

Algae Investigation

Students board the boats to a mangrove island in Florida Bay. Macroalgae as a microhabitat is introduced before students are asked to snorkel and record some observations about the macroalgae and its community that they find fascinating or cause them to wonder. They use these wonders to design testable questions and conduct short investigations. They will work with their buddy to make sense of their results before sharing and reflecting on potential investigation improvements with the boat group.

**** This program can be boat based or land based ****

Grade Level: 5th – 12th (slight variations depending on grade level)

Timing: 2- 3 hours. We recommend 3 hours if you want the program to be boat based. The amount of time spent in the water is dependent on student interest. The program is most effective when conducted after students have participated in our Mangrove Ecology Program.

Concepts Covered:

- Scientific observation
- Developing a testable question
- Designing an investigative plan to test a hypothesis
- Scientific explanation utilizing evidence
- Macroalgae as a microhabitat
- Scientific discussion

Vocabulary: macroalgae, microhabitat

Resources: <http://beetlesproject.org/cms/wp-content/uploads/2017/04/Exploratory-Investigation.pdf>

Standards Addressed:

Next Generation Sunshine State Standards

SC.5.N.1.1: Define a problem, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigations of various types such as: systematic observations, experiments requiring the identification of variables, collecting and organizing data, interpreting data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.

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.N.2.1: Recognize and explain that science is grounded in empirical observations that are testable; explanation must always be linked with evidence.

SC.6.N.1.1: Define a problem from the sixth grade curriculum, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigation of various types, such as systematic observations or experiments, identify variables, collect and organize data, interpret data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.

SC.6.N.1.4: Discuss, compare, and negotiate methods used, results obtained, and explanations among groups of students conducting the same investigation

SC.6.N.1.5: Recognize that science involves creativity, not just in designing experiments, but also in creating explanations that fit evidence.

SC.7.N.1.1: Define a problem from the seventh grade curriculum, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigation of various types, such as systematic observations or experiments, identify variables, collect and organize data, interpret data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.

SC.7.L.17.3: Describe and investigate various limiting factors in the local ecosystem and their impact on native populations, including food, shelter, water, space, disease, parasitism, predation, and nesting sites.

SC.8.N.1.1: Define a problem from the eighth grade curriculum using appropriate reference materials to support scientific understanding, plan and carry out scientific investigations of various types, such as systematic observations or experiments, identify variables, collect and organize data, interpret data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.

SC.8.N.1.6: Understand that scientific investigations involve the collection of relevant empirical evidence, the use of logical reasoning, and the application of imagination in devising hypotheses, predictions, explanations and models to make sense of the collected evidence.



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.1.1: Define a problem based on a specific body of knowledge, for example: biology, chemistry, physics, and earth/space science, and do the following:

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.
- e.** The ocean provides a vast living space with diverse and unique ecosystems from the surface through the water column and down to, and below, the seafloor. Most of the living space on Earth is in the ocean.

Principle 7. The ocean is largely unexplored.

- b.** Understanding the ocean is more than a matter of curiosity. Exploration, experimentation, and discovery are required to better understand ocean systems and processes.