to live.**

I Am a Bladderwort



**I live in shallow water.
I need water to keep me healthy.
I need lots of sunlight to keep
growing.**

Survival Factors

A resident of Miami throws a strange plant from her fishpond into her backyard canal. The plant is water hyacinth and as it spreads, it shades sunlight from other submerged plants.

A tree called melaleuca grows uncontrollably and quickly converts open sawgrass prairies into a dense, closed forest.

Brazilian pepper is introduced and begins to grow and reproduce rapidly. These new invaders eventually shade out smaller plants.

A tiny weevil that was accidentally introduced during the importation of exotic air plants threatens the health of native bromeliads.

New alien introduction!

Australian pines planted as windbreaks along the coast grow thickly on the shore and prevent access to the beach.

Melaleuca continues to spread and takes over a wet cypress forest.

Hydrilla reproduces and spreads, crowding our shallow waterways and displacing other aquatic plants.

Because there is only so much money to go around, funds that fight the growth of exotic plants take away money from programs to save endangered species!

Survival Factors

A couple of Cuban tree frogs stow away aboard an imported palm tree. Upon arriving, they find a smorgasborg and begin to feed on insects!

The thick growth of both aquatic and terrestrial exotic plants in our canals and wetlands stymies the flow of much-needed water to the Everglades.

Old World climbing fern continues to spread along the coast and eventually covers a huge stand of mangrove trees.

The spread of alien species continues to reduce the number of native wildflowers.

New alien introduction!

Exotic fire ants that were accidentally introduced to South Florida in potted plants make their way to the beach, where they invade the nests of native wildlife.

Air potatoes releases hundreds of bulbs which will sprout quickly into a thick tangle of climbing vines that can shade out tall trees and small plants.

Wildfire breaks out in an area that is infested with exotic plants. The growth is so thick, the fire climbs into the canopy of the tall trees.