

Pre-visit Activity:

South Florida's Ecosystem News

Objective

Students will identify the major characteristics of various South Florida ecosystems. Students will research one of three ecosystems native to South Florida and produce a collaborative creative writing piece which they will present and share with their peers.

Next Generation Sunshine State Benchmarks: SC.4.N.1.1, SC.4.N.1.4, SC.4.N.1.5, SC.4.N.1.6, SC.4.E.6.6, LA.4.1.6.1, LA.4.1.6.2, LA.4.1.6.3, LA.4.1.6.4, LA.4.1.6.5, LA.4.1.6.10, LA.4.2.2.1, LA.4.2.2.2, LA.4.2.2.3, LA.4.2.2.5, LA.4.3.1.1, LA.4.3.1.2, LA.4.3.2.1, LA.4.3.2.3, LA.4.3.3.1, LA.4.3.3.3, LA.4.3.4.1, LA.4.3.4.2, LA.4.3.4.3, LA.4.3.4.4, LA.4.3.4.5, LA.4.3.4.6, LA.4.3.5.1, LA.4.3.5.2, LA.4.3.5.3, LA.4.4.1.1, LA.4.4.1.2, LA.4.4.2.1, LA.4.4.2.2, LA.4.4.3.1, LA.4.4.3.2, LA.4.5.2.1, LA.4.6.1.1, LA.4.6.2.1, LA.4.6.2.2, LA.4.6.2.3, LA.4.6.2.4, LA.4.6.3.2, LA.4.6.4.1, LA.4.6.4.2, SS.4.A.1.1, SS.4.A.1.2, SS.4.A.4.2, SS.4.G.1.1, SS.4.G.1.3

Vocabulary

canopy	decaying	epiphyte	hammock	understory
elevation	erosion	marl	peat	pinnacles
brackish	estuary	pneumatophores		

Materials

"Words for a Day at Fairchild" (page 2)

"South Florida's Native Ecosystems" (pages 3-5)

Unlined paper

Pencils/crayons/markers

Resource materials (Internet, encyclopedias, newspaper articles, etc.)

Procedure

1. As a class, read and discuss the information on each of the three ecosystems. Use the handouts on pages 3-5.
2. Divide the class into groups of 4-5 students. Each group will develop a community newspaper for a specific South Florida ecosystem.
3. Students may use the Internet, encyclopedias, etc., to conduct research on their specific ecosystem.
4. Consider assigning sections to each student in the group such as history, real estate listings (who would depict what types of shelters the animals live in), current events, restaurants (what do the animals in the ecosystem eat?), etc.
5. The newspaper students produce may include articles, poems, advertisements, puzzles, drawings and photographs depicting different aspects of the environment including plants and animals within the ecosystem. Exploring current events and controversies should be followed by class discussion.
6. Ask student groups to circulate their papers around the class and present their ecosystems to each other with time for questions and answers. Which ecosystem would students like to live in?



Words for a Day at Fairchild

Brackish - a combination of salt and fresh water.

Canopy - the highest level of plant growth in a forest.

Consumer - an organism that feeds on plants and/or animals.

Decay - the slow break down (decomposition) of plant material.

Ecosystem - a community of animals, plants and microscopic life that interact together in the environment.

Elevation - the rise of land that is measured by units above sea level.

Epiphyte - a plant that grows on another plant or tree; it derives its nutrients from the rain and debris that fall into it.

Erosion - the wearing away of the land by water or wind.

Estuary - an aquatic area in which fresh water from rivers mixes with salt water from the ocean.

Exotic - having been introduced to an area where the organism would not naturally be found.

Food Web - a series of interconnected food chains that show predator-prey relationships.

Hammock - an area of higher ground that supports a community of plants that are different from those in lower elevations.

Marl - soil that contains limestone.

Native - the area where an organism originated; plants that have lived in South Florida for hundreds of years and were not introduced to the area by humans.

Peat - rich soil made up of decomposing plants.

Producer - an organism that produces its own energy, such as photosynthetic plants.

Understory - the plant layer growing under the canopy, made up mostly of young trees and shrubs.



Epiphyte on tree

South Florida's Native Ecosystems

Tropical Hardwood Hammock

Along the coast of South Florida, throughout the Everglades and the Florida Keys, exists dense, tropical forest ecosystems that are called **tropical hardwood hammocks**. These communities are dominated by a variety of large trees growing on a natural rise in the limestone that is approximately 1 to 2 feet above the surrounding land. Due to the increased elevation, **tropical hardwood hammocks** seldom flood during the summer rainy season.

Many of the trees that grow well in hammocks are of West Indian or Caribbean origin, such as: Mahogany, Gumbo Limbo, Cocoplum and Wild Tamarind. In fact, many of South Florida's **tropical hardwood hammock** communities closely resemble the coastal hardwood forests of the Bahamas. Scientists hypothesize that the initial seeds from these trees were brought to South Florida shores by ocean currents, hurricanes and migratory birds. Eventually, these seeds took root in the rocky soil. The tropical hardwood trees flourished because they have sprawling, shallow roots that are able to search for water and soil in the limestone cracks. Over 200 species of native Caribbean trees have been found growing in **tropical hardwood hammocks**. Some temperate zone trees, including Live Oak, also thrive in these areas.

The uneven forest floor is covered by loose rock, a decaying layer of leaves and other organic materials that have built up over many years. These organic materials become very acidic and eventually eat away the limestone, causing it to collapse and form "solution holes". During most of the year, these solution holes are filled with soil and organic materials. During the rainy season, however, the solution holes fill with water. The moisture from the solution holes in combination with the dense canopy create an area in the understory that is breeze-free and extremely humid. The high humidity helps prevent fires from spreading in these areas.

A variety of shrubs, ferns, vines and bromeliads contribute to a hammock's jungle-like appearance. Some plants called epiphytes grow on other plants without any soil! One of the better-known epiphytes is Spanish Moss, which is not really a moss, but is actually in the same family as the pineapple. Orchids are some of the best known and most showy of the epiphytes. Some shrubs that grow in **tropical hardwood hammocks** may include Devil's Claw, Wild Coffee and Red Mulberry.

South Florida's Native Ecosystems

Pine Rockland

Pine rocklands are unique to South Florida and the Bahamas. This ecosystem consists of a land surface that is very dry, rocky and pitted. Elevation is about 3 to 6 feet above sea level and includes some of the highest and driest areas in South Florida. The exposed limestone surface of this ecosystem is formed into sharp pinnacles after many years of erosion. Solution holes are also common. Marl (limey, organic mud) or peat (rich, organic material) lie on top of the limestone and provide enough soil for plants to take root. The dominant tree of the pine rockland– the Florida Slash Pine or Dade County Pine– has roots that grow quite well in this type of rocky ground. Growing among the pines are Sabal Palms, Saw Palmettos, Coonties, shrubs, palms and herbs.

Pine rocklands depend upon fire for their survival. In South Florida, fires caused by lightning strikes during summer thunderstorms are common. Without these fires to destroy the fast growing hardwood tree seedlings, the slow growing pine trees would not be successful. A tropical hardwood hammock ecosystem would be created instead of the continuation of the **pine rockland** ecosystem. Plants in a **pine rockland** have adaptations for survival during and after a fire. The multi-layered bark of the Slash Pine provides protection to the inner portion of the tree trunk. Coontie is a species of cycad that survives fire due to its large underground stem. In both cases, fire destroys only a part of the plant. The main parts of the plant that are needed for survival remain unharmed.

Many of these areas have already been lost to development, agriculture, fire suppression, and invasive species. There are only a few large pine rockland areas that remain under protection. Smaller pieces of land are scattered throughout South Florida and are still in danger of being destroyed.

The caterpillar of the Atala butterfly feeds exclusively on the Coontie plant that grows in the pine rocklands.



South Florida's Native Ecosystems

Mangrove Forest

Mangrove forests cover most of the southern tip of Florida. In these ecosystems, fresh water from the Everglades meets with salt water from the ocean and creates a brackish water estuary. Red, Black and White Mangroves are the main plants that grow here. Mangroves appear to grow right out of the water along the coast. They are adapted to survive in areas where the environment is constantly changing.

Each type of mangrove grows in a specific part of the forest. Red Mangroves have stilt-like prop roots that hold them firmly at the water's edge. Black Mangroves have root parts called pneumatophores that need to be exposed to the air. Black Mangroves require a slightly higher elevation of land and are located further inland from the Red Mangroves. White Mangroves are less common. They grow the furthest inland, in the portion of the mangrove forest that is farthest away from the water. Other plants in this ecosystem may include Buttonwood (which is related to the White Mangrove), Poisonwood and Manchineel.

The **mangrove forest** estuary serves as an important nursery for shrimp, crabs, fish and other sea life. During the winter, many wading birds come to South Florida to nest in the **mangrove forest**.



The prop roots of these Red Mangroves form a protected habitat for many different animals looking to escape large predators.