

3-4 Hour Programs

Seagrass Survey Program

Grade Level: High School or Above

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.

Schedule: one hour discussion, 2-3 hours in the field (includes practice survey component in parking lot)

Coral Reef Ecology BleachWatch Program

Grade Level: High School or above

Summary: The coral reef ecology program is a part of MarineLab's core curriculum. MarineLab's coral reef bleachwatch program was created for more advanced students and for groups interested in service learning/citizen science opportunities. Students will learn about the importance of this diverse habitat, snorkel multiple reefs, and collect coral bleaching data. Coral bleaching is a common disturbance to coral reefs and a local organization, Mote Marine Lab, has created a program for snorkelers to survey the corals while snorkeling. MarineLab staff will be in the water and on the boat to lifeguard, point out marine life, and discuss observations. Students will discuss data once on the boat and data will be entered into an online database used by scientists at Mote Marine Lab.

Schedule: 1 hour classroom discussion followed by boat trip to the coral reef (2-3 hours)

Florida Bay Survey Program:

Grade Level: All

Summary: The Florida Bay survey program is a citizen science program that builds on the snorkeling expertise gained during the seagrass/mangrove ecology core programs. This is a 3 hour program where students will collect water quality data and work in buddy pairs to conduct underwater surveys. Students will record the abundance of seagrass, macroalgae and Florida Bay animals they learned to identify during the seagrass/mangrove ecology programs. All data is entered into MarineLab's database

Schedule: three hour field trip

Fish ID/Parrotfish Feeding Survey Program:**Grade Level:** High School or Above

Summary: The fish identification program is a part of MarineLab's core curriculum. An service learning option for our Fish ID program is to include parrotfish feeding surveys. As with our core program, students will learn the best field marks to use to identify a fish, behavioral characteristics of fish families, and how to identify fish species that we commonly see on Key Largo's reefs. For this particular program, students will also be taught in the classroom on the proper protocols for data collection for the study they will be participating in and the reasoning behind the study. The students are then taken out to a reef to put what they learned into practice! During the snorkel, each pair of students will spend 6 minutes recording parrotfish feeding data. All data is submitted to Dr. Deron Burkepile and entered into MarineLab's database.

Schedule: 1 hour classroom discussion followed by boat trip to the coral reef (2-3 hours).

Fish ID/REEF Fish Survey Program:**Grade Level:** High School or above

Summary: The REEF Fish Survey Program is an extension of our Fish ID program, using the citizen science opportunity created by Reef Environmental Education Foundation. Students will learn the best field marks to use to identify a fish, behavioral characteristics of specific family, and learn how to identify fish species that we commonly see on Key Largo's reefs. Additionally, students will learn the "roving diver" technique employed by REEF survey volunteers. Once in the water, the students will be equipped with underwater slates and REEF fish survey sheets in order to record all fish they can identify and count. Students can take his/her data sheet home, register at reef.org and enter his/her data. An additional option is to have students take a REEF fish ID quiz during their stay at MarineLab. As MarineLab is an official REEF base, if students pass the quiz they can enter data into the REEF database as Level 2 surveyors.

Schedule: 1 hour classroom discussion followed by boat trip to the coral reef (2-3 hours). If interested in passing the Fish ID test, an additional 30 minutes is necessary.

Marine Debris Program:**Grade Level:** 7th grade and above

Summary: Marine debris is one of the most widespread pollution problems facing the world's oceans and waterways. This is a half day program that encompasses a classroom discussion, boat trip and mangrove cleanup and data analysis. In the classroom, marine debris is defined and impacts and solutions to the issue are discussed. Students will go out on the water for a cleanup and return to MarineLab to collect and analyze data. All data will be submitted to Mote Marine Lab and entered into MarineLab's in house database.

Schedule: Three hour program. 45 minute discussion followed by a boat ride to cleanup site. Students will spend final 30 minutes on land collecting data for Mote

2 Hour Programs**Diversity Indexing Lab****Grade Level:** High School or Above (correlates with APES standards)

Summary: Biodiversity can be calculated using Simpson's Diversity Index to give a measurement of the overall health of an ecosystem. This lab is an extension of our basic invertebrate diversity lab. The diversity indexing lab takes our "rock shake" lab a step further by having the students not only identify and count invertebrates on live rock to determine health of Largo Sound, but to also calculate a diversity index. The purpose of diversity indexing is discussed and data is submitted into MarineLab's in house database.

Schedule: 2 hour lab (usually conducted as an evening program)

Phytoplankton**Grade Level:** High School and Above

Summary: Phytoplankton play a vital role in the marine ecosystem; changes in diversity and abundance can affect the entire food chain, including humans. Students will observe and analyze phytoplankton in water samples collected off of Key Largo. Students will work in groups to identify phytoplankton species, determine if toxic and participate in NOAA's Phytoplankton Monitoring Network.

Schedule: Two hour land based program.

One Hour Programs:**Microplastics Lab****Grade Level:** 7th and above

Summary: While not necessarily visible, microplastics are a global marine debris issue with documented impacts on animals from plankton to whales. Continued research and public education is necessary to create the best solution to this oceanwide problem. Students will have the opportunity to not only learn about the impacts of microplastics but they will see the problem firsthand. Students will have the opportunity to be a part of the solution by collecting data for the Florida Microplastic Awareness Program.

Schedule: one hour land based lab**Water Quality Lab****Grade Level:** 7th and above

Summary: Abiotic water parameters determine the health and the community of any fresh or salt water system. Primary water quality parameters will be discussed as well as the best tools and methods to measure each parameter. Students will have hands on opportunity to use all of the tools in preparation for water quality field collection and analysis. In the field students will collect data for GLOBE. Advanced students will be trained in used of a YSI in order to assist with an FIU study.

Schedule: One hour land based lab. Water quality data will be collected during field trips***Multi Day SCUBA Program:*****Reef Check****Grade Level:** High School or Above (Must be certified SCUBA divers)

Summary: With an understanding of the need for more baseline data on the current health status of our coral reefs, student divers are trained to use Reef Check scientific survey protocols to conduct reef surveys. With the assistance of marine biologist divemasters, students will conduct multiple underwater reef surveys and once completed, be certified as Reef Check EcoDivers.

Schedule: Multi day program.

Other Service Learning Opportunities

Coastal Cleanup

Grade Level: All

We can incorporate a “cleanup” into a mangrove and/or a coral reef program during the field trip component. While it will shorten the time spent in the water it will provide students the chance to physically “give back” to the habitats they are enjoying

Water Sampling Trips

Grade Level: All

We currently collect water samples and water quality data for FWC (Bayside) and University of Florida (reef). The sampling is done once/month and can be incorporated into a **mangrove ecology field trip (UF samples)** and **coral reef ecology field trip (FWC samples)**.

Coral Reef Restoration Program

Grade Level: All

MarineLab has an established relationship with the Coral Restoration Foundation (CRF). If interested in having students participate in a land based “hands on” reef restoration program, MarineLab can coordinate with CRF to have a CRF staff person conduct a program at MarineLab. SCUBA programs have additional option in hands on participation in CRF’s efforts.