

# Seagrass Ecology Program

**Grade Level:** All

**Timing:** Discussion is 45 mins- 1 hour. Field trip is 2 hours.

**Summary:** The seagrass ecology program is a part of MarineLab's core curriculum. Seagrass beds make up the largest benthic habitat in the waters surrounding the Florida Keys. The seagrasses provide a vital habitat and are a key component to the overall Florida Keys marine ecosystem. There is both a classroom and snorkel portion to this program. Level 1(grades 5-8) and Level 2 (grades 9-12) curriculum used accordingly (same concepts; varied classroom teaching methodology).

**\*\* service learning option available (This option includes data collection and analysis. Suited for advanced students.)**

**\*\* advanced option available using research techniques**

## Program Objectives:

- List 5 of the most common phyla found in the FL Keys waters and two common characteristics of each phylum mentioned
- Identify three seagrass species, three algae species and three animals that utilize the seagrass
- Explain the role of the seagrass habitat within the FL Keys marine ecosystem
- List three threats to the seagrass habitat

## Concepts Covered:

- ecology and the abiotic factors controlling the geographic distribution of seagrass
- function of the seagrass habitat in the overall keys ecosystem
- distinguishing characteristics of algae and grass
- seagrass and algae identification
- threats to seagrasses and restoration efforts
- unique Florida Bay habitat
- common marine phyla, the characteristics of each phylum and examples of species of each phylum

**Vocabulary:** ecology, estuary, calcareous, substrate, vascular, obligate halophyte, autotroph, heterotroph, biotic, abiotic, sessile, prop scar, rhizome, salinity, evisceration, regeneration

**Procedures:** The program begins with a classroom discussion covering the concepts and vocabulary listed above. **Level 1 students will be given pictures of species of invertebrates commonly found and will work with the group to use common characteristics of each phyla to categorize the species.** The students are then taken snorkeling to gain experience in the water and view seagrass community. Depending on the length of the school program, the snorkel portion of this program is done as a 2 hour seagrass snorkel, concentrating solely on seagrass ecology, or the seagrass snorkel is in combination with the mangrove ecology program snorkel. Regardless, during the snorkel, seagrass and algae samples will be collected for students to ID and discuss on the boat.

**Extensions:** long term data collected by MarineLab staff and students is available for analysis before or after your MarineLab seagrass program; Florida Bay Survey citizen science program

**Resources:** [www.seagrasswatch.org](http://www.seagrasswatch.org), <http://seagrass.fiu.edu/>, <http://floridakeys.noaa.gov/plants/seagrass.html>



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# Standards Addressed:

## ***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.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.912.L.15.4: Describe how and why organisms are hierarchically classified and based on evolutionary relationships.

SC.912.L.15.7: Discuss distinguishing characteristics of vertebrate and representative invertebrate phyla, and chordate classes using typical examples.

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.

## ***Ocean Literacy Principles***

Principle 3. The ocean is a major influence on weather and climate.

f. The ocean has had, and will continue to have, a significant influence on climate change by absorbing, storing, and moving heat, carbon and water. Changes in the ocean's circulation have produced large, abrupt changes in climate during the last 50,000 years.

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

f. Ocean ecosystems are defined by environmental factors and the community of organisms living there. Ocean life is not evenly distributed through time or space due to differences in abiotic factors such as oxygen, salinity, temperature, pH, light, nutrients, pressure, substrate and circulation. A few regions of the ocean support the most abundant life on Earth, while most of the ocean does not support much life.

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

Principle 6. The ocean and humans are inextricably interconnected.

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.

