

# Times

Gulf of Maine

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

## Canada and US collaborate on strategies to address Gulf of Maine oil spills



Photo: Maine Dept. of Environmental Protection

A clean-up crew worker washes oil from rocks along Portland, Maine's shoreline following a September 1996 spill, in which the *Julie N.* dumped 170,000 gallons of oil into Portland Harbor after colliding with a bridge.

**Gulf of Maine** — As long as we continue to rely on petroleum to power our vehicles, businesses, industries, and homes, ocean-going tankers will carry massive amounts of oil through the Gulf of Maine.

According to the Massachusetts-based Oil Spill Intelligence Report, the US alone uses 710 million gallons [2.7 billion liters] of oil per day.

Canadian Coast Guard Environmental Response Officer Ryan Green surmised that quantities of oil being shipped through the Canadian areas of the Gulf of Maine "are probably increasing, as are population and [oil] consumption."

Given that the threat of oil spills prevails in the North Atlantic, the US and Canada are working both collaboratively and separately to prevent and prepare for oil spills in the Gulf of Maine.

Both countries have federal regulations requiring the oil industry to take certain precautions.

In the aftermath of the 1989 Exxon Valdez oil spill in Prince William Sound, Alaska, the US Congress enacted the Oil Spill Pollution Act of 1990. The act mandates, among other measures, a phase-in of double hulls for large oil tankers by 2015.

In Canada, regulations intended to prevent or mitigate oil spills include a requirement that all new tankers be built with double hulls or double bottoms. Also, individual oil cargo tanks within ships are limited in size to control the amount of oil spilled in the event of a rupture.

Tankers with double hulls are more expensive to build and to maintain than single-hulled ships, but according to David Sait, Director of the Maine Department of Environmental Protection's [DEP] Division of Response Services, the oil industry has come to accept such requirements as "the cost of doing business."

OIL SPILL STRATEGIES,  
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## Trial opening of Petitcodiac River Causeway to begin in April '98

**MONCTON, New Brunswick** — Built 30 years ago to connect the communities of Moncton and Riverview, the Petitcodiac River Causeway has, in fact, created a long-standing chasm between community members.

Some want to restore the river to a free-flowing tributary to revitalize the river's estuarine ecosystem.

Others say opening the gates will destroy the headpond above the causeway, which they describe as a valid ecosystem in itself, as well as a recreational resource. They also fear opening the gates will lead to health risks.

Provincial and federal agencies hope the provincial cabinet's recent decision to partially open the causeway gates on a

### Community remains divided on issue

seven-month trial basis next spring will provide information to serve as a basis for deciding what action should be taken in the long term.

Continuing the project beyond the seven months would require a full-scale Environmental Impact Assessment [EIA], incorporating a public comment process, notes the New Brunswick Department of Environment [DOE].

The province had originally planned to start the trial this spring, and the decision to postpone it a year in order to undertake erosion control measures first prompted skepti-

cism and disappointment among environmental groups.

But opponents of the trial are also dissatisfied, and say a full EIA should be done before any other action takes place.

DOE Minister Vaughn Blaney and Transportation Minister Sheldon Lee announced the trial January 30. Environment Canada [EC] and the federal Department of Fisheries and Oceans [DFO]

also support the project.

The provincial and federal governments will split the trial's approximately \$1 million cost, officials say.

### Causeway changed local landscape

The Petitcodiac flows through southeastern New Brunswick to Shepody Bay and is an arm of the Bay of Fundy, which is

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### IN OUR NEXT ISSUE

Gulf of Maine Alliance A new coalition of non-governmental organizations focuses on Gulf of Maine issues.



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Welcome to the first edition of the *Gulf of Maine Times!*

**Gulf of Maine Times**

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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 on the Marine Environment's web site at: <http://gulfofmaine.unh.edu/cme.html>

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# Partnerships: Our most valuable resource

Barry Jones  
Secretariat  
Gulf of Maine Council  
on the Marine Environment



Photo: GOMC

Since the Gulf of Maine Council's formation in 1989, partnerships have been indispensable in pursuit of our mission to maintain and enhance environmental quality in the Gulf of Maine.

Having begun with a mostly state, provincial, and federal government orientation, the Council has since grown to include representatives of business and industry.

Gulf-wide collaborative efforts have also drawn in members of non-governmental advocacy and environmental organizations, the scientific and academic communities, educators, concerned citizens, and local and municipal governments.

Through joint ventures we are making progress in our mission "to maintain and enhance environmental quality in the Gulf of Maine and to allow for sustainable resource use by existing and future generations."

Our combined efforts are leading to success in restoring and protecting habitats and reducing debris and toxic contamination in the marine environment. And we anticipate

making more progress as we continue to expand our cooperative endeavors.

A collaborative approach to Gulf-wide issues was necessitated initially by the vastness of the Gulf of Maine region. The Gulf's watershed covers 69,115 square miles [165,185 square kilometers] spanning two Canadian provinces and three US states: New Brunswick, Nova Scotia, Maine, New Hampshire, and Massachusetts.

But in addition to its comprehensive geography, the diversity of interests and activity in the Gulf region also makes cooperation crucial in addressing the state of the Gulf of Maine.

In 1989, Canada and the United States officially recognized this need for collaboration to promote and sustain the Gulf's biological productivity when the region's US Governors and Canadian Premiers pledged in writing to work together to protect the Gulf's resources.

The agreement mandated that a Gulf of Maine Council on the Marine Environment be established. It also directed this new coalition to document the Gulf's ecological and environmental trends and develop recommendations for managing its resources.

The Gulf of Maine Council serves in four primary roles: it convenes partners to undertake efforts in pursuit of its mission; decides how resources should be used toward this end; cultivates support for mission-related projects; and develops methods for educating the public about the Gulf of Maine.

A ten-year Gulf of Maine Action Plan, drafted soon after the Council's formation, addresses environmental issues under five

major program areas: monitoring and research; coastal and marine pollution; protection of public health; habitat protection; and public education and participation.

A more recent 1996-2001 Action Plan outlines proposed strategies that government agencies, researchers, environmental groups, and others in the Gulf's jurisdictions can undertake to address these program areas.

The Council annually awards grants to non-government organizations working on projects that support its priority goals within the five program areas.

The Council also funds its own projects, directed by committees that work in partnership with individual citizens and non-governmental organizations.

One of these projects is the Gulfwatch program, which tests blue mussel samples for evidence of toxic contamination in the marine environment.

Another is this new publication, the *Gulf of Maine Times*, created as a forum for information on the Gulf's numerous and diverse issues for those who live and do business in the region.

Opportunities to join in the Gulf of Maine Council's efforts are many, and the Council welcomes and encourages your interest. To learn more about the Gulf of Maine and the Council's programs, contact:

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## Welcome to the *Gulf of Maine Times*

One of the Gulf of Maine Council's most important roles is to educate residents of the Gulf of Maine watershed about this magnificent resource.

With that in mind, the Council is pleased to present this inaugural edition of the *Gulf of Maine Times*.

Ensuring the continued health of the Gulf requires that efforts to protect it be undertaken and understood in the broader context of the region's economic, cultural, political, educational, and social fabric.

The *Gulf of Maine Times* hopes to help

provide this context in news and feature stories presenting diverse perspectives on the Gulf; descriptions of efforts to protect this ecosystem; and profiles of the people involved in that work.

The *Gulf of Maine Times* will also inform you about resources that can help you to learn more about the Gulf and to develop your own environmental solutions.

And news of the Gulf of Maine Council's activities will keep you abreast of its progress and your potential role in its efforts.

You can help us make this publication useful and relevant to you by completing the reader response form below and mailing it to us.

Also, please share your copy of this free newspaper with others and encourage them to subscribe, and contact us if you would like to help us distribute this publication.

Enjoy our first edition. We look forward to hearing from you.

Anne Donovan  
Editor in Chief

## Letters

Dear Gulf of Maine Friends,

EPA-New England is pleased to be associated with the Gulf of Maine Council, its members and all those interested in promoting the ambitious goals and objectives designed to move us toward achieving a shared vision for the Gulf.

The challenges are many. The Gulf's resources, its water quality, its habitat, its fisheries benefit all of us. Preserving and protecting the Gulf are necessary to assure

that it remains an environmentally rich and valuable resource. The efforts undertaken to date must be leveraged to assure its protection and preservation into the future.

EPA-New England will continue to provide as much support, guidance, and assistance as possible to further the efforts initiated under the start-up grant awarded by EPA for the Gulf of Maine Council's efforts. We look forward to contributing and realizing the results of these efforts.

With continued dedication we will reap the rewards of our efforts.

Sincerely,

John DeVillars  
Regional Administrator-Region 1  
US Environmental Protection Agency

### 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 and address, 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.

### We'd like to know more about you.

The *Gulf of Maine Times* is a free newspaper published by the Gulf of Maine Council on the Marine Environment. The paper is intended to provide useful information on environmental, economic, and social issues relating to the Gulf of Maine. The publishers have attempted to distribute this publication to readers interested in these issues; however, if you would like us to modify our mailing list, please check the appropriate box and mail this form to:

Editor

*Gulf of Maine Times*

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# New MA law boosts protection of state's rivers

**BOSTON, Massachusetts** — Legislation passed here last summer expands protective measures for the state's rivers, helping to safeguard water quality in this part of the Gulf of Maine watershed.

After years of discussion, the Rivers Protection Act became law on August 7 when Massachusetts Governor William Weld signed the legislation at a ceremony along the Charles River.

"This law will preserve clean water, protect quality of life, and promote economic vitality along our state's rivers," he told onlookers.

"This major environmental victory will protect nearly 9,000 miles [about 14,484 kilometers] of Massachusetts' riverbanks," noted Trudy Coxe, Secretary of the Executive Office of Environmental Affairs [EOEA].

The new measures revise the state's Wetlands Protection Act to control development within a designated "riverfront area" extending 200 feet [about 61 meters] from each side of a river or stream.

"What it does is give advance notice to people to plan their projects around these watersheds and have an undisturbed riparian zone for the benefit of water quality and wildlife habitat, as well as other wetland interests," explained Richard Tomczyk, spokesman for Massachusetts Department of Environmental Protection's [DEP] Wetlands Protection Program.

The legislation applies to Massachusetts rivers, but, "Certainly the result will affect the Gulf of Maine," in terms of helping to protect water quality, said Tomczyk.

Previously, "In circumstances where you had bordering vegetative wetlands along rivers, some protection was afforded, but upland, the level of protection was much less," said Russ Cohen, Rivers Advocate for the Massachusetts Department of Fisheries, Wildlife, and Environmental Law Enforcement.

"The burden of proof was on the conservation commissions to show that the proposed activity on the uplands would alter the adjacent wetland. There was no recognition in the law that the riverfront land had intrinsic value: that it was worthy of protection per se," Cohen said.

The Appalachian Mountain Club [AMC] was among the environmental organizations pushing for the increased protection of Massachusetts rivers.

"There was a lot of compromise and negotiation when [the legislation] was first introduced, so we were trying to defend the bill through the years as it went through the legislature," said Peter Donahue, AMC's Rivers and Greenway Conservation Specialist.

The measures were discussed for about six years — a period Tomczyk described as typical for passage of "major environmental legislation."

"We think there's better protection than there was in the original bill in many ways," Donahue said.

The legislation's effectiveness will depend on the strength of regulations now being written by the Massachusetts DEP to guide conservation commissions in enforcing the new measures within their communities, Donahue asserted.

An eight-member committee established by the DEP in December is helping to develop the regulations, Tomczyk said. The committee includes representatives of environmental, development, agriculture, and aquaculture concerns.

Public hearings on a draft of the regulations are expected to take place in May. The regulations must be completed within a year of the legislation's passage.

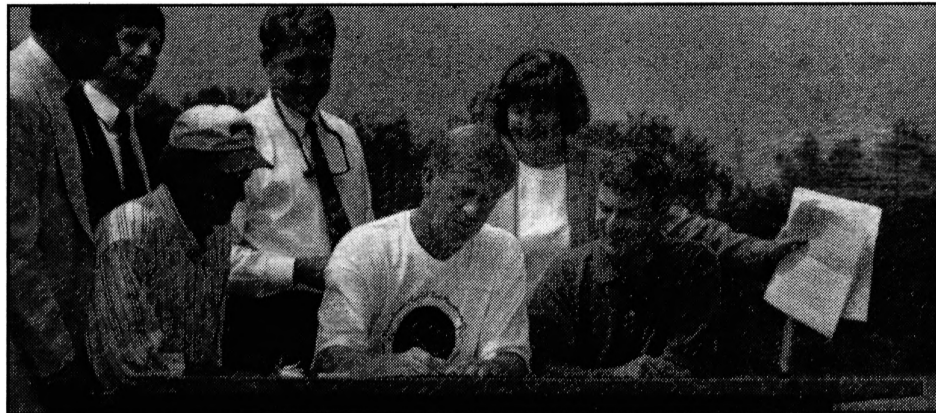
Municipalities can enact rivers protection measures that are more stringent than the state's, and some already have.

## Rivers protection varies throughout in the Gulf

Among the jurisdictions within the Gulf of Maine watershed (New Brunswick, Nova Scotia, Maine, New Hampshire, and Massachusetts), the degree and method of rivers protection varies. Citizens' groups are active in stewardship efforts in all five jurisdictions, however.

At the federal level, Canada's Heritage Rivers Program offers protection similar to that afforded certain US rivers under federal Wild and Scenic River designation. In both cases, however, rivers must meet specific criteria to qualify for that federal protection. In the US, the federal Clean Water Act also provides protection to rivers.

Canada's Federal Fisheries Act protects any river serving as habitat for anadromous fish (species that run from salt water to fresh water to spawn), noted Bill Ayer, Manager of



Massachusetts Governor William Weld signed legislation in August to strengthen protection of the Commonwealth's rivers.

Environmental Planning at New Brunswick's Department of Environment. The Canadian government also regulates discharge of pulp mill and mine effluents into rivers, he said.

In the province of New Brunswick, the Clean Water Act empowers jurisdictions to regulate discharge of effluents into rivers from manufacturing or treatment processes, said Ayer. The act is being revised to include a Water Classification Regulation modeled on Maine's river water quality classifications, he said.

The province's Watercourse Alteration Regulation and Clean Environment Act also help its rivers, Ayer said.

Municipalities in New Brunswick do not usually play a role in rivers protection, although some communities along the St. Croix River (an international waterway that travels through Maine and New Brunswick) are enacting shore land zoning laws requiring buffers, setbacks, and other protective measures, he said.

Nova Scotia is developing a method for managing rivers protection on a watershed basis, collaborating with federal agencies and local communities on stewardship efforts, according to Catriona Moir, Acting Manager, Ecosystem and Risk Assessment in that province's Department of Environment.

Moir said her department is developing a water management strategy. The province also protects rivers with waste management and municipal and industrial discharge regulations, and by regulating alteration of water bodies, she said.

Management guidelines for forestry and farming practices also help protect river water quality, and some municipalities have

enacted limited provisions to protect rivers and shore land, Moir noted.

According to a report released last October by Appalachian Mountain Club and the National Parks Service following a two-year-long assessment of rivers stewardship in the northeastern United States, "Maine has no formal river protection program."

But the report notes that Maine's Department of Environmental Protection [DEP] is involved in some community-based stewardship projects; with recreational flows and boating access; and has enacted measures to protect shore land within 250 feet [about 76 meters] of rivers and 75 feet [about 23 meters] of streams.

According to Maine officials, the state's shore land protection legislation, originally passed in 1971, was among the first of its kind.

A river inventory by that state also led to legislation protecting some rivers from new dams, the report states.

The report describes New Hampshire's Rivers Management and Protection Program as one that protects designated rivers through state and local government partnerships in which the state regulates in-stream values and local communities protect the shoreline and adjacent lands.

New Hampshire also enacted statewide shore land protection measures in 1994.

As is the case in Massachusetts, municipalities in Maine and New Hampshire are encouraged to adopt their own shore land protection regulations, which can be more restrictive than the state's.

# Right whales migrating through the Gulf of Maine

By Anne I. Smrcina  
Education Coordinator  
Stellwagen Bank NMS, NOAA

**PLYMOUTH, Massachusetts** — The annual migration of the world's most endangered great whale northward into the Gulf of Maine is under way.

Scientists believe that only 300 northern right whales remain in the North Atlantic. Despite international measures established in 1935 to protect the whales, their population has yet to recover from centuries of intense whaling.

But since 1984, at least 60 percent of the right whale population has appeared annually from January through May off the coast of Massachusetts in Cape Cod Bay, around Stellwagen Bank, and in the Great South Channel.

Even greater numbers travel farther north in late summer to Canada's Bay of Fundy and Scotian Shelf to feed and breed.

Yet, heavy shipping and fishing traffic within the whales' breeding and calving grounds continue to claim their lives. Collisions with ships are thought to be the most frequent cause of death for the 45- to 50-foot [approximately 13-15 meter] giants.

Though huge, the whales are difficult to see in the water, and virtually invisible to radar due to their low, broad body profile and

lack of a dorsal fin.

According to the Center for Coastal Studies [CCS] in Provincetown, Massachusetts, entanglement in fishing gear, such as gill nets and lobster buoy lines, causes about a tenth of known right whale deaths. An entangled whale can drown, be struck by a vessel, or die from wounds or starvation.

The US, Canada, and the Commonwealth of Massachusetts are collaborating to reduce these threats.

## Protective measures in place in US and Canada

Under the Endangered Species Act, the US has identified special high-use areas — known as critical habitats — for the Right Whale. These include Cape Cod Bay, the Great South Channel, and the area off the Florida/Georgia coast where the whales give birth to their calves. Government agencies and environmental groups are developing whale protection plans for these sites.

The Canadian Government promotes seasonal Right Whale Conservation Areas in the Bay of Fundy near Grand Manan Island and on the Scotian Shelf, informing boaters of the whales' presence.

An early warning system notifies ships of the whales' presence in US waters. This system is operated by CCS, the National



Right whales are now traveling through the Gulf of Maine.

Marine Fisheries Service [NMFS], the US Coast Guard, the Stellwagen Bank National Marine Sanctuary [NMS], the Massachusetts Executive Office of Environmental Affairs, and other agencies.

The agencies modeled the system after a successful program instituted by the New England Aquarium in the whale calving area off the Florida/Georgia coast.

From mid-January through April, observers in helicopters, airplanes, and boats scan the waters of Cape Cod Bay and the Stellwagen Bank National Marine Sanctuary for signs of the whales.

"Each of our organizations regularly

records when and where right whales are sighted," said NMFS regional administrator Dr. Andy Rosenberg. The observers then warn vessels of the whales' presence with marine radio alerts.

Similar overflights are planned for later this spring over the Great South Channel.

## Massachusetts tackles fishing gear dangers

In another move to protect the whales, a legal challenge in Massachusetts prompted the Commonwealth to develop a state fisheries plan calling for a ban on use of gill nets from January through May in the portion of the critical habitat that includes most of Cape Cod Bay.

The plan also calls for modification of other fishing gear to reduce the likelihood that whales will become caught in lines.

Fishing associations, state agencies, and environmental groups are also collaborating on a project using revenues from the sale of special-edition automobile license plates to help test additional fishing gear modifications.

Should a whale become entangled in fishing gear despite these precautions, a first-of-its-kind Rapid Response Team of scientists is prepared to travel to the site and free the creature.

# Oil spill strategies: A collaborative effort

■ Continued from page 1

The oil industry has become "far more dedicated to taking safety precautions than ever," agreed Green. "Fines are getting larger and cleanup costs are going up," he observed.

Nevertheless, recent oil spills in Portsmouth, New Hampshire, and Portland, Maine underscore the need for local and federal agencies to be prepared for potentially disastrous incidents. Some environmentalists urge that the best way to reduce the potential problems caused by spills is to reduce oil consumption.

Officials, however, continue to emphasize planning, as oil consumption is unlikely to decrease enough in the near future to eliminate the threat of spills.

## CANUSLANT simulates joint response

Since 1974, Canada/US/Atlantic [CANUSLANT] exercises have taken place every two years with the intent of preparing US and Canadian government agencies and other relevant parties to effectively handle oil tanker spills that take place in international waters.

The location of the exercises alternates between the two countries, and the programs are developed to provide as realistic a scenario as possible.

Participants in CANUSLANT include the Canadian and US Coast Guards; Environment Canada, and the US Environmental Protection Agency; other federal, state, and provincial agencies with environmentally-related mandates; and industry, non-governmental, and citizens' organizations.

CANUSLANT does not lobby for or pass regulations, explained Lieutenant Commander Tom Walker of the First Coast Guard District Office in Boston. "It's strictly a joint response plan for dealing with cross-border incidents," he said.

According to Brad Marshall, Director of Regional Services and Enforcement for the New Brunswick Department of Environment, CANUSLANT helps the two countries share resources and "get around a lot of the red tape in times of emergency."

Lt. Jeff Gafkjen, Chief of Response and Planning at the Coast Guard's Portland, Maine Marine Safety Office, said participants in the most recent exercise focused on establishing a joint US/Canadian command post.

"We decided to treat the Gulf of Maine as one ecosystem and forget the political border and establish one response organization throwing in the resources of both nations," he said.

The two governments' procedures differ with regard to licenses, permitting, liability issues, cross border worker issues, terminology, communications, and other elements, noted Green. CANUSLANT helps work through those differences before a crisis is under way, he said.

Last year, some CANUSLANT participants supplemented their exercise with real life experience. The day after the exercise ended in New Brunswick, the tanker *Julie N.* hit a bridge in Portland Harbor, Maine, spilling 170,000 gallons [643,518 liters] of oil.

Marshall said CANUSLANT was not invoked because the spill did not threaten international waters, but he noted that some Canadian technicians who had been participating in the simulation immediately traveled to Maine to help with the spill response there.

## Spill's size not sole indicator of severity

According to environmental agency officials, the number of gallons of oil dumped into the ocean during a spill isn't the only determining factor in assessing its harmfulness to the environment.

Other important considerations are the spill's location, the type of oil spilled, time of



Photo: Cheryl Seavey/Friends of Casco Bay

Staff from Friends of Casco Bay and Seacoast Ocean Services deploy a boom designed to contain spilled oil in Portland Harbor, Maine, following the *Julie N.* oil spill there last September.

year, weather, winds, and currents. All of these factors can influence how fast and how far the oil travels, determining how much land and water it affects, and how much of it can be recovered.

Some types of oil float, while others sink. Walker said techniques for handling the latter type of oil are still being developed.

The promptness with which the response begins also plays a role in determining how successfully the spill is contained.

Maine DEP's Sait noted that most marine terminals are now equipped with permanent oil containment booms that are placed around a vessel as a precautionary measure as soon as it arrives.

## Wildlife, environment suffer harmful effects

Oil that has spread through the marine environment can coat the feathers of sea birds, ruining their insulative properties so that the birds can't stay warm or dry. And, as they preen their feathers, the birds ingest toxic substances in the oil.

If the oil contaminates the surface of the birds' eggs during incubation, their chicks may not be able to hatch.

Toxic substances in oil can contaminate several levels of the food chain, affecting species from microorganisms to mammals.

Oil also damages fragile salt marsh vegetation and can be incorporated into sediments and then leach out over the years, causing chronic low-grade contamination of



Photo: Suzy Fried/Gulf of Maine Times

Steve Jones of the University of New Hampshire's Jackson Estuarine Laboratory gathers mussel samples from Dover Point, NH to be tested for organic contaminants to determine an oil spill's effects on water quality.

the marine environment.

But experts note that, given time, the marine environment can recover from some of the damage caused by oil spills, though others debate how complete or successful this recovery can be.

## Spills carry costs for marine-related economy

The fishing industry suffers following an oil spill when fin fish are either directly contaminated, making them unsaleable, or when their spawning areas are damaged. Shellfish can also be rendered worthless when a spill contaminates the areas where they are harvested.

Fishermen's boats, dirtied by spills, must be cleaned so they don't spread pollutants into uncontaminated waters.

Tourist economies suffer when cruise operators and other marine-related recreational outfits have to temporarily suspend their businesses following a spill, or when beaches become coated with oil.

John Sowles, Director of the Maine DEP's Marine Program, noted that the government agency assigned as trustee following an oil spill determines how much damage has been caused using the Natural Resource Damage Assessment process.

The party identified as responsible for the spill — or its insurer — is then responsible for paying for all damages. "The difficult part is coming up with the figures," said Sowles.

## Agencies not the only ones involved in spill response

Non-governmental organizations and individual volunteers often participate in monitoring water quality following a spill, cleaning oiled birds, and other tasks.

Steve Jones, Research Associate Professor of Natural Resources at University of New Hampshire's Jackson Estuarine Laboratory, in Durham, NH, oversees the six-year-old Gulfwatch program.

Sponsored by the Gulf of Maine Council on the Marine Environment, Gulfwatch monitors 62 sites in the Gulf watershed's five jurisdictions — Nova Scotia, New Brunswick, Maine, New Hampshire, and Massachusetts.

Following an oil spill, Gulfwatch collects blue mussel samples from relevant sites and analyzes them for petroleum-related organic contaminants, Jones said.

Researchers can then compare these results with information on samples taken before the oil spill, and with data collected from samples collected later to see recovery progress, he said.

Sowles' agency uses data collected by Gulfwatch and said the program is "not affected by catastrophic events but it is critically valuable in enabling anyone who wants

to assess those critical events in putting them into long-term perspective."

## Clean-up methods vary

Since no two spills ever occur under identical conditions, "It's hard to have protocols in terms of time frames for removing oil from the water," said Sait.

Several methods can be used to contain spilled oil — if it is the type that floats on the water's surface — including using floating booms to block the oil's flow; and porous, sorbent booms and barriers, which absorb the moving oil.

Recovery of floating oil can also be undertaken using skimmers, which mechanically remove oil from the water's surface; or a sweep system, which collects the oil, then pumps it into storage tanks.

Sorbents used to absorb trace amounts of oil include organic substances like peat moss or sawdust, and synthetic materials such as polypropylene, polyester foam, polystyrene, and polyurethane. In either case, the material is applied to the spill by hand and recovered with rakes, nets, or other tools.

Chemical dispersion of the oil involves spraying detergent-like material onto the spill to break it down. This method is not used near biologically sensitive areas.

Bioremediation involves applying oil-eating bacteria to the spill to break it down and disperse it.

Cleaning or restoring shorelines is one of the more difficult tasks of responding to a spill.

Hydraulic dispersion uses high- or low-pressure water hoses to wash oil from sediments, rock surfaces, shore vegetation, marshes, and man-made structures.

Steam-cleaning can be used on rocks and man-made structures.

Sand beaches can be graded and scraped free of oil, although this method doesn't usually work for pebble and cobble beaches, and can cause erosion.

According to Green, recovered oil must be either disposed of or refined or recycled for future use. Oil can be burned on the surface of the water if it is thick enough, or it can be removed from the water and burned in boilers, he said.

In some cases, cleanup of oil spilled in sensitive environments is left to nature. Clean-up crews walking or driving onto oil-coated salt marshes or mud flats can push the oil farther down into marsh grasses or sediments. This can cause more damage than leaving the clean-up to natural processes such as storms, waves, and seasonal changes.

But natural recovery processes can take years, and are not always completely successful, making prevention the most effective means of controlling oil spill damage.

# Agencies to open Petitcodiac River Causeway on trial basis

■ Continued from page 1

part of the Gulf of Maine.

The 3,400-foot (approximately 1036-meter) causeway was built in 1968 to prevent flooding of agricultural lands, provide road access across the river, and create a recreational lake. Five water control gates regulate tidal flow from the Bay of Fundy.

Local environmental organizations say that, because the causeway's gates are closed most of the time, the exchange of freshwater and saltwater and their different nutrients is prevented, which has disrupted the regional ecosystem.

## Causeway opponents cite environmental impacts

Environmental groups, along with DFO, blame the dam for reducing or eradicating several once-plentiful fish species, and favor opening the gates full time.

The causeway was designed with vertical slots to allow fish passage, but according to DFO, the fishways have proven ineffective, even with subsequent renovations.

During the trial, scheduled to begin in April 1998, one of the causeway gates will be opened a total of four hours daily to allow fish to migrate, in the hope that the river's natural ecosystem will begin to restore itself.

George Finney, Director of EC's Conservation Branch for the Atlantic region, explained that since the causeway was completed and maintained with its gates mostly closed, silt in the water column has increased, and sedimentation in the mud flats has changed, which has reduced the availability of saltwater mudshrimp — the principal food of the semi-palmated sandpipers that migrate through the area.

"We're not convinced it can be attributed to dams, but we've got an eye on that

as a potential factor," he said.

Opponents of the trial say uncertainty about whether reduced fish populations and other environmental effects can be attributed to the causeway is the very reason the trial should wait until an EIA is completed. But according to John Ritter, Manager of the DFO's Diadromous Fish Division, salmon, American smelt, alewife, striped bass, shad, and trout were all plentiful in the Petitcodiac before the causeway was built.

Now those stocks are either severely depleted or completely gone, he said. DFO favors restoring free flow so fish can migrate back and forth from the sea, Ritter said.

## Opening would also cause environmental impacts

The trial opening will virtually drain the headpond above the causeway, noted Michael Sprague, Manager of the DOE's Water Resources Monitoring Section.

Residents who live on its shores maintain that the lake's recreational values make it an economic asset to the community.

They also point out that the lake ecology includes wildlife that would be displaced if the gates are opened, allowing Bay of Fundy Tides to fill the headpond with silt.

Residents on the headpond's shores are concerned that the additional tide flow generated during the trial opening will cause serious problems, including health risks.

Victor McLaughlin of the Lake Petitcodiac Preservation Association said potential erosion could damage Moncton's old landfill; expose water supply lines installed across the causeway and sewer lines along the riverbanks; and damage private property.

But DOE's Sprague said the trial will stop if problems occur. Erosion prevention

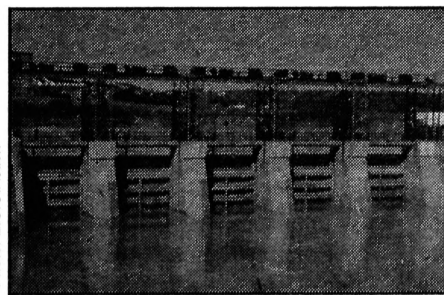


Photo: E.C.O. Action

**The Petitcodiac River Causeway's five water-regulation gates have been mostly closed since its construction 30 years ago. Beginning in April 1998, one of the gates will be opened for four hours daily on a trial basis.**

measures will begin as soon as snow and ice along the river have melted this spring, he noted.

Alma Fisherman's Association Chairman Jim Wood said the causeway's mostly closed gates have reduced silt in the upper Bay of Fundy, improving breeding ground for lobsters and scallops. His group wants the causeway left alone until comprehensive study justifies any change.

Lake Petitcodiac Preservation Association President Edgar Mitton said his group agrees. And the town of Riverview is considering legal action to demand an EIA, said Mayor Dave Richardson.

## River advocates urge immediate action

Julia Chadwick, an organizer of Friends of the Petitcodiac, a coalition of Moncton-area environmental groups who want the causeway gates opened full time, described the 1998 project as an "extremely conservative approach."

She said such a strategy may be necessary, but added, "I'm quite concerned that it's going to be very difficult to see any biological changes because a seven-month period is not very long."

Some opponents of the trial agreed that it may not yield enough information, and said that is why an EIA should be done first. But Sprague emphasized that information gathered during the trial would provide a starting point for such a study.

Nevertheless, supporters of a free-flowing river voiced skepticism that the trial will occur at all, predicting that its coincidence with the federal election season will prompt officials to shelve the controversial action once again.

Sprague said extended debate made it impossible to complete erosion prevention measures and still begin the trial this spring.

Chadwick, however, characterized the postponement as a "political decision made at a provincial level" with Gulf-of-Maine-wide ramifications for shorebird and anadromous fish (those that migrate from the sea to spawn in fresh water) habitat.

Friends of the Petitcodiac maintains that the trial must take place this year to allow salmon now in the river to reach the ocean.

According to Chadwick, the last salmon caught in the causeway's fishway were captured in 1992 and taken to a hatchery. The resulting young salmon — the last of a genetic strain found only in the Petitcodiac — must find their way back to ocean this year "or that's the end of them," she said.

Michel LeBlanc, former Petitcodiac River campaign coordinator for University of Moncton's Ecoversite, said that group may pursue legal action to force the trial to take place this year.

# Solar Aquatics: Greening up sewage treatment

**BEAR RIVER, Nova Scotia** — A decidedly unglamorous part of the infrastructure in most communities, sewage treatment has attained star quality here.

Bear River's two-year-old Solar Aquatic™ treatment plant last November received one of 15 international awards for excellence in environmental protection and enhancement from the Waterfront Center in Washington, DC.

The non-profit education corporation focuses on inland and coastal urban waterfront issues.

In 1995, the Bear River plant also received a Visionary Award from the Gulf of Maine Council on the Marine Environment, and was recognized at the G-7 summit in Halifax.

Designed as a greenhouse and built in Bear River's downtown area, the facility's aesthetic appeal and environmental approach have made it a tourist attraction and educational showcase, helping revitalize the waterfront, and drawing worldwide attention, said Annapolis County Councillor Bob Johnstone.

But celebrity aside, the plant meets the community's very down-to-earth need to collect and treat the sewage generated by its residents.

Applied Environmental Systems [AES], the Halifax firm that oversaw construction of the plant, acquired the license to the Solar Aquatic process for Eastern Canada from Ecological Engineering Associates [EEA] of Marion, Massachusetts.

## Process treats to drinking water quality

Traditionally, treatment of sewage and wastewater is described in terms of three levels. Primary treatment uses set-

ling and screening methods to remove solids. Secondary treatment uses an aeration process to add oxygen into the sewage to speed decomposition. Tertiary treatment removes higher levels of organic and solid materials, nitrogen, and phosphorus from the wastewater and disinfects it. Tertiary treatment brings the effluent to drinking water standards.

Paul Klaamas, an environmental engineer in Environment Canada's [EC] Environmental Protection Branch, said sewage treatment facilities on property owned by the Canadian Government must treat to the secondary level, but in other cases, "It's up to the provinces."

In New Brunswick and Nova Scotia, most sewage is treated to the primary or secondary level, then discharged into water bodies, said Al Smith, head of the Regional Habitat Program for EC's Canadian Wildlife Service, Atlantic Region. But currently, "There is no treatment whatsoever for the city of Dartmouth/Halifax," he acknowledged.

In the United States, the federal Clean Water Act requires that sewage discharged into water bodies be treated to the secondary level, said Carol Kilbride, spokeswoman for the US Environmental Protection Agency's [EPA] Center for Environmental Industry and Technology in Boston.

## Greenhouse approach affordable, appealing

According to AES, the Solar Aquatic method can treat wastewater to tertiary quality levels cheaper than traditional methods, without chemicals, and producing less residual sludge.

The wastewater collected at the Bear River plant is funneled through the

plant's greenhouse, which contains a system of solar tanks, a solar pond, and a constructed marsh designed to duplicate a natural ecosystem.

Plants, microorganisms, snails, and fish that live there consume most of the organic nutrients contained in the waste. The small amount of sludge generated by the process is composted on site.

"The place is filled with racked vegetation growing in this sewage," said Andrews. "You don't think you're inside a treatment plant."

The Solar Aquatic method can efficiently treat sewage flows of 20,000 to 100,000,000 gallons [approximately 74,000 liters to 38.5 million liters] per day — the amount generated by an average small community — according to AES, which also notes that the Solar Aquatic process appears more able than traditional sewage treatment methods to handle large amounts of toxic substances.

The method uses a large number of diverse organisms that can act as backups should one type of "friendly bacteria" be killed by a toxic substance.

## System may expand to neighboring county

Serving 63 homes on the Annapolis County side of the river, the plant could begin to serve an additional 35 homes on the river's Digby County side this spring under a proposal to extend the system's main collection line, Johnstone said.

Previously, raw sewage from the village's homes and businesses was dumped directly into the river, and groundwater contamination from leaky septic systems was spreading among the town's small lots.

But the county couldn't afford conventional sewage treatment options, said

Johnstone. Construction of a lagoon to hold the wastewater alone would have cost about \$1 million, aside from piping costs and the cost of building a plant to treat the collected sewage, he said.

The Solar Aquatic facility cost approximately \$600,000, including installation of a system of pipes to collect the wastewater.

Not only is the Bear River plant working, but so is another, much larger facility constructed in Beaverbank on the site of a nursing home complex, Andrews said.

## Method addresses coastal water quality

According to Susan Peterson, president of EEA, which owns the rights to the Solar Aquatic technology, since the company was established in 1988, it has built 15 plants in the US, Canada, and Mexico that use the process to treat sewage, food processing waste, septic waste, and leachate — the liquid runoff from landfills.

According to Peterson, enormous population growth since the 1970s has strained water resources and coastal environments in small towns, leading to "measurable coastal quality degradation." EEA's Solar Aquatics offer a more affordable, appealing method to address this issue, she said.

Kilbride agreed that coastal water quality in the Gulf of Maine has suffered. "Septic systems are a major problem along all of our coastal area," and faulty inland systems can cause groundwater problems that carry contamination to coastal waters as well, she said.

## GULF LOG

### NH towns, USF&WS collaborate on Great Bay salt marsh restoration

**Newington, New Hampshire** — Twenty-five acres of degraded salt marshes in the Great Bay National Wildlife Refuge are the target of a restoration project begun last November by the US Fish and Wildlife Service [USF&WS], neighboring towns, and a Maine-based contractor.

The joint efforts are meant to provide habitat for invertebrates and migratory birds; reestablish normal tidal flow; restore water levels; reestablish native vegetation; and halt costly mosquito spray programs by restoring mosquito-eating fish in four environmentally important coastal marshes.

Restoration work under way at Herods Cove, Stubbs Salt Marsh, Woodman Point, and Welsh Cove is funded by a USF&WS Challenge Grant, the North American Waterfowl Management Plan, and matching contributions from the towns of Greenland, Hampton, Newmarket, and Newington.

The USF&WS provided a trained equipment operator and specialized lightweight equipment designed for use in fragile salt marshes, and developed the projects jointly with SWAMP, Inc., a York, Maine-based contractor.

According to USF&WS biologist Jan Taylor, drainage ditches constructed in the past to remove mosquito breeding areas often improved mosquito habitat instead. She said draining of marshes also ruined habitat that had supported mummichogs, leading to a noticeable increase in the marsh mosquito population.

Draining of coastal marshes for mosquito control, salt hay production and other kinds of development also led to a decline in wildlife dependent on wetlands for breeding, migration, and wintering habitat, Taylor noted.

According to the USF&WS, the methods being used to reverse these effects have proven successful in other southern New Hampshire coastal communities, as well as Massachusetts and Connecticut.



Photo: Save Wetlands and Manage Pests, Inc.

As part of the Great Bay salt marsh restoration project, an excavator creates a pond hole to restore open water habitat to the marsh surface.

*Management of the St. Croix Estuary Area*, the plan addresses a number of land and water resource issues.

One of several major estuaries within the Bay of Fundy, the St. Croix system is the only international estuary on North America's Atlantic Coast. It spreads over parts of southwest New Brunswick and "Downeast" Maine.

Because of the region's economic diversity, "There is no one major threat to the environmental health of the St. Croix Estuary, but rather a number of smaller challenges,"

area without wiping out existing economic activities.

These include more aggressive pursuit of municipal and rural wastewater treatment, pollution prevention, and water quality monitoring; increased public education about the area's sensitivity; and environmental assessments of activities that affect the system, including salmon aquaculture, rockweed harvesting, and scallop and urchin dragging.

The plan also proposes infrastructure improvements to accommodate increased tourism and recreation.

SCEP hopes to begin implementing its plan in April following public meetings on the draft document, said Casey.

Public comment is also being sought on a proposal for a provincial park being developed for the St. Croix River system, Natural Resources and Energy Minister Alan Graham announced in December.

In 1995, SCEP received a Visionary Award from the Gulf of Maine Council on the Marine Environment for completion of a full-scale monitoring program for the estuary.

### MA awards more than \$350,000 in stormwater grants

**Boston, Massachusetts** — Seven coastal Massachusetts communities have received a total of \$369,575 in grants to address roadway runoff and other stormwater pollution problems.

The Massachusetts Executive Office of Environmental Affairs [EOEA] awarded the grants in October under the Coastal Pollutant Remediation [CPR] Program.

EOEA Secretary Trudy Coxe announced awards to Chatham, Ipswich, Marblehead, Nantucket, Revere, Seekonk, and Wareham in amounts from \$15,000 to \$111,000.

"The enthusiastic response to the CPR program shows that towns recognize how fundamental clean water is to local industries like traditional shellfishing, to green business like aquaculture and tourism, and to overall quality of life," said Coxe.

Administered through EOEA's Massachusetts Coastal Zone Management Office [MCZM], the CPR Program will appropriate up to \$4 million over five years for projects that reduce stormwater runoff from roadways and other transportation-related nonpoint pollution sources.

According to MCZM Director Peg Brady, "The main goal of the program is to control sources of pollution that are directly impacting important environmental resources such as shellfish beds. The projects funded this year clearly meet this goal and will make a big difference for our coastal environment."

Projects the grants will fund include installing catch basins and treating runoff that is contaminating shellfish beds; reducing sedimentation from storm drain discharge that is burying critical rainbow smelt spawning habitat; and pinpointing causes of stormwater degradation.

### Draft plan proposes protection measures for Merrimack River watershed

**Merrimack, New Hampshire** — Proposals to reduce pollution, conserve water, and monitor water quality highlight a draft management plan released last November by the Merrimack River Initiative [MRI].

The group planned to release the final draft of the plan, *Watershed Connections*, by early March, according to Carolyn Jenkins of the New England Interstate Water Pollution Control Commission [NEIWPCC].

The 5,010-square-mile [13,026-square-kilometer] Merrimack River watershed lies within the Gulf of Maine watershed, covering areas of New Hampshire and Massachusetts.

According to MRI, the Merrimack River watershed supports more than two million people who rely on it for sewage disposal, electricity generation, recreation, fishing, and industrial purposes. The watershed also supplies drinking water for increasing numbers of communities whose other water supplies are becoming contaminated.

The draft plan's recommendations include reducing nonpoint source pollution; cutting the impacts of combined sewer overflows; preventing water quality degradation; and encouraging agencies, businesses, and the public to conserve water.

The draft plan also calls for joint efforts by government agencies in both states to address watershed issues; and measures to educate communities about the watershed and to encourage them to participate in restoration and protection efforts.

MRI originated in 1988 from an agreement between the US Environmental Protection Agency [EPA], the state of New Hampshire, the Commonwealth of Massachusetts, and NEIWPCC to collaborate on water quality issues. MRI participants also include communities and businesses.

### Casco Bay Plan details comprehensive management approach

**Portland, Maine** — The recently completed Casco Bay Plan proposes strategies for pollution prevention, water quality improvement, and protection and restoration of fish and wildlife habitat in Casco Bay.

Hundreds of citizens, scientists, business leaders, nonprofit agency representatives, and government officials collaborated on identifying the most significant environmental problems affecting Casco Bay, investigating their causes, and developing a strategy for the Bay's protection.

The plan focuses on five key issues: stormwater management; clam flats and swimming areas; habitat protection; toxic pollution; and stewardship of the bay. Actions to address these issues fall within the categories of public education, technical assistance, regulation and enforcement, planning and assessment, and monitoring of changes.

At a ceremony last fall, Maine Governor Angus King and US Environmental Protection Agency Region 1 Administrator John DeVillars endorsed the Casco Bay Plan along with government agencies, municipalities, and nonprofit groups.



Photo: St. Croix Estuary Project

New Brunswick resident Stan Hart collects a water sample in the St. Croix estuary.

### St. Croix management plan calls for aggressive protection measures

**St. Stephen, New Brunswick** — Water pollution continues to threaten the St. Croix River estuary ecosystem, necessitating more aggressive protection measures, according to a draft summary of an environmental management plan.

The St. Croix Estuary Project Inc. [SCEP], a cross-border, non-governmental, community-based environmental planning organization, released the draft in November.

The document cites some improvement in the system's water quality in recent years, but says more is needed. Titled, *Caring for Our Coast: A Plan for Community*

according to SCEP Chair Paul Casey.

The group's management proposal results from a written agreement with Environment Canada [EC], that country's federal environmental agency, which is providing support to SCEP through the Atlantic Coastal Action Program [ACAP]. Casey noted.

ACAP is designed to encourage community members to address local environmental, economic, and social issues said Doug Bliss, EC's representative on the Estuary Project's Board of Directors.

The St. Croix system is one of 13 ACAP sites, and one of six that are in the Gulf of Maine watershed.

The draft management plan proposes 50 specific actions to help protect this sensitive

# Council Currents

## News from the Gulf of Maine Council on the Marine Environment

### New plan: Collaborative action needed in key areas

**FREDERICTON, New Brunswick** — Proposals for region-wide collaborative efforts by public- and private-sector partners highlight a new five-year action plan adopted by the Gulf of Maine Council on the Marine Environment at its semi-annual meeting in December.

The plan provides direction for addressing five key priorities relating to the 69,115-square-mile [165,185-square-kilometer] international Gulf of Maine watershed.

According to Council Chairman Bernard Theriault, who is also minister of New Brunswick's Department of Fisheries and Aquaculture, the plan "builds on our accomplishments over the past several years."

Established in 1989 by the governments of Nova Scotia, New Brunswick, Maine, New Hampshire, and Massachusetts, the Council convenes efforts to maintain and enhance environmental quality in the Gulf watershed.

The new action plan describes the Council's five priorities as restoring shellfish habitat; promoting restoration of groundfish resources; addressing ecosystem and public health effects of toxic contaminants in the marine food chain; protecting and restoring regionally significant coastal habitats; and reducing marine debris.

"One new approach the Council is taking to support these five focus areas is through a funding program for non-government organizations working to improve the marine environment in their respective regions," Theriault said.

Since the Council's 1991 action plan, many effective partnerships have been established on both sides of the international border, he noted.

### Council seeks role in UN efforts to combat marine pollution

**Washington, DC** — The Gulf of Maine Council on the Marine Environment anticipates joining the UN's Commission for Environmental Cooperation [CEC] in efforts to combat marine pollution.

That action would be pursued under the guidance of the United Nations' Global Program of Action for the Protection of the Marine Environment from Land-Based Activities [GPA].

More than 100 nations (including Canada, the US, and Mexico) adopted the GPA at a 1995 Washington, DC conference sponsored by the United Nations Environment Program [UNEP] in response to a recommendation made at the 1992 Earth Summit in Rio de Janeiro, Brazil.

The GPA is a guide for national and regional authorities for controlling marine pollution caused by activities taking place on land.

The CEC is facilitating cooperative efforts among organizations in marine and coastal areas of the US, Canada, and Mexico to implement the GPA, and has chosen the Gulf of Maine and the Southern California Bight as pilot projects, said Dr. Joseph H. Arbour, Senior Advisor for Priority Issues in Environment Canada's [EC] Environmental Protection Branch.

The Gulf of Maine Council hopes a partnership with the CEC will bolster its efforts in support of the GPA, Arbour said.

He and Massachusetts Coastal Zone Management Office Director Peg Brady, who is also a Council member, co-chair the ad-hoc Land-Based Source [LBS] Committee set up by the Council to expedite a partnership with the CEC. That process is under way, Arbour said.

According to UNEP, human activities on land cause approximately 80% of all

marine pollution. By the year 2000, 4.5 billion people, or 75% of the world's population, will live within 40 miles [60 kilometers] of the coast, intensifying these problems, the group states.

An effort known as the Gulf of Maine Project, administered by the US National Oceanic and Atmospheric Administration [NOAA] with the Council's support, is already implementing parts of the GPA by identifying point and nonpoint land-based sources of marine pollution in the Gulf, Arbour explained.

### Council awards nearly \$100,000 to NGOs

**FREDERICTON, New Brunswick** — The Gulf of Maine Council on the Marine Environment last December awarded nearly \$100,000 to 14 non-governmental organizations in Canada and the US for 1997 projects.

The US Environmental Protection Agency [EPA] provided the funds for those efforts, which are intended to further the Council's mission to maintain and enhance environmental quality in the Gulf and to meet new action plan objectives by 2001.

These projects include opening shellfish beds now closed to harvesting; restoring regionally significant coastal habitats; reducing toxic contaminant levels in the sediments of three coastal bays; and reducing the amount of marine debris along the Gulf's shores.

Council Chairman Bernard Theriault, also minister of New Brunswick's Department of Fisheries and Aquaculture noted, "Building community involvement and support at the local level for protecting the Gulf and its watershed is an integral component of each project we are supporting through our NGO grant program."

- The following groups received grants:
- Partners with the Meduxnekeag, Woodstock, NB - \$10,000 to develop an informational video.
  - St. Croix Estuary Project, St. Andrews, NB - \$1,900 for toxic contaminant sampling and a report recommending actions.
  - St. Croix International Waterway Commission, St. Stephen, NB and Calais, ME - \$7,400 to facilitate the opening of clam beds.
  - Fundy Fixed Gear Council, Tiverton, NS - \$9,000 to coordinate research and development of community-based and ecosystem-based fisheries management.
  - Beals Island Regional Shellfish Hatchery, Beals, ME - \$10,000 for outreach for a Maine coast-wide demonstration clam farm project.
  - Maine Audubon Society, Falmouth, ME - \$8,953 for a public education program on the Coastal Method for the Inventory and Evaluation of Tidal Marshes.
  - Maine Island Trail Association, Rockland, ME - \$3,500 for a brochure promoting the Fragile Lands Distribution Project.
  - Planning Alliance of the Damariscotta River Estuary, Damariscotta, ME - \$4,430 to promote plastics recycling.
  - Conservation Law Foundation, Boston, MA - \$10,000 for a conference on the impacts of fishing gear on the sea floor.
  - Harborlife, Inc., Nantucket, MA - \$8,000 to develop cost-efficient eelgrass restoration methods in Nantucket Harbor.
  - Ipswich River Watershed Association, Ipswich, MA - \$10,000 for an education project on preventing contamination of water by animal waste.
  - Parker River Clean Water Association, Byfield, MA - \$6,132 for a Tidal Crossing Assessment and public out-

- reach program on salt marsh habitat.
- Salem Sound 2000, Salem, MA - \$7,500 for a volunteer pollution-control program.
- Saugus River Watershed Council, Saugus, MA - \$1,135 for public outreach for a salt marsh restoration project.

### Visionary Awards recognize efforts on Gulf's behalf

**FREDERICTON, New Brunswick** — The Gulf of Maine Council on the Marine Environment honored ten recipients in December with 1996 Visionary Awards for their "outstanding commitment" to protecting the coastal environment in the Gulf of Maine region.

Since 1991, the Council has recognized one individual and one organization annually from each of the five provinces and states bordering the Gulf of Maine.

The Council announced the following winners at its semi-annual meeting in Fredericton last December:

- New Brunswick naturalist Dr. Mary Majka, a founder of the New Brunswick Federation of Naturalists, for her life-long commitment to preserving and enhancing the upper coastal region of the Bay of Fundy.
- The New Brunswick Museum, for its conservation education programs on the Bay of Fundy and the Gulf of Maine.
- Dr. Derek Davis of Nova Scotia, an environmental educator, for his years of work in conservation, including developing a province-wide environmental education program.
- The Digby East Fish and Game Association of Nova Scotia, for raising awareness of fish and wildlife issues, working to reduce potential damage from development, and working to protect and restore wildlife populations.
- Sherman Hoyt of St. George, Maine, for his work to open shellfish beds and train clam harvesters to identify pollution problems.
- The Gulf of Maine Aquarium of Portland, Maine, for innovative education programs on aquatic environments.
- Sharon Meeker, a New Hampshire marine education specialist, for advancing education of people of all ages about marine ecology and the Gulf.
- Mike Gowell and the Piscataqua Gundalow Project at Strawberry Banke Museum, in which the gundalow — a replica of a flat-bottomed sailing barge used from colonial times through the early 1900s — is used as an educational tool.
- Massachusetts Governor William Weld, for career-long leadership in Massachusetts' environmental issues.
- Reaching Out to Chelsea Adolescents [ROCA], for encouraging leadership in young people in Chelsea and Revere, Massachusetts, by involving them in coastal environmental projects.

### Great Marsh summit spurs action to protect resource

**WENHAM, Massachusetts** — Work is under way to restore and protect the Great Marsh following last year's summit funded by the Gulf of Maine Council on the Marine Environment and Massachusetts Coastal Zone Management [MCZM].

Attendees adopted a work plan to address degradation of the Great Marsh, which covers 20,000 acres [8,000 hectares] along the northern Massachusetts coast from west Gloucester to the New Hampshire border.

Massachusetts Audubon Society's [MAS] North Shore Conservation Advocacy Office, which hosted the summit and is coordinating the efforts of project teams, said these actions represent the first regional col-

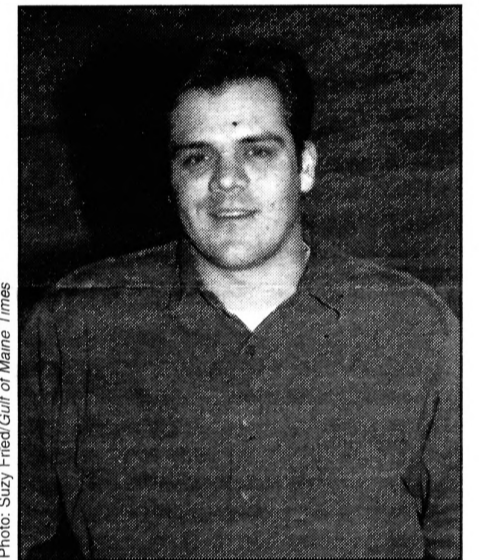
laboration to protect the largest contiguous acreage of salt marsh north of Long Island, New York.

According to MAS, summit attendees included federal, state, regional, and local officials; scientists; planners; teachers; students; and representatives of non-governmental organizations.

MAS noted that pollution problems and intensive land development are affecting the health of the marsh, parts of which are routinely closed to shellfishing. The group also stated that anadromous fish runs in the Parker, Merrimack, and Essex Rivers are severely reduced. Open space, wildlife habitat, and biological diversity are also disappearing at what MAS called "an alarming rate."

The work plan outlines steps for restoring and protecting the marsh, citing six goals: reopening closed shellfish beds; reducing stormwater pollution to shellfish beds; restoring and enhancing anadromous fish habitat; restoring degraded sections of the marsh; preserving critical resource areas around the marsh; and promoting conservation design practices.

### Sea grant fellow evaluates Gulf's coastal habitat programs



Sea Grant Fellow Chris Cornelisen

**BOSTON, Massachusetts** — The effectiveness of coastal habitat restoration programs in the Gulf of Maine is under study by a Coastal Zone Fellow based in the Massachusetts' Coastal Zone Management Office [MCZM] since October 1.

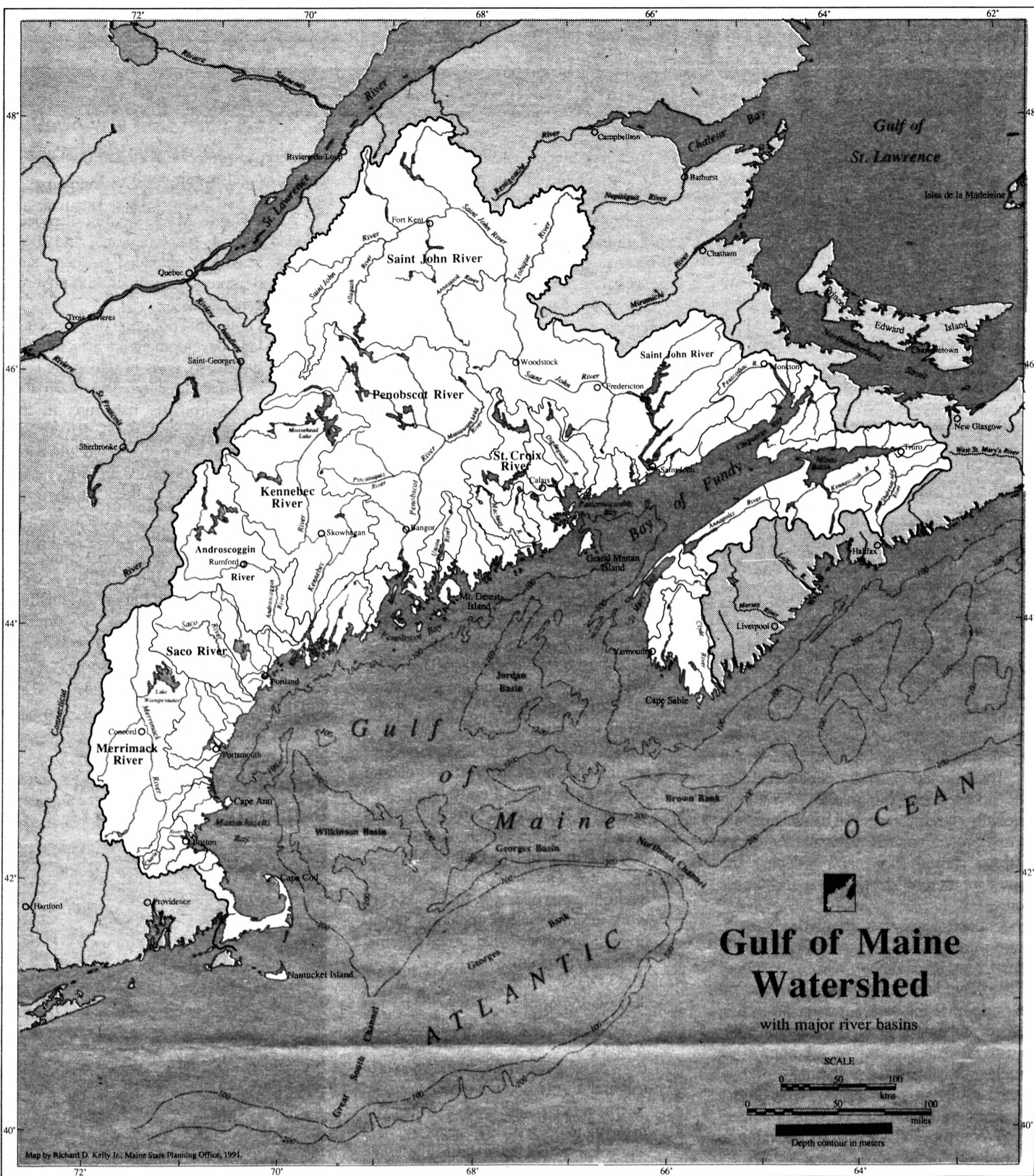
Christopher Cornelisen is one of six fellows working under a new program funded by NOAA's Sea Grant and Coastal Services Center Programs and the host states, according to Susan Snow-Cotter, MCZM Ocean Policy Coordinator.

The program matches qualifying, recently graduated Masters, professional degree, and Doctoral students with state coastal zone management positions around the US, said Snow-Cotter. The fellow receives professional, on-the-job education and training opportunities in coastal resource and policy, while the host agency receives specific technical assistance.

Cornelisen's project encompasses Maine, Massachusetts, and New Hampshire.

A graduate of Drake University in Des Moines, Iowa with a degree in Biology, Cornelisen also holds a Master of Science Degree in Coastal Zone Management from Florida Institute of Technology. He worked as a marine educator for three years between his undergraduate and graduate study.

"We're thrilled to have someone of Chris' caliber working with us on such an important issue. It's quite a luxury to have this scale of research done at a state agency," Snow-Cotter said.



Map: Richard D. Kelly Jr., Maine State Planning Office 1992



## Gulf of Maine Council on the Marine Environment

### 1997 Members

Wayne Adams, Minister  
Department of Environment  
Halifax, Nova Scotia

Robin Alden, Commissioner  
Department of Marine Resources  
Augusta, Maine

James Barkhouse, Minister  
Department of Fisheries  
Halifax, Nova Scotia

Vaughn Blaney, Minister  
Department of Environment  
Fredericton, New Brunswick

Peg Brady, Director  
Massachusetts Coastal Zone Management Office  
Boston, Massachusetts

Trudy Coxe, Secretary  
Executive Office of Environmental Affairs  
Boston, Massachusetts

Irene d'Entremont, President  
M.I.T. Electronics, Inc.  
Yarmouth, Nova Scotia

David Haney  
Director of Community and Economic Development  
MEG Asset Management, Inc.  
Londonderry, New Hampshire

Elizabeth Kay  
Environmental Communications Strategist  
Hull, Massachusetts

Edward MacLean, President  
Connor's Brothers Ltd.  
Black's Harbour, New Brunswick

Donald W. Perkins, President  
Gulf of Maine Aquarium Development Corp.  
Portland, Maine

Evan D. Richert, Director  
Maine State Planning Office  
Augusta, Maine

Jeffrey Taylor, Director  
Office of State Planning  
Concord, New Hampshire

Bernard Theriault, Minister  
Department of Fisheries & Aquaculture  
Fredericton, New Brunswick

Robert Varney, Commissioner  
Department of Environmental Services  
Concord, New Hampshire

### Federal Partners

Neil Bellefontaine, Director General  
Department of Fisheries & Oceans  
Halifax, Nova Scotia

David Fierra, Director, Office of Ecosystem Protection  
US Environmental Protection Agency - Region 1  
Boston, Massachusetts

George Finney, Director  
Environment Canada  
Sackville, New Brunswick

Ron Lambertson, Regional Director  
US Fish & Wildlife Service  
Hadley, Massachusetts

Col. Michael S. Meuleners, Division Engineer  
US Army Corp of Engineers  
Waltham, Massachusetts

Dr. Allen Peterson Jr.  
Senior Policy Advisor for International Relations  
Northeast Fisheries Science Center  
Woods Hole, Massachusetts

Larry Wilson, Marine Programs Directorate  
Canadian Coast Guard Base  
Dartmouth, Nova Scotia

## GULF OF MAINE FACTS

- The water surface of the Gulf of Maine measures 79,000 square kilometers/33,054 square miles.
- The total land area of the Gulf of Maine watershed is 69,115 square miles/165,185 square kilometers.
- Three US states and three Canadian provinces share the Gulf's watershed. Only the province of Quebec does not have Gulf of Maine shoreline; and only Maine is entirely within the watershed.

## Resources

### Coastal Zone '97

*Coastal Zone 97 The Next 25 Years: Charting the Future of Coastal Zone Management* is slated for July 1997 at the Park Plaza Hotel in Boston, Massachusetts. For details, call the Urban Harbors Institute at (617) 287-5570, or visit their new Web site at <http://www.nos.noaa.gov/cz97/welcome.html>.

### Gulf data for Web users

Documents, resource directories, and databases relating to the Gulf of Maine are available from the Environmental Data and Information Management System [EDIMS], overseen by the Gulf of Maine Council on the Marine Environment's Data and Information Management Committee [DIMC].

The Internet network offers information likely to be of interest to state and provincial planners, marine environment and resource managers, marine/ocean scientists and engineers, and others. To use EDIMS, visit <http://gulfofmaine.unh.edu/edims.html>.

### Gulf of Maine magazine

Profiles of citizens' efforts to protect habitats of the Gulf of Maine appear in the latest edition of *Our Common Heritage*, the magazine produced by the Gulf of Maine Council on the Marine Environment. This edition also explores the importance of Gulf habitats and profiles the Council's 1995 Visionary Award winners.

For a copy, call the Massachusetts Coastal Zone Management Information Line at (617) 727-9530, ext. 420 or E-mail your request and your mailing address to [mczm@state.ma.us](mailto:mczm@state.ma.us).

### Shellfish fact sheet

Prepared by the Nova Scotia Department of the Environment, *Shellfish Resources in the Gulf of Maine* provides an overview of the health of this Gulf resource. The fact sheet describes current shellfish and water quality monitoring efforts; the role of government agencies, volunteers, and partnerships in shellfish management; and the economic impacts of closing shellfish beds.

For a copy call (from Canada) (902) 424-5206 or (from the US) (603) 433-7187.

### Wild Gulf almanac

*The Wild Gulf Almanac: Educational Resources About the Gulf of Maine Watershed*, is designed to give teachers, students, and the public access to information and educational tools on the Gulf and its watershed.

For a copy, call The Chewonki Foundation at (207) 882-7323 or the US Fish & Wildlife Service Gulf of Maine Project at (207) 781-8364.

### New MA coastal zone brochure and map

*Protecting Natural Resources While Promoting Responsible Economic Development*, a new brochure from Massachusetts Coastal Zone Management [MCZM], describes their programs and includes a full-color, poster-sized map of the Bay State's coastal zone.

For a copy, call the MCZM Information Line at (617) 727-9530, ext. 420 or E-mail your request and your mailing address to [mczm@state.ma.us](mailto:mczm@state.ma.us).

### Woods Hole Sea Grant publications catalog

The Woods Hole Oceanographic Institute Sea Grant Program offers a comprehensive 80-page catalog listing nearly 600 marine science publications. For a copy, call (508) 289-2398 or E-mail your request and your mailing address to [seagrant@whoi.edu](mailto:seagrant@whoi.edu).

### ME Coastal Program guide

The Maine Coastal Program [MCP] has produced a new edition of *Sightings*, a guide to audio/visual materials on marine and coastal topics available on loan to schools, libraries, and other educational institutions. For a copy call (207) 287-5305, or E-mail [paul.dest@state.me.us](mailto:paul.dest@state.me.us).

### Nova Scotia Marine Affairs Directory

Compiled by the Marine Affairs Program at Dalhousie University, the *Marine Affairs Directory* lists organizations with interests and activities in the Nova Scotia marine sector. Copies are available by calling the Marine Affairs Program at (902) 494-3555.