

Seagrass Survey Program

Grade Level: High School or Above (*APES*)

Timing: 3 hours

Summary: The seagrass ecology program is a part of MarineLab's core curriculum. The seagrass survey program was created for more advanced students and for groups interested in service learning opportunities. Students will learn about the importance of this vital habitat, snorkel the seagrass beds, and conduct seagrass surveys following SeagrassWatch protocols using transects and quadrats. As disturbances to the habitat are prevalent, it is important that long term changes in the seagrass habitat are measured, documented and monitored. Student data will be entered into MarineLab's database, analyzed and discussed. Experimental design and the importance of baseline data is discussed. Students will be encouraged to further pursue citizen science opportunities outside MarineLab.

Program Objectives:

After completion, students will be able to:

- List five 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
- Participate in a long term seagrass monitoring study
- Explain the importance of habitat monitoring
- Use a transect and quadrat to ecologically sample

Concepts Covered:

- ecology and the abiotic factors controlling the geographic distribution of seagrass
- function of the seagrass habitat in the overall keys ecosystem
- 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
- long term ecological monitoring
- ecological sampling
- importance of baseline data
- seagrass survey techniques
- replicate sites and experimental repeatability
- citizen science

Vocabulary: ecology, estuary, calcareous, substrate, vascular, obligate halophyte, autotroph, heterotroph, biotic, abiotic, sessile, prop scar, rhizome, salinity, evisceration, regeneration, seagrass monitoring, transect, quadrat, standard deviation, citizen science, systematic sampling, stratified sampling, random sampling

Procedures: The program begins with a classroom discussion covering the concepts and vocabulary listed above. The students are then taken snorkeling for students to gain experience in the water and view seagrass community. 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

Resources: www.seagrasswatch.org, <http://seagrass.fiu.edu/>, <http://floridakeys.noaa.gov/plants/seagrass.html>



© MarineLab Environmental Education
A Marine Resources Development Foundation Program
PO Box 787 Key Largo, FL 33037
(800) 741-1139 Fax (305) 451-3909
www.marinelab.org
Last Updated: 8/30/18

Standards:

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.N.1.5: Describe and provide examples of how similar investigations conducted in many parts of the world result in the same outcome.

SC.912.N.1.7: Recognize the role of creativity in constructing scientific questions, methods and explanations.

SC.912.N.4.1: Explain how scientific knowledge and reasoning provide an empirically-based perspective to inform society's decision making.

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.

SC.912.L.17.8: Recognize the consequences of the losses of biodiversity due to catastrophic events, climate changes, human activity, and the introduction of invasive, non-native species.

SC.912.L.17.13: Discuss the need for adequate monitoring of environmental parameters when making policy decisions.

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.



© MarineLab Environmental Education
A Marine Resources Development Foundation Program
PO Box 787 Key Largo, FL 33037
(800) 741-1139 Fax (305) 451-3909
www.marinelab.org
Last Updated: 8/30/18