



Schooner...

more than just a tall ship!

in partnership with the University of New Haven

CT Coastal Classrooms: Harbor Discovery Cruise Stations 2012

Students, teachers, and chaperones board the schooner Quinnipiack for a three or five hour excursion to experience the wonders of Long Island Sound! From trawling and raising the sails to Navigation and Plankton, each trip is rich in information and adventure. The schooner Quinnipiack can accommodate a maximum of 40 passengers (inclusive of chaperones and teachers. Sails depart from Long Wharf Pier in New Haven.

Appropriate Grades: 1-12

Cost: \$300/3-hour program or \$450/5-hour program (up to 40 people)

Season: April 15 – October 15 (estimated)

Teachers choose 3 stations for a 3-hour Harbor Discovery Cruise or 7 stations for a 5-hour cruise. We recommend that students are at least in 6th grade for the 5-hour cruise. Schooner has created the following ‘recommended’ station choices based on common themes/focus areas of groups. Stations can be combined differently – please make choices carefully based upon the interests and ages of your group! Station descriptions can be found on the next page.



Recommended Station Choices

All Grades		
<p><u>Harbor Sail</u> Marine Life Identification Chart Study Watershed Dynamics All Hands: Marine Debris</p>	<p><u>Life Aboard</u> Chart Study Life of a Sailor Simple Machines All Hands: Buoyancy Challenge</p>	<p><u>Teambuilding/Leadership</u> Marine Life Identification Knots Simple Machines All Hands: Marine Debris</p>
Middle/High School		
<p><u>Marine Life</u> Marine Life Identification Plankton Study Benthic Study All Hands: Marine Debris</p>	<p><u>Environmental</u> Marine Life Identification Water Quality Watershed Dynamics All Hands: Marine Debris</p>	<p><u>History of Sail</u> Life of a Sailor Sail Theory Chart Study All Hands: Buoyancy Challenge</p>



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Please note that the prices for Harbor Discovery Cruises are available during the week only – any weekend programs are available at the Non-profit Charter rate of \$250/hour.

Station Descriptions – Environmental Stations

Benthic Study

The benthic study combines marine geology, chemistry, and biology in an interactive activity. Students will begin by learning about the different bottom types in Long Island Sound followed by collection of sediment with a ponar grab and examination of the sediment and living things in that sample.

CT Science Curriculum Framework: 1.2, 2.3, 3.2, 4.2, 4.3, 6.2, 7.2, 8.2

Marine Life ID

The marine life ID station is run using animals collected from Long Island Sound. The otter trawl will be deployed at the beginning of your trip (conditions permitting) and students will use animals from the trawl (plus animals from our tanks onshore) to learn 'hands-on' about how to identify the marine of life in Long Island Sound.

CT Science Curriculum Framework: 1.2, 3.2, 4.2, 6.2, 7.2, 8.2

Plankton Study

In this station, students will work with crew to deploy a plankton net to collect samples of phytoplankton and zooplankton living in the water column. While the net is deployed, crew will work with students to learn the body shapes and physical characteristics of common plankton found in Long Island Sound as well as the importance of plankton to the Long Island Sound ecosystem. When the sample is brought onboard, students will get a chance to identify plankton and estimate the relative abundance of each in the water column.

CT Science Curriculum Framework: 1.2, 1.3, 3.2, 4.2, 5.4, 6.2, 7.2, 8.2, 10.1

Watershed Dynamics

Students are introduced to the basic concepts of watershed dynamics, including water cycle, run-off, vegetative buffers, and human effects on watersheds. Through hands-on activities, students predict the effects of pollution as well as the effect of a 'natural' vegetative buffer.

CT Science Curriculum Framework: 2.3, 4.3, 6.4

CT Social Studies Curriculum Framework: 1.5

Water Quality

Although scientific measurements are used to define a water's quality, it's not a simple thing to say that "this water is good," or "this water is bad." In this station, students will get a brief summary of water quality



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parameters (i.e., temperature, turbidity, pH, Nitrite/Nitrate, Phosphorous, etc) and talk about 'good' and 'bad' water in their lives. Water tests will be used to compile a water quality snapshot of the Harbor on your trip.

CT Science Curriculum Framework: 4.2, 4.3, 6.2, 6.4, 9.6, 9.8, 9.9

Station Descriptions – Maritime Stations

Simple Machines

So how DO we get a 100 pound anchor off the bottom? Or lift a 1000 pound trawl net full of squirming marine life? By using simple machines like pulleys, levers and incline planes, students will learn to apply the concept of Mechanical Advantage aboard the schooner Quinnipiack.

CT Science Curriculum Framework: 4.1, 5.4, 7.1

Knots

There are many different uses for knots onboard any sailing vessel. In this station, students will learn the three main types of knots as well as how to tie them and where they are commonly used onboard.

CT Science Curriculum Framework: 5.4

Life of a Sailor

While Schooner likes to think of the schooner Quinnipiack as a floating classroom, it is also home to the crew from March through October each year. Students join a crew member on a tour of the 'Quinni' and get a chance to compare what they see with the 'typical' parts of a home. The history of making a home of a boat come into place with the different names & explanations.

CT Social Studies Curriculum Framework: 1.2, 1.9, 1.10, 3.2

Chart Study

The ability to know where you are, where you came from, and where you are going is critical to survival at sea. Scientists also must know basic navigation principles to be able to accurately define their sampling sites, replicate experiments and analyze data. In this station, students will learn about the history and uses of charts (and the difference from maps) and work to determine their location in New Haven Harbor.

CT Science Curriculum Framework: 1.1

CT Social Studies Curriculum Framework: 1.4, 1.5

Sail Theory

What makes a sailboat... sail? Using the best possible demonstration model – the schooner Quinnipiack – students will learn how sailors use sails (along with some physics and planning) to harness the power of the wind and get the schooner moving. Bernoulli's Principle will be discussed and bubbles will help demonstrate this amazing physics lesson!



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CT Science Curriculum Framework: 4.1, 7.1, 8.1



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All Hands Stations

On the trip back to the dock, the group will participate in an all-hands activity. Each topic can be tailored to the age group.

Marine Debris

During this interactive station, students will use science inquiry skills to put together a biodegradation timeline of common marine debris found along the shores of Long Island Sound. Students will then discover the true lifecycle of these materials and find out why it takes so little, or so long for these items to naturally breakdown.

CT State Science Standards Addressed: 3.4, 4.2, 6.4, 9.6, 9.9

Buoyancy Challenge

Why do boats float and anchors sink? How does a 42 ton wooden boat float with all the gear and people onboard? Students will learn the basics of buoyancy and then try their hand at creating a floating masterpiece!

CT State Science Standards Addressed: 4.1, 5.4, 8.4,

CT Social Studies Curriculum Framework: 1.6