

Mangrove Ecology Program

The mangrove ecology program is a component of our core program and allows the staff to truly use the outdoors as a classroom. Mangrove forests make up the majority of the natural coastal habitat in the Florida Keys and provide a variety of ecosystem services. The ecology of this habitat will be discussed on the boat on the way to a snorkel site. We will stop at various locations en route so instructors can point out any animals to identify (birds!), examples of mangrove adaptations, the identifying characteristics of the three species of mangroves and unique habitats created by these trees. With an understanding of how to properly snorkel in the shallow FL Bay waters and of what animals to be looking for, students will join a MarineLab instructor to snorkel amongst the mangrove roots. The instructor will collect a sample of representative animals that he/she will bring back to the boat for observation and discussion.

** We can run the same program described here from land and do a shore based snorkel to avoid cost of boat trip, if preferable

Grade Level: All

Timing: 3 hours

Concepts Covered:

- Three species of mangroves in the FL Keys and their identifying characteristics
- Mangrove adaptations
- Bird identification
- Interconnectedness of mangrove habitat within the overall Florida Keys subtropical marine ecosystem
- biogenic and abiogenic limestone making up the Florida Keys
- detritus based food web
- abiotic factors controlling geographical distribution and zonation of mangroves

Vocabulary: detritus, prop root, propagule, pneumatophore, lenticels, tannin, facultative halophyte, adaptation, aerial root, zonation, vivipary, salt exclusion/excretion, exotic species, mutualism

Extensions: Florida Bay Survey citizen science program, Marine Debris Field Trip, Sediment Analysis Lab

Resources: <http://floridakeys.noaa.gov/plants/mangroves.html>, <http://mangroveactionproject.org/>, <https://marinelabresearch.wordpress.com/2012/10/15/mangrove-restoration-update/>

Standards Supported:



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Next Generation Sunshine State Standards

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.

SC.5.L.14.2: Compare and contrast the function of organs and other physical structures of plants and animals, including humans, for example: some animals have skeletons for support -- some with internal skeletons others with exoskeletons -- while some plants have stems for support.

SC.6.L.15.1: Analyze and describe how and why organisms are classified according to shared characteristics with emphasis on the Linnaean system combined with the concept of Domains.

SC.7.L.17.2: Compare and contrast the relationships among organisms such as mutualism, predation, parasitism, competition, and commensalism.

SC.912.L.14.7: Relate the structure of each of the major plant organs and tissues to physiological processes.

SC.912.L.17.2: Explain the general distribution of life in aquatic systems as a function of chemistry, geography, light, depth, salinity, and temperature.

SC.912.L.17.4: Describe changes in ecosystems resulting from seasonal variations, climate change and succession.

SC.912.L.17.6: Compare and contrast the relationships among organisms, including predation, parasitism, competition, commensalism, and mutualism.

Ocean Literacy Principles

Principle 2. The ocean and life in the ocean shape the features of Earth.

a. Many earth materials and geochemical cycles originate in the ocean. Many of the sedimentary rocks now exposed on land were formed in the ocean. Ocean life laid down the vast volume of siliceous and carbonate rocks.

Principle 5. The ocean supports a great diversity of life and ecosystems.

d. Ocean biology provides many unique examples of life cycles, adaptations and important relationships among organisms (symbiosis, predator-prey dynamics, and energy transfer) that do not occur on land.

i. Estuaries provide important and productive nursery areas for many marine and aquatic species.

Principle 6. The ocean and humans are inextricably interconnected.

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d. Humans affect the ocean in a variety of ways. Laws, regulations and resource management affect what is taken out and put into the ocean. Human development and activity leads to pollution (point source, non-point source, and noise pollution), changes to ocean chemistry (ocean acidification) and physical modifications (changes to beaches, shores and rivers). In addition, humans have removed most of the large vertebrates from the ocean.

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