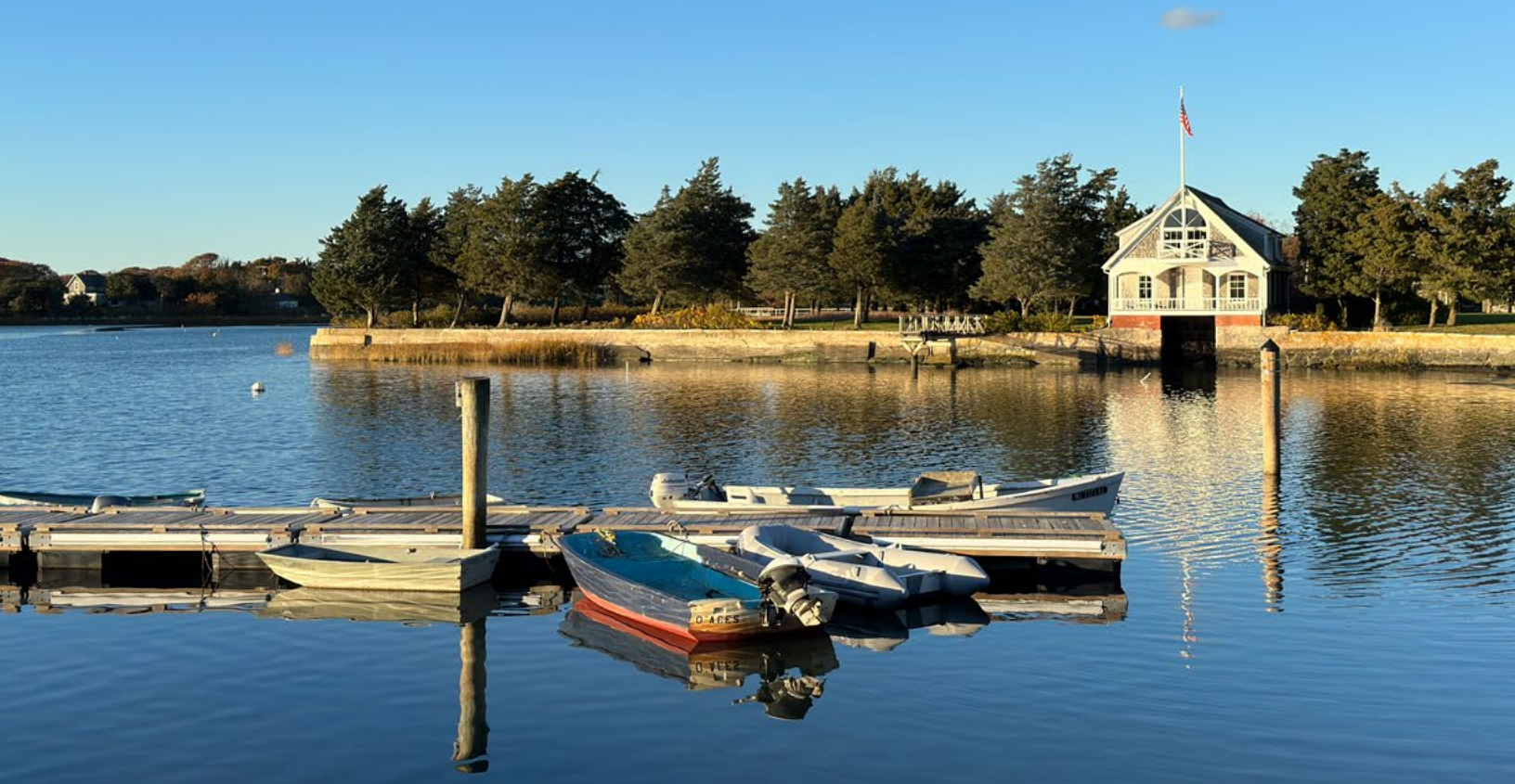
Sea Grant
WOODS HOLE
OCEANOGRAPHIC INSTITUTION

GUIDE TO WHOI SEA GRANT PROGRAMS 2024–2025

Putting Science to Work for Massachusetts' Coastal Communities



Mission

WHOI Sea Grant's mission is to enhance the practical use and conservation of coastal and marine resources by developing and sharing science-based knowledge to create a sustainable economy and environment for the diverse communities of Massachusetts.

RESEARCH
EXTENSION
EDUCATION

Photo by Poonam Narotam

Research Projects 2024-2025

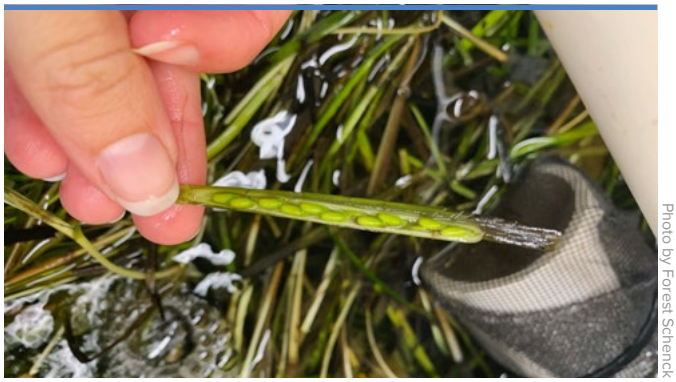


Photo by Forest Schenck

Restoring Eelgrass: Identifying best practices for a seed-based approach

Seagrass plays a critical role in coastal marine environments, like providing fish a nursery habitat. Its significant decline across Massachusetts has been caused by poor water quality. Seagrass can be restored, especially as the state invests in water quality improvements. Researchers Jill Carr (UMass Boston), Forest Schenck (MA Division of Marine Fisheries), and Alison Frye (Salem Sound Coastwatch) will test and identify best practices for planting eelgrass meadows using seeds, enabling large-scale restoration efforts across the state.

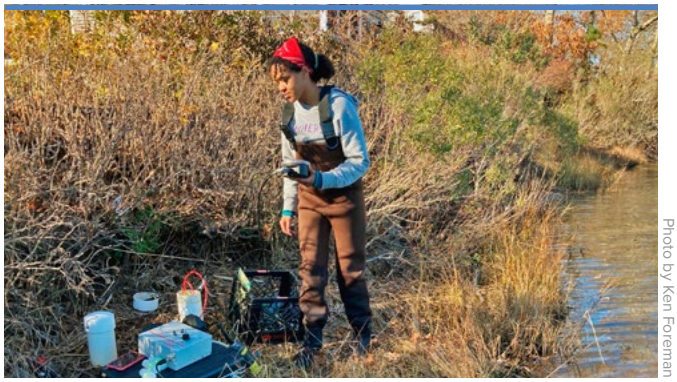


Photo by Ken Foreman

Reduce, Restore, Recover: Little Pond ecosystem's response to sewering

Over the last 70 years, Cape Cod has seen rapid population growth and minimal investment in wastewater infrastructure. This has added significant amounts of nitrogen to the local watersheds. In 2016, Falmouth, MA, installed a sewer system near Little Pond, dramatically reducing the amount of nitrogen reaching the ecosystem. Researchers Ken Foreman, Ketil Koop-Jackobson (Marine Biological Laboratory), and Matt Long (WHOI) will measure and assess how nutrients flow into and through the Little Pond estuary to understand how coastal ecosystems respond to these changes.

Photo courtesy of NOAA

Waste to Watershed: How contaminants of emerging concern impact mussels

Amongst the compounds that make their way from septic systems to New England's coastal embayments are contaminants of emerging concern (CECs), including pharmaceuticals and endocrine disrupting chemicals, which might be removed by newer septic technologies. Researchers Jared Goldstone (WHOI) and Helen Poynton (UMass Boston) will study how CECs impact the biology of blue and ribbed mussels and test how well these innovative septic technologies prevent CECs from reaching coastal watersheds.

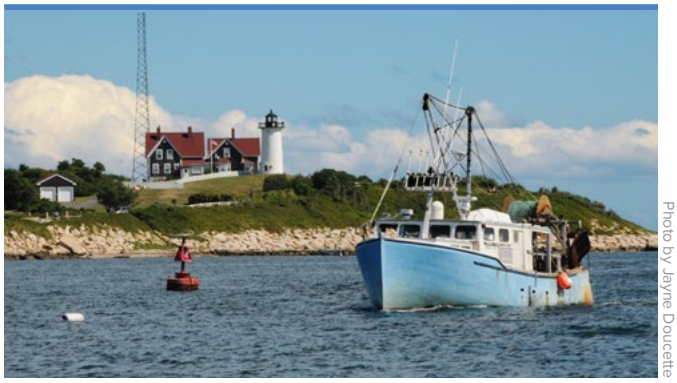


Photo by Jayne Doucette

Changing Currents: Collecting data with fishermen to build more sustainable fisheries

Waters off the Northeast U.S. have warmed faster than most of the world's oceans, with potentially drastic impacts on fishing industries. WHOI researchers Caroline Ummenhofer, Svenja Ryan, and Glen Gawarkiewicz will partner with the Cape Cod Commercial Fishermen's Alliance to collect important catch-relevant ocean data in under-sampled areas off outer Cape Cod. With tools to visualize the data, fishers can make real-time science-based decisions, while the data provides scientists with a better understanding of changing ocean conditions.

WHOI Sea Grant-funded projects focus on economically and environmentally important issues in the Massachusetts coastal environment.

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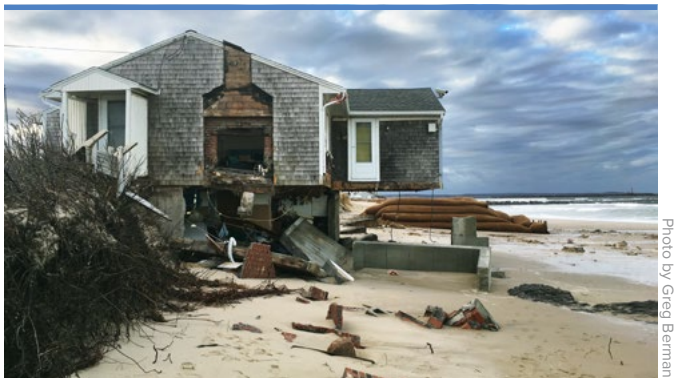


Photo by Greg Berman

To Insure or Not to Insure: How homeowners perceive flood risk

While threats from sea level rise, hurricanes, and winter storms are increasing in coastal communities, Massachusetts flood insurance enrollments are not. In fact, participation in flood insurance policies declined in recent years, particularly on Cape Cod, leaving homeowners vulnerable to the growing impacts of climate change. WHOI economists Di Jin and Michael Weir will survey property owners to investigate the relationship between purchasing flood insurance and/or investing in physical protections, like sea walls, as ways to manage risks associated with sea level rise.

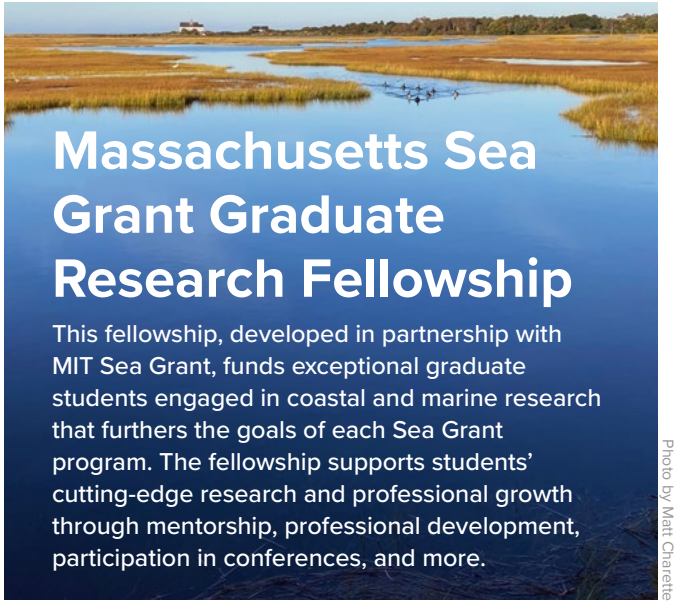


Photo by Matt Charette

Massachusetts Sea Grant Graduate Research Fellowship

This fellowship, developed in partnership with MIT Sea Grant, funds exceptional graduate students engaged in coastal and marine research that furthers the goals of each Sea Grant program. The fellowship supports students' cutting-edge research and professional growth through mentorship, professional development, participation in conferences, and more.

National Sea Grant Funded Initiatives

WHOI Sea Grant participates in collaborative projects funded through the National Sea Grant Office. Highlights include:

- **Aquaculture Disease Research** conducted by WHOI Postdoctoral Investigator Arun Venugopalan focuses on diseases that impact shellfish.
- **Cape Cod Marine Debris Initiative** is building a network of local businesses, organizations, leaders, and public entities to support the transition away from single-use plastics in the food and hospitality sectors. Partner: CARE for the Cape & Islands
- **Catalyzing Aquarium Aquaculture Project** improves the sustainability of public aquariums through on-site finfish aquaculture. Partners: Five public U.S. aquariums
- **Offshore Renewable Energy Initiative** provides outreach, policy, technical, and/or legal expertise to Northeast coastal ocean energy stakeholders. Partners: Northeast Sea Grant programs
- **Shellfish Aquaculture Hub** addresses critical issues facing the perception and expansion of the aquaculture industry in southern New England. Partners: Rhode Island Sea Grant and Conn. Sea Grant
- **Seaweed Hub** grows the seaweed aquaculture industry by developing a database of non-proprietary resources and serving as a one-stop-shop for those interested in seaweed aquaculture. Coordinated by: Conn. Sea Grant
- **Hard Clam Selective Breeding Collaborative** sequences the hard clam genome and develops a breeding program to produce clam stocks resilient to environmental challenges. Coordinated by: New York Sea Grant
- **American Lobster Initiative** links lobster research results with industry members and meets emerging needs among American lobster stakeholders. Partners: Northeast Sea Grant programs led by Maine Sea Grant

Find more online at **seagrant.whoi.edu**

Core Program Activities

Extension

Applying research to coastal resource issues

WHOI Sea Grant, in collaboration with the Cape Cod Cooperative Extension of Barnstable County, conducts an outreach and extension program that applies research in social and natural sciences to coastal resource issues. Highlights include:

Fisheries and Aquaculture Program

- Conducts research, monitoring, and continuing education to help the aquaculture industry maintain and enhance production and adapt to ever-changing conditions
- Shares knowledge and guidance with town shellfish constables to support continued, sustainable production in shellfisheries
- Develops and administers educational programs about shellfish biology, harvest and farming for public officials and educators and at public events
- Offers continuing education opportunities to river herring and diadromous fish managers and volunteers
- Monitors water quality and shares data with users and managers of marine resources

Coastal Resilience Program

- Raises awareness of issues resulting from storms, flooding, and erosion and how to enhance coastal resilience, through education and outreach
- Provides knowledge and guidance to municipalities and communities on state and federal regulations and resources related to coastal resilience, floodplain management, and storm recovery
- Supports municipalities in planning and preparing for current and future coastal hazards and helps reduce flood insurance rates
- Conducts and participates in research on living shorelines and other nature-based flood and erosion protection methods

Photo by Hazel Groskorth-Flynn

Photo by Poonam Narotam

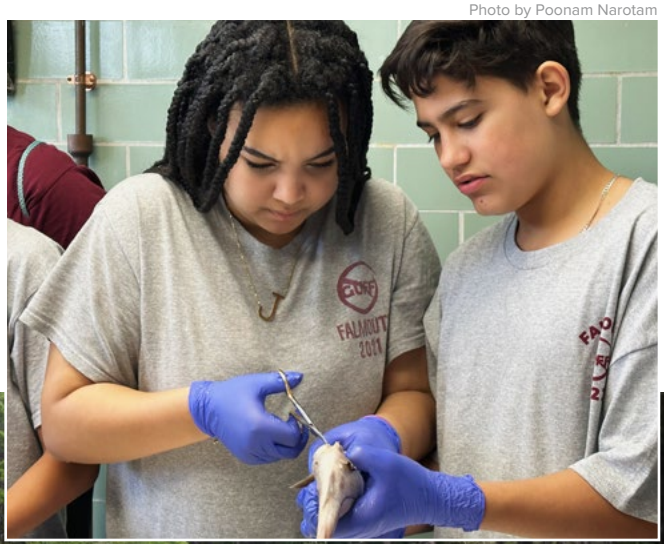
Education and Outreach

Providing leadership in marine and coastal science education and environmental literacy

WHOI Sea Grant is a leader in marine and coastal science education and outreach, collaborating with federal, state, and nonprofit organizations. Activities are designed to reach people of all ages and abilities, such as school-age children, undergraduates and graduate students, interested general public, and industry professionals, and prepare them to make informed decisions involving our nation's coastal resources, communities, and economies. Highlights include:

- Ocean STEAM-Powered Women is a one-week residential fellowship program for ten diverse, underserved high school young women who work alongside female scientists to explore STEAM career paths and immerse themselves in research focused on current marine/coastal issues. Partner: Sea Education Association
- COAST Program provides classroom-based lessons for K-12 students based on research funded by WHOI Sea Grant and the NOAA Fisheries Northeast Fisheries Science Center and web-based resources for educators. Partner: NOAA Fisheries Northeast Fisheries Science Center
- Professional development workshops connect Northeast educators to scientists from WHOI and the region, the latest marine and/or coastal research, and new activities for their classrooms.

Photo by Poonam Narotam



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BARNSTABLE COUNTY
CAPE COD COOPERATIVE EXTENSION

NOAA

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Photo by Grace Simpkins