



TEACHERS ON THE ESTUARY: INVESTIGATING A CHANGING ENVIRONMENT

AUGUST 3-5, 2016- Great Bay Discovery Center, Greenland NH

(Plus a follow-up call in November, date TBD)

Teachers on the Estuary (TOTE), is a program of the National Estuarine Research Reserve System (NERRS) that offers field-based professional development for teachers on watershed and estuary topics at Research Reserves. In this workshop, Reserves use local research and habitats as a context for introducing teachers to coastal science and issues such as climate change and sea level rise. This year's TOTE is being funded by a grant* and allows us to offer this unique 3-day opportunity for **free**. In addition, a \$200 stipend will be award to each teacher to be used as part of the course goals. Teachers will be asked to conduct a stewardship project with one of their classes and carry out a scientific investigation back at their school during the 2016/17 school year based on the tools and methods learned during the workshop. The workshop activities have been correlated to Next Generation Science Standards and are designed for middle and high school teachers.

The majority of the activities will be hands-on or in the field, as the weather allows. The course will include a kayak tour (no experience necessary) and a boat trip on NH Fish and Game's research vessel, "the Endeavor". We will also spend time reviewing online resources such as data sets from NOAA and the NERRS, including water quality graphing applications and the Estuaries 101 online curriculum for middle and high school students.

Please contact **Kelle Loughlin**, Education Coordinator at the Great Bay Discovery Center, with any questions and to register for this workshop.

Email: Kelle.Loughlin@wildlife.nh.gov

Space is limited to 15 participants and will be accepted on a first come first served basis.

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Day 1, August 3 8:30 am – 4:00 pm

- Course Overview and Introductions
- Test your Estuary IQ
- Introduction to the National Estuarine Research Reserve System, Cory Riley, Manager GBNERR
 - Investigating a Changing Environment – Reserves as Sentinel Sites
- Tour of Reserve Headquarters, boardwalk and grounds and visitor center
- The Great Bay Estuary – Biological, Physical and Chemical Components, Steve Miller, Coastal Training Program Coordinator
 - Climate Science 101- The Global and Local Implications of Climate Change
- Estuary Principles and Concepts
- LUNCH
- NH Coastal Viewer and Sea Level Rise – Tools to use in the Classroom, Rachel Stevens, Stewardship Coordinator, GBNERR
 - Kayak Trip in Great Bay- Exploring Climate Impacts on Coastal Wetlands, Rachel Stevens,
 - Teacher Time: The Classroom Connection



Day 2, August 4 8:30 am – 4:00 pm

- Introduction to Sentinel Site Activity Module
- Investigating Sea Level Rise Activity
- Habitat Mapping – A River Mouth of Change
- Break and Drive to Jackson Estuarine Laboratory, Durham
- Picnic Lunch at Adams Point
 - Introduction to Oyster Research and Monitoring
 - Board NH Fish and Game Vessel – Oyster Research and Aquaculture in Great Bay
 - Oysters, Eel Grass and Nitrogen – A Complex Interaction
- Drive back to Great Bay Discovery Center
- Horseshoe Crabs – Biology and Monitoring- Meghan Owings, UNH Graduate Student, Dept. of Biological/Marine Science
- Teacher Time: The Classroom Connection

Day 3, August 5, 8:30 am – 4:00 pm

- Student Sentinel Sites at Schools/Stewardship Activity
- Estuaries 101 Curriculum/System-Wide Monitoring Program(SWMP) - Using Data In the Classroom
- Blue Carbon and Bringing Wetlands to Market Curriculum
- LUNCH
- Investigating Change through Saltmarsh Vegetation Sampling, Paul Stacey, Research Coordinator, GBNERR
- Are NH Saltmarshes Keeping Pace with Sea Level Rise? Field Monitoring of Marsh Sediments Dave Burdick, UNH
- Teacher Time: Putting it all Together: brainstorming and planning Sentinel Site activities and stewardship activities for the classroom
- Wrap up, Test your Estuary IQ, Evaluation

