



## Scientist Snorkel Program

While students are at MarineLab we want them thinking like scientists, whether it is during a discussion, lab, or snorkel excursion. During the scientist snorkel, students take their snorkeling to the next level as they are asked to scientifically observe and wonder while in the water. The snorkel sites for this program are from shore (which is advantageous for groups that don't want to forgo a snorkel but don't want the cost associated with a boat trip). Water quality will briefly be discussed before the snorkel. Once in the water, instructors will collect life (that can safely and legally be handled) that piques the students interests (e.g. algae, invertebrates, etc.) during the snorkel. Students will then observe these items back on campus using microscopes, etc. to better understand these organisms and give them an opportunity to ask questions about what they are seeing and make sense of their observations.

**Grade Level:** Adaptable for all grade levels

**Timing:** 3 hours (flexible timing)

**Concepts Covered:**

- water quality and the common tools used to measure each parameter
- scientific observation
- diversity of life found in inshore waters of the FL Keys

**Vocabulary:** salinity, dissolved oxygen, temperature, refractometer, hydrometer, acidity/alkalinity, pH, ammonia

**Extensions:**

- The Florida Bay Survey would be a good follow up as students develop a keen eye during the scientist snorkel. The FL Bay survey would utilize this skill as students collect abundance data on life they are seeing in the seagrass/mangroves
- Algae Investigation. This program takes the scientific process a few steps further – after making observations, students develop wonder/questions, design an experiment, and make sense of the data they collect.
- Behavior Lab. During this lab students make observations and conduct experiments specifically designed to learn more about behavioral and morphological invertebrate adaptations.



## Standards Supported:

### ***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.N.1.5: Recognize that science involves creativity, not just in designing experiments, but also in creating explanations that fit evidence.

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.N.1.6: Describe how scientific inferences are drawn from scientific observations and provide examples from the content being studied.

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

### ***Ocean Literacy Principles***

**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.

**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.