FALL 1999 VOLUME 3, NUMBER 3

Gulf of Maine Times

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

Right whale rescuers expand disentanglement efforts in Gulf

By Suzy Fried, Editor

Bay of Fundy – Organizers of an expanding network of people trained to release whales from fishing gear would love nothing more than to see their pet project become obsolete. But last spring, as training sessions took place in Canada and the US, the need to expand the network only became more apparent. In May and June alone, five endangered North Atlantic right whales were seen towing fishing gear in the Gulf of Maine.

"I have never seen right whales and fishing gear together so much – ever," said Deborah Tobin, Education and Whale Rescue Coordinator at East Coast Ecosystems (ECE), a right whale conservation organization based in Freeport, Nova Scotia. "We're not happy to see so many entanglements, but we're happy with being able to test out our new system," she said.

Scientists are uncertain where most of the North Atlantic right whale population is at any one time, where they breed, or where males spend the winter. Some females, however, are seen migrating annually from their calving grounds along the southeastern US coast to one of their feeding and nursery grounds in the Bay of Fundy, appearing in Cape Cod Bay in winter and early spring. Male and female right whales appear in the Great South Channel in late spring. They begin arriving in the Bay of Fundy and on the Scotian Shelf in June or July, remaining there through the summer. During their travels through inshore waters, the whales can encounter fishing gear.

Scientists suspect that, as right whales swim with their large mouths open to catch tiny marine animals, buoy lines and netting catch in the whale's baleen – a sieve of bristly, stiff plates that hangs from the upper jaw. As the whale tries to free itself by rolling or twisting, the gear can wrap around its body, flippers, or tail, subsequently snagging on other parts of the body and on additional gear.

Whales often can free themselves, and even gear that stays on a whale usually will not kill the animal immediately. But the gear can hinder the whale's ability to swim and to feed, and the whale can eventually starve, suffocate, or die from infection of continually irritated wounds. About two-thirds of known North Atlantic right whales and humpback whales have scars indicating that they have been entangled in fishing gear.

ECE's new Whale Emergency Network recently began responding to entangled whales in the Bay of Fundy with assistance from the Canadian Coast Guard. At right whale disentanglement training workshops this summer organized by ECE with funds from Canada's Department of Fisheries and Oceans (DFO), ECE started recruiting fishermen and other mariners to participate in the network.

The new Canadian Whale Emergency Network and the New England Whale Disentanglement Network coordinated by the Center for Coastal Studies (CCS), a research organization based in Provincetown, Massachusetts, are collectively increasing right whale rescue coverage,

Whale Disentanglement *continued on page 6*

Photo: Suzy Fried/*Gulf of Maine Times*

Stormy Mayo of the Center for Coastal Studies prepares to attempt to remove fishing gear from an endangered North Atlantic right whale. Mayo was with a group of whale researchers and disentanglement experts that encountered the entangled animal in the Bay of Fundy on June 5.

US Nat'l Estuaries Day is Oct. 2

By Suzy Fried, Editor

Gulf of Maine – In preparation for National Estuaries Day on October 2, estuary programs and research reserves in the US are planning annual celebrations of the valuable ecosystems that both bind and separate the land and sea.

The US Environmental Protection Agency (EPA) and National Oceanic and Atmospheric Administration (NOAA), which administer programs that protect and study the nation's estuaries, have jointly declared the first Saturday of each October as National Estuaries Day.

Estuaries are coastal areas where freshwater and ocean water mix, creating productive zones that serve as nurseries for "two thirds of the nation's fish and shellfish," according to EPA. Estuaries also provide habitat and food for birds and other wildlife. They protect the land against storm erosion, and filter pollutants from water that drains from the land into the ocean.

But growth and development are damaging some estuaries and threatening others. Under the National Estuary Program established in 1987 by amendments to the Clean Water Act, EPA is working with state and local governments and organizations to protect, restore, and improve water quality in US estuaries. Three estuary projects now operate in the Gulf of Maine.

While EPA administers the national program and provides grants and technical assistance, local estuary program committees make program decisions and oversee activities according to the Comprehensive Conservation and Management Plans they develop for protection of the estuary and its resources.

The National Estuarine Research Reserve (NERR) System, established in 1972 under the Coastal Zone Management Act, also protects US estuaries, and is run by NOAA's Office of Ocean and Coastal Resource Management.

Estuaries Day *continued on page 9*

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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

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Letters policy
The *Gulf of Maine Times* welcomes readers' letters, however we reserve the right to edit them for length and clarity. Please include your name, address, and phone number, and mail, fax, or E-mail your letters to *Gulf of Maine Times* c/o Editor. We will consider all letters for publication, but cannot guarantee that we will print and/or respond to every one.

CORRECTIONS: The Gulf of Maine Watershed Map on page 12 of the June 1999 issue of the *Gulf of Maine Times* was printed incorrectly. The version that appears on page 12 of this issue is the correct version.

The article on page 3 of the same issue, "New Theory: Tidal mixing creates red tide incubator," was written by Nick Houtman of the University of Maine Department of Public Affairs.

The next decade: Collaboration, flexibility, youth involvement

By Irene d'Entremont, President
MIT Electronics, Yarmouth, Nova Scotia

Photo courtesy of Irene d'Entremont

December marks the Gulf of Maine Council's tenth anniversary, and as that milestone approaches, the Council has been reflecting on our identity, growth, and our future.

In recognition of our role in developing awareness of the Gulf of Maine, we will continue to support our primary outreach tools – the *Gulf of Maine Times* and our homepage, www.gulfofmaine.org. Additionally, we look forward to branching out into other initiatives that build awareness of the Gulf of Maine and its valuable resources.

The Council must remain adaptable as we continue our involvement in long-term, collaborative initiatives to maintain and enhance the Gulf of Maine. The ever-changing and intertwined worlds of government, community, and the private sector demand flexibility, as do short-term circumstances.

Such was the case when a labor strike at our June meeting site in Yarmouth required that we relocate most of our semi-annual sessions and events, including a Mini Fair and a discussion forum. The fair and forum had been organized with a great deal of assistance from the Integrated Coastal Planning Project at Dalhousie University and the Coastal Network of the Gulf of Maine, and participants in those events were extraordinarily accommodating in responding quickly to the change of venue.

The Mini Fair featured diverse groups involved in partnerships addressing environmental issues in the Gulf. Exhibitors included funding agencies as well as community groups making efficient use of available funds to work at the local level on initiatives that also meet many of the Council's goals.

Several of the displays conveyed the theme of the power of youth involvement in moving environmental issues forward. In particular, the Clare Salmon Education Program, a partnership of the Salmon River Salmon Association and Êcole Secondair of Clare, in Digby County, Nova Scotia, has developed a program to teach elementary students about the protection and restoration of salmon habitat.

The youth awareness theme also arose during presentations made at the Council's meeting session. The Gulf of Maine Institute Without Walls presented the concept of electronically linking youth educators and students throughout the Gulf. This idea has captivated the imagination of the Council, and we will be working with the Institute to incorporate it into the our tenth-year anniversary celebrations in the upcoming months.

Reaffirming the importance of pooling our energies on behalf of the Gulf was the subject of our June forum, entitled *Sharing Information Among Neighbors*. The degree and diversity of participation in that discussion indicated an extraordinary presence of will among communities, governments, First Nations, and the private sector to collaborate on behalf of the Gulf environment. What we now need is for all of us to transform that strength of will into concrete commitments to work together on behalf of the environmental health of the Gulf of Maine.

Cooperation, coordination, and partnerships remain the foundation of the Gulf of Maine Council. Being open to new ways of creating those relationships, and incorporating youth into our methods will surely bring progress as we prepare to move into our second decade of working on behalf of the Gulf of Maine marine environment.

Celebrating the Gulf of Maine in photographs

A Gulf of Maine Times *readers' photo exhibit as part of the Gulf of Maine Council's tenth anniversary*

Submissions wanted — Deadline: October 29

Join us in a photographic celebration of the Gulf's natural beauty, its people, and its importance to our livelihood.

Enter our newspaper exhibit of readers' best photographs of the Gulf of Maine's marine and coastal environments.

You may see your work in print!

The exhibit is open to amateur and professional photographers of all ages.

Photographs selected for "exhibition" will be printed in upcoming issues of the *Gulf of Maine Times*, starting with our December 1999 Gulf of Maine Council 10th Anniversary issue.

You may enter up to a total of six photographs in three categories:.

Category 1 - Gulf Folks: Images of people living, working, and playing in the Gulf of Maine.

Category 2 - Gulf Creatures: Images of wildlife in the Gulf of Maine.

Category 3 - Gulf Scenes: Images of the Gulf of Maine, from a fog-shrouded fishing fleet, to a lightening storm over a boiling bay.

Photo courtesy of Massachusetts Coastal Zone Management

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Art Longard Award recipient Dana Wallace: Mollusks key to ME's coastal prosperity

By Suzy Fried, Editor

Brunswick, Maine –"He's out with his oysters," said Dana Wallace's wife, Mary, in response to a first attempt to reach him at his Mere Point home. When he's out, it usually has something to do with shellfish. This time, Wallace was tending to matters at "Chance Along Farm," a commercial oyster farm that he runs with a partner.

Wallace can't stay away from shellfish. Even his vacations to the Canadian Maritimes sound more like shellfish research junkets than relaxing respites. But with his vigor – at 81 he still runs to keep in shape for winter skiing – lounging under an umbrella seems to be the last thing Wallace will ever do on a beach.

Lifelong fascination

In 1983, Wallace retired from his 37-year career as a marine scientist at the Maine Department of Marine Resources (DMR). He wanted to have more time to immerse himself in protecting the Gulf of Maine's coastal environment and helping people understand why intertidal resources are important – biologically, economically, and historically. This summer, Wallace received the Gulf of Maine Council's first annual Art Longard Award, which honors outstanding citizen volunteers working on behalf of the Gulf's environment.

Colleagues point out that even before his retirement, Wallace devoted his career to improving coastal water quality and boosting clam harvests in Maine. One Canadian associate describes him as the "Granddaddy of shellfish issues in Maine."

Wallace's fascination with the coastal environment emerged many summers ago when he and his family would make regular Sunday pilgrimages from their farm in Lisbon, Maine, to the coast – about an hour's ride in their Model T Ford. "My Dad loved to go down on the shore and dig clams and he loved to get lobsters," sometimes trading bottles of hard cider for them. "We had little picnics down on the shore and we'd go out in rowboats and so forth." Wallace would explore the tide pools.

At Bates College, in Lewiston, Maine, Wallace's preoccupation with the marine environment grew. He made trips to the coast with a close friend who was writing his thesis on Maine's fisheries. Wallace recalls, "I got quite interested in not only the biological things that would be going on, but the social aspects of the people and the industry," and how coastal communities could make the most of their natural resources.

A budding specialist

After graduating from Bates in 1939, Wallace began working as a high school science teacher and athletics coach in Presque Isle, Maine. During the summer of 1941, he became involved in a National Youth Administration project in coastal Washington County, Maine that showed youth how they could help manage natural resources. "It seemed like a good idea to establish a program up there to take advantage of the clam resources, so I became a shellfish specialist," Wallace chuckles. "Lord knows I knew very little about shellfish but I had a copy of Dr. David Belding's *The Soft-Shell Clam Fishery of Massachusetts*."

After three years in Europe as a meteorologist during World War II, Wallace taught for another year, and in the summer of 1946, began another collaboration with his college friend. This time they undertook a research project for Maine's Department of Sea and Shore Fisheries – DMR's precursor – that studied ways to boost the value of marine fisheries to Maine's coastal communities.

At the end of the summer, the agency's commissioner asked Wallace to stay and help staff a new research unit. He did – for nearly 40 years – serving as Assistant Director of Research, and as Director of Industry Service. He co-chaired the Biological Advisory Committee of the Atlantic States Marine Fishery Commission, working with people up and down the Atlantic coast on fisheries issues, and collaborating with Canadian researchers.

Coastal connections

Since his retirement, much of Wallace's volunteer work has involved gathering and sharing information on shellfish and their habitat. He leads public tours of intertidal areas. He collects, analyzes, and interprets scientific data for local shellfish committees, regional watershed groups, state policy makers, and elected officials. And he's still crusading for community shellfish management and aquaculture as means of fortifying coastal economies.

Communities have the ability, in cooperation with the state, to manage and cultivate shellfish successfully, "if you can convince them to spend the money and time," Wallace asserts. Brunswick, he notes, is spending $130,000 this year for shellfish aquaculture, but he says such investment pays off "in sustaining the resource and employing people."

"Traditionally, harvesting clams was sort of a last resort for employment," says Wallace, recalling that when he started working with the clam industry, the mollusks sold for a dollar a bushel. "Now, it's up to $100 a bushel in the summer. Clam diggers have done really well," he says, thanks, in part, to advancements in shellfish aquaculture and management that have increased harvests.

For example, shellfish can be protected from predators with fences and netting. They can be transplanted from abundant to depleted areas, and can be harvested on a rotating basis to allow shellfish beds of small clams to grow. Increased monitoring and improved coastal water quality have allowed reopening of once-closed shellfish beds.

Photo: Bob Dow

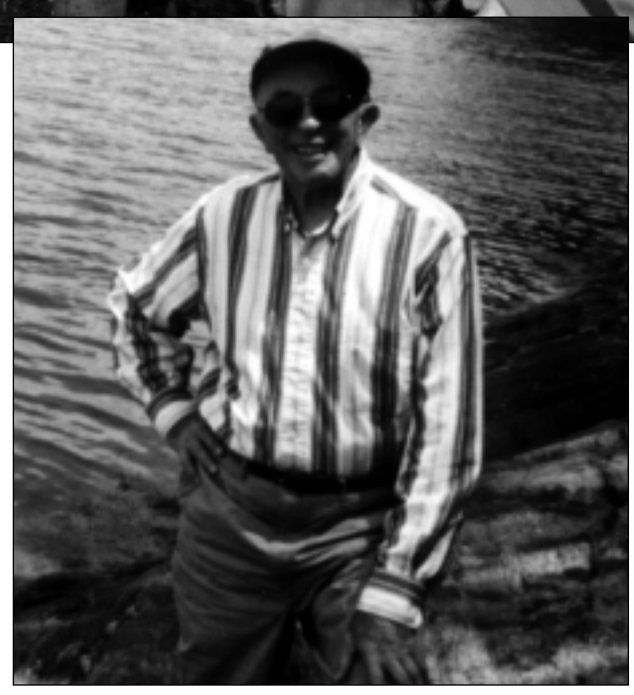


Photo: Mary Wallace

Top: In the 1950s, green crabs virtually wiped out clamming from Massachusetts to Canada, according to Dana Wallace. This 1954 photo shows Wallace (left) with Maine fisheries wardens Thomas Flaherty (middle) and Paul Gardner (right) looking for green crab burrows in a Maine marsh bank.

Bottom: Dana Wallace, recipient of the first annual Art Longard Award.

Valuable volunteers

A board member for numerous volunteer-based organizations working on behalf of coastal Maine, Wallace says the preservation of coastal resources relies heavily on those groups' contributions. He credits volunteers with expanding coastal water quality monitoring efforts. He praises government agencies with funding some of the volunteers' work in recent years, but asserts, "I think the government was very shortsighted for many years in not taking advantage of them."

According to Wallace, "It was always the attitude of the federal and state governments that they only wanted trained biologists to take the water samples." But when state government job cuts in the region reduced the numbers of trained staff that were available, "we had to have volunteers to do the work. It became clear that motivated volunteers could be easily trained."

The Phytoplankton Monitoring Program developed by the University of Maine Cooperative Extension and DMR illustrates the success of volunteer monitoring, Wallace maintains. One hundred volunteers monitor coastal waters weekly for toxic plankton blooms that can endanger human health by poisoning shellfish that people eat. "We've got sampling stations all along the coast. We're very proud of the program, as we are of the regional efforts," such as the Friends of Casco Bay's volunteer water quality sampling program.

Wallace believes that people, including shellfish harvesters, are becoming more interested in being stewards, not just users, of the environment. "Everybody in the world isn't aiming at making a million dollars. They're paying more attention to natural resources. We have more people that are willing to think about those things and think that they are important. I think that there's an attitudinal change. I really do."

Art Longard Award

The Gulf of Maine Council created the annual Art Longard Award following Longard's death from cancer in December 1997. A founding member of the Gulf of Maine Council Working Group, Longard was known for his commitment to protecting the marine environment, and his conviction that volunteers are essential to stewardship of the Gulf's natural resources.

The award recognizes one outstanding volunteer each year from the Gulf of Maine region for his or her commitment to preserving natural resources within the Gulf or its watershed. To nominate a candidate for the Art Longard Award, contact Laura Marron at the Gulf of Maine Council Secretariat via E-mail at l_marron@des.state.nh.us or call (603) 271-8866.

Canada's "Blue" Schools teach kids to take care of the ocean

By Suzy Fried, Editor

Summerville, Nova Scotia — Some Canadian kids are heading to the shore on school days, but not to play hooky and build sand castles. With the beach as a classroom, they are getting a first-hand look at the intricate workings of coastal and marine environments through the Canadian Wildlife Federation's (CWF) Blue School program.

Launched in 1997 as part of Canada's activities for the United Nations' International Year of the Ocean, the program has become an ongoing effort to educate youth about marine and coastal environments, and to encourage them to protect those resources. It does this by providing materials teachers can use to develop activities for their classes, as well as some seed money for project expenses.

Collaborators in the program include the Canadian Museum of Nature, Scouts Canada, the Canadian Association of Principals, the North American Wetlands Conservation Council-Canada, and federal agencies including the Canadian Department of Fisheries and Oceans and Environment Canada (EC).

Top: Second-grade students from the Dr. Arthur Hines Elementary School in Summerville, Nova Scotia, round up rubbish they collected from brooks near a local beach.

Left: Hines Elementary School students examine rock formations during an outing to a local beach. The Blue School program encourages young people to learn about and protect the marine and coastal environment.

Photos courtesy of the Dr. Arthur Hines Elementary School

Exploring their turf and surf

This fall, the Dr. Arthur Hines Elementary School in Hants County, Nova Scotia, in the Bay of Fundy, is beginning its third year as a Blue School. According to Paul Topping, Program Officer with EC's Marine Environment Division, the Hines School was the first school to participate in the program.

Principal Hazel Dill said the school, with about 180 students in grades K through six, was already working on some environmental projects when she received information about the Blue School program in the mail three years ago. "When this came across my desk, I thought it fit quite nicely with our environmental initiatives."

Most of the children attending Hines live on the coast, said Dill. "Through this [program], we're hoping they'll develop an appreciation for what they have in their own back yards, and a desire to take care of it." Parents have also shared in developing Hines' Blue School activities, she said.

While schools can participate in the Blue School program a year at a time, Dill said her school has taken it on as a five-year effort. Teachers of all grades bring their classes to one of five different local beaches each year, so that by the time a student finishes the sixth grade, he or she will have visited and studied all of them.

Seaside assignments

In June, at the Hines School's annual Oceans Day outing, students worked on several projects at Summerville Beach, the closest beach to the school. Second-graders cleaned up a brook, while grades three and five built a stone-lined fire pit to provide an alternative to open beach fires. Grade four students built nesting boxes for marsh birds, while grades five and six developed informational signs describing the various species and habitat found at the beach.

On other beach days, students have worked in mixed grade groups, gathering information on plant and animal life that they bring back to class to use in developing presentations, displays, and reference materials to share with the rest of the school.

The students have also held Earth Day beach cleanups in April, recording the types and amounts of rubbish they collect, and turning those tallies over to Clean Nova Scotia, organizer of an annual Maritimes Beachsweep.

The school's practice of giving each grade level a part in these projects shows how, according to Topping, children of all ages can become involved in the study and stewardship of oceans and coastal systems.

During the last three years, students and teachers at Hines have been building their own awareness of local coastal environments, but in the future, said Dill, "I think we'll look at more community involvement." The students already have their eye on a collaborative project to clean up a pond on the site of a former plaster works, she said. The pond, which feeds a brook, has been used as a dump site. The school is also considering recruiting community members to help create some nature trails.

"This is a personal love of mine as an administrator — to get involved and to get the kids involved," said Dill. "I really feel proud about what our kids are doing and how they feel about it, and my staff as well."

Just add water

Each year CWF sends a Blue School education kit to all Canadian schools. Along with colorful posters and other ready-to-use materials, it includes a detailed booklet describing classroom and outdoor activities on specific environmental topics, such as migratory species, wetland revitalization, and pollution control. The program encourages students to set an example of environmental stewardship for their community by undertaking local habitat improvement projects.

Extending beyond math and the sciences to incorporate language arts, drama, visual art, and other subjects, the activities also help students develop communication, cooperation, interpretation, and research skills, according to Luba Mycio-Mommers, CWF Head of Education and Information.

The program is designed for kindergarten and elementary students, but can be adapted for other grade levels, even the university level. Because it is not a formal curriculum, teachers can customize their activities for their class. "What we look for in the Blue School is that students are engaging community expertise that helps them become intimately familiar with the issues," noted Mycio-Mommers.

CWF offers up to $500 per school or $200 per class to help pay for supplies and equipment. Schools can apply any time, and can submit applications for multiple projects, and even for projects already under way, though the funding cap remains the same, Mycio-Mommers said. Participating schools receive a plaque, and for each project a school completes, it receives a medallion to add to the plaque.

According to Topping, ocean-related projects may hit closest to home in coastal communities, but schools all over Canada are participating in the Blue School program. "Even if you're in the middle of the prairies, you have a role to play in the marine environment. If you help to restore a wetland that's part of a river that runs into the basin, you're doing your part. If you're working on air emissions, you're doing your part."

About 200 Canadian schools — 50 of them in Nova Scotia and New Brunswick — participated in the Blue School program last school year, said Mycio-Mommers. As the program catches on throughout Canada, organizers hope to export it to the US as well.

For more information on the Blue School program

Contact Luba Mycio-Mommers at the Canadian Wildlife Federation

From Canada, call 1-800-563-WILD.

From the US, call (613) 721-2286.

Visit www.cwf-fcf.org on the Web
E-mail info@cwf-fcf.org.

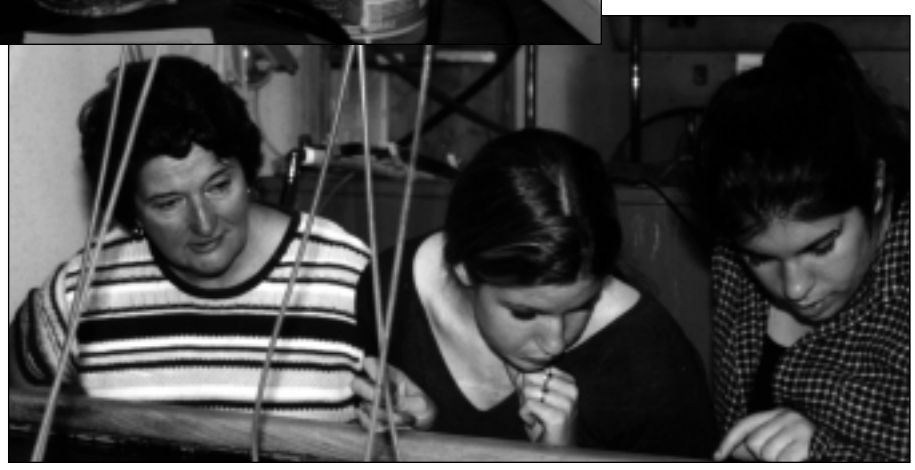
New NH education program steeps students in aquatic science

By Suzy Fried, Editor

Hampton, New Hampshire – "That's cool" – the ultimate teen endorsement – wafted up more than once from the bent heads of five Winnacunnet High School juniors peering through microscopes and stereoscopes at tiny aquatic plants and animals. At the end of the table, fathead minnows swam busily in clear containers.

Members of marine science teacher Cathy Silver's class visited Aquatic Research Organisms in Hampton after school on June 16 to learn about aquatic food chains and to earn extra class credit. The tour was part of a new program launched this summer by the nonprofit Aquaculture Education and Research Center (AERC).

Silver, a member of AERC's board of directors, designed many of its educational activities. She said she has always emphasized first-hand encounters with coastal and aquatic environments in her marine science classes, involving her students in spring and fall beach cleanups, organizing class field trips to a salt marsh, and stocking her classroom with live coastal creatures.



Photos: Suzy Fried/*Gulf of Maine Times*

Left: High school students Jen Cennami (left) and Jessica Langmaid trade dishes of aquatic organisms to examine with stereoscopes during a visit to Aquatic Research Organisms in Hampton, New Hampshire.

Below: Marine Science Teacher Cathy Silver (left) brought some of her students, including Jackie Lacrosse (middle); and Jen Cennami (right) to Aquatic Research Organisms in Hampton, NH, to learn about the aquatic organism food chain and about the aquaculture business.

"These kids see live sea animals every day. I do hands-on activities constantly," said Silver. AERC is offering even more opportunities for these sorts of close encounters, which she said are especially helpful to students who usually find themselves glazing over during science classes. In written comments following the tour, one of Silver's students remarked, "I would like to go back there and look at more. Or maybe even work or help out there."

A good idea reborn

AERC is a new version of a program that originated in the late 1980s under the University of New Hampshire (UNH) Cooperative Extension's 4H program. Named "Tidal Experience," taught by Silver, and housed in a small construction trailer on a Seabrook beach, the summer program immersed middle- and high-school-age youth in activities such as seeding clam flats and studying the aquatic animals of Seabrook's inner harbor.

That program ended in 1996, when the trailer began to fall apart, according to Sue Foote, another AERC board member who is also Silver's sister. That year, the New Hampshire Coastal Program awarded UNH Cooperative Extension a one-year, $50,000 grant to design a new facility. AERC grew from that process.

After three years of planning, AERC rolled out a roster of activities this summer, offered to local camp and scouting groups, and recreation programs. The center is not associated with the UNH Cooperative Extension, and its indoor activities take place in a new, albeit temporary location. A new facility, likely to cost millions of dollars, remains in the distant future.

Fishy business

Tucked in the back of a small office park next to a salt marsh in Hampton, Aquatic Research Organisms (ARO) is donating space and time for AERC's indoor activities until the organization builds a permanent facility. Owned by AERC Board Member Stan Sinitski, ARO grows and sells about a dozen species of fish and aquatic invertebrates for environmental and biomedical research and toxicity testing to clients in the US, Canada, and Europe.

The company's aquaculture facility is an ideal setting for discussing aquatic food chains. "Everything that's grown here either eats something else, or can be eaten by something else that lives here," explained Mark Rosenqvist, ARO's Technical Manager and President of AERC's board of directors, as he led Silver's students through a maze of water-filled tanks and tubs housing various aquatic plants and animals.

On one shelf sat large glass jars filled with algae-laced water. Tinted various shades of yellow and green, illuminated by artificial sunlight, and injected with air from thin hoses passed through their narrow necks, they resembled enormous, festive bubble lights for a giant's Christmas tree.

Later, the students scrutinized several organisms under magnification, following an illustrated booklet that described the tidy operations of an aquatic food chain. Primary producers, such as freshwater and saltwater plants and algae, use sunlight and nutrients to grow and reproduce. Next in line are primary consumers – algae eaters such as the chiefly freshwater Daphnia and mostly marine-dwelling Rotifers. Secondary consumers, such as fathead minnows, prey on the primary consumers. When the minnows die, they decompose into nutrients, and the cycle begins again.

The "Food Chain" curriculum is one of three programs in AERC's inaugural lineup. Others include lessons for high school science teachers on how to spawn the zebra danio, a small tropical fish, for instructional use. A third program, Aquaculture Filter Construction, is an awards competition for students. AERC plans to expand its offerings to include additional curriculum topics and teacher workshops.

Home economics

Young people living in coastal New Hampshire communities need to understand the relationship between their backyard coastal environment and the larger Gulf of Maine marine system, and about the need to protect existing resources for environmental and economic reasons, according to AERC organizers.

Salt marshes provide a buffer between land and sea, protecting the uplands from erosion, and filtering pollutants from runoff that drains from the land into coastal waters. The marshes also serve as nurseries for commercially valuable fish and shellfish. "If you don't take care of the perimeter wetlands and the salt marshes you're not going to have a healthy groundfish stock out there," Foote said.

AERC presents these issues in the context of examining aquatic systems. Participants in the educational activities also learn some of the basic principles of saltwater, freshwater, and shellfish aquaculture, such as how to set up a filtration system, and simulate a natural spawning habitat. But AERC emphasizes that the critical thinking and problem-solving skills its youth programs foster will be useful in any future career, whether it be the aquaculture business or another field.

For generations, according to Foote, youth from fishing families in Hampton and Seabrook followed their parents into the fishing industry. But as it declines locally, following a Gulfwide pattern, "Part of what AERC is trying to accomplish is to present other ways that communities can still find a living from the ocean."

AERC treasurer Jim Fuller said he hopes the program can expand throughout seacoast New Hampshire "and possibly Massachusetts."

Building a future

Though activity fees help offset the cost of providing materials for AERC's educational activities, the program essentially lives on volunteerism, in-kind donations, and occasional cash contributions by organizers. "Six months ago, we all chipped in five bucks out of our wallets so we could buy a P.O. Box," laughed Foote.

Organizers have not yet begun full-scale fundraising for the new building, nor set a goal date for construction, saying they are concentrating this year on developing and promoting AERC's educational activities. "If we can get consistent tours and educational programs presented, it will prove to [potential funders] we aren't fly-by-night," Foote explained.

By honing its program offerings AERC will also be better able to determine exactly what kind of facility it needs, noted Amy Day, a Fisheries Biologist who is also an AERC board member and instructor. Once settled into a permanent home, AERC intends to provide space for teachers and for high school students undertaking independent research, and to rent space to graduate students and other researchers, said Foote. "We're hoping that's part of the way we'll be able to get funding and remain a non-profit organization."

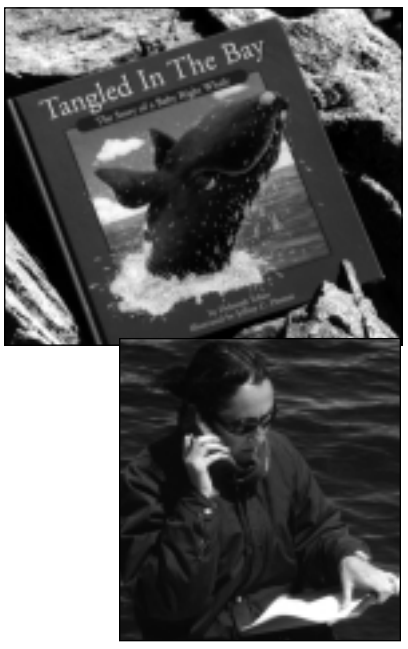
For more information on AERC

Contact Mark Rosenqvist at
(603) 926-1650 or
E-mail AROFISH@aol.com
or write AERC, P.O. Box 153,
Seabrook, NH 03874.

A tangled whale tale for kids

In a new children's book, Deborah Tobin tells the story of how Pasha, a North Atlantic right whale calf, is rescued from a snarl of fishing gear. *Tangled in the Bay: The Story of a Baby Right Whale*, is filled with real-life characters from the right whale rescue community.

Richly illustrated by Jeffrey C. Domm, the book is the first in the "Natural Heroes" children's book series from Nimbus Publishing in Halifax, Nova Scotia. The series explores the work of people acting on behalf of endangered animals. In addition to Pasha's tale, *Tangled* also includes information about right whales, and about organizations working to save them.



Photos: Suzy Fried/*Gulf of Maine Times*

Deb Tobin, author of* Tangled in the Bay, *is the coordinator of the Whale Emergency Network, a new whale rescue effort in the Bay of Fundy.

Tobin is the Education and Whale Rescue Coordinator at East Coast Ecosystems (ECE), a right whale conservation organization based in Freeport, Nova Scotia. She also works as a teacher in upper elementary and middle schools.

For information on how to get a copy of the book, call Nimbus Publishing at (902) 455-4286.

What do *you* think?

What should be done to prevent whales from becoming entangled in fishing gear in the Gulf of Maine?

Join the Gulf of Maine Council online forum.
www.gulfofmaine.org/cgi-bin/forum.cgi

Whale Disentanglement *continued from page 1*

though their approaches are not identical.

CCS Senior Scientists Charles "Stormy" Mayo and David Mattila began disentangling whales about 15 years ago. The center now organizes whale rescues on the US Atlantic coast under authorization from the National Marine Fisheries Service (NMFS) – which also funds the work – with assistance from the US Coast Guard and state marine patrols. In numerous workshops, CCS and NMFS have trained fishermen and Coast Guard crews to respond to entangled whales.

At a workshop for fishermen in North Head, Grand Manan, New Brunswick, Ed Lyman (right) of the Center for Coastal studies demonstrates tools used to cut fishing gear off of entangled whales.

Photos: Suzy Fried/*Gulf of Maine Times*

Population struggling

Though all species of whales in the Gulf can become entangled in fishing gear, endangered North Atlantic right whales are of most concern because of their extreme scarcity. Nearly decimated by hunting in past generations, fewer than 350 North Atlantic right whales exist today, according to scientists.

A fully-grown right whale can measure up to 55 feet long and looks indestructibly sturdy with its broad, black body, short, paddle-shaped flippers, and large head. But the species is not reproducing at a fast enough rate to compensate for the many persisting threats to its survival, including collisions with ships and entanglement in fishing gear.

"The right whale is now the rarest whale in the world," Mattila told US Coast Guard staff at a disentanglement workshop in Gloucester, Massachusetts in May. "If we can eliminate the human-caused fatalities, they may stand a chance. If not, they will probably be extinct in about a hundred years."

Appealing to fishermen

The US Marine Mammal Protection Act requires that NMFS reduce human-caused right whale deaths. One more right whale death from fishing gear entanglement in US waters could force closures of fishing areas at a time when the industry is already under pressure. Canadian fishermen say they also fear closures if conflicts between right whales and fishing gear continue.

US fishermen are collaborating with NMFS to try to modify fishing gear to make it less dangerous to whales while remaining functional for fishing. According to Moira Brown, founder of ECE and a Senior Scientist at CCS, there is no formal gear modification research under way in Canada.

Until entanglements can be prevented, rescue networks will remain necessary, say organizers, who describe fishermen as integral to these efforts. They are appealing to fishermen's self-interest, as well as engaging what they see as fishermen's affinity for whales and a desire to help. It was a fisherman who counseled CCS on how to release a whale from fishing gear when the organization was first called to help an entangled whale in the early 1980s, according to Mattila.

"Fishermen have got to be made aware that they're part of the solution and not part of the problem," said fisherman and whale watch tour operator Dana Russell at ECE's June 6 workshop in North Head, Grand Manan, New Brunswick. "I have a good feeling from everything that's been said this morning that things are going in the right direction."

Eyes on the water

Close to 400 fishermen and US and Canadian Coast Guard crews have been trained in identifying, reporting, and standing by an entangled whale until help arrives. "The real key," said Brown at the Grand Manan session, "Is to get eyes on the water." Network organizers emphasize that they can't rescue whales they can't find. Informational materials that include contact information for reporting entangled right whales are available for Canadian and US mariners (see "Right whale resources").

Photos: Suzy Fried/*Gulf of Maine Times*

Whale rescue teams attach special cutting tools to long extension poles so that they can reach fishing gear on an entangled whale from an inflatable raft. (From left) Todd Sollows, Ed Lyman, and Stormy Mayo used the specialized tools during a June 5 disentanglement in the Bay of Fundy.

"We're not expecting you to leave today prepared to go out and disentangle a whale," said Tobin. But CCS and ECE are allowed by their respective federal fisheries agencies to authorize others to approach whales to remove gear or attach tracking devices. With this in mind, the Canadian and US workshops have included demonstrations of the disentanglement gear – much of which is similar to gear fishermen use in their own work – and of the telemetry equipment.

Whale Disentanglement *continued on page 8*

Chance encounter leads to Bay of Fundy whale rescue

Bay of Fundy – By the time the pancakes were eaten, the gear gathered and loaded, and everyone on board the *Fundy Cruiser*, we cast off at least an hour later than our planned 9:00 a.m. departure from Tiverton, Nova Scotia. About a dozen of us were making the three-hour crossing to Grand Manan Island, New Brunswick on Saturday, June 5, for a workshop the next morning on what fishermen should do when they encounter whales caught in fishing gear.

The late start seemed insignificant at the time – we were in no rush. Clear, sunny skies and calm seas promised perfect conditions for scouting whales along the way.

On the bow, bundled against a stiff spring wind and peering out over the water, was Deborah Tobin, Education and Whale Rescue Coordinator for East Coast Ecosystems (ECE). The Freeport, Nova Scotia-based research and education organization works on behalf of the endangered North Atlantic right whale. Tobin had organized Sunday's workshop, as well as one that had taken place on Friday.

Also on board were several whale researchers – some experienced at disentangling whales – and a Toronto film crew making a documentary about whale disentanglement for Canadian Geographic.

Early arrivals

We weren't out long before a minke whale popped up off of our port side. Soon after, we spotted two endangered North Atlantic right whales, whose surprisingly early appearance in the Bay of Fundy prompted an excited scramble for binoculars, cameras, notebooks, and pens.

And then, at noon, spooky serendipity. Making regular dives not far from our vessel was another right whale, this one harnessed in fishing gear. Rope passed through the whale's mouth, crossed over its back, and wrapped around its body, binding it with a metal shaft and a large red float. Our collective adrenaline level spiked. All eyes tracked the whale as it continued to dive normally, despite the gear.

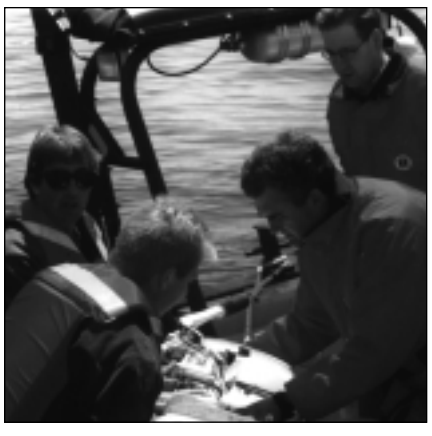


Photo: Suzy Fried/*Gulf of Maine Times*

Canadian Coast Guard personnel from Westport, Nova Scotia, arrive with a motor for the disentanglement team's inflatable raft.

Timing took on more importance now. Had we left the dock an hour earlier as planned, the entangled whale may not have crossed paths with our vessel, which was packed with whale disentanglement gear, and crawling with people who knew how to use it.

The whale was younger than four years old, guesstimated New England Aquarium right whale researcher Phil Hamilton, as he hunted for data sheets to record information about the animal.

He also snapped photos that would later be compared with the Aquarium's extensive right whale photo identification catalog.

Photos: Suzy Fried/*Gulf of Maine Times*

Top: This entangled North Atlantic right whale crossed paths with a disentanglement team in the Bay of Fundy on June 5. Rope was caught in the whale's mouth, and was crossed over its back, binding it with a metal shaft and a large float.

Left: Stormy Mayo returns to the* Fundy Cruiser *with the fishing gear that had entangled the young female right whale.

Making a plan

Charles "Stormy" Mayo, a Senior Scientist at the Provincetown, Massachusetts-based Center for Coastal Studies (CCS), and Ed Lyman, CCS Associate Scientist and Rescue Coordinator, started working out a plan to try to free the whale. Mayo, who is experienced at releasing right whales from fishing gear, said that even a 24-foot-long extension pole with a cutting tool on the end would probably not be long enough to reach the animal from the deck of the *Fundy Cruiser*.

The team would have to try to cut the gear off of the whale from a motorized, inflatable raft. ECE and CCS have federal permits allowing close approaches to right whales – which are otherwise prohibited – for research or disentanglement purposes. The US prohibits vessels from approaching within 500 yards of a North Atlantic right whale without one of these permits.

On board the *Fundy Cruiser* was a cache of disentanglement equipment to be used in demonstrations at Sunday's workshop. The kit was usually stored at the Canadian Coast Guard station in Westport on Brier's Island, Nova Scotia. It included floats, special cutting tools, and an inflatable raft. But a motor for the raft had been left behind, since it wasn't needed for the demonstrations. Tobin called *Fundy Cruiser* Captain Todd Sollows' father and brother to ask them to bring one out. She also reported the entanglement to the federal Department of Fisheries and Oceans, and alerted Fundy Traffic, which directs the region's shipping traffic, that right whales were in the area.

Meanwhile, Mayo and Lyman tied large floats to a long line with a grappling hook on the end and threw the grapple end into the tangle of gear already wrapped around the whale. The floats would create more drag in the water as the whale tried to swim, tiring the animal – we hoped – so the disentanglement team could work on it.

We watched the whale dive and resurface, the earlier bustle ebbing to an edgy calm. Those with seaworthy stomachs munched distractedly on donuts and leftover hard-boiled eggs. Dinner on Grand Manan was going to be a bit later than planned.

One vigorous whale

At last, the Coast Guard arrived with the outboard motor, having met the Sollows part-way. Mayo, Lyman, and Todd Sollows, who had attended the previous day's training workshop in Freeport, set off in the inflatable to get a closer look at the whale. Though they wore life vests and helmets to provide protection from poles and other gear, only vigilance and luck would protect them from the whale itself. According to Mayo, "If a whale slaps you with its tail, it's going to probably kill you."

Now at the wheel of the *Fundy Cruiser*, CCS Senior Scientist and ECE Founder Moira Brown kept the vessel at a distance to avoid adding to whale's growing agitation. We squinted over the water, watching as the team maneuvered the raft and the gear around the whale. It didn't seem at all fatigued as it repeatedly lunged away from its pursuers.

Finally, one of the floats attached to the whale would occasionally lie still. At last, the animal was resting. At 4:45, taking advantage of a calm moment, Mayo manipulated a long-handled cutting tool just under the water's surface, slicing through the lines binding the whale.

Perched atop the *Fundy Cruiser*'s wheelhouse with a pair of powerful binoculars, Jon Lien, a whale researcher from Newfoundland who has disentangled more than a thousand humpback whales, announced with a wide grin that the whale was free. Because of our limited visibility, the rest of us were not quite convinced until the team returned.

Mayo confirmed that he had cut the rope on each side of the whale's mouth, removing the gear, but said a short piece remained stuck, like dental floss, in the whale's baleen. He expected it would work its way out. "I think it's as good as we could do," he said, looking relieved, and a bit resigned as he handed up the more than 200 feet of line and other gear that had been wrapped around the whale.

At the next morning's workshop, Mayo said that the whale seemed uninjured by the entanglement, but that over time, "certainly having that much gear could have done the animal in." He recalled that he once decided against attempting to remove fishing gear wrapped around a young right whale's flipper. He thought at the time that the disentanglement process would be too traumatic for the whale which, he surmised, would free itself from the apparently minor entanglement. A year later the same whale washed up on a beach, dead from a lethal infection that had developed as the animal grew and the line became more deeply embedded. Now, he said, "We try to [disentangle right whales] as often as we can get our hands on them."

We didn't see the June 5 whale again after it was freed, but Hamilton later used photographs to identify it as #2753, a two-year-old female right whale, and a granddaughter of Staccato, a female that died in April as a result of a ship collision. Scars indicate that 2753 had been entangled at least one other time before we encountered her. There was no guarantee she wouldn't become entangled again, but for now, she was free to swim and feed unfettered, a possible future contributor to a precarious population.

– S.F.

Protection for whales in the Gulf

NMFS *Atlantic Large Whale Take Reduction Plan*
US National Marine Fisheries Service (NMFS) plan outlines measures intended to prevent endangered whales off of the US Atlantic coast from becoming entangled in fishing gear. Published in the *US Federal Register*, Docket No. 970129015-9044-09, available on the Web at www.access.gpo.gov/u_docs/aces/aaces002.html or in US public libraries.

Canadian *North Atlantic Right Whale Recovery Plan*
Draft version of a plan developed by Canada's Department of Fisheries and Oceans (DFO) and World Wildlife Fund-Canada (WWF) recommends measures for addressing threats to right whales. Final version was expected to be signed by federal ministers before summer's end. Contact Jerry Conway at DFO via E-mail at conwayj@mar.dfo-mpo.gc.ca or call (902) 426-9609.

Mandatory reporting for large commercial vessels
Large commercial vessels entering right whale critical habitat areas, including those off of Cape Cod, are required by the International Maritime Organization to report to the US Coast Guard (USCG), which, in turn, provides captains with information about nearby right whales to reduce the risk of potential whale-ship collisions.

Right Whale Sighting Advisory System
From boats and planes, biologists survey waters that serve as both commercial shipping lanes and right whale feeding grounds, forwarding information about whale sightings to the US Coast Guard, which alerts mariners via radio, fax, and Internet. NMFS, USCG, and the state of Massachusetts collaborate with numerous other organizations on the program. Visit www.nefsc.nmfs.gov/cgi-bin/rwhale.pl on the Web.

Whalewatching Guidelines for the Northeast Region
Revised voluntary operating guidelines issued by NMFS for whale watching vessels in the northeast recommend larger buffer zones around whales, specific speed limits, and dedicated lookouts to prevent harassment of and injury to large whales. Developed by NMFS and the Northeast Recovery Plan Implementation Team with participation from regional whale watch operators. Visit the NMFS Northeast Region office Web site at www.wh.whoi.edu/ro/doc/nero.html or call (978) 281-9254.

Whale Disentanglement *continued from page 6*

CCS Maine Project Director Bob Bowman asserted that in most cases, it is best to wait for a trained disentanglement team. "If [the whale] can breathe, chances are they'll be fine until we can get there," he told Coast Guard staff at the Gloucester workshop.

Bowman, who has released whales from fishing gear, said disentanglements, especially by inexperienced people, are potentially dangerous for whales and humans alike. Removing gear improperly – such as leaving some gear still in the whale's mouth – may do the animal more harm than good. And getting into the water with a whale is especially dangerous. Even experts should avoid it, he said. Whales do not recognize that they are being helped and are not inclined to cooperate.

But the Canadian network is encouraging fishermen to participate in all aspects of whale rescues from spotting entangled whales to removing gear from the animals. Tobin maintains that, "In some cases, it's appropriate for fishermen to be involved" in disentangling a whale.

High tech and old methods

Because bad weather, poor visibility, or other conditions can prevent a disentanglement team from approaching or working on an entangled whale, they will sometimes attach transmitters to the animal to track its whereabouts, returning to the whale when conditions improve. Instruments used include VHF (very high frequency) radio transmitters, and a satellite tracking mechanism enclosed in a rugged custom buoy system, developed by Bowman, that can withstand a whale's deep dives. About 40 fishermen, mostly in the US, have been trained to attach radio tracking devices to entangled whales.

Caches of disentanglement gear, including motorized inflatable rafts, fuel, floats, safety gear, cutting tools, and extension poles, are stored in Westport, Nova Scotia; in Somesville, Maine; in Provincetown, Massachusetts; and in locations on the southeast US coast. The gear is packed in containers and kept in small trailers so it can be transported quickly, often by Coast Guard crews who frequently receive the first reports of entangled whales. Ten first-response kits containing some tools are also stationed at various sites along the US east coast.

Before attempting to cut gear off of a whale, rescuers will first try to immobilize it using a process called "kegging" developed by whalers to slow an animal so they could harpoon it. Whale rescuers attach floats and buoys to an entangled whale to create drag in the water, tiring the animal so it will stop swimming.

In response to a question from a Grand Manan fisherman, Mayo acknowledged that kegging is also potentially dangerous to the whale. But, he pointed out, the entire disentanglement process is a series of choices about which risk is worst. "It's like a lot of things at sea. You're weighing a bunch of things and you're hoping you make the right decision."

Photo: Suzy Fried/*Gulf of Maine Times*

Bob Bowman, of the Center for Coastal Studies, developed a custom buoy system in which a satellite tracking mechanism is enclosed in the shaft of a heavy duty buoy that can be attached to fishing gear on an entangled whale. The device enables a disentanglement team to track and relocate the animal if they are unable to release it from the gear on the first attempt.

Photo: Bob Bowman/Center for Coastal Studies

Some of the tools used in disentangling whales are similar to ones used by fishermen.

Right whale resources

East Coast Ecosystems Web site
dti-web.com/ecosystems

Center for Coastal Studies Web site
www.coastalstudies.org

Gulf of Maine Council Web site
http://www.gulfofmaine.org/library/

Right Whales and the Prudent Mariner
This 15-minute video describes how to avoid collisions with right whales. Call Massachusetts Coastal Zone Management at (617) 626-1212.

Whales and Fishermen: A Plan for Reducing Entanglements
This 11-minute video describes how to avoid harming whales and how to participate in the Right Whale Sighting Advisory System that alerts mariners to the presence of the whales.Visit www.seagrant.unh.edu/pubs.htm#Videos or call Maine Sea Grant at (207) 581-1435 or New Hampshire Sea Grant at (603) 749-1565.

Whale Emergency Network Wheelhouse Card
Includes large whale identification illustrations, instructions for reporting an entangled or dead whale, and contact information for the Whale Emergency Network and the Canadian Coast Guard. Contact the Whale Emergency Network at 1-888-854-4440 from Canada or at (902) 839-2962 from the US.

Right Whales: Guide for Mariners
Laminated wheelhouse card describes precautionary measures captains can take to avoid collisions with North Atlantic right whales and how to contact the US Coast Guard. Call Massachusetts Coastal Zone Management at (617) 626-1212 or call the US Coast Guard Marine Safety Office at (207) 780-3251.

Estuaries Day

continued from page 1

Reserves are primarily publicly owned areas within US estuaries that contain important habitat and are protected by state law. State agencies operate the reserves, directing research, monitoring, and public education programs, and working in partnership with local communities and regional groups to address coastal watershed management issues. The nationwide system includes two reserves within the Gulf of Maine.

Following are descriptions of National Estuary Projects and National Estuarine Research Reserves in the Gulf, as well as the neighboring Buzzards Bay Estuary Project and Waquoit Bay National Estuarine Research Reserve. To join in Estuaries Day celebrations, many of which will be part of Coastweeks celebrations in the US from September 18 to October 9, contact the estuary program or reserve nearest you, or visit the Estuaries Day Web sites listed under "More US estuary information."

Casco Bay Estuary Project

Established in 1990, the Casco Bay Estuary Project works to preserve the ecological integrity of the Bay by reducing pollution and protecting habitat. The Casco Bay estuary system in southern Maine is home to federally protected species including the Piping Plover, Roseate Tern, and shortnose sturgeon.

Photo courtesy of Casco Bay Estuary Project

Casco Bay Estuary Project is providing technical assistance to landowners in addressing sources of pollution to shellfish areas. Jim Gray (above) of SeptiTech installs new septic system technology on a property in Casco Bay.

By lowering the amounts of nutrients, toxic substances, and pathogens entering the Bay, the Project hopes to reduce incidents of contaminated seafood, habitat degradation, losses and declines in species and fisheries, and swimming area closures.

One project the group is working on involves addressing sources of pollution affecting specific clam flats in the system, working with landowners as needed to help them stop the pollution from occurring.

Visit www.muskie.usm.maine.edu/cascobay or call (207) 780-4820.

Wells NERR

Just off of Route 1 in Wells, Maine, sits historic Laudholm Farm, the site of the 1,600-acre/648 hectare Wells Reserve with a seven-mile/11-kilometer trail system that winds through fields, forests, wetlands, salt marshes, dunes, and beach. Among the resident species are whitetail deer, Snowy Egrets, soft shell clams, and endangered Piping Plovers and Least Terns.

Designated in 1986, the Reserve works with more than 400 volunteers, some of whom are involved in its Wells Reserve Watershed Evaluation Team (WET) Water Quality Monitoring Program, in which adult and student volunteers characterize and monitor the aquatic environment of up to 22 sites on the Little and Webhannet River estuaries two or three times each month. The program, one of many at the Reserve, helps its researchers follow changes in water quality in the two estuaries and identify sources of human impact. The Reserve shares the data with all schools involved, local community members, and state scientists.

The Wells Reserve is planning family-oriented activities for National Estuaries Day, including visits to its floating lab, and coastal bird watching tours.

Visit http://inlet.geol.sc.edu/WEL/home. html or call (207) 646-1555.

New Hampshire Estuaries Project

The New Hampshire Estuaries Project focuses on two estuarine systems, Great Bay/Little Bay and Hampton Harbor and their tributary rivers in Seacoast New Hampshire. Living within the systems are federally protected Piping Plovers and Peregrine Falcons, along with state-protected Common Terns and Osprey.

Established in 1995, the New Hampshire Estuaries Project has made prevention of nonpoint source pollution (pollution that enters the water from runoff, rather than from a specific, identifiable source) a priority. The Project is also involved in an effort among seacoast agencies to provide more coordinated and effective assistance to towns in protecting and managing their natural resources as they grow.

Visit www.state.nh.us/nhep or call (603) 433-7187 or (603) 436-8043.

Great Bay NERR

Fifteen miles/24 kilometers inland from the coast on the New Hampshire and Maine border in Stratham, New Hampshire, is the 5,280 acre/2,137 hectare Great Bay Reserve, home to Bald Eagles, horseshoe crabs, and Osprey, among other species. The Reserve, which features walking trails, also encompasses Great Bay National Wildlife Refuge.

Designated in 1989, the Reserve gets volunteer support from University of New Hampshire Marine Docents and public volunteers, as well as from its friends group, the Great Bay Stewards at Sandy Point. Among the programs it offers is an integrated elementary curriculum, "It's All Connected." The curriculum incorporates literature, social studies, art, math, and science into an exploration of the characteristics and values of the Great Bay Estuary and how humans have affected it.

National Estuaries Day is also the Reserve's tenth anniversary, and it is holding a day-long public celebration: "Great Bay Fest: Celebrating a Decade of Discovery," which will begin with a 5k road race followed by free activities.

Visit http://inlet.geol.sc.edu/GRB/ home.html or call (603) 868-1095 or (603) 778-0015.

Massachusetts Bays Program

The Massachusetts Bays region encompasses the coastal waters of Massachusetts from the tip of Cape Cod Bay to the New Hampshire border. The estuary system encompasses about 34,000 acres/13,760 hectares of salt marsh, almost half of which is the Great Marsh, stretching from Plum Island Sound through Essex Bay on the upper North Shore.

Since its establishment in 1990, the Massachusetts Bays Program has worked to open shellfish beds, reduce toxic substances and nutrient overload, and ensure no-net-loss of saltmarsh and wetlands habitat.

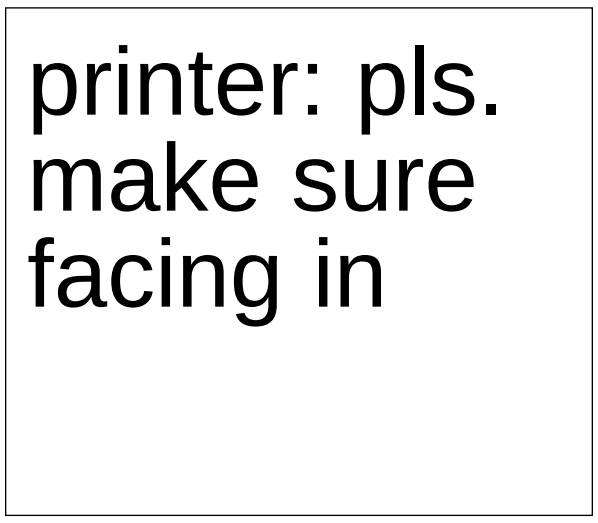


Photo: Paula Mueller

During a wetland water chemistry workshop at a Gloucester salt marsh, Bruce Carlisle of the Massachusetts Coastal Zone Management Office shows participants how to check water quality. The workshop was part of a series of wetlands monitoring workshops co-sponsored by the Massachusetts Bays Program.

In collaboration with the state's Coastal Zone Management Office and the University of Massachusetts Cooperative Extension, the program launched the Wetlands Health Assessment Program last summer, instructing more than 40 citizen volunteers how to determine wetland health by evaluating indicators including vegetation, tidal influence, water chemistry, and land use.

Visit www.epa.gov/region01/eco/massbay/ or call (617) 626-1230 or 626-1231.

Buzzards Bay Project

Located in Massachusetts to the west of Cape Cod and the Elizabeth Islands, the Buzzards Bay estuary system is home to North America's largest colony of federally protected Roseate Terns.

Accepted into the National Estuary Program in 1987, the Buzzards Bay Project focuses on addressing pollution from residential development, industrial wastes, and sewage, which is contaminating fish and shellfish.

The Project is also working with the Massachusetts Division of Marine Fisheries to restore declining herring populations in two rivers in the Buzzards Bay system.

Visit www.buzzardsbay.org/ or call (508) 291-3625.

Waquoit Bay NERR

Midway between Falmouth and Mashpee, Massachusetts, on the south shore of Cape Cod, is a 2,250 acre/910 hectare estuarine Reserve on Waquoit Bay. The Reserve's diverse habitat is home to numerous species including Piping Plovers, Least Terns, and blue crabs.

The Reserve, which was designated in 1988, is working to minimize nutrient loading to coastal embayments by developing demonstration projects and public education materials, holding informational meetings, and participating in the Waquoit Bay Land Margin Ecosystem Research project. More than 100 volunteers help with the Reserve's programs.

Visit http://inlet.geol.sc.edu/WQB/home.html or call (508) 457-0495.

More US estuary information

NEP National Estuaries Day Web site
www.epa.gov/owow/estday

National Estuaries Day in Maine
www.state.me.us/spo/mcp/mcp.htm
or call (207) 287-3261

National Estuary Program
www.epa.gov/OWOW/estuaries/nep.htm

National Estuarine Research Reserve System
www.nos.noaa.gov/OCRM/nerr/

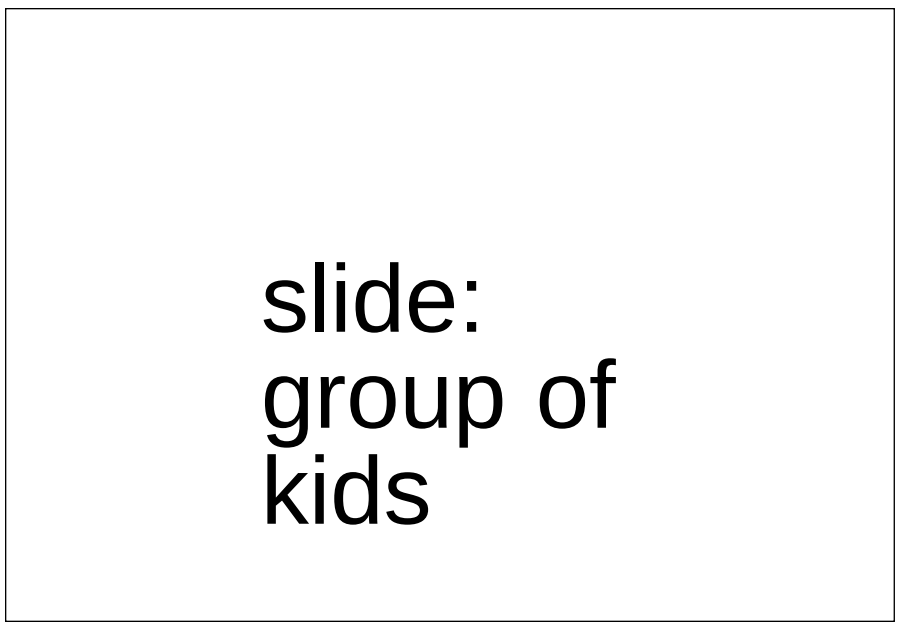


Photo courtesy of Great Bay NERR.

The Great Bay National Estuarine Research Reserve offers educational programs that teach people about the Reserve's ecosystem and natural resources. Many estuarine research reserves and estuary projects will offer special programs on National Estuaries Day, Saturday, October 2.

Gulf Log

Edwards dam breach frees Maine river

Augusta, Maine – The Edwards Dam on Maine's Kennebec River gave way to free-flowing waters during a July 1 public ceremony that followed years of lobbying by conservationists, and a landmark federal ruling.

slide of dam here

Photo: Stephen Brooke

The Edwards Dam, breached on July 1 according to a US federal ruling, is scheduled for complete removal by November.

Removal of the 162-year-old dam has reopened about 18 miles/29kilometers of prime spawning habitat for 10 species of migratory fish whose passage had been been blocked by the dam since 1837.

The Edwards Dam is one of many structures blocking rivers that drain into the Gulf of Maine. Dams, causeways, and other obstructions impede migratory fish passage and cause other environmental effects.

In 1997, the US Federal Energy Regulatory Commission (FERC) ruled that the hydroelectric dam should be removed against the will of its owner, Edwards Manufacturing Co. It was the first-ever such ruling by FERC, and followed years of lobbying by the Kennebec Coalition, a group of conservation organizations. The project has also involved businesses, power companies, and municipal, state, and federal agencies.

On the morning of July 1, a backhoe removed a section of a gravel coffer dam that had been constructed to hold back the river while workers removed part of the hydroelectric dam. As the river began to flow through the channel, it washed away the rest of the coffer dam, allowing the Kennebec to flow freely. Removal of the rest of the dam will be complete by November.

CN government halts Petitcodiac opening

Fredericton, New Brunswick – Federal and provincial officials discontinued an experimental opening of the controversial Petitcodiac River Causeway on June 2 after only a few weeks, citing insufficient water flows.

The project began in April and was expected to continue through much of the summer. Government agencies had planned to study the effects of the experimental opening to determine the feasibility of restoring free-flow to the tidal river. The Petitcodiac, which travels through southeastern New Brunswick to the Bay of Fundy, is one of many rivers in the Gulf of Maine blocked by dams and causeways.

Controversy has surrounded the Petitcodiac River Causeway since its construction 30 years ago. Environmentalists say it is killing the river's natural ecosystem, and want it removed. Others – including residents living along a headpond that would be drained if the dam were opened or removed – say restoring free-flow would also cause environmental problems. They want a full environmental impact assessment (EIA) to be completed before any further action.

The federal and provincial governments have not undertaken a full EIA. But in a June 1 news release, the province stated that "Any further gate opening projects would be subjected to an environmental impact assessment process."

Georges Bank Panel: Extend drilling ban

Halifax, Nova Scotia – Ranking the value of habitat, biological diversity, and fisheries above the potential worth of gas and petroleum reserves, a panel has recommended extending a drilling moratorium on the Canadian portion of Georges Bank.

The Georges Bank Review Panel's June recommendation did not indicate how long the moratorium, now due to expire January 1, 2000, should remain in place.

Convened under the 1988 Canada-Nova Scotia Accord Acts establishing the moratorium, the panel was charged with conducting a public review of the environmental and socioeconomic impacts of exploration and drilling on the Bank and recommending a course of action to the Canadian Minster of Natural Resources and the Nova Scotia Minister responsible for the Act. The recommendation was due by July 1. The ministers must make their decision by January 1, 2000.

Following a series of information sessions, community workshops, and public hearings in Nova Scotia, the panel issued a report citing what it described as the Bank's exceptional ecological value, and the value of its fishery. It noted that evidence exists that seismic surveys and exploratory drilling – used to determine whether or where to drill for hydrocarbons – could affect fish and other marine species.

Fishermen's organizations, environmental agencies, conservation organizations, and other groups support extending the ban.

"If commercial quantities of oil or gas were discovered, development and production would eventually follow; it would be inappropriate to permit the associated risks on Georges," the panel's June report states.

The US and Canada share jurisdiction over Georges Bank, with approximately one sixth of it lying on the Canadian side of the border. Last year the US extended its own Georges Bank drilling moratorium until 2012.

Plans target mercury, acid rain problems

By Joy Manson
New Brunswick Department of the Environment

Portland, Maine – Participants in a June 4 workshop on regional efforts to address mercury emissions and acid deposition discussed an ambitious program aiming to virtually eliminate all releases of mercury in the region that are generated by human activity.

The program is being undertaken by the Conference of New England Governors and Eastern Canadian Premiers. Emissions of mercury, sulphur dioxide, and nitrogen oxides can be deposited close to emission sources or travel thousands of miles to coastal watersheds.

The more than 150 workshop participants from across the region represented health and environmental groups, industry, the private sector, scientists, and government officials charged with implementing action plans to reduce mercury and acid deposition. They called for public education about the health impacts of mercury deposition and acid rain, for private sector involvement in acid rain reduction, and for health agencies and business and environmental groups to be more actively involved in developing a mercury reduction action plan.

In October, the Acid Rain Steering Committee and the Mercury Task Force will report to the Conference on what will happen in year two.

Mercury occurs naturally, and also becomes airborne during combustion and incineration processes. As it falls to earth it can enter coastal waters where it can become toxic to humans and animals. Mercury increases in concentration as it moves through the food chain.

Acid rain occurs when nitrogen oxides in the atmosphere convert to nitric acid and other nitrogen-containing compounds that fall to earth, fertilizing coastal waters and depriving aquatic wildlife of oxygen and habitat. Acidified rainwater can also more easily dissolve potentially toxic heavy metals and deposit them in coastal estuaries in the form of runoff.

Calendar

Awards deadline

Deadline for applications is October 27, 1999 for Local Initiatives Awards granted for excellence in categories including freshwater management, atmospheric protection, and waste management. Local governments working with community partners on projects to protect and improve the environment can apply. Visit www.iclei.org/liawards for more information.

AWRA annual meeting

The American Water Resources Association annual meeting from December 5-9, 1999 in Seattle, Washington, will feature a symposium on Water Resources and the World Wide Web. For more information visit www.awra.org/meetings/Seattle99/ or call (425) 649-4447 or (425) 453-5000.

Coastal Zone Canada 2000

Scheduled to take place in Saint John, New Brunswick September 17-22, 2000, the fourth international conference will address the theme, "Coastal Stewardship: Lessons Learned and the Paths Ahead." Topics will include aboriginal practices, community-based actions, coastal health, and oceans governance. A youth conference will also take place. For more information visit www.gov.nb.ca/dfa/czc-zcc2000.htm or E-mail czczcc2000@gov.nb.ca or call (506) 453-2253.

Resources

CD-ROM ocean odyssey

The Canadian Wildlife Federation (CWF) offers an interactive CD-ROM for students and teachers called *One Earth, One Ocean, One Life*. It focuses on the underwater wonders of the world and the need to protect them. Users can meet deep sea creatures, follow the life of a leatherback sea turtle, learn how pollution affects the ocean, and more. For a copy at $24.95 CN, contact CWF via E-mail at info@cwf-fcf.org, visit their Web site, www.cwf-fcf.org, or call 1-800-563-WILD in Canada or (613) 721-2286 from elsewhere.

BoFEP fact sheets

Fundy Issues, fact sheets produced by the Bay of Fundy Ecosystem Partnership (BoFEP) and the Clean Annapolis River Project, are available on topics including the Gulf of Maine Council's Gulfwatch mussel monitoring program, tidal and riverine restrictions, mud flat ecology, and more. Visit BoFEP's Web site at www.auracom.com/~bofep and look under resources/publications. Or, for printed copies, E-mail Graham Dayborn at gdaborn@ace.acadiau.ca or call (902) 542-2201.

Maine watershed maps

The Nonpoint Source Pollution Prevention Initiative works to educate Maine watershed residents about nonpoint source pollution. Visitors to stopnps.com can view maps of their local basins and find out about water protection groups.

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 contact Laura Marron at the Council Secretariat via E-mail at l_marron@des.state.nh.us or call (603) 271-8866.

GOMC examines role after a decade of work

Yarmouth, Nova Scotia – At its semi-annual meeting in June, the Gulf of Maine Council discussed cultivating closer relationships with other groups as it enters its second decade of work. The Council also began planning events for its upcoming tenth anniversary.

In December 1989, the Canadian premiers and US governors of the five provinces and states bordering the Gulf of Maine signed an agreement pledging to work jointly to implement sustainable management of the Gulf's resources.

Commemoration of a decade of Canadian/US collaboration on behalf of the Gulf of Maine ecosystem will begin December 8-10 in Portsmouth, New Hampshire, at the Council's winter meeting. Celebrations will continue through 2000, which the Council has proclaimed "The Year of the Gulf." The Council plans to stage a summer event with the Gulf of Maine Institute Without Walls, an organization that electronically links students throughout the Gulf who are working on stewardship projects.

In search of ways to work more closely with the numerous non-governmental organizations undertaking countless projects to sustain or improve the Gulf ecosystem, the Council – with help from the Integrated Coastal Planning Project at Dalhousie University and the Coastal Network of the Gulf of Maine (CNET) – facilitated a June 10 forum titled, *Sharing Information Among Neighbors*.

The wide-ranging discussion covered the need to make environmental regulations and technical information understandable to the public; the necessity for quick action on environmental problems; and the importance of collaboration among diverse groups addressing similar issues. "These kinds of cooperative approaches can address a common problem by working together, not by finding fault," asserted Steve Hawboldt of the Clean Annapolis River Project.

The Council also reaffirmed its role as a convener of groups working on behalf of the Gulf of Maine. "I think that the role the Council can best play is bringing you together," said New Hampshire Council Member Jeffrey Taylor.

CNET also helped the Council organize its first-annual Mini Fair, June 9-10, featuring about 30 exhibitors from the US and Canada, including environmental organizations, provincial, state, and federal agencies, and other groups.

At a June 10 reception, the Council announced Dana Wallace as the recipient of the first-annual Art Longard Award (see story on page 3).

The Council moved the Mini Fair, forum, and several other sessions originally scheduled to take place at the Rodd-Grand Hotel in Yarmouth to alternative locations due to a labor dispute at the hotel.

Following the meeting, New Hampshire assumed the Council Secretariat, hosted by Nova Scotia since last July. The Secretariat rotates annually among the Gulf's five jurisdictions.

Join in the Gulf of Maine Council's Discussion Forum
www.gulfofmaine.org/cgi-bin/forum.cgi

Looking for a Gulf of Maine contact?
Try the Gulf of Maine Contacts Listing
www.gulfofmaine.org/cdb/index.htm

Celebrating the Gulf of Maine in photographs

A *Gulf of Maine Times* Readers' Photo Exhibit, as part of the Gulf of Maine Council's tenth anniversary

Instructions

Important: Please read this first!

We will not return photos or other materials sent. Therefore, do not send irreplaceable prints, slides, or disks.
All photos submitted will become the property of the *Gulf of Maine Times* for possible future use in the newspaper, by the Gulf of Maine Council, or by organizations that may borrow photos from the *Gulf of Maine Times* or the Gulf of Maine Council, for use in their publications, presentations, or exhibits.

Who may enter

Amateur and professional photographers of all ages.
You need not live within the Gulf of Maine watershed.
You may submit only photos that you have taken.

Timing

Deadline for submissions is October 29, 1999.
You may submit photos taken at any time.

Subjects

Photos must have been taken within the Gulf of Maine watershed, and will be selected for the exhibit based on three categories.

Category 1 - Gulf Folks
Images of people living, working, and having fun in the Gulf of Maine.
(See section on "submission forms" for instructions on having subjects sign releases.)

Category 2 - Gulf Creatures
Images of wildlife in the Gulf of Maine.

Category 3 - Gulf Scenes
Images of the Gulf of Maine, from a fog-shrouded fishing fleet, to a lightening storm over a boiling bay.

Format

Submit photos in the following formats:
- Black and white or color prints
- Black and white or color slides.
- Black and white or color images saved on Macintosh disk in JPEG or TIFF format for Macintosh.
- For photos submitted on disk, include a hard copy printout of the photo as well.

We cannot accept photos via E-mail or on the Internet.
Do not send photographic negatives.

Labeling photos

Label each photo with:
- Your name
- Photo number 1-6, *(see submission form)*.

How many photos to enter

Send no more than six photos.
You may divide the six photos however you like over the three categories described above.

Submission forms

We will not consider any photo sent without a completed *Gulf of Maine Times* Readers' Photo Exhibit Submission Form.
Include a separate submission form for each photo. Clip and photocopy blank form to make duplicates for multiple submissions.
Have each person(s) recognizable in your photo sign the release included in the submission form for that photo.
You do not need to obtain releases for people appearing in photos of large crowds in public places.
Sign the photographer's release on each submission form.

Send submissions to:

Suzy Fried, Editor
Gulf of Maine Times
P.O. Box 4524
Salem, MA 01970

Gulf of Maine Times Readers' Photo Exhibit Submission Form

(For multiple submissions, photocopy this form and fill out one for each photo you submit.)

Photographer's name_____

Address_____

Phone number _____

Photo number (check one - should be the same number you have noted on the corresponding photo)
@ 1 @ 2 @ 3 @ 4 @ 5 @ 6

Category in which you are submitting photo (check one)
@ Category 1 - Gulf Folks @ Category 2 - Gulf Creatures @ Category 3 - Gulf Scenes

Date photo was taken _____

Subject of photo _____

Location of photo _____

Optional: Is there anything noteworthy about the technique you used to capture this image?

_____

Optional: What do you think makes the Gulf of Maine worth celebrating?

_____

_____

Release: *(To be signed by people recognizable in photos. Parents or guardians must sign for minors under 18 years of age.)*

I hereby allow use of a photo of myself by the *Gulf of Maine Times*, the Gulf of Maine Council, or by organizations that may borrow photos from the *Gulf of Maine Times* or the Gulf of Maine Council, for use in their publications, presentations, or exhibits.

Date _____Name (print)_____ Signature _____

Date _____Name (print)_____ Signature _____

Date _____Name (print)_____ Signature _____

(Attach additional paper for more names/signatures if necessary)

Photographer's release:

I understand that photos I submit for the *Gulf of Maine Times* Gulf of Maine Readers' Photography Exhibit become the property of the *Gulf of Maine Times*, and I hereby allow use of these image by the *Gulf of Maine Times*, the Gulf of Maine Council, or by organizations that may borrow photos from the *Gulf of Maine Times* or the Gulf of Maine Council, for use in their publications, presentations, or exhibits.

Date_____ Name (print)_____ Signature _____

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