Evaluation of Legal Mechanisms For Establishing Marine Protected Areas in the Gulf of Maine

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Gulf of Maine Marine Protected Areas Project

By:

Sam Brody

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Executive Summary

Marine protected areas (MPAs) have been identified as an important tool for managing, protecting, and understanding marine resources in the Gulf of Maine. The intricately linked nature of the Gulf of Maine ecosystem and its transboundary socioeconomic and resource issues warrant an ecosystem-based approach to establishing MPAs. A coherent network or system of MPAs may offer an effective means for promoting the sustainable use and conservation of regionally significant marine resources. The coordination of protected areas efforts throughout the Gulf of Maine could more readily achieve commonly held conservation goals, as opposed to ad hoc or reactive methods of marine management.

An evaluation of the existing legal framework for MPAs is necessary when considering and ecosystem-based approach to protection in the Gulf of Maine. This document seeks to describe and interpret the major agreements, laws, and programs relevant to establishing MPAs. In cases where laws are not geared exclusively towards creating MPAs, only applicable portions or sections are emphasized. The report is not meant to be an exhaustive list or detailed analysis of every law or program, but an evaluation and comparison of the options which would have to be employed if a Gulf-wide approach to MPAs is taken. Those interested in further details should consult with legal text or with contact people listed in table 2. Each legal instrument is described from an international, federal, or state/provincial perspective.

The greatest opportunity for designating and implementing MPAs in the Gulf of Maine lies at the federal level. Six laws geared specifically toward protecting discrete areas in the marine environment are described in detail. While there are differences in the focus of each program, there is also overlap in their language and general intent. International laws and agreements provide a solid framework for establishing MPAs, but often lack the legislation and enforcement powers to actually create protective measures within marine environments. At the state/provincial level, there are few laws which focus on MPAs. Only the *Massachusetts Ocean Sanctuaries Act* allows for the establishment of protected areas offshore. In general, there are many laws and programs which either directly support or compliment MPAs. A Gulf-wide effort will most likely be accomplished through a combination of several legal instrument seeking to attain a common goal.

Introduction

As defined by the IUCN, a marine protected area is “any area of intertidal or subtidal terrain, together with its overlying water and associated flora, fauna, historical and cultural features, which has been reserved by law or other effective means to protect part or all of the enclosed environment.” Marine protected areas (MPAs) have been identified as an important tool for managing, protecting and understanding marine resources in the Gulf of Maine. The Gulf of Maine, a 36,000 square mile basin stretching from the tip of Cap Cod to the Bay of Fundy, is an intricately linked marine system distinguished by a counter clockwise water current (gyre). The ecosystem is constantly in flux, and as a result habitats are often linked through the movements of priority species and other organisms. An ecosystem-based approach to the establishment MPAs may offer an effective means for protecting some of the transboundary resources in the Gulf and better address environmental and socioeconomic issues contributing to the decline of the marine ecosystem. In this sense, an ecosystem-based MPAs initiative could offer benefits not gained through traditional ad hoc or reactive approaches to marine protection.

Considering an ecosystem-based approach to establishing MPAs in the Gulf of Maine calls for an evaluation of existing legal options. Within the Gulf of Maine region, there are several agreements, laws and programs which support or could be applied to the establishment of MPAs (Table 1). Each option has its own jurisdictional complexities, specific objectives, and protective measures. Some are focused entirely on the designation of MPAs, while others merely support the concept of protecting discrete areas in the marine environment. In general, a Gulf-wide initiative cannot be accomplished through one legal instrument, but by a combination of many seeking to attain a common goal. In this sense, it is important to understand the commonalties and differences among each option to determine if a legal collaborative approach is viable when designating MPAs the Gulf of Maine.

Table 1: Legal Mechanisms Applicable to MPAs in the Gulf of Maine			
International Agreements			
UN Law of the Sea Convention	UNEP Regional Seas Programme	Convention on Biological Diversity	UNESCO Biosphere Reserve Programme
Ramsar Convention	Marpol 73/78	World Heritage Convention	UN Agreement on Straddling Fish Stocks
Bilateral Agreements: Migratory Birds Convention, N. American Waterfowl Management Plan, GOMCE Agreement			
Major Federal Laws and Programs			
Canada:			
Canadian Wildlife Act	National Parks Act	Canada Oceans Act	
United States:			
Coastal Zone Management Act	Magnuson-Stevens Fishery Conservation and Management Act	Marine Protection, Research, and Sanctuaries Act	
Supporting Federal Laws and Programs			
Canada:			
Fisheries Act	Canada Shipping Act	Pilotage Act	Coastal Fisheries Protection Act
Navigable Waters Protection Act	Canada Water Act	Canadian Environmental Protection Act	Canadian Environmental Assessment Act
Canada Oil and Gas Operations Act			
United States:			
Clean Water Act	National Wildlife Refuge System Act	Migratory Bird Treaty Act	Fish and Wildlife Coordination Act
Endangered Species Act	Marine Mammal Protection Act		
State/Provincial Laws and Programs			
Maine:			
Natural Resources Protection Act	Shoreland Zoning Act	Critical Area & Endangered Plant Program	Heritage Coastal Areas Program
New Hampshire:			
Endangered Species Conservation Act	Areas of Particular Concern Program		
Massachusetts:			
Ocean Sanctuaries Act	Areas of Critical Environmental Concern Program	MA Environmental Policy Act	MA Endangered Species Law
New Brunswick:			
Ecological Reserves Act	Provincial Parks Act		
Nova Scotia:			
Special Places	Provincial Parks Act		

Protection Act

International Agreements Applicable to MPAs in the Gulf of Maine

A growing number of international conventions, agreements, and other legal instruments focusing on the conservation of marine environments have applicability to the Gulf of Maine. Many of these call for the development of MPAs, while others provide a framework for their future establishment.

United Nations Convention on Law of the Sea (UNCLOS)

The 1982 United Nations Convention on Law of the Sea (UNCLOS) entered into force in November 1994. Ratified by over 80 nations, this Convention establishes a global legal framework governing ocean use and codifies much of what is customary law regarding marine jurisdictions, rights to resource exploitation, and conduct in marine areas. The UNCLOS makes only limited reference to marine protected areas (MPAs), but does reinforce designations pursuant to other international agreements. Article 211.6 of the treaty cites the need for designation of "special areas" potentially threatened by vessel-source pollution. In addition, Article 194.5 directs States to protect and preserve rare or fragile ecosystems from pollution and technologies under their control. While the US considers most of its principles to be customary international law, it has yet to ratify UNCLOS.

United Nations Environment Program (UNEP) Regional Seas Conventions

UNEP's Regional Seas Programme seeks to address common environmental problems in selected shared bodies of water by promoting cooperation on coastal and marine matters of regional concern. The most comprehensive legislative measures for MPAs have been taken through this Programme and to date, international conventions have been adopted for eight regions. Protocols under the agreements provide for the regulation of activities, the creation of buffer zones, and international cooperation over frontier protected areas. The Protocol on Specially Protected Areas and Wildlife (SPAW) under the Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region is one such example. This Protocol calls for the creation of a MPAs network that conserves and restores habitats and their associated ecosystems (Freestone, 1990). As of 1990, nations of the Caribbean had established 135 marine and coastal protected areas, forming the basis of the current regional network (Miller, 1990). As a multi-jurisdictional marine ecosystem of high value, the Gulf of Maine could be an ideal location for the UNEP Regional Seas Programme. However, most agreements to date focus on larger areas containing more than two participating nations.

Convention on Biological Diversity

The Convention on Biological Diversity (CBD), which entered into force in 1994, is a legally binding agreement targeting biodiversity at all levels, both terrestrial and marine. In this sense, the Convention establishes a set of general obligations that each party is to elaborate and expand upon at the national level. In November 1995, the second conference of the Parties (COP II) concentrated on marine and coastal biodiversity. The outcome of COP II was a non-binding

document known as the Jakarta Mandate, emphasizing the CBD as a tool for promoting the conservation of marine and coastal biodiversity. Article 8 of the Mandate calls for the establishment of MPAs for the conservation and sustainable use of threatened species, habitats, living marine resources, and ecological processes. Furthermore, Action Item 2 outlines a series of obligations and recommendations, including the development of representative systems of marine and coastal protected areas, and the enhancement of linkages and information among the sites (de Fountabert, Downes & Agardy, 1996). Canada has played a central role in determining the outcome of the CBD. The US has signed but not ratified the agreement and has no legal obligation to follow its mandates and guidelines.

UNESCO Biosphere Reserve Programme

The United Nations Educational, Scientific and Cultural Organization (UNESCO) began its Man and Biosphere (MAB) Programme in 1971 and in 1974 initiated its Biosphere Reserve Programme as one aspect of the wider MAB philosophy. The MAB Programme involves research, education, and information transfer to resolve conflicts between conservation and development (Agardy, 1997). Biosphere Reserve designations take a "man-in approach" by incorporating human needs and activities into long-term planning (Kenchington and Agardy, 1990). Central to the model is multiple-use zoning to protect sensitive habitats and critical ecological processes in core areas, while allowing human use in surrounding buffer zones (Agardy, 1990).

Biosphere reserves are ideal for protecting coastal and marine environments characterized by multiple jurisdictions, large-scale ecological interactions, and heavy human use. They have already been suggested for managing critical marine resources in the Gulf of Maine region. Specific proposals for the Bay of Fundy and an area extending from Cape Cod Bay to the northern limits of the Scotian Shelf have been suggested as an effective means of achieving the sustainable use and conservation of threatened resources (Agardy, 1995; Agardy and Broadus, 1987). To date, no activity has been undertaken to implement the Biosphere proposals in the Gulf of Maine.

Ramsar Convention

The Convention on Wetlands of International Importance (Ramsar Convention) has been in force since 1975 and is geared towards protecting both fresh-water and coastal wetlands. Parties to the Ramsar Convention are obligated to designate at least one wetland area of international significance and take measures to promote the conservation and wise use of those sites. As of November, 1995, there were 90 contracting parties to the Ramsar Convention (including the US and Canada), with 765 Wetlands of International Importance sites totaling 52 million hectares (Agardy, 1997). There are four Ramsar sites designated in the Bay of Fundy covering 41,220 hectares, three of which have a marine component.

MARPOL 73/78

The 1973 International Convention for the Prevention of Pollution from Ships (MARPOL) and the 1978 Protocol Relating Thereto seek to restrict vessel discharges of oil, noxious liquid substances in bulk, harmful substances in containers, sewage and garbage. MARPOL 73/78 also imposes stricter shipping standards on Special Areas and more recently on Areas to Be Avoided (ATBAs) and Particularly Sensitive Sea Areas (PSSAs). These areas have been designated for special protection from maritime activities due to their sensitivity with regard to renewable natural resources or scientific significance (Meltzer, 1997).

World Heritage Convention

The Convention Concerning the Protection of the World Cultural and Natural Heritage (World Heritage Convention) aims to designate and protect natural areas and cultural sites of outstanding universal value, such as the Great Barrier Reef in northeastern Australia. Designations of World Heritage Sites under the Convention are restricted to the territory, including the territorial sea, of one of the 146 Contracting Parties (including Canada and the US). A World Heritage site in the Gulf of Maine could facilitate the management and protection of regionally significant areas spanning several jurisdictions. Because these sites are merely designations, to be effective, they have to be supported by strong regulation at the federal or state/provincial levels, as well as a political commitment from several jurisdictions to protect and manage the area.

UN Agreement on Straddling Fish Stocks

The UN Agreement on Straddling Fish Stocks and Highly Migratory Fish Stocks builds upon the provisions of UNCLOS concerning fish species that move between EEZs and the high seas or migrate over vast distances. While the effect of most of the provisions of the Agreement are more pronounced on the high seas, the general objective is to ensure the conservation and sustainable use of target straddling species or highly migratory species. The agreement calls for the protection of habitats and ecosystems of special concern both within the EEZs and on the high seas (Meltzer, 1997).

Bilateral Agreements

There are also bilateral agreements which support the establishment of marine protected areas (MPAs) in the Gulf of Maine including: the Migratory Birds Convention, the North American Waterfowl Management Plan, and the Agreement on Conservation of the Marine Environment of the Gulf of Maine. The Gulf of Maine Council on the Marine Environment's (GOMCE) Agreement in 1989 and corresponding Action Plan offers perhaps the greatest opportunity to establish an integrated system of MPAs in the Gulf of Maine based on the protection of "regionally significant" habitats. The Council, consisting of state/provincial representatives and federal partners, is distinctive for maintaining an ecosystem-wide perspective and for its attention to issues of transboundary significance. While it has no enabling legislation or regulatory control, the GOMCE is the only international body with the representation and institutional support to establish a MPAs program for the Gulf of Maine. Its Action Plan for 1996 - 2001 states as a measurable objective the achievement of 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.

Analysis and Interpretation

In general, international law, its conventions and agreements applicable to the Gulf of Maine does not offer strong options for establishing MPAs within the territorial seas. While international law lays out general principles for States to follow, it often lacks the legislation and enforcement powers to actually create protective measures within marine environments. Not only are these laws generally non-binding, but many of the available conventions, such as the CBD and the UNCLOS have yet to be ratified by the US and therefore may be less relevant. International agreements usually rely upon the use of available legal mechanisms within participating nation-states. Therefore, to give strength to an agreement, parties must be willing to pass or apply regulations accordingly.

The GOMCE's Action Plan offers a strong bilateral opportunity for the establishment of a Gulf-wide MPAs system through its goal to protect regionally significant habitats. A major obstacle, however, is the Council's inability to include or address commercial fishing issues. The over-harvesting of living marine resources is a central consideration for an MPAs program that must receive attention. In general, the Council has yet to clearly define the role of MPAs in achieving its stated measurable objectives and strategies. In addition, it has no regulatory authority, but instead must rely on the cooperation of its 15 members to implement and enforce available legislation. It is also important to note that the Council is primarily a state/provincial organization yet the strongest legal mechanisms for MPAs in the Gulf of Maine exist at the federal level.

Major Federal Laws Applicable to MPAs in the Gulf of Maine

As noted above, while there exist international agreements advocating the establishment of MPAs, many are non-binding and rely on the goodwill of member states to fulfill their international obligations. Perhaps the strongest legislative framework for developing MPAs in the Gulf of Maine is at the federal level. In Canada, the *Canada Wildlife Act*, the *National Parks Act*, and the *Oceans Act* are all geared toward establishing MPAs (for slightly different purposes) and together encourage the development of a national MPAs network. In the US, the *Marine Protection, Research, and Sanctuaries Act*, recent revisions to the *Magnuson-Stevens Fishery Conservation and Management Act*, and the *Coastal Zone Management Act* are the principal legal instruments allowing for the creation of MPAs.

Canada

National Parks Act

The *National Parks Act* (as amended in 1988) enables Parks Canada to establish National Marine Conservation Areas (NMCAs). The primary objective of the NMCA Program is to set up a network of representative marine protected areas in each of Canada's 29 marine eco-regions (Parks Canada, 1995). NMCAs are managed for ecologically sustainable use and rely on a variety of conservation mechanisms from small zones of high protection to areas where most resource harvesting and other activities could continue under careful management. MNCAs are relatively large areas and may protect the sea bed, its subsoil and overlying waters, the associated fauna and flora, islands, and even some coastal lands. In addition to representing the diversity of Canada's oceanic and Great Lakes environments, NMCAs are also focused on maintaining ecological processes, as well as protecting endangered species and their habitats. The Bay of Fundy marine region falls within the Gulf of Maine. However this region is not yet represented in the NMCA system. The *National Parks Act* will soon be replaced by the National Marine Conservation Act (tabled in Parliament), which will strengthen the use of NMCAs as a tool for conservation and management.

Canada Wildlife Act (CWA)

The *Canada Wildlife Act* (CWA) was amended in 1994 to allow for the establishment of Marine Wildlife Areas out to 200 nautical miles. These designations are meant to protect marine wildlife and their habitats for the purpose of conservation, research, and interpretation (Zurbrigg, 1996). The Canadian Wildlife Service uses Marine Wildlife Areas and other legislative tools, such as National Wildlife Areas and Migratory Bird Sanctuaries, to protect marine areas primarily for the conservation of populations of migratory birds and the ecosystems upon which they depend. While CWS is not interested in managing fish populations directly, it does recognize that fish play a vital role in the food chain for birds. There are currently no Marine Wildlife Areas in the Gulf of Maine. However, there are approximately 3 National Wildlife Areas having a coastal, estuarine or marine component (totaling 2,218 ha) and 5 migratory bird sanctuaries (totaling 1,150 ha) in the Gulf of Maine region.

Oceans Act

The *Oceans Act*, enacted in December 1996, established a third federal program in Canada by enabling the Department of Fisheries and Oceans (DFO) to designate a Marine Protected Area (MPA) (Department of Fisheries and Oceans, 1997). These areas are meant to conserve marine resources and their habitats. The Oceans Management Strategy (OMS), Part II of the *Oceans Act*, identifies DFO as the lead agency in coordinating the development of a national system of MPAs in Canada. In this capacity, DFO will collaborate with other government agencies, particularly Canadian Heritage and Environment Canada (which have complementary MPA programs) to achieve a national network of MPAs as a framework for conservation in the coastal zone. The *Oceans Act* may prove to be the most powerful legal option for establishing MPAs in the Gulf of Maine. To date there are no DFO-designated MPAs in the Gulf of Maine.

United States

Marine Protection, Research and Sanctuaries Act (MPRSA)

Title III of the Marine Protection, Research and Sanctuaries Act (MPRSA) authorizes the Secretary of Commerce of the United States to designate and protect discrete areas of the marine environment as National Marine Sanctuaries. These areas must be of national significance, and existing authorities must be inadequate to ensure comprehensive conservation and management, resource protection, scientific research, and public education. A National Marine Sanctuary is eligible for special regulatory controls and management by the National Oceanic and Atmospheric Administration (NOAA). Although natural resource protection is emphasized, multiple uses are encouraged within these areas (Marine Law Institute, 1992).

In 1992, the US Congress designated the Stellwagen Bank National Marine Sanctuary, a 638 square nautical mile area over and around Stellwagen Bank off the Commonwealth of Massacusetts. The Sanctuary attempts to protect one of the most productive marine environments in the US, including important habitats for fish, whales, and other marine mammals. Exploration for and mining of sand, gravel and other minerals is prohibited within the Sanctuary.

Magnuson-Stevens Fishery Conservation and Management Act

Recent amendments to the *Magnuson-Stevens Fishery Conservation and Management Act* include substantial new provisions to protect Essential Fish Habitat (EFH). These provisions require the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA Fisheries), along with regional fishery management councils, to take measures to identify and protect EFH. These requirements include identification of EFH, adverse impacts to EFH (including adverse impacts from fishing), and actions to conserve and enhance EFH. An ecosystem approach is to be used in identifying and assessing the EFH of a given species assemblage (NMFS, 1997). Because the revisions are so recent, specifics have yet to be determined.

In the Gulf of Maine, the National Marine Fisheries Service (NMFS) will be working with the New England Fishery Management Council to designate EFH several NE groundfish species, Atlantic scallops, American lobsters, and Atlantic salmon. Once EFH is designated, NMFS will be required to provide conservation recommendations regarding any proposed federal or state agency action that would adversely affect EFH. Fishery management options may include, among others: closing areas to all fishing or specific gear types during spawning, migration, foraging and nursery activities; and designating zones to limit effects of fishing practices on certain vulnerable or rare areas, species, or at certain life history stages (NMFS, 1997). Area closures have been used for management purposes for some time through the implementation of Northeast Fisheries Management Plans. Within the Gulf of Maine region, there have been closed haddock spawning areas in place since 1982. However, these closures are based on single species stock management, rather than the protection of habitat. While the EFH does not require the establishment of MPAs, if used to its fullest extent, it could prove to be a leader in the US in terms of protecting important habitats from the adverse impacts of human activities.

Coastal Zone Management Act - National Estuarine Research Reserve System

The *Coastal Zone Management Act* provides for a National Estuarine Research Reserve System to establish and manage a national system of estuarine reserves representing different regions and estuarine types in the US. The system is administered by the Sanctuaries and Reserves Division of NOAA's Office of Ocean and Coastal Resources Management (OCRM). To receive designation, the Secretary of Commerce must find that the area is a representative estuarine ecosystem suitable for long-term research; that the law of the coastal state provides long-term protection for reserve resources; that designation of the site will enhance public awareness and understanding; and that the state has complied with applicable regulations. In addition to scientific research and monitoring, the NERR mission entails the long-term protection of estuarine reserve resources and the enhancement of public awareness and understanding of the marine environment. Each of the three of the Gulf of Maine coastal states has a designated NERR. The Waquoit Bay site on Cape Cod represents the Virginian Biogeographic region, and sites in Great Bay, New Hampshire and Wells, Maine represent the Acadian boreal region.

Table 2: Major Federal Laws Applicable to MPAs						
Legislation	**National Parks Act**	**Canada Wildlife Act**	**Oceans Act Canada**	**Marine Protection, Research and Sanctuaries Act**	**Coastal Zone Management Act**	**Magnuson-Stevens Fishery Conservation and Management Act**
Lead Agency	Parks Canada	Environment Canada/ Canadian Wildlife Service	Department of Fisheries & Oceans Canada	Sanctuaries and Reserves Division (SRD)/Office of Ocean and Coastal Resource Management (OCRM)/National Oceanic and Atmospheric Administration (NOAA).	Sanctuaries and Reserves Division (SRD)/Office of Ocean and Coastal Resource Management (OCRM)/National Oceanic and Atmospheric Administration (NOAA).	National Marine Fisheries Service (NMFS)/NOAA
Designation	National Marine Conservation Areas	Marine Wildlife Areas	Marine Protected Areas	National Marine Sanctuary-Stellwagen Bank	National Estuarine Research Reserve (NERR)	Essential Fish Habitat (EFH)
# of sites in GOM	0	0	0	1	3	0
Jurisdiction	Internal Waters, territorial sea, and EEZ. Coastal or offshore. Includes sea bed, subsoil, and the overlying column of water.	Out to 200 nautical miles (EEZ).	Internal waters, territorial sea, and EEZ. Coastal or offshore.	Out to the EEZ	Estuarine areas in state or federal waters	Out to the EEZ.

Table 2: Major Federal Laws Applicable to MPAs						
Legislation	**National Parks Act**	**Canada Wildlife Act**	**Oceans Act Canada**	**Marine Protection, Research and Sanctuaries Act**	**Coastal Zone Management Act**	**Magnuson-Stevens Fishery Conservation and Management Act**
Program Objectives	Conserve representative areas from 29 regions. To provide opportunities for public understanding, appreciation, and enjoyment of natural and cultural marine heritage.	To protect nationally significant habitats, especially for migratory birds for the purpose of wildlife research, conservation and interpretation.	To conserve and protect marine resources and habitats. Develop a network of MPAs which reflects the diversity of the oceans.	To identify and designate marine areas of special national significance; providing for their conservation and management; supporting scientific research and monitoring; Enhancing public awareness,…and wise use of the marine environment. (16 U.S.C. 1431).	Create a NERR system to ensure a stable environment for research and monitoring through long-term protection; address coastal management issues identified as significant; enhance public awareness and understanding of the estuarine environment.	To improve the linkage between harvest management and habitat conservation to facilitate the sustainable management of fisheries.
Selection Criteria	Naturalness, representativeness, ecosystem diversity.	Importance to migratory birds; rare and endangered species.	Criteria in development. Based on the purposes for MPAs stated in section 35 of Oceans Act, plus other factors including social and economic values, immediacy of need, practicality, partnership opportunities, Community support, scientific importance, educational value, regional, national or international significance, etc.	Natural resource values; human use/ historical values; potential activity impacts; management concerns.	Area that is a representative estuarine ecosystem suitable for long-term research; law of coastal states provides long-term protection; site will enhance public awareness and understanding; state has complied with applicable regulations.	None yet finalized, but based on waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.

Table 2: Major Federal Laws Applicable to MPAs						
Legislation	**National Parks Act**	**Canada Wildlife Act**	**Oceans Act Canada**	**Marine Protection, Research and Sanctuaries Act**	**Coastal Zone Management Act**	**Magnuson-Stevens Fishery Conservation and Management Act**
Participation/ Community Involvement	Consultation with communities during area establishment, management, planning and review. Management advisory committees for each site.	Consultation with communities, governments and individuals at proposal/ establishment stage, management plan development and review.	Minister may consult with other federal ministers, boards and agencies, aboriginal groups, and coastal communities. Nomination of areas by interested parties.	Public commentary is invited and encouraged during the selection and designation process. Public comments may be incorporated in the management plan.	Public participation and input is required early in the site selection process through public hearings. Local citizens are also involved in NERR activities, such as monitoring.	Opportunities for public comment exist through the Regional Councils in verbal and written format.
Partnerships	Partnerships with DFO managing fisheries; Transport Canada and DFO/Coast Guard managing marine transport and navigational issues.	Agreements with provincial/territorial governments, First Nations, and other parties. Partnership agreements may be developed for area establishment, cooperative management of the area, and for other programs.	Minister shall cooperate with other federal or provincial ministers, boards and agencies, aboriginal groups, and coastal communities. Partnering with diversity of stakeholders including coastal communities, fishing industry, conservationists, governments, etc.	NOAA at times works closely within the existing administrative framework of state agencies to ensure a coordinated approach to resource management. A chief aim is to cooperate fully with other State and State-related programs which can involve formalization of cooperative agreements and Memoranda of Understanding (MOU). In general partnerships are not a requirement of the NMS Program.	The NERR System relies heavily on collaboration between federal, state, and local participants. Partnerships are solidified by an MOU between federal and state entities.	Designation of EFH will involve partnerships between NMFS, the Councils, Atlantic States Marine Fisheries Commission, state agencies, other federal agencies, NGOs, and other entities. Formal agreements will be developed between NMFS and each Council on EFH conservation recommendations.

Table 2: Major Federal Laws Applicable to MPAs						
Legislation	**National Parks Act**	**Canada Wildlife Act**	**Oceans Act Canada**	**Marine Protection, Research and Sanctuaries Act**	**Coastal Zone Management Act**	**Magnuson-Stevens Fishery Conservation and Management Act**
Protection Measures	Zoning (3 levels), management plans.	Management plans determining specific regulations.	Zoning, management plans, temporal and spatial closures, prohibition of activities.	Management plans; in some cases zoning (not in Stellwagen Bank (SB)).	Management plans, including a resource protection and restoration plans.	Fish Management Plans (FMPs) implemented by regional councils.
Level of Protection	Seabed mining, oil and gas exploration and extraction, ocean dumping, and sport hunting prohibited. Highly protected zones buffered by multiple use areas.	Regulations would focus on human activities including broad prohibitions. Specific levels of protection would be determined on a site by site basis.	Level of protection determined on site by site basis and can vary from strict no take zones to areas where controlled activities are permitted.	Regulations vary by sanctuary and have been adopted restricting oil and gas development, limiting harvest of marine resources, prohibiting dumping or discharging of wastes, and limiting vessel traffic. SB prohibits exploration for and mining of sand, gravel and other minerals.	Regulations vary by site, but commercial development is prohibited or strictly controlled in most sites.	Councils must manage the effects of fishing on EFH; options may include fishing gear restrictions, closed areas/times, harvest limits; avoidance and minimization of adverse impacts on EFH, enforcement of best management practices.
Research	NMCAs are to encourage research and ecological monitoring	Research could provide the purpose for establishing a proposed area. Aimed at wildlife ecology and monitoring, habitat restoration, and wildlife habitat relationships.	MPAs may be used as laboratories to conduct research. Information will be gathered for understanding oceans and their living resources, as well as hydrographic, oceanographic, fisheries, and other marine systems.	NMS's should support, promote, and coordinate scientific research and monitoring of the resources of these areas.	Research and monitoring of the estuarine environment is the central component of the NERR program.	Research agenda is to provide information to refine the designations of EFH and to improve understanding of threats and conservation measures.

Table 2: Major Federal Laws Applicable to MPAs						
Legislation	**National Parks Act**	**Canada Wildlife Act**	**Oceans Act Canada**	**Marine Protection, Research and Sanctuaries Act**	**Coastal Zone Management Act**	**Magnuson-Stevens Fishery Conservation and Management Act**
Education	Marine education/interpretation programs. Cooperation with schools and other institutions.	Marine education/ interpretation programs.	Establishing a public education and awareness program using a wide range of educational tools and catering to different audiences.	Educational programs are used to increase public awareness of marine resources, the dangers to those resources, enrich public school programs, and enhance protection efforts. Education is achieve through classroom lectures and field experiences.	NERRs all have a strong educational component aimed at enhancing public awareness at all levels. Program include on-site interpretive centers and school education activities.	None Developed

Table 2: Major Federal Laws Applicable to MPAs						
Legislation	**National Parks Act**	**Canada Wildlife Act**	**Oceans Act Canada**	**Marine Protection, Research and Sanctuaries Act**	**Coastal Zone Management Act**	**Magnuson-Stevens Fishery Conservation and Management Act**
Enforcement	Fines up to CA$2,000 for breaking regulations; up to CA$10,000, plus 6 months imprisonment for poaching of listed threatened species; up to $150,000, plus 6 months imprisonment for poaching listed protected species.	Enforcement strategy will rely heavily on public education and communication, rather than on physical inspection by officers. However, penalties may apply as in the case of NWAs with fines up to $100,000 for an individual plus 6 months and up to $250,000 for a corporation and up to 5 years imprisonment. Fines cumulatively imposed for each animal, plant or organism involved in offense. Other enforcement options include community service, remedying harm, or paying cost of remedial action.	Fines up to CA$100,000 (summary conviction) or CA$500,000 (indictable offense). Fines cumulatively imposed for each animal, plant or organism involved in offense. Other flexible remedies available such as community service, remedying harm, or paying cost of remedial action.	Permits for specific activities; penalties for infractions from US$50,000 to US$100,000 for each violation day.	Enforcement measures are conducted through the state and federal laws applicable to each site.	NMFS will enforce fishing regulations, but other protection measures are not enforceable by NMFS.

Table 2: Major Federal Laws Applicable to MPAs						
Legislation	**National Parks Act**	**Canada Wildlife Act**	**Oceans Act Canada**	**Marine Protection, Research and Sanctuaries Act**	**Coastal Zone Management Act**	**Magnuson-Stevens Fishery Conservation and Management Act**
Funding	not available	Must rely on cost-sharing and agreements since the extended responsibility of NWAs came with no new funding.	Not available	Authorized funding for the NMSP for FY1996 was US$20 million. SB receives approximately US$500,000 annually from the federal government.	Funding for acquisition, development, and operation of reserves is based on a 50/50 match between state and federal government. Annual federal appropriations range between US$3-4 million.	Funding still being determined and varies by organization. For FY 1998, NMFS will have US$360,000 in the Northeast Region, plus some additional funds from a nationally competitive process for EFH research.
Contact Person	Francine Mercier, Parks Canada, Dept. of Canadian Heritage, 25 Eddy St., 4th Floor, Hull Quebec K1A 0M5; (819) 997-4916; francine_mercier@pch.gc.ca	Diane Amirault, Environment Canada, P.O. Box 1590, Sackville, New Brunswick EOA 3C0l (506) 364-5060; diane.amirault@ec.gc.ca	Bob Rutherfor/Derek Fenton, Dept. of Fisheries and Oceans, P.O. Box 550, Halifax, NS B3J 2S7; (902) 426-8398; derek.fenton@maritimes.dfo.ca	Brad Barr, Stellwagen Bank NMS, 14 Union St., Plymouth, MA 02360; (508) 747-1691; bbarr@ocean.nos.noaa.gov	Randall Schneider, SRD/OCRM/NOAA, 1305 East-West Highway N/ORM2, Silver Spring, MD 20910; (301) 713-3132; rschneider@oceans.nos.noaa.gov	Jon Kurland, NMFS, 1 Blackburn Dr., Glouchester, MA 01930-2298; (508) 281-9328; jon.kurland@noaa.gov

* Some Information taken from Meltzer, 1997.

Analysis and Interpretation

From a broad perspective, there are many commonalties among the six laws described above that could be built upon in a Gulf-wide MPAs initiative (Table 3). Each law or program seeks to protect discrete areas in the marine environment which are important or significant in some way. The language of each option emphasizes an ecosystem approach to marine protection based not solely on a particular species, but the habitats on which they depend. While there are differences with regard to the types of species being protected, each law recognizes the interconnectedness of marine ecosystems and the need to take a regional perspective when designating sites. Another important commonality between the federal laws is a focus on building partnerships and fostering coordination across jurisdictions and among organizations. For example, the NERR system relies heavily upon collaboration between federal, state and local entities. In Canada, a high level of coordination is already being demonstrated by the DFO, which will act as a lead agency in developing a national system of MPAs. Strong commonalties are also apparent with respect to using MPAs as places for increasing scientific research and public education on the marine environment.

Although the six federal laws described above have areas of overlap each has its own focus, selection criteria, and set of protection measures. For example, the *National Parks Act* (Canada) and the *Coastal Zone Management Act* (US) seek to protect representative habitats, while *the Magnuson- Stevens Fishery Conservation and Management Act* (US) and *the Marine Protection, Research and Sanctuaries Act* (US) are geared more toward the protection of critical or essential marine habitats. The major laws applicable to MPAs may also concentrate on different types of species. The *Canada Wildlife Act* is concerned primarily with migratory birds, while the *Magnuson- Stevens Fishery Conservation and Management Act* (US) is meant to identify and conserve commercial fishery habitat. These differences in program focus makes a narrowly defined MPAs initiative for the Gulf of Maine (i.e. fish species or birds) unrealistic. Instead, an ecosystem-based effort comprising of several individual programs calls for a broad conceptual approach to MPAs backed by coordination across jurisdictions and organizations. A Gulf of Maine MPAs initiative will most likely be accomplished not by means of one law or program, but a combination of several. In this sense, established programs could be coordinated in their efforts as long as they are striving towards commonly held goals.

Due to emerging programs and a renewed emphasis on MPAs in the Gulf of Maine region, there are opportunities for regional coordination. Only 2 out of the 6 programs mentioned above currently have designated sites in the Gulf, making it timely to consider a collaborative initiative in light of possible future designations of MPAs. Furthermore, many programs such as the EFH and MWAs have yet to take shape due to their recent enactment. Legislatively, the greatest opportunities for establishing additional MPAs lies in the Maritimes, with the newly enacted *Oceans Act*. DFO could play an important role in promoting a cooperative effort in the Gulf of Maine given its mandate to take a systems approach and establish a network of MPAs. Also, in the US, the NMFS EFH Program may prove to be an important force in identifying and protecting fish habitats. Since

specific regulations have yet to be passed, the exact direction of this program remains uncertain. These relatively new legal options have specific language to identify and protect new marine areas, while in contrast, older options, such as the NMS Program and the NERR System, will most likely not expand their efforts in the Gulf of Maine region anytime soon.

Increasing interest in MPAs as a tool for marine conservation, and the arrival of laws and programs that focus on the protection of important habitats in the Gulf of Maine create opportunities for an ecosystem-based initiative. However, there are several obstacles that could prevent the establishment of future MPAs. Perhaps the largest barrier common to all laws and programs is the level of financial resources. All six programs have extremely limited funding, despite their lofty mandates. The pooling or matching of resources, particularly where there are commonalties, may generate enough funds or people to support the establishment of an ecosystem-wide network of MPAs. Lack of scientific information on important habitats is another potential obstacle. An important role for MPAs is to act as a laboratory to generate data, yet a certain amount of information is needed before a systematic approach to establishing MPAs can take place. A final barrier is the level of political interest to coordinate across international boundaries. Governments must be willing to make a commitment to cooperate at some level beyond their jurisdictions. The best way to accomplish this goal is to rely on existing forums for international collaboration, such as the Gulf of Maine Council on the Marine Environment.

Table 3: MPA Program Focus

Program Goals	DFO-Marine Protected Areas	CWS-Marine Wildlife Areas	Parks Canada-NMCAs	NOAA-NMS Program-Stellwagen Bank	NMFS-Essential Fish Habitat	NOAA-NERR System
Ecosystem Focus	X	X	X	X	X	X
Habitat Protection: representative critical	X X X	X X	X X	X X	X X	X X
Species Focus: whales fish birds	non-specific	 X	non-specific	X	 X	non-specific
Scientific Research	X	X	X	X	X	X
Education	X	X	X	X		X
Tourism/Recreation			X	X		X
Cultural/Heritage			X			

Supporting Federal Laws and Programs Relevant To MPAs in the Gulf of Maine

In addition to legislation geared specifically toward establishing MPAs (as defined under a broad definition), there exist several laws and programs that could support or be applied to the development of MPAs in the Gulf of Maine. In Canada, such legislation includes the *Fisheries Act, Canada Shipping Act, Pilotage Act, Navigable Waters Protection Act, Coastal Fisheries Protection Act, Canadian Environmental Protection Act, Canadian Environmental Assessment Act, Canada Water Act,* and *the Canada Oil and Gas Operations Act*. In the United States legislation includes: the *Clean Water Act, National Wildlife Refuge System Act, Endangered Species Act, Marine Mammal Protection Act, Migratory Bird Treaty Act*, and the *Fish and Wildlife Coordination Act*. Some of these laws and programs are described briefly below. For more information, please consult the legal text or responsible organizations.

Canada

Fisheries Act

Section 35 of the *Fisheries Act* prohibits the "harmful alteration, disruption, or destruction of fish habitat." Subsection 36(3) prohibits the deposit of deleterious substances in water frequented by fish. Both provisions could be used to control adverse human impacts in or around MPAs. The "Governor in Council" can also make regulations regarding the conservation and protection of fish and fish spawning grounds. Fishery closed areas and harvest refugia are available options to protect fish and their habitats.

Canada Shipping Act

Under the *Canada Shipping Act*, compulsory routing systems and other shipping traffic control measures can be adopted to re-route ship traffic beyond MPAs. The Governor in Council can enact regulations authorizing routing and navigational limitations for areas to be avoided for environmental purposes out to 200 nautical miles, and can also establish Vessel Traffic Service Zones (VTS) within internal waters and the territorial sea. In addition, navigation, operation, anchoring, mooring or berthing of ships can be limited or prohibited on the basis of environmental conditions. Special provision for wildlife areas can be made pursuant to these provisions.

Pilotage Act

Under the *Pilotage Act*, MPAs could be enhanced through "compulsory pilotage areas" where only a licensed pilot would be allowed to operate a ship through it. A requirement for local knowledge of waters could include knowledge of sensitive ecological areas to be avoided at all times or at specific critical times during the year (Graham et al., 1992).

Navigable Waters Protection Act

The *Navigable Waters Protection Act* prohibits unauthorized barriers or construction interfering with navigable waters and sets terms and conditions for the construction of works in navigable waters. It also regulates the disposal of wastes. The act could be used to prohibit ocean dumping in protected areas.

Canadian Environmental Protection Act

The Canadian Environmental Protection Act prohibits ocean dumping without a permit and regulates toxic substances. Under this Act, guidelines and codes of practice could be developed to protect sensitive marine areas or create buffers around MPAs.

United States

Clean Water Act - National Estuary Program

The National Estuary Program (under section 320 of the *Clean Water Act*) is administered by the US Environmental Protection Agency. The Agency or a state may nominate a marine site as an estuary of national significance. Once a site is designated, the Program convenes a "management conference" in which the goal is to prepare a comprehensive conservation and management plan (CCMP) for the estuary. Through CCMP, "special" areas within the estuary may be regulated to protect water quality or other features of importance. To date EPA has designated 17 national estuaries. Massachusetts and Cape Cod Bay, and Casco Bay (Mass Bays) are designations within the Gulf of Maine.

National Wildlife Refuge System Act

The *National Wildlife Refuge System Act* designates wildlife refuges, wildlife management areas, waterfowl protection areas and other areas for protection and conservation of fish and wildlife. Many wildlife refuges are sited in coastal areas and nearshore environments. The U.S. Fish and Wildlife Service manages these refuges to restore, preserve, develop and manage wildlife and wildlands habitat (50 CFR 25.11 (b)). Several National Wildlife Refuges exist in the Gulf of Maine including the Great Bay NWR, the Parker River NWR and the Petite Manan NWR. While NWRs focus mostly on terrestrial areas, they could be instrumental in supporting nearshore MPAs.

Endangered Species Act

The objective of the *Endangered Species Act* (ESA) is to protect the "ecosystems upon which endangered species and threatened species depend" and to provide a means for their

conservation (16 USC 1531(b)). The Act requires all federal agencies to conserve endangered and threatened species, including plant species. Section 7 prohibits federal agencies from taking any action to "jeopardize the continued existence of any endangered species or threatened species" or that will result in the destruction or adverse modification of critical habitat (16 USC 1536 (a)(2)). The ESA could provide a basis for establishing MPAs where endangered species exist.

Marine Mammal Protection Act

The *Marine Mammal Protection Act* (MMPA) provides federal protection, conservation, and management of marine mammals in danger of extinction or depletion as a result of human activities. The Act calls for the replenishment of endangered species of marine mammals, the protection of mating grounds, and negotiations to encourage the development of international cooperative research and conservation efforts. The MMPA imposes a moratorium on the taking and importation of marine mammals and marine mammal products, and states that species and population stocks should not be allowed to diminish below their optimal sustainable population. The Departments of the Interior and Commerce administer the Act and jointly manage the Marine Mammal Commission (MMC) to assist in the development of regulations for the taking of marine mammals and to conduct independent research. One applicable control strategy to reach the goals of the MMPA are specially protected areas. While the MMPA could be instrumental in helping to establish MPAs for habitats on which marine mammals depend, little has been done in terms of protecting discrete areas in the marine environment. Instead, activities under the Act have focused on scientific research, incidental death or injury of marine mammals from commercial fishing, and state harbor programs.

Fish and Wildlife Coordination Act

The *Fish and Wildlife Coordination Act* requires federal or private agencies to consider fish and wildlife species when planning federal water related projects. Federal agencies may acquire lands for wildlife purposes associated with water projects and integrate costs into the project (16 USC 622).

Analysis and Interpretation

There are many different laws that are compatible with the establishment of MPAs, covering a broad spectrum of activities and marine issues. Few of these laws, however, enable the strict regulation of specific areas in the marine environment for the purposes of resource conservation. Instead, most of the laws described above are focused on a specific activity, such as shipping, or a particular set of species (e.g. birds, fish. endangered species, etc). Some of these laws are extremely narrow, as is the case for the *Canada Shipping Act*, which controls the routing of ship traffic, while others are broad, as demonstrated by the *Endangered Species Act*, which regulates the disturbance of any species listed as endangered. Few if any of the laws are meant solely to protect discrete areas in the marine or coastal environment, but can do so on the basis of their related but

various objectives. The laws and programs described in this section can be effective tools in supporting the establishment of MPAs in the Gulf of Maine. In this sense, they should not take the place of laws geared specifically towards creating MPAs (even under a broad definition), but should act as compliments by enhancing the level of protection or the protective status of a designated site.

State/Provincial Laws and Programs Relevant to MPAs in the Gulf of Maine

In addition to international agreements and federal laws and programs, there exist state/provincial laws and programs that support the establishment of MPAs in the Gulf of Maine. With the exception of *Massachusetts Ocean Sanctuaries Act*, legislation at the state level does not specifically focus on designating MPAs, but could be used to enhance such efforts. Canadian provincial legislation entails the creation of reserves, but it is not focused on coastal or marine areas. Some of the major laws and programs are listed below.

Maine

Maine regulates uses within coastal and freshwater wetlands, sand dunes systems, rivers, streams, and significant wildlife habitats under the *Natural Resources Protection Act*. State permits are required for construction activities within protected areas and within or adjacent to all coastal wetlands. The Act also prohibits unreasonable harm to fisheries and significant wildlife habitat in the case of development of or adjacent to coastal wetlands exceeding 10 acres. The *Mandatory Shoreland Zoning Act* requires local governments to establish "resource protection" zones within 250 feet of moderate or high value wetlands. Both of these laws could be used to expand or strengthen the protection of an MPA.

Maine has also adopted non-regulatory programs applicable to the establishment of MPAs (Waterman, 1994). The Critical Area and Endangered Plants Program compiles a Register of Critical Areas and Heritage Coastal Areas (5 MRSA 3310-3316). The Maine Register of Critical Areas contains an inventory of sites containing plant and animal life or geologic features worthy of preservation. Listed areas are recommended for protection through voluntary conservation agreements and state acquisition. Heritage Coastal Areas are sites that contain geological, botanical, zoological, historical or scenic features of exceptional state or national significance. Like the Critical Areas Program, the Heritage Coastal Areas Program is voluntary and relies on state acquisition and informal conservation agreements. Since neither program has state acquisition funds, they are weak options at this time for creating state-level MPAs.

Perhaps the strongest legal option in Maine for establishing MPAs comes under the authority of the Department of Marine Resources (DMR), which is empowered to restrict uses and the taking of specific species in certain areas for marine conservation within three miles of the shore (12 MRSA 6171). To date, however, the DMR uses this authority primarily for protecting areas for human health purposes, rather than marine conservation.

New Hampshire

New Hampshire has adopted an *Endangered Species Conservation Act* to protect endangered and threatened wildlife species, including marine mammals, but excluding other marine species (RSA 212-A:1-15 (NHAR Fis 1001)). The Act authorizes the State to initiate conservation programs to protect endangered and threatened species including acquisition, limitations on takings, boat traffic, and agreement with other entities. While the Act focuses on specific species, it could be used to bolster MPA designations which attempt to conserve broader habitats.

New Hampshire also has a non-statutory program that designates Areas of Particular Concern (APCs) including coastal and estuarine waters, tidal and freshwater wetlands, floodplains, beach and sand dunes, rocky shores, and other unique natural areas. Designated areas may receive priority for additional regulation or acquisition.

Massachusetts

The *Massachusetts Sanctuaries Act* creates five ocean sanctuaries covering all state offshore waters except for one area between Lynn and Marshfield. The Act prohibits exploiting, developing, significantly altering, or endangering the ecology or appearance of the ocean seabed or subsoil. Massachusetts is the only Gulf of Maine state to establish offshore MPAs with some degree of protection.

Massachusetts also has laws and programs that support MPAs. The state has established a program for designating Areas of Critical Environmental Concern (ACEC) which may include coastal areas, fishery habitats, estuarine wetlands, natural areas, and sensitive inland areas. While special permits are not required for development in ACECs, rigorous performance standards are imposed under existing laws. In addition, all state-funded projects must be reviewed under the *Massachusetts Environmental Policy Act*. A recently strengthened *Endangered Species Law* provides for the designation of "significant habitats" for the conservation of endangered or threatened species. Massachusetts has identified portions of Stellwagen Bank and Cape Cod Bay as a special habitat for endangered northern right whales.

Nova Scotia

Nova Scotia enacted the *Special Places Protection Act* to conserve critical ecological areas. The Act protects sites that represent natural ecosystems, ecosystems modified by human activity, and ecosystems containing rare or endangered native plants or animals in their natural habitats. Reserves may be located on Crown Land or on private land with the permission of the landowner. The *Provincial Parks Act* could also be used to acquire coastal areas for protection, as in the case of the Five Islands Provincial Park in the Bay of Fundy.

New Brunswick

The New Brunswick *Ecological Reserves Act* allows the provincial Department of Natural Resources and Energy to designate representative sites as ecological reserves. Selection criteria is similar to the Nova Scotia *Special Places Protection Act* and allows New Brunswick to actually purchase land for the purposes of establishing a reserve. New Brunswick also has a *Provincial Parks Act* that could be used to acquire coastal lands to protect and conserve significant areas.

Analysis and Interpretation

Several state/provincial laws and programs support or are focused on the establishment of MPAs, but many are hindered by lack of resources, weak protection measures, and a lack of political will. Such is the case with the non-regulatory programs in Maine and New Hampshire, which are strong in intent but weak in effectiveness due to their voluntary nature. Among the three states, Massachusetts maintains the strongest regulatory option to create MPAs with the *Sanctuaries Act*, which is the only state/provincial law focusing on offshore areas of concern. By employing the full regulatory power of the Act and increasing protection in designated areas, the state could better make use of MPAs as a tool to complement other state and federal initiatives. Another powerful mechanism at the state level is the authority of commissioners to close or restrict certain areas to human disturbance, such as is the case in Maine. While this tool is at present underdeveloped for conservation purposes, it could prove to be extremely useful for creating MPAs in state waters.

New Brunswick and Nova Scotia both have laws that enable the establishment of parks or reserves, but none is focused exclusively on the coastal zone, making their application to MPAs unclear. Loosely defined jurisdictions and the fact that provinces must purchase the land they intend to protect present further obstacles to creating MPAs. In general, the strong federal legislative presence may outweigh future provincial attempts to establish protected areas focusing within the marine environment.

Conclusion

There exist many laws and programs intended for or compatible with the establishment of MPAs in the Gulf of Maine. Despite the jurisdictional complexities, different objectives, and regulatory mechanisms, there are strong commonalties among available instruments, which could make a Gulf-wide approach to establishing MPAs possible. The strongest legislative options are found at the federal level, particularly Canada's new *Oceans Act* and recent revisions to the U.S. *Magnuson-Stevens Fishery Conservation and Management Act*. As with many laws, the level of resources and political will may determine the effectiveness of this legislation. Whichever legal mechanisms are emphasized in a Gulf of Maine initiative, to be successful, there must be coordination among existing laws and programs at every jurisdictional level. Collaboration is already present in many instances, and this model could be expanded to the entire Gulf of Maine region through the use of existing international forums, such as the Gulf of Maine Council on the Marine Environment.

References

Agardy, Tundi Spring. 1997. *Marine Protected Areas and Ocean Conservation*. Austin, Texas: R.G. Landes Company and Academic Press, Inc.

Agardy, M.T. 1990. Draft Guidelines for Biosphere Reserve Planning. In *Marine Ecological Areas in Canada: Perspectives on the Canadian Council on Ecological Areas Task Force on Marine Protected Areas*. Canada: CCEA.

Agardy, Tundi. 1995. Critical Area Identification and Zoning in Coastal Biosphere Reserves: One Way To Make Marine Conservation Work In Canada. In *Marine Protected Areas and Sustainable Fisheries*. Edited by Nancy Shackell and J.H. Willison. Wolfville, Nova Scotia: Science and Management of Protected Areas Association.

Agardy, Tundi and James Broadus. 1987. Coastal and Marine Biosphere Reserve Nominations In the Acadian Boreal Region: Results of A Cooperative Effort Between the United States and Canada. In *Proceedings of the Symposium on Biosphere Reserves*. Fourth World Congress Worldwide Conservation. Edited by W. Greff, S. Krugman, and J. Wood. Atlanta, Georgia: US Department of the Interior, National Park Service, Science Publications Office.

de Fontaubert, C., D. Downes and T.S. Agardy. 1996. Protecting Marine and Coastal Biodiversity and Living Resources under the Convention on Biological Diversity. Washington, D.C.: Center for International Environmental Law, World Wildlife Fund, and IUCN Publication.

Department of Canadian Heritage. 1994. *Parks Canada Guiding Principles and Operational Policies*. Ottawa: Department of Canadian Heritage, Parks Canada.

Department of Fisheries and Oceans. 1997. *An Approach to the Establishment and Management of Marine Protected Areas Under the Oceans Act: A Discussion Paper*. Ottawa, Ontario: Communications Directorate Fisheries and Oceans Canada.

Freestone, David. 1990. Specially Protected Areas and Wildlife in the Caribbean—The 1990 Kingston Protocol to the Cartagena Convention. *International Journal of Estuarine and Coastal Law*. 5(4): 362-382.

Kenchington, Richard and M.T. Agardy. 1990. Achieving Marine Conservation Through Biosphere Reserve Planning and Management. *Environmental Conservation*. 17(1): 39-44.

Meltzer Research and Consulting. March, 1997. *Guidelines For Offshore Marine Protected Areas In Canada*. Prepared for Department of Fisheries and Oceans Canada.

Miller, Beverly A. 1990. The UNEP Regional Seas Programme (The Caribbean Environment Programme) and Actions To Protect Vulnerable Areas in the Wider Caribbean. *In the Proceeding of the International Seminar on the Protection of Sensitive Areas*. Preliminary Edition. Malmo, Sweden: International Maritime Organization.

National Marine Fisheries Service. 1997. *Framework for the Description, Identification, Conservation, and Enhancement of Essential Fish Habitat*.

Waterman, Melissa. 1995. Marine Protected Areas in the Gulf of Maine. *Natural Areas Journal*. 15: 43-49.

Zurbrigg, E.J. 1996. *Towards An Environmenta Canada Strategy For Coastal and Marine Protected Areas*. Hull, Quebec: Environment Canada, Canadian Wildlife Service.