



# NEW HAMPSHIRE SEA GRANT 2015-17 PROGRAM GUIDE

## Coastal Science for the Granite State

New Hampshire Sea Grant's mission is to promote the wise use, conservation and sustainable development of marine and coastal resources in the state, the region and beyond.

Located at the University of New Hampshire, N.H. Sea Grant is part of a national network of programs located in our coastal and Great Lakes states as well as in Puerto Rico and Guam. Working in coordination, these programs conduct research, extension, education and communications projects designed to enhance the practical use and conservation of the country's coastal, marine and Great Lake resources. Sea Grant receives funding from the U.S. Department of Commerce through the National Oceanic and Atmospheric Administration, funds that are matched 1:2 with local funds.



*Above: Two UNH students, Helen Cheng and Christos Tsiamos, have received John A. Knauss Marine Policy Fellowships for 2015. The fellowship matches highly qualified graduate students with "hosts" in the legislative and executive branches of government located in the Washington, D.C., area for a one-year paid fellowship.*

## N.H. Sea Grant Fast Facts

In one year, **2,373 acres** of degraded ecosystems were restored/enhanced as a result of NHSG activities.

**93 jobs** were created/retained over two years in fisheries and aquaculture with NHSG's guidance.

Over two years, NHSG has trained representatives from **66 communities** to prepare their municipalities for climate change.

Each year, NHSG-trained educators teach **8,600 K-12 students** about ocean science.

NHSG experts helped establish and support **27 acres** of oyster farms in Great Bay with six million oysters in culture worth **\$4 million**.

**\$1.58 million** was invested in research for 2014-15 to address coastal issues in N.H.

**9,000 hours** are volunteered per year by NHSG-trained individuals.



## NHSG Extension/Outreach

N.H. and the northeast region have been faced with both environmental and social challenges that are impacting land use, water quality and natural resource management decisions, which in turn have affected coastal economies. To address these challenges, NHSG focuses research and extension efforts on improving the sustainability of the fishing and aquaculture industries while reducing their impact on fish stocks and marine habitats and enhancing the management of marine resources. NHSG also works to build decision-maker understanding of nutrient flux in coastal watersheds from stormwater runoff while preparing to adapt to a changing climate. NHSG's efforts in environmental literacy and workforce development provide youth and young adults with an appreciation and understanding of our marine ecosystem, strengthening marine stewardship and encouraging future marine professionals. The following summaries provide highlights from our four focus areas.

## Sustainable Fisheries and Aquaculture



NHSG staff have worked diligently to help support the development of new markets for seafood, delivering higher prices directly to fishermen and helping to meet consumer demand for local and sustainable seafood. As part of this effort, NHSG manages the website [www.NHSeafood.com](http://www.NHSeafood.com) to convey information about local fish availability and seasonality.

NHSG staff are also training fishermen on multi-trophic aquaculture at the mouth of the Piscataqua River, where they are culturing steelhead trout, sugar kelp and blue mussels all together on a floating platform. More than 4,000 lbs. of mussel seed was harvested from an inshore platform and moved to an offshore farm for the final stages of growth. All three species will be for sale in local markets, providing additional income for struggling fishermen.



## Healthy Coastal Ecosystems

NHSG continues to help coordinate marine debris clean-up and education efforts on local beaches and in nearshore waters. Efforts are under way to document the amount and types of microplastics — pieces of plastic that are the size of an eraser or smaller — found on N.H.'s beaches. In addition, NHSG, in partnership with UNH Cooperative Extension, has formed the Coastal Research Volunteer (CRV) Program. This program engages volunteers in meaningful science and stewardship opportunities while enhancing and expanding local coastal research. Volunteers have helped monitor American eel populations, restore oyster beds in Great Bay and survey the health of coastal streams.



*Above: The Coastal Research Volunteers and local students plant native dune species and build fencing to capture sand at Newbury, Mass. These efforts will help rebuild sand dunes in Mass. and N.H. to protect shorelines from erosion during storms and buffer the storm's impacts on homes, businesses and infrastructure along the coast.*

*Left: NHSG is collaborating with the Yankee Fisherman's Cooperative in Seabrook, N.H., to develop value-added products like frozen fish fillets made from local fish such as pollock. This will help extend the season for consumers seeking local seafood at a time when fishermen traditionally do not go out fishing. Photo by: Gabriela Bradt, NHSG/UNHCE*

## Environmental Literacy and Workforce Development

NHSG seeks to foster an environmentally literate and engaged citizenry through formal and informal education and outreach opportunities in ocean, coastal and climate sciences. Approximately 180 NHSG-trained UNH Marine Docents teach thousands of students and adults about marine science through programs in schools, on boats, at public events and a variety of other settings. The annual Ocean Discovery Day program features UNH marine research and allows the docents to reach thousands of students during the two-day event. NHSG also helps to support a year-long Ocean Projects course where undergrad teams tackle real-life marine-related challenges, thus helping to prepare students for careers in marine science and engineering.

NHSG's Brian E. Doyle Undergraduate Marine Extension Fellowship offers juniors and seniors the opportunity to receive hands-on training in one of five fields: fisheries/aquaculture, marine literacy, coastal communities/climate adaptation, healthy coastal ecosystems or communications.

*Clockwise from top: The Local Fish Finder app was developed by NHSG Doyle Fellow Amanda Parks (UNH) to inform consumers about local seafood species and where to purchase them; Sarah VanHorn (UNH) spent a summer working on commercial fishing vessels and writing about her experiences in her blog, Fishues; Shea Flanagan (Dartmouth College) taught volunteers how to measure tiny eels migrating up N.H. coastal rivers; Dan Tauriello (UNH) learned the ropes of kelp and trout aquaculture and helped to develop protocols for raising ornamental shrimp.*



*Above: Community members examine a map of their town to determine where they could improve infrastructure to adapt to climate change. Photo by: Chris Keeley, NHSG/UNHCE*

## Resilient Communities and Economies

NHSG is working with communities throughout the N.H. Seacoast to help them prepare for climate change impacts including sea level rise, extreme precipitation and flooding. Since 2012, NHSG staff and partners have worked intensively with six communities to prepare for climate change using a customized workshop series called "Preparing for Climate Change." In this process, communities learn about their local climate and discuss how future changes will impact their town. Participants then receive customized educational programs on topics of concern, such as how sea level rise affects salt marshes, as they create action plans for how to address key concerns like stormwater management, green infrastructure, emergency preparedness and regulations. This process enables communities to map out manageable steps for adapting to climate change.



## NHSG Research: Beyond Borders

Research funded fully or in part by N.H. Sea Grant extends well beyond the borders of the Granite State and often involves collaboration with numerous partners. Recognizing that some issues are best addressed at the regional scale, the Northeast Sea Grant Consortium is funding three projects with a regional scope that focus on social science research in the focus areas of Resilient Communities and Economies and Healthy Coastal Ecosystems. The Sea Grant programs in New York, Connecticut, Rhode Island, MIT, Woods Hole, New Hampshire and Maine comprise this consortium.

NHSG is currently funding a number of research projects with collaborative elements. The following are two examples:

- **NHSG-funded researchers are working closely with Maine Sea Grant, Lake Champlain Sea Grant, the N.H. Agricultural Experiment Station, and two aquaculture businesses to develop effective nori aquaculture protocols.**

Nori is a red sea vegetable used for sushi, but the U.S. demand currently exceeds supply. Establishing longline nori production protocols will allow New England kelp producers to diversify their operation with a crop that will extend their growing season while utilizing their existing equipment.

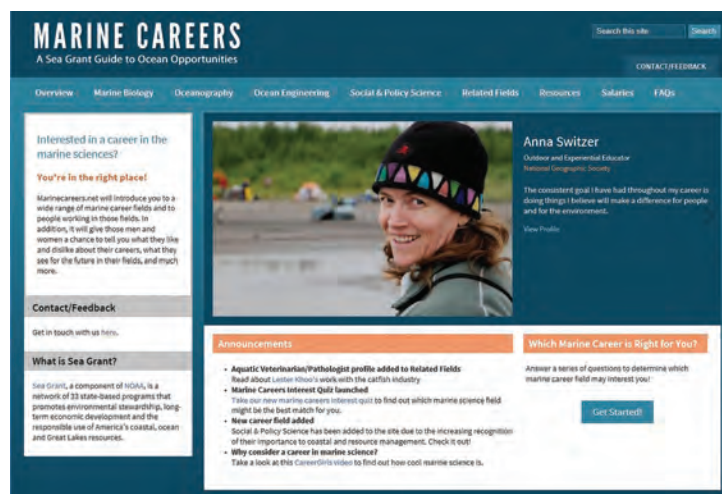
- **NHSG-funded researchers are collaborating with many units and centers within UNH and N.H., two local towns, the Georgetown Climate Center, and a group of communication specialists to analyze and communicate the impacts from increased flooding in the Lamprey River Watershed.**

This research will provide a broader understanding of the risk and economic impact of current and future flooding as a result of land use and climate change to residents across the watershed.

**Please visit the research page of our website for more details about all of the current research projects funded by NHSG: [www.seagrant.unh.edu/researchprojects](http://www.seagrant.unh.edu/researchprojects).**

To learn more about the full breadth of NHSG activities:

**[www.seagrant.unh.edu](http://www.seagrant.unh.edu)**



## More Web Resources

For over 15 years, NHSG has participated in the management of [marinecareers.net](http://marinecareers.net), a national Sea Grant website devoted to providing students with information on career possibilities in the marine sciences and closely related fields. NHSG recently redesigned the site and we are almost finished updating the material, which includes question and answer profiles of more than 50 professionals, many of whom interact with site visitors via email. Each day, 500-600 students and others visit the site.

If you're looking for more information, check out the **National Sea Grant Library**, the digital library and official archive for NOAA Sea Grant documents. It is the only comprehensive collection of Sea Grant-funded documents from over 30 programs and projects across the country. The NSGL provides global access to over 22,000 full-text digital documents through its online publications catalog. Check it out at [www.nsgd.gso.uri.edu](http://www.nsgd.gso.uri.edu).

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