Maine Coastline

News from the Maine Coastal Program Spring 2007

USF&WS

U.S. EPA

Toxic Pollution along Maine's Coast

The coast of Maine—with its stunning scenery, sparkling waters and boundless blue skies—appears to be a clean and wholesome place. The quality of waters in Maine's bays and estuaries has improved markedly since passage of the federal Clean Water Act in 1970. Recent studies in the Casco Bay Estuary Partnership report, *Toxic Pollution in Casco Bay,* suggest that contaminant levels in sediments are declining over time due to regulatory controls, manufacturing bans, and voluntary efforts at reducing pollution. Eagles and ospreys, once endangered by widespread use of the pesticide DDT, have experienced a heartening recovery (eagles will soon be "delisted" as a threatened species).

While the load of toxic chemicals entering Maine's coastal and marine ecosystems has diminished greatly in recent decades, these substances (see list on page 4) still compromise the health of many habitats and organisms. Pollutants that have entered Maine waters over the last century often persist for decades and break down over time into more hazardous compounds. Federal legislation has decreased pollution from industrial discharges, but toxic chemicals continue to come from atmospheric deposition and stormwater runoff (rainwater and snowmelt that carry pollutants from roads, construction sites, lawns, farms and landfills). And there are whole classes of "emerging contaminants" (such as pharmaceuticals, fire retardants, and personal care products) that could endanger aquatic ecosystems.

Over time, toxic chemicals tend to collect in the bottom sediments of estuaries and bays, with the highest concentrations often in harbors and ports, near the mouths of rivers, and in populous areas. The diverse array of plants, mollusks and small crustaceans that dwell in benthic sentiments serve as a food source for groundfish such as flounder, cod, lobsters and crabs. Contaminants can migrate up the food chain, becoming more concentrated with each step up the chain. Mammals and birds that feed toward the top of the marine food chain—such as humans, seals, eagles and loons—are most vulnerable to toxic exposure (accumulating what is known as a high "body burden" of certain chemicals). These chemicals can compromise their immune systems and disrupt hormonal activity, potentially causing cancer, adverse reproductive effects, and birth and developmental defects.

This issue of *Maine Coastline* looks at some recent findings on which toxic contaminants occur in Maine's nearshore environments and what their potential impacts may be.

Director's Column

A Tribute to Susan Snow-Cotter

If you are lucky, you have known people in your life who are "spark plugs." These individuals have true visions, passionate conviction, and a gift for inspiring others. Spark plugs look for opportunities, take on daunting challenges, and accomplish what most of us would have thought impossible.

The coastal management community lost one of our most radiant spark plugs when our colleague and friend, Susan Snow-Cotter, succumbed to Inflammatory Breast Cancer (IBC) this past December. Susan was most recently the director of the Massachusetts Coastal Zone Management Program and she represented Massachusetts on the Gulf of Maine Council on the Marine Environment.

As a coastal manager, Susan was involved in a wide variety of projects. It was in the area of ocean management, though, that she was making an indelible mark and receiving national and international recognition. Susan was undaunted by this vastly complicated issue, and focused clearly on proven approaches to comprehensive management: conserving critical habitats, siting development in optimal locations, and basing all decisions on up-to-date, high-quality data and information. Thanks in large measure to her efforts, the Massachusetts Legislature is now considering passage of the Massachusetts Ocean Act, the first such legislation in this country that spells out plans for developing a comprehensive management plan to balance use and protection of nearshore waters.

Susan's spark shown brighter than most because of her ability to balance work and play, her commitment to mentoring others, her humility and, above all, her devotion to family and friends. To read more about Susan's life and career, to learn about the innovative work of the Massachusetts Coastal Zone Management Program, and to inform yourself about IBC, please visit http://www.mass.gov/czm.

Whatever your passion in life, may your own personal "wattage" increase as the days lengthen and our Maine spring becomes another glorious Maine summer.

Kathleen Leyden
Director, Maine Coastal Program

Maine Coastline

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Martha Freeman
Director
Maine State Planning Office

Kathleen Leyden
Director, Maine Coastal Program

Theresa Torrent-Ellis
Communication, Education and Outreach
Maine Coastline Editor

Maine Coastal Program
State Planning Office
38 State House Station
Augusta, ME 04333
207-287-3261
1-800-662-4545
207-287-8059 (FAX)
info@mainecoastalprogram.org
www.mainecoastalprogram.org

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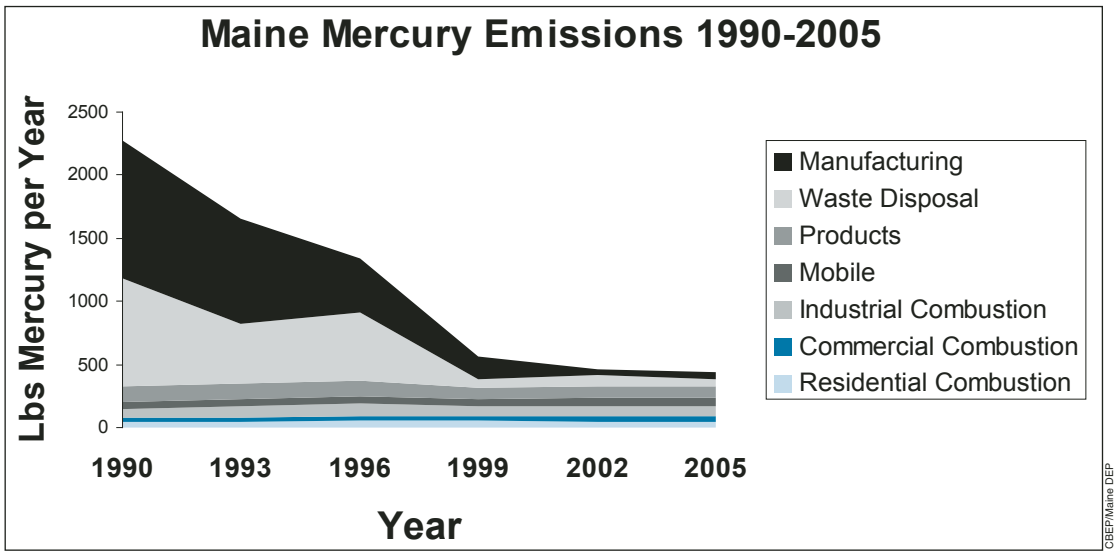
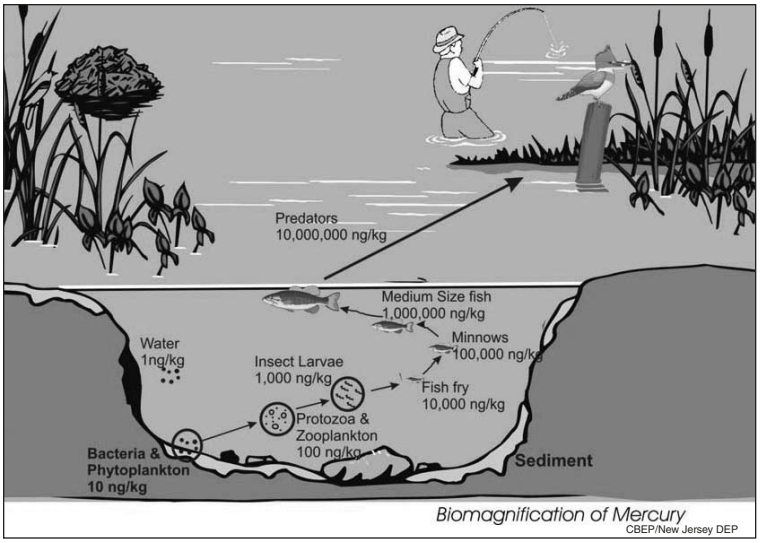
Mercury: A Continuing Source of Concern

Mercury, a heavy metal used in manufacturing, can become airborne through industrial emissions; combustion of coal, oil, wood and natural gas; and incineration of items that contain mercury. Mercury then falls back into soils and waters with rain or snow (wet deposition) or as gases and particles (dry deposition). "Once elemental mercury enters the environment," the *Toxic Pollution in Casco Bay* report notes, "bacteria can transform it into a highly toxic organic compound—methyl mercury—that is readily absorbed into living tissues. Methyl mercury can seriously damage the nervous systems, reproductive systems and kidneys of fish, birds and mammals."



Maine has taken major steps in recent years to reduce mercury pollution from manufacturing and waste disposal. However due to mercury's persistence, tendency to accumulate in organisms and continued release, it will likely remain a contaminant of concern for many years to come.

The Maine Department of Environmental Protection (DEP) conducts a field monitoring program to determine how much mercury is entering the environment through atmospheric deposition. Its monitoring sites, which are part of the national Mercury Deposition Network (MDN), include Bridgton, Greenville, Acadia National Park and, since 1998, Freeport (a site added with Casco Bay Estuary Partnership funding). Based on regional MDN data, wet deposition rates in Maine are similar to or slightly higher than those of surrounding states.



With each step up the food chain, concentrations of toxic contaminants like mercury can increase through a process known as "biomagnification." According to the new Toxic Pollution in Casco Bay *report, "the tissues of predatory freshwater fish near the top of the food chain may contain levels of methyl mercury that are 100,000 to 1,000,000 times higher than the concentration in the water."*

As reported in *Toxic Pollution in Casco Bay*, the two coastal sites consistently have had the highest deposition rates, probably due to higher rates of rainfall at the coast (but possibly also due to local coastal sources). Atmospheric deposition accounts for 85 to 92 percent of the overall mercury loading directly into Casco Bay (not counting nonpoint source runoff from tributary rivers and streams).

Researchers believe that the atmospheric load of mercury may be aggravated by polluted air masses from other regions (*e.g.,* those with coal-fired power plants), as well as local emissions. Scientists with the BioDiversity Research Institute in Gorham have found "high and pervasive" levels of mercury in the tissues of fish and birds throughout the New England states and Canadian Maritimes. The highest levels of mercury and methyl mercury appeared in wetland areas far from point sources, supporting the theory that much of Maine's mercury pollution now comes from atmospheric deposition.

The DEP considers all fresh waters in Maine impaired by atmospheric deposition of mercury, and reports that Maine's fish, loons and eagles have among the nation's highest mercury levels. Fish from 65 percent of the lakes sampled in a DEP study (released in 2005) had mercury levels that exceeded Maine's established level of concern for human consumption. At numerous sample sites in Casco Bay, mercury tested above the "Effects Range Low" (where there can be possible biological impacts), and at two sites it exceeded a level considered to have probable biological effects on marine life. Elevated mercury levels in both freshwater and marine species have led the Maine Center for Disease Control to issue consumption advisories and consumer guidance for shark, saltwater tilefish, swordfish, king mackerel, halibut, tuna, lobster tomalley and all fish caught in Maine's fresh waters (see www.maine.gov/dhhs/eohp/fish/).

Marine and Estuarine Areas of Concern

Location	Area
Cape Rosier	80 acres
Boothbay Harbor	410 acres
Fore River (Casco Bay)	1,230 acres
Back Cove (Casco Bay)	460 acres
Presumpscot River Estuary (Casco Bay)	620 acres
Piscataqua River Estuary	2,560

Acreage based on professional judgment.

Based on analyses of sediments and mussel tissue, the Maine Department of Environmental Protection has identified six areas along the coast that are considered "Areas of Concern" due to toxic contamination.

Toxic Chemicals Commonly Found in Maine's Coastal Ecosystems

Polycyclic aromatic hydrocarbons (PAHs), the most common contaminants found in Casco Bay, result from combustion of fossil fuels and wood, as well as fuel spills. About 70 fuel spills are reported in Maine's surface waters each year, averaging 20 gallons per spill.

Polychlorinated biphenyls (PCBs) are potent carcinogens that were banned in the 1970s but persist in the environment and can still leach from old dumps and landfills.

Pesticides enter water bodies through runoff from farmfields and lawns. Pesticides like DDT that were banned decades ago still persist in the environment.

Polybrominated diphenyl ethers (PBDEs) are brominated flame retardants widely used in manufacturing that can disrupt endocrine and immune system functions in mammals.

Dioxins and furans are released through incineration, pulp paper manufacturing, coal-fired utilities, diesel vehicles and metal smelting.

Butyltins are organometallic compounds that come primarily from marine anti-fouling paints.

Heavy metals (such as lead, mercury, arsenic, silver and nickel) come from vehicle emissions, industrial processes, coal combustion, weathering of metal pipes and incineration.

Adapted from Toxic Pollution in Casco Bay: Sources and Impacts (Casco Bay Estuary Partnership, 2007)

Seals as S

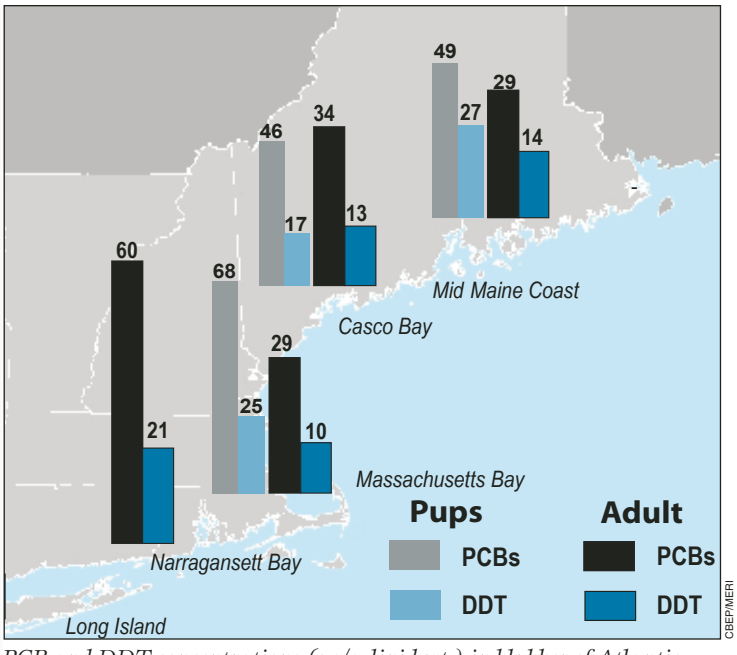
PCBs, DDT and Flame Retarda

Scientists at the Marine Environmental Research Institute (MERI Blue Hill report that Gulf of Maine harbor seals have high levels toxic compounds such as PCBs, dioxins, mercury and brominate retardants in their tissues. Seals feed at the top of the marine food cha nearshore environments where pollution is concentrated. Chemicals a late in their blubber over the course of their 35- to 40-year lifespan, ar passed on to pups through nursing. MERI researchers have found som have levels of PCBs and the pesticide DDT five times higher than thos adult females. Both substances have been banned in the US since the

The levels of DDT and PCBs found in seal blubber have declined over decades, falling 82 percent and 66 percent respectively between 1971 a 2001. However, MERI studies suggest these declines have leveled off i last decade and persistent compounds are still cycling in the ecosysten Compared to seal populations around the world, levels of PCBs and D northwestern Atlantic harbor seals (see chart) are still "at the upper n of the global contamination spectrum," according to a recent report by Casco Bay Estuary Partnership.

Dr. Susan Shaw, MERI founder and director, reports that seals now ar retardants known as PBDEs. "Recent European studies have linked fl with thyroid hormone alterations in young gray seals," Shaw notes. "T exceed, the levels in seals inhabiting highly polluted European waters. enced several viral outbreaks and mass mortalities since the 1980s.

PBDEs are added to the fabric or plastic of common household produc prevent the spread of fire. Like PCBs, they are organic pollutants that in foods are found in fish and dairy products, followed by meats. PBD repro wide high our l



PCB and DDT concentrations (µg/g, lipid wt.) in blubber of Atlantic harbor seals. At the Maine sites, PCB concentrations in adult seals exceeded the estimated threshold value of 17 µg PCB/g. for adverse effects on immune and endocrine functions. PCB concentrations for seal pups were up to 18 times higher than concentrations associated with altered immune and endocrine functions.

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For more information on Deca-BDE and legislative control efforts in M

SENTINELS:

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re accumulating relatively new toxic chemicals–the brominated flame
ame retardants with immune suppression in harbor porpoises and
The PBDE levels in Gulf of Maine seals match, and in some cases
." Like their European counterparts, these harbor seals have experi-

cts, including clothing, furniture foam, and appliance casings to
persist and accumulate in ecosystems. The highest concentrations
Es have been linked in animals to impaired learning and memory,
oductive deficits, weakened immune systems and cancer. "Due to
espread use of PBDEs in the US, Americans have 30 to 100 times
er levels of PBDEs in their tissues than Europeans or Asians, and
levels are still increasing," Shaw says.

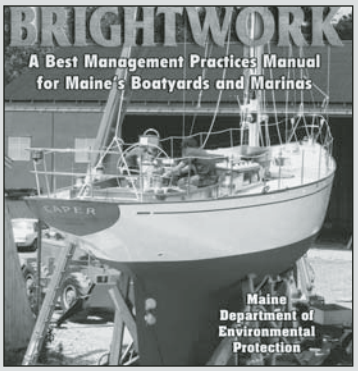
ne three major PBDE products in commerce, two (Penta-BDE
Octa-BDE) were phased out recently, but Deca-BDE is still being
uced and used globally in plastic casings for computers and TVs,
ronic circuitry, and wires and cables. "Deca-BDE has been called the
lla in the closet,'" Shaw says, "because it comprises 75 percent of the
d's PBDE production; it breaks down to the more toxic PBDEs; and
unregulated."

ne first regular session of the 123rd Legislature, Maine lawmakers are
idering two bills (L.D. 1488 and L.D. 1658) to remove Deca-BDE
the environment and reduce its impact on human and ecosystem
th. A report released in January by the Maine Department of Envi-
nental Protection and Maine Center for Disease Control and Preven-
proposes that the Legislature consider phasing out products contain-
Deca-BDE. Along with California, Maine has been at the forefront of
s legislating against the use of flame retardants: in January 2006, it
ned the sale of products containing Penta-BDE and Octa-BDE.

v calls for further research into the effects of PBDEs and their break-
n products in marine mammals and humans. "Meanwhile, given what
now today," she says, "we should be substituting safer alternatives
Deca-BDE and other hazardous flame retardants wherever possible."

Maine, see www.nrcm.org/deca_bill.asp and www.preventharm.org.

Taking Action to Reduce Toxic Pollution



- **Encourage maritime businesses to join Maine's Clean Boatyards and Marinas Program**, which encourages use of environmentally sound practices (www.mmtaonline.com/cleanmarinas.html). The Maine Coastal Program recently helped fund publication of *Brightwork: A Best Management Practices Manual for Maine Boatyards and Marinas*, available online at www.maine.gov/dep/blwq/docwatershed/marina/bmp.htm.

- **Encourage golf courses to participate in Audubon International's Golf Course Certification Program** (www.audubonintl.org/programs/acss/golf.htm).

- **Manage lawns and gardens without use of toxic chemicals** (see www.yardscaping.org for more guidance).

- **Minimize toxic runoff from driving**. Share rides when possible; do not idle your car unnecessarily; select vehicles with maximal fuel efficiency; and have oil, brake and transmission fluid at a service station that recycles.

- **Conserve electricity** as coal-fired power plants are a major source of atmospheric mercury (see www.efficiencymaine.com for energy-saving tips).

- **Reduce use of household hazardous wastes and dispose of them at special collection days** (see www.maine.gov/spo/recycle/hhw/ for a listing).

- **Clean your chimney annually** and use only dry, well-seasoned wood in woodstoves and fireplaces as burning wood releases PAHs and other toxic chemicals.

(Adapted from *Toxic Pollution in Casco Bay)*

For More Information

Toxic Pollution in Casco Bay: Sources and Impacts, published by the Casco Bay Estuary Partnership, 2007 (online at http://www.cascobay.usm.maine.edu/toxicsreport07.html). The report includes references and websites on toxic chemicals and their environmental effects.

Recommendations for Managing Maine's Nearshore Coastal Resources

Taking Steps Toward a New Vision

In the Future...

- Maine's coastal and marine resources are among the most healthy, productive, and resilient natural systems in the world.
- Effective management and active citizen stewardship achieves a balance between conservation and development that ensures the sustained use and enjoyment of coastal resources by current and future generations.
- Human impacts on coastal ecosystems are managed in a holistic way that addresses multiple stressors on a complex and dynamic ecosystem.
- Comprehensive, up-to-date data and information inform public and private management decisions.
- Management reflects ecosystem boundaries and allows for improved citizen participation.

from *Managing Maine's Nearshore Coastal Resources*—4 page summary

Two years ago, acknowledging growing pressures on Maine's nearshore environment (coastal waters within state ownership out to three nautical miles), the Legislature called for a broad look at the ways that we might better manage these resources. An interagency staff team coordinated by the State Planning Office and the Department of Marine Resources met with residents, business owners and municipal officials, conducted research, and assessed the results of two pilot projects. This January it completed a report with its recommendations.

The report notes that cumulative pressures on Maine's coastal resources are causing increasing damage—degrading the environment and generating more user conflicts. The two-year study found major gaps in knowledge about Maine's nearshore resources; fragmented management (scattered in numerous agencies at different levels of government) that is not strategically working on a common set of priorities; and programs that are chronically underfunded. Of particular note, the study confirms that state management needs to be more responsive to regional conditions and involve stakeholders more effectively.

The study's recommendations, which focused on four core areas, include:

1) **Create new partnerships between groups of towns and state agencies to manage coastal waters more effectively.** Funding and technical support from state agencies should help regions conduct citizen dialogues, map resources, create goals, and implement workplans to achieve targeted improvements in marine resource health.

2) **Direct state agencies to work collectively in priority coastal areas and create strategic plans to work together more effectively.** A new coastal and marine policy committee of state agencies is needed to make sure efforts are coordinated. Routine reports to stakeholders and the Legislature are needed to ensure accountability.

3) **Improve the amount and availability of nearshore data and information.** An aggressive strategy to map and monitor nearshore habitats is needed to understand and effectively manage marine resources.

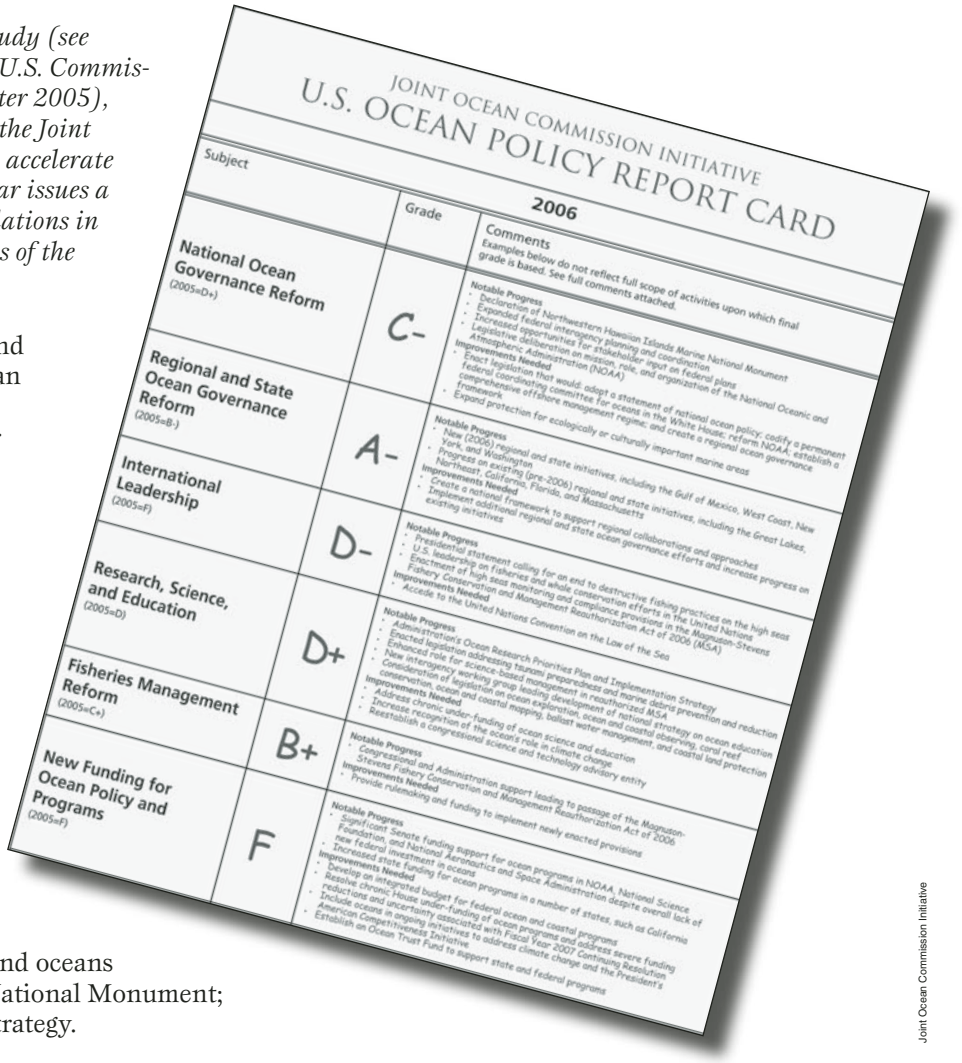
4) **Create additional resources to support innovation in coastal management.** A focused effort on securing additional resources for coastal programs needs to take place through new partnerships between government, and the private and nonprofit sectors.

On March 28, 2007, Governor Baldacci signed an Executive Order to implement the recommendations noted in the "Managing Maine's Nearshore Coastal Resources" report. "Maine's economic and ecological health depends on the ocean," Governor Baldacci said. "It's imperative that we consider long-term sustainability and undertake regional approaches to marine and coastal management. As a result of the study, we have a good idea of what needs to be done. This executive order will make sure those things happen," the Governor said.

A copy of the four-page executive summary and the full report can be viewed online at: http://www.maine.gov/spo/mcp/baymanagementreport.php. A copy of Governor Baldacci's Executive Order #30 FY06/07 is available at: http://www.maine.gov/tools/whatsnew/index.php?topic = Gov_Executive_Orders&id = 35856&v = Article.

National Report Card Cites Little Progress in Ocean Policy Reforms

Following completion of the Pew Oceans Commission study (see Maine Coastline, *Spring 2002 on our website) and the U.S. Commission on Ocean Policy report (see* Maine Coastline, *Winter 2005), members of these two study groups joined forces to form the Joint Ocean Commission Initiative. The Commission seeks to accelerate the pace of meaningful ocean policy reform and each year issues a report card assessing progress to date on the recommendations in the two initial reports. The following summarizes results of the 2006 report card.*


JOINT OCEAN COMMISSION INITIATIVE
U.S. OCEAN POLICY REPORT CARD
2006

Subject	Grade	Comments
National Ocean Governance Reform (2005=D+)	C-	Notable Progress • Declaration of Northwestern Hawaiian Islands Marine National Monument • Expanded federal interagency planning and coordination • Increased opportunities for stakeholder input on federal plans • Legislative deliberation on mission role, and organization of the National Oceanic and Atmospheric Administration (NOAA) Improvements Needed • Enact legislation that would: adopt a statement of national ocean policy; codify a permanent federal coordinating committee for oceans in the White House; reform NOAA; establish a comprehensive offshore management regime; and create a regional ocean governance framework • Expand protection for ecologically or culturally important marine areas
Regional and State Ocean Governance Reform (2005=B-)	A-	Notable Progress • New (2006) regional and state initiatives, including the Gulf of Mexico, West Coast, New York and Washington • Progress on existing (pre-2006) regional and state initiatives, including the Great Lakes, Northeast, California, Florida, and Massachusetts Improvements Needed • Create a national framework to support regional collaborations and approaches • Implement additional regional and state ocean governance efforts and increase progress on existing initiatives
International Leadership (2005=F)	D-	Notable Progress • Presidential statement calling for an end to destructive fishing practices on the high seas • U.S. leadership on fisheries and whale conservation efforts in the United Nations • Enactment of high seas monitoring and compliance provisions in the Magnuson-Stevens Fishery Conservation and Management Reauthorization Act of 2006 (MSA) Improvements Needed • Accede to the United Nations Convention on the Law of the Sea
Research, Science, and Education (2005=D)	D+	Notable Progress • Administration's Ocean Research Priorities Plan and Implementation Strategy • Enacted legislation addressing tsunami preparedness and marine debris prevention and reduction • Enhanced role for science-based management in reauthorized MSA • New interagency working group leading development of national strategy on ocean education • Consideration of legislation on ocean exploration, ocean and coastal observing, coral reef conservation ocean and coastal mapping, ballast water management, and coastal land protection Improvements Needed • Address chronic under-funding of ocean science and education • Increase recognition of the ocean's role in climate change • Reestablish a congressional science and technology advisory entity
Fisheries Management Reform (2005=C+)	B+	Notable Progress • Congressional and Administration support leading to passage of the Magnuson-Stevens Fishery Conservation and Management Reauthorization Act of 2006 Improvements Needed • Provide rulemaking and funding to implement newly enacted provisions
New Funding for Ocean Policy and Programs (2005=F)	F	Notable Progress • Significant Senate funding support for ocean programs in NOAA, National Science Foundation, and National Aeronautics and Space Administration despite overall lack of new federal investment in oceans • Increased state funding for ocean programs in a number of states, such as California Improvements Needed • Develop an integrated budget for federal ocean and coastal programs • Reallocate chronic House under-funding of ocean programs and address severe funding reductions and uncertainty associated with Fiscal Year 2007 Continuing Resolution • Include oceans in ongoing initiatives associated with Fiscal Year 2007 Continuing Resolution, American Competitiveness Initiative, and the President's Climate Change Initiative • Establish an Ocean Trust Fund to support state and federal programs

Joint Ocean Commission Initiative

The Joint Ocean Commission's 2006 report card found some advances in ocean policy reform, but assigned an overall grade of only C- (up from a D + the previous year), given a failure to commit necessary funding or make needed policy reforms.

"In the race to preserve our oceans, the states are outdistancing the federal government," observed the Honorable Leon Panetta, co-chair of the Joint Ocean Commission Initiative. State and regional leadership earned a grade of A-, with regional management efforts—like the Gulf of Maine Council on the Marine Environment—recognized for bringing a more coordinated, ecosystem-based approach to coastal and marine management.

Federal steps forward included passage of the Magnuson-Stevens Fishery Conservation and Management Reauthorization Act (which sets a firm deadline for ending overfishing); designation of 140,000 square miles of protected islands, atolls, and oceans under the Northwestern Hawaiian Islands Marine National Monument; and development of a new national ocean research strategy.

Progress in other areas measured by the report card—such as new funding; research, science and education; and international leadership—was notably lacking. "Although the climate and oceans are inexorably intertwined, the critical role oceans play in climate change is seldom addressed," reflects Admiral James D. Watkins, co-chair of the Joint Initiative. "Unless we learn more about these links, we are trying to fight climate change with one arm tied behind our back." The report card advocates for an Integrated Ocean Observing System to monitor changes and learn more about the ocean's role in climate change.

New federal funding for ocean policies and programs remained flat in 2006, earning the United States a grade of F. The Joint Initiative has identified $750 million in funding priorities for 2007. "The President's FY 2008 budget provides a welcome $140 million for ocean-related programs," the Commission reports, "but the challenges facing our oceans clearly require a much greater commitment of resources."

The United States earned a D- for International Leadership since it remains the only industrialized nation that has failed to accede to the United Nations Convention on the Law of the Sea. The Commission notes that environmental groups and major U.S. industries (such as offshore energy, shipbuilding, and maritime commerce) agree that signing onto the convention will help protect U.S. economic interests as well as the ocean's health.

To review a full copy of the report card, see www.jointoceancommission.org.

2007 Maine Beaches Conference

The Future of Maine's Changing Beaches: Diverse Interests and Common Goals

Friday June 22, 2007, 8:30 a.m. - 5:30 p.m.
at Southern Maine Community College, South Portland

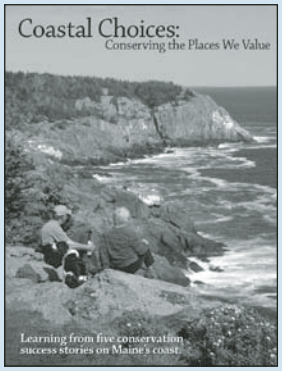
Global climate change, rising populations, increased use, new technologies: these are just a few of the changes and developments facing Maine's beaches in the coming decades. Public officials, coastal property owners and business, recreational users and other stakeholders all hold the common goal of sustaining these valuable natural resources. How do we reach consensus to achieve this goal?

There will be two plenary speakers; sessions on beach migration; bacterial monitoring, and local action; "priority-setting sessions" targeted to public officials, beach users, and coastal property owners; a multimedia session; field trips; viewings of the films *An Inconvenient Truth* and *Coastal Clash*; and a reception.

For more information, please contact conference coordinator, Kristen Whiting-Grant, kristen.whiting-grant@maine.edu or at 207-646-1555 x115.

New Coastal Land Conservation Video

The Maine Coast Protection Initiative has just released a DVD & accompanying resource sheets entitled *Coastal Choices: Conserving the Places We Value,* which demonstrates how people can work together to protect our coastal heritage and provide for the future. Five case studies show how diverse Maine communities have taken creative measures to enhance community life and economic health through land conservation. For more information on the DVD or to order a copy, visit www.protectcoastalmaine.org.



Maine Coastal Program
State Planning Office
38 State House Station
Augusta, ME 04333-0038
www.mainecoastalprogram.org

The Maine Coastal Program represents a partnership of local, regional and state agencies that work collaboratively to enhance management of the state's diverse coastal resources. Housed at the State Planning Office, Coastal Program staff work extensively with governmental agencies and community organizations such as local land trusts and regional economic development groups. Planning and outreach focus on such issues as watershed management, development issues, fisheries management, water quality monitoring, marine education, citizen stewardship, coastal hazards, marine infrastructure and habitat protection.

For more information on the Maine Coastal Program, please visit our website at www.mainecoastalprogram.org.

Gulf of Maine Council Approves 5-year Action Plan

The Gulf of Maine Council on the Marine Environment has published a new action plan for 2007-2012 that focuses on three goals: protecting and restoring habitats; improving environmental and human health; and supporting vibrant coastal communities. The habitat goal focuses on four areas: control of invasive species, minimizing the adverse affects of land-based human activities; restoring damaged coastal habitats; and fostering ecosystem-based stewardship. The second goal focuses on preventing and reducing water pollution through regional collaboration, improved monitoring and education, and tracking of ecosystem indicators. The third goal seeks to support innovations in marine-dependent industries and foster use of alternative energy sources.

For more information on the *Action Plan*, see www.gulfofmaine.org.

Evaluation Underway of Growth Management in Coastal Towns

With NOAA funding (through the Maine Coastal Program), the State Planning Office has launched a two-year project that seeks to evaluate the strengths and weaknesses of the 1987 Growth Management Act (GMA). Development pressures are intensifying along Maine's coast, making it critical for communities to employ effective and current approaches to land-use planning. This project, which implements a recommendation from a recent Growth Management Program evaluation, will provide a detailed, on-the-ground analysis of local planning efforts. Through research, interviews, and cooperation with towns and other state agencies, a Coastal Associate is compiling case studies of 14 coastal municipalities that have developed and adopted comprehensive plans under the GMA. The towns chosen for the study, a mix of large and small communities facing varied planning issues, span the coast from Wells to Roque Bluffs. With help from these towns, the Associate will identify where the GMA has been effective and suggest alternative growth management concepts to address shortcomings. This process will ultimately lead to recommendations for adjustments in State programs and statutes that will make local planning efforts in coastal communities more effective. Future issues of *Maine Coastline* will feature project findings-so stay tuned!

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