

# CELEBRATING OUR RIVERS

## PLACE-BASED EDUCATION UNDER SAIL ON *PISCATAQUA*

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### Grade 4-Adult

During school sails on the PISCATAQUA, students are engaged at customized learning stations related to exploration of the waterways and the operation of the gundalow, and work with the crew to set the sail, steer, and navigate. Activities are hands-on and place-based, combining concepts from social studies, science, math, art, and language arts. Critical thinking skills, decision making, and working as a team are all incorporated into the experience.

The cultural and natural history of the area will come alive as your students join the gundalow crew - setting the sail, steering the boat, and engaging in active learning and teamwork throughout the trip. Students will board as a group and then rotate through an established program as the PISCATAQUA leaves the dock and travels down river. Our Celebrating Our Rivers Program includes the 3 stations listed below:

**Human Impact on the Watershed:** Students use our 3D watershed model to explore how our actions on land impact the watershed and river on which we sail

**Marine Food Chain:** Using a plankton net, student engage in a 5 minute tow to collect plankton. After looking at the plankton under magnification, students, student work their way up the food chain by looking at various filter feeders and eventually a lobster.

**Sense of Place:** During the sense of place station, students work with a nautical chart, compasses, binoculars, and other tools to determine their location. Based on students interest, the crew will discuss the history or ecology of the region through which we are sailing.

## Frameworks, Standards and Principles

### Next Generation Science Standards

- 4-ESS2-2. Analyze and interpret data from maps to describe patterns of Earth's features.
- 4-ESS3-2. Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.
- 5-PS3-1. Use models to describe that energy in animals' food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun.
- 5-LS2-1. Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.
- 5-ESS2-2. Describe and graph the amounts and percentages of water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.
- 5-ESS3-1. Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment
- MS-LS2-1. Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.

- MS-ESS2-4. Develop a model to describe the cycling of water through Earth’s systems driven by energy from the sun and the force of gravity.
- MS-ESS3-3. Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment
- HS-LS2-6. Evaluate the claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions, but changing conditions may result in a new ecosystem.
- HS-ESS2-5. Plan and conduct an investigation of the properties of water and its effects on Earth materials and surface processes.
- HS-ESS3-1. Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.

### **NH Frameworks: Social Studies**

- SS:GE:4:3.1: Illustrate the components of Earth's physical systems, e.g., a climate or a model of the water cycle.
- SS:GE:4:3.5: Investigate how humans interact with ecosystems
- SS:GE:4:5.1: Illustrate how people modify the physical environment
- SS:GE:4:5.2: Examine the ways in which the physical environment provides opportunities or limitations
- SS:GE:6:1.2: Apply the spatial concepts of location, distance, direction, scale, movement, and region
- SS:GE:6:3.4: Explain how human activities influence changes in ecosystems
- **SS:GE:2: Places and Regions Students will demonstrate an understanding of the physical and human geographic features that define places and regions as well as how culture and experience influence people's perceptions of places and regions.**
  - SS:GE:12:2.2: Investigate how relationships between humans and the physical environment lead to the formation of ‘place,’”

### **Estuary Literacy**

- Principle 2: Estuaries are dynamic ecosystems with tremendous variability within and between them in physical, chemical, and biological components.
- Principle 3 Estuaries support an abundance of life, and a diversity of habitat types

### **Ocean Literacy**

- Principle 5: The ocean supports a great diversity of life and ecosystems.
- Principle 1: The Earth has one big ocean with many features.
- Principle 6: The ocean and humans are inextricably interconnected.