



South Florida Science Museum Everglades Lab- All about Alligators Program Curriculum

PROGRAM DESCRIPTION

This program introduces students to the most fascinating ecosystem in southern Florida. The program is demonstrated through the eyes of its top predator, the American alligator! Students will learn all about the food webs existing in the Everglades and have the opportunity to explore the anatomy of a real alligator.

PRE-ACTIVITY FOR TEACHER

Read:

- The Journey of Wayne Drop to the Everglades
- Izzie Lizzie Alligator: A Tale of a Big Lizard by Suzanne Tate
- Who Lives in an Alligator Hole? by Anne Rockwell

SUNSHINE STATE STANDARDS

Grades K-2:

SC.K.L.14.3: Observe plants and animals, describe how they are alike and how they are different in the way they look and in the things they do.

SC.K.N.1.2: Make observations of the natural world and know that they are descriptors collected using the five senses.

SC.1.E.6.1: Recognize that water, rocks, soil, and living organisms are found on Earth's surface.

SC.1.E.6.2: Describe the need for water and how to be safe around water.

SC.1.L.14.1: Make observations of living things and their environment using the five senses.

SC.1.L.16.1: Make observations that plants and animals closely resemble their parents, but variations exist among individuals within a population.

SC.1.L.17.1: Through observation, recognize that all plants and animals, including humans, need the basic necessities of air, water, food, and space.

SC.2.L.17.1: Compare and contrast the basic needs that all living things, including humans, have for survival.

SC.2.L.17.2: Recognize and explain that living things are found all over Earth, but each is only able to live in habitats that meet its basic needs.

Grades 3-5:

SC.3.L.15.1: Classify animals into major groups (mammals, birds, reptiles, amphibians, fish, arthropods, vertebrates and invertebrates, those having live births and those which lay eggs) according to their physical characteristics and behaviors.

SC.3.L.17.1: Describe how animals and plants respond to changing seasons.

SC.3.L.17.2: Recognize that plants use energy from the Sun, air, and water to make their own food.

SC.3.N.1.6: Infer based on observation.

SC.4.L.17.3: Trace the flow of energy from the Sun as it is transferred along the food chain through the producers to the consumers.

SC.4.L.17.1: Compare the seasonal changes in Florida plants and animals to those in other regions of the country.

SC.4.E.6.6: Identify resources available in Florida (water, phosphate, oil, limestone, silicon, wind, and solar energy).

SC.5.E.7.6: Describe characteristics (temperature and precipitation) of different climate zones as they relate to latitude, elevation, and proximity to bodies of water.

SC.5.L.15.1: Describe how, when the environment changes, differences between individuals allow some plants and animals to survive and reproduce while others die or move to new locations.

SC.5.L.17.1: Compare and contrast adaptations displayed by animals and plants that enable them to survive in different environments such as life cycles variations, animal behaviors and physical characteristics.

Grades 6-8:

SC.6.E.7.7: Investigate how natural disasters have affected human life in Florida.

SC.6.E.6.2: Recognize that there are a variety of different landforms on Earth's surface such as coastlines, dunes, rivers, mountains, glaciers, deltas, and lakes and relate these landforms as they apply to Florida.

SC.7.L.17.1: Explain and illustrate the roles of and relationships among producers, consumers, and decomposers in the process of energy transfer in a food web.

SC.7.L.17.3: Describe and investigate various limiting factors in the local ecosystem and their impact on native populations, including food, shelter, water, space, disease, parasitism, predation, and nesting sites.

MATERIALS

-Food chain game cards (sun, butterfly orchid, mosquito, southern leopard frog, raccoon, American alligator) OR (sun, bladderwort, grass carp, great blue heron, American Alligator)

-Giant stuffed alligator or alligator puppet

-Alligator skull

-Alligator teeth

-PowerPoint ('All About the Alligators')

VOCABULARY

American alligator- large alligator of the southeastern United States

Carnivore- a terrestrial or aquatic flesh-eating mammal

Cold-blooded- describes an animal whose body is the same temperature as its surroundings

Ecosystem- a place where plants and animals all live together and depend on each other to survive

Endangered species- animals in danger of becoming extinct, or disappearing forever

Food web- a diagram showing the organisms that eat other organisms in a particular ecosystem, predators being higher in the web than their prey

Food chain- a community of organisms where each member is eaten in turn by another member

Herpetologists- scientists who study reptiles

Predator- an organism that lives by preying (hunting and catching for food) on other organisms

Prey- an animal that is hunted or caught for food

Reptiles- cold-blooded animals that reproduce by laying eggs

Wetland- an ecosystem that is a low area full of water

SCRIPT

Introduction to the Everglades

SLIDE 1

(Hand every child a “gator hole” animal at the beginning of the class)

Good morning/afternoon everyone. My name is _____ and I am from the South Florida Science Museum. Today we are going to explore the Everglades through the eyes of its top predator, the American Alligator. Now I said that the American Alligator is the top predator in the Everglades, so what does it mean to be a predator? *It is an animal that hunts and catches other animals for food.*

SLIDE 2

You may be wondering where the Everglades even is? Has anyone ever been to the Everglades? It is actually right near us. Here is a map of south Florida. Can someone come up and point out Lake Okeechobee, using our key? The water from Lake Okeechobee flows down through rivers and streams to the Everglades. West Palm Beach is represented by the red star on the map, so is it apart of the natural Everglades area? NO. How big do you think the Everglades is? *It is 2 million acres, which is about 60 Walt Disney Worlds in Orlando, Fl or about the size of Rhode Island and Connecticut combined.*

SLIDE 3

The Everglades is a very special ecosystem. Can everyone say ecosystem? ‘Ecosystem.’ What is an ecosystem? *It is a place where plants and animals all live together and depend on each other to survive.* Here we have two different pictures of what the Everglades looks like. There are many different kinds of ecosystems, so looking at the pictures, which one do you think the Everglades is? (Read through the list and have kids raise their hand when they think that is what the Everglades is. You can even give a little bit of information about each ecosystem). Well whoever raised their hand for the Wetlands is absolutely correct. That means that the Everglades is a low area and full of water. The Everglades is one of the largest wetlands in the Western Hemisphere and serves as one of the main sources of drinking water for south Florida, which is one of the many reasons we don’t want it to be polluted. The Everglades, which is sometimes called the River of Grass, is a slow moving body of water. It moves about 50-100 feet per day. So in a whole day, the water in the Everglades would move across this classroom 2-4 times (Discovery II is 25 feet long).

Food Webs and Food Chains

SLIDE 4

There are so many different plants and animals that live in the Everglades. Just like any ecosystem, certain organisms (both plants and animals) eat other organisms. Does anyone know what it is called when animals are listed based on who eats who? A *food chain*. And the diagram that shows all the organisms that eat other organisms is known as a *food web*. So we are going to play the 'Food Chain Game.'

(Each group will receive a set of cards with pictures of plants and animals from the Everglades. See if you can put them in order based on who eats who.)

(Have the students check their answers based on the food web on SLIDE 5). You may have noticed that the American Alligator was at the top of all of your food chains. Just as I mentioned at the beginning of this class, the American Alligator is the top predator in the Everglades.

The Importance of the American Alligator in the Everglades

SLIDE 6

The American Alligator is very important to the Everglades for many reasons:

- Nutrients derived from the alligator's droppings and remnants of its meals enrich the soil and contribute to the support luxuriant vegetation.
- Alligators keep the bony-scaled spotted garfish (REFER TO THE FLORIDA GAR THAT WE HAVE IN THE AQUARIUM) in check. Without control on the gar population, these fish would eat up all the valuable bass and bream, as well as other game fish.
- Even the movement of the alligator through its habitat has a beneficial effect on the landscape. Being a large reptile, the alligator makes channels through the plant life and thereby retards the processes that transform a pond into a marsh.
- The alligator contributes toward the preservation of living things by digging basin like holes in areas where the water table fluctuates greatly. In the Everglades, these "*gator holes*" constitute the deepest pools. During periods of drought they are the last to dry up and so provide a refuge for various fish, amphibians and reptiles. Once the drought passes, the creature life preserved in the "*gator holes*" can begin to multiply. These holes also supply food and water for birds and mammals. These "gator holes" contribute much to the preservation of plant and animal life.

<http://www.design42.com/everglades/alligators.html>

Anytime one species, one kind of animal, changes the environment for its own use in a way that helps other plants and animals, scientists call it a 'keystone species.' Can you all say keystone species? Because of all these points listed on the slide, the American Alligator is a keystone species.

Let's talk a little bit more about these wonderful "gator holes." When an American Alligator finds damp muck on the ground, he will try and dig it up. Then the hole that this alligator creates fills with water up to a few feet deep. Fish and insects lay their eggs near the hole. Birds come to eat some of the eggs, and the fish and insects when the eggs

hatch. Seeds in the bird droppings sprout. More animals come to eat and drink. This is all because an alligator dug a gator hole. Let's see what kinds of animals might benefit from the gator hole.

SLIDE 7

You all have pictures of animals that may or may not live in gator holes. Let's find out. (Using the alligator puppet, go around and find out who's living in the "Gator Hole." Encourage the students to use the picture on the slide to see if their animal is in the hole.)

Reptiles

SLIDE 8

Does anyone know what types of animals the American Alligator evolved from? Right, dinosaurs!

SLIDE 9

Does anyone know what class the American Alligator is part of? *It is a reptile.*

Reptiles have been around for 300 million years, and during the age of the dinosaurs, they ruled the Earth. Those days are long gone, and those giants have vanished, but some 6,500 species of reptiles still thrive today. Crocodiles, alligators, snakes, lizards, and turtles are all reptiles. Most reptiles live on land, and most lay eggs. They are vertebrates, and are covered in scales. They are cold-blooded, and regulate their body temperature by seeking or avoiding the sun's heat. (*National Geographic*)

SLIDE 10

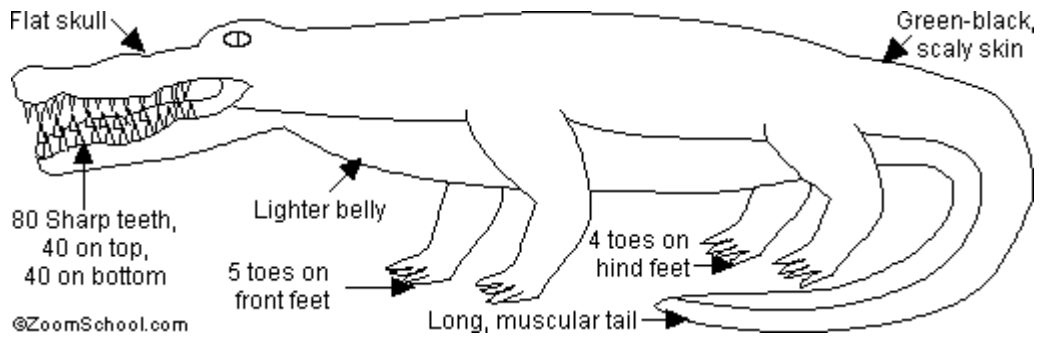
(Use alligator skull as a display item. Use baby alligator to study anatomy, and then hold him belly up for everyone to pet him. Go over the different parts)

Alligators are large, meat-eating reptiles that spend a lot of their lives in the water. They mostly live in fresh to brackish water, in swamps, marshes, canals, and lakes. Do you guys think alligators are good swimmers? *They do swim very well, using mainly their tail to propel themselves through the water, and also use their webbed feet.*

Alligators are semi-aquatic carnivorous reptiles with four legs and a huge tail. The tail is half the animal's length; it helps propel the alligator through the water, is used to make pools of water during the dry seasons (gator holes), is used as a weapon, and stores fat that the alligator will use for nourishment during the winter. Alligators are cold blooded; they do not make their own body heat. They gain body heat by basking in the sun.

Anatomy: There are two types of alligators, the American alligator and the Chinese alligator. The American alligator grows up to 19 feet (3.5 m) long, weighing up to 600 pounds (270 kg). The Chinese alligator grows to be about 6 feet long (1.8 m).

Diet and Teeth: Alligators are nocturnal and feed primarily at night. Adult gators eat fish, birds, turtles, reptiles, and mammals. They swallow their prey whole. The alligator's conical teeth are used for catching the prey, but do not tear it apart. Alligators have about 80 teeth. Did you know alligators replace their teeth when the old ones wear down? This popular reptile can go through 3,000 to 4,000 teeth in a lifetime!



Alligators & Crocodiles living together

SLIDE 11

Everglades National Park is the only place in the world where alligators and crocodiles exist side by side.

Differences between alligators and crocodiles:

	Snout	Jaws and Teeth	Salt Glands on Tongue	Sensory Pits
ALLIGATORS	Wide, U-shaped, short	Upper jaw wider than lower jaw, overlapping it. The lower teeth are mostly hidden when mouth is closed (and fit into sockets in the upper jaw).	Salt glands are non-functional.	Sensory pits only near jaws.
CROCODILES	Narrow, V-shaped, long	Upper jaw is about the same size as lower jaw. The lower teeth show outside the upper jaw when mouth is closed (especially noticeable is the huge fourth tooth). The upper teeth show outside the lower jaw.	Salt glands on the tongue excrete excess salt.	Sensory pits over most of the body

****You may include any of the facts from the American Alligator Fact Sheet when appropriate.**

