Valuing Marine Wilderness: Representative Marine Protected Areas and the Perceived Value of Biodiversity Restoration

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Abstract: Although the political will to protect areas of the ocean in marine protected areas lagged far behind governments' willingness to protect ecologically or culturally important terrestrial areas, marine protected areas and systems of marine protected areas have emerged into the political agendas of governments throughout the world, including Australia, Canada, New Zealand, the United States, and, as of June 2003, the European Union; however, the creation of marine protected areas and systems of marine protected areas requires countries to sacrifice potentially beneficial uses of those areas, such as fishing and mineral extraction. Creation of marine protected areas and systems of marine protected areas thus involve political choices and policy promotion, and a country's choice of legal vehicle and political priorities can suggest implications regarding the eventual scientific and ecological success of its national system of marine protected areas.

This paper examines the legal and political rhetoric that three countries—the United States, Canada, and Australia—have used to justify their national systems of marine protected areas and explores the potential ramifications of that rhetoric and the policy choices behind it for the scientific and ecological success of each of their systems. Because each system is relatively new, measurements of success may have to wait for several years; nevertheless, some distinctions are already striking. The United States, for example, is pursuing its national system of marine protected areas based on a non-binding legal policy to promote economic goals, suggesting that the scientific and ecological value of its system will readily fall victim to changing political priorities and economic pressures. Canada, in contrast, has put in place substantial national culture and national pride policies that will serve to reinforce its biodiversity goals for its system of national marine conservation areas. Finally, Australia has committed fully to the protection of marine biodiversity for biodiversity's sake, suggesting that its national system of marine protected areas, as has already been evidenced in the history of the Great Barrier Reef Marine Park, will enjoy considerable scientific validity.

Key Words: marine protected areas, MPA, national system, marine wilderness, biodiversity conservation, Australia, Canada, United States

Introduction

Marine protected areas (MPAs) are areas of the ocean protected by law from some or all human uses, especially from mineral and energy (oil and gas) extraction and/or from commercial and recreational fishing. Nevertheless, 'marine protected area' is a general term that can refer to a wide variety of protective regimes for particular areas of the sea, ranging from completely protected, generally small marine reserves, such as the Dry Tortugas Reserve in the United States, to large, multiple-use and zoned marine parks, such as Australia's Great Barrier Reef Marine Park. To acknowledge this spectrum of potential protection regimes, the World Conservation Union (IUCN) has established seven management categories for protected areas, which can describe either terrestrial protected areas or MPAs. These categories include: strict nature reserves, which are "[m]anaged primarily for scientific research or environmental monitoring"; wilderness areas, which are "[p]rotected and managed to preserve [their] unmodified condition"; national parks, which are "[p]rotected and managed to preserve [their] natural condition"; national monuments, which are "[p]rotected and managed to preserve [their] natural or cultural features"; habitat/species management areas, which are "[m]anaged primarily, including (if necessary) through active intervention, to ensure the maintenance of habitats or to meet the requirements of specific species"; protected landscapes or seascapes, which are "[m]anaged to safeguard the integrity of the traditional interactions between people and nature"; and managed resource protected areas, which are "[m]anaged to ensure the long-term protection and maintenance of biological diversity with a sustainable flow of natural products and services to meet community needs" (DEH Australia 2004c).

In addition to acknowledging a range of scientific and ecological goals for protected areas, the IUCN's list also reflects the policy choices that governments make in choosing to protect terrestrial and marine environments, ranging from a choice to eliminate all human uses of and direct economic benefits from an area in pursuit of what might be termed pure biodiversity conservation and protection, to a decision to minimally regulate ongoing extractive uses in an area in pursuit of 'sustainable' use and continued economic production. Historically, moreover, governments and individual citizens have been more willing to protect biologically or culturally important terrestrial areas than their marine equivalents, because the oceans traditionally have been considered too vast and productive to warrant protection (Craig 2003). Extension of the 'national park' concept to the ocean has been slow, and when governments have chosen to create MPAs, they have tended to focus on highly visible, aesthetically pleasing areas that are important to tourism, such as coral reefs and kelp forests—marine areas with obvious economic benefits to the nation that protects them (Craig 2000; Craig 2003).

Recently, however, the importance of MPAs for biodiversity protection has begun to come to the forefront of both science and government policy and law, especially with respect to the value of MPAs in restoring over-exploited fisheries (Craig 2003). The latest phase of interest in MPAs has been the efforts by many governments around the world to create national and international systems of MPAs—coordinated collections of MPAs intended to protect national and

international biodiversity and to preserve representative marine ecosystems from over-exploitation. Nations pursuing such national and international systems include Australia, Canada, New Zealand, the United States, and, as of June 2003, the European Union.

However, even more than individual MPAs, systems of MPAs require policy justifications for restricting human use of large areas of the ocean—a need for justification that has often stalled legal efforts to protect the sea (Craig 2003). Predictably, while certain themes are common to all nations pursuing national and international systems of MPAs, individual nations have also chosen to emphasize different policy objectives in establishing those systems. These differing policy emphases not only reflect differing national priorities but also suggest that the various national efforts to create systems of MPAs will, in fact, meet with different levels of success in achieving biodiversity goals.

A National System of Economic and Social Benefits: The United States

While the United States has a national policy to create a national system of MPAs, it has no national legislation commanding or guiding such a system. Instead, work on the United States' system of MPAs is proceeding in accordance with President Clinton's MPA Executive Order (Clinton 2000). According to this Order, an MPA is "[a]ny area of the marine environment that has been reserved by federal, state, territorial, tribal or local laws or regulations to provide lasting protection to part or all of the natural or cultural resources therein" (Clinton 2000). President Clinton's purposes in establishing a national system of MPAs were "to protect the significant natural and cultural resources within the marine environment for the benefit of present and future generations" and to "enhance the conservation of our Nation's natural and cultural marine heritage and the ecologically and economically sustainable use of the marine environment for future generations" (Clinton 2000). Thus, from the beginning, the United States' national system of MPAs has existed to promote sustainable economic benefits, not biodiversity for biodiversity's sake.

The tenuousness of the United States' commitment to marine biodiversity protection is underscored by its choice of legal instrument for creating the MPA system. Unlike federal statutes, presidential executive orders require no congressional participation and have no binding legal effect outside of the Executive Branch (Craig 2000). As a result, they can easily change from president to president. When President George W. Bush took office, for example, there was a significant delay before his Administration decided to adopt the MPA Executive Order, and changes in national priorities after the September 11 terrorist attacks further delayed its implementation. As a result, progress on the national inventory of MPAs—the first step in the national system's establishment (Clinton 2000)—will not be completed until late 2005 (National MPA Center 2003).

In keeping with the MPA Executive Order's focus, the National MPA Center originally emphasized, in its presentation of MPAs to the American people, that:

> MPAs are internationally recognized as a means for conserving natural, historic, and cultural marine resources. Through protection of marine species and habitats, MPAs provide social and economic benefits, including sustainable recreational and commercial use of marine resources and enhanced research and educational opportunities. MPA networks can help individual MPAs achieve conservation goals, providing additional social and economic benefits. Like most actions, achieving benefits usually involves costs or tradeoffs. In the case of MPAs, some human activities may be prohibited or restricted in order to achieve the benefits of establishing an MPA (National MPA Center 2004a).

Like the MPA Executive Order, therefore, the Center stressed the economic and social benefits of a national network of MPAs, not its biodiversity benefits *per se*; however, the Center also emphasized the need for education and outreach to "ensure that visitors to an MPA understand the value of protected resources and how various activities can affect these resources" (National MPA Center 2004b).

More recently, the Center has been working on a classification system for the United States' MPAs, and this system continues to reflect the economic bias of the United States' justification for its national MPA system. For example, the classification system recognizes three primary "conservation" goals for MPAs—"natural heritage", "cultural heritage", or "sustainable production" (National MPA Center 2004c)—two of which stress the use values of MPAs. Natural heritage MPAs are "established and managed principally to sustain the protected area's natural communities, habitats, ecosystems and processes, *and the ecological services, uses, and values they provide to this and future generations*" (National MPA Center 2004c). Similarly, sustainable production MPAs are "established and managed principally to support the continued sustainable extraction of renewable living resources within the MPA . . . or provide refugia for by-catch species" (Nation MPA Center 2004c). MPAs that exist solely to protect marine biodiversity are not recognized. Indeed, the Center admits that "no access", "no impact", and "no take" MPAs are "extremely rare", "very rare", and "rare", respectively, in the United States (National MPA Center 2004c). In addition, the Center classifies MPAs, in part, through reference to the extractive activities they allow, including commercial fishing, recreational fishing, subsistence fishing and hunting, scientific and educational collecting, and minerals and energy extraction (National MPA Center 2004c).

From its legal inception, therefore, the United States' national system of MPAs has promoted a policy to ensure Americans' continued ability to use and profit from their marine resources. As a result, the success or failure of this system—and its continued political viability—are likely to depend on the U.S. Government's ability to convince the American people that the national system of MPAs is producing real economic rewards (i.e., jobs, fish, oil) for them. Even if succeeding presidential administrations retain the MPA Executive Order, these political stressors on the national system of MPAs may skew the United States' implementation of scientific

priorities, with new MPAs being chosen as much for their noncontroversial political status as for their ecological importance.

A National System of National Pride: Canada

Canada directly ties its national system of MPAs—referred to as 'national marine conservation areas' (NMCAs) (Canada National Marine Conservation Areas Act 2002)—to its terrestrial national parks system and structures both similarly. With respect to terrestrial national parks, "Parks Canada has been able since 1972 to work toward one fixed and finite target—a park system representing every one of the 39 natural regions of Canada" (Yurick 1995). Parks Canada began to focus attention on marine areas in the late 1960s and early 1970s, resulting in its identification of nine marine regions to protect (Yurick 1995); however, "[t]he criteria used in deriving this first framework had very little to do with biology. Oceanography and coastal physiography were the dominant considerations, perhaps because the effort was seen as an extension of the 39-regions terrestrial planning framework which depended so heavily on a physiographic underpinning" (Yurick 1995). In the early 1980s, Canada prepared a marine parks policy which resulted "in a marine park planning framework of 29 natural marine regions" (Yurick 1995); nevertheless, "[a] very significant bias was the stipulation, at the outset, that the marine regions in a Parks Canada planning framework would have to be terrestrially anchored, since it was anticipated that marine parks would normally require a land base for administrative reasons, and because coastal physiography was to be one component in subsequent regional analyses to identify potential park sites" (Yurick 1995).

Given its early work on marine national parks, Canada has already developed a comprehensive plan for creating its national system of NMCAs. "[N]ational marine conservation areas divide the country's oceans and Great Lakes into 29 marine regions, each one a distinct combination of physical and biological characteristics" (Parks Canada 2004) that "represent the full range of marine ecosystems found in Canada's Atlantic, Arctic, and Pacific Oceans, and the Great Lakes" (Parks Canada 2003b). While only two such NMCAs currently exist—the Fathom Five National Marine Park of Canada in Ontario and the Saguenay-St. Lawrence Marine Park in Quebec (Parks Canada 2003a)—Canada has already identified nine Arctic marine regions (Parks Canada 2003f), five Pacific marine regions (Parks Canada 2003g), ten Atlantic marine regions (Parks Canada 2003h), and five Great Lakes aquatic environments (Parks Canada 2003i) that represent particular marine ecosystems that should be protected through the NMCA system.

The Minister of Canadian Heritage, acting through Parks Canada, administers the Canadian NMCA program pursuant to the Canada National Marine Conservation Areas Act (Canada National Marine Conservation Areas Act 2002). This statute announces Canada's commitment to "the maintenance of biodiversity" and "to adopting the precautionary principle in the conservation and management of the marine environment" (Canada National Marine Conservation Areas Act 2002), an explicit prioritization of biodiversity goals entirely lacking in

the United States' MPA Executive Order. Moreover, "[i]n order to protect marine ecosystems and maintain marine biodiversity, the primary considerations in the development and modification of management plans [for marine conservation areas] shall be principles of ecosystem management and the precautionary principle" (Canada National Marine Conservation Areas Act 2002). However, the Canadian government also acknowledges that "[n]ational marine conservation areas focus . . . on ecological sustainable use, which means harmonising conservation practices with human activities" (Parks Canada 2004), and "NMCAs are established to represent a marine region and to demonstrate how protection and conservation practices can be harmonized with resource use in marine ecosystems" (Parks Canada 2003b). Therefore, like the United States, Canada does acknowledge the political realities of use pressures on these MPAs.

While Canada's system of NMCAs thus incorporates both biodiversity and economic goals, both the implementing legislation and the implementing agencies also promote that system as a means of preserving national culture and heritage, and as a source of national pride. The Act, for example, seeks to "ensure that Canada contributes to international efforts for the establishment of a worldwide network of representative marine protected areas" (Canada National Marine Conservation Areas Act 2002). The Canadian Parliament established the system of NMCAs to "provide opportunities for the people of Canada and of the world to appreciate and enjoy Canada's natural and cultural marine heritage" (Canada National Marine Conservation Areas Act 2002), and to fulfill Canada's responsibilities, "both at the national and international levels, to protect examples of this marine heritage for present and future generations" (Parks Canada 2003b). As such, "[m]arine conservation areas are established in accordance with this Act for the purpose of protecting and conserving representative marine areas for the benefit, education, and enjoyment of the people of Canada and the world" (Canada National Marine Conservation Areas Act 2002).

Parks Canada, which undertakes the day-to-day management of Canada's NMCAs, has also stressed the national cultural and heritage elements of Canada's system:

> Canada is truly a maritime nation with a rich marine heritage. We have the longest coastline in the world—over 243,000 km along three oceans—plus another 9500 km along the Great Lakes. We also have responsibility for over 5 million km^2 of marine waters—the equivalent of about 60% of the country's land mass!
>
> The vast marine ecosystems off these coasts, varied and productive, have played a major role in shaping Canada's history and economy. So it is no wonder that the national marine conservation areas representing this powerful force are an important component of Parks Canada's networks of nationally significant places. (Parks Canada 2004)

Moreover, Parks Canada introduces the NMCA plan with the following:

> The world's longest coastline, running along three oceans. The second largest continental shelf. Some of the world's richest fishing grounds. Marine mammal and marine bird populations of global importance. Diverse and colourful underwater communities. Gorgeous seascapes of wave-battered coasts, island-strewn bays, quiet sandy coves. Limitless expanses of both salt and fresh water. All of this in Canada you say? Of course! (Parks Canada 2003e)

Individual NMCAs within this system also help to create national pride and preserve national culture. "Each national marine conservation area is a gateway to nature, adventure, learning and discovery, offering visitors the opportunity to connect with a major marine environment" (Parks Canada 2004), and each will be chosen in part for its "exceptional natural and cultural features" (Parks Canada 2003b). The existing Fathom Five National Marine Park of Canada "preserves a rich cultural legacy that includes 22 shipwrecks and several historic lightstations" and "contains some of the most pristine waters of the Great Lakes" (Parks Canada 2003c), while the Saguenay-St. Lawrence Marine Park contains a fjord that is "the longest in Eastern Canada" and "one of the longest in the world", as well as being "one of the rare fjords that flows into an estuary" (Parks Canada 2003d).

Unlike the United States, therefore, Canada has identified non-economic policy reasons for establishing and preserving a national system of MPAs, and has enshrined those national, international, and biodiversity goals in legislation. Wrapped within these stated policies, of course, are potential ecotourism benefits, as visitors from around the world come to observe and learn from the particular NMCAs Canada chooses to protect. Nevertheless, the rhetoric supporting the creation of the system of NMCAs suggests that Canada has already performed a different cost-benefit analysis than the United States, and that it is willing to promote NMCAs as extensions of its terrestrial national park system. Therefore, the very existence of the legislation and the policies it chooses to promote suggest both that Canada's system of NMCAs will better weather fluctuations in political priorities, and that Canada will end up with a more scientifically defensible final system of MPAs than the United States.

A National System of Biodiversity Conservation: Australia

Australia's various governments identified the need for a National Representative System of Marine Protected Areas in the early 1990s, and serious work began on the system in 1992 (DEH Australia 2004f). That system currently contains 14 MPAs in Commonwealth waters, the largest and most famous of which is the Great Barrier Reef Marine Park (DEH Australia 2004a), and it also includes 192 marine reserves (DEH Australia 2004f). As of 2002, Australia's National Representative System of MPAs had protected 64,600,000 hectares of ocean—about 7% of Australia's total marine jurisdiction. Since 1992 the Commonwealth has added 8 MPAs to the system, while the states have collectively added 82 more (DEH Australia 2004f).

Australian law defines a marine protected area as "an area of land and/or sea especially dedicated to the protection and maintenance of biological diversity and of natural and associated cultural resources, managed through legal or other effective means" (DEH Australia 2004b). In this very definition, Australia's focus on biodiversity protection becomes obvious. In addition, Australia has adopted the World Conservation Union's seven management categories for its MPAs (DEH Australia 2004b). The primary goal of Australia's National Representative System of Marine Protected Areas program is to build a system of MPAs that will be (1) comprehensive, meaning that the system will "include MPAs that sample the full range of Australia's ecosystems"; (2) adequate, meaning that the system will "include MPAs of appropriate size and configuration to ensure the conservation of marine biodiversity and integrity of ecological processes"; and (3) representative, meaning that the system will "include MPAs that reflect the marine life and habitats of the area they are chosen to represent" (DEH Australia 2004d).

Australia establishes and manages its Commonwealth MPAs pursuant to the Environmental Protection and Biodiversity Conservation Act 1999 (EPBC Act 1999), which came into force in July 2000 (DEH Australia 2004e). The objectives of that Act are

a) to provide for the protection of the environment, especially those aspects of the environment that are matters of national environmental significance;
b) to promote ecologically sustainable development through the conservation and ecologically sustainable use of natural resources;
c) to promote the conservation of biodiversity;
d) to provide for the protection and conservation of heritage;
e) to promote a cooperative approach to the protection and management of the environment involving governments, the community, landholders and indigenous peoples;
f) to assist in the cooperative implementation of Australia's international environmental responsibilities;
g) to recognize the role of indigenous people in the conservation and ecologically sustainable use of Australia's biodiversity; and
h) to promote the use of indigenous peoples' knowledge of biodiversity with the involvement of, and in cooperation with, the owners of the knowledge (EPBC Act 1999).

Thus, the EPBC Act promotes many policies, including biodiversity protection, sustainable use and economic benefit, and cultural heritage protection.

Australia's explanations of its national system of MPAs also have elements of both the Canadian and United States policy emphases. Thus, like Canada, Australia has emphasized that "[a]s a developed nation with a maritime area larger than the continent itself, Australia has a special responsibility for the conservation and management of its marine and coastal environments and their resources" (DEH Australia 2004b). Moreover:

> Our vast ocean contains one of the greatest arrays of marine biodiversity on earth. Australia's marine environments contain more than 4000 fish varieties and tens of thousands of species of invertebrates, plants, and micro-organisms. From the spectacular coral reefs of Australia's tropical north to the majestic kelp forests of the temperate south, the number of newly discovered species tends to increase with each survey. Currently scientists estimate about 80% of our southern marine species occur nowhere else in the world. (DEH Australia 2004c)

Australia also acknowledges the economic benefits from ocean protections, noting that unsustainable fishing and other threats have resulted in "decreased abundance of target organisms" and that, by "preserv[ing] habitat and natural population levels," MPAs "attract[] tourists, generating business opportunities and sustaining coastal communities" (DEH Australia 2004c).

Nevertheless, when listing the benefits of its national MPA system, Australia stresses "conservation of biodiversity and ecosystems", "maintenance of genetic diversity", "protection of rare or threatened species and communities", "contribution to technology and scientific knowledge", and "conservation of scientific reference sites" above "contributions to sustainable tourism" and "potential contribution of ecosystem-based management of fisheries" (DEH Australia 2004b). This is the exact inverse of the United States' policy priorities. Moreover, as the Australian Department of Environment and Heritage has stressed, "all marine protected areas managed by Australia's Commonwealth Marine Protected Areas Program share at least one objective—to promote biodiversity" (DEH Australia 2004c). This emphasis on biodiversity protection led the Australian Department of the Environment and Heritage to declare in January 2004 that although it will seek to minimize the impacts of the MPA system on fishers, and may provide 'adjustment assistance' to fishers, on a case-by-case basis, who are displaced by the establishment of the national system, MPAs established to protect biodiversity take precedence in the nation's public priorities (DEH Australia 2004g).

In addition, the EPBC Act creates specific legal protections for Commonwealth MPAs, subjecting those MPAs to a national regulatory regime. For the marine environment, the Act specifies that "[a] person must not take in a Commonwealth marine area an action that has, will have, or is likely to have a significant impact on the environment," while outside the Commonwealth marine areas but within Australia's jurisdiction persons are prohibited from taking actions that "has or will have a significant impact on the environment in a Commonwealth marine area" or "is likely to have a significant impact on the environment in a Commonwealth marine area" (EPBC Act 1999). Violations of either prohibition result in civil penalties, and criminal violations are also possible (EPBC Act 1999); thus, the Australian legal system undergirds the National Representative System of Marine Protected Areas' biodiversity goals by prohibiting and punishing acts that could interfere with those goals.

Finally, the national system "helps to meet Australia's responsibilities and obligations as a signatory to the Convention on Biological Diversity and the major components of the Jakarta Mandate developed under that Convention" (DEH Australia 2004f), and also "supports national commitments under the Inter-governmental Agreement on the Environment (1992)" (DEH Australia 2004f). As such, the National Representative System of Marine Protected Areas is part of a long-term commitment in Australia, at the international, federal, and state levels, to biodiversity protection, helping to ensure the continued political viability of that system.

Australia, therefore, presents a fully developed model of a biodiversity-focused national system of MPAs sanctioned by state, federal, and international law. The fact that its National Representative System of Marine Protected Areas has existed for more than a decade is already a testimony to the strength of Australia's effort, and the system's continuing viability is supported by national legislation, emphasized in new policies such as the fishing policy, and made enforceable by law against individual detractors.

Conclusions

As countries throughout the world pursue the creation of national systems of MPAs, policy makers, legislators, and politicians must justify these systems to themselves and their constituents. As the rhetoric surrounding the United States, Canadian, and Australian national systems shows, a variety of justifications are available—economic, cultural, and ecological—and most governments have employed various combinations of these in presenting their MPA programs to their public and to the world.

Nevertheless, differences in emphasis are clearly discernible, not just among agency justifications but also in the legal basis for such national systems of MPAs. These differences have implications for the continued viability and scientific and ecological defensibility of the resulting national systems of MPAs. The United States' focus on economic justifications, combined with the system's genesis in a presidential executive order rather than in legislation, suggests that the United States' system of MPAs might easily become hostage to changing political priorities, particularly if anticipated economic benefits, such as restoration of fishing, do not materialize as quickly as hoped. In contrast, both Canada and Australia have enshrined non-economic justifications for their national systems in statutory law, stabilizing the necessarily slow process of establishing their MPA systems and framing success in terms of preservation rather than in terms of additional gain. These rhetorical and legal stabilizing policies bode well for the actual scientific and ecological success of Canada's and Australia's networks, contributing, as both countries intend, to the world's marine biological heritage and resources.

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