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Subject: Science

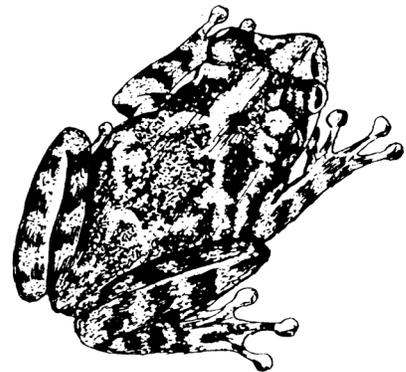
Duration: 30-45 minutes

Location: Outdoors

Key Vocabulary: Food chain, exotic, native, habitat, competition, producer, consumer, herbivore, omnivore, carnivore

Related Activities: Unwanted Guest, Population Explosion, Break the Chain, Going...Going...Gone!, Everglades "Most Wanted," Fishy Business

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 a food chain and give at least one example of a food chain; 2) define exotic and native species and state at least one example of each; 3) explain how exotic species can harm native species.

Method. Students will play an active game depicting the interactions in a habitat and the problems that occur with exotic species introduction.

Background. The natural food chain within a habitat is finely tuned. For any species to survive within a habitat four components are needed: food, water, shelter, and space. Exotic species can take these components away from native species.

Materials

- 5 bases
- Blackline Master - "Organism Cards"

Suggested Procedure

1. In an open area place bases equally apart. Instruct students to form a circle around the bases. Tell students that the each base represents a different habitat in South Florida. (i.e. one base is a mangrove estuary, another is a sawgrass marsh. To help clarify, small signs can be placed on or near each base so students know which habitat it is)
2. Pass out organism cards. Each student should have one with either a native or exotic species on it. Make sure that every component of a food chain is represented.
3. Have students walk quickly around bases while you play music or count to 10. When music or counting stops students must go to the nearest base (habitat). Only 4-6 students can stop at each base.
4. After students have settled at the bases ask them to read the information that is written on the back of each card. Based on that information, they must form a food chain. The food chain should have at least one producer, one herbivore, one carnivore and one exotic at each base. Note: Some exotics will compete for food and natives do not eat others. Make sure the students pay close attention.

5. Have each student who is an exotic raise his or her hand. Ask them what species they are and how they alter a habitat and the animals that are found within it. If a native species is affected, the student with that card is now out. Note: Some exotics destroy an entire habitat. When this happens all the other species that were on the base are now dead.
6. Record how many native species or habitats were destroyed by exotics.
7. Play another round. If any habitats were destroyed take that base away and those students that were native species must sit out. The student(s) that were exotics are able to continue since exotics are able to spread easily.
8. Once the music or counting stops repeat steps 4 through 6.
9. Continue for a total of 3 rounds or until all native species are gone.

Evaluation

Once the game is over ask the students what they think happened during the game. Were native species able to compete with the exotics? Did the exotics disrupt the food chain? How? What would this do to an ecosystem?

Organism Cards

MAYAN CICHLID	<ul style="list-style-type: none">• Exotic fish• Varied diet• High tolerance to salt water• Competes with native fish for food• Preys on young tarpon and snook• Very aggressive feeder
WHITE TAILED DEER	<ul style="list-style-type: none">• Native mammal• Herbivore• Browses mostly on grass and young plants• Primary food of panthers• Large alligators will prey on deer sometimes
EUROPEAN STARLING	<ul style="list-style-type: none">• Exotic bird• Travels in very large flocks• Can damage trees when flocks land on them• Spreads diseases
BLUE TILAPIA	<ul style="list-style-type: none">• Exotic fish• Tolerance to cold• Responsible for lower shad numbers• Compete with native fish for food• Competes with native fish for breeding grounds• Native fish don't prey on it
CUBAN TREEFROG	<ul style="list-style-type: none">• Exotic amphibian• Carnivore• Feeds on invertebrates• Eats smaller native tree frogs• Inedible for many snakes and birds
WOODSTORK	<ul style="list-style-type: none">• Native bird• Endangered species• Carnivore• Needs 3 ½ lbs. of fish per bird for young to survive.• Eats small fish only

Organism Cards

<p>AUSTRALIAN PINE</p>	<ul style="list-style-type: none">• Exotic plant• Sterilizes ground• Stops growth of food for herbivores• Displaces native plants that grow near salt water• Interferes with sea turtle nesting
<p>SAWGRASS</p>	<ul style="list-style-type: none">• Native plant• Covers 75% of fresh water habitat• Apple snails lay eggs on sawgrass stalks• Deer eat sawgrass• Main habitat for alligators, wading birds, apple snails
<p>SABAL PALM</p>	<ul style="list-style-type: none">• Native tree• Provides food for wildlife, like deer and bears• Provides shelter for birds and lizards• The bases of old fronds (boots) sticking out from trunk provides growing spots for ferns and bromeliads
<p>LARGEMOUTH BASS</p>	<ul style="list-style-type: none">• Native fish• Carnivore• Feed on smaller fish and invertebrates• Lay eggs in shallow nests• Found in all clear freshwater
<p>SNOOK</p>	<ul style="list-style-type: none">• Native fish• Species of special concern• Found in saltwater• Carnivore, feeds on small fish and crustaceans
<p>PURPLE MARTIN</p>	<ul style="list-style-type: none">• Native bird• Carnivore, eats insects (insectivore)• Uses manmade houses for breeding and raising young• Dependent on these houses for raising young

Organism Cards

<p>FLORIDA PANTHER</p>	<ul style="list-style-type: none">• Native mammal• Endangered species• Carnivore, deer and hogs are preferred food• Lives in hammocks, pinelands, cypress swamps, sawgrass marshes• Not enough large prey at times
<p>GREEN TREEFROG</p>	<ul style="list-style-type: none">• Native amphibian• Carnivore (small insects)• Found on plants near water• Found in most moist habitats
<p>BROMELIADS</p>	<ul style="list-style-type: none">• Native plants• Water pockets formed by leaves provides habitats for treefrogs• Several species are endangered• Tend to grow on host trees with rough bark• Collects nutrients from the air
<p>MOSQUITO FISH</p>	<ul style="list-style-type: none">• Native fish• Insectivore (eats insects)• Found in freshwater sloughs and rivers• Eat as many as 100 mosquito larva per day
<p>KEY LARGO WOODRAT</p>	<ul style="list-style-type: none">• Native mammal• Endangered species• Omnivores• Dependent on diversity of tropical hardwood fruits• Found in only mature hammocks
<p>LEATHERBACK SEA TURTLE</p>	<ul style="list-style-type: none">• Native reptile• Endangered species• Omnivore, feeds on jellyfish and algae• Found in saltwater• Largest living sea turtle• Builds nests on sandy beaches

Organism Cards

<p>BURMESE PYTHON</p>	<ul style="list-style-type: none"> • Exotic reptile • Reaches up to 26ft in length • Preys on medium to large mammals • Eats fish, mammals, reptiles, birds which threatens a large variety of animals • Has been known to eat wood storks, an endangered species
<p>MELALEUCA</p>	<ul style="list-style-type: none"> • Exotic tree • Grows in almost any habitat • Destroys habitats, turning them into melaleuca forests • Uses 4 to 5 times more water than sawgrass • Poor quality habitat for wildlife
<p>BROMELIAD WEEVIL</p>	<ul style="list-style-type: none"> • Exotic insect • Larva drills into the leaves of bromeliads • 2 species of bromeliads now endangered because of weevil • no natural predators
<p>NINE-BANDED ARMADILLO</p>	<ul style="list-style-type: none"> • Exotic mammal • Feeds on reptiles and amphibians • Digs up the roots of plants • Carry diseases
<p>LYGODIUM</p>	<ul style="list-style-type: none"> • Exotic plant • Climbing fern, covers the canopy of trees • Can cover an entire forest • Roots may alter the flow of water in wetlands • Increases chance of fire in cypress habitats
<p>APPLE SNAIL</p>	<ul style="list-style-type: none"> • Native invertebrate • Herbivore • Favorite food is periphyton • Major food source for endangered snail kite • Alligators and limpkins also eat snails

Organism Cards

<p style="text-align: center;">BALD CYPRESS</p>	<ul style="list-style-type: none"> • Native tree • Important plant species in Big Cypress National Preserve • Provides a place for native air plants to grow, including endangered ones • Provides roosting for birds
<p style="text-align: center;">BREAM</p>	<ul style="list-style-type: none"> • Native fish • Carnivore • Feeds on aquatic invertebrates, like young apple snails • Nest in shallow waters
<p style="text-align: center;">SEA GRAPE</p>	<ul style="list-style-type: none"> • Native tree • Grows in sandy areas near salt or brackish waters • Fruit provides food and shelter for wildlife • Many medicinal qualities
<p style="text-align: center;">ALLIGATOR</p>	<ul style="list-style-type: none"> • Native reptile • Carnivore • Main predator species in South Florida • Found in freshwater areas • Feeds on fish, mammals, reptiles
<p style="text-align: center;">CAPE SABLE SEASIDE SPARROW</p>	<ul style="list-style-type: none"> • Native bird • Endangered species • Most of the population is in Big Cypress Swamp and Taylor Slough (southern Everglades NP) • Changing water levels and vegetation disrupt nesting • Omnivore
<p style="text-align: center;">GREEN ANOLE</p>	<ul style="list-style-type: none"> • Native reptile • Carnivore (eats insects) • Southern green anole (subspecies) is found only in Florida • Only native anole in US • Population in decline

Organism Cards

<p>MARSH RABBIT</p>	<ul style="list-style-type: none">• Native mammal• Herbivore• Lower Keys Marsh Rabbit (subspecies) is endangered• Found in cypress swamps and sawgrass marshes
<p>FERAL CATS AND DOGS</p>	<ul style="list-style-type: none">• Exotic mammals• Preys on a large number of native species, including endangered and threatened species• Carnivores, feed on fish, reptiles, amphibians, and mammals
<p>PIKE KILLIFISH</p>	<ul style="list-style-type: none">• Exotic fish• Found in freshwater and some brackish• Carnivores, feeds on smaller fish and insects• Lower numbers of mosquito fish
<p>GAMBIAN POUCH RAT</p>	<ul style="list-style-type: none">• Exotic mammal• Omnivore• Large, up to 9 pounds• No natural predators• Found on the Florida Keys in hammocks
<p>INDIGO SNAKE</p>	<ul style="list-style-type: none">• Native reptile• Threatened species• Carnivore• Found in many habitats, but need a large range• Not many predators• Pythons are competing with for food and habitat
<p>POND APPLE</p>	<ul style="list-style-type: none">• Native tree• Produces fruit that is important for wildlife• Favorite food of giant sphinx moths