SPRING 1999 VOLUME 3, NUMBER 1

Gulf of Maine Times

Promoting Cooperation to Maintain and Enhance Environmental Quality in the Gulf of Maine

Sprawl in the Gulf

Development taxing coastal resources

By Suzy Fried, Editor

Gulf of Maine — In many areas of the Gulf, the spidery spread of sprawl is causing problems from increasing taxes to loss of coastal habitat.

Defined as the unmanaged, unsustainable expansion of development from community centers into outlying areas, sprawl fragments the landscape, limiting future options for land use, while town and city centers with established infrastructures are often left underutilized. In the Gulf's coastal communities, where ecosystem health, community character, quality of life, and economic well-being are intertwined, the environmental repercussions of poorly managed residential and commercial development can be immediate, such as loss of valuable wildlife habitat — or gradual, such as the pollution of coastal waters.

Throughout the Gulf, regulators, communities, nongovernmental organizations, developers, and regional planning groups are seeking ways to put some constraints on unmanaged development and its environmental and economic effects.

How sprawl happens

"We've got this preference to have more space, to be close to nature, to have some privacy, and to be fairly independent, so that tends to send us outward from our centers into the more rural areas," said Beth Della Valle, Co-Manager of the Maine State Planning Office's Community Planning and Investment Program.

But other factors also play a role in peoples' decisions to move out of city or town centers. "Land is cheaper out there and, at least in the beginning, taxes are lower. There is clearly a financial motivation," Della Valle said. She also cited a "decline in the overall liveability of our cities," due to shrinking budgets with little money for parks and other open spaces.

As people move into outlying areas, businesses follow. Then, schools, fire stations, and sewerage systems are needed to serve the growing communities. Eventually, towns and cities have to raise their taxes to pay for those services. Soon, people who left the city or village center for a rural aesthetic and low taxes find themselves living in a suburb and paying a hefty tax bill.

"The old idiom that growth is going to broaden the tax base and lower our taxes simply isn't true," said Phil Auger, County Forester at the University of New Hampshire Cooperative Extension, Rockingham County. "We are continuing to have communities chase growth to get them out of their tax woes and it just isn't working."

Auger said New Hampshire's campaign to attract business to the state, which already has low unemployment, is partly responsible for sprawl there. "If you create 200 new jobs, where will the people come from if there's little unemployment? If half of them are newcomers, that's potentially 100 new homes," he asserted. Coastal Rockingham County anticipates a 63 percent population growth between 1990 and 2020 census dates, Auger said, warning, "There isn't going to be a lot of open space left if things keep going."

A sprawl epidemic in fast-growing Southern Maine prompted the Maine State Planning Office, led by Director Evan Richert, to study the problem and then bring its results to communities in a series of workshops over the last year. At the workshops, held mostly in coastal communities, state planners and others explained the effects of sprawl and described how communities can foster "smart growth" by using comprehensive planning methods, protecting rural areas and service centers, and relieving fast-growing suburbs.

But planners note that population growth is not always the reason for sprawl. Along with the Gulf coast's more populated southern regions, New Brunswick and Nova Scotia are feeling the pressure as well. Most

Sprawl *continued on pages 6-7*

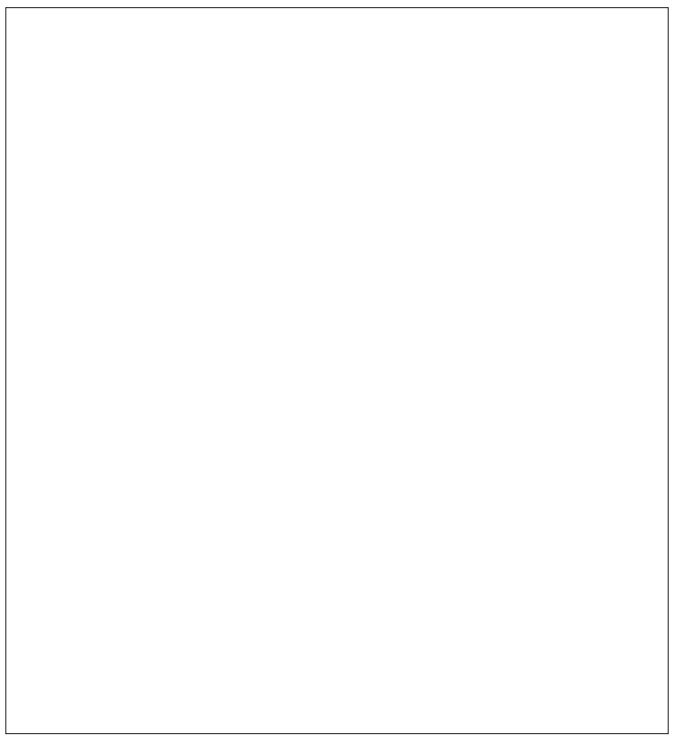

Photo: Maine Audubon Society

A piping plover guards its nest on a Maine beach. Coastal development threatens the piping plover and other species by encroaching on their habitat and by increasing populations of predators and species that compete for space and food. Planners say controlling sprawl by concentrating future development in already developed areas will help curb these effects.

US panel ponders possibility of whale-watch regulations

By Suzy Fried, Editor

Bourne, Massachusetts — In elegant slow motion, a humpback whale glides by a boat full of breathless passengers, its white flippers gleaming neon green just under the surface of the nutrient-rich waters on Stellwagen Bank. Whale watchers can't help but use words such as inquisitive, gentle, and intelligent to describe this living oxymoron — a marine mammal that moves underwater with bulky grace. We'd give anything to believe not only that close observation by humans is harmless to whales, but that they actually enjoy our company.

"After watching whales for over 20 years I believe they know we're out there to see them," said Captain Steve Milliken, operator of the Provincetown-based Dolphin Fleet at a recent forum on the ethics of whale watching. "Many of them give us close approaches."

But researchers say they don't know enough about the long-term effects on whales of the growing whale-watching industry. Even if the whales do enjoy watching humans as much as we enjoy watching them, that doesn't necessarily mean they're unharmed by the increasing contact. If, for example, people watching distracts the whales from feeding, that might have long-term consequences. On the other hand, scientists note a recent population increase among endangered humpback whales — the species most watched on Stellwagen Bank.

Whale watching *continued on page 8*

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Gulf of Maine Council on the Marine Environment

P.O. Box 4524

Salem, MA 01970

PRINTED MATTER

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Gulf of Maine Times
VOL. 3, NO. 1, SPRING 1999

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The *Gulf of Maine Times* is made possible through support of the Gulf of Maine Council on the Marine Environment, a grant from the US Environmental Protection Agency, and generous donations by the New Brunswick Department of Environment and the US Fish and Wildlife Service Gulf of Maine Coastal Program.

Views expressed in the *Gulf of Maine Times* are not necessarily those of the Gulf of Maine Council on the Marine Environment or other sponsors.

The Gulf of Maine Council on the Marine Environment was established in 1989 by the governments of Nova Scotia, New Brunswick, Maine, New Hampshire, and Massachusetts to foster cooperative actions within the Gulf watershed. Its mission is to maintain and enhance environmental quality in the Gulf of Maine to allow for sustainable resource use by existing and future generations.

VISIT THE GULF OF MAINE COUNCIL'S WEB SITE AT:
www.gulfofmaine.org

This newspaper is printed on 25% post-consumer recycled paper by Boston Offset, Norwood, MA.

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Conserving the Gulf's biodiversity

By Peg Brady, Director
Massachusetts Coastal Zone Management

On a recent flight between Boston and Halifax I found myself gazing at the sunlit beauty of the waters of the Gulf of Maine almost as if I were seeing them for the first time. It was one of the those brilliant, crystal-clear winter mornings with no evidence of a winter storm on any horizon. Surveying the Gulf in all its natural splendor literally took my breath away.

With the anticipation of a child boarding an amusement ride, I quickly sought out a seat on the plane's starboard side so I could test my recollection of the coves and harbors on Cape Ann. Next, I slid over to the port side windows to try my geography skills on the Isles of Shoals and the New Hampshire coastline. As the land receded from sight, I found myself closing my eyes and wondering what would become of this rich body of water that has provided so much to so many.

I thought back to the many stories of the first European fishermen arriving on the Isles of Shoals centuries ago, making the best of the plentiful supply of fish they found. What was it like to see those islands and waters for the first time? How much fish did they really catch in their nets? What creatures did they discover in the tide pools and on the cobble bottom?

Discovery in the Gulf of Maine continues. Today, the Isles of Shoals are home to Cornell University's Shoals Marine Laboratory, a summer research facility for college students eager to study marine sciences at the Gulf's threshold. The Shoals lab, the Sea Education Association, along with many education and research programs throughout the Gulf, attract hundreds of students to their institutions each year. These institutions introduce groups of students and visitors to the Gulf of Maine, often for the very first time. They provide an opportunity for students to increase their awareness about the fragility of marine ecosystems as they become immersed, literally and figuratively, in their studies of the intricate processes of the Gulf of Maine and the complex marine organisms that inhabit this ecosystem.

(These institutions also generate a body of data and information about the Gulf of Maine, but, unfortunately, this information is often confined to student notebooks and computer files, with only a small fraction finding its way to the public.)

When I was studying marine sciences in college too many years ago to mention here, my professors would often use the term "biological diversity" to label the diverse nature not only of individual species but also the composition of their genetic makeup, their reproductive strategies, their functional roles, and their habitats. The term was shortened to "biodiversity" in the 1980s when scientists and conservationists began writing about the alarming rates of change in species diversity within global ecological hot spots such as the tropical rain forests of South America.

At the time, researchers were aware of the importance of species richness, but were just beginning to understand the complex connection among the players within marine ecosystems. Originally, scientists assumed the importance of a species to an ecosystem was proportional to its abundance. However, Robert Paine found in 1969 that the Pacific ochre sea star affected the physical structure and species composition of the rocky shoreline community, despite its low abundance. The finding inspired the concept of "keystone" species that play a critical role within an ecosystem. Today much more is known about the relationships and functional roles among marine species and their habitat, yet increasing threats to biodiversity create a growing need to disseminate this information beyond our traditional spheres.

"The message from scientists is that there is a growing sense of urgency to slow the rate of biological change caused by human activities in the ecosystem."

Scientists conducting research within the Gulf of Maine have reported a decline in the Gulf's biodiversity, which they attribute to the displacement or conversion of one species for another, habitat fragmentation, and simplification of the ecosystem as a result of human activity such as farming. With estimates predicting a global population of 5.9 billion in 2000 and doubling expected by 2050, evidence points to the likelihood that even more dramatic human-influenced changes, possibly catastrophic for some marine ecosystems, will take place.

The message from scientists is that there is a growing sense of urgency to slow the rate of biological change caused by human activities in the ecosystem, and to implement conservation strategies such as setting aside reserves or conservation areas. But while public awareness of the need for conservation increases, little is known about the results of marine conservation strategies being employed today. Some believe the conservation efforts are misguided and unrealistic.

But the opportunity exists to build an effective Gulf of Maine conservation strategy. What if every new marine science student attending an institution in the Gulf of Maine were given an opportunity to participate in a comprehensive Gulf-wide conservation initiative? Linking educational, research, and public resources in this way might create an ideal model.

National Geographic devoted its entire February edition to biodiversity as part of the publication's millennium series. Their web site offers a detailed description of research in the Gulf of Maine that is examining the unique features of the benthic cobble community and its importance to lobster populations (www.nationalgeographic.com/2000/biodiversity/biomes). There are many models and predictions about the biological integrity of the Gulf of Maine, although more research is necessary to verify these predictions.

The Gulf of Maine Council along with other regional marine policy and scientific leaders must redouble our collective efforts to bridge the information gap that exists concerning the biological diversity of the Gulf of Maine and work toward developing a conservation strategy to insure its future.

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Georges Bank petroleum ban decision due in July 1999

By Suzy Fried, Editor

Halifax, Nova Scotia — Now that the public comment process is over, those for and against continuing a ban on petroleum exploration and drilling on the Canadian portion of Georges Bank must wait several months for a decision on the issue from provincial and federal ministers.

The moratorium, which expires on January 1, 2000, has been in place since 1988 when the fishing industry and environmentalists were first alarmed by exploration activities on the bank — a traditional fishing ground for scallops, lobster, cod, haddock, and other finfish — that marks the southern gateway to the Gulf of Maine. A moratorium on the US portion of the bank, enacted under former President George Bush and recently extended by President Bill Clinton, is in place until the year 2012.

NORIGS 2000, a coalition of fishery, environmental, and community representatives that favors extending the Canadian drilling moratorium until 2012, asserts that the ban is necessary to protect the bank from oil spills and other environmental damage. "Georges Bank is one of the most ecologically productive fishing areas in the world. Nothing significant, in terms of the risks of drilling, has changed since 1988," says the group. NORIGS 2000 maintains that the Georges Bank fishing grounds are worth more than any of the economic benefits anticipated by proponents of oil and gas development there.

In January, those for and against continuing the moratorium stated their views at public hearings in Yarmouth, Shelburne, Lunenburg, and Halifax. Representatives from all sides of the issue had also presented their views at a Gulf of Maine Council forum on the topic in Halifax November 19. The deadline for entering written comments into the record was February 10, according to Maurice MacDonald, Communications Officer for the Georges Bank Review Panel.

Appointed in 1996 as part of a public review process required under the Canadian legislation that established the moratorium, the panel is responsible for coordinating the review process, culminating in the recent public hearings. The panel must submit its recommendations by July 1 of this year to the Canadian Minister of Natural Resources, and the provincial Minister responsible for the Canada Nova Scotia Accord Act, who must decide before January 1, 2000 whether to extend the moratorium.

MacDonald said the nearly 90 presentations made at the hearings by government representatives, environmental groups, the fishing industry, petroleum companies, and community chambers of commerce were "very well prepared." But he declined to predict what the panel would decide to recommend in July.

Photo: PanCanadian Resources

The Rowan Gorilla III (RGIII) shown above near Sable Island, Nova Scotia, is one type of drilling rig that might be used on Georges Bank if a current Canadian moratorium on petroleum exploration and drilling there is not continued after January 1, 2000.

Ecosystem damage feared

According to NORIGS 2000, the seismic surveys that petroleum companies undertake to look for hydrocarbons under the sea would disrupt the spawning activity of fish on the bank. Seismic surveys involve setting off loud sounds and recording their echoes. The timing and strength of the echo indicates the depth and properties of undersea rock layers. If surveys indicate that certain rocks may contain petroleum, exploratory drilling is used to confirm its presence. NORIGS 2000 says drilling could also cause numerous environmental problems including suffocating organisms living on the ocean floor.

The Canadian Department of Fisheries and Oceans (DFO) has led a scientific review of the possible effects of exploratory activities on the Georges Bank marine ecosystem. According to Paul Boudreau of DFO's Marine Environmental Sciences Division, "The review concluded that there will be impacts, although most likely they will be restricted in time and space to the location of activities." He said there is a "small chance" that those activities could have wider ecosystem ramifications on fish spawning and catch rates. DFO has not yet assessed the potential impacts of the next step beyond exploration — petroleum production.

Petroleum production activities also worry NORIGS 2000, which fears the environmental repercussions of controlled burning of natural gas, potential pipeline leaks and ruptures, accidental spills of solvents, incidents involving tankers, restriction of access to fishing grounds due to exclusion zones around rigs and pipelines, and conflicts between exploration supply vessels and fishing boats.

The end of the moratorium would not, however, lead to a sudden drilling free-for-all on Georges Bank, according to Andy Parker, Manager of Operations and Environment at the Canada/Nova Scotia Offshore Petroleum Board (CNSOPB), an independent federal/provincial government agency that regulates petroleum production in the Nova Scotia offshore area.

If the moratorium were not extended, said Parker, companies holding exploration licenses for Georges Bank predating the ban would have to renegotiate those agreements with CNSOPB. Before any seismic exploration could begin, an environmental assessment would have to take place. Then, CNSOPB, in consultation with its advisory committees on the fishery and the environment, would consider whether to allow petroleum exploration activities and under what circumstances. The process would include informational meetings for the public, although public hearings — at which people could state their positions on the proposed exploration activities — may or may not take place, Parker said.

But NORIGS 2000 says opening the door to petroleum production on Georges Bank would set a precedent for other fishing areas. "Failure to extend the moratorium on Georges could herald open season in areas like German Bank, Browns Bank, and the Bay of Fundy," the group asserts. "Failure to extend could also undermine our growing cooperative fisheries and other relationships with US interests on Georges and in the Gulf of Maine."

Sources for more information

Georges Bank Review
www.ycn.library.ns.ca/georges/
From Canada call 1-800-370-2282
From the US call (902) 496-5454
Fax (902) 496-5283
E-mail gbreview@ycn.library.ns.ca

Canada Department of Fisheries and Oceans
www.dfo-mpo.gc.ca/csas/csas/resdoc/1998/index98.html

Canada/Nova Scotia Offshore Petroleum Board
www.cnsopb.ns.ca

Fundy Forum
http://is.dal.ca/aczisc/fundy/topic.htm

GPAC promotes projects designed to address pollution in Gulf

South Portland, Maine — To protect the Gulf's coastal and marine environment from land-based activities causing pollution and habitat disturbance, the Global Programme of Action Coalition for the Gulf of Maine (GPAC) plans to launch several projects this year.

GPAC — which includes participants representing US and Canadian private industry, environmental and community groups, indigenous peoples, science, and government — formed in response to the United Nations Environment Programme's efforts to reduce degradation of marine and coastal environments in recognition of the fact that about 80 percent of marine pollution is caused by human activities on land.

The project ideas resulted from a November GPAC workshop in South Portland attended by about 140 participants. At the workshop, a finance panel that included representatives from the banking industry, a nonprofit foundation, government agencies, and an international organization, provided information on funding sources for the projects. GPAC will oversee the work of project teams and will convene another meeting next fall to assess their progress.

At an earlier workshop in Saint John, New Brunswick, GPAC had identified 15 priority issues requiring urgent action, including reduction in emissions of specific pollutants, and protection of marine and coastal habitats through improvements in land development practices. GPAC recommends the following activities to address those issues:

T A workshop to explore new institutional arrangements between the US and Canada to address issues of regional concern, including the management of sewage-borne contaminants and other toxic chemicals. Contact: David Coon, Conservation Council of New Brunswick, (506) 466-4033 or David VanderZwaag, Dalhousie University, Nova Scotia (902) 494-1045.

T A conference to develop a research program and make policy recommendations for managing the harvesting of low trophic-level species such as rockweed and krill. Contact: Phil Holmes, St. Croix Estuary Project, New Brunswick (506) 529-4868.

T "Communities United for the Gulf of Maine," an activity intended to expand community-based efforts to monitor environmental quality through networked resources, training, and use of common protocols. It will be coordinated through the Coastal Network, a binational network that is monitoring water quality and other environmental indicators. Contact: Alison Evans, Dalhousie University, Nova Scotia (902) 494-3967.

T Educational materials on land-based sources of marine pollution to be developed for a general audience and school children about the impacts of their activities on the marine environment and what to do about them. Contact David Keeley, Maine State Planning Office, (207) 287-1491 or Judith Swan, Foundation for the World's Oceans, Nova Scotia (902) 860-1758.

T A regional database of salt marsh restoration opportunities and standardized, regionally applicable criteria and protocols for evaluating the success of restoration projects in reconstructing the structure and functions of natural systems. Building on existing work, this initiative will establish a regional network of sites, consolidate and update existing coastal databases, and begin a demonstration project. Contact Kim Hughes, New Brunswick Department of the Environment (506) 453-4409 or Hilary Neckles, US Geological Survey, Maine (207) 622-8205.

About 80 percent of marine pollution is caused by human activities on land.

—Global Programme of Action Coalition

Organizers say the GPAC's work builds on the work of groups and individuals committed to the protection of the Gulf including the Gulf of Maine Council, the Regional Association for Research in the Gulf of Maine (RARGOM), and the United Nations Commission for Environmental Cooperation (CEC).

For more information, contact US GPAC Co-Chair Katie Ries via E-mail at: kries@ocean.nos.noaa.gov or call (301) 713-3078, ext. 171; or Canadian Co-Chair Joe Arbour via E-mail at Joe.Arbour@ec.gc.ca or call (902) 426-1701; or visit the GPAC working web site, www.cec.org/statepage/ and type in user name: *gulf* and password: *trends*, all in lower case.

1998 Visionaries set stewardship standard

By Suzy Fried, Editor

Halifax, Nova Scotia — In recognition of their innovative, creative, and committed efforts to improve the marine environment, the Gulf of Maine Council annually recognizes "visionaries" from each of the five jurisdictions around the Gulf — Nova Scotia, New Brunswick, Maine, New Hampshire, and Massachusetts.

"The Gulf of Maine Council's Visionary Awards recognize organizations and individuals who, through their actions, have advanced the Council's goals for protection of the marine environment," said Council Secretariat Manager Andrew Cameron of the Nova Scotia Department of Fisheries and Aquaculture shortly after the Council announced the 1998 award recipients. "The support and commitment of local organizations and individuals are essential elements for protection of the Gulf of Maine," he added. Nova Scotia also presented a separate award to Canadian Broadcasting Corporation Information Morning reporter Pam Berman for her series on lobster conservation in the Gulf of Maine.

Arthur A. Longard

Halifax, Nova Scotia

The late Arthur ("Art") Longard, who died in December 1997 after a long battle with cancer, is remembered as having dedicated his career to protecting the ocean, one of Nova Scotia's most valuable resources. "He lived and breathed his love for the oceans both in his work and in his recreational private life," says friend and colleague Peter Underwood, Deputy Minister at the Nova Scotia Department of Fisheries and Aquaculture, where Longard had served since 1980 as Director of Policy, Planning and Coastal Resources. Earlier he worked at the federal Department of Fisheries and Oceans. An avid sailor and diver, Longard "had an affinity for all things marine," Underwood says.

Longard was a founding member of the Gulf of Maine Council program, and was the province's long-time representative to the Council's working group. "The thing that he really liked about it was that it did offer an opportunity to look at a piece of space on earth without the political boundaries on it," Underwood recalls. "He always used to say, 'This is the fun file. It's a chance to forget who we are and what our positions are and get together on issues of common concern and have some fun with it.' He had an aura about him that was magnetic and positive."

The Council has created an Art Longard award to be given annually to an outstanding volunteer within the Gulf of Maine region in memory of Longard's belief in citizen volunteerism as essential to sustaining natural resources. The first award will be presented later this year.

Clean Nova Scotia

Halifax, Nova Scotia

www.clean.ns.ca

Clean Nova Scotia (CNS) has led community programs addressing environmental restoration, conservation, and enhancement throughout Nova Scotia, coordinating an annual maritime provinces Beachsweep that cleans up dozens of beaches. In 1998, the group coordinated a Gulf-wide Beach Cleanup Program for the International Year of the Ocean. Executive Director Meinhard Doelle says some community groups were cleaning up beaches before CNS formed, but that his organization has boosted the efforts of all participants through recognition and support.

Formed in 1988 in response to concern about litter and solid waste in the province, CNS has adopted other issues as well. This year, CNS is starting an educational campaign to reduce carbon dioxide emissions that are believed to contribute to global warming. Scientists predict that warming temperatures will increase sea levels, augmenting erosion, and causing other coastal effects.

As part of CNS's continuing focus on beach stewardship, Doelle says. "This year we're starting an Adopt-a-Beach program, supporting groups that have been involved in the Beachsweep for a long time in looking at it more holistically." CNS will assist those groups with activities such as water quality monitoring, identifying local sources of pollution, working with industry, conducting wildlife inventories, and monitoring erosion.

William Beverley Scott

Kingston, Ontario

William Beverley Scott has devoted a prolific career to researching organisms on the Atlantic coast of Canada, in the Caribbean, and in freshwater ecosystems. He has studied the distribution, systematics, behavior, and ecology of Atlantic Canada's fishes, compiling a wealth of valuable information for scientists, conservationists, economic developers, and resource managers.

Scott initiated the Atlantic Reference Center, one of North America's largest collections of larval fishes, housed at the Huntsman Marine Science Center in St. Andrews, New Brunswick. He served as Executive Director there and, until his retirement last year, as Senior Scientist. He has also served as honorary curator of the St. Andrews Biological Station.

In 1988 after many years of work, he published the federal publication, *Fishes of the Atlantic Coast of Canada*. He worked on that document with his wife of 57 years, Milly Scott, a bibliographer.

Additionally, Scott's career has included investigating the feasibility of establishing a hagfishery off the coast of Nova Scotia, and conducting research on the Atlantic sturgeon, a species being cultivated for aquaculture. Undertaking more thorough research of marine organisms is critical to managing marine resources, in Scott's view. "We know enough to exploit them but we don't know enough to fully understand the role they play in the ecology of the region."

Eastern Charlotte Waterways Inc.

Saint George, New Brunswick

www.cardsaqua.com/ecwinc/home.htm

Eastern Charlotte Waterways (ECW) brings together diverse parties including community members, government, industry, and academia to address coastal watershed and other environmental issues in Southwestern New Brunswick.

ECW began as one of Environment Canada's Atlantic Coastal Action Programs, which receive a small amount of federal funding and are intended to bring community members together to address local environmental priorities.

About 80-100 volunteers participate in ECW's numerous projects, according to Executive Director Susan Farquharson, who says the group is focusing this year on assessing the effects of rockweed harvesting and the use of biocides in aquaculture.

Farquharson says one of ECW's most successful initiatives is its cooperative bacterial monitoring program that includes participants from the federal and provincial governments and the shellfish harvesting and processing industries. The partners began monitoring water quality in local shellfish harvesting areas when staff cutbacks at Environment Canada (EC) ended federal monitoring in those areas. Without evidence that the waters were clean, the government would have had to close them to shellfishing.

Now, ECW collects water samples and sends them to EC for analysis. In addition to providing the government with the information it needs to keep the shellfish beds open, Farquharson says the program "gave the soft-shell clam industry in this area one strong voice. It can speak through this committee."

Edward Myers

Walpole, Maine

A consistent voice for the health of the world's oceans, and an advocate for the protection and wise use of the Gulf of Maine's marine resources, Edward Myers is also a pioneer who, in the 1970s, helped develop and nurture Maine's aquaculture industry, today valued at over $150 million.

Myers launched North America's first mussel farm and founded a shellfish mail order business. He has also served as administrator of Darling Marine Center, chaired the Maine Department of Marine Resources Advisory Committee, and writes a column for *The Working Waterfront/Inter-Island News*, published by the Island Institute in Rockland, Maine.

Worried that bureaucracies lack mechanisms to address the cumulative effects of incremental environmental changes on the ocean, Myers is especially concerned about the marine effects of airborne carbon particulates generated by industrial and automotive emissions. "If CO_2 goes into the water at reasonable rates it can be photosynthesized and give us oxygen, but how much carbon is too much?" he wonders.

A volunteer with many coastal conservation organizations including the Maine Island Trail Association, Myers also helped establish the Planning Alliance of the Damariscotta River Estuary. He says his activism comes naturally. "That's the way my head works."

Photo: Lee Bumsted

Photo courtesy of Nova Scotia Department of Fisheries and Aquaculture

Top: Longtime environmental advocate Ed Myers says volunteering comes naturally to him.

Bottom: The late Art Longard was known for his love of "all things marine."

Penobscot Marine Museum

Searsport, Maine

www.acadia.net/pmmuseum

Maine's oldest maritime museum, the Penobscot Marine Museum, under the leadership of Executive Director Renny Stackpole, works closely with local environmental organizations to chronicle, preserve, and champion Maine's maritime heritage and to interpret and protect Penobscot Bay.

The museum has a long history of preserving the heritage of coastal Maine in general, and Penobscot Bay in particular. In addition to its commitment to maritime art, history, culture, and education, the Museum has been an active member of the Pen Bay Network, and co-sponsors the Penobscot Bay Marine Volunteer Program — organizations involved in protecting the region's natural resources.

Among the many activities that volunteers in the program take on is water quality monitoring in the Penobscot River and Penobscot Bay. Volunteers also work in the museum as interpreters. "We're not just exhibiting artifacts, but also teaching about the bay as a living environment," says Stackpole. "Marine museums can't just rest on the laurels of their historical collections. They must focus on the living environment," and how changes affect it.

Sue Foote

Seabrook, New Hampshire

"I grew up honoring the ocean because it was my family's living," says farmer, herbalist, and coastal resources activist Sue Foote. Describing a youth spent renting out rowboats and selling bait worms from her family's Hampton Harbor fishing pier where her father docked his party fishing boat, Foote says it led her to dedicate herself to protecting and restoring natural resources in coastal New Hampshire.

She also encourages other budding conservationists, initiating a salt marsh monitoring program for Seabrook High School students, and working to expand an aquaculture education and research program for students ranging from the middle school to graduate school through the University of New Hampshire's Cooperative Extension.

Her work with the Great Bay Watch, the New Hampshire Estuaries Project, and the New Hampshire Coastal Program (NHCP) to complete a sanitary shoreline survey of Hampton/Seabrook marsh led to the eventual opening of the Middle Ground clam flats in Hampton Harbor. As a member of the Seabrook Planning Board and Conservation Commission, Foote led the commission last year in pursuing salt marsh restoration projects with funding from the Natural Resources Conservation Service and NHCP.

Foote maintains that degrading saltmarshes along the Atlantic coast have contributed to depleting groundfish stocks. "I can remember when you could go three miles [five kilometers] offshore and fill the boat to the gunwales with 20- to 24-inch haddock in a couple of hours," she says. "Salt marshes are virtually the nursery for everything. If you don't have a healthy salt marsh, you aren't going to have the groundfish."

Advocates for the North Mill Pond

Portsmouth, New Hampshire

"We're trying to foster an appreciation of North Mill Pond because, despite its industrial history, it really is a beautiful spot in the middle of Portsmouth," says Steve Miller, President of Advocates for the North Mill Pond (ANMP).

Formed in 1997 by residents from the neighborhoods surrounding the pond and others concerned about the area's environmental quality, ANMP works to protect, restore, and enhance the North Mill Pond estuary. "We focus on the environment as a way of improving the quality of life where we live," says Miller. Also, he points out, healthy marshes serve as water filters and provide fish habitat, making them important to coastal fisheries.

The group publishes a quarterly newsletter, sponsors public education meetings, and organizes numerous projects including an annual shoreline cleanup and a project involving local school children in planting salt marsh grass and re-seeding mussel beds. With help from numerous partners, ANMP has also conducted and published the results of a year-long environmental assessment of the pond.

In the future, Miller says, ANMP "will continue our efforts to clean up and revitalize the North Mill Pond, and strengthen partnerships in our community to improve environmental health."

Robert "Stubby" Knowles and Dave Sargent

Gloucester, Massachusetts

"Stubby" Knowles and Dave Sargent have pooled their commitment to environmental protection, their technical and practical expertise, and their extensive volunteerism to spur coastal improvements in the Gloucester/Essex County area. Knowles and Sargent have conducted extensive water sampling that has helped identify problems and dramatically improve coastal water quality in the region. This has led to the opening of shellfish beds, retaining of coastal access sites, and restoration of priority marsh areas.

A commercial shellfisherman and member of the volunteer Gloucester Shellfish Advisory Commission, Sargent is also a representative to the Eight Towns and the Bay Committee, which works to restore salt marshes along the Massachusetts Bay. He recently helped develop a manual that aids water quality monitors in examining bacterially contaminated water samples for the presence of a dye used in most laundry detergents. Evidence of the dye would indicate the presence of human wastewater.

Knowles, who works closely with Sargent, has been Gloucester's Shellfish Constable for 27 years, and oversees about 1,000 acres/405 hectares of open shellfish beds. He also monitors closed beds and works on cleaning them up so the town can reopen them. Formerly in the shellfish business himself, Knowles says its importance has increased with the decline of Gloucester's fishing fleet. "It's a resource that everybody's after now. It provides a place for them to be able to go to supplement the income from their other jobs."

Massachusetts Audubon Society Coastal Waterbird Program

Marshfield, Massachusetts

www.massaudubon.org

Since its inception in 1987, the Massachusetts Audubon Society's Coastal Waterbird Program, under the direction of Scott Hecker, has grown from a small, seasonal project to a year-round effort. The program now combines research, conservation, environmental education, land acquisition, and advocacy to protect more than 50 tern, shorebird, and heron nesting sites along the state's coastline.

The program is largely responsible for the rapidly recovering population of the threatened piping plover, which increased in Massachusetts from 126 to 490 pairs from 1987 to 1997. Hecker says, "I hope to continue to make progress in the face of the growing conflict with competing uses of the shoreline."

Hecker has convinced Massachusetts towns to restrict off-road vehicle traffic near the beach habitat of piping plovers and least terns, and has organized projects designed to encourage plovers and terns to return to nesting areas they had not visited in years. Additionally, he is pushing for limits on erosion control measures such as sea walls, vegetation planting, and snow fences, which he says prevent natural development of piping plover and least tern habitat.

Of the 200 people who participate in tern and plover protection in Massachusetts, Hecker says. "We're all very determined to help these birds and the obstacles are very great. Every year is certainly no easier than the year before. On the other hand its wonderful to be involved in work where you can show quantitative accomplishments."

For information on how to nominate an individual or organization for a 1999 Visionary Award, contact Megan Trites-Tolson at tritesml@gov.ns.ca or call (902) 424-1764.

Photo courtesy of Scott Hecker

Top: Accompanied by daughter Rima, Scott Hecker of Massachusetts Audubon Society's Coastal Waterbird Program examines a clutch of piping plover eggs on Plymouth Beach.

Middle: Eastern Charlotte Waterways, Inc. organizes beach cleanups, among its many coastal stewardship activities. Participants in this cleanup at Lime Kiln Bay last year included Susan Farquharson, Loretta Tatton, and Eleanor Blackier.

Bottom: Students from Portsmouth's New Franklin School seed mussel beds as part of a project organized by the Advocates for the North Mill Pond.

beach clean up slide

Photo: Eastern Charlotte Waterways Inc.

Photo: Advocates for the North Mill Pond

Sprawl, *continued from page 1*

of their unmanaged development and the resulting environmental consequences are occurring in areas outside of cities and towns where, much as is the case in the US, residents are lured by cheaper land, lower taxes, and a more rural lifestyle.

Environmental problems such as runoff are a function of improper land use, said Roger Sturtevant, Director of the Annapolis District Planning Commission noting, "You don't have to have a lot of people to do negative things to the environment."

Sturtevant and others concerned about sprawl say that development is inevitable — desirable in some contexts. "We don't want to stop development in the rural areas, the intention is to manage it, provincially and locally," said Bill Ashton, Senior Policy Planner for the New Brunswick Department of Municipalities and Housing.

Photos: James W. Sewall Company

Top: Bangor Mall area, Bangor, Maine,1955.

Bottom: Bangor Mall area, 1995.

Costs to coastal environments

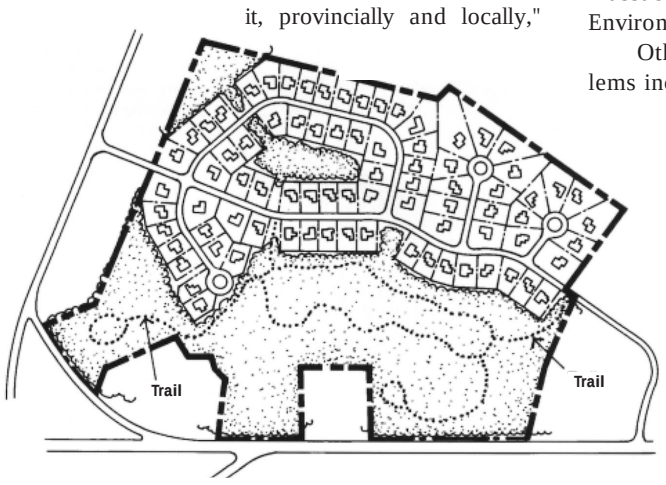
Sprawl most directly affects the coast by chopping up large habitat areas that support species including endangered plants and animals. "If we hadn't developed the beaches in Maine [piping plovers and least terns] probably wouldn't be endangered. Now we don't build on the beach most of the time anymore, but any little bit of habitat we lose is critical," said Maine Audubon Society (MAS) Biologist and Conservation Infor-mation Manager Barbara Charry. Piping plovers and least terns are on Maine's endangered species list, and piping plovers are on the federal list of threatened species.

Also, as more people move into beach areas, they generate more trash, which attracts more foxes, skunks, gulls, and other animals that drive out or prey upon resident species such as shorebirds. Increased use of the beach by people also crowds out the birds that nest there.

MAS is working to inform landowners about these issues, and Charry believes they are receptive to ideas about how to prevent or offset the effects of sprawl. "A lot of people who live in Maine I think enjoy the nature and would like to maintain a suite of species that represent all the diversity in Maine," Charry said, adding that MAS is not trying to prevent development. "Development is going to happen. It's not going to stop, but we can be smart about it and we can hopefully make choices that can minimize impacts and maximize diversity," she said.

Often, another casualty of development is water quality. Pollution can enter coastal waters in stormwater runoff and by way of leaky septic systems. "On Cape Cod, we've seen the closure of several thousand acres of shellfish beds largely as a result of development," said John Lipman, Director of Growth Planning for the Massachusetts Executive Office of Environmental Affairs.

Other development-induced problems include increased amounts of sediment deposited into rivers by erosion, affecting migrating fish; excessive water withdrawals from rivers — used to supply municipal water supplies — that also affect fish and other species; and restriction of tidal flow into saltmarshes, reducing their value as coastal water filters and wildlife habitat.



This schematic of a subdivision from* Growing Greener, *published by the Natural Lands Trust, depicts a Conservation Subdivision Design in which houses are built on quarter acre lots adjacent to wooded conservation land that is accessible to residents by way of walking trails.

Schematic: Natural Lands Trust

Options and obstacles

New England communities have tried various approaches to combat sprawl outside of their city and town centers over the years. House lot sizes were increased to keep population densities low so more schools and other services would not have to be built. But this has not worked. "A lot of people perceive that large lots give them privacy or a country feel, but once the area fills up with more lots of that size you get all the pollution, traffic congestion, lack of open space that you left to escape. It's not rural, but suburban," Lipman said, adding, "A lot of towns say they're going to three-acre [1.2 hectare] zoning to protect their character, but they end up destroying it."

Emphasizing that communities need to do their short-term planning in the context of a long-range master plan, planners now favor methods that situate homes fairly close together on small parcels near common open areas. But, they say, a crucial measure in controlling sprawl will be to change regulations that, in many US and Canadian municipalities, make it harder to build these unconventional subdivision designs.

On the North Shore of Massachusetts, a coalition of environmental groups, state agencies, regional planning agencies, local officials, real estate agents, and developers is promoting Conservation Subdivision Design for residential developments. The concept was developed by Randall Arendt, who has worked on Subdivision Design in Massachusetts, and is now with the Pennsylvania-based Natural Lands Trust. The method's premise is that at least 50 percent of a residential development parcel should be set aside as undeveloped open space. Natural Lands Trust is careful to differentiate between Conservation Subdivision Design and cluster development, which has less stringent requirements for the quality and quantity of land left undeveloped.

As is the case elsewhere in the Gulf, Massachusetts regulations require towns to review non-conventional subdivision designs under a special permitting process that was initially designed to control population densities. The lengthier process provides little incentive for developers to propose innovative designs, say proponents of such projects. Members of the Conservation Subdivision coalition are pushing legislation that would eliminate the special permit requirement for subdivision designs intended to preserve open space.

Conservation Subdivision Design "is a process for achieving residential growth without consuming all of the open space left in a town," according to Kathy Leahy, Advocacy Program Coordinator for Massachusetts Audubon-North Shore. "With careful advanced planning, a community can direct its growth in ways that suit that community," she said. "Communities are finding that the one-size-fits-all subdivision isn't working for them anymore. The trophy home on two acres [.8 hectares] is no longer the answer," said Andrea Cooper, Massachusetts Coastal Zone Management North Shore Regional Coordinator.

Using Arendt's method, "People have a smaller lot than in traditional subdivisions but they gain open space and the feeling that they are part of a community. Over time that becomes what is valued," said developer Shep Spear, one of the coalition's members, and a builder of residential developments in northeast Massachusetts. "There are people who will tell you these will not sell as well as bigger lots, but if marketed properly they will," he said. Spear noted that smaller house lots require less infrastructure, such as roads, and that savings can show up in the homes' purchase price.

Proponents of innovative development concepts assert that not all home buyers want single family homes

on large lots in the first place, and that communities should strive for diversity of development. Many buyers do not want to spend a lot of time maintaining a large piece of land, said Realtor John Steiger of Hunneman Coldwell Banker in Gloucester, Massachusetts, who is also a proponent of Conservation Subdivision Design. "There are always going to be people who want a two-acre [.8 hectare] lot," said Cliff Sinnot, Executive Director of the Rockingham County Planning Commission in New Hampshire. “The problem is,” he said, “that’s all we produce. We seem to allow nothing else.”

While acknowledging that concepts such as Arendt's offer sound options for suburban growth, Della Valle said that communities need to address "what's causing people to move to suburbs in first place."

Planners emphasize the importance of making already developed areas more attractive places to live so that people are less eager to move out of town. Along with revitalizing town and city centers, they say, these efforts must also include preserving open spaces by working with land trusts on land purchases and easements that allow public access. US President Bill Clinton's Liveability Initiative proposes tax credits in support of such goals.

One way of concentrating growth in already developed areas and preserving outer rural areas is to delineate growth zones — a prevalent practice in the US northwestern states. Some towns in the Gulf are already establishing growth zones, and the New Hampshire legislature is considering a bill submitted by legislator Hal Melcher's committee on land use that would allow towns to create them.

Layers of assistance

Some support for local efforts to combat sprawl's environmental effects comes through federal policies that focus on managing coastal resources, including the US Coastal Zone Management Act and the National Estuary Program. The US Environmental Protection Agency is also developing a "Smart Growth Action Plan" to curb sprawl in its northeast region. Canada's recent Oceans Act does not specifically outline land use policy, but mandates integrated plans to protect marine environments.

Both countries are also participating in the United Nations Global Programme of Action, which is working to identify and address land-based activities affecting the marine environment, including coastal development.

Regional programs also play a role in controlling the effects of development. Environment Canada's Eastern Habitat Joint Venture (EHJV), which includes all of Canada's provinces east of Manitoba, works with provincial departments to address environmental issues such as the effects of water quality on waterfowl and seabird habitat.

According to EHJV Coordinator Reg Melanson, the group is addressing development by working with towns to develop tertiary treatment methods for sewage discharged into tidal rivers; purchasing coastal habitat and obtaining easements on municipally owned islands; and publishing several brochures on how development is affecting coastal habitats.

At the provincial level, Nova Scotia planners and environmental officials are hopeful that a new Municipal Government Act (MGA), which takes effect April 1, will offer a way to control development in the province. Under the Act, the province can adopt policy statements, called "statements of provincial interest," pertaining to land use and development. Municipalities will have to incorporate these provincial concerns into their planning processes. The province has already adopted statements addressing floodplains, watersheds that supply drinking water, housing, agricultural land, and municipal infrastructure. It could also add statements addressing other concerns, such as sprawl.

"If the province expresses an interest in reducing sprawl and encouraging growth management and compact urban growth, all towns and municipalities will have to submit their plans to the province for approval," said Sturtevant, of the Annapolis District Planning Commission.

New Brunswick is working on several land management policies, including a provincial policy to manage development immediately outside of New Brunswick's seven urban centers, and a provincial land use policy for coastal areas, which, according to Ashton of the provincial Department of Municipalities and Housing, "probably will be the most advanced [policy] in Canada in terms of protection for the coastal environment."

The coastal areas policy would protect the province's coastal marshes, beaches, dunes, cliffs, and other coastal features with measures including setbacks. Municipalities would have to conform to the policy or develop their own policies that are at least as stringent, he explained. A provincial wetlands policy is also being developed to protect inland marshes, Ashton said.

In New Hampshire's coastal watersheds, several agencies and organizations are working with communities to protect natural resources. Among them is the New Hampshire Estuaries Project (NHEP), which is developing a management plan for the state's estuaries that will include measures municipalities can take to reduce the impacts of sprawl, according to NHEP Director Chris Nash. The Audubon Society of New Hampshire is writing the plan's habitat section, which will identify undeveloped land suitable for conservation easements or acquisitions and offers advice to municipalities on developing zoning regulations to protect habitat.

Given that numerous New Hampshire agencies are working with communities on land use and watershed issues, the state is attempting to coordinate those efforts, according to Cynthia Lay of the New Hampshire Coastal Program (NHCP). She said NHCP will work directly with towns in the Great Bay watershed to help them understand how their specific local actions relate to larger issues such as regional water quality. In many towns, "There's not an awareness of the cumulative impacts of incremental change [on natural resources]," she said.

But other planners note that the causes and effects of sprawl ooze over municipal borders, and that even as agencies and organizations coordinate with one another, they should also approach land use management as a regional, rather than a town-by-town issue.

Personal choices

Those working to control sprawl say the actions of individuals do affect the balance of development. Choosing to live in an area that is already developed helps ensure the viability of town and city centers, while protecting outlying areas, according to Sinnot, who noted that, in many cases, people find that living in a more densely developed area is less expensive in the long run.

Owners of large open parcels can consider preserving them through local land trusts. Participating on planning boards and conservation commissions is another way to work on behalf of sound land management.

According to Della Valle, there is still time to get a handle on sprawl before it is too late. "In the Gulf I think we've been very fortunate that the rate of development is such that we can see this happening. In some areas, the rate of development is so quick it's virtually impossible for any level of government to deal with it."

photo from a slideTRURO AS SEEN FROM PILGRIM MONUMENT

Photo: Kathy Sferra

Left: In recent decades, coastal development has proliferated along the Gulf of Maine, especially in southern communities, such as Provincetown and Truro, Cape Cod, Massachusetts. Recognizing that coastal development has many environmental effects, many of these communities are now taking steps to better plan future growth.

Below: Cities and towns with attractive public parks and other accessible open spaces offer some incentive for residents to settle in population centers rather than moving out into more rural areas in search of grass and trees. Forest River Park in the coastal city of Salem, Massachusetts, is visited year 'round by people living in and near downtown areas.

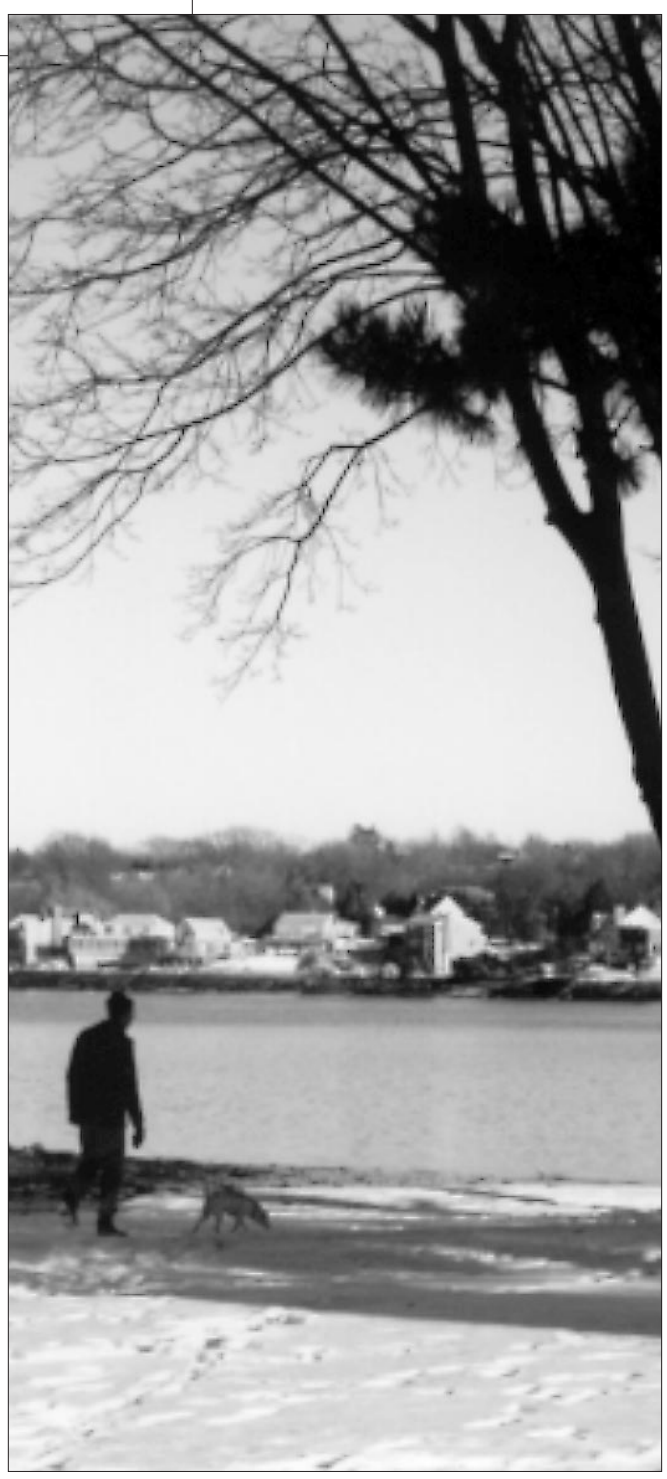


Photo: Suzy Fried/*Gulf of Maine Times*

For more information on sprawl in the Gulf, visit:

Maine State Planning Office,
www.state.me.us/spo, click on *Cost of Sprawl* report.

Global Programme of Action
Coalition for the Gulf of Maine
http://www.cec.org/statepage/scopingpapers.htm
Type in user name: *gulf* and password: *trends*, all in lower case. Click on *Scoping paper 3: Coastal Development*.

PlannersWeb *Sprawl Resource Guide*
www.plannersweb.com/sprawl

Whale watching

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Yet, there are cases in which whale-watch activity has directly harmed whales. In two confirmed incidents last season, Massachusetts-based whale-watch vessels collided with whales. A third reported incident is still under investigation. And so, on a frosty January day punctuated by snow squalls, a panel met at the Massachusetts Maritime Academy in Bourne to discuss whether additional measures should be put into place in April, when whale-watching season begins, to protect whales from being loved to death.

Whale-watch operators, government officials, scientists, naturalists, researchers, conservationists, and representatives of the US Coast Guard participated in the forum sponsored by the Provincetown-based Center for Coastal Studies (CCS) and Stellwagen Bank National Marine Sanctuary.

Bank draws whales, admirers

Spanning the mouth of the Massachusetts Bay, Stellwagen Bank is an important feeding ground for several whale species, including endangered humpback and North Atlantic right whales. This popularity with whales makes the bank the preferred destination for numerous Massachusetts whale-watch tours during the spring, summer, and fall.

Conservationists and others throughout the Gulf of Maine are concerned about an apparent increase in whale-watch vessel traffic in the whales' north Atlantic feeding and breeding grounds. Animals that are already jeopardized by commercial shipping traffic, loss of habitat, entanglement in fishing gear, and other dangers can't afford this increased threat, some assert.

But whale-watch proponents describe the industry as more beneficial, on the whole, than harmful to endangered whales. Whale-watch vessels, they point out, provide a platform for whale research and build public awareness of the plight of endangered whales, creating support for whale conservation. Noting that CCS conducts whale research aboard the Dolphin Fleet's whale-watch vessels, the Center's Executive Director Peter Borrelli opened the January forum by stating its premise: "That whale watching is legal and not inherently harmful to whales and is of enormous scientific value." He explained that CCS, Dolphin Fleet, and the New England Aquarium are named as defendants in a Massachusetts lawsuit brought by whale activist Max Strahan claiming that whale-watching activities inherently violate the US Marine Mammal Protection Act.

Guidelines vs. regulations

The US Marine Mammal Protection Act and the Endangered Species Act, and Canada's Fisheries Act, prohibit killing, injuring, or harassing whales. Harassment defines a broad range of activity that can include causing the animal to change its normal behavior, such as if a whale stops feeding as a whale-watch vessel approaches.

US regulations also require all vessels to stay at least 500 yards/457 meters away from endangered North Atlantic right whales. Canada is considering increasing its protective regulations for right whales as well.

But neither country specifically regulates commercial whale-watch activity in the Gulf of Maine. US whale-watch tours operate under voluntary guidelines developed by the National Marine Fisheries Service (NMFS) that include avoiding maneuvering closer than 100 feet/30 meters to any whale. Forum panelists noted, however, that the guidelines focus more on preventing harassment of whales than on preventing collisions between whales and whale-watch vessels. Some fear collisions will increase as tours increase, and as some companies switch to faster, jet-propelled vessels.

Photo: Suzy Fried/*Gulf of Maine Times*

Private boaters watch a humpback whale on Stellwagen Bank. While a recent forum focused on interactions between whale-watch vessels and whales, participants emphasized that all vessels represent potential threats to whales if they are not operated by educated and responsible captains.

Canada's Department of Fisheries and Oceans (DFO) encourages whale-watch operators to follow the voluntary whale protection guidelines it developed for all mariners. Deborah Tobin, Education Coordinator for East Coast Ecosystems (ECE), a marine education and research organization based in Freeport, Nova Scotia, described the guidelines as inadequate. But DFO contends that they are helping to prevent problems for whales. And, noted DFO Marine Mammal Advisor Jerry Conway, the Department hopes to develop "new and more comprehensive regulations that will ensure that marine mammals are given the utmost protection."

Tobin asserted that most whale-watch operators in Canada's Bay of Fundy have, since 1997, followed a voluntary code of ethics, developed with ECE's assistance, that take local factors more into account. ECE has also created brochures to educate passengers about how to be responsible whale watchers. But Tobin ultimately favors government regulation of whale watching in the Bay of Fundy in light of the industry's growth. "The code of ethics is successful up to a point, but when there's few whales and stiff competition, people tend to get carried away sometimes," she said.

Selling the drama

Brochures depicting whales exhibiting their most dramatic — but least common — behavior are standard advertising for many whale-watch companies. Critics of the practice, including Mason Weinrich, Executive Director and Chief Scientist at the Gloucester-based Cetacean Research Unit, say this misleads passengers about what to expect, and feeds competition among whale-watch operators to pursue crowd-pleasing whales, and to race from one whale "hot spot" to another. In an attempt to squeeze as many trips as possible into a day, some companies even offer sunset cruises that, by definition, pass through whale habitat when visibility is poor, increasing the chance of whale/vessel collisions.

One audience member at the forum emphasized that passengers don't want thrills at the whales' expense. "As a photographer I want to be as close as possible to get the best shot, but not if it's going to endanger the whale," he said. Milliken supports posting whale-watch guidelines in public view on all whale-watch vessels to inform passengers about what is considered responsible conduct.

Cape Ann Whale Watch tour operator Jim Douglas said whale-watch captains try to control irresponsible behavior by policing themselves informally, but added, "We need some sort of enforcement out on the bank." The presence of US Coast Guard vessels on the water encourages private and commercial mariners to behave, he said. According to NMFS Biologist Doug Beach, the Coast Guard can stop a vessel and write a violation report, but then turns the case over to NMFS for prosecution. The Coast Guard also plays a key role in the disentanglement of whales from fishing gear and in operating reporting systems designed to prevent whale/vessel collisions.

Some panelists, including whale-watch operators such as Milliken, of the Dolphin Fleet, voiced support for tightening the voluntary guidelines under which US-based whale-watch outfits operate. CCS Senior Scientist David Mattila described the current guidelines as "the least restrictive of any official [whale-watch] guidelines anywhere in the world." But according to Beach, the NMFS guidelines "are complex and not enforceable as regulations. Therefore, it is difficult to determine their effectiveness."

Others, including Bruce Russell who represented the International Fund for Animal Welfare, called for federal regulations specifically addressing whale watching, even as some wondered aloud whether either tighter guidelines or regulations would help at all, given the difficulty of policing the open water.

Strike prevention solution sought

"I'm amazed that a $50 million industry operating around a federally endangered species operates on a voluntary basis alone," said Dennis Nixon, Director of Graduate Programs at the University of Rhode Island's Department of Marine Affairs. He called for certification requirements for whale-watch captains and naturalists. Now, most naturalists on whale-watch vessels are employed by whale-watch companies. Nixon proposed that whale-watch naturalists be employed by NMFS as naturalist/observers, placing them in a better position to report irresponsible behavior on the part of whale-watch operators or other mariners. Naturalists should also be required to contribute to whale research, he said.

To reduce whale-watch vessel traffic in whale habitat and to help recover research costs, Nixon proposed that marine sanctuaries be authorized to charge fees in the same way that the US land-based National Parks charge fees to tour companies, recovering that cost with a small increase in their ticket prices.

A working group was to meet in late February to examine issues having to do with the interaction of whales and whale-watch vessels throughout the region, especially within the Stellwagen Bank National Marine Sanctuary. The group will determine whether voluntary guidelines should be made more stringent, or whether enforceable whale-watch regulations should replace them.

In an interview after the forum, Borrelli said strategies to protect whales from vessels have to consider commercial shipping and recreational boat traffic as well, asserting, "Whale watching is part of an overall complicated issue of vessels in general." NMFS would have to pursue legislative amendments to the federal Marine Mammal Protection Act to gain the authority to specifically regulate the US whale-watch industry. Stellwagen Bank Sanctuary Manager Brad Barr noted that the Sanctuary has the authority to issue and enforce any new regulation of whale-watch activity within Sanctuary boundaries, but contends that a larger, region-wide solution would be more effective, since whale-watch vessels and whales sometimes cross paths outside of the Sanctuary. Borrelli doubts guidelines could be converted to regulations before the next whale-watch season begins, but said, "I think the industry could do something easily by April."

Noting the lack of scientific evidence that whale watching has long-term effects on whales, some panelists favored beefing up the voluntary guidelines until additional research reveals what those effects actually are, and then developing regulations based on those results. But researchers said it could take years to determine the long-term effects of whale watching on whales, moving other panelists to recommend that regulations be adopted as a precautionary measure, then revised according to any new information that research contributes.

Nixon maintains that regulation is inevitable in light of last season's collisions and the fear that such incidents will only increase. "The policy window is open," he said. "Either move ahead with the regulatory process or risk a federal judge making [regulations] for you."

Whale-watching guidelines

US guidelines
Visit www.coastalstudies.org

Canadian guidelines
E-mail DFO Marine Mammal Advisor Jerry Conway at conwayj@mar.dfo-mpo.gc.ca or call (902) 426-9609

Bay of Fundy Whale Watch Code of Ethics
E-mail Deb Tobin at deb.tobin@ns.sympatico.ca or call (902) 839-2962

Visiting the Home of the Whale: A Consumer's Guide to Responsible Viewing
Visit http://new-brunswick.net/new-brunswick/whales/ethics.html or, E-mail Deb Tobin at deb.tobin@ns.sympatico.ca or call (902) 839-2962

UNH to tackle fish farming in open ocean

By Suzy Fried, Editor

Portsmouth, New Hampshire — Off the coast of New Hampshire near the Isles of Shoals, University of New Hampshire (UNH) researchers will launch an aquaculture demonstration project in May to explore the biological, engineering, and economic feasibility of raising summer flounder and blue mussels in the open ocean.

The project will also address some specific environmental issues, said UNH Associate Sea Grant Director Brian Doyle, who explained that "open ocean" refers to "anyplace where you're exposed to open ocean conditions," even if the site is relatively close to shore.

"The audience we're looking to appeal to could be aquaculture entrepreneurs or commercial fishermen looking for supplemental business," said Rich Langan, Director of the UNH Jackson Estuarine Laboratory. The demonstration project is funded by the National Oceanographic and Atmospheric Administration through the year 2001, but, Langan said, "We're hoping that this becomes a long term R&D site that could be used by regional institutions and regional groups that want to test different types of gear and different types of species of fish and shellfish."

Five miles/eight kilometers off the Isles of Shoals, engineers will erect two net pens in 180-foot/55-meter deep waters. The pens are especially designed for open ocean conditions. One will be submerged at a depth of 50 to 66 feet/15 to 20 meters; the other will be partially submerged, so researchers can study how both systems work. In June, each will be filled with about 3,000 summer flounder now being reared at GreatBay Aquafarms in Portsmouth. Mussels will be grown on two submerged longlines near the finfish cages.

Project organizers hope the flounder will reach market size by early November so they can be harvested before cold weather sets in. "They're not an ideal species for us because they won't take the winter temperatures that we expect here," said UNH Zoology Professor Hunt Howell. Summer flounder are being used because they are available, but, he said, "Our expectation is we'll switch species as time goes on."

"This is a relatively new species for aquaculture," said George Nardi, President of GreatBay Aquafarms. "We're not 100 percent sure what to expect after they're stocked out there."

Coastal sites scarce

For years, people in the Gulf of Maine have reared fish, shellfish, and aquatic plants in land-based and coastal aquaculture facilities. Salmon farming is a multimillion dollar industry in Downeast Maine, and both New Brunswick's and Nova Scotia's provincial governments include departments of "Fisheries and Aquaculture." Interest in aquaculture continues to grow as market demand for a fresh, reliable supply of seafood increases, and as declining wild stocks force increasingly stringent closures on Gulf of Maine fisheries.

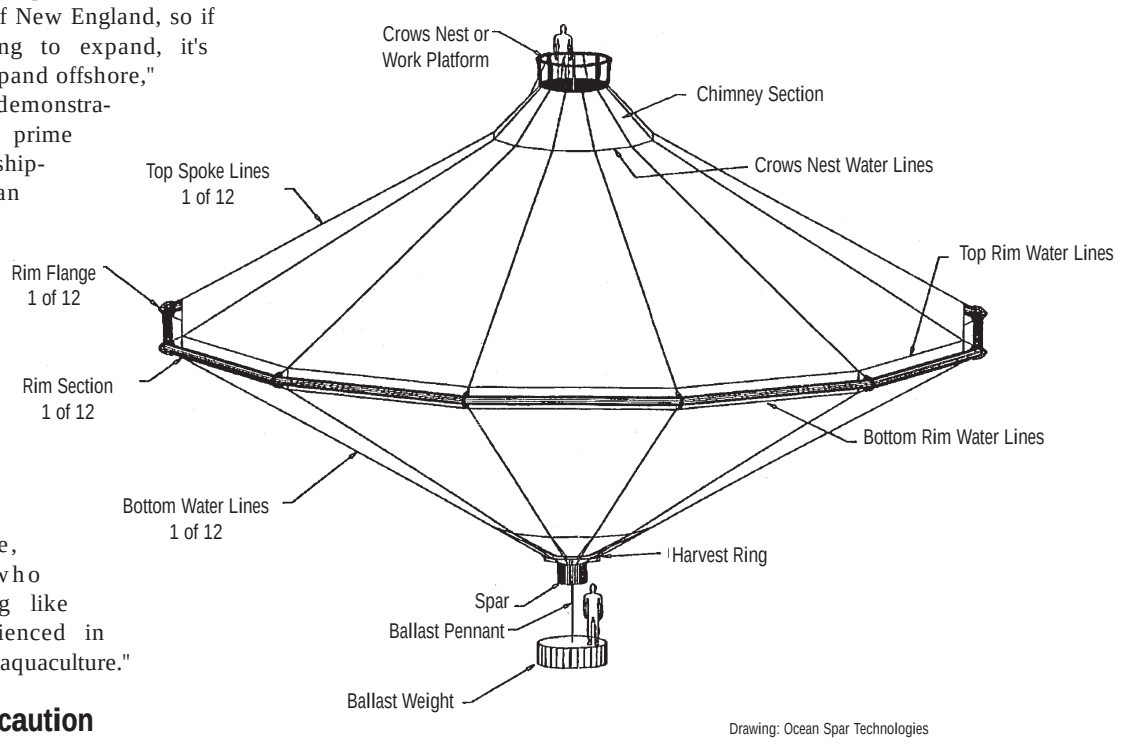
Portsmouth Fishermen's Coop Manager Peter Kendall anticipates strong interest in the demonstration project among coop members who will maintain the pens and the fish. "In past years when they could make money fishing, only one or two guys might be interested in [participating], whereas with all these regulations coming up you might find a lot of guys willing to go out and do it just to make a day's pay," he said.

As aquaculture spreads in the Gulf, it joins fishing, recreation, and other uses competing for space along the coast. "The reason we're looking at offshore aquaculture to begin with is that there are virtually no protected inshore sites on the coast of New England, so if aquaculture is gong to expand, it's going to have to expand offshore," said Howell. The demonstration site is not in prime fishing areas or shipping lanes, Langan noted.

But open ocean aquaculture presents challenges not found on fish farms closer to shore. Waves can reach heights of up to 30 feet/nine meters at the project site, said Langan, who observed, "Nothing like that's been experienced in Maine or maritimes aquaculture."

Photo: George Nardi/GreatBay Aquafarms, Inc.

Greg Beckman, Farm Operations Manager at GreatBay Aqua-farms, sorts juvenile flounder by size. The larger fish are removed so that they don't prey on smaller ones. The farm will supply summer flounder for an open ocean aquaculture project that the University of New Hampshire plans to undertake this year.



Drawing: Ocean Spar Technologies

Schematic drawing of the type of finfish cage that will be used at the University of New Hampshire's open ocean aquaculture demonstration project site off the Isles of Shoals.

Warnings urge caution

While aquaculture proponents emphasize its economic benefits, others are concerned about its environmental repercussions. The Environmental Defense Fund, which published a 1997 report, *Murky Waters: Environmental Effects of Aquaculture in the United States*, urges caution and careful management to prevent long-term environmental losses that bring economic consequences of their own. Rebecca Goldburg, EDF Senior Scientist and one of the authors of *Murky Waters*, said EDF has helped to draft proposed organic certification standards for aquaculture that address environmental concerns.

Goldburg, a self-described "fan of bivalves," applauds the mussel cultivation part of the UNH program, stating that shellfish aquaculture generally has fewer environmental effects than marine finfish farming. But she is not opposed to finfish aquaculture. "It is possible to build a net pen facility at an experimental scale where finfish are grown with seaweeds or bivalves to absorb nutrients. That's the kind of project that I think should be pursued."

Many concerns about marine aquaculture arise in regard to inshore salmon farming, though some of those issues raise questions for cultivation of other species in net pens. Scientists say nutrient pollution from fish feces and uneaten food can smother benthic communities below the pens and also cause algal blooms that deplete oxygen needed by organisms in the water. Environmental groups worry about the effects on the marine environment of biocides used to kill fish parasites and of antibiotics used to prevent disease.

In an attempt to deal with aquaculture concerns on a Gulf-wide basis, the Gulf of Maine Council last fall established an Aquaculture/Environmental Committee of resource managers, industry representatives, and community members to discuss such issues as environmental monitoring, disease regulations, and research.

Some environmental issues addressed

"We have been looking at some aspects of the negative impacts of aquaculture, particularly on benthic communities. We have experiments designed to look at that question," said Doyle, but he explained that the project's focus is on feasibility, not on investigating numerous specific environmental issues. UNH is soliciting research proposals from other scientists, however, and Doyle said he hopes some of those proposals will examine other environmental questions.

One concern that the UNH project has addressed directly, according to Langan, is its potential effects on sea turtles and marine mammals. To prevent entanglement in net pens and other gear, Langan explained, no small diameter or loose lines will be used. "Everything is going to be under tension, so the possibility of a turtle flipper or whale fluke getting tangled up in lines or nets is minimal." UNH will not use acoustical deterrents or "noisemakers" to keep seals away from the site. The devices have been known to cause other marine mammals to avoid their usual travel routes. Langan expects the taughtness of the net pens to deter seals from trying to break in.

Doyle and other UNH project organizers also emphasized that the project is undergoing state and federal environmental permitting processes and will comply with any applicable environmental regulations. But existing regulations are not necessarily designed to address issues specifically relating to open ocean aquaculture.

Even so, Howell said he's confident pollution will not be a problem. "It's an issue when you have massive production sites in inappropriate locations. For us, it's only a couple of pens so there are going to be relatively few fish, relatively little food, deep water, and strong currents." Goldburg acknowledged that the demonstration project would probably have little effect on its surrounding environment, but surmised any resulting commercial scale projects would be much larger. "All net pens take a 'dilution is the solution to pollution' approach," she said, asserting that global air pollution has proven that idea false.

Another issue that plagues salmon aquaculture is the problem of fish that escape from pens and then compete with wild salmon for food and spawning habitat, and spread disease and parasites among wild stocks. Scientists also note that the offspring of wild salmon that breed with farmed salmon don't have the genetic programming they need to migrate to spawning rivers.

Goldburg advocates domestication of aquaculture species much as other farmed livestock are domesticated, which involves breeding them "over a number of generations for economically desirable characteristics." Domesticated animals are less likely to survive and breed in the wild. Nardi and other project organizers maintain that the summer flounder used in the demonstration project shouldn't present any genetic threat to wild stocks because they are the direct offspring of wild parents caught in the region.

"This project will hopefully demonstrate how an aquaculture operation done correctly, can be a good neighbor," said Nardi. "It can be a part of the coastal environment that's productive, creates jobs, and can be done in a manner that's not detrimental to the environment or the other user groups."

CCNB examines eco effects of Fundy tidal barriers

Moncton, New Brunswick — As part of its Gulf of Maine Estuaries Restoration Project, the Conservation Council of New Brunswick's (CCNB) Marine Conservation Program will examine the relationship between tidal barriers and ecological decline in the Bay of Fundy and its estuaries at an information-sharing workshop April 14-15 at Hotel Moncton.

"Fundy's giant tides have been relentlessly blocked, diverted, and short-circuited, beginning with dikes built by Acadian settlers in the late 1600s to turn salt marsh into farmland and ending with the ill-conceived causeways and dams of the late 1900s," CCNB stated.

Three centuries of human interference in the flow of tidal waters in the Bay of Fundy have brought devastating results, according to the group. "To this point, attention has been focused only on localized impacts of tidal barriers. The results on the Petitcodiac, Memramcook, Avon, and Annapolis rivers have been extreme, ranging from sedimentation to the elimination of fish runs. Original salt marsh acreage in the Bay of Fundy has been reduced by a staggering 85 percent," CCNB states.

Through the presentation of research and case studies, researchers, managers, policy makers, community groups, and concerned citizens will consider the issue and what can be done to reverse further decline.

For more information, E-mail Monique Breau, CCNB Project Assistant at ccnb@nb.aibn.com or call (506) 458-8747.

Gulf resource guidebook changes name, goes quarterly

Wiscasset, Maine —With support from a Maine Outdoor Heritage Fund grant, The Chewonki Foundation will rename, update, and expand, the *Wild Gulf Almanac* – a guidebook to educational resources about habitats and ecosystems in the Gulf of Maine. Now a quarterly publication and renamed the *Wild Gulf Journal*, the revamped guide will debut in April and is expected to reach more than 7,000 people and organizations.

Originally developed by The Chewonki Foundation, the US Fish and Wildlife Service Gulf of Maine Project, and the Wells National Estuarine Research Reserve, the *Wild Gulf Almanac* was first published in 1996 with support from the National Fish and Wildlife Foundation, the Gulf of Maine Council, and other sponsors.

According to Chewonki Community Resources Coordinator Paul Arthur, the publication is being expanded "in an effort to make available to the public the most comprehensive and up-to-date materials about the Gulf's natural resources."

The guide describes educational materials, programs, and facilities available in the Gulf region for learning about natural systems and living resources. Essays or narratives about ongoing research, school projects, new curriculum activities, and particular points of view on watershed-related topics are likely additions. "We may also include occasional submissions of an artistic or creative sort, such as watershed related photos, drawings, or writings," Arthur said.

The first issue of the *Wild Gulf Journal* will include an expanded introductory section on the importance of watershed related issues and their relevance to readers. Each issue will include a cumulative index of the year's entries.

For information on how to submit materials or subscribe to the *Wild Gulf Journal* contact Paul Arthur at The Chewonki Foundation via E-mail at parthur@chewonki.org or call (207) 882-7323.

New federal grant promotes ME coastal habitat restoration

Falmouth, Maine — Efforts to restore Maine's salt marshes and coastal freshwater marshes and re-establish fish passages on coastal rivers and streams will get a boost from a new grant provided by the National Fish and Wildlife Foundation (NFWF) and administered by the US Fish and Wildlife Service's (USFWS) Gulf of Maine Program.

The NFWF $100,000 challenge grant is designed to promote voluntary partnerships between federal and state agencies, local conservation groups, and landowners. The grant is intended to benefit migratory birds that depend on wetlands, and migratory fish — such as alewives, herring, smelt, and salmon — that depend on free-flowing rivers.

The grant can fund a wide variety of restoration projects, such as installing culverts to restore tidal flow to salt marshes; plugging drainage ditches; removing invasive non-native plants; maintaining existing fishways that have fallen into disrepair; constructing new fishways; and removing unneeded dams.

To ensure grassroots support and stretch limited federal dollars, the NFWF grant requires 2:1 matching non-federal funds. "We look forward to coordinating with a wide variety of partners, including the Natural Resources Conservation Service, which also provides federal matching funds for habitat restoration," said Lois Winter, a biologist and Outreach Specialist at the USFWS Gulf of Maine Program. "Because habitat restoration projects demand the interest and abilities of a broad coalition of partners, participation of many is key to our success," she said. For more information, contact Winter at (207) 781-8364.

Researchers glimpse secret life of right whales

Skidaway Island, Georgia — A research tagging program offering biologists a rare opportunity to study the endangered North Atlantic right whale took place in Georgia and Florida waters for six weeks during the winter as part of an effort to reduce collisions between whales and ships.

Approximately 300 North Atlantic right whales are believed to exist, with ship strikes accounting for half of their known deaths. The whales calve along the southeast coast of the United States during the winter months. They migrate north to the Gulf of Maine in early spring where they spend the summer feeding on Stellwagen Bank before continuing north to their breeding grounds in the Bay of Fundy.

The tagging project was a collaborative effort headed by National Oceanic and Atmospheric Administration (NOAA) Fisheries in partnership with NOAA's National Marine Sanctuaries and the New England Aquarium. Scientists used newly developed tagging equipment to attach VHF-radio transmitters to adult female whales. The tags allowed researchers to observe and document right whale calving behavior around the clock.

The data scientists collect will help them determine when calving right whales are most vulnerable to ship strikes and whether the whales detect and react to passing vessels. "Hopefully what we learn will help develop protection measures for that part of the day when we can't see them," said Scott Kraus, New England Aquarium Research Director and founder of its Right Whale Research Project.

Federal regulations prohibit vessels, including research vessels, from approaching within 500 yards of North Atlantic right whales. NOAA granted a research permit for the tagging project under a stringent review process that determined that the research is necessary for the survival and recovery of the species.

NH Gov's awards laud marine volunteerism

Portsmouth, New Hampshire — The community group Great Bay Watch and Jane Jette, a marine docent, each received a Governor's Award for Volunteerism in the State of New Hampshire in November.

The Great Bay Watch monitors water quality parameters at 21 sites in the Great Bay watershed and makes the data and analyses available to state environmental agencies, town governments, schools, and scientists. During the past year, the Watch has broadened its activities to include sanitary shoreline surveys conducted in collaboration with the New Hampshire Estuaries Project. The surveys done in the Hampton Estuary contributed to the reopening of clam flats that had been closed for at least 10 years.

Other activities undertaken by Great Bay Watch include estuarine surveys for pollution sources, and estuarine habitat surveys in conjunction with Jackson Estuarine Laboratory. Also, Great Bay Watch Coordinator Ann Reid provides consultation and support to community groups.

Jane Jette, a marine docent with the University of New Hampshire Cooperative Extension's Sea Grant program, won an individual Governor's Award for her efforts as a 20-year volunteer with Sea Grant. She has worked in many capacities in the education programs at the Great Bay Estuarine Reserve's Sandy Point Discovery Center.

Photo: Tony Williams

Signs promote good, clean fun

In support of its goal to reduce marine debris, the Gulf of Maine Council provided a grant to the Coalition for Buzzards Bay to develop and post signs urging beach-goers to pick up their trash to prevent it from entering the water. The group also made free litter bags available in dispensers on the beach. Marine animals that eat trash they find in the ocean can die as a result of suffocation, starvation, poisoning, and injury. Others can become entangled in discarded nets, fishing line, plastic bags, or other material and then drown. Marine debris is also unsightly and can endanger barefoot beach goers.

Calendar

Fundy Science Workshop

Understanding Change in the Bay of Fundy Ecosystem is a workshop scheduled to take place April 22-24 at Mount Allison University in Sackville, New Brunswick, sponsored by the Fundy Marine Ecosystem Science Project and the Bay of Fundy Ecosystem Partnership. Discussion will focus on studying change in complex marine ecosystems, reliability of methods, the evidence for change in the Bay, causes of change, whether changes can be remediated, and availability of new research to help address these questions. Those interested in the Bay of Fundy are invited to participate. Visit http://is.dal.ca/aczisc/fundy/page7.html for more information or E-mail fundy99@mta.ca or call Jeff Ollerhead at (506) 364-2428.

UNH summer program

Oceanography and Coastal Processes for K-12 Teachers, a course open to northeast US educators who are minorities or who have minority students in their school, will be offered July 7-24, 1999 at the University of New Hampshire. The all-expenses-paid course includes several days of applied computer technology, and is sponsored by the New Hampshire/Maine Sea Grant Program, UNH Cooperative Extension, and others. For more information, call Sharon Meeker at (603) 749-1565.

CZ '99

Coastal Zone 99: The People, The Coast, The Ocean: Vision 2020 takes place July 24-30, 1999 in San Diego, California. For more information visit omega.cc.umb.edu/~cz99 or E-mail Chantal Lefebre at cz99@umbsky.cc.umb.edu or fax (617) 287-5575

Council Currents

News from the Gulf of Maine Council on the Marine Environment

The Gulf of Maine Council is an international body formed in 1989 to foster cross-border cooperation among government, academic, and private groups on implementing sustainable management strategies for the Gulf, which extends from Cape Cod to the Bay of Fundy. The Council's primary goals are to: restore shellfish habitat; promote restoration of fishery resources; address ecosystem and public health effects of toxics in the marine food chain; protect and restore regionally significant coastal habitats; and reduce marine debris. For more information, visit www.gulfofmaine.org or, until June 1999, contact Megan Trites-Tolson at the Council Secretariat via E-mail at tritesml@gov.ns.ca or call (902) 424-1764.

June GOMC meeting to feature NGO "mini-fair"

Yarmouth, Nova Scotia — The Gulf of Maine Council's summer meeting will feature a "mini-fair" where nongovernmental organizations can exhibit information on their work in the Gulf. The meeting is to take place here June 8-11 at the Rodd Grand Hotel.

As part of an effort to build its relationships and foster communication with nongovernmental organizations, First Nations, and the private sector, the Council also anticipates hosting a June 10 forum tentatively titled, "Public Communications."

Forum participants will discuss ways to develop mutual understanding among the Council and the other diverse organizations working in the Gulf, and to encourage collaboration to preserve the region's marine and coastal resources. Discussion topics will include current communication practices and suggestions for change.

Among the speakers the Council plans to invite are representatives of the NGO community, First Nations, and industry.

Also at the June meeting, the Council plans to announce the recipient of the first annual Art Longard Award, given to an outstanding volunteer in the Gulf of Maine. The award honors Art Longard, a founding and long-time member of the Gulf of Maine program and its working group who died in December 1997 after a long battle with cancer. Longard placed high value on the role of volunteers in Gulf stewardship.

At its winter meeting in Halifax in November, the Council hosted an informational forum on Canada's moratorium on petroleum exploration and drilling on the Canadian portion of Georges Bank. The moratorium expires on January 1, 2000 (see story on page 3), and provincial and federal governments must decide before then whether to extend it.

In November the Council also established an Aquaculture/Environment Committee to address regional aquaculture issues including environmental monitoring, disease regulations, site assessment, and research.

Workshop wrangles with electronic communication

Boston, Massachusetts — Those working to enhance electronic communication among people interested in the Gulf of Maine environment say their goal is to create a regional electronic information exchange system that diverse groups and individuals can easily use.

Participants in a November 4-6 workshop, *Out of the Fog: Furthering the Establishment of an Electronic Environmental Exchange for the Gulf of Maine*, remarked that considerable information on the Gulf of Maine exists on the Internet, but people cannot always find it and its quality varies.

The workshop was organized jointly by the Gulf of Maine Council and the Boston-based New England Aquarium. About 55 participants — including representatives of commercial fisheries, watershed management, and science and education — discussed ways to develop a more unified network for electronic exchange of information and data about the Gulf. They examined regional information and data exchange networks from other areas of the country and developed an action plan for establishing one for the Gulf of Maine.

"There have been lots of independent efforts that have gone on among scientists, between scientists and managers, and there have been others that have involved fishermen, government agencies, and the NGO [nongovernmental organization] community. Somehow we have all of these independent activities but we have not been very successful in bringing [information about] them together in any kind of a coherent manner," said New England Aquarium President Jerry Schubel.

Respondents to a pre-workshop survey said they want contact information for those working on or involved with Gulf issues and that they would also like a specific Gulf of Maine search engine.

The workshop also explored funding issues. The cost of developing, staffing, and maintaining an easy-to-use system that provides access to quality data can be prohibitive. But Woods Hole researcher Bruce Tripp noted that while people may be hesitant to pay a fee for a service providing access to such information, they should realize that they often pay for information in other ways, such as taking the time to search for it at the library, through a series of phone calls, or piecemeal on the web.

In addition to intensive discussions, workshop participants also familiarized themselves with Internet search tools and existing information systems in hands-on computer sessions at the Massachusetts Institute of Technology.

The workshop was organized and facilitated by the New England Aquarium's Conservation Department with funding from the Cabot Family Charitable Trust and the National Oceanographic and Atmospheric Administration. Other sponsors include the Canadian Department of Fisheries and Oceans, the Collaboration of Community Foundations for the Gulf of Maine, the Gulf of Maine Council, the Maine Department of Marine Resources, the Maine State Planning Office, Massachusetts Coastal Zone Management, MIT Sea Grant, and the Regional Association for Research on the Gulf of Maine.

For more information on ongoing efforts to develop a Gulf of Maine regional electronic information exchange system, contact Patrice Farrey at the New England Aquarium via E-mail at pfarrey@aol.com or call (617) 573-0748; or contact Paul Boudreau, Canadian Co-Chair of the Gulf of Maine Council Data and Information Management Committee via E-mail at boudreaup@mar.dfo-mpo.gc.ca or call (902) 426-7464.

Resources

New undersea poster goes "down under"

A map and poster that focuses on the landscapes, geology, and biology of the Gulf of Maine was published as part of the International Year of the Ocean celebration. Called the *Undersea Landscapes of the Gulf of Maine*, the poster's concept and text were developed by Robert Steneck of the University of Maine School of Marine Sciences and Joseph Kelley of the Maine Geological Survey. The project was coordinated by Paul Dest of the Maine State Planning Office. For a copy contact (in the US) Massachusetts Coastal Zone Management, (617) 727-9530, ext., 420; Cynthia Lay, New Hampshire Coastal Program, (603) 431-9366; or Paul Dest, Maine State Planning Office, (207) 287-5305; (in Canada) Tim Hall at (902) 426-4116.

Restoration database

A *Coastal Wetlands Restoration Database* includes information on approximately 100 tidal marsh restoration projects, more than 100 freshwater impoundments in Canada, and several innovative projects aimed at restoring seagrass and tidal flats. The database also includes information on more than 400 potentially restorable tidal marshes, representing more than 2,000 acres/809 hectares. Visit gulfofmaine.org and click on Our Library/Regionally Significant Coastal Habitats/Coastal Habitat Restoration to view or download the database and related report. If you have new information on a restoration project to add to the database, or if you have questions, contact Susan Snow-Cotter at Massachusetts Coastal Zone Management, (617) 727-9800, ext. 210.

Clean boating guide

The Portland Harbor Marine Debris Council, a project of Friends of Casco Bay, has published *Clean Boating in Casco Bay: Action Guide for Boaters*. The guide features sections on practical steps boaters can take to prevent problems caused by toxic substances, human waste, and marine debris in the Bay. Another section explains how to explore ecologically sensitive islands with minimal impact. The guide also includes safe boating tips and a map of Casco Bay area boating facilities. For a copy, call Friends of Casco Bay at (207) 799-8574.

Guide to marine organisms

A *Guide to Common Marine Organisms Along the Coast of Maine* has been published by the University of Maine Sea Grant Program and Cooperative Extension. The 56-page book presents a compendium of information about the flora and fauna of the intertidal zone in an easy-to-use format illustrated with pen-and-ink drawings. The guide is divided into three parts: marine organisms, seaweeds, and phytoplankton, and includes a full index for easy reference. It is available for $10.00 US plus shipping costs from the University of Maine Cooperative Extension at 1-800-244-2104 or from the Maine/New Hampshire Sea Grant Program at (207) 581-1440.

Fishing gear impacts report

Effects of Fishing Gear on the Sea Floor of New England, published by the Conservation Law Foundation (CLF), is a 168-page book that outlines the effects of the major bottom-tending gear types used in New England. The book contains 28 papers by scientists and fishermen that describe and illustrate the sea floor, fishing gear, fish habitat, and fishing gear impacts. Copies are available from CLF for $25.00 US plus shipping and handling. Order via CLF's web site at www.clf.org or call CLF's Boston office (617) 350-0990.

Canadian estuary report

Habitat Lost, a publication of the Conservation Council of New Brunswick (CCNB), is an 81-page report representing the culmination of phase one of the Gulf of Maine Estuaries Restoration Project, a partnership of the Conservation Council, the Island Institute of Rockland, Maine, and the Conservation Law Foundation. The report records a two-year effort to assess the state of habitat in estuaries around the Canadian region of the Gulf of Maine, and makes recommendations for action to restore and protect estuary habitat. The Gulf of Maine project is part of a US-wide initiative called Restore America's Estuaries, funded in part by the Pew Charitable Trusts. Copies of the report are available from CCNB for $8.00 CN plus tax, shipping, and handling. E-mail ccnb@nbnet.nb.ca or call (506) 458-8747.

New STORET

The US Environmental Protection Agency's modernized version of the STOrage and RETrieval (STORET) water quality database system will serve as EPA's principal repository for marine, freshwater, and biological monitoring data. The updated system is designed to meet the current and future needs of federal agencies, states, tribes, local governments, academic groups, and citizen volunteers involved in the collection of water quality data. Copies of the CD rom are now available free of charge from EPA. To obtain a copy, E-mail STORET@epa.gov or call 1-800-424-9067. Data stored in STORET will be accessible to the public on the Internet.

Resource for nonprofit management

Visit the River Network on line at www.rivernetwork.org/nonprofi.htm for information on nonprofit management, including strategic planning, boards of directors, financial management, fundraising, media/marketing, volunteer management, and personnel.

EPA research priorities

The US Environmental Protection Agency has released a report that outlines its goals for ecological research over the next decade. High priority topics include: global change, contaminated sediments, stormwater flow, toxic algal blooms, endocrine disrupters, and total maximum daily loading of water bodies. "Ecological Research Strategy" is available on the Internet at www.epa.gov/ORD/WebPubs/final/ or by calling (513) 569-7562.

Watershed map

For an 18" x 24" three-color map of the Gulf of Maine watershed (the same map featured on page 12 of the *Gulf of Maine Times*) while supplies last, contact Massachusetts Coastal Zone Management, (617) 727-9530, ext., 420; Cynthia Lay, New Hampshire Coastal Program, (603) 431-9366; or Paul Dest, Maine State Planning Office, (207) 287-5305.

Mr. and Mrs. Fish on the 'Net

A new web site at www.mrandmrsfish.com features Mr. and Mrs. Fish, who have, for 20 years, traveled throughout the world teaching about life in the sea. In 1993-94, the pair received the Gulf of Maine Council's Visionary Award for their work with young children in the Gulf region. A resource for all ages, Mr. And Mrs. Fish perform humorous yet highly educational shows about how life works in the waters of the Gulf of Maine.

Hometown stewardship

The US Environmental Protection Agency (EPA) has created a home page at www.epa.gov/ecocommunity designed to promote Community-Based Environmental Protection. The CBEP web site provides information on tools, financial resources, case studies, publications, and documents, and provides links to related sites. EPA has also launched an Internet web site at www.epa.gov/ceis that will allow citizens to easily obtain up-to-date, comprehensive, accurate environmental information about their communities simply by entering a zip code. Volumes of EPA air, water, toxic substances, and waste information are available from the site, which also features links to specific subject area EPA web sites.

A shorebird feeds at dusk on Cape Cod's Sandy Neck Beach on Cape Cod Bay.

Photo: Suzy Fried/*Gulf of Maine Times*

The *Gulf of Maine Times* is made possible in part by generous donations from:

New Noveau Brunswick
Environment/Environnement

U.S. FISH & WILDLIFE SERVICE
DEPARTMENT OF THE INTERIOR