I. Introduction

Information in this report, gathered from staff, partners, and funded researchers, relates to the research, extension, communications, education, and management portions of Maine Sea Grant. The information is organized according to the guidance provided by the Office of the Vice President for Research at the University of Maine, and also will be provided to the National Sea Grant Office.

These outcomes, outputs, and impacts are impressive in relationship to Maine Sea Grant’s staffing level and budget. Most, if not all, of these projects and programs involve partnerships with other individuals and organizations. These partnerships are key to Maine Sea Grant’s success, and we wish to thank our partners for their commitment to the people of Maine and the natural resources upon which we all depend.

The Maine Sea Grant College Program continues to grow in our service to the state, providing scientific information to communities and decision-makers to ensure collaborative and effective management of Maine’s precious coastal natural resources. Our stakeholders view the Marine Extension Team as a neutral broker of scientific information and a balanced convener for difficult issues facing Maine’s coast. Because of this demand, the Maine Sea Grant program is oversubscribed and staff are being pulled in many directions as they work to address the diverse interests in the communities they serve. This represents a significant challenge. To ensure that we are focusing resources strategically on projects and programs that will result in the greatest impact, program leaders, along with members of our Policy Advisory Committee, are engaged in discussions with other partner organizations to better articulate Sea Grant’s niche in Maine.

While Maine Sea Grant partners with many organizations around the state, we have increased efforts to cultivate relationships with departments, faculty, and students at the University of Maine. In this past year, we worked closely with the Climate Change Institute, providing financial support for the CC^21 conference, and supporting in-kind the editing, design, and production of the Maine’s Climate Future report. This partnership is continuing as we expand outreach and community engagement on climate change-related issues. Sea Grant has also interacted closely with the Advanced Engineered Wood Composites (AEWC) Center on alternative ocean energy issues, helping to provide the community engagement support that will be necessary as the AEWC becomes a national center for offshore wind energy research. Sea Grant also continues to connect with the faculty in the School of Marine Sciences, providing guest lectures and other interactions with students through fellowship opportunities and internships. In addition to continuing these campus partnerships, Sea Grant will likely interact with the “Sustainability Solutions Initiative” in the coming year. These connections help to integrate the University's strengths into the Sea Grant program, which not only adds value to Sea Grant, but also helps the University in its mission of engagement and helps to build the relevance of the University to the people of Maine.
II. Membership Determination (% funded by MEIF, E&G, MAFES)

<table>
<thead>
<tr>
<th>Sea Grant Staffing</th>
<th>Number of Individuals</th>
<th>Number of FTEs (Sea Grant Award)</th>
<th>Number of FTEs (MEIF)</th>
<th>Additional MEIF</th>
<th>Coop Ext</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administrative</td>
<td>4</td>
<td>1.13</td>
<td>2.87</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Communications</td>
<td>4</td>
<td>2.01</td>
<td>1.99</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extension</td>
<td>4</td>
<td>2.64</td>
<td>.76</td>
<td>.6</td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>.08</td>
<td></td>
</tr>
<tr>
<td>Research</td>
<td>21</td>
<td>3.04</td>
<td>Unknown</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

III. Collection of ROI Data for Research Unit/Entire Unit and per FTE

a. Leveraged Funds

<table>
<thead>
<tr>
<th>Project</th>
<th>Source</th>
<th>Award</th>
<th>Indirect</th>
<th>Amount</th>
<th>Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Climate Change Catalog</td>
<td>ME Philanthropy Center</td>
<td>$3,850</td>
<td>$934</td>
<td>$4,784</td>
<td></td>
</tr>
<tr>
<td>Climate Variability and Coastal Community Resilience</td>
<td>NOAA Sectoral Applications Research Program</td>
<td>$39,700</td>
<td>$16,951</td>
<td>$56,651</td>
<td>2</td>
</tr>
<tr>
<td>Investigation of Nearshore Migration of Atlantic Salmon</td>
<td>NOAA Fisheries</td>
<td>$26,109</td>
<td>$3,891</td>
<td>$30,000</td>
<td>1</td>
</tr>
<tr>
<td>Omnibus Award</td>
<td>NOAA</td>
<td>$732,346</td>
<td>$322,654</td>
<td>$1,055,000</td>
<td>1</td>
</tr>
<tr>
<td>Program Leadership Team</td>
<td>UM Cooperative Ext.</td>
<td>$4,500</td>
<td>0</td>
<td>$4,500</td>
<td>1</td>
</tr>
<tr>
<td>Support for articles to Wild Catch magazine</td>
<td>Wild Catch magazine</td>
<td>$681</td>
<td>0</td>
<td>$681</td>
<td>1</td>
</tr>
<tr>
<td>Support for Marine Invasives Brochure printing</td>
<td>Maine Dept. of Environmental Protection</td>
<td>$250</td>
<td>0</td>
<td>$250</td>
<td>1</td>
</tr>
<tr>
<td>Support for Marine Invasives Brochure printing</td>
<td>Casco Bay Estuary Partners</td>
<td>$600</td>
<td>0</td>
<td>$600</td>
<td>1</td>
</tr>
<tr>
<td>Support for Marine Invasives Brochure printing</td>
<td>Maine Dept. of Marine Resources</td>
<td>$500</td>
<td>0</td>
<td>$500</td>
<td>1</td>
</tr>
<tr>
<td>Support for Invasives Display at Maine Fishermen’s Forum</td>
<td>Maine Coastal Program</td>
<td>$250</td>
<td>0</td>
<td>$250</td>
<td>1</td>
</tr>
<tr>
<td>Smelt Assessment Year 1</td>
<td>Maine Dept. of Marine Resources</td>
<td>$6,084</td>
<td>$791</td>
<td>$6,875</td>
<td>1</td>
</tr>
<tr>
<td>VitalVenture: Immersing Middle School Learners in Authentic Aquatic Science: B-WET</td>
<td>Gulf of Maine Research Institute (NOAA)</td>
<td>$4,997</td>
<td>$1,339</td>
<td>$6,336</td>
<td>3</td>
</tr>
<tr>
<td>The Future of Maine's Aquaculture Industry</td>
<td>Maine Aquaculture Association (MTI)</td>
<td>$8,405</td>
<td>$4,076</td>
<td>$12,481</td>
<td>2</td>
</tr>
<tr>
<td>Oil Spill Advisory Committee Research Competition</td>
<td>Maine Dept. of Environmental Protection</td>
<td>$72,572</td>
<td>$7,257</td>
<td>$79,829</td>
<td>1</td>
</tr>
<tr>
<td>Oil Spill Advisory Competition Award Administration</td>
<td>Maine Dept. of Environmental Protection</td>
<td>$12,500</td>
<td>0</td>
<td>$12,500</td>
<td>1</td>
</tr>
</tbody>
</table>
b. Peer-Reviewed Publications

i. Journals (5)


ii. Conference Proceedings (3)


c. Other Publications

i. Book Chapters (0)

ii. Books (1)

iii. Editor for a Book (0)

iv. Technical Reports (13)


Maine Healthy Beaches. 2008. 2007 Annual Report to the EPA.


d. Presentations/Posters/Creative Shows

i. National and International Meetings (14)


science in the practice of ecosystem-based management. Wells National Estuarine Research Reserve and Rachel Carson National Wildlife Reserve, September 24, Wells, ME.


Zhang, Y., and Y. Chen. 2008. Updates on the biological reference points testing. ASMFC Lobster Stock Assessment Committee, Gulf of Maine Research Institute, March 10-11, Portland, ME.


ii. Poster presentations (14)


Bisson, B. 2008. The Penobscot River Watershed Education Program. Maine Water Conference, March 19, Augusta, ME; Maine Sea Grant Symposium, April 28, Orono, ME.

Bisson, B., and Tenga-Gonzalez, K. 2008. Penobscot River Watershed; Dam Removal and River Restoration on the Penobscot; Penobscot River History. Posters designed by students and produced by Maine Sea Grant as part of the Penobscot River Watershed Education Program, June, kiosk display in Old Town, ME.


Hoyt, S. 2008. The Taunton Bay ecosystem-based pilot project. Maine Sea Grant Research Symposium, April 28, Orono, ME.


Locke, W.L., E. Sypitkowski, and C. Bohlen. 2008. Effects of bloodworm (Glycera dibranchiata) digging and epibenthic predation on growth and survival of pre-commercial
softshelled clams (*Mya arenaria*). Gulf of Maine Symposium, May, Bowdoin College, Brunswick, ME.

Springuel, N. 2008. Legal tools for protecting access to the Maine coast. Maine Sea Grant Research Symposium, April 28, Orono, ME.


Zhang, Y., and Y. Chen. 2008. Developing and evaluating biological reference points for the American lobster fishery management. Graduate Research Expo, University of Maine, April, Orono, ME.

**iii. Lay Audiences (48)**


Bartlett, C. 2008. A collaborative effort to examine new strategies for managing closed bottom habitats for sea scallops. Maine Fishermen’s Forum, March 1, Rockport, ME; Cobscook Bay Fishermen’s Forum, October 18, Eastport, ME.


Bisson, B. 2008. Penobscot River Watershed Education Program. Waterfront kiosk opening celebration, June 12, Old Town, ME; Bangor Area Stormwater Group, August 21, Orono, ME.


Hoyt, S. 2008. Maine’s commercial fisheries. Tanglewood Elderhostel, June 26 and September 22, Rockland, ME.

Hoyt, S. 2008. Lobster fishing in St. George. Tanglewood Leadership Program, August 5, Port Clyde, ME.


Lindberg, K. 2008. Maine Healthy Beaches: Ogunquit Beach and Ogunquit River Watershed special study. Ogunquit Town Hall, April 22 and August 28, Ogunquit, ME.


Lindberg, K. 2008. Maine Healthy Beaches. St. George Town Hall, October 27, St. George, ME.

Morse, D. 2008. Scallop Fencing Project. Scallop Advisory Council, June 26, Machias, ME.

Morse, D. 2008. Oyster Gardening. Sea Grant Policy Advisory Committee, November 6, Wiscasset, ME.
Schmitt, C. 2008. Communicating science to the rest of the world: lessons from the field. University of Maine School of Marine Sciences, November 14, Orono, ME.

Springuel, N. 2008. Coastal access in Maine. Maine Maritime Academy, April 14, Castine, ME.


Wilson, K.R. 2008. The ecological values of Maine salt marshes. Piscataqua Garden Club, September 17, Wells, ME.

IV. Number of Spin-Out Companies (0)
V. Number of Patents and Other Forms of Intellectual Property (0)
VI. Number of Jobs Funded (0)
VII. Revenue Generated (see leveraged funds above)

VIII. Summary of Accomplishments for the Year

RESEARCH HIGHLIGHTS

Undergraduate wins award for research on baitworm harvesting. Bates College student Ann E. Speers won the Rankin Prize for best undergraduate presentation at the 2007 spring meeting of the New England Estuarine Research Society. Speers' study, part of the Sea Grant-funded work of principal investigator Will Ambrose, examined the effect of baitworm digging on the nutrient cycling, pigment distribution, and sediment characteristics in intertidal flats in midcoast Maine. She found that heavily dug worm flats respond differently to digging than protected areas, and may represent structurally and functionally altered ecosystems. The investment of Sea Grant funds in Ambrose’s research through program development and competitive research awards represents the most current and robust investment in scientific inquiry into the bloodworm, an economically important source of bait for commercial and recreational fishing. This research is informing management and harvest practices to ensure the coexistence of bloodworm and soft-shell clam fisheries.

One step closer to ecosystem-based management of Maine lobster. In the U.S., most fisheries are managed on a species-by-species basis. Scientists and fishermen recognize that
this conventional approach is often unsuccessful, because it does not account for the complexity of ecosystems, including interactions among and between different species. University of Maine scientist Yong Chen and his research team have compiled and analyzed data collected in the state’s inshore trawl fishery to develop a database of species that can potentially influence the population dynamics of American lobster. The database will be used to more accurately model future lobster populations in the Gulf of Maine.

**Maine salt marshes keeping pace with sea-level rise.** Salt marshes provide protected nursery sites for fish, crustaceans, and other invertebrates, as well as open water and food for waterfowl. Concerned that an observed increase in pannes (shallow depressions) and pools on marshes indicates that the marshes are drowning from the inside out, as sediment accumulation fails to keep up with sea-level rise, researcher Dan Belknap and graduate student Kristin Wilson studied historic aerial photographs, maps, and sediment cores of five marshes along the Maine coast to determine how marshes change over time. They discovered that salt marsh surfaces are dynamic, with pools forming, changing size and shape, draining and re-colonizing on decadal to centennial time frames. The salt marshes they studied are able to accumulate at rates greater than six mm/year, suggesting that marshes will survive under even moderately high projections of future sea-level rise.

**Seaweed genetics studies key to developing sea vegetable products.** Growing macroalgae in concert with finfish aquaculture can mitigate potential nutrient overenrichment. For the past two years, Susan Brawley and graduate student Nic Blouin have been experimenting with methods for growing native Maine seaweeds, *Porphyra* spp. (also known as nori) in partnership with Cooke Aquaculture's salmon facilities in Cobscook Bay. Porphyra mariculture would be more economical if seeding nets with the appropriate form of seaweed could be controlled easily. Through molecular investigations of the life history of *Porphyra*, Brawley and Blouin improved culture technology and reduced generation times for the macroalgae. The specific haplotype they analyzed was deposited in two public culture collections in Maine and Texas for use by other scientists. The researchers hope their work will advance development of sea vegetable products for U.S. and European markets.

**Finding the needle in the haystack: tracking hatchery-raised lobsters at sea.** Realizing that a collapse of the lobster fishery would have far-reaching effects beyond the dock, fishermen and scientists are taking a fresh look at stock enhancement for the lobster population. Richard Wahle and his colleagues at Bigelow Laboratory for Ocean Sciences are working with the Zone C lobster hatchery in Stonington to track the success of releasing hatchery-raised lobsters into coastal waters using genetic fingerprinting analysis to distinguish hatchery-reared from wild stock. At a release site in midcoast Maine, they were able to determine that 91.2% of the sampled lobsters were wild, and therefore, 8.8% might be hatchery-reared. This rate is encouraging enough to allow the experiment to continue.

**Theses and dissertations (2)**


**PROGRAM DEVELOPMENT HIGHLIGHTS**

**Leveraging funds to keep Maine's marine industries healthy.** As "seed" funding, Maine Sea Grant program development funds are designed to support pilot projects and new initiatives. An ideal example of the effectiveness of these funds is offered by Debbie Bouchard, Manager of the University of Maine's Aquatic Animal Health Laboratory, who leveraged $3,000 in Sea Grant development funds awarded in 2007 to obtain a $250,000 grant for a two-year project investigating factors that affect lobster health.

**Eight graders use oranges to trace Saco River currents.** In an example of successful inquiry-based science education, University of New England researcher Charles Tilburg engaged Biddeford Middle School students to map the fate of the freshwater plume out of the Saco River, the fourth largest river in Maine. They released "biodegradable drifters"—oranges—at the mouth of the Saco River during ebb tide and then tracked each orange by collecting information on its location, date when it was found, and its condition. While the majority of oranges were found in the vicinity of the Saco River mouth, some drifted as far north as Phippsburg and as far south as Gloucester, Massachusetts. Analysis of river discharge dynamics, wind forcing, and the observed orange trajectories suggests that the direction of the winds can influence the distribution of the river and carry its plume into the Western Maine Coastal Current and the Gulf of Maine.

**New gear enhances sustainability of Maine's shrimp fishery.** To compete in the volatile shrimp market, fishermen are targeting catches of larger shrimp, which bring the highest price, while striving to eliminate the bycatch and discard of non-target fish to meet demand for sustainably harvested seafood. Maine Sea Grant contributed funds toward the manufacture of new selective trawl gear, expanding the use of such gear from two to 20 fishing vessels, or 15% of shrimp harvesters. Ken La Valley and his research team at New Hampshire Sea Grant/Cooperative Extension anticipate that, as the market demand for local shrimp increases, shore-side processing facilities will return and all gear that was provided, in part, by this project will be used during the 2009 shrimp season.

**Large lobsters may not produce highest quality eggs.** Larger lobster eggs have been shown to have higher lipid contents, faster growth, and result in larger larvae; and that the lipids and fatty acids comprising the fat content of an egg will have a significant influence on growth rates and size of larvae at hatching, which increases the probability of survival to adulthood. In this preliminary survey, University of North Carolina researcher Heather Koopman found that large lobsters in fact did not have the greatest amount of lipid in their eggs and had consistently lower levels of omega-3 fatty acids than small or medium lobsters. Koopman found no obvious relationship between female size and egg size, information which could influence the harvest policies of the lobster industry.

**Sea urchins grown successfully in laboratory.** After a rapid boom-and-bust in the 1990s, the Maine sea urchin fishery continues to be depleted, especially in southern Maine.
Leveraging MEIF-Small Campus Initiative Grant funds from the University of Maine System, Douglas McNaught and a team of undergraduate students at the University of Maine at Machias have developed and tested techniques to raise green sea urchins from spawning, through larval stages, and into early juvenile stages within a laboratory environment. An estimated 10,000 juvenile green sea urchins will continue to grow in the laboratory until late July 2009, and then be transplanted into the field for growth and survival experiments.

EXTENSION ACCOMPLISHMENTS

Ecosystem Health

Cleaner beaches = healthier swimming. The Maine Healthy Beaches Program expanded to two new beaches in 2008. Monitors in the program documented improvements in water quality at eight beaches, while the total number of beach advisories decreased in 2008. Program staff attribute the improvements to special studies and sanitary surveys, marine pumpout and education/outreach efforts, and local actions to address malfunctioning subsurface wastewater disposal systems and improvements to stormwater systems. Two examples follow.

Partners clean up Ogunquit beaches. High bacteria levels on Ogunquit Beach prompted the Maine Healthy Beaches Program to conduct a multi-year special study of the Ogunquit River and Ogunquit Beach watershed. In 2008, program staff (in partnership with the Maine Geological Survey) presented the study findings and recommendations based on a coastal current survey, additional monitoring, and GIS “hot-spot” analysis to state and town representatives and local residents. As a result, the town of Ogunquit inspected 53 subsurface disposal systems, initiated a stormwater mapping project, and the Ogunquit Conservation Commission passed a new ordinance titled: *An Ordinance to Amend the Ogunquit Zoning Ordinance (Title X) to Protect Additional Streams Beyond Those Required by Department of Environmental Protection Minimum Shoreland Zoning Guidelines*. Additionally, the towns of Wells and Ogunquit committed $8,000 to support implementation of the Ogunquit River Management Plan (in partnership with the Wells National Estuarine Research Reserve).

York takes action to protect water quality. The town of York’s sandy beaches are an integral part of the local economy, yet several beaches periodically experience high bacteria levels, forcing swim advisories. Town officials, working with the Maine Healthy Beaches program, created a new position for a Shoreland Resource Officer. This new position has allowed the town to be proactive by expanding its water quality program beyond the shoreline to include the upstream watersheds. In addition, with help from the U.S. EPA, beach monitors collected and analyzed additional water samples to identify the source of pollution in the Cape Neddick River. When these results were presented to the town by the beach manager and the Shoreland Resource Officer, the York Selectmen unanimously voted to track down and remediate land-based sources of pollution.

Advancing community-based management of coastal ecosystems. Several partners have cited Sea Grant's participation as a vital component to the Taunton Bay Pilot Project, the only continuous ecosystem-based coastal resource management initiative in the nation that is led
by a community, not an agency. Taunton Bay has served as a test site for new fisheries management approaches, such as Area Management, Limited Access Privileges Programs (LAPPs), Quota Management, and Collaborative Stock Assessments, which are being discussed by industry groups and may be applied to future management of Maine’s scallop, urchin, and groundfish resources. Sea Grant's work with the Department of Marine Resources, the Maine Legislature, and the Taunton Bay Advisory Group in 2008-2009, funded by the Maine Community Foundation and The Davis Conservation Foundation, has resulted in a new NOAA Fisheries Extension Enhancement project that will continue to bring national information about marine protected areas to Maine’s fishing industry, and also inform the industry about the new fisheries management tools being tested in Taunton Bay.

**Coastal Communities**

**Recreational saltwater fishing contributes to the economy of Downeast Maine.** Recreational fishing is an important nature-based tourism activity with direct fishing-related expenditures exceeding $35 billion nationwide in 2001, according to the U.S. Fish & Wildlife Service. Of the more than 300,000 saltwater anglers in Maine, more than half are from out of state. In order to produce accurate estimates of the economic impacts of this activity at the county level, University of Maine Cooperative Extension, Maine Sea Grant, and University of Maine at Machias interviewed 205 shoreside anglers at the Eastport Breakwater during the summer of 2007. Spending by nonresident anglers as part of their fishing trips to the Eastport Breakwater generated an economic impact of about $77,500 in local value of sales, while local anglers generated an estimated $20,700 in additional income to local businesses. The study concluded that while recreational fishing does not have large impact relative to other major tourist attractions in Maine, it can be a significant economic contributor at a local level. Town officials are using the study to highlight recreational fishing as an activity for residents and tourists.

**Riverfront festivals grow in 2008.** The success of the third annual Spring Running festival can be attributed to partnerships. The 2008 event had nearly twice the number of attendees from the previous year. The event continues to mobilize citizens and groups around the Augusta area to recognize the value of the Kennebec River. A similar event, the Penobscot River Revival, was created in part because of the demonstrated benefits of the Spring Running. Maine Sea Grant continues to support these events that help raise community awareness of the connections between people, rivers, and the sea.

**Sea Grant helps enhance capacity for community wellness.** Funding for two town coordinator positions for the Community Wellness Coalition has been secured in an effort led by Maine Sea Grant for a grant to the United Way of the Greater Seacoast. The new positions will enhance the organization’s capacity to advance its mission “to develop and support collaborative projects which lead to individual, family, and community well-being in the KEYS (Kittery, Eliot, York, and South Berwick) Region of southern York County, Maine.”

**Affordable housing created in Southern Maine.** During the recent housing boom, development patterns in the Seacoast Region favored large lots and large homes unaffordable to the majority of the region’s workers, forcing them to commute long distances. Maine Sea Grant worked with the Workforce Housing Coalition to design, implement, and evaluate the
“Small House, Small Lot, Great Community” workshop (and an Affordable Housing 101 fact sheet) to share perspectives from planners, builders, and architects on the more affordable housing alternatives. The Eliot comprehensive planning committee is considering an affordable housing proposal, and South Berwick's planning board is mulling over a downtown revitalization proposal that includes residential space. Meanwhile, public voters in York approved a workforce housing ordinance.

**Working waterfront preservation efforts strengthened.** In continued partnership with Island Institute, Maine Coastal Program, and University of Southern Maine School of Law, Maine Sea Grant hosted a follow-up series of coastal access workshops in Fall 2008. These workshops served to answer questions about the state's new current use taxation law for working waterfronts and Working Waterfront Access Pilot Program, to test the Accessing the Maine Coast legal resource being developed with a grant from the National Sea Grant Law Center, and to create an access information toolkit. Of those who attended the workshops, 80% gained information or tools to address coastal access issues in their communities. Recommendations from participants are being used by the Working Waterfront Coalition to evaluate and suggest changes to state laws and programs.

**Maine is a national leader in addressing coastal access.** More and more, other states are looking to Maine for guidance in developing their own working waterfront policies and programs. In 2008, Maine Sea Grant reviewed proposals to Alabama Sea Grant's working waterfront inventory; evaluated Louisiana Recovery Authority's Fisheries Infrastructure Project; advised Georgia Sea Grant on developing their coastal access program; and provided information to the Sea Grant Association for input to the Obama stimulus plan. *Access to the Waterfront: Issues and Solutions Across the Nation*, a report produced by Maine Sea Grant in 2007, helped Maryland's Working Waterfront Commission in their review of maritime programs around the country, and Senator Chellie Pingree has picked up the effort of her predecessor Tom Allen to introduce national working waterfront legislation, using the *Access to the Waterfront* report as reference.

**Award recognizes Sea Grant's sustainable tourism efforts.** The *Resource Guide for Sustainable Tourism in Down East Maine and Southwest New Brunswick*, produced by Maine Sea Grant in partnership with the Vacationland Resources Committee, was awarded "Outstanding Area-Wide Project of the Year" by Downeast Resource Conservation and Development in 2008. The *Resource Guide* is an implementation of DESTINY 2010, a plan to foster appropriate, responsible and sustainable development of cultural and nature-based tourism opportunities for regional economic prosperity in Downeast Maine. The Resource Guide is one example of why the Downeast region is emerging as a leader in sustainable tourism. The guide is innovative because it extends across the border to include Charlotte County, New Brunswick, promoting a regional identity of shared heritage and natural resources.

**Framing issues, facilitating discussions to find solutions.** The Maine Solutions process was employed for a community assessment of the Tidal Energy Device Evaluation Center proposed by Maine Maritime Academy. Community members were interviewed to identify questions and concerns, a public meeting was held in April 2008, and the results were summarized in a report. A working group of stakeholders, convened by State Senator Dennis
Damon, is working with TIDEC to outline studies that will address the questions and concerns raised by community members. This experience is helping to inform the growing number of efforts to establish alternative energy facilities throughout the coast of Maine.

**Building legislative and citizen capacity for collaborative problem solving.** Through Maine Solutions, extension staff have developed educational sessions to help legislators understand the role of convener, as well as to help other citizens and practitioners learn strategies for improving public dialogue and problem-solving. Working with the National Conference of State Legislatures and the Policy Consensus Initiative, the workshop improved legislators' understanding of how and when to intervene in public concerns to prevent them from becoming full-blown conflicts.

**Helping Maine's natural resource agencies find consensus.** The Marine Extension Team facilitated a 30-member task force considering ways for Maine’s five natural resource agencies (Agriculture, Conservation, Environmental Protection, Inland Fisheries and Wildlife, and Marine Resources) to improve service delivery through communication, cooperation, collaboration and possible merger. After eight meetings and a two-day retreat, the task force delivered their final report in December 2008. While the group could not agree on particular consolidations of agency functions, they did suggest nine consensus-based recommendations. The report will serve as the basis for a variety of legislative proposals by the Governor and individual legislators introduced in 2009.

**Sustainable Seafood**

**Scallop fishermen experiment with stock enhancement techniques.** Sea scallops, once a $15 million fishery in Maine with landings exceeding three million pounds, is now a fishery on the verge of collapse. The symptoms of decline warrant dramatic change in the approach managers use to attain a goal of sustainability while minimizing resource depletion. One solution proposed by fishermen is to develop additional scallop beds along the Maine coast where scallop stocks have been depleted. With funding from the Northeast Consortium, Maine Sea Grant, the Downeast Institute, and eastern Maine fishermen experimentally closed selected bottom areas to fishing and placed small scallops (wild or cultured) on the bottom. The scallops survived well, demonstrating that fishermen can successfully move large quantities from wild beds to enhancement areas. In another experiment, fishermen studied the feasibility of using empty lobster pounds, in conjunction with seabed fences and bottom cages, as nurseries for juvenile sea scallops. While both indoor and outdoor lobster pounds showed promise as scallop nurseries, the researchers found that enhancement activities have to work in concert with the principal function of the businesses involved (in this case, lobster pounds), and planning and communication with the business owner is necessary for success.

**Seabirds safely deterred from mussel farms.** Predacious seabirds such as eiders are responsible for major losses at shellfish aquaculture operations. Sea Grant worked with aquaculturists to develop an acoustic deterrent technique that has proven to be very effective in limiting predation from eider ducks on a longline mussel farm without causing harm to
birds or the environment. According to the mussel farmer, the new development has made the difference between financial loss and profitability.

**Conference helps businesses connect for increased profits.** The Northeast Aquaculture Conference and Expo 2008 more than accomplished its goals in terms of attendees, commercial vendors, and scope of program. Reviews from the event indicated that it was well received by attendees. An outcome of the event is that it stimulated a partnership between a Maine fishing gear dealer and a Canadian aquaculture gear manufacturer. Bouctouche Bay Industries of New Brunswick has partnered with Brooks Trap Mill in Thomaston, Maine, to manufacture parts of the Bouctouche's OysterGro System, and Brooks is now carrying other aquaculture gear. This new partnership will stimulate business locally, and will result in the broadening of the aquaculture industry. It will also improve a smooth transition for some fishermen into the aquaculture industry, strengthening both.

**Hazard Resilience**

**What do Maine people think about climate change and coastal hazards?** With increasing concerns about climate change and its effects on sea-level rise, shoreline erosion, and coastal flooding, Maine residents and towns need strategies to prepare for and adapt to these changes. In 2008, Maine Sea Grant conducted six focus groups and surveyed 548 coastal property owners and 55 town officials to identify their information needs and attitudes regarding climate change and its impacts on the coast, and to understand the barriers to action faced by these groups. The results of the surveys helped to inform the development of technical reports, a DVD, and other outreach materials planned for 2009. This project is part of a joint research grant with Oregon Sea Grant.

**Beach managers use volunteer data to make decisions.** Working with the Maine Department of Environmental Protection and Maine Geological Survey, many towns used data from the Maine Beach Profiling Program in 2008. At Willard Beach in South Portland, profiling data helped inform dune restoration and access improvements. Scarborough was able to evaluate seawall replacement options at Higgins Beach, and to evaluate beach nourishment performance at Western Beach. Saco assessed accelerated erosion rates and potential mitigation at Ferry Beach. Wells evaluated a nourishment project at Wells beach, and used data in their permit application for seawall improvements. Finally, Ogunquit data helped illustrate discussions of sand fence replacement and piping plover management. The value of beach profiling data generated by program volunteers is clear from the $4,900 contributed by the towns of Ogunquit, Kennebunk, Kennebunkport, and the cities of Biddeford and South Portland, as well as the Maine Department of Conservation to support the program.

**COMMUNICATIONS ACCOMPLISHMENTS**

*A Coastal Companion: A Year in the Gulf of Maine from Cape Cod to Canada* was published by Tilbury House in May 2008. The book, the only almanac specific to the Gulf of Maine, included the work of 12 Maine poets and two Maine artists, including an undergraduate student at the University of Maine. Eight favorable reviews, including by *The Boston Globe* and *Down East* magazine, and a five-star customer rating on Amazon, have helped garner
sales of over 1,000 copies. The book was promoted at 15 public readings/events, and continues to engage readers within and outside of Maine.

One local artist collaboration came to fruition in December, when Sea Grant produced a Maine seafood calendar featuring 12 original watercolors by Kennebunkport artist Mimi Gregoire Carpenter. The calendar highlights sustainably grown and harvested Maine seafood species, when they are in season, and how they are harvested. The calendar was distributed to over 200 supermarket seafood departments and fish markets throughout the state, as well as to partners and friends. The project was a partnership with the Maine Fishermen's Forum, and calendars were also distributed at a marketing workshop at the forum.

Brochures produced by Maine Sea Grant to educate new residents about living in the working waterfront communities of Harpswell and Moosabec were cited as models in a Virginia report about managing use conflicts in the coastal zone.

Diane Belanger, a Ph.D. student at the University of Maine, used Maine Sea Grant's feature article Alewives: Feast of the Season in an introductory course for the Maine Studies program. The overall theme of the course is to investigate the interaction between people and the land, including cultural differences between ethnic communities and key industries. The article was used for a section on the state's fishing industry.

During the past five years, Maine Sea Grant has produced a series of outreach and education materials and programming on the history, prevention, and monitoring of marine aquatic nuisance species invasions in Maine. Maine Sea Grant has received requests for over 7,000 copies of the six-page brochure, entitled Maine’s Marine Invasion, produced in 2005 and updated in early 2008. The Maine Marine Trades Association requested 1,300 copies of the revised brochure to include with information packets distributed to Maine's recreational boaters at the beginning of each summer, and Maine Volunteer Lake Monitoring Association annually requests 300 copies to include in training materials for volunteer monitors who work at boat landings throughout the state.

Maine Sea Grant worked with more than 75 scientists from the University of Maine and other institutions to produce the first statewide predictions of climate change and implications for Maine's environment. Maine's Climate Future, An Initial Assessment, edited and designed by Sea Grant, was delivered to Maine's Governor John Baldacci in February. The report stimulated action by the state legislature to initiate a climate change adaptation planning process for the state, which will continue through 2010.

**EDUCATION ACCOMPLISHMENTS**

**Marine invasive species program yields statewide data and a new seasonal monitoring initiative.** In 2006, Maine Sea Grant received a regional Sea Grant National Strategic Investment grant to develop and pilot a survey protocol for science divers to monitor nearshore marine waters for aquatic nuisance species. Last year, Maine Department of Marine Resources (DMR) divers involved in the pilot used the new protocol to monitor for invasive tunicates during their annual urchin survey, which covers the entire Maine coast. DMR will continue to collect these data during future urchin surveys, and DMR divers are now planning to work with Maine Sea Grant and members of the Maine Marine Invasive
Species Working Group to conduct additional surveys that will assess seasonal changes in Maine’s invasive tunicate populations.

**Watershed education program expands to more schools.** During the 2007-2008 school year, Maine Sea Grant worked with the Senator George J. Mitchell Center, the Penobscot River Restoration Trust, and Old Town Elementary School to develop and pilot a multidisciplinary watershed education program that is serving as a model in two new partnerships. With NOAA Bay Watershed Education and Training (B-WET) funds, the Gulf of Maine Research Institute's VitalVenture program will extend the five curriculum units that Maine Sea Grant piloted in the Penobscot River watershed to 5th-8th grade students and teachers throughout the state. Sea Grant also is working with Acadia Partners for Science and Learning to adapt watershed content related to sea-run fish for high school students and teachers in central and eastern Maine.

**Students share their knowledge of river restoration and watershed science.** For several years, Maine Sea Grant has worked with NOAA Fisheries and other partners to develop educational posters on a range of topics, and build kiosks at boat landings and other public spaces to display them. In 2008, this "free-choice learning" approach was incorporated into Maine Sea Grant's K-12 education programming. Fifth grade students in the Penobscot River Watershed Education pilot program designed three large posters which were displayed in two waterfront kiosks built by the City of Old Town. In presenting their work at a community gathering of over 100 people, the students were empowered to become educators, a model for increasing both student and community engagement in learning that is well established in education research literature.

**PROGRAM MANAGEMENT ACCOMPLISHMENTS**

In April, we hosted the first-ever Maine Sea Grant research symposium at the Black Bear Inn. Actual and potential Sea Grant researchers were invited, as well as members of our Policy Advisory Committee and National Sea Grant Office liaisons. Selected presentations by our current researchers highlighted partnerships with the Marine Extension Team (MET). More than half of attendees said the symposium provided useful information that influenced their work, and at least seven people made new partnerships at the event. Most people were familiar with MET and already working with an MET member, and ranked the collaboration as "excellent" or "good," with comments such as: "MET was instrumental in helping us with our field work." "I value being able to consult MET staff for information and advice, and being able to refer others to them." The evaluation of the 2008 event will inform a second symposium planned for spring 2010.

Beginning in 2008, the leadership of Maine Sea Grant and Cooperative Extension developed a research project with graduate student Nora Seitz to understand how members of the Maine State Legislature access and utilize technical information in conducting their business. Seitz developed a survey with the help of the University's Center for Research and Evaluation, which was delivered to four targeted legislative committees during the 2009 session. We hope the results will help the Marine Extension Team and the Communications program improve efforts to help inform the decision-making processes around the management of coastal natural resources.
Director Paul Anderson completed his two-year term as president of the Sea Grant Association, having coordinated the network of 32 Sea Grant programs through the development of the National Sea Grant Strategic Plan and the recently evolving performance assessment process. Coordination of advocacy work within NOAA and with Congress was an important component of the position, and progress has been made toward growing the national Sea Grant budget. In this capacity, Anderson had the opportunity to meet with the Obama transition team on ocean-related issues. Anderson serves on the board of directors as past-president and remains active in the national arena.

During 2008, Sea Grant initiated and led the planning effort for the upcoming Maine Coastal Waters Conference to be held in Northport on October 28, 2009. The conference themes include alternative ocean energy, climate change, and community-based natural resource management. It is anticipated that the conference will draw over 200 people.

Workshops, Conferences, Meeting Facilitation (67)

Anderson, P.
- Nearshore Migration of Atlantic Salmon in the Gulf of Maine, July 22-23, 2008 and January 27-28, 2009, Portland, ME

Bartlett, C.
- Aquaculture Research and Economic Development Workshops

Beard, R.
- Community Assessment Results: Preparing for Tidal Energy, April 30, 2008, Castine
- Community Development Skills for Island Fellows, December 11, 2008, Rockland
- Expanding Shoulder Seasons, Bar Harbor Chamber of Commerce, December 2, 2008
- Cranberry Island Transportation Committee, April 23, 2008
- Monhegan Island Community Development Retreat, February 8-9, 2008
- Maine Marine Dialogue (facilitated 5 meetings in 2008)
- Frenchboro Island Community Futures, May 9, 2008
- Island Housing Trust Board and Staff Planning Retreat, January 12, 2008 and January 31, 2009, Bar Harbor
- Healthy Island Project Board and Staff Planning Retreat
- Lower Penobscot Watershed Coalition Planning Retreat

Bisson, B.
- Squid Night: An Interactive Educational Workshop on Squid and Other Cephalopods, Gulf of Maine Marine Education Association, March 19, 2008, Portland

Grant, K.
- Climate Variability and Coastal Community Resilience: Testing a National Model of State-based Outreach, Focus Group Workshops (4)
- Marine Extension Team Public Participation Training, July 17, 2008
- The Practice and Potential of Ecosystem Based Management Workshop, October 22, 2008 (facilitator).
- Small House, Small Lot, Great Community, May 16, 2008, York; Seacoast Housing and Local Businesses, Sept 23, 2008, South Berwick

**Hoyt, S.**
- Georges River Regional Shellfish Management Committee Meetings (5)
- Taunton Bay Advisors (10 meetings facilitated)
- Taunton Bay Mussel and Urchin Fisheries Meetings (3)

**Morse, D.**
- Spring Running, June 12-13, 2008, Augusta
- Northeast Aquaculture Conference and Expo, December 3-5, 2008, Portland
- Oyster Gardening (12 classes)
- Maine Aquaculture Association Foresight Planning workshops (facilitator).

**Springuel, N.**
- Coastal Access Law, Maine Fishermen's Forum, February 29, 2008, Rockland
- Accessing the Maine Coast Workshops (3)
- Downeast Tourism Marketing Workshop, November 2008, Winter Harbor
- Climate Change Forum, April 9, 2008, Ellsworth

**Stancioff, E.**
- Climate Variability and Coastal Community Resilience: Testing a National Model of State-based Outreach, Focus Group Workshops (4)

**White, S.**
- Climate Variability and Coastal Community Resilience: Testing a National Model of State-based Outreach, Focus Group Workshops (4)

**Boards, Committees**

**Anderson, P.**
- Investigation of Nearshore Migration of Atlantic Salmon Steering Committee
- Maine Fisherman’s Forum Board of Directors
- Sea Grant Association Board of Directors
- Maine Aquaculture Research and Development Plan – Advisory Committee
- Herring Gut Learning Center Board of Directors (chair)

**Bartlett, C.**
- USDA Infectious Salmon Anemia Technical Board (chair)
- Downeast Institute Board of Directors (chair)
- Maine Marine Technology Center Advisory Committee (secretary)
- Eastport Port Authority Harbor Committee (chair)
Beard, R.
- MDI Tomorrow Steering Committee
- Maine Feeds Maine
- Maine Solutions
- College of the Atlantic Board of Trustees (secretary) Committee on Trustees (chair)
- UMaine Cooperative Extension Faculty Policy Advisory Committee (chair)
- UMaine Cooperative Extension Marketing Implementation Team

Bisson, B.
- Dean John A. Knauss Marine Policy Fellowship National Review Panel
- Board of the Gulf of Maine Marine Education Association
- Northern Maine Children’s Water Festival Steering Committee
- Maine Marine Invasive Species Working Group
- New England Ocean Science Education Collaborative Governing Council
- Northern New England National Ocean Sciences Bowl Planning Committee

Hoyt, S.
- Muscongus Bay Project Steering Committee
- Herring Gut Learning Center Board of Directors
- Port Clyde Boat Maintenance Fund Steering Committee (chair)

Grant, K.
- KEYS Community Wellness Coalition Board of Directors
- National Sea Grant Focus Team
- Sea Grant Sustainable Coastal Community Development Network, Executive Committee (vice chair and regional representative), and Training and Meeting Committee
- Workforce Housing Coalition Forum Planning Committee

Lindberg, K.
- Maine Healthy Beaches Program Advisory Committee

Morse, D.
- Northeast Aquaculture Conference and Expo
- Herring Gut Learning Center
- Scallop Advisory Council

Schmitt, C.
- Penobscot River Science Steering Committee (coordinator and facilitator)
- Lower Penobscot Watershed Coalition Steering Committee
- Investigation of Nearshore Migration of Atlantic Salmon Steering Committee.
- Maine Water Conference Committee

Springuel, N.
- National Waterways and Working Waterfronts Symposium Planning Committee
- Working Waterfront Coalition
- Vacationland Resources Committee (chair)
- Governor's Task Force on Nature-based Tourism (Downeast representative)
- Bar Harbor Chamber of Commerce Tourism Committee
- University of Maine Tourism Economic Development Committee (founder)
- Downeast and Acadia Regional Tourism Downeast Birding Trail Committee
- Washington County Community College Adventure Recreation and Tourism Advisory Committee
- Maine GIS Consortium
- Sea Grant Sustainable Coastal Community Development Network
- Bar Harbor Marine Resources Committee

Stancioff, E.
- Maine Healthy Beaches Program
- Coastal Community Resilience Stakeholder Advisory Committee (facilitator)

White, S.
- Cove Brook Watershed Council (vice president)
- Penobscot Bay Alliance (vice president)
- UMaine Employee Assistance Program Advisory Council

a. Explanation for Change from Previous Year

Due to a new National Sea Grant Strategic Plan, we have developed an implementation plan that aligns the Maine program with National Sea Grant goals, focusing program resources in four specific areas: healthy coastal ecosystems, sustainable coastal community development, sustainable seafood, and hazard resilience. Although these four national focus areas are not new to Maine Sea Grant, we have taken this opportunity to build a plan that can achieve measurable objectives that will help to demonstrate Maine Sea Grant’s impact in future performance assessments while maintaining high relevance for the stakeholders we serve. This is an ongoing challenge for such a small program and, by closely monitoring our progress and adapting, we will continue to improve the program’s strategic focus.

IX. Goals for Next Year

Hazard Resilience and Climate Change
- Help individuals and coastal communities understand and adapt to climate change.
- Implement coastal resiliency outreach plan, media coverage, and demonstration projects.
- Develop a communications strategy beyond our Web site that might include the “Climate Witness Program” and the “Maine Climate News.”
- Work with the Climate Change Institute to create the Maine Climate Information Exchange.

Alternative Ocean-Related Energy
- Work with AEWC, the state, and others toward offshore energy initiatives with specific emphasis on outreach and community engagement.
- Secure external funding to sustain community outreach related to alternative energy on behalf of the University and our partners.
Sustainable Seafood

- Assist with the completion of the Maine Aquaculture Association MTI-funded planning effort and provide outreach support in delivering the findings and recommendations.
- Work with the University in developing aquaculture research and community engagement priorities and collaborate on fundraising efforts.
- Take an active role in reaching out to commercial fishermen with respect to shellfish aquaculture as a growth opportunity, and expand the Oyster Garden Program.
- Continue work with stakeholders to improve understanding and effectiveness of sea scallop enhancement techniques to restore the fishery.
- Participate in the National Sea Grant Sustainable Seafood Theme Team and help to organize a national conference on Energy in Fisheries.
- Deliver presentations describing Taunton Bay fisheries management tools and marine protected areas to the Sea Urchin Zone Council, Scallop Advisory Council, Cobscook Bay Fishermen’s Association, and the Midcoast Fishermen’s Association.
- Continue building the Port Clyde Boat Maintenance Fund and supporting the Midcoast Fishermen’s Association and Monhegan Boat Lines joint venture to construct a marine railway, freezer, and ice plant in Port Clyde.
- Complete Taunton Bay project sustainability analysis and action plan.

Tourism and Cultural Heritage

- Begin to work with partners to conduct a tourism asset evaluation for marine heritage tourism Downeast and beyond, starting with the existing Downeast Fisheries Trail.
- Explore the potential for educational marine heritage and ocean literacy experiences for students and locals that result in products that enhance visitor experience and contribute to community economic development goals.
- Share and apply findings from fisheries heritage and tourism research with relevant and interested stakeholders in Maine.
- Work with the Vacationland Resources Committee to fully develop quarterly Downeast sustainable tourism digital newsletter and initiate tourism training programs.
- Help people make thoughtful choices about their use and enjoyment of coastal resources.

Management and Program Sustainability

- Work with the Policy Advisory Committee and partner institutions to clarify Sea Grant's niche and to ensure that partnerships are efficient and effective.
- Develop a program to engage Sea Grant-funded graduate students both during their academic career and post graduation.

Community Development, Engagement and Capacity Building

- Build community capacity to engage the public in sustainable planning efforts.
- Finalize plans for sustainably funding beach profile monitoring.
- Build capacity of local level resource managers to identify and remediate sources of bacterial pollution affecting beaches and/or shellfish growing areas.
- Provide at least four other Sea Grant programs with the funding and template to develop a Web resource on legal tools for coastal access.
- Initiate planning for the 2010 National Waterways & Working Waterfronts Conference.
Formal and Informal Education and Outreach

- Develop pilot oyster gardening program for students in Damariscotta.
- Develop and implement marine nuisance species fouling study and outreach effort with the Maine Marine Invasive Species Working Group.
- Work with the Gulf of Maine Research Institute to develop meaningful watershed education experiences and deliver professional development workshops for the VitalVenture watershed education program at middle schools throughout the state.
- Work with Acadia Partners for Science and Learning to increase high school student participation in coastal Maine watershed research.
- Evaluate opportunities for engaging K-12 students and teachers in hazard resilience and climate change programming and develop a strategy for student engagement.

X. Challenges and Solutions

The program reorganization in the administration of the Sea Grant Program that was begun in 2008 will continue into 2010 when Associate Director Susan White will retire. Beginning in July 2009, Susan White will go on a partial retirement schedule (at 60%) for one year. Plans are underway to initiate management tools and professional development to ensure smooth transition and positive employee morale with a team approach. With stresses on budgets and personal lives, this is a potentially volatile time for the program, and the leadership intends to pay close attention to interpersonal relationships and office dynamics in the coming year.

With continued flat funding (federal and state) and rising costs, the operational budget continues to shrink. Program management is delayng the hiring of a research coordinator and the director is performing the most pressing duties at least until Fall of 2010. It is more critical than ever for staff to scrutinize budgets and identify opportunities to attract and leverage extramural funding for specific projects to ensure that we can maintain current staffing levels. Such opportunities are presented by emerging issues like climate change, alternative ocean energy, and marine aquaculture. While we are being called upon to work on these issues, the program lacks the staff to be as responsive as is necessary and, in order to apply focused support in these areas, additional resources beyond the program’s core budget are required.

XI. Long-term Priorities

In the long term, much of our work is intended to improve the management of Maine’s inshore marine resources and help coastal communities be more directly involved in that management. As with fisheries and aquaculture and other coastal issues, we want to establish Maine Sea Grant as the “go to” for climate change-related coastal and marine information, in part by creating a communication network and media presence in the state. We also want to maintain and expand our capacity and reputation as a source of information about coastal access and working waterfront issues and solutions for stakeholders and Sea Grant programs throughout the nation. In the end, we hope to grow Maine Sea Grant's profile as a productive and trusted partner in research, education, and extension.
Appendix A: Communications Publications and Media 2008-09

BROCHURES, REPORTS, GUIDES, FACT SHEETS, ETC.


5. Dam Removal on the Penobscot, Penobscot River History, and Penobscot River Watershed (posters). MSG-E-08-04/05/06. Orono, ME: Maine Sea Grant.


BOOKS


MULTIMEDIA


www.accessingthemecoast.blogspot.com

twitter.com/Maine_Sea_Grant

http://www.facebook.com/pages/Orono-ME/Maine-Sea-Grant/133176140284

Talk of the Towns (24 radio programs). Blue Hill, ME: WERU. http://archives.weru.org/


SHOW/FESTIVAL PROGRAM LISTINGS (6)

Bangor Book Festival, October 3-4, 2008, Bangor, ME

The 35th Annual Trade Show, New England Independent Booksellers Association, September 18-20, 2008, Boston, MA

Maine Boats, Homes, & Harbors Show, August 2008, Rockland, ME

Maine Festival of the Book, May 15-17, 2008, Portland, ME

Maine Fishermen's Forum, March 2008, Rockland, ME

6th Annual POETS/SPEAK! Many Voices Reading. University of Maine Department of English, April 14, 2008, Bangor, ME
MEDIA PLACEMENT from Sea Grant press releases (9)


Forums to explore coastal access rights, issues. *South Portland Sentry*, October 3, 2008; *Biddeford-Saco-Old Orchard Beach Courier*, October 2, 2008.


UNSOLICITED PRESS (43) †Coastal Companion book review or news item


Students 'huck' oranges for science. *WLBZ2/WCSH6 News Center* (NBC), October 9, 2008.

UMM to host Maine writer Catherine Schmitt. [www.umm.maine.edu](http://www.umm.maine.edu), October 8, 2008.†

Coastal Living. *Down East*, October 2008.†


Plying the waters, by boat, map, and memory. *The Boston Globe*, August 31, 2008.†

Writers celebrate the Gulf of Maine at Maine Coast Book Shop. *The Free Press*, August 7, 2008.†


Book Review A Coastal Companion: A Year in the Gulf of Maine from Cape Cod to Canada. *Gulf of Maine Times*, Summer 2008.†


Maine and Climate Change: What Choices Do We Have Now? Talk of the Towns (Blue Hill, ME: WERU 89.9 FM) May 9, 2008.

A Coastal Companion: A Year in the Gulf of Maine, from Cape Cod to Canada. From the Bookshelf, The Quoddy Tides, April 25, 2008.†

Sea Change. Bangor Daily News, April 24, 2008.‡

Annual 'Poets Speak'. Bangor Daily News, April 10, 2008.‡


Island Institute receives NOAA excellence award. The Earth Times, February 27, 2008.

Fishermen's Forum Starts Today. The Ellsworth American, February 27, 2008.

Long Sands Beach is slowly moving inland. seacoastonline.com, February 20, 2008.

**FEATURE ARTICLES (16)**


