Advanced Invertebrate Behavior and Morphology Lab

Marine invertebrates exhibit a variety of behavioral and morphological adaptations which allow them to survive in various habitats within the marine environment. Students will observe some of these adaptations firsthand while conducting short experiments with macroinvertebrates collected from the mangroves. Students will conduct experiments and will share observations with peers. If applicable, the behaviors are classified as taxis or kinesis. The observations are meant to allow students to draw conclusions regarding the invertebrates' in situ behavior but also make the students begin to ask questions. The importance of observation in the scientific method is emphasized.

Grade Level: High School or Above

Timing: 1 hour

Concepts Covered:

- Unique behavior mechanisms among marine invertebrates
- Correlation between behavior and morphology
- What invertebrate morphology and behavior can tell us about the invertebrate's niche and the environment it lives in
- How to use a dichotomous key
- Common characteristics among species within a phylum and the different uses of these characteristics among these species
- The role of observation in scientific research
- Difference between taxis and kinesis
- Correlation between behavior and adaptation

Vocabulary: invertebrate/vertebrate, behavior, dichotomous key, morphology, observation, niche, taxis, kinesis, adaptation, stimulus

Resources: *www.biologicaldiversity.org, "Animal Behavior," Drickamer, Vessey, and Meikle, www.scienceclarified.com*

MarineLab
Marine Resources Development Foundation
Marine Science education in the Florida Keys

Standards:

Next Generation Sunshine State Standards

SC.5.L.15.1: Describe how, when the environment changes, differences between individuals allow some plants and animals to survive and reproduce while others die or move to new locations.

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

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

SC.8.N.1.2: Design and conduct a study using repeated trials and replication.

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.