

Maine Sea Grant Annual Report to the University of Maine Vice President for Research  
for the period beginning February 1, 2013 and ending January 31, 2014

Executive Summary

The Maine Sea Grant College Program experienced a productive year in 2013 as we transitioned to a new strategic plan. Sea Grant research projects were in year two, with a new slate of four studies selected for funding in 2014. We provided \$40,000 in program development funding to 15 projects statewide. Sea Grant staff are effective at leveraging funds, with a two-to-one return on state investment.

We expanded our undergraduate scholarship beyond the University of Maine, and continued to support two graduate students as Sea Grant Scholars in the School of Marine Sciences dual-degree program.

Outreach activities, conducted via the Marine Extension Team and the Sea Grant Communications Office, reached tens of thousands of people in Maine. Extension professionals assisted coastal communities in addressing important and timely issues, from offshore wind energy and fisheries diversification to tourism and workforce housing. Their work was recognized with two awards from the Northeast Region Sea Grant programs.

Publications of note include a special issue of Canadian Journal of Fisheries & Aquatic Sciences, a series of fact sheets on fisheries and aquaculture tourism, and the launch of a new marine-themed literary journal in partnership with Fogler Library, *The Catch: Writings from Downeast Maine*.

*Highlights*

**Sea Grant research supported renewable ocean energy research and development.**

Maine Sea Grant researchers have developed and defined new approaches to monitoring and assessing environmental impacts associated with tidal power turbines, helping to inform similar efforts nationally and globally. Dr. Gayle Zydlewski and her research team, including Sea Grant scholar Jeffrey Vieser, assessed fish communities associated with Ocean Renewable Power Company's tidal energy project in Cobscook Bay. The researchers identified ways that industries and other stakeholders investing in tidal power could save money (using a single beam rather than a split beam echosounder system to monitor fish could save up to \$30,000 in equipment costs) and time (by automating acoustic data analyses). Data collected and analyzed by Sea Grant researchers advanced ORPC's license application process by providing regulatory agencies the best available science, helping to inform the policy changes that were needed to enable tidal power development in the U.S. and abroad. By contributing to the project's success, Sea Grant has helped ORPC retain 38 businesses and more than 100 jobs.

Maine Sea Grant is also engaging communities affected by the University of Maine's offshore wind energy research. The University of Maine is building and testing new floating wind turbine designs for deployment off Midcoast Maine. Fishermen, communities, and other ocean users in the vicinity need opportunities to provide input on the design and deployment, and learn about the goals of the project. Since April 2013, Maine Sea Grant has coordinated community engagement in the project region, including hosting multiple public forums and meetings with lobster, shrimp, and scallop fishermen. Approximately 300 people attended these events in 2013. Maine Sea Grant's work in communities affected by offshore wind energy research and development have helped to correct misinformation and expand the sphere of

engagement, reducing potential conflicts while incorporating more concerns into the development process.

### **Sea Grant science and outreach sustains Maine's lobster economy.**

Since Sea Grant helped develop the American Lobster Settlement Index 25 years ago, the juvenile lobster monitoring program has expanded throughout northeastern North America. The resulting long-term dataset for the fishery has allowed scientists to measure change in fish populations and their ecosystems. In 2013, Sea Grant researchers developed a web portal for project partners to access the long-term data set, and continued work using the data to create forecasting tools. The Atlantic States Marine Fisheries Commission, National Marine Fisheries Service, Canada Department of Fisheries and Oceans, and state fisheries agencies use the Index for assessing the lobster stock.

The lobster industry in the Northeast has suffered due to low prices for the product, and faces several challenges in improving industry practice and competitiveness. Maine Sea Grant coordinated the implementation of the USDA's Trade Adjustment Assistance Program for the lobster fishery in five Northeastern states, and collaborated in design, creation, and implementation of several workshop topics. The TAA program resulted in the delivery of relevant business and technical assistance to more than 2,000 lobstermen in Maine, and 4,000 in the region. In 2013, Maine families and lobster businesses received \$1.43 million in payments.

**Sea Grant played a central role in fostering a developing sector of Maine's marine economy: seaweed.** Maine Sea Grant works together with the wild harvest fishing industry, sea farmers, educational organizations, and public outreach programs to facilitate technology and knowledge transfer for increased awareness of sea vegetable use and importance as well as for the development of a new seaweed aquaculture industry. Since 2012, Maine Sea Grant has provided over 3,150 feet of seeded kelp line to sea farmers to trial on their leases, which has supported the development of at least four new growers who are committed to developing sea vegetable crops on their farms for additional income. Maine Sea Grant has also worked together with educational institutions to develop two new seaweed nurseries for student engagement in Maine, serving middle school, undergraduate, and graduate level students.

Maine Sea Grant assisted the Maine Department of Marine Resources with facilitating the development of a fisheries management plan for rockweed (*Ascophyllum nodosum*), the brown seaweed that dominates Maine's rocky shorelines. In 2013, the Maine legislature directed the Commissioner of Marine Resources to create a fisheries management plan for rockweed. At the Department's request, Maine Sea Grant assisted with the plan, facilitating meetings of the development team and providing guidance on procedures for respectful collaboration and decision-making. The Fisheries Management Plan for Rockweed was completed in January 2014 and submitted to the Joint Standing Committee of Marine Resources.

### **Sea Grant helps coastal communities plan for their future.**

Social science research led by Maine Sea Grant revealed that coastal property owners and municipal officials lack access to accurate information on options for, and the effectiveness of, climate change adaptation strategies in Maine. The research informed outreach and education resources, including The Maine Property Owner's Guide to Managing Flooding, Erosion and other Coastal Hazards, [seagrant.umaine.edu/coastal-hazards-guide](http://seagrant.umaine.edu/coastal-hazards-guide). The guide is being adapted for use in Connecticut, and in 2013, the content was expanded to include comprehensive

guidance on permitting and regulations related to coastal management actions. In 2013 Maine Sea Grant trained 147 municipal Code Enforcement Officers, often a first point of contact for property owners, to use the guide, and hosted a demonstration tour of southern Maine properties where hazard resilient strategies have been applied.

The southern Maine “Seacoast” communities of Kittery and Wells are experiencing development pressure as demand increases for coastal living in proximity to Boston. These towns have worked with Maine Sea Grant, University of Maine Cooperative Extension, Workforce Housing Coalition of the Greater Seacoast, and the U.S. Environmental Protection Agency to conduct community design workshops or workforce housing-focused charrettes toward engaging residents in community planning. These education efforts have resulted in access to funding, policy changes, and redevelopment opportunities.

### **Sea Grant citizen scientists and volunteers inform research and management.**

The Southern Maine Volunteer Beach Profile Monitoring Program, founded and coordinated by Sea Grant, provides data used by Maine Geological Survey and National Weather Service to guide beach management and storm forecasting capabilities. The program is sustained by financial contributions from participating towns and cities. With additional external support in 2013 from Maine Outdoor Heritage Fund, the program expanded to 14 beaches between York and South Portland, [seagrant.umaine.edu/extension/beach-profile-monitoring/home](http://seagrant.umaine.edu/extension/beach-profile-monitoring/home). “Storm teams” provided the National Weather Service with data on four storms between October 2012 (Hurricane Sandy) and March 2013, enabling meteorologists to gage and improve decision-making and warning efforts for coastal storms.

Citizens engaged in the Signs of the Seasons phenology monitoring program have made Maine the third-highest state contributor to the National Phenology Network database used by climate researchers and resource managers across the country. The cumulative number of observations of plant and animal life cycle events exceeded 250,000 in 2013, and the program has begun to develop a long-term phenology record for its indicator species. State and national researchers are already using Signs of the Seasons participant observations to study changes in tree “leaf out,” monarch butterfly populations, seaweed reproduction and growth, and bird migrations and reproduction.

## **I. Overview**

The University of Maine is a federally-designated Sea Grant College. The Maine Sea Grant College Program is supported by the National Oceanic and Atmospheric Administration and the State of Maine. Sea Grant supports marine and coastal research, education, and outreach. Maine Sea Grant is part of a network of 33 programs across the nation’s coastal and Great Lakes states and territories.

### *Mission*

Our mission is to play a leadership role in marine science and education and to promote the sustainable use and stewardship of marine and coastal resources.

### *Vision*

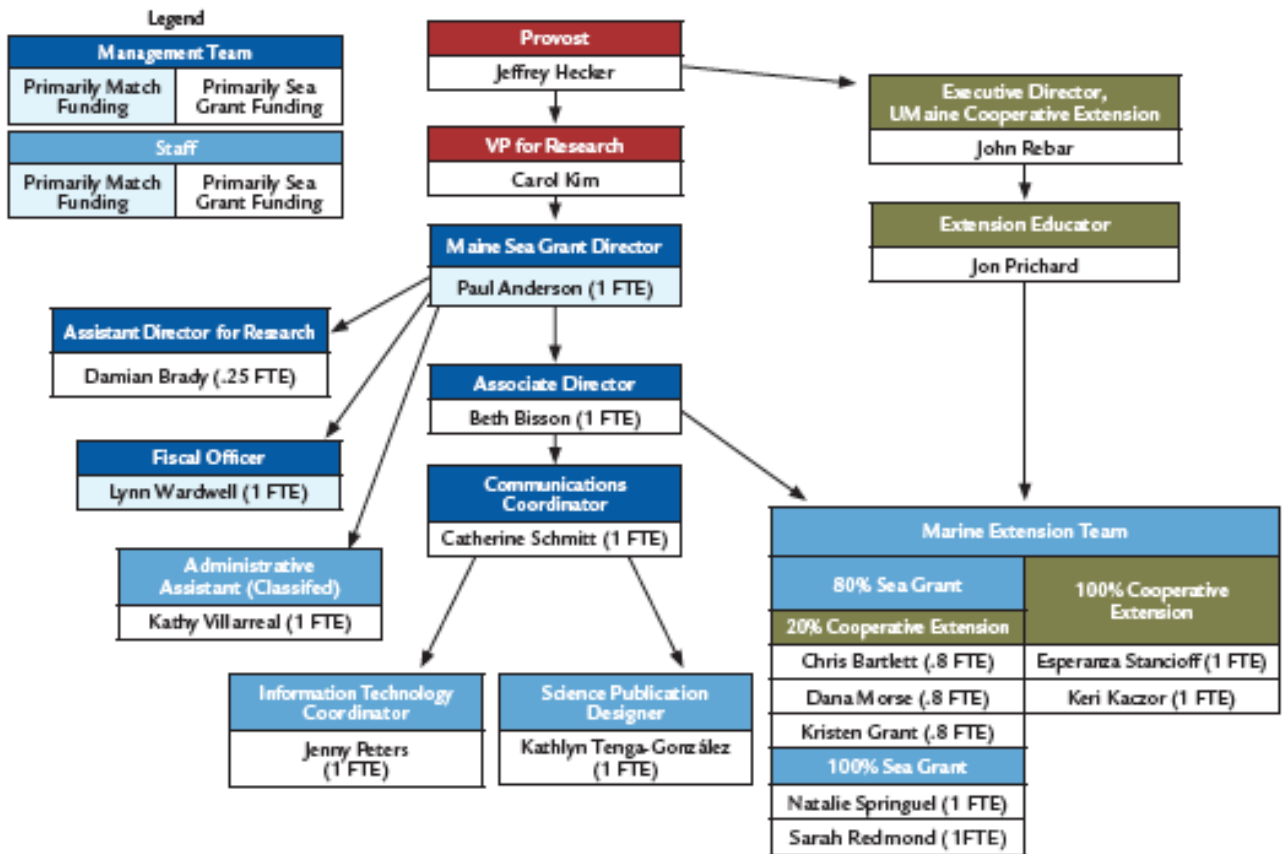
Our vision, from our current strategic plan, is a Maine where people recognize that healthy ecosystems are the foundation of resilient communities, and act to ensure the long-term health of

coastal resources. Maine’s coastal communities include viable neighborhoods, thriving waterfronts, and businesses that draw upon and maintain their natural and cultural heritage. Wild harvest and culture fisheries and the communities that depend on them are economically viable and environmentally sustainable. Maine has a diverse workforce skilled in science, technology, engineering, mathematics, and other disciplines critical to the ecological health, economic vitality, and resilience of Maine’s coastal communities and ocean-related resources.

*Status of strategic plan*

2013 was a year of transition between strategic plans. Our current Strategic Plan was completed in October 2013 and covers the four-year period from 2014 to 2017. The plan, which is in alignment with the National Sea Grant Strategic Plan and has been approved by NOAA Sea Grant, reflects our intent to continue to provide high-quality, science-based information, outreach, education, and support needed by Maine’s coastal communities as they face economic and environmental transitions of the early 21st century. A copy of the plan can be downloaded from [seagrant.umaine.edu/publications/program](http://seagrant.umaine.edu/publications/program).

*Administration and staffing structure*



## II. Serving Maine

### *Community engagement*

Our primary means of engaging stakeholders is through the Marine Extension Team (MET) a formal partnership with the University of Maine Cooperative Extension. Ten professionals are based in coastal communities from Wells to Eastport. The Marine Extension Team performs the traditional “extension” function of connecting scientific researchers and coastal stakeholders. The specific communities engaged in Sea Grant programming vary from year to year, but 2013 collaborations can be found in the partner list in [Appendix A](#).

### *Economic development*

Economic impact	Businesses created	Businesses retained	Jobs created	Jobs retained
<b>\$1,553,000</b>	<b>2</b>	<b>305</b>	<b>8</b>	<b>85</b>

### *Workforce development*

The Maine Sea Grant Scholar program, initiated in 2011, supports a student’s first year in UMaine’s dual master’s degree program in marine policy and science. Maine Sea Grant’s Undergraduate Scholarship Program was expanded through a new partnership with five public and private undergraduate institutions in Maine who committed to matching \$500 in Sea Grant scholarship funding for any successful applicant from their own institution. Scholarship funds may be used for academic research, tuition, professional development, or other academic expenses related to awardees’ marine or coastal studies.

Maine Sea Grant also supports a variety of education and professional training programs. Our funding criteria favor meaningful involvement of K-16 and graduate students, and our education and citizen science programs involve stakeholders of all ages in research and stewardship. Marine Extension Team activities typically include support for graduate and undergraduate students in addition to providing professional training to stakeholders.

Two Maine graduates received Knauss Fellowships in Marine Policy from the National Sea Grant Program in 2013, including UMaine alumna Katherine Farrow. Another UMaine graduate and Sea Grant-funded graduate student, Margot Mansfield, is a NOAA Coastal Management Fellow with the Massachusetts Coastal Zone Management Program.

### *Collaborations with UMaine System campuses*

Dr. Karen Wilson of University of Southern Maine, research funding, “Variation in habitat use by juvenile river herring in the Penobscot River.”

Dr. Brian Beal of University of Maine at Machias, research funding, “Spatial and temporal variation in growth of soft-shell clams.”

### *Collaborations with other outside institutes/organizations*

A list of partners from 2013 is attached in [Appendix A](#).

### III. Financial Sustainability

<i>E&amp;G Support; salary and operating support</i>	NA
<i>MEIF Support</i>	<b>\$572,244</b> (includes fringe benefits and indirect)
<i>Research Funding; Submitted and Awarded, Trends</i>	8 submitted, 2 awarded \$2,000 Eel workshop, University of New England \$19,387 New England Sustainability Consortium, EPSCoR
<i>Brief overview of each major new award</i>	Funding during 2013 was omnibus year four, including Maine Sea Grant administration, communications, extension, and climate change-related projects.
<i>Return on Investment</i>	<b>\$1,630,035 Total</b> \$881,114 NOAA Base/Core Funding \$526,386 NOAA Aquaculture Strategic Initiatives (3) \$140,000 NOAA Merit Funding \$23,148 NOAA Social Science \$30,000 NOAA Climate Adaptation \$10,000 NOAA Bonus Pool

*Revenue centers*

NA

*Private giving/alumni cultivation*

NA

*Initiatives to increase fiscal efficiency*

Maine Sea Grant continuously strives to make the most effective use of its limited funding dollars and to be as efficient as possible without sacrificing the quality of our work.

*Other*

NA

#### **IV. Culture of Excellence**

*Faculty and staff achievements (e.g., awards, recognitions, prestigious appointments etc.)*

Paul Anderson, appointed Director of the Aquaculture Research Institute.

Beth Bisson, promotion to Associate Director.

Chris Bartlett, Dixon Schoodic Scholar award by Schoodic Institute for bird education and monitoring efforts in Washington County.

Ron Beard, 2013 Susan Snow-Cotter Leadership Award, Gulf of Maine Council on the Marine Environment, for outstanding leadership and professional mentoring in the Gulf of Maine watershed.

Keri Kaczor, 2013 Individual Outstanding Outreach Achievement Award, Northeast Sea Grant Consortium, for her work on the Maine Healthy Beaches Program.

Dana Morse, 2013 Group Outstanding Outreach Achievement Award, Northeast Sea Grant Consortium, for his work on the five-state American Lobster Trade Adjustment Assistance Program.

*Research and scholarship summary*

In 2013, Maine Sea Grant activities resulted in

14 peer-reviewed publications, including a special issue of *Canadian Journal of Fisheries & Aquatic Sciences*.

60 print and digital publications, including technical reports, fact sheets, websites, interpretive panels, and articles.

139 presentations to professional and public audiences, attended by nearly 8,000 people.

152 Sea-Grant sponsored or organized workshops, meetings, and conferences attended by more than 4,000 people.

See [Appendix B](#) for a complete list.

*Curricular innovations/integration with the UMaine education mission*

In Spring 2013, Catherine Schmitt designed and taught a new course, Science Writing, offered by the English Department as ENG 418 - Special Topics in Professional Writing.

Beth Bisson is a member of the UMaine K-12 Outreach Network, which works to identify and leverage opportunities to collaborate on multidisciplinary educational programming and

maximize engagement of K-12 teachers and students in STEM learning opportunities and resources supported by UMaine.

## **V. Student Engagement, Student Success**

### *Undergraduate student research, scholarship or creative activities*

Maine Sea Grant supported a total of 33 undergraduate students, 5 from UMaine, through scholarships, program development awards, and research, outreach, and monitoring activities associated with Marine Extension Team research and extension programs.

### *Undergraduate student awards*

NA

### *Graduate student research, scholarship or creative activities*

Maine Sea Grant supported a total of 40 graduate students, 13 from UMaine, through research and program development awards, the Maine Sea Grant Scholar Program, NOAA and Sea Grant graduate fellowship programs, and research, outreach, and other professional opportunities related to Marine Extension Team research and extension programs.

### *Graduate student awards*

NA

### *Retention and graduation numbers, initiatives*

NA

### *Degrees granted*

Maine Sea Grant does not grant degrees directly, but we count the numbers of Sea Grant-supported students who earn undergraduate or graduate degrees during each reporting period. In 2013, three UMaine students (one undergraduate and two graduate) received degrees.

### *Highlighted student profile*

Julia Beaty, a Maine Sea Grant scholar who graduated from the University of Maine in 2013 with a master's in marine science and a master's in marine policy, now works as a contractor for the National Oceanic and Atmospheric Association (NOAA). For her master's research, Beaty interviewed halibut fishermen in midcoast and eastern Maine about their observations of habitat use by the large flatfish. She combined information from fishermen with statistical analysis of catch data to assess the distribution of halibut off the coast of Maine. Upon graduation, Beaty collaborated with Maine Sea Grant and NOAA Fisheries to investigate the history of alewives, blueback herring and American eel in Downeast Maine, a project funded by NOAA's Preserve America Initiative. She conducted interviews with harvesters and other stakeholders, focusing on their detailed knowledge of the local distribution, abundance, and behavior of these species, as well as the cultural and economic importance of these species in Downeast Maine. Beaty's findings and conversations are featured in a series of videos on Maine Sea Grant's YouTube channel.

"I think fishermen's knowledge is under-appreciated, especially in management settings," she said. "Fisheries managers and biologists are interested in what fishermen have to say, but



there's definitely an idea that scientifically rigorous data is the only thing that decisions should be made from."

NOAA subsequently retained Beaty to expand her interviews to alewife fishermen from Maine to North Carolina.

See [Appendix C](#) for details of student engagement.

## **VI. Preserving-Restoring Infrastructure**

### *Renovation or construction projects initiated/completed*

Sarah Redmond and Susan Brawley expanded the seaweed culture laboratory at the Center for Cooperative Aquaculture Research.

### *Renovation/construction projects planned for coming year*

NA

## **VII. Summary of Anticipated Challenges**

One of the major problems with managing a program heavily reliant on public funds is the difficulty in keeping revenues growing commensurate with expenses. The latter suffers constant, annual increases due to either fringe benefits or institutional indirect charges. Salary lines also creep forward. Although the 2014 NOAA award was slightly larger than recent years, the forecast of these funds indicates essentially flat funding. So at a time when we need to continue to serve more societal needs and to build on the momentum we've created, we must diversify funding sources. Our extension program staff are now expected to secure at least one month of salary/fringe per year. Recently this has extended to administrative staff as well.

These budget constraints will also drive necessary reform of the research pass-through funds. We are exploring creative ways to maximize that pool of funds to meet NOAA's expectation for 40% of the federal award supporting competitive research and education. We are also exploring ways to maximize the number of research projects and graduate students that can be supported in lieu of faculty salaries.

Maine Sea Grant has a highly effective team of professional educators and program administrators and staff. Though focused on the programs in our strategic plan, we remain informed on contemporary issues and are responsive to new and emerging needs. Our beneficiaries are faced with many challenges and those challenges, like the environment around them, are changing constantly. We will continue to listen well to our stakeholders and reflect carefully on programmatic decisions that aggregate to meet the most important societal needs that Sea Grant is uniquely capable of addressing. Most of our programming, from seafood to tourism to coastal hazards, requires this engaged and nimble approach. Our management team is incorporating an adaptive management approach known as developmental evaluation to recognize how we can be strategic, while also responding to opportunity.

## **VIII. Summary of New Initiatives**

Seafood and food systems are in flux. Our commercial fishermen and aquaculturists must recognize their shared challenges and opportunities and find common ground in food systems that recognize the value of high quality, local seafood and related products for the Atlantic coast. We will continue to link these producers through workshops and engagement and help to facilitate their transition toward higher-value business opportunities.

Coastal hazards along Maine's coast are as diverse as its people. Severe storm events are clearly on the rise and the continued monitoring of coastal erosion and other infrastructure impacts in vulnerable communities remains important. Research on how hydrographic systems under storm conditions might be more predictable will provide tools for coastal property owners and municipalities to plan for and adapt to costly disasters.

The Gulf of Maine has warmed faster than 99% of the world's oceans. Combined with acidification and other perturbations in nutrient and carbon cycles, ecological changes are expected in the nearshore environment. Continued monitoring of water quality and observations of flora and fauna will provide information about how global change is effecting the Gulf of Maine. We are taking a lead role in updating the 2009 Maine's Climate Future report.

The linkage between river systems and the ocean are proven. Even more so in recent years, as rehabilitation of river habitat and restoration of diadromous species have taken place. In the Penobscot River, one of the largest habitat restoration projects on the planet is commencing and Sea Grant is part of capturing the change and engaging effected parties about changes to the physical and biological features of the river from the estuary up into the watershed.

## **APPENDIX A: MAINE SEA GRANT PARTNERS, 2013**

Acadia National Park  
Acadian Seaplants  
Aquacoustics  
Agriculture Research Service (USDA)  
Aquatic Science & Health Services  
Argonne National Laboratory (DOE)  
Atlantic Coastal Cooperative Statistics Program  
Atlantic Lobster Sustainability Foundation  
Atlantic States Marine Fisheries Commission  
Bates College  
Baxter State Park  
Bigelow Laboratory for Ocean Sciences  
Blue Hill Bay Mussels  
Boat U.S.  
Bowdoin College  
Burnstein Shur Attorneys  
Calendar Islands Lobster Company  
California Sea Grant  
Cape Neddick River Association City of Saco  
Casco Bay Estuary Project  
Center for Ecological Research  
Center for Farm Financial Management, UMN  
Centre for Aquatic Biotechnology Regulatory  
Research, Centre for Aquaculture and Environmental  
Research, Fisheries and Oceans Canada (DFO)  
Chinese Academy of Sciences  
City of Brewer, ME  
City of Ellsworth, ME  
City of Guilford, CT  
City of Portsmouth, NH  
City of Southold, CT  
Clark University  
Clearwater Lobster  
Coastal Enterprises, Inc.  
Coastal Maine Botanical Gardens  
Coastal States Organization  
Cobscook Bay Resource Center  
College of the Atlantic  
Community Wellness Coalition  
Connecticut Sea Grant  
Consulate of Canada  
Consortium for Ocean Leadership  
Cooke Aquaculture  
Cornerstones of Science  
Dartmouth College  
Davis Foundation  
Diadromous Species Restoration Research Network  
Downeast and Acadia Regional Tourism  
Downeast Institute  
Downeast Resource Conservation and Development  
Downeast Salmon Federation  
Drummon Woodsum Law Firm  
East Carolina University  
Eat Local Foods Coalition of Maine  
E+K Shellfish  
Farm Service Agency (USDA)  
FB Environmental  
Federal Energy Regulatory Commission  
Fisheries and Oceans Canada  
Fishermen and Scientists Research Society  
Florida Sea Grant  
Friends of Casco Bay  
Friends of the Boat School (Eastport)  
Friendship International  
Frenchman Bay Partners  
FV Capt. Lee  
FV Ella Christine  
FV Lindsay Marie  
FV Lost Airmen  
FV Leslie and Jessica  
FV Skipper  
Great Bay Aquaculture, LLC  
Georges River Tidewater Association  
Gulf of Maine Council on the Marine Environment  
Gulf of Maine Council's EcoSystem Indicator Program  
Gulf of Maine Research Institute  
Hancock County Emergency Management Team  
Harvard Forest  
Harvard School of Public Health  
Herring Gut Learning Center  
Honam Sea Grant (Korea Sea Grant)  
International Pectnid Workshop  
Island Institute  
K2 Family Foundation  
Lerner Foundation  
Lincoln County Regional Planning Commission  
Lobster Institute  
Long Cove Oyster Company  
Maine Aquaculture Association  
Maine Aquaculture Innovation Center  
Maine Association of Realtors  
Maine Assoc. of Sea Kayak Guides and Instructors  
Maine Audubon  
Maine Beaches Association  
Maine Botanical Gardens  
Maine Bureau of Parks and Lands  
Maine Climate Adaptation Providers Network  
Maine Coast Heritage Trust  
Maine Coast Sea Vegetables  
Maine Coastal Islands National Wildlife Refuge  
Maine Coastal Program  
Maine Community Foundation

Maine Conservation Corps (AmeriCorps)  
 Maine Cooperative Extension Service  
 Maine Cooperative Fish and Wildlife Research Unit  
 Maine Department of Conservation, Agriculture & Forestry  
 Maine Department of Environmental Protection  
 Maine Department of Health  
 Maine Department of Inland Fisheries and Wildlife  
 Maine Department of Marine Resources  
 Maine Department of Marine Resources  
 Maine Department of Revenue Services  
 Maine Department of Transportation  
 Maine EPSCoR (NSF)  
 Maine Fishermen's Forum  
 Maine Geological Survey  
 Maine Health Laboratory  
 Maine Island Trail Association  
 Maine Lobstermen's Association  
 Maine Maritime Academy  
 Maine Office of Tourism  
 Maine Outdoor Heritage Fund  
 Maine Research Internships for Teachers and Students  
 Maine Seafood Network  
 Maine Seaweed  
 Maine Soft-shell Clam Advisory Council  
 Maine State Legislature  
 Maine Tidal Power Initiative  
 Maine Working Waterfront Coalition  
 Maryland Department of Natural Resources  
 Massachusetts Institute of Technology  
 Massachusetts Sea Grant  
 MDI Water Quality Coalition  
 Michigan Sea Grant  
 Micro Technologies  
 Midcoast Fishermen's Association  
 Midcoast Maine Fishing Heritage Alliance  
 Middle Peninsula Chesapeake Bay Public Access Authority  
 Minnesota Sea Grant  
 Mississippi-Alabama Sea Grant Consortium  
 Monhegan Boat Lines  
 Mount Desert Biological Laboratory  
 National Centers for Coastal Ocean Science (NOAA)  
 National Fish and Wildlife Foundation  
 National Fisherman  
 National Marine Fisheries Service (NOAA)  
 National Marine Manufacturers Association  
 National Oceanic and Atmospheric Administration  
 National Park Service  
 National Safe Boating  
 National Science Foundation  
 National Sea Grant (NOAA)  
 National Sea Grant Law Center  
 National Weather Service (NOAA)  
 National Working Waterfront Network  
 New Brunswick (Canada) Department of Tourism, Heritage, and Culture  
 New England Aquarium  
 New Hampshire Climate Adaptation Workgroup  
 New Hampshire Coastal Program  
 New Hampshire Sea Grant  
 New York Sea Grant  
 Newfoundland and Labrador Department of Fisheries and Aquaculture  
 Normandeau Associates  
 North American Kelp  
 North Carolina Sea Grant  
 Northeast Algal Society  
 Northeast Center for Risk Management Education  
 Northeast Sea Grant Consortium  
 Northeastern Regional Aquaculture Center  
 Northeastern University  
 Northwest Atlantic Marine Alliance  
 Nova Scotia Department of Fisheries and Aquaculture  
 Ocean Approved, LLC  
 North American Kelp  
 Ocean Organics  
 Ocean Park Conservation Society  
 Ocean Renewable Power Company  
 Oceanville Seafood  
 Office of International Affairs (NOAA)  
 Ogunquit Conservation Commission  
 Ogunquit Sewer District  
 Ohio Sea Grant  
 Oregon Sea Grant  
 Peaks Island Shellfish  
 Pemaquid Mussel Company  
 Penobscot East Resource Center  
 Penobscot Marine Museum  
 Phoenix Salmon  
 Pine Point Oysters  
 Pleasant River Wildlife Foundation  
 Province of Prince Edward Island  
 Quebec Labrador Foundation, Atlantic Center for the Environment  
 Recreational Boat and Fishing Foundation  
 Rhode Island Sea Grant  
 Roosevelt Campobello International Park  
 Scallop Advisory Council  
 Schoodic Arts for All  
 Schoodic Community Fund  
 Schoodic Education and Research Center  
 Sea Grant Association  
 Sea Grant Climate Network

SOS Maine  
Source, Inc.  
Southern Maine Community College  
Southern Maine Regional Planning Commission  
Spruce Creek Association  
State University of New York, College of  
Environmental Science and Forestry  
States Organization for Boating Access  
Stonington Clam Committee  
Sunrise County Economic Council  
Surfrider Foundation  
Syracuse University  
Texas A&M University  
Texas Sea Grant  
The Lobster Conservancy  
The Nature Conservancy  
Town of Camden, ME  
Town of Gouldsboro, ME  
Town of Hancock, ME  
Town of Harpswell, ME  
Town of Kennebunk, ME  
Town of Kennebunkport, ME  
Town of Kittery, ME  
Town of Lincolnville, ME  
Town of Ogunquit, ME  
Town of Old Orchard Beach, ME  
Town of Old Saybrook, CT  
Town of Orrington, ME  
Town of Prospect Harbor, ME  
Town of Rockport, ME  
Town of Scarborough, ME  
Town of Saco, ME  
Town of South Portland, ME  
Town of Sullivan, ME  
Town of Wells, ME  
Town of Winter Harbor, ME  
Town of York Harbor, ME  
Town of York, ME  
Trust for Public Land  
Tufts University  
U.S. Representative Chellie Pingree (ME)  
U.S.A. National Phenology Network  
University of Connecticut  
University of Delaware  
University of Louisiana at Lafayette  
University of Maine  
UMaine Advanced Structures & Composites Center  
UMaine Aquaculture Research Institute  
UMaine Center for Cooperative Aquaculture Research  
UMaine Center for Research in STEM Education

UMaine Cooperative Extension  
UMaine Department of Biochemistry, Microbiology  
and Molecular Biology  
UMaine Department of Communications and  
Journalism  
UMaine Department of English  
UMaine Law School and Center for Law and  
Innovation  
UMaine Office of the Vice President for Innovation  
UMaine School of Marine Sciences  
UMaine Senator George J. Mitchell Center  
University of Maine at Machias  
University of Massachusetts at Boston  
University of Minnesota  
University of New Brunswick  
University of New England  
University of New Hampshire  
UNH Cooperative Extension  
UNH Cooperative Institute for Coastal and Estuarine  
Environmental Technology  
UNH Jackson Estuarine Laboratory  
University of Prince Edward Island  
University of Rhode Island  
University of Rhode Island Cooperative Extension  
University of Rhode Island Department of Fisheries,  
Animal and Veterinary Sciences  
University of Southern Maine  
Urban Harbors Institute  
US Army Corps of Engineers  
US Coast Guard  
US Department of Agriculture  
US Economic Development Administration  
US Environmental Protection Agency  
US Fish and Wildlife Service  
Virginia Institute of Marine Science  
Virginia Sea Grant  
Virginia State Legislature  
Vitamin Seaweed  
Walsh Engineering  
Washington County Community College  
Washington County Council of Governments  
Washington Sea Grant  
Wells National Estuarine Research Reserve (NOAA)  
West Coast Governor's Alliance  
Wild Ocean Aquaculture  
Woods Hole Oceanographic Institution  
Workforce Housing Coalition  
Works of Hand Gallery  
Wright-Pierce Engineers  
York Conservation Commission

## **APPENDIX B: SEA GRANT COMMUNICATIONS & OUTREACH 2013**

### Peer-reviewed journals

Annis, E.R., C.J. Wilson, R. Russell, and P.O. Yund. 2013. Evidence for thermally mediated settlement in lobster larvae (*Homarus americanus*). *Canadian Journal of Fisheries and Aquatic Sciences* 70:1641-1649.

Cone, J. 2013. Creating research-based videos that can affect behavior. *Journal of Extension* 51(2):2IAW2.

Cone, J., S. Rowe, J. Borberg, E. Stancioff, B. Doore, and K. Grant. 2013. Reframing engagement methods for climate change adaptation. *Coastal Management* 41(4):345-360.

Brewer, J. 2013. From experiential knowledge to public participation: social learning at the Community Fisheries Action Roundtable. *Environmental Management* 52:321-334.

Fox, E., S. White, G. Sato, M. Miller, G. Kidder, J. Hauck, and J.E. Disney. 2013. Effects of slow release nutrients on eelgrass (*Zostera marina* L.) morphometrics and water quality. *Bulletin of the Mount Desert Island Biological Laboratory* 52:34-36.

Hogg, R., S.M. Coghlan Jr., and J. Zydlewski. 2013. Anadromous sea lampreys recolonize a Maine coastal tributary after dam removal. *Transactions of the American Fisheries Society* 142(5):1381-1394.

Jury, S.H., and W.H. Watson III. 2013. Seasonal and sexual differences in the thermal preferences and movements of American lobsters. *Canadian Journal of Fisheries and Aquatic Sciences* 70:1650-1657.

Kidder, G.W., and J.E. Disney. 2013. A comparison of transplant methods for eelgrass (*Zostera marina* L.) restoration in Frenchman Bay. *Bulletin of the Mount Desert Island Biological Laboratory* 52:37-39.

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### Outreach publications

Beaty, J. 2013. A history of the Atlantic halibut fishery in Downeast Maine, [downeastfisheriestrail.org/fisheries-then/fisheries-then-atlantic-halibut/](http://downeastfisheriestrail.org/fisheries-then/fisheries-then-atlantic-halibut/). Orono, ME: Maine Sea Grant College Program.

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Morse, D., C. Guenther, T. DeGraaf, and E. Owen. Scallop aquaculture in Maine. WERU radio: Talk of the Towns, hosted by Ron Beard. November 22, 2013.

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University of Maine Cooperative Extension. Introduction to beach profiling (video), [youtube.com/watch?v=NaF7Pq2HkxA&feature=c4-overview&list=UU0wajJ67o5YTuxaRjZGX8eA](https://www.youtube.com/watch?v=NaF7Pq2HkxA&feature=c4-overview&list=UU0wajJ67o5YTuxaRjZGX8eA). Orono, ME: University of Maine Cooperative Extension.

Wahle, R., P. Jekielek, and C. Bergeron. American Lobster Settlement Index 2012 Update. Orono, ME: University of Maine.

#### Presentations at Local, State, National, International Meetings (# attending)

Bartlett, C. Marine Extension Team efforts in Washington County. University of Maine Cooperative Extension-Washington County Extension Association, 17 September 2013, Machias, ME. (unk.)

Beaty, J., Y. Chen, and J. Wilson. Assessing life history and habitat preferences of Atlantic halibut off the coast of Maine: an integrative approach. University of Maine Grad Expo, March 2013, Orono, ME. (20)

Beaty, J., Y. Chen, and J. Wilson. Evaluating habitat preferences of Atlantic halibut off the coast of Maine by integrating statistical analyses and fishermen’s knowledge. University of Maine School of Marine Sciences Graduate Student Research Symposium, May 2013, Walpole, ME. (100)

Beaty, J., Y. Chen, and J. Wilson. Combining fishermen’s knowledge and statistical analysis to understand habitat usage of Atlantic halibut in the Gulf of Maine. American Fisheries Society, August 2013, Little Rock, AR. (20)

Belknap, D.F, et al. Salt marsh die-back and green crabs. Maine Green Crab Working Group, 16 September 2013, Augusta, ME. (10)

Belknap, D.F, et al. Invasive green crab impacts on low salt marsh in Maine. Maine Green Crab Summit, 16 December 2013, Orono, ME. (250)

Belknap, D.F., J.T. Kelley, K. Wilson, and M.E. Mansfield. Basal peats and the critical leading edge of Holocene transgression. Northeast Section Meeting, Geological Society of America, 20 March 2013, Bretton Woods, NH. (100)

Belknap, D.F. Salt marsh records of sea-level change in Maine. New England Estuarine Research Society, 11 April 2013, Portland, ME. (150)

Bisson, B. Signs of the Seasons: strengthening nature connections and advancing climate research. Maine Environmental Education Association Conference, 22 March 2013, Wiscasset, ME. (10)

Bisson, B. *Heterosiphonia japonica* in Maine: science, policy, and management needs related to a recent invasion of the red alga, *H. japonica*, to Maine marine waters. Maine Invasive Species Network Meeting, 18 April 2013, Portland, ME. (60)

Bisson, B. Monitoring Maine's marine invaders. Maine Beaches Conference, 12 July 2013, South Portland, ME. (25)

Bisson, B. Maine Sea Grant aquaculture research and education initiatives. Maine Development Foundation Leadership Maine Program, 9 October 2013, Orono, ME. (45)

Brewer, J.F., C.M. Guenther, and R. Alden. Community Fisheries Action Roundtable: industry participation for social learning (poster). Managing our Nation's Fisheries, 7-9 May 2013, Washington, DC. (200)

Disney, J., E. Fox, S. White, G. Kidder, and G. Sato. Community-based eelgrass restoration in Frenchman Bay. New England Estuarine Research Society, 12 April 2013, Portland, ME. (140)

Eberhardt, A., B. Bisson, and J. Pederson. A regional approach to preventing the invasion of the Chinese mitten crab in the Gulf of Maine (poster). Coastal and Estuarine Research Federation, 3-7 November 2013, San Diego, CA. (1,400)

Eberhardt, A., B. Bisson, and J. Pederson. A regional approach to preventing the invasion of the Chinese mitten crab in the Gulf of Maine (poster). Northeast Sea Grant Consortium, 18-20 November 2013, New Bedford, MA. (100)

Grant, K. How social science is helping build a resilient coast in Maine. Coastal Services Center Climate Change Adaptation Training, 17 January 2013, Wells, ME. (40)

Grant, K. Speaking of climate change: the ins and outs of climate change communication. New Hampshire Climate Summit, 12 April 2013, Greenland, NH. (103)

Grant, K. Talking with coastal property owners about climate change impacts. Greater Portland Council of Governments, 26 June 2013, Portland, ME. (23)

Grant, K. Building a Resilient Coast (display). Sustain Southern Maine Summit, 7 November 2013, Biddeford, ME. (65)

Grant, K., and A. Gray. Maine Property Owner's Guide to Flooding, Erosion, and Other Coastal Hazards. Code Enforcement Officer Trainings, 19 total, April - November 2013, statewide. (147)

Grant, K. Wells Design Charrette. Wells Board of Selectmen, 17 December 2013, Wells, ME. (15+)

Grant, K. Financing tools for working waterfronts. National Symposium on Working Waterfronts and Waterways, 26 March 2013, Tacoma, WA. (25)

Grant, K. Tools for cooperation café. National Symposium on Working Waterfronts and Waterways, 27 March 2013, Tacoma, WA. (14)

Guenther, C., and R. Alden. Fishery access strategies to support ecosystem-based management (poster). Managing Our Nation's Fisheries, 7-9 May 2013, Washington, DC. (200)

Gunst, S. Legal framework of fisheries, aquaculture and tourism. Fisheries & Tourism Workshop, 11 December 2013, Belfast, ME. (35)

Gunst, S. Legal framework of fisheries, aquaculture and tourism. Fisheries & Tourism Workshop, 12 December 2013, Machias, ME. (28)

Gunst, S. Legal framework of fisheries, aquaculture and tourism. Fisheries & Tourism Workshop, 13 December 2013, Portland, ME. (39)

Henry, A., and T.R. Johnson. Vulnerability and resilience in Maine fishing communities: the complex and dynamic role of the American lobster fishery. Society for Applied Anthropology, 22 March 2013, Denver, CO. (25)

Hunt, H., R. Wahle, M. Comeau, A. Silva, J. Tremblay, V. Burdett-Coutts, and R. Rochette. Cobble-filled collectors as a biodiversity monitoring tool: spatial variation in fish and decapod communities in New England and Atlantic Canada. Benthic Ecology Meetings, 22-24 March 2013, Charleston, SC. (400)

Kaczor, K. Strategies to identify, eliminate and prevent sources of bacterial pollution impacting coastal beach water quality. Keeping Clam Flats Open: Septic Tank Problems and Solutions, 8 March 2013, Bath, ME. (30)

Kaczor, K. Strategies to identify, eliminate and prevent sources of bacterial pollution impacting coastal beach water quality. Maine Water Conference, 19 March 2013, Augusta, ME. (60)

Kaczor, K. Strategies to identify, eliminate and prevent sources of bacterial pollution impacting coastal beach water quality. Maine Beaches Conference, 12 July 2013, South Portland, ME. (30)

Kidder, G., and J. Disney. Eelgrass restoration: from permitting to monitoring in Frenchman Bay, Maine. Eelgrass Extravaganza, 18 March 2013, Boston, MA. (50)

Lindenfeld, L. Seafood Links. Sustainability Solutions Initiative, March 2013, Orono, ME. (25)

Lindenfeld, L. Seafood Links. Department of Communication and Journalism Research Colloquium, September 2013, Orono, ME. (20)

Morse, D. Mook Sea Farm Hatchery Tour. NOAA Ocean Acidification Office Staff, 27 February 2013, Walpole, ME. (12)

Morse, D. Darling Marine Center and Pemaquid Mussel Company. Magdalene Islands, Quebec, and MERINOV, 25 March 2013, Walpole, ME. (10)

Morse, D. Welcome and overview of Maine aquaculture. Canadian Delegation on Hatchery Production, 29 July 2013. (18)

Morse, D. An overview of shellfish aquaculture in Maine. UMaine 'Dive In' Program, 13 August 2013, Walpole, ME. (20)

Morse, D. An introduction to the Aquaculture in Shared Waters Project. Maine Sea Grant Policy Advisory Committee, 1 October 2013, Belfast, ME. (20)

Morse, D. Long-term outcomes in the tech transfer of scallop spat collection techniques, from Aomori Prefecture, Japan, to Maine, USA. US - Japan Natural Resources Panel on Aquaculture. 10 October 2013, Hakodate, Japan. (40)

Morse, D., N. Battista, S. Belle, and R. Clime. Aquaculture in Shared Waters. Maine Lobster Advisory Committee, 15 October 2013, Hallowell, ME. (20)

Payne, M., and K. Wilson. Using natural tags to determine marine and freshwater habitat use by juvenile blueback herring (*Alosa aestivalis*). 69th Annual Northeast Fish and Wildlife Conference, 7-9 April 2013, Saratoga Springs, NY. (50)

Payne, M., and K. Wilson. Using natural tags to determine marine and freshwater habitat use by juvenile blueback herring (*Alosa aestivalis*). American Fisheries Society Atlantic International Chapter Meeting, 22-24 September 2013, Winter Harbor, ME. (40)

Redmond, S., et al. 2013. A pilot project to stimulate seaweed production on mussel farms in Maine. World Aquaculture Society, 22 February 2013, Nashville, TN. (50)

Redmond, S., D. Morse, C. Yarish, J. Kim, P. Dobbins and T. Olson. The cooperative culture of seaweed in New England: how research, industry, and extension are cultivating a new field in aquaculture. World Aquaculture Society, 24 February 2013, Nashville, TN. (20)

Redmond, S., D. Morse, et al. Aquaculture in Shared Waters. World Aquaculture Society, 23 February 2013, Nashville, TN. (35)

Redmond, S. Opportunities for fishermen: seaweed aquaculture. Maine Fishermen's Forum, 2 March 2013, Rockland, ME. (20)

Redmond, S., et al. Integrating seaweed aquaculture into shellfish farms: the role of extension in bringing together research and industry to develop a new field of aquaculture in the U.S. Gangwon Sea Grant International Symposium: Development of Integrated Multi-Trophic Aquaculture, 26 March 2013, Gangneung-Wonju National University, Gangneung, Korea. (60)

Redmond, S., et al. Integrating seaweed aquaculture into shellfish farms: the role of extension in bringing together research and industry to develop a new field of aquaculture in the U.S. NFRDI 1st International IMTA Symposium, 28 March 2013, Busan, Korea. (75)

Redmond, S., et al. Opportunities and challenges for the developing seaweed culture industry in New England (poster). Northeast Algal Society Meeting, 20 April 2013, Mystic, CT. (20)

Redmond, S., and L. Solet. Economic and ecological value of seaweeds (display). Maine Beaches Conference, 12 July 2013, South Portland, ME. (30)

Redmond, S., and S. Barker. Seaweed on shellfish farms: another step forward. The Seaweed Scene 2013, 29 August 2013, Belfast, ME. (120)

Redmond, S. Advances in seaweed aquaculture. Maine Sea Grant Policy Advisory Committee, 1 October 2013, Belfast, ME. (13)

Redmond, S., and S. Erhart. Growing towards the future: developing seeding technologies for sea vegetable culture in Maine. Maine Technology Institute TechWalk, 6 November 2013, Portland, ME. (30)

Schmitt, C. When facts are not enough: understanding risk perception and belief in science. University of Maine BMB 420 - Infectious Diseases, 25 February 2013, Orono, ME. (40)

Schmitt, C. Geologic investigation on Mount Desert Island, 1800-1920. Geological Society of America Northeastern Section, 17 March 2013, Bretton Woods, NH. (80)

Schmitt, C. Rachel Carson and science writing. English 205/Honors 212, 3 April 2013, Orono, ME. (20)

Schmitt, C. Science communication. College of the Atlantic, 8 April 2013, Bar Harbor, ME. (20)

Schmitt, C. Maine Property Owner's Guide to Flooding, Erosion, and other Coastal Hazards. Maine Code Enforcement Officer Training, 6 May 2013, Cherryfield, ME. (12)

Schmitt, C. Students as conservation catalysts in the nineteenth century: the Champlain Society. Lincoln Institute of Land Policy, 13 May 2013, Cambridge, MA. (25)

Schmitt, C. The Downeast Fisheries Trail (panel). University of Maine Humanities Initiative Faculty Development Seminar, 16 May 2013, Orono, ME. (25)

Schmitt, C. Science in eastern Maine, early history and its role in conservation. Eagle Hill Institute, 5 September, Steuben, ME. (30)

Springuel, N. Coastal and heritage tourism in Maine: the role of Maine Sea Grant. National Sea Grant Sustainable Coastal Community Development Network, 25 March 2013, Tacoma, WA. (25)

Springuel, N. Maritime heritage in working waterfronts. National Symposium on Working Waterfronts and Waterways, 26 March 2013, Tacoma, WA. (25)

Springuel, N., and K. Grant. Announcing a Sustainable Working Waterfront Toolkit, from research to implementation. National Symposium on Working Waterfronts and Waterways, 27 March 2013, Tacoma, WA. (210)

Springuel, N. What is the National Working Waterfront Network? National Symposium on Working Waterfronts and Waterways, 27 March 2013, Tacoma, WA. (210)

Springuel, N., and K. Grant. Setting a national working waterfronts agenda: a strategy session. National Symposium on Working Waterfronts and Waterways, 28 March 2013, Tacoma, WA. (110)

Springuel, N. Alternative enterprises. Trade Adjustment Assistance for Lobsters, 16 April, 17 April, 24 April, 2 May, statewide. (30)

Springuel, N. The Downeast Fisheries Trail and you! Downeast Fisheries Trail Annual Celebration, 26 April 2013, Columbia Falls, ME. (40)

Springuel, N. Heritage tourism and the Downeast Fisheries Trail. University of Maine Humanities Seminar, 16 May 2013, Orono, ME. (35)

Springuel, N. University of Maine Sea Grant at College of the Atlantic, University of Maine Office of the President, 17 June 2013, Bar Harbor, ME. (10)

Springuel, N. Downeast Maine fisheries and working waterfronts. Acadian Internship in Resource Conservation and Stewardship Program, 16 July 2012, Winter Harbor, ME. (18)

Springuel, N. Fisheries and aquaculture in Maine food systems, Farm to Fork Short Course for High School Students, 23 July 2013, Bar Harbor, ME. (12)

Springuel, N. What is the Downeast Fisheries Trail? Jonesport Historical Society Fall Meeting, 26 September 2013, Jonesport, ME. (30)

Springuel, N. The Downeast Fisheries Trail as experiential tourism. Two Nation Vacation Industry Leaders Educational Tour, 20 October 2013, Downeast Maine and Southwest New Brunswick. (25)

Springuel, N. Mount Desert Island and Downeast Maine. Two Nation Vacation Industry Leaders Educational Tour, 20 October 2013, Downeast Maine and Southwest New Brunswick. (25)

Springuel, N. Working waterfronts, ocean planning, and the paddling industry: how do we fit in? Maine Association of Sea Kayak Guides and Instructors, November 2013, Brewer, ME. (50)

Springuel, N. Coastal access and working waterfronts. Mid-Coast Council of Governments Workshop, 4 April 2013. (20)

Springuel, N. Coastal access and working waterfronts in Maine and Hancock County. Hancock County Planning Commission Striking the Balance Workshop, June 2013, Ellsworth, ME. (40)

Stancioff, E., and B. Bisson. Maine's changing climate and Signs of the Seasons Program. York County Master Gardeners, 27 February 2013, Springvale, ME. (25)

Stancioff, E., and B. Bisson. Signs of the Seasons Program. Maine Garden Day, 6 April 2013, Lewiston, ME. (25)

Stancioff, E., S. Hoyt, S. Belknap, and K. Grant. Planning for a changing climate: a participatory approach to fishing community adaptation (poster). Regional Association for Research on the Gulf of Maine, 8 October 2013, Sea Coast Science Center, NH.

Stancioff, E., et al. The Northeast Coastal Acidification Network (NE-CAN): meeting stakeholder needs for regional ocean acidification information (poster). Regional Association for Research on the Gulf of Maine, 8 October 2013, Sea Coast Science Center, NH.

Stancioff, E. Climate change impacts on the marine system. Maine Food Summit, 6 December 2013, Orono, ME.

Stancioff, E., A. Gray, S. Jain, and N. Dakhal. Climate adaptation in coastal communities (poster), Maine EPSCoR Conference, 2013.

Viehman, H. How do tidal turbines affect fish? (poster). School of Marine Sciences Graduate Student Symposium, 13-14 May 2013, Walpole, ME. (100)

Wahle, R.A. The American lobster in a changing ecosystem (invited). Atlantic Lobster Sustainability Foundation Annual Meeting, 23-24 July 2013, Moncton, NB, Canada. (120)

Wahle, R.A. The American lobster in a changing ecosystem. Fisheries in a Climate of Change, 1-2 August 2013, Portland, ME. (70)

Weaver, D., S.M. Coghlan Jr., and J. Zydlewski. Anadromous sea lamprey as vectors of marine-derived nutrients: implications for dam removal and Atlantic salmon restoration. Atlantic Salmon and their Ecosystems Forum, 10 January 2014, Orono, ME. (100)

Wilson, K.R., J.T. Kelley, and D.F. Belknap. Salt pools drive surficial transformations of Maine salt marshes. Northeastern Section Meeting, Geological Society of America, 20 March 2013, Bretton Woods, NH. (100)

Wilson, K.R., J.T. Kelley, B.R. Tanner, and D.F. Belknap. Maine's dynamic salt marshes: are re-interpretations of north-temperate salt marsh stratigraphic records warranted? Joint Penrose/Chapman Conference, Geological Society of America and American Geophysical Union, 14-19 April 2013, Galveston, TX.

Yarish, C., and S. Redmond. From ecosystem service to final product: capturing the full potential of seaweed aquaculture. Workshop on Using Cultivated Seaweed and Shellfish for Nutrient Bioextraction in LIS and the Bronx River Estuary, 3 April 2013, Bridgeport, CT. (20)

Zydlewski, G.B., and M. Grippo. Assessing the effects of the ORPC TidGen® on fish in Cobscook Bay and development of an ELAM fish behavior model, Federal Energy Regulatory Commission, 9 April 2013. (50)



Zydlewski, G.B. Maine Tidal Power Initiative (panel). The Global Marine Renewable Energy Conference, New England: Wave and Tidal Energy, 10 April 2013. (100)

Zydlewski, G.B. Fish interactions with ORPC TidGen® in Cobscook Bay (invited). Department of Energy Workshop on Instrumentation for Monitoring around Marine Renewable Energy Devices, 25 June 2013. (40)

Zydlewski, G.B. Quantifying nearfield and farfield effects of the ORPC turbine on fishes of Cobscook Bay. Marine Energy International Symposium, 16 September 2013. (50)

#### Presentations to Lay Audiences

Barrows, A. Microplastic monitoring in Blue Hill Bay. Acadian Internship in Regional Conservation and Stewardship Program, July 2013, Winter Harbor, ME. (40)

Bartlett, C. Salmon farming Downeast: benefits and consequences (panel). University of Maine at Machias, 16 October 2013, Machias, ME. (20)

Coghlan, S.M. Jr. Fish-forestry interactions. FTY 101 Introduction to Forest Resources, 26 August 2013, Lincolnville, ME. (30)

Eaton, J. Opportunities to become a citizen monitor on the St. George, Weskeag, and Medomak estuaries. GRTA Volunteer Recruitment Event and Open House, 16 February 2013, Tenants Harbor, ME. (15)

Eaton, J. Water quality health and chemistry of the St. George River Estuary, St. George Conservation Committee, 21 February 2013, Tenants Harbor, ME. (25)

Eaton, J. 2013. Water monitoring results. Community meeting, 14 March 2013, Rockland, ME. (25)

Eaton, J. 2013. 2012 water monitoring results, Georges River Tidewater Association Annual Meeting, 18 March 2013. (25)

Eaton, J. Georges River water quality monitoring program. Midcoast Stewards Program, 16 May 2013. (25)

Kaczor, K. Strategies to identify, eliminate and prevent sources of bacterial pollution impacting coastal beach water quality. Coastal Studies for Girls, 10 April 2013, Freeport, ME. (25)

K. Kaczor. Our wonderful watery world. Riley School Earth Day Celebration: Women in Science, 22 April 2013, Rockland, ME. (100)

Kaczor, K. Strategies to identify, eliminate and prevent sources of bacterial pollution impacting coastal beach water quality. Midcoast Stewards, 16 May 2013, Waldoboro, ME. (20)

Kaczor, K. Maine Healthy Beaches at a glance. UMaine Cooperative Extension Leadership Team, 4 June 2013, Waldoboro, ME. (7)

Kaczor, K. What you can do to keep our coastal beaches healthy. Maine State Park Lifeguard Academy, 12 June 2013, Phippsburg, ME. (20)

Morse D. Shellfish aquaculture and research opportunities. University of New England, 20 June 2013, Biddeford, ME. (14)

Morse, D. A tour of aquaculture on the Damariscotta River. Waynflete School, 2 July 2013, Walpole, ME. (18)

Morse, D. Oyster aquaculture in Maine. Damariscotta River Association Shore Stewards, 11 September 2013, Damariscotta, ME. (13)

Morse, D. An oyster-centric view of the Damariscotta. Bristol Historical Society, 18 September 2013. (40)

Morse, D. Marine aquaculture in Maine. Bangor Senior College, 1 November 2013, Bangor, ME. (6)

Morse, D. A historical perspective on extension. Aquaculture Research Institute, 12 November 2013, Orono, ME. (35)

Morse, D. Oyster gardening. Great Salt Bay School, 29 October 2013, Walpole, ME. (50)

Redmond, S., and M. Pietrak. Korean/U.S. aquaculture: building partnerships for the development of safe and sustainable seafood, 15 April, 11 June 2013, Orono, ME. (20)

Redmond, S. Vegetables from the sea. Old Orchard Beach/Saco Adult and Community Education, 13 May 2013, Old Orchard Beach, ME. (9)

Redmond, S., and P. Van Patten. Seaweed tea and nature's art at Stoneridge. Stoneridge Independent Living and Retirement Community, Mystic, CT. (25)

Redmond, S. Seeing seaweed: how seaweed aquaculture is changing the way we look at both. University of New Hampshire Marine Docent Meeting, 4 June 2013, Durham, NH. (60)

Redmond, S. Seaweed aquaculture in Maine. White Head Community Center, Grand Manan, NB. (17)

Redmond, S., and H. Krapf. Exploring Maine seaweeds: from bay to body. Beachcombers' Rest Nature Center at Pemaquid Beach, 23 August 2013, Bristol, ME. (15)

Redmond, S., and T. Olson. Maine seaweeds (display). Camden Windjammer Festival, 31 August 2013, Camden, ME. (40)

Redmond, S., and L. Solet. Maine seaweeds (display). Pemaquid Oyster Festival, 29 September 2013, Damariscotta, ME. (100)

Redmond, S., and C. Redmond. Sea vegetables for taste and nutrition. Maine Adult Education, 1 October 2013, Bath, ME. (5)

Redmond, S. Techniques in sea vegetable aquaculture. University of New England, 31 October 2013, Biddeford, ME. (10)

Schmitt, C. The Catch: Writings from Downeast Maine. Poets/Speak! 10 April 2013, Bangor, ME. (50)

Schmitt, C. A history of science in Acadia National Park and its role in conservation. Road Scholars, 29 May, 3 June, 4 September, 7 October, 16 October 2013, Bar Harbor, ME. (100)

Sims, M., and K. Kaczor. Improving water quality on Higgins Beach and in the Spurwink River. Higgins Beach Association Annual Meeting, 30 August 2013, Scarborough, ME. (20)

Springuel, N. Multiple presentations and programs on nature and culture of the Mediterranean. A Prairie Home Companion Cruise to the Mediterranean Sea. (500)

Stancioff, E., and G. Jacobson. Climate change: how plants respond. Coastal Maine Botanical Gardens, 9 July 2013, Boothbay, ME.

Zydlewski, G.B. Considerations for fish and tidal power in Maine. Penobscot Marine Museum History Conference, 2 November 2013, Searsport, ME. (100)

Viehman, H. How will tidal turbines affect fish? Town meeting, 29-30 April and 17, 24 June 2013, Eastport and Lubec, ME. (80)

Wahle, R. American Lobster Settlement Index. Hall of Flags, February 2013, Augusta, ME. (50)

Wahle, R. American Lobster Settlement Index. Damariscotta River Association Stewards, Spring 2013, Damariscotta, ME. (10)

Wahle, R. American Lobster Settlement Index. Penobscot Bay Stewards, Spring 2013, Belfast, ME. (15)

### Events

34 Maine Healthy Beaches Program trainings statewide, April-August 2013. (161)

33 Maine Healthy Beaches Program meetings statewide, January-October 2013. (141)

57 Trade Adjustment Assistance for Lobster meetings, January-June 2013, statewide. (200)

10 Southern Maine Volunteer Beach Profile Monitoring Program Trainings, various locations. (21)

9 Signs of the Seasons Program trainings, March-June 2013, various locations. (130)

6 Maine Beaches Conference meetings, various locations. (72)

7 Wells Workforce Housing Charrette Committee meetings May- October 2013 (8 per meeting)

4 Wells Workforce Housing Charrette sessions, October 2013, Wells, ME. (127)

3 New England Climate Adaptation Project Scenarios, Wells and Kennebunkport, ME. (115)

3 NOAA COCA funded project meetings, February-March 2013, South Thomaston, ME. (44)

Maine Marine Invasive Species Collaborative Meeting, 6 January 2013, Portland, ME. (10)

Frenchman Bay Partners Annual Meeting, 2 February 2013, Bar Harbor, ME. (40)

A Phenology Focus on Maine: Signs of the Seasons Program Research Data Webinar, 26 February 2013, location.

Nor'Easter Bowl: Northeast Region National Ocean Science Bowl Competition, 23 February 2013, Biddeford, ME. (350)

Maine Fishermen's Forum, 28 February - 2 March 2013, Rockport, ME. (3,000)

*Heterosiphonia japonica* in Maine: research, policy, and management needs related to the invasive red marine algae, 13 March 2013, Augusta, ME. (20)

Sea Grant Sustainable Coastal Community Development Network, 25 March 2013, Tacoma, WA. (21)

National Symposium on Working Waterfronts and Waterways, 25-28 March 2013, Tacoma, WA. (250)

National Working Waterfront Network Steering Committee, 28-29 March 2013, Tacoma, WA. (15)

New England Estuarine Research Society (NEERS), 11-13 April 2013, Portland, ME. (140)

3 Maine Tidal Power Initiative Outreach meetings, April-June 2013, Eastport and Lubec, ME. (50)

Downeast Fisheries Trail Meeting & Celebration, 26 April 2013, Columbia Falls, ME. (40)

Downeast Smelt Fry, 26 April 2013, Columbia Falls, ME. (500)

Maine's Climate Change Adaptation Providers Network and New Hampshire's Climate Adaptation Workgroup, 7 June 2013, Wells, ME. (16)

10 Development Team meetings for Rockweed Fisheries Management Plan, June 2013 – January 2014. (100)

Tour Our Resilient Coast, 29 June 2013, multiple communities. (15)

Signs of the Seasons Climate Change Forum, 9 July 2013, Boothbay, ME. (25)

Maine Beaches Conference, 12 July 2013, South Portland, ME. (210)

Atlantic Canadian Oyster Mission to New England, 29 July 2013, Newcastle, ME. (29)

Kelp Farming Workshop: An Introduction to the Equipment, Processes, and Techniques of Kelp Farming, 29 August 2013, Belfast, ME. (45)

The Seaweed Scene 2013, 29 August 2013, Hutchinson Center, Belfast, ME. (125)

Rise and Fall of Gull Populations (symposium), Waterbird Society, 24-29 September 2013, Wilhelmshaven, Germany. (582) \*based on society membership.

National Weather Service Caribou Field Office Focus Group, 25 October 2013, Eastport, ME. (10)

National Weather Service Caribou Field Office Focus Group, 15 November 2013, Brewer, ME. (20)

Maine Green Crab Summit, 16 December 2013, Orono, ME. (300)

2 Shellfish Working Group meetings, January and December 2013. (60)

3 Fisheries, Aquaculture and Tourism Workshops, December 2013, Belfast, Machias, and Portland, ME. (100)

Ocean Acidification Workshop, 16 January 2014. (unk.)

Island Housing Trust Board Retreat, 25 January 2014, Somesville, ME. (18)

**APPENDIX C: STUDENT ENGAGEMENT, 2013**

*Students were enrolled at the University of Maine unless otherwise indicated.*

	<b>undergraduate students</b>	<b>graduate students</b>
<b>total engaged in 2013</b>	<b>33 (5 UMaine)</b>	<b>40 (13 UMaine)</b>
<b>degrees awarded</b>	Alexander Jensen, BS marine science	Anna Henry, MS/MA marine science/policy Felipe Parades, Ph.D.
<b>students supported with Sea Grant research funds</b>		Julia Beaty (Chen) Jeffrey Vieser (Zydlewski) Jie Cao (Chen) Haley Viehman (Zydlewski) Brienne Suldovsky (Lindenfeld) Carl Wilson (Chen) Karen Pianka (Johnson)
<b>students supported with program development funds</b>	Tyler Carrier Jeffrey Dubois	Molly Payne Wynne (USM)
<b>scholarship recipients</b>	Benjamin Segee Alexander Jensen	Noah Oppenheim Jocelyn Runnebaum
<b>students supported with external research funds</b>		Scott Gunst (Roger Williams)
<b>students involved in Marine Extension Team activities/advising</b>	National Working Waterfront Network posters (1 College of the Atlantic)  Sea vegetable research Nathan Carey (UNE) Daniel DeBiasi (UNE) Jennifer La Comfora (UNE) Brian Kennedy (Bates)  Beach Profile Monitoring (24 various)	Samuel Belknap Stephanie Maclagan Nirajan Dakhal (post-doc) Ashley Heinze (COA) Anne Clark Baker (Clark) Miriah Russo (Oregon State)  Acadian Internship Program in Landscape Conservation (18 various)