

St. Johns County School District's **MARINE SCIENCE PROGRAM**

MIDDLE SCHOOL PROGRAM (students entering the 7th grade in August)

Students are assigned to small classes of approximately 14 students by grade level. Each class rotates to another instructor every two days. To accommodate the large number of students applying to the program and still keep class sizes small, we will have two seventh grade groups, A and B. Each group will do identical activities but on different days with different instructors. Due to weather or class size activities may change.

FIRST ROTATION:

SALT MARSH ECOLOGY, KAYAKING SKILLS AND SAFETY, FISH BIOLOGY II, SEAFOOD PREPARATION

Students will participate in lecture and activities on the energy flow in salt marshes. This will include a presentation and identification activities of local marine plants and animals. The instructor will then discuss kayaking skills and safety procedures. Students will take a kayaking trip to the marshes of the Intracoastal Waterway adjacent to Bings Landing south of Marineland. There they will use cast nets, seine nets, and Ponar grab samplers to collect specimens for identification. All specimens will be released on site.

An introductory lecture and discussion includes paleohistory of fish, external and internal structures of bony and cartilaginous fish, fish ecology, and fisheries management. Students will then tour a commercial fish house and discuss the form and function of the features of the various offshore and inshore fish available. In addition, students will learn the economic history of the San Sebastian River and the importance of navigable rivers to the success and survival of coastal towns like St. Augustine. Upon returning to the lab, students will dissect a variety of the vertebrate and invertebrate specimens purchased at the fish house (various fish, shrimp, squid, bivalves, etc.). Students will then cook their dissections.

SECOND ROTATION:

FLORIDA'S AQUIFER SYSTEM, SNORKELING SKILLS AND SAFETY, COASTAL DUNE ECOLOGY

After a lecture on the formation and anatomy of freshwater springs and their unique animal and plant life, the instructor will discuss snorkeling skills and safety procedures. Students will then travel to Silver Glen Springs Park where they will actively participate in snorkeling, view freshwater plants and animals in their natural habitats, and discuss the importance of Florida's aquifer system and freshwater springs.

Students will discuss coastal dune geography and the characteristic plants and animals of high energy beaches. They will then travel to Anastasia State Park for guided trips into the dune and

beach areas with park naturalists. After lunch at the park, students will return to school to participate in a lab experiment analyzing biotic and abiotic factors present in dune ecology.

THIRD ROTATION:

SALTWATER FISH MANAGEMENT, CANOEING SKILLS WINDSURFING AND SAILING SKILLS AND SAFETY

The class will participate in a class discussion of the factors in an ecosystem highlighting the interdependence between organisms, abiotic factors, and energy flow. There will also be a discussion of canoeing safety and techniques as students travel to Princess Place canoe launch. A comparison of various ecosystems such as spartina and juncus marshes, mud flats, and oyster beds. They will sample for organisms using seine nets and cast nets. They will also test for O₂ and salinity and record all data.

The instructor will present and discuss a video about windsurfing and sailing skills and safety procedures. They will discuss Bernoulli's Principle explaining how the difference between high and low pressure creates suction or lift that is utilized by sails. Students will then travel to Anastasia State Park where they will participate in sailing and windsurfing lesson at Salt Run taught by Windsurfing St. Augustine instructors

FOURTH ROTATION:

FRESH WATER ECOLOGY, CPR SKILLS

Students will participate in lecture and discussion about the connections between the freshwater rivers of Florida and the health of our saltwater ecosystems. Students will then explore Deep Creek, a freshwater ecosystem that is one of the St. Johns River Water Management District's water recharge areas. They will travel down this historic creek by kayak. The creek is a tannic riverine system that drains western St. Johns County and was the location of a logging town in the early 1900's when ancient cypress trees were cut and milled for northern cities. They will observe and discuss the functions and uniqueness of an automated data collection station in the swamp located on an abandoned railroad trestle, part of the early Flagler system of railroads.

Students will receive CPR and first aid training with an SJCSO nurse/CPR instructor. Students will also become familiar with and practice using AED's. After displaying CPR proficiency through practice on mannequins and a written test, students will receive their CPR/first aid certificate. Students will also participate in a discussion and video presentation of hazardous marine animals (prevention and treatment). They will then travel to Anastasia State Park for an orientation with St. Johns County lifeguards and a water safety demonstration and lesson.

ALL CLASSES:

Students may develop skills for using various marine ecology instruments and tools such as: hydrometer, secchi disk, Kemmerer water sampling bottle, water quality test kits, dissolved oxygen kits, Ponar grab sampler, YSI flow meter, plankton nets, pH meters, cast and seine nets, plant presses, handheld GPS units, and quadrat sampling equipment.