

# New Hampshire Coastal Adaptation Workgroup

Thanks to our heritage and belief, New Hampshire's coastal communities are resilient by nature. We can take what is given us and forge through it all. For example, coastal communities get the storms and weather that track from the west, they are the end point of the water cycle for all the precipitation that falls within their watersheds, and they get the full coastal impact of Nor'easters with intense storm surges. And through it all coastal communities have found a way to move forward. But climate patterns have changed and the challenges are growing.

Here in New England the documented impacts of a changing climate include increased average annual temperatures, an increase in very hot days, an increase in stronger storms that dump larger than usual amounts of water, and an increased rate of sea level rise. There has been a 50% increase in federally declared storms during the last twenty years here in New England, with a huge increase in cost associated with storm damage. Coastal communities are experiencing the increase in extreme weather events, which on top of the practical concerns for infrastructure damage and human health, is adding a big strain on the local tax base as well as big challenges for municipal officials.

How do coastal communities plan and prepare for these climate challenges? What are the priority needs? To help coastal communities prepare for and respond to these events the New Hampshire Coastal Adaptation Workgroup (NHCAW) was formed in late 2009. The group was first convened by the GBNERR CTP to plan a coastal adaptation workshop based on a model developed by the Padilla Bay NERR. It was quickly realized by the participants



NH needed a group to spearhead coastal adaptation efforts and the NHCAW was formed.

NHCAW or CAW for short was modeled after the state's successful Natural Resources Outreach Coalition which was established in the 90's to provide coordinated technical assistance on natural resource protection to coastal communities. CAW is made up of staff from the City of Portsmouth Planning Department, Town of Seabrook Conservation Commission/ Planning Board, UNH Cooperative Extension, UNH Institute for the Study of Earth Oceans and Space, UNH Jackson Lab, Clean Air-Cool Planet, Carbon Solutions New England, Piscataqua Region Estuaries Partnership, NH Coastal Program, The Nature Conservancy, Rockingham Planning Commission, NH Sea Grant, Stafford Regional Planning Commission, NH Department of Environmental Services, NOAA Coastal Services Center, and the Great Bay National Estuarine Research Reserve.

CAW is an ad-hoc committee, with the purpose of bringing together coastal stakeholders with responsibility for organizational, municipal, or state level planning. The goal is to help coastal communities develop and implement

a coastal adaptation strategy. CAW helps identify and find funding to support the research, legislative and technical assistance needs for climate adaptation planning. CAW also provides a coordinated, strategic approach to outreach and education to improve the resilience of coastal communities.

To this end, CAW has been offering a series of workshops to develop a community of learning around the issues and tools that can play a part in coastal adaptation. The series will continue in the fall with planned workshops on a regional climate assessment and on the NOAA Roadmap tool for coastal adaptation planning. Past workshop topics include linking emergency management and hazard mitigation planning with coastal adaptation planning, preparing for severe weather events and developing climate change adaptation plans, conducting a community vulnerability assessment, sea level rise and available tools that are used to inform the decision making process. All of these workshops gave participants an opportunity to hear from New Hampshire communities and share stories and insights.

CAW is a great example of how the organizations and agencies in NH can work together in a true partnership. Everyone is there because they understand the climate challenges faced by NH coastal communities, they understand the need to use our limited resources wisely, and they know that to be effective all the partners need to work together. If you have questions about CAW or would like to talk about adaptation assistance, send Steve an email at [Steve.Miller@Wildlife.nh.gov](mailto:Steve.Miller@Wildlife.nh.gov).

Steve J. Miller  
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# Inquiry-Based Learning at Great Bay Discovery Center

Spotlight

“Tell me and I forget, show me and I remember, involve me and I understand.” This age-old adage is the essence of inquiry-based learning. Inquiry is defined as a quest for knowledge, data or truth – seeking information by questioning. We carry on the process of inquiry from the time we are born until we die.

Infants see, touch, hear, taste and smell to better understand the world around them. Inquiry works because it is driven by the learner, leading to answers that are much more meaningful and long-lasting.

Traditional education systems across the country struggle to utilize this approach, leading students to become less likely to ask questions and more prone to simply listen and spit back correct answers.

But thankfully, there is a growing movement towards this approach in traditional and non-formal educational settings, like the skill-based conservation education at New Hampshire Fish and Game. The Great Bay Discovery Center and other education programs at Reserves throughout the nation understand the long-lasting benefits of inquiry-based education and work to integrate the approach as much as possible into existing programming.

This spring, we were fortunate to have Rye Junior High teacher, Robin Ellwood, spend a week on the grounds of the Discovery Center with a group of 17 eighth graders studying factors that influence wild bird populations on New Hampshire’s Seacoast. The unique part of the week was that all the students developed their own questions to answer – a quintessential inquiry-based approach. Robin, along with science teacher, Brian Betournay, challenged the students to generate their questions and then figure out how best to gather and analyze the data.

Robin developed the idea as part of her work toward a doctorate in science education from the University of New Hampshire. She is studying how different approaches to inquiry-based science change learning outcomes. One group of students conducted experiments throughout their school grounds, while another group went off site, conducting their observations and experiments at the Discovery Center.

One group of boys decided to measure temperatures inside and outside a European starling nest located behind the large black metal horseshoe crab hanging outside the Great Bay Discovery Center. Despite the fact that the temperatures outside and around the crab rose to a sweltering 120 Fahrenheit, the temperatures inside stayed fairly constant and below one hundred degrees. Students indicated they were surprised by the results but learned something about the adaptability and toughness of starlings.

Other students studied osprey hunting habits in the estuary, and another group, using a parabolic dish microphone, studied whether the pitch of a bird call correlated to its size.

Throughout the course of the week, students not only learned about their cho-

sen topics, but they had a chance to view nature and wildlife slowly, and naturally, experiencing things that can’t be seen in a structured and harried classroom.

## NH Envirothon Held at Hugh Gregg Coastal Conservation Center

Over one hundred high school students and volunteers from across New Hampshire took part in the 20th New Hampshire Envirothon on Tuesday, May 17th. The annual environmental science competition attracted students and teachers representing 12 high schools from 41 different communities.

The theme this year was “Fresh and Saltwater Estuaries”, making the Reserve an ideal location for the competition. The competition tests students on a variety of topics including wildlife, soils, aquatics and forestry, as well as challenges them to give a presentation on a “Land-based” problem.

This year’s problem – Nitrogen Loading to the Great Bay Estuary, challenged the students as representatives of an environmental consulting firm to address the issue in the Squamscott/Exeter Rivers.

The winning team was from Keene High school. Students from Conval High, who placed second overall in the competition, participated in a kayak trip on the estuary in late July where they were given a first-hand experience in the Great Bay.

The event is sponsored by the New Hampshire Association of Conservation Districts.

Kelle Loughlin  
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Rye Junior High students Jono Harrison and Reed Williamson, listen for bird calls.