

Endicott Sanctuary staff will meet you in your classroom, or at coastal sites around the North Shore to explore wetlands and coastal habitats with you and your students, and to collect data. If you would like to consider an in depth project contact Liz Duff to discuss possible grant oppurnuties.

The programs listed below are offered at the rate of \$100 per contact hour, plus travel costs.

**AT YOUR SCHOOL:**

Rate \$100 per class.

**Mystery In the Tidepool** (Grades 4 & 5) Who killed Barney the Barnacle, and how? Learn about adaptations and habitat in this cooperative investigation. Note: This can be a stand-alone program or combined with a rocky shore field trip. (45 min-1 hour)

**Introduction to Wetlands- Focus on Salt Marshes** (Grades 4 and up)

What is a wetland? Why do we care about them? How have people treated wetlands in the past? What are people doing to protect and restore wetlands? Students will explore these questions through a combination of guided discussion, video, and presentation. Note: This can be a stand-alone program or combined with a salt marsh field trip. (45 min-1 hour)

**Introduction to Invasive Species** (Middle and High School)

What are invasive species and how are people working to reduce them? Learn about local efforts to control invasive species such as perennial pepperweed, Phragmites, and purple loosestrife, and learn how your class can help. This class is a lecture format which may include an on-line investigation if there is time. (45 min-1 hour)

**Climate Change and Stewardship Topics:** (Consider pairing these with Raising Awareness about Rising Sea Levels Field Trip)

**Inland Fish (Middle & High School):** (1-2 hours) How will a warming climate impact local inland fish populations? Can cool water species survive at current temperatures? Students will investigate these questions. Call to discuss sampling sites on or near your school grounds.

**Low Carbon Diet (Middle & High School):** How can students individually and collectively live more sustainably? Challenge your class to assess their [carbon footprint](#), and go on a “Low Carbon Diet” to lose 5000 or more pounds. Call to discuss how to implement this with your students. This program meets once every week or two for 4 sessions. Our staff can launch it in your school, for you to continue, or come back once a week for four weeks.



## **FIELD TRIPS ON THE COAST:**

Rate \$100 per contact hour.

Please note: Most of these classes need to take place at low tide. Please check a [tide chart](#) to begin thinking about possible dates. Call early to schedule! Please prepare your students **and chaperones** to dress properly. Waterproof boots, or old sneakers that can get wet are preferred. Footwear is required.

### **Salt Marsh Scavenger Hunt: (Grades 1-4)** (1.5 hours)

Discover and salt marsh habitats including: Low marsh, high marsh, mud flat, salt panne and river. Students will explore and discover plants and animals that live in these habitats, and learn how salt marshes are formed. 4-6 Chaperones required, to help escort students in smaller groups. Waterproof boots required!

### **Rocky Shore Explore: (Grade 1-3)** (1 hour)

What species live on the rocky shore? Do they live closer to the water or further away? Using a scientific protocol, students will investigate these questions.

### **Crab Population Survey (Grades 4 and up)** (1-2 hours Rocky Shore)

Are invasive crabs out-competing our native species? Help assess crab populations while learning and applying important math and science skills. Help document the spread of Asian Shore crabs.

## **Climate Change and Stewardship Topics**

### **Raising Awareness about Rising Sea Levels: (Grades 5 and Up)** (1 hour on barrier beach or salt marsh.)

How will rising sea levels impact coastal areas? How will rising sea levels impact coastal areas? What are current sea level rise projections, and how will they impact the high tides on local beaches? Students will use a spotting level to investigate and raise awareness about this impact of a changing climate.

### **Seaside Stewardship: (Grades 1-High School)** (1-3 hours) Help improve our coastal areas.

Option 1: Clean up litter and collect data on the types and sources of litter you found.

Option 2: Help pull the invasive perennial pepperweed from coastal sites. Learn proper pulling, containing, and disposal methods.

### **Salt Marsh Science Project: (Grades 5-College)**

This extensive partnership pairs Mass Audubon educators and classroom teachers to collect data on the invasive reed Phragmites. It includes professional development for teachers as well as extensive learning opportunities for students. The partnership includes salt marsh monitoring and may include data analysis and presentation preparation as listed below. For more information see [www.massaudubon.org/saltmarsh](http://www.massaudubon.org/saltmarsh). Cost is \$100 per hour. Grant funding may be possible.

#### **Teachers Receive:**

- Professional development in field science methods
- Technology training (data entry and graphing in excel, utilizing the Salt Marsh Science Website)
- Project Wet Training
- Extensive frameworks-based integrated curriculum
- On-going support

#### **Students engage in:**

- Introduction to Salt Marshes
- Salt Marsh Monitoring: collect vegetation, salinity, and fish data for Mass Audubon
- Data Analysis
- Presentation Preparation
- Presenting at an annual Coastal Science Conference

#### **Professional Development for Teachers:**

Call to discuss professional development opportunities. Our staff has extensive experience in offering professional development for teachers from day-long workshops to graduate level courses.

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#### **Salt Marsh Science Project:**

Part 1:

- **Field Training:** Learn to measure salinity, identify plants, collect data on plant species' distribution and vegetation vigor along transects, and collect fish abundance data. Investigate invasive plant species, and restoration.

Part 2

- **Technology Training:** Learn to enter and analyze fish, vegetation and salinity data. Explore the resources available on Mass Audubon's Salt Marsh Science website.

**Lessoning Loosestrife Teacher Training:** Lessoning Loosestrife is curriculum designed for elementary - high school level students to help teach about wetlands, invasive species, and about using biocontrol beetles as a tool for controlling a wetland invader, purple loosestrife. Our aim is to not only teach lessons about loosestrife and key ecological concepts, but also to lessen the impact of this invader, while developing and reinforcing a stewardship ethic in students. This training will teach you monitoring techniques, as well as how to rear beetles. Go to [http://www.massaudubon.org/Lessoning\\_Loosestrife/](http://www.massaudubon.org/Lessoning_Loosestrife/) to view the curriculum.

#### **Striper Science: Striped Bass Curriculum**

Striper Science is a set of lesson plans and resources for middle school and high school level based on striped bass research conducted in Massachusetts.

Resources include PowerPoint presentations, inquiry lessons based on databases, field studies, and online videos. We are proud to present these lesson plans and resources which are based on Massachusetts Science Curriculum Frameworks. Participate in this training to learn how to best utilize this curriculum. <http://www.massaudubon.org/saltmarsh/striper/>



**Teaching About Climate Change:** Highlights of this course will be field and classroom investigations to learn how scientists know climate is changing. This course offers a variety of activities for teachers including methods of studying the changing timing of biological events such as tree leaf drop and bud burst, investigations of physical properties of water, and how these properties impact global circulation currents, and reviewing current resources such as web-sites, curriculum and videos to help students understand the complex abstract topics of climate change. Teachers will consider their own impact on the planet, and explore solutions.

**Project Wet- Worldwide Water Education.** Grades K-12 interdisciplinary water resource curriculum for educators. This training will orient you to using the curriculum. Its goals are to facilitate and promote awareness, appreciation, and stewardship of water resources through classroom ready teaching aides. This great curriculum resource is: interdisciplinary, classroom ready, hands-on, concept based, easy to use and integrates all major subject and skill areas.