

# NH Sea Grant Program Guide

# 2005



*The NH Sea Grant College Program provides support, leadership and expertise for university-based marine research, extension and education.*

*A component of NOAA's National Sea Grant College Program and based at the University of New Hampshire, it is one of 30 programs throughout the nation promoting the understanding, wise use and stewardship of our coastal resources.*

**On our cover:** Built in 1878, Portsmouth Harbor Lighthouse is located in the Fort Constitution/US Coast Guard complex in New Castle, NH. The original light on the site, constructed in 1771, consisted of a lamp hoisted up a flagpole. For more information on the lighthouse, including its 2005 tour dates, visit it on the web at <http://lighthouse.cc/portsmouth/>.

[www.seagrants.unh.edu](http://www.seagrants.unh.edu)



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UNIVERSITY of NEW HAMPSHIRE

# Onward to the Future!

## **A Message from the Director**

All organizations require regular re-examination and occasionally even top-to-bottom scrutiny when hard questions are asked, such as: “Are we doing the right things? Are we doing them the right way? Are we having significant impact? Are we having impact on the people and processes we are targeting? What are we missing?” For Sea Grant programs throughout the nation, this re-examination occurs every five years, with preparation of a strategic plan and planning for the regularly scheduled comprehensive Program Assessment Team (PAT) review.

During 2005, NH Sea Grant will prepare its strategic plan for 2006-2011 and plan for its 2006 PAT review. With the assistance of the NH Sea Grant Policy Advisory Committee (PAC), we will seek information and advice from all our constituents and stakeholder groups. NH Sea Grant managers and staff will collect information and recommendations from all sources. The PAC will help us identify the highest priority and most relevant issues, opportunities and needs for New Hampshire, New England and the nation. We will then develop a strategic plan that can stimulate



a balanced portfolio of activities in research, extension, education and communications. The strategic plan will be our guide and will help us steer our course through the next half-decade.

I encourage you to communicate with us and contribute to our strategic planning efforts. If you have answers to the above questions, suggestions for improving NH Sea Grant, and/or advice for us as we work to prepare for whatever challenges the future may bring, please talk to a NH Sea Grant staff member, send us an e-mail message (to [seagrant@unh.edu](mailto:seagrant@unh.edu)), write us a letter (to our mailing address at UNH), or fill out the comment form on our web site ([www.seagrant.unh.edu/survey/comments.html](http://www.seagrant.unh.edu/survey/comments.html)).

I look forward to hearing from you!



Ann Bucklin  
Professor and Director



# Research

## Development of a General Protocol for Characterizing Subtidal Oyster Reefs Using Remote Sensing Techniques

**Raymond Grizzle**, Jackson Estuarine Laboratory, UNH, Durham, NH 03824, 603.862.5130, ray.grizzle@unh.edu  
**Semme Dijkstra**, UNH Center for Coastal and Ocean Mapping;  
**Brian Smith**, NH Fish and Game Department

Eastern oyster (*Crassostrea virginica*) populations have been declining in many areas along the East Coast for years. Effective oyster management has been hindered by the lack of a means to effectively and economically obtain information on oyster distribution and abundance. This research team plans to remedy that situation by assessing the effectiveness of newly developed acoustic, visualization, videographic and GIS-based technologies for characterizing subtidal oyster reef habitat and developing a protocol for noninvasive habitat evaluation.

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## Analyzing 19th Century Fisheries Records to Determine the Historical Abundance and Distribution of Gulf of Maine Cod

**W. Jeffrey Bolster**, Dept. of History, UNH, Durham, NH 03824, 603.862.3016, jeff.bolster@unh.edu  
**W.B. Leavenworth**, **Andrew Cooper** and **Karen Alexander**, UNH Dept. of Natural Resources

While most agree that the Gulf of Maine cod fishery is in crisis, none of the stakeholders know very much about the historical nature of the Gulf's cod population or about its productivity over the long term. To address this, a team of UNH maritime historians, biostatisticians, marine ecologists and policy experts will reconstruct cod population dynamics for the mid-19th century using data obtained from fisheries logbooks and other records. Data sets compiled from these sources are suitable for analysis using modified fisheries stock assessment models, generating metrics for cod population size in numbers of fish, total biomass and average fish size.



## Environmental Controls on Shrimp Recruitment Dynamics

**Jeffrey Runge**, Ocean Process Analysis Laboratory, UNH, Durham, NH  
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**Patrick Ouellet**, Dept. of Fisheries and Oceans, Canada;

**Daniel Schick**, Maine Dept. of Marine Resources

This research project is part of a collaboration among US and Canadian researchers to study environmental controls on recruitment dynamics of the northern shrimp (*Pandalis borealis*) in the Gulf of Maine and coastal waters of eastern Canada. Dramatic fluctuations have occurred in the abundance of these shrimp over the past 50 years. In order to understand these fluctuations, the researchers are studying the growth and survival of the shrimp during their early life stages. This work will provide tools for the management of this important fishery.

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## Age and Size Differences in Sexually Mature Thorny Skates: Implications for Fisheries Management in the Gulf of Maine

**Paul Tsang**, Dept. of Animal and Nutritional Sciences, UNH, Durham,  
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**James Sulikowski**, Univ. of Florida;

**Patrick Danley**, Biology Dept., Univ. of Maryland

While skates are of growing commercial importance in the Gulf of Maine, very little is known about their biology. This study will focus on the thorny skate (*Amblyraja radiata*), one of seven skate species indigenous to the Gulf. Researchers have observed a disparity in age and size at sexual maturity in a localized population of thorny skates. This team will seek to determine if smaller, early-maturing thorny skates are migrating into the Gulf from Canadian waters or if the two groups of skates belong to a single genetically cohesive species.



# Overview:

## NH Sea Grant Extension

NH Sea Grant Extension serves as the link between the marine community and UNH, and it helps stakeholders solve problems related to marine resources. Through informal education programs and day-to-day contact, extension staff members are able to assist individuals and groups in making informed decisions about the use, development and conservation of those resources. Extension's efforts are focused on achieving the goals listed here. In all of these activities, NH Sea Grant works closely with UNH Cooperative Extension. For more information, get in touch with the staff member associated with the activity using the contact information on page 11.

### Commercial Fisheries

- ◆ Develop technologies and techniques that will lead to reduced by-catch and regulatory discard of commercially important Gulf of Maine (GOM) fish species. (Pingguo He)
- ◆ Improve fisheries science and provide ancillary employment for fishermen by encouraging and facilitating cooperative research between fishermen and scientists. (Rollie Barnaby)
- ◆ Reduce the incidental take of marine mammals during fishing operations in a way that has minimal economic impact on the commercial fishing industry. (Rollie Barnaby)







- ◆ Reduce the negative impacts of fishing gear on marine habitats and reduce by-catch of commercially important GOM species. (Ken LaValley)

## **Aquaculture**

- ◆ Develop and improve production methods for marine species appropriate for aquaculture in the New England region. (Rollie Barnaby)
- ◆ Ensure that commercial aquaculture is environmentally sustainable and economically/socially viable. (Rollie Barnaby)
- ◆ Transfer information and technology to appropriate user communities. (Rollie Barnaby)

## **Coastal Ecosystem Health and Public Safety**

- ◆ Develop the capability to monitor and predict the response of GOM ecosystems to both natural and man-made disturbances. (Brian Doyle)
- ◆ Identify land uses within the coastal watershed that are significantly degrading GOM water quality through nutrient and contaminant discharges. (Ann Reid)
- ◆ Determine the environmental and ecological factors responsible for harmful algal blooms in the GOM. (Brian Doyle)
- ◆ Develop techniques and approaches to conserve, improve, restore and create important GOM coastal habitats, including seagrass beds, wetlands, mudflats and beach systems. (Julia Peterson)



- ◆ Provide scientifically based information, allowing decision-makers to implement policies for sustainable development in coastal areas. (Julia Peterson)

## **Marine Science Education and Human Resources**

- ◆ Develop, enhance, customize and field test multidisciplinary K-12 curriculum materials and programs that support state and national science standards. (Mark Wiley)
- ◆ Increase opportunities for K-12 teachers to improve their knowledge and skills in the marine science fields by providing appropriate training for preservice and practicing teachers. (Mark Wiley)
- ◆ Build a marine literate citizenry by increasing public understanding of critical New Hampshire marine and coastal issues through up-to-date and relevant marine education programs focusing on the GOM. (Mark Wiley)



# New Faces at NH Sea Grant

After many years of staff solidarity, new opportunities and retirements have led to the departure of several staff members and the influx of new people and new ideas.

**Mark Wiley** — Mark has joined NH Sea Grant as head of the UNH Marine Docent Program. He has an MS in natural resource management from UNH and worked for NH Sea Grant from 1989-91 as an extension specialist in Atlantic salmon restoration. Mark comes back to us from Measured Progress

of Dover, NH, a national testing service where he directed the development and administration of programs in educational standards and assessment.



**Karen Diamond** — A technical writer and former Great Bay Coast Watch volunteer, Karen works as an assistant with the Watch, training volunteers, processing samples, ensuring that QAQC

(quality assurance quality control) standards are being maintained, producing manuals and reports, and managing the program's databases. Formerly, she worked as a management analyst for the city of Dover.

**Ken LaValley** — Ken fills a new position as an extension specialist in commercial fisheries technology transfer. He will work to foster cooperative research efforts between the commercial fishing and academic communities, interpret the results of this research for fisheries managers, and transfer the results of fishing gear technology research to the fishing industry. A PhD candidate in environmental science and





microbiology at the University of Rhode Island, Ken worked most recently as director of quality assurance for Spinney Creek Shellfish of Eliot, ME.

**Kirsten Weir** — A former member of the editorial staff at both *Natural History* and *Current Science*, Kirsten takes over as our science writer. She has an MA in science journalism from New York University and published *That's Science?*, a non-fiction book for young readers, with Scholastic. She will be involved

in both our public information efforts and a range of special communications projects.

**Sue Chalifoux** — Sue is our new communications assistant, a part-time position that includes managing our publications database, overseeing our compliance with the Sea Grant mandatory distribution guidelines, and providing support for a range of communications endeavors. Previously, she worked as a technical writer and software developer for OPUS 2 Revenue Technologies of Portsmouth and as a systems operations manager for George J. Foster & Company of Dover.



# NH Sea Grant Staff

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# Policy Advisory Committee

The NH Sea Grant Policy Advisory Committee (PAC) provides advice and oversight for all aspects pertaining to the management and operation of the program. Appointed by the UNH president, PAC members play a critical role in strategic planning, including determining program priorities in research, extension, education and communications. The members are selected to ensure that NH Sea Grant is listening to people with diverse interests and expertise, including university administrators, academic researchers, entrepreneurs, clientele and concerned citizens, as well as federal, state and local agency staff.

**Andy Armstrong**

Codirector

NOAA/UNH Joint Hydrographic Center

**David Bartlett**

Associate Director

UNH Institute for the Study of Earth Oceans & Space

**James Byers**

Assistant Professor, Zoology

UNH

**Bob Campbell**

Manager, Yankee Fishermen's Cooperative

Seabrook, NH

**Janet Campbell**

Research Professor and Codirector

UNH Ocean Process Analysis Lab

**Jack Chambers**

UNH Marine Docent

Portsmouth, NH

**Celia Chen**

Research Assistant Professor, Biological Sciences

Dartmouth College

**Richard Fralick**

Professor, Natural Science

Plymouth State University



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Associate Director  
UNH Cooperative Extension

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Vice President, Normandeau Associates  
Bedford, NH

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**Chris Mantzaris**  
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**Betsy Nicholson**  
NOAA Regional Coastal Program Specialist  
UNH

**Bonnie Spinazzola**  
Executive Director  
Atlantic Offshore Lobstermen's Association



# NH Sea Grant Communications Products

***Seaweeds of the Northeast Coast of North America*** Produced by James Sears of the University of Massachusetts with support from several regional Sea Grant programs, this full-color poster contains photos of the area's seaweed species and information on their importance. \$3.

***Size at Maturity of Female American Lobsters from an Estuarine and Coastal Population*** (UNHMP-JR-SG-03-24) S. Little and W. Watson. Reprinted from *J. Shellfish Research*, 22:3, 857-863. \$1.

***A Hatchery System for Green Sea Urchin Aquaculture in the Gulf of Maine*** (UNHMP-JR-SG-03-28) L. Harris, P. Madigan and K. Waters. Reprinted from *World Aquaculture*, June 2003. \$1.

***The Great Bay Coast Watch 2003 Annual Report*** (UNHMP-AR-SG-04-04) A. Reid, S. Meeker, C. Dolan, K. Diamond, B. Pagum, A. Perkins and S. Cooper. \$18.

## **2004 Tech 797 Ocean Project Reports:**

***Mini Baja Flotation, Propulsion and Aquatic Maneuverability*** (UNHMP-TR-SG-04-05) E. Couture, J. Forrest, M. Siopis and N. Withington. This report covers the design and testing of a propulsion and flotation system for an all-terrain vehicle. \$3.

***Open Ocean Aquaculture Work and Research Transport Project*** (UNHMP-TR-SG-04-08) S. Davis, S. Hall, B. Nichols and V. Puleo. This team designed a work boat that could meet all of the needs of those involved in the UNH Open Ocean Aquaculture Project and do so as economically as possible. \$6.

***Oyster Thief*** (UNHMP-TR-SG-04-07) J. Lynch and I. Patten. This is a study of *Codium fragile ssp. tomentosoides*, an Asian green algae known as the oyster thief that has become one of the most invasive macro-algal species in temperate regions worldwide. \$4.





***Ultrasonic Tracking of Oil*** (UNHMP-TR-SG-04-06) A. Kavvathas, A. Hamadah and M. Motta. This team developed a system to measure the acoustic impedance of oil as a function of temperature and frequency, a first step towards developing the ability to track sinking oil with sonar. \$4.

All of these items are available from NH Sea Grant Communications.

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## National Sea Grant Communications Products

Each year, the nation's Sea Grant programs produce hundreds of publications and other communications products on a wide range of marine-related topics. We like to introduce a few that we feel our readers might find to be of particular interest in each issue of our program guide. For complete information on all the products available from the Sea Grant network, visit the National Sea Grant Library at <http://nnsogl.gso.uri.edu/index.html>.

***Beachcomber's Companion*** — These field cards feature 50 Atlantic Coast marine invertebrates, illustrated and described for beachcombers of all ages. The cards are printed on waterproof and fade-resistant material and come with a special marking pencil and a checklist card so beachcombers can record the organisms they find on the beach. Available from Woods Hole Sea Grant ([www.whoi.edu/seagrant](http://www.whoi.edu/seagrant)). For more information, visit [www.beachcomberscompanion.net](http://www.beachcomberscompanion.net).



**Protect Our Waters** — Produced by Wisconsin Sea Grant and reprinted by Michigan Sea Grant, this full-color brochure explains why aquatic hitchhikers cause problems and provides tips on how boaters and anglers can prevent their transport. Free, available at [www.miseagrant.com](http://www.miseagrant.com).

[www.ocean.udel.edu/horseshoecrab](http://www.ocean.udel.edu/horseshoecrab) — A joint effort of the Mid-Atlantic Sea Grant Programs and NOAA, this web site explores the significance of a remarkable marine animal, the horseshoe crab.

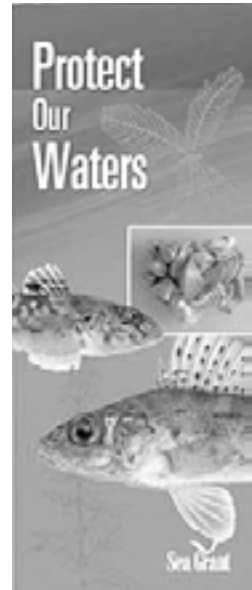
***The Bering Sea and Aleutian Islands: Region of Wonders***



— Written by Terry Johnson, associate professor at the University of Alaska Fairbanks, and produced by Alaska Sea Grant, this 200-page, richly illustrated book tells how the biological and physical worlds above and below the sea meld to form a complex and rich natural environment.

\$25, available from [http://www.uaf.edu/seagrant/Pubs\\_Videos/pubs/SG-ED-42.html](http://www.uaf.edu/seagrant/Pubs_Videos/pubs/SG-ED-42.html).

**Break the Grip of the Rip** — This brochure covers rip currents, a common threat to swimmers at surf beaches. Produced by NOAA and the US Lifesaving Association, it is available free from NH Sea Grant Communications.



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Additional copies are available from:

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manufactured chlorine-free.



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