

# Great Bay Discovery Center Spring School Programs



Here at the Great Bay Discovery Center, we are focused on providing students with an interactive, fun educational experience. The students engage in hands on activities that teach them about the importance of the Great Bay estuary and the cultural history that surrounds Coastal New Hampshire. It is important to us that we incorporate the New Hampshire Science and History Curriculum Standards into our programs. In this brochure, we have provided information that illustrates the main objectives of our activities and how they align with the NH Education Framework.

## Estuary Soup

**Grades:** 1-5

**Objective:** To introduce plankton in the estuary as an important source of food for many animals

**Life Science Curriculum Covered:**

**LS1- All living organisms have identifiable structures and characteristics that allow for survival (organisms, populations, and species).**

1. Identify and explain how the physical structures of filter feeders (oysters, clams, and mussels) allow it to survive in the Great Bay estuary.
2. Identify the basic needs of plants and animals living in the Great Bay and what natural resources they depend on in order to stay alive (microscopic plants and animals, bacteria and fungi, the sun's energy and moon's tides, etc.)

**LS2- Energy flows and matter recycles through and ecosystem**

1. Recognize that energy is needed for the survival of all organisms to stay alive and grow- an explanation of the food web, the interdependence of Great Bay's organisms on one another, and the processes (i.e. photosynthesis, recycling of materials, and decomposition) of living and non-living organisms in the estuary that produce "estuary soup".

**LS3- Groups of organisms show evidence of change over time**

1. Estuary soup is constantly evolving due to the cooperation of Great Bay's organisms. A combination of the sun's energy, the moon's tides, dead plants and animals (detritus), bacteria and fungi, and time allow for estuary soup to be created.

**LS4- Humans are similar to other species in many ways**

1. The connection between the estuary and human life is important to understand because ingredients such as, carrageenan are in many food and bath products that humans eat and use in their everyday lives.

# **Waterfront Exploration**

**Grades:** 1-5

**Objective:** To guide students in a safe and ethical exploration of the edge of the estuary.

**Life Science Curriculum Covered:**

**LS1- All living organisms have identifiable structures and characteristics that allow for survival (organisms, populations, and species).**

1. Sort/classify different organisms residing in the Great Bay estuary by identifying physical characteristics that distinguish them from other organisms.
2. Discover how specific features function and allow them to either capture food or defend themselves from prey.

**LS2- Energy Flows and matter recycles through an ecosystem**

1. Find out where plants and animals get energy from the food they eat (i.e. mud snails and algae).
2. How are Great Bay's organisms connected through the estuary? See how plants and animals use the estuary's resources for habitat, nesting, or food.

**LS3- Groups of organisms show evidence of change over time and how they respond**

1. How do organisms respond to changes in the environment? Learn about certain organisms that are affected by tidal and seasonal changes in the Great Bay.

# **Habitat Discovery Walk**

**Grades:** 1-5

**Objective:** To introduce the different habitats associated with the estuary along the boardwalk trail from the Sandy Point Discovery Center to the salt marsh.

**Life Science Curriculum Covered:**

**LS1- All living organisms have identifiable structures and characteristics that allow for survival (organisms, populations, and species).**

1. Wondering what critters live in the salt marsh? Meet the carnivores, omnivores, and herbivores of Great Bay and discover what classifies them from other species in the estuary.
2. Learn about Great Bay's most precious bird, the Osprey. Identify physical features (i.e. camouflage and talons) that help to hide from predators or attack their prey. Also, learn why the bird became a threatened species in Great Bay and how scientist's efforts have helped to restore the bird's population.
3. Discover the features of the vernal pool, why do some species rely on these seasonal pools for reproduction and survival?

4. Look above at the trees around you; notice the gradual change of the forested ecosystem as you wander towards the salt marsh.

**LS2- Energy flows and matter recycles through an ecosystem: recognize the connection between the estuary and Great Bay's plants and animals**

1. The Great Bay estuary is a habitat to many plant and animal species. Learn why the Great Bay is a perfect location for an Osprey nest and its chicks. Also, discover several wetland metaphors that reiterate the connection between the estuary and its wildlife.

**LS3- Groups of organisms show evidence of change over time (e.g. evolution, natural selection, structures, behaviors, and biochemistry).**

1. An introduction to threatened species (the Osprey) - increased human activity in a pristine environment like the Great Bay can cause organisms to respond (e.g. survive there and reproduce, migrate to another habitat, or die).

## **Horseshoe Crabbing Around**

**Grades:** 1-5

**Objective:** To introduce one of the key inhabitants of the Great Bay estuary through the opportunity to "become" the animal.

**Life Science Curriculum Covered:**

**LS1- All living organisms have identifiable structures and characteristics that allow for survival (organisms, populations, and species).**

1. Check out the unique characteristic structures of the horseshoe crab, learn to differentiate between male and females, and explain what each feature is used for.
2. Learn how a horseshoe crab differentiates between other crabs and classify what scientific family the crab really comes from!
3. Identify the defense- discover how horseshoe crabs defend themselves from prey and learn about their basic needs for survival in the Great Bay estuary.
4. Predict the age of horseshoe crabs and compare the life stages of this unique organism as it molts from a juvenile horseshoe crab into an adult.

**LS3- Groups of organisms show evidence of change over time (e.g. evolution, natural selection, structures, behaviors, and biochemistry).**

1. Learn why horseshoe crabs travel to the Great Bay every year, what's so special about the estuarine environment that brings them to our beautiful shores?

**LS5-The growth of scientific knowledge in Life Science has been advanced through the development of technology and is used to identify, understand, and solve global issues.**

1. Learn about horseshoe crabs "blue blood" and its importance to scientific research in the medical field.

## **Discovery “Touch” Tank**

**Grades:** All

**Objective:** This activity gives students a closer look at the creatures living in the Great Bay estuary.

**LS1- All living organisms have identifiable structures and characteristics that allow for survival (organisms, populations, and species).**

1. Take a peak at some of the organisms living in Great Bay; students have an opportunity to get an up-close look and hands on experience with each animal ranging from bi-valves and snails to horseshoe crabs and flounder fish. Volunteers will educate you on specific physical structures that classify each organism.
2. Ever wonder what each part of an animal is used for? Volunteers will point out the specific uses for each feature on the organisms.
3. Learn how all the creatures in the touch tank can live together while obtaining their basic needs for survival.