

*To maintain and enhance environmental quality
in the Gulf of Maine and to allow for sustainable
resource use by existing and future
generations...*

—Gulf of Maine Council Mission

Action Plan: 1996 – 2001

*The Gulf of Maine Council
on the Marine Environment*



Table of Contents

A Letter of Agreement Among the
Region's Governors and Premiers

Introduction

Protect and Restore Regionally
Significant Coastal Habitats

Restore Shellfish Habitats

Protect Human Health and
Ecosystem Integrity from Toxic
Contaminants in Marine Habitats

4 Reduce Marine Debris

5 Protect and Restore
Fishery Habitats and Resources

6 Appendices

6-1 Appendix I
Regionally Significant Coastal and
Marine Habitats of the Gulf of Maine
Ecosystem

6-4 Appendix 11
The Gulf of Maine Council on the
Marine Environment

6-8 Appendix III
Gulf of Maine Program
Secretariat Offices, 1996 - 2001

6-9 Appendix IV
Agreement on Conservation of the
Marine Environment of the Gulf of
Maine between the Bordering States
and Provinces

Cover Image

Particle Brightness (0) Image Derived by Inverting Radiance Model This "brightness" index was obtained from satellite data used to derive chlorophyll concentration by applying a new technique. Particle brightness is higher in the Atlantic Ocean waters which appear in shades of yellow and green (lower right). These waters flow into the Gulf of Maine through the Northeast Channel. Areas of high chlorophyll tend to have lower brightness. Exceptions occur near shore (e.g., Bay of Fundy) and over Georges Bank. *From "Measuring Water Constituents in the Gulf of Maine: Exploring Future Ocean Color Algorithms based on Spectral Radiance Models." Poster presented at the Gulf of Maine Ecosystem Dynamics Conference, St. Andrews, NB, September 16-19, 1996. Authors: Janet W. Campbell and Tomas L. Krasuski, University of New Hampshire, Durham, NH.*

The Gulf of Maine Action Plan

Working Collaboratively to Manage the Region's Coastal and Marine Habitats

The Governments of Maine, Massachusetts, New Brunswick, New Hampshire, and Nova Scotia do hereby reaffirm their long-standing commitment to the wise management of the Gulf of Maine and its watershed as articulated in the Governors' and Premiers' 1989 Agreement on Conservation of the Marine Environment of the Gulf of Maine between the Bordering States and Provinces.

Considering that the Parties to the Agreement recognize a shared duty to protect and conserve the renewable and nonrenewable resources of the Gulf for the use, benefit, and enjoyment of all their citizens, including generations yet to come;

Considering that the most effective means of protecting, conserving, and managing the Gulf's coastal and marine habitats is through the cooperative pursuit of consistent policies, initiatives, and programs;

Considering that the Gulf of Maine Council on the Marine Environment has concluded an eighteen-month public consultation process to identify the region's coastal and marine habitat priorities;

Considering that the *Gulf of Maine Action Plan: 1996 - 2001* establishes priorities that are specific and actions to address them are clear, we hereby pledge that:

Our state and provincial agencies with coastal and marine habitat responsibilities will address the Action Plan priorities through their annual work plans / budgets; they will work cooperatively with the region's non-governmental organizations, businesses, and individuals on implementing the Action Plan; and they will periodically report on their progress to the Gulf of Maine Council so that the region's residents can be kept informed of progress being made.

SIGNATURES

Honorable Joseph E. Sullivan, Jr.,
Governor, Maine

Honorable William F. Weld
Governor, Massachusetts


Honourable Frank McKenna
Premier, New Brunswick


Honourable John McKeown
Premier, Nova Scotia

Honorable John McKeown
Premier, Nova Scotia

Introduction

The Gulf of Maine Council on the Marine Environment, in collaboration with public and private entities around the Gulf of Maine, has charted a course for the protection and conservation of coastal and marine habitats in the Gulf of Maine. The Governors of Maine, Massachusetts, and New Hampshire; the Premiers of New Brunswick and Nova Scotia; and six federal agencies with mandates in the marine environment (Environment Canada; the Department of Fisheries and Oceans, Canada; the U.S. Fish and Wildlife Service; the U.S. Army Corps of Engineers; the U.S. Environmental Protection Agency; and the National Oceanic and Atmospheric Administration) have agreed that this plan will help to guide state, provincial, and federal policy and budgeting decisions affecting the Gulf's coastal and marine environments.

The actions outlined in this plan are the product of five years of collaborative work by researchers and scientists; environmental groups; educators; state, provincial, and federal government agencies; and individuals in Canada and the United States-particularly in Maine, Massachusetts, New Brunswick, New Hampshire, and Nova Scotia. This multi-jurisdictional collaboration on behalf of the Gulf of Maine ecosystem has been underway since the establishment of the Gulf of Maine Council on the Marine Environment by the region's governors and premiers in 1989. (See Appendix 11 for a description of the history of the Council, its membership, organizational structure, and general operating procedures.)

This *Action Plan* is a sequel. The first Gulf of Maine Action Plan, adopted by the Council in 1991, defined priorities, objectives, and a timetable for cooperative work by member jurisdictions ten years into the future. Major objectives in that plan involved Monitoring and Research, Coastal and Marine Pollution, Protection of Public Health, Habitat Protection, and Public Education and Participation. The first plan functioned as a blueprint with which to coordinate research, resource management, and conservation education in the region by emphasizing a common, Gulf-wide focus.

The first *Action Plan* also mandated that the Council review its progress after five years and identify any adjustments that were needed to reflect changing environmental and economic trends in the bioregion. The results of that review are summarized in the Council's publication *Work In Progress: Five-Year Report of the Gulf of Maine Council on the Marine Environment, 1990-1995*.

Building Partnerships to Set Priorities

The genesis of this *Action Plan* began with the second *Sustaining Our Common Heritage Conference*, convened by the Gulf of Maine Council in Wolfville, Nova Scotia in July, 1994. The conference was conducted with the explicit purpose of gaining perspective and advice from the bioregion's non-governmental environmental organizations and individuals regarding the Council's work over the previous several years and to identify priorities for the next five years. More than 150 organizations and individuals were present, representing each of the Gulf of Maine watershed's state and provincial jurisdictions, in addition to representatives from related federal agencies and national conservation groups.

Results from the WoNville Conference were then augmented by a survey of 300 organizations and individuals in the region and a 1995 synthesis of recommendations from the more than thirty scientific and professional workshops that the Gulf of Maine Council either sponsored or co-sponsored during the preceding four years. The Council's evaluation process culminated in a two-day retreat to review results and recommendations and to develop plans for the Council's work in the future.

The major outcome of this evaluation process was a decision to focus the Council's program activities on Gulf of Maine *coastal and marine habitats* for the next five years. Given the realm of statutory responsibilities of Gulf of Maine Council members in their respective jurisdictions, and drawing upon the expertise of the Council's Committees, Working Group, federal and regional partners, and related organizations and agencies within the region, the Gulf of Maine Council identified five major goals for its new coastal and marine habitat focus:

Protect and Restore Regionally Significant
Coastal Habitats

* Restore Shellfish Habitats

Protect Human Health and Ecosystem Integrity
from Toxic Contaminants in Marine Habitats

. Reduce Marine Debris

Protect and Restore Fishery Habitats and
Resources

Working in Partnership for the Future

The goals and objectives that have been developed within these priority habitat focus areas are bold and ambitious. The Gulf of Maine Council believes that achieving these goals depends in great part upon the synergy that occurs when public and private organizations and individuals work together for a common purpose. The diversity of these organizations and individuals, and their expertise and commitment to the Gulf of Maine environment, is at once incredible and encouraging.

The Gulf of Maine Council is committed to building meaningful and lasting partnerships in the years ahead, and has explicitly included examples of potential partners in the *Action Plan* for each habitat focus area. These examples represent just a few of the many possibilities for collaboration among agencies, organizations, educators, researchers, communities, and citizens in the Gulf of Maine region.

Addressing the Gulfs Ecosystem Priorities

Implicit in this *Action Plan*, and the original that preceded it, is the recognition by the states and provinces bordering the Gulf that continued health of this marine ecosystem is a shared, transboundary responsibility. The Gulf is a complex network of estuaries and other marine habitats, ocean currents, interrelated nutrient and energy cycles, and natural communities that, throughout history, have comprised one of the world's most biologically productive bodies of water.

Management and protection of this dynamic ecosystem and its coastal and marine habitats requires partnerships and a level of collaboration among researchers, policy makers, and resource managers that reaches across political boundaries.

As in the past five years, this *Action Plan* maintains a focus on transboundary objectives, rather than addressing individual state, provincial, or local community issues. The site-specific strategies and actions described in this Plan are either pilot, demonstration, or education projects, yielding experiences and information that will be transferred to other jurisdictions around the Gulf, or are part of a cumulative pattern of on-the-ground protection and restoration that directly contributes toward measurable, Gulf-wide goals.

Besides this emphasis on **transboundary issues and partnerships**, several other important operating criteria have **guided the Gulf** of Maine Council in developing the plan:

Strategies for implementing measurable objectives within each major habitat goal are designed to yield both direct, achievable short-term results and long-term benefits.

- Results of actions are expected to be specific and measurable.

Actions to be taken are built upon existing programs in order to strengthen partnerships with other groups working within the region.

Strategies and specific actions are intended to provide information that can be made available to the public and used to promote an awareness of jurisdictional interdependence.

Actions in the plan contribute toward a positive public identity and sense of stewardship for the Gulf of Maine and include potential for community involvement.

Setting Measurable Goals

This *Action Plan* is not a static document, rather it is designed to be responsive to evolving needs and changing priorities within the framework of the Council's five major habitat goals. Implementation of the *Action Plan* over the next several years will produce new ideas and possibilities for achieving the objectives of coastal and marine habitat protection and sustainability. Thus, each section is viewed as a flexible framework that can be fine-tuned or reassembled as conditions in the ecosystem change and management priorities within jurisdictions are adjusted to reflect those changes.

Each year, in consultation with the Working Group and the Committees on Public Education and Participation, Monitoring, and Data and Information Management, the Gulf of Maine Council will review progress in each habitat area and refine the next year's work plan as needed to maintain measurable progress toward each goal.

The *Action Plan* is arranged by major habitat goals, and follows a sequence beginning with a description of each major goal; the reasons for the Council's focus on the particular goal and information about its importance to the Gulf of Maine ecosystem; the Council's role in relation to that goal; and the measurable objectives that have been selected in order to achieve the goal. This is followed by a more detailed examination of each objective, including specific strategies for accomplishing objectives and a series of actions within each strategy.

The Gulf of Maine Council welcomes comments on this *Action Plan*. Council members are committed to ensuring that this document will remain up-to-date and serve as a dynamic road map for transboundary collaboration in protecting the diversity of living resources in the marine ecosystem of the Gulf of Maine. For additional information, contact the Gulf of Maine Program Secretariat (Appendix 111) and learn how you can become part of the *Action Plan* in the years ahead.

Section I

Protect and Restore

Regionally Significant Coastal Habitats

The estuaries of the Gulf of Maine act as pathways to inland waters for migratory fish and as nurseries for other fish species. The extensive intertidal flats associated with estuaries support shellfish and worm populations, harvested for generations by commercial and recreational fishers. Flocks of migratory birds settle on Gulf waters and wetlands each spring and fall as they follow their seasonal path along the eastern seaboard.

Since the Gulf's coastal habitats are vital to both the region's economy and its ecological integrity, the Gulf of Maine Council is focusing attention on threats to these areas. These threats include contaminants, disturbance, and habitat alteration. Collectively, they affect public health, the region's biodiversity, ecological health, and the ability of the region to sustain multiple use of its resources.

An overall Gulf of Maine Council priority is the protection, restoration, and enhancement of the Gulf of Maine's terrestrial, coastal, and marine habitats—the cornerstones of the region's economy and ecological health. In 1991, recognizing that public and private entities were working aggressively on habitat issues, the Gulf of Maine Council began development of a systematic approach for identifying, classifying, and protecting the Gulf's regionally significant habitats. The *regionally significant habitat* focus is a special role for the Gulf of Maine Council in the region.

Within this focus, the Council's highest habitat priority during the next five years is on coastal habitats (see Appendix 1). After 2001, the Council expects to expand its focus to include terrestrial and marine habitats. Since coastal habitats cover a geographically vast area in the Gulf of Maine and the issues involved in managing these habitats are very complex, the Council is working to accomplish a specific set of measurable objectives.

Coastal Habitat Goal

Coastal habitats throughout the Gulf of Maine are healthy and support an appropriate abundance and range of plant and animal species.

Council's Role in Achieving this Goal

To encourage and support public and private actions that wisely use, protect, and restore regionally significant coastal habitats.

Examples of Potential Partners State, provincial, and federal wildlife and public works agencies, regional and local land conservation organizations, National Estuary and Atlantic Coastal Action Programs, Regional Association for Research in the Gulf of Maine, academic and research laboratories and organizations, etc.

Measurable Objectives

Between 1996 and 2001, the Gulf of Maine Council will pursue the following four measurable objectives:

#1 -1 Improve management of coastal habitats Greater than 50% of the region's coastal habitat science, policy, and management community are aware of the Gulf's regionally significant coastal habitats and are working to improve their management by 2001.

#11-2 Increase protection To achieve a 10% increase in the acreage of regionally significant coastal habitats that are protected by public and private organizations and landowners Gulf-wide by 2001.

#11-3 Increase restoration To assist in the restoration of 10,000 acres of regionally significant coastal habitats by 2001, which is twice the level of restoration effort in the preceding five years.

#11-4 Increase citizen stewardship To achieve a 20% increase in the number of volunteer programs that are working to support the protection, restoration, and management of regionally significant coastal habitats by 2001.

Strategies and Actions for Achieving Measurable Objectives

Measurable Objective #1 -1 Improve management of coastal habitats.

Greater than 50% of the region's coastal habitat science, policy, and management community are aware of the Gulf's regionally significant coastal habitats and are working to improve their management by 2001.

Strategy #1-1-1 Work in partnership with two or three coastal regions each year to consolidate public and private information that identifies regionally significant coastal habitats.

Possible Actions

1. Conduct an evaluation of the regionally significant species methodology in light of the results of the 1995-96 pilot projects in Great Bay, New Hampshire and Passamaquoddy Bay, New Brunswick/Maine to determine necessary modifications.
2. Identify other priority coastal regions in the Gulf that should be encouraged to pursue this habitat identification work.
3. Support the full dissemination of the procedures and protocols from the 1995-96 pilot projects throughout the Gulf of Maine in 1997, including the presentation of on-the-ground results.
4. Initiate discussions with regional organizations pursuing habitat-related work and form partnerships to assemble existing coastal plant and animal species research and data/information consistent with the Gulf of Maine Council's approach.

Strategy #1-1-2 Identify Gulf-wide deficiencies in existing research, data, and information that delay the identification of regionally significant coastal habitats.

Possible Actions

1. Conduct a Gulf-wide reconnaissance and review of existing data and information on the Gulf of Maine Council's priority coastal species.
2. Convene the region's coastal habitat experts to assess the synthesis and develop recommendations on the most expedient and efficient methods for obtaining required information to improve management of these areas.
3. Develop a benthic classification system for the Gulf that provides a consistent framework to identify and protect representative examples of benthic habitat types to ensure the conservation of most species, biotic interactions, and ecological processes.
4. Assess the region's capability to manage existing and new information and develop recommendations for standardization, data sharing, and infrastructural improvements.

Strategy #1-1-3 Develop and promote work on a Gulf-wide coastal habitat research and information analysis agenda that supports the identification and wise management of coastal habitats.

Possible Actions

1. Analyze government and non-governmental habitat research agendas to determine their alignment with the Council's coastal habitat priorities and develop recommendations that help to focus on regionally significant habitats.

2. Assess Gulf-wide management of regionally significant coastal habitats to determine the scope of management authority and effectiveness. Focus on achieving, to the extent possible, state and provincial consistency in resource management objectives for regionally significant coastal habitats.

3. Develop, distribute, and assist in the implementation of management and restoration guidelines for regionally significant coastal habitats.

4. Assess the role of indicators (e.g., submerged aquatic vegetation as biological indicator, etc.) in improving management initiatives.

Strategy #1-1-4 Conduct habitat suitability modeling for estuaries and coastal areas.

Possible Actions

1. Convene the region's species experts to develop recommendations on species models that can be used to identify priority species habitats.

2. Assist in the development of biologically supportable siting criteria for aquaculture facilities located adjacent to priority seabird nesting islands.

Measurable Objective #1-2 Increase protection.

Achieve a 10% increase in the acreage of regionally significant coastal habitats that are protected by public and private organizations and landowners Gulf-wide by 2001.

Strategy #1-2-1 Identify the acreage of regionally significant coastal habitats owned and protected by government, conservation organizations, and private landowners.

Possible Actions

1. Compile and analyze state, provincial, federal, and conservation organization holdings.

Strategy # 1-2-2 Increase the acquisition of regionally significant coastal habitats Gulfwide.

Possible Actions

1. Assess government and non-governmental land acquisition programs to determine their alignment with the Gulf of Maine Council's coastal habitat priorities.
2. Communicate with those programs about the Council's coastal habitat priorities and encourage their support for the acquisition of regionally significant coastal habitat areas identified by the Gulf of Maine Council and others.

Strategy #1-2-3 Work with public and private organizations to increase the use of conservation easements to protect regionally significant coastal habitats.

Possible Actions

1. Assess existing landowner conservation programs in the region to determine the role of easements, taxation, and landowner willingness to participate.

2. Provide support to private conservation organizations that are working to conserve coastal habitats, including the development and dissemination of model easements, guidebooks, pamphlets, and other technical assistance materials.

Strategy #1-2-4 Evaluate the role of coastal and marine reserves in conserving coastal habitats.

Possible Actions

1. Conduct an analysis of existing parks, reserves, and other protected area programs in the Gulf of Maine and elsewhere that are applicable to the Council's goal.

2. Develop a proposal, including the identification of potential funders, that networks and augments reserve programs in the Gulf.

3. Pursue a pilot project to demonstrate the feasibility of this concept.

Strategy #1-2-5 Promote local actions to conserve and enhance coastal habitats.

Possible Actions

1. Document examples of successful local protection and distribute results through the media, local conservation newsletters, land conservation workshop/conferences and other means.

2. Work with public and private organizations to create a communication network.

Strategy #1-2-6 Complete wetland loss analysis for the region.

Possible Actions

1. Identify the range of tools available to assist in this initiative, convene responsible organizations, and develop a strategy to make these resources available in the Gulf and obtain the information.
2. Work with public and private conservation interests to improve the protection of priority wetlands.

Measurable Objective #1 -3 Increase restoration. Assist in the restoration of 10,000 acres of regionally significant coastal habitats by 2001, which is twice the level of restoration effort in the preceding five years.

Strategy #1-3-1 Conduct a Gulf reconnaissance to document rate of loss of regionally significant coastal habitats.

Possible Actions

1. Assess the priority issues/activities affecting coastal habitats (e.g., land use, land-based sources of pollution, waste disposal, marine construction, marine industry activities including harvesting, marine recreation, etc.), determine the level of threat (demographics, economics, land use changes), the rate of loss, and the immediacy of need for action.
2. Conduct an analysis of representative, regionally significant habitats to assess effects of cumulative impacts on habitat health and priority species.

Strategy #1-3-2 Evaluate restoration practices in the Gulf of Maine and assess their effectiveness.

Possible Actions

1. Document public (state, provincial, and federal) and private coastal habitat restoration approaches currently being used in the Gulf of Maine.
2. Conduct analysis of representative sites to assess effectiveness.
3. Prepare recommendations amending current approaches in order to make them more effective.

Strategy #1-3-3 Identify the types of restoration priorities, potential sites for restoration, restoration partners, and funding sources to support them.

Possible Actions

1. Characterize the region's coastal habitat restoration needs and priorities.
2. Develop model approaches that respond to priority habitat degradation issues and promote their use.
3. Assess existing restoration programs and their alignment with coastal habitat conservation.
4. Develop recommendations for priority restoration activities for specific types of coastal habitats, including land use permitting restoration requirements.

Strategy #1-3-4 Act as facilitator to bring restoration efforts to fruition.

Possible Actions

1. Document the region's restoration success stories and communicate the results to bolster support for increasing restoration efforts.

Measurable Objective #1 -4 Increase citizen stewardship.

Achieve a 20% increase in the number of volunteer programs that are working to support the protection, restoration, and management of regionally significant coastal habitats by 2001.

Strategy #1-4-1: Promote the expansion of existing volunteer programs and support new volunteer programs that monitor the health of coastal habitats.

Possible Actions

1. Support a Gulf-wide conference of habitat monitors to develop recommendations on how to integrate volunteer data into policy and regulatory decisions.
2. Develop a coordinated network of volunteers to validate habitat suitability models.
3. Expand the Electronic Data and Information Management System (EDIMS) to contain habitat data suitable for use by volunteer groups.
4. Expand voluntary stewardship programs with land owners of coastal habitats.
5. As regionally significant coastal habitats are identified, determine land ownership patterns and engage land-owners in stewardship activities.

Strategy #14-2 Work cooperatively with the media to ensure that accurate habitat information is disseminated to the public.

Possible Actions

1. Develop and distribute materials through media outlets that inform the public about coastal habitats and the need to manage them wisely.

Strategy #14-3 Expand public awareness of the effects of disturbance and encroachment on marsh habitat/fringe areas.

Possible Actions

1. Assess existing public education materials and outreach efforts to identify how the Gulf of Maine Council can augment these efforts,
2. Expand the use of EDIMS as a tool to distribute information to the public.

Strategy #14-4 Assist educators by developing and disseminating coastal habitat materials.

Possible Actions

1. Support the expansion and distribution of Wild Gulf materials, including an effective educator feedback mechanism so that materials are constantly being improved.
2. Document the economic and ecological values of coastal habitats and disseminate the results.

Section 11

Restore Shellfish Habitats

Shellfish harvesting in the Gulf of Maine makes a significant economic contribution in coastal communities. However, this traditional livelihood is threatened by conflicting uses of the shoreline as more people move to the coast. An expanding population and more intense shoreline development lead to estuarine and marine water quality degradation. Point and non-point sources of pollution have adverse effects on shellfish habitats. This pollution impacts both the water column and the substrate on which shellfish depend.

One of the Gulf of Maine Council's five habitat priorities focuses on the restoration of shellfish habitats. Given the extent of the Gulf's shellfish habitats, the Council is focusing on soft shell clam, mussel, oyster, and quahog habitats, both for wild harvesting and aquaculture.

Shellfish Goal

Gulf of Maine shellfish habitats will produce shellfish that are safe for human consumption.

Council's Role in Achieving this Goal

To increase the capacity of government and citizens to manage and restore shellfish resources, the Gulf of Maine Council will work with others to expand water quality monitoring and pollution prevention programs, promote awareness of the region's shellfish resources and assist in Gulf-wide learning through shellfish research and management initiatives.

Examples of Potential Partners

State, provincial, and federal fishery management and environmental agencies, National Shellfish Sanitation Program, Environment Canada, Sea Grant and Coastal Management Programs, National Estuary Programs, Atlantic Coastal Action Programs, Regional Association for Research in the Gulf of Maine, and water quality monitoring groups, local shellfish committees and wardens, etc.

Measurable Objectives

Between 1996 and 2001 the Gulf of Maine Council will pursue the following two measurable objectives:

#2-1 Restore water quality in shellfish habitats. Water quality that has been degraded by bacteria in more than 12,000 acres of shellfish habitat will be restored to meet public health standards by 2001.

#2-2 Increase water quality testing in priority shellfish habitats. By 2001, more than 125,000 acres of shellfish habitat that are closed to harvesting because of the absence of adequate water quality monitoring will be monitored and opened for harvesting.

Strategies and Actions for Achieving Measurable Objectives

Measurable Objective #2-1 Restore water quality in shellfish habitats. Water quality that has been degraded by bacteria in more than 12,000 acres of shellfish habitat will be restored to meet public health standards by 2001.

Strategy #2-1-1 Support a Gulf-wide citizen monitoring network that delivers scientifically credible information to decisionmakers at all levels, and specifically to managers of environmental protection and restoration programs.

Possible Actions

1. Assist in solidifying and expanding the Gulf's volunteer network, which collects accurate and useful shoreline data and water quality information used to identify and remediate pollution sources.

2. Support the development and maintenance of a Gulf-wide database for data generated by volunteers.
3. Widely disseminate the Gulf-wide *Point Source Inventory*, ensuring that it is made available in the most useful format possible.
4. Work with federal (U.S. and Canadian), state, and provincial fisheries and environmental agencies to increase the use of volunteer data in their management decisions.

Strategy #24-2 Support shellfish communication networks that promote sharing of research and management results.

Possible Actions

1. Assist in developing a regional research agenda that will increase shellfish landings by developing responses to priority habitat degradation issues.
2. Support the development of a network of public and private shellfish managers to promote the exchange of information on shellfish habitat restoration as recommended in the Gulf of Maine Council's June 1996 shellfish workshop.
3. Support the development and distribution of "model" local and regional shellfish restoration programs that emphasize local stewardship actions.

Strategy #24-3 Supportpoint and nonpoint source pollution control programs and other pollution prevention initiatives through demonstration projects that implement best management practices in areas adjacent to degraded shellfish habitat.

Possible Actions

1. Convene the region's pollution prevention experts to determine how current programs can assist the Council in attaining this measurable objective.
2. Assess the 1995 *Land-based Sources of Pollution Inventory* and its follow up recommendations to determine appropriate next steps.
3. Support demonstration projects and ensure that results are transferred to other areas of the Gulf.

Strategy #2-1-4 Supportpublic education initiatives that inform people about shellfish habitats in the Gulf and encourage local community involvement in all aspects of research, development, and management of shellfish resources.

Possible Actions

1. Use the Gulf of Maine Council's 1996 *Shellfish Fact Sheet* and NOAA's *Shellfish Register* as a public education tool.
2. Develop and implement a public opinion survey to assess the public's awareness of the value of and threats to the Gulf's shellfish resources.

3. Use volunteer water quality monitoring as a tool to educate people about the Gulf's shellfish resources.

4. Document the value of the region's shellfish resource, including the "Yoregone value" of closed flats.

5. Develop partnerships to disseminate this information in a useful, timely, and cost effective manner.

Measurable Objective #2-2 Increase water quality testing in priority shellfish habitats. By 2001 '

more than 125,000 acres of shellfish habitat that are closed to harvesting because of the absence of adequate water quality monitoring will be monitored and opened for harvesting.

Strategy #2-2-1 Increase the level of water quality monitoring testing in priority shellfish habitat areas.

Possible Actions

1. Identify priority shellfish growing areas that are closed due to the absence of adequate water quality information.

2. Work with existing volunteer water quality monitoring groups to expand coverage in these areas.

3. Secure public and private funding to support adequate testing that complies with federal procedures/standards.

4. Support appropriate agencies to open closed areas that meet water quality standards.

Section III Protect Human Health and Ecosystem Integrity from Toxic Contaminants in Marine Habitats

There is increasing concern about the toxic effects of certain substances on marine organisms in the Gulf of Maine. This concern is based on evidence that some substances are being introduced to the Gulf in concentrations and at rates that can be toxic to marine life. While a variety of data exists on the levels of toxic contamination, it is sporadic and incomplete. Existing data include some sampling of sediment, mussels, fish tissue (livers), marine mammal tissue (blubber), and bird eggs in a few selected locations for one or more of the following: metals (mercury, lead, cadmium), organometals (methyl mercury and butyltins), organochlorines (PCBs, chlorinated hydrocarbons, pesticides), and polyaromatic hydrocarbons (PAHs).

Many questions need to be answered to effectively manage toxic contaminants in the marine food chain. The acute toxic threshold concentrations of many substances in marine organisms is not well known. Little is also known about the cumulative toxic effects of many substances that occur simultaneously in the Gulf of Maine. To understand and assess toxic contamination problems in the Gulf, environmental managers must know the amounts of toxic substances discharged in the watershed and the amounts that enter the system through atmospheric deposition. The 1995 *Gulf of Maine Point Source Inventory* has organized some information on the major point sources of toxic substances (large industrial plants and wastewater treatment plants) in the Gulf of Maine watershed. The National Oceanic and Atmospheric Administration (NOAA) is also working on estimates of pollutant loading by nonpoint sources in two of the Gulf's subwatersheds. The Council's Gulfwatch program is developing trend **data** on metal and organics in the tissue of blue mussels. However, more work is needed to quantify actual pollution loads in order to make this information useful in management decisions.

To manage problems presented by toxic contamination, information is needed to determine the extent and sources of existing toxic contamination. Without information on the limits of toxic substances that can be discharged safely to the marine environment, or on the amounts that are actually being discharged to the Gulf, environmental managers operate under the general assumption that any toxic substance discharge into the Gulf of Maine is undesirable. Managers therefore seek to reduce such discharges through technology or practices that minimize or

3-2

eliminate the discharge. However, widespread application of the best technology or management practices **throughout the Gulf** of Maine watershed may not be realistically achievable or even necessary in all cases. Management strategies should therefore be aimed at the priority problems that are identified through research and monitoring.

Toxic Contaminants Reduction Goal

Toxic contaminants in the marine food chain of the Gulf of Maine are at levels such that public health is protected and ecosystem integrity is maintained.

Council's Role in Achieving this Goal

To focus the region's toxic contaminants research and management efforts on the Gulf's priority toxic contaminants in the marine food chain.

Measurable Objectives

Between 1996 and 2001, the Gulf of Maine Council will pursue the following two measurable objectives:

Examples of Potential Partners

State, provincial, and federal environmental, fishery, public health, and ocean agencies; Regional Association for Research in the Gulf of Maine; academic and research laboratories and organizations; public interest groups', National Estuary and Atlantic Coastal Action Programs; National Estuarine Research Reserves; the business community, etc.

#3-1 Increase Awareness

Greater than 50% of the region's coastal management community is aware of environmental health threats and associated public health implications posed by priority toxic contaminants in the marine environment and are working to reduce those threats by 2001.

#3-2 Remediate Toxic Contamination

By 2001, selected priority toxic contaminants in the sediments of three coastal embayments are reduced by 10% from their 1990 levels.

Strategies and Actions for Achieving Measurable Objectives

Measurable Objective ~3-1 Increase Awareness

Greater than 60% of the region's coastal management community is aware of the human and environmental health threats posed by priority toxic contaminants in the marine environment and are working to reduce those threats by 2001.

Strategy #3-1-1: Identify sources of data on priority toxic substances in the Gulf of Maine and organize a distributed database on the Council's Environmental Data and Information Management System (EDIMS).

Possible Actions

1. Update the Council's 1990 inventory of Gulf monitoring programs and expand to include other data sources on toxic contaminants.
2. Compile existing information on priority toxic contaminant loads to the Gulf, identify gaps, and estimate loading rates for each major watershed. Establish 1995 baseline data to assess progress.
3. Develop a toxic contaminants data management program and place on the Electronic Data and Information Management System (EDIMS).
4. Develop and pursue a coordination mechanism so that existing monitoring programs are more consistent.

Strategy #3-1-2: Promote the Gulf-wide standardized assessment of toxic contaminant exposure by expanding and continually improving the Gulfwatch monitoring network.

Possible Actions

1. Convene the region's experts to assess and interpret five years of Gulfwatch data, publish findings in peer review journals, and integrate recommended modifications into the ongoing program.

E The Gulf of Maine Action Plan: 1996 - 2001

2. Continually improve Gulfwatch and create linkages with ongoing volunteer water quality monitoring.

3. Encourage research (e.g., graduate students, etc.) that addresses the gaps and needs of Gulfwatch monitoring activities.

4. Develop and/or supplement existing monitoring efforts that address the gaps that have been identified.

Strategy #3-1-3: Support the identification of toxic contaminants that are of greatest significance to public health and ecosystem health.

Possible Actions

1. The Gulf of Maine Regional Marine Research Board, the Regional Association for Research in the Gulf of Maine, and the Gulf of Maine Council convene a regional forum of ecosystem and public health managers, researchers, and others as appropriate with expertise on toxic contamination to identify the region's toxic contaminant priorities and the research required to implement appropriate management strategies.

2. Assist in the development of a regional research agenda that documents the significance of the priority toxic contaminants on public and ecosystem health.

3. Promote communication between the science and management communities about the results of the research.

**Measurable
Objective #3-2
Remediate Toxic
Contamination** By

2001, selected
priority toxic
contaminants in the
sediments of three
coastal embayments
are reduced by 10%
from their 1990
levels.

Strategy #3-2-1: Determine ecological and public health risks and develop risk management strategies for areas with the highest levels of priority toxic contaminants.

Possible Actions

1. Identify watersheds and other specific areas, if possible, that have the highest levels of toxic contamination.
2. Determine biological effects of toxic **contaminants from existing data** and initiate testing as necessary for priority toxic contaminants in areas identified as having the highest levels of those contaminants.
3. Determine the appropriate actions, including education, regulation, and remediation, to manage the risks identified.
4. Prepare interjurisdictional comparative analyses of human health risk management policy related to species in the Gulf.
5. Prepare interjurisdictional comparative analyses of ecological health risk management policy related to species in the Gulf.
6. Compile literature on values that relate to ecological/biological effect levels in various matrices of concern.

Strategy #3-2-2: Support the reduction of priority toxic contaminants entering the Gulf of Maine.

Possible Actions

1. Conduct a reconnaissance of existing watershed management efforts (e.g., ACAP, NEP, etc.), determine their interest in establishing partnerships with the Gulf of Maine Council, and select focal areas.

2. Identify actual point and nonpoint source reduction efforts and quantify reductions in contaminant loading rates,

3. Develop and support implementation of a point source strategy that will meet or be below effluent limits for priority toxic contaminants.

4. Develop and support a strategy to use best management practices to address nonpoint sources contributing priority toxic substances

Section IV

Reduce Marine Debris

The health and value of the Gulf of Maine's ecosystem is compromised by a wide array of toxic, hazardous, and unsightly marine pollution. This pollution impacts local economies that depend on thriving marine businesses and tourism.

The Gulf of Maine Council and the region's citizens are dedicated to reducing the introduction of materials that:

entangle marine mammals, other marine and terrestrial organisms, and marine engines;

foul the coastline with unsightly materials (e.g., Styrofoam, plastics, etc.); and

endanger marine life through ingestion, other routes of exposure, and deterioration of marine habitats.

The Gulf of Maine Council, working in partnership with other organizations, will also work to clean up marine debris when it does occur.

Marine Debris Reduction Goal

The Gulf of Maine is known for its clean marine environment. Its shoreline and waters are free of marine debris, and will be healthy for people and wildlife.

Council's Role in Achieving this Goal

To promote the wise management of marine debris to avoid its introduction into the marine environment, and to assist local organizations in removing marine debris when it does occur.

Examples of Potential Partners

State, provincial, and federal environmental, fishery, public health, and ocean agencies; Center for Marine Conservation; state and provincial coastal management and Sea Grant programs; port and watershed organizations; local marine debris organizations; etc.

Measurable Objectives

Between 1996 and 2001, the Gulf of Maine Council will pursue the following measurable objective:

#4-1 Reduce incidence of marine debris. By 2001, the amount of marine debris found along the shores of the Gulf of Maine is reduced by 15% compared to 1995 levels.

1

Strategies and Actions for Achieving Measurable Objectives

Strategy #4-1-1 Expand the number and frequency of shoreline cleanups around the Gulf of Maine.

Possible Actions

1. Synthesize the 1995 baseline data from representative sites around the Gulf on the amount of shoreline debris collected and the level of volunteer participation in shoreline clean up and related activities.
2. Work in partnership with public and private organizations to increase the number of volunteers participating in shoreline/ beach cleanups by 25%.

Strategy #4-1-2 Strengthen existing marine debris reduction programs and increase the number of port communities sponsoring such programs.

Possible Actions

1. Assess the status of existing port programs to identify needed improvements.
2. **Identify priority** ports needing pier and wharf marine debris disposal programs.

Measurable Objective #4-1 Reduce incidence of marine debris.

By 2001, the amount of marine debris found along the shores of the Gulf of Maine is reduced by 15% compared to 1995 levels.

3. Collaboratively develop self-sustaining programs with local stakeholders.

Strategy #4-1-3: Increase on-shore disposal and recycling capacity for waste materials.

Possible Actions

1. Identify priority pollutants, characterize the generation rates for priority port communities, and assess existing disposal practices.
2. Develop stakeholder initiatives that respond to the problem at the local/port level.

Strategy #4-1-4.: Expand public awareness of the marine pollution issue and the ways people can be better stewards of the marine environment by developing a Gulf-wide communications network of organizations involved in marine debris issues.

Possible Actions

1. Conduct a reconnaissance of the communication capacity of Gulf organizations.
2. Collaborate in the development of an electronic communications network through the Electronic Data and Information Management System (EDIMS).
3. Convene a stakeholders conference in 1998 to facilitate personal networking and information sharing.

Section V

Protect and Restore

Fishery Habitats and Resources

Many of the Gulf's commercially important groundfish resources are at or near record low levels. For example, the depressed state of the cod fishery has resulted in closures and has heightened scientific and public concern over the condition of the region's groundfish resources. While the depletion of fish stocks is attributed primarily to overfishing, pollution and the destruction of benthic habitats and food sources may affect the ability of these stocks to rebuild.

The severe depletion of bottom-dwelling stocks (cod, pollock, flounders) is having significant economic and social impacts on the Gulf's coastal communities. In 1995, the Gulf of Maine Council developed a resolution as its first response to the groundfish crisis, excerpted below:

... Be it resolved that the Gulf of Maine Council on the Marine Environment requests that fundamental principles of fisheries management for the rebuilding of groundfish stocks be followed by all fisheries managers. Such principles should include the avoidance of juvenile fish, temporal and spatial closures of spawning areas during critical periods...

*... be it further resolved that the Gulf of Maine Council will...encourage programs to acquire such additional scientific information as will benefit resource **managers** in developing sustainable **management strategies**...*

Groundfish Goal

The Gulf of Maine has productive fishery resources that meet human needs and maintain ecological integrity.

Council's Role in Achieving this Goal

To increase awareness about the Gulf's finfish resources and habitats.

Examples of Potential Partners

State, provincial, and federal fishery agencies; public interest groups; fishing organizations; academic and research laboratories and organizations; Regional Association for Research in the Gulf of Maine; conservation organizations, etc.

Measurable Objective

Between 1996 and 2001, the Gulf of Maine Council will pursue the following measurable objective:

#5-1 Identify priority fishery resource habitats. By 2001, the Gulf's spawning and recruitment fishery resource habitats for priority finfish species are identified in order to provide information to assist in the management of fishery resources.

Strategies and Actions for Achieving Measurable Objective

Strategy #5-1-1: Assist the science, policy, management, and fishing communities in increasing the level of knowledge about priority finfish spawning and recruitment habitats in the Gulf of Maine.

Possible Actions

1. Compile a Gulf-wide inventory of marine habitat data and develop a distributed database on the Council's Electronic Data and Information Management System (EDIMS).
2. Convene public and private fishery experts to evaluate the database and determine what additional data are needed (and for which habitats), to discuss data collection protocols, to set priority areas for mapping, and to identify funding sources to collect missing information.

Measurable Objective #5-1 Identify priority fishery resource habitats. By 2001, the Gulf's spawning and recruitment fishery resource habitats for priority finfish species are identified in order to provide information to assist in the management of fishery resources.

Strategy #5-1-2: To produce and disseminate maps on the Gulfs spawning and recruitment habitats for priority finfish resources, that are based on historical and current anecdotal information that supplements the scientific data.

Possible Actions

1. Complete compilation and analysis of traditional knowledge about finfish spawning and recruitment areas from Cape Ann to Cape Cod and in Canadian waters.
2. Use existing scientific data to confirm (groundtruth) the results of traditional groundfish mapping efforts.
3. Distribute the maps and analyses widely to public and private organizations involved in fishery resource management.

Appendices

Appendix I

Regionally Significant Coastal and Marine Habitats of the Gulf of Maine Ecosystem

Regionally Significant Coastal Habitats

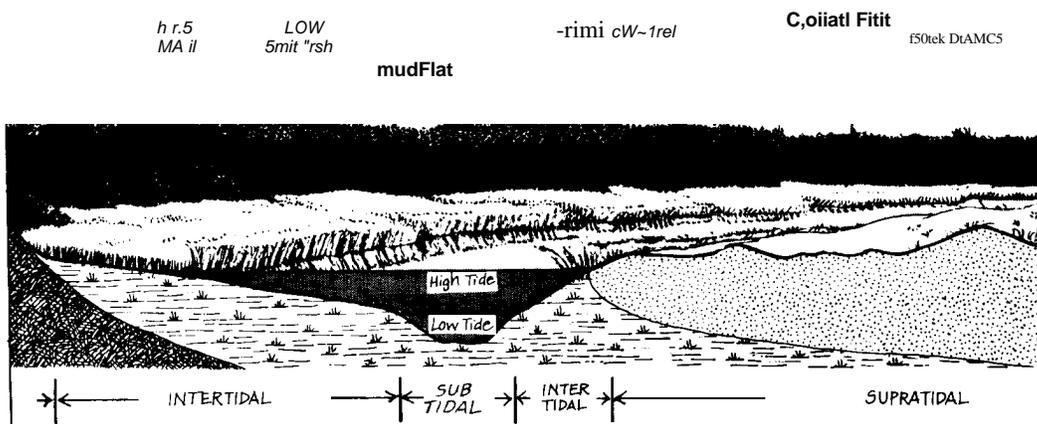
Between 1996 and 2001, the Gulf of Maine Council will focus on regionally significant coastal habitats.

After 2001, the Council expects to expand its focus to include terrestrial and marine habitats. Coastal habitats containing regionally significant plant and animal species are defined geographically to include:

1) Upland Systems

This narrow coastal area extends upland from the high tide mark.

Representative areas: islands, bluffs, sand dunes, maritime spruce-fir forests.



Overview of Coastal Geologic Units (from *The Geology of Maine's Coastline*, Maine State Planning Office, June 1983)

2) Estuarine Systems

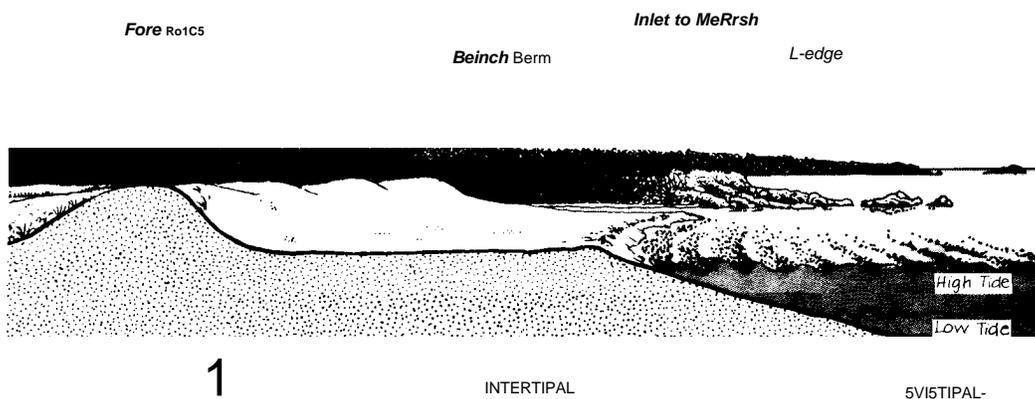
This area consists of semi-enclosed, coastal water embayments that have a connection with the sea and within which sea water mixes with fresh water. This area extends upstream to the maximum extent of tidal influence (head of tide), landward to the high tide mark, and seaward to an imaginary line across the mouth of the estuary, or to where surface salinities seldom exceed 30 ppt.

Representative areas: tidal freshwater marshes, mudflats, salt marshes, eelgrass beds.

3) Marine Systems

This area is not appreciably diluted by freshwater (surface salinities seldom fall below 30 ppt) and extends from the high water mark to the 60 meter depth contour.

Representative areas: rocky intertidal, kelp beds, sand and cobble beaches.



Appendix 11

The Gulf of Maine Council on the Marine Environment

Roles of the Gulf of Maine Council

The Gulf of Maine Council has four primary roles in its focus on the health of the Gulf of Maine:

- 1) convene partners
- 2) marshal resources and decide how best they should be used to further the Council's mission
- 3) support projects, when possible, as part of a region-wide focus
- 4) educate the public and raise awareness of the value of the Gulf of Maine

Membership

The Gulf of Maine Council consists of Governors' and Premiers' representatives from each of the parties to the Gulf of Maine Agreement (Appendix IV). The members of the Council consist of one nongovernment individual from each state and province, appointed for two-year renewable terms, along with the holders of the following positions:

Maine

Director, Maine State Planning Office
 Commissioner, Department of Marine Resources

Massachusetts

Secretary, Executive Office of Environmental Affairs
 Assistant Secretary, Executive Office of Environmental Affairs

New Brunswick

Minister, Department of Environment
 Minister, Department of Fisheries and

New Hampshire
Director, Office of State Planning
Commissioner, Department of
Environmental

Nova Scotia
Minister, Department of Environment
Minister, Department of Fisheries

Working Group

The Working Group of the Gulf of Maine Council provides support to the Council as follows:

- develops annual work programs and budgets for the Council's action
- manages annual work elements of the Gulf of Maine Program
- conducts strategic planning and prepares policy options for the Council's consideration
- oversees committee operations

The Working Group consists of one person appointed by each Council member and one co-chair from each Council committee (see below).

Committees and Purposes

Members of all committees are appointed by the Working Group and are geographically balanced among the states and provinces. Participation in committee deliberations is always open to interested individuals beyond the stated membership.

The **Gulf of Maine Data and Information Management Committee** serves the data and information needs of the Gulf of Maine Council, the Working Group and its committees, and facilitates access for the research community, non-profit organizations, and the public in the Gulf of Maine region to data and information about the Gulf of Maine.

The **Gulf of Maine Environmental Quality Monitoring Committee** implements and periodically refines the Gulf of Maine Council's Gulf-wide *Environmental Monitoring Plan*.

The Gulf of Maine Marine Debris Committee builds awareness of and reduces discharge and inadvertent release of marine debris and other contaminants into the Gulf of Maine.

The **Gulf of Maine Public Education and Participation Committee** cultivates a sense of stewardship among the citizens of the Gulf of Maine region to enable them to make responsible decisions regarding the uses of the resources of the Gulf of Maine.

Canadian and U.S. Gulf of Maine Associations

The Associations are tax-exempt, not-forprofit organizations created in both Canada and the United States by the Gulf of Maine Council to help it achieve its short and longrange agendas.

Gulf of Maine Council governmental and private delegates from New Brunswick and Nova Scotia, and Gulf of Maine Council governmental and private delegates from Maine, Massachusetts, and New Hampshire are the Directors and sole members of the Canadian Gulf of Maine Association and the U.S. Gulf of Maine Association, respectively.

Gulf of Maine Program

Canadian Association of Delegates
U.S. Association of Delega

Gulf of Maine Council
--Gulf Working Group

_Secretahat

Data & Information Management Committee
Mission Statement:
To facilitate the access to Gulf-related data & information

Environmental Monitoring Committee
Mission Statement:
To implement and refine the Council's environmental monitoring plan

Marine Debris Reduction Committee
Mission Statement:
To build awareness and reduce discharge of marine debris

Public Education and Outreach Committee
Mission Statement:
To cultivate a sense of stewardship and enable people to make responsible decisions regarding Gulf resources

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Appendix III

The Gulf of Maine Program Secretariat, 1996 - 2001

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1998-1999 Jurisdiction

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1999-2000 Jurisdiction

New Hampshire Department of
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Contact: Chris Simmers

1995-96 Jurisdiction

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Appendix IV

Agreement on Conservation of the Marine Environment of the Gulf of Maine between the Bordering States and Provinces

(Amended June, 1992)

The Governments of Maine, Massachusetts, New Brunswick, New Hampshire, Nova Scotia, as Parties to this Agreement; and

Considering that the shoreline, seabed, waters, and associated natural resources of the Gulf of Maine region, including Georges Bank and the Bay of Fundy, constitute precious public natural resources shared by the contiguous States and Provinces; and

Considering that the natural resources of the Gulf of Maine are interconnected and form part of an overall ecosystem that transcends political boundaries; and

Considering that the sustainable development and use of these resources for recreational and aesthetic enjoyment activities, as well as fish and wildlife habitat, are dependent on the ecological integrity of the Gulf ecosystem; and

Considering that the planning and management of human activities which may affect the Gulf ecosystem should recognize and be based upon an understanding of the system's integrity; and

Considering that the Parties to this agreement recognize a shared duty to protect and conserve the renewable and non-renewable resources of the Gulf for the use, benefit, and enjoyment of all their citizens, including generations yet to come; and

Considering that the most effective means of protecting, conserving, and managing the region's resources is through the cooperative pursuit of consistent policies, initiatives, and programs; and

Considering that studies conducted by National, State, and Provincial governments and other agencies have found that, without prudent Management, the future development and use of the Gulf resources may have significant adverse impacts on the environment, economy, and general welfare of the Parties and have agreed to the following:

1. The Parties agree to establish a **Gulf of Maine Council** on the Marine Environment to discuss and act upon environmental issues of common concern including but not limited to:

- the protection and conservation of the ecological balance within the Gulf of Maine ecosystem;

- the problem of marine debris and medical waste;
- the relationship between land use and the marine environment;
- the sustainable use of resources within the Gulf of Maine;
- cooperative programs to better protect and conserve the Gulf's natural resources.

2. The Gulf of Maine Council on the Marine Environment will be composed of three representatives from each of the Gulf of Maine States and Provinces to be appointed by their respective Governors and Premiers within sixty days of the effective date of this Agreement.

3. The Gulf of Maine Council on the Marine Environment will produce its first annual report on environmental trends and conditions including specific recommendations on a Gulf of Maine Action Plan within fifteen months of its appointment.

4. The Parties agree to minimize actions that would result in degradation of environmental quality or depletion of resources that individually or cumulatively could result in significant adverse impacts on resources leading to loss of sustainable use or environmental viability.

5. The Parties agree to design and develop a coordinated monitoring program to provide improved information for future decisions concerning the Gulf.

6. The Parties agree that the successful conservation of Gulf resources will require the development of additional agreements or protocols on specific issues or concerns that may be raised from time to time.

SIGNATURES:

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b
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Premier, Nova Scotia

1-1 ?norabl/eJudd Greg~?
Governor, New Hampshire
Honourable Frank McKenna
Premier, New Brunswick

IVAAU.t'e~ Jave,
Honorable William F. Weld
Governor, Massachusetts