The Current State of Marine Protected Areas in Canada

A Canadian overview in a Global Context

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"I wish you would use all means at your disposal — films! Expeditions! the web! more! — to ignite public support for a global network of marine protected areas, hope spots large enough to save and restore the ocean, the blue heart of the planet."

Sylvia Earle's TED wish

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Summary

Canada with the largest coastline in the world is lagging behind many other countries in protecting its marine biodiversity through the use of marine protected areas (MPAs). Marine Protected Areas are a recognized valuable approach to conserving biodiversity while also having socio economic and cultural values. The current 0.88% of Canadian waters so protected has Canada listed as 23rd among OECD nations. Since Canada as a signatory to the Convention on Biological Diversity has agreed to a Strategic plan that calls for 10% protection of the global marine biome by 2020, much needs to be done to meet this target.

Three federal Departments, Fisheries and Oceans, Parks Canada and Environment Canada and a number of Provinces have been working together to develop in 2011 a national Planning Framework. Industry, non-governmental organizations and Aboriginal Peoples were consulted. Basically the Framework is to establish a Bioregional representative system of MPAs. Yet, mandates for the federal Agencies and department do not line up fully. Parks Canada is to establish National Marine Conservation Areas within each of its 29 identified Regions and Environment Canada's priorities are not regional representation but rather protection of habitat and species. Variable mandates cause uncertainty within federal departments and among stakeholders. Neither the recent review by the Auditor General nor a recent review by a NGO were complementary to the state of MPA establishment.

Federal financial and human resources are inadequate and recent cuts will likely add to the difficulty of trying to meet international obligations and more importantly protecting marine biodiversity through the establishment of MPAs. Yet, funding of subversive subsidies that continue to degrade fisheries and harm biodiversity exceed $500M.

This report provides 14 recommendations that range from increasing resources by shifting subsidy payments to conservation activities, maintaining and using international standards for MPA establishment, revising federal mandates, and building partnership with stakeholders and Aboriginal Peoples. Examples from around the world and within Canada exists that can guide such work. It is imperative that political will gets behind this initiative as marine biodiversity is at risk and with it the substantive part of the dependent Canadian economy.
Introduction

Canada has the longest coastline in the world - over 243,000 km along three oceans - plus another 9500 km along the Great Lakes. Within its exclusive economic zone (EEZ) it has responsibility for over 5 million km$^2$ of marine waters - the equivalent of about 60% of the country's land mass.

Canada's extensive Marine Biome yields high significant economic benefits. The Auditor General in his 2012 Fall Report listed a few:

- fishing and fish processing contributed almost $3.3 billion to Canada’s gross domestic product (GDP) in 2006;
- the lobster catch generated over $1 billion in 2011 exports;
- the snow and queen crab catch generated over $613 million in 2011 exports;
- marine tourism generated expenditures of about $4.3 billion in 2006; and
- whale watching in the Saguenay region of Quebec, attracted more than one million visitors in 2007, spending an estimated $161.7 million in the region.

Alarmingly, this economic benefit continues to decline. Fisheries and Oceans Canada reports that in 2009, the quantity of Canada’s fishery catches was 41 percent less than the peak harvest volumes of the late 1980s, and the 2009 values of catches were among the lowest on record since 1984. Such statistics unfortunately are mirrored around the world. Many point to the overriding attitude that the fishery is a "common property" which leads to a "free for all" race for limited resources. The tragedy of the commons is being played out on the sea.

The bulletin "Sea Around US" reported in 2007 that global depletion of fish stocks can be attributed to a number of factors:

- fishing access agreements between North and South countries;
- increased global trade of fish products;
- increased use of fisheries subsidies;
- illegal, unreported and unregulated fishing;
- enhanced technology leading to higher efficiencies; and an
- extension of fishing to the deep and high seas, beyond the EEZ.

Canada's fisheries development policies and that of other countries used to be simple - send out more boats and more people fishing. With the demise of the Canadian cod fishery in the 70s, two separate Commissions carried out east and west coast fishery industry assessments. The subsequent fishing strategies ranged from buying back fishing licences and consolidating and infusing more funds to the industry. The 1977 extension of EEZ provided the means by which to deal with problems of offshore factory freezer trawlers. But, catches still declined.

Regrettably, one of the options available to Canada by which to address depleting fish stocks, the establishment of Marine Protected Areas (MPAs), was not and, one can argue effectively, has not as yet
been fully taken up. Canada's rich marine biome is grossly underrepresented in national approaches to protecting biodiversity. Only 0.88% of Canada's marine biome is currently enclosed by a marine protected area (MPA) (CARTS 2012) (Appendix 1). Some of this miniscule percentage includes small near shore areas captured by provincial parks (Appendix 2). Furthermore, some of the tabulated area is not fully dedicated to strict protection as only a part of these MPAs have a "no take" zone where all fishing is prohibited.

It cannot be stressed strongly enough that the world's oceans are in trouble and with the impending added stresses brought on by climate change, action is required (see opinion piece in NY times - Lopoukhine, 2007). Declines in marine harvests, wildlife, and habitats have prompted global calls for a global system of MPAs. MPAs that actively manage, including the restriction of fishing, human activities, conserve habitats and populations and, by exporting biomass, may sustain or increase yields of nearby fisheries. MPAs provide a range of benefits for fisheries, local economies and the marine environment including:

- stopping the local decline in fish populations and productivity by protecting critical breeding, nursery and feeding habitats;
- promoting marine tourism which will enhance local economic options;
- providing opportunities for education, training, heritage and culture; and
- providing broad benefits as sites for reference in long-term research; and
- contributing to climate change mitigation by protecting habitats effective in absorbing carbon dioxide

**Background**

**MPA Definition (what counts as a MPA)**

The International Union for the Conservation of Nature (IUCN) has developed a set of guidelines which define a protected area, be it marine or terrestrial (Dudley, 2008, Day 2012). Along with the definition, the IUCN Guideline sets out six management types and four governance types (Appendix 4). Governance is a particularly important consideration which is explored through a number of global case studies in the report "Governing Marine Protected Areas; Getting the Balance Right" (Jones et. al., 2011). Being open to different forms of governance that are driven by bottom up, top down and/or market approaches creates possibilities that may help to achieve the objective of a representative system of protected areas at a much faster rate than the world and indeed Canada has achieved to date.

To qualify for one or more of the IUCN categories, a site must *a priori* meet the IUCN definition of a protected area, as given in the 2008 Guidelines:
A protected area is a clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values.”

The key to this definition is that it sets out clearly that the overall objective of a MPA is to conserve nature as a priority. Subsequently an appropriate IUCN category can be assigned based on the primary stated management objective of the MPA. The objective must apply to at least 75% of the MPA, or a zone within an MPA that is clearly mapped and recognized by legal or other effective means and have distinct and unambiguous management aims that can be assigned to a particular protected area category. There must a be a stated purpose, preferably in the form of a management plan.

It should be noted that temporary or permanent fishing closures established primarily to help build up and maintain reserve stocks for fishing in the future, without wider conservation aims or achievements, are not considered to be MPAs (Day, 2012). IUCN’s advice is that areas set aside purely to maintain fishing stocks, particularly on a temporary basis, should not be considered as protected areas even though they may well reflect good fishery management. For such sites to meet IUCN’s definition of a protected area, managers would need to address the overall health and diversity of the ecosystem and have a stated primary aim to this effect. Such areas, however, may be important components of the management of an MPA. For example, seasonal closures of fish spawning aggregation areas or pelagic migratory routes, at specific and predictable times of year for certain species when they are extremely vulnerable, may be essential to the effective management of an MPA.

**RECOMMENDATION 1:** Canada’s adoption of the IUCN definition of a protected area is an appropriate standard providing the basis for measuring progress in meeting international commitments. Pressure to count areas that do not meet the IUCN definition should be guarded against.

**RECOMMENDATION 2:** Canada should work towards using all of the IUCN Protected Area Management and Governance categories (Appendix 4) in building up its MPA system. Such an approach assures a broad representation of activities, levels of protection and broadens the constituency in support of MPAs.

**Values of Marine Protected Areas**

The National Framework for Canada’s Network of Marine Protected Areas correctly lists benefits of MPAs (Government of Canada, 2011). These include

- protecting unique, rare, and threatened species, and processes and habitats essential for ecosystem functioning, such as spawning;
- maintaining the natural range of species;
- protecting coastal ecosystems, such as wetlands, that buffer against damage from extreme weather events;
- enabling adequate mixing of the gene pool;
• mitigating the impact of climate change by capturing and storing carbon;
• providing refuge for marine species displaced by habitat loss elsewhere;
• enhancing the ability of marine areas to resist or recover from ecosystem disturbances; and
• generating social and economic benefits, such as sustainable fisheries and enhanced recreation opportunities.

There are three categories of values associated with MPAs; ecological, socio-economic and socio-cultural.

**Ecological Values**

In addition to their critical role in biodiversity conservation, marine protected areas are important for many other reasons from creating a reservoir of genetic resources to capturing and storing carbon. A system of MPAs assures that the diverse characteristics of the marine biome are conserved for future generations in a systematic way. A network of MPAs based on ecological parameters should consider linkages between marine species. This is a critical consideration in the face of of climate change and other impacts and thus addresses connectivity for many different marine organisms at different spatial scales.

IUCN's World Commission on Protected Areas emphasizes four key ecological principles for designing MPA networks: representativity, adequacy, connectivity, and resilience. Representativity emphasizes the need to protect the full range of biological diversity present in the area to be conserved, while adequacy refers to the need to ensure that the individual components of the network are of sufficient size, shape, and distribution to achieve ecological conservation goals. Connectivity is concerned with the need for linkages between MPAs, to take account, for example, of the migrations of organisms and the mixing of water and nutrients that occur naturally. Resilience is a measure of the ability of an ecosystem to survive disturbance, and this principle might be considered the culmination of achieving the other three principles, as representative, adequate, and well-connected MPA networks should be more resilient to climate change. (DeSanto, 2012)

The above addresses in part how to adapt the effects of climate change. Coastal and marine habitats, especially salt marshes, kelp and sea grass beds are important carbon sinks, and as such mitigate effects of climate change. Such systems are efficient in the transfer of carbon to the sediment and sequester carbon more efficiently than terrestrial ecosystems of equivalent area (Laffoley and Grimsditch 2009). There is a danger, however, if these systems are disturbed to the point that carbon is released. The release of carbon, accumulated over centuries, is often rapid and then sustained for many decades. It is significant at national and indeed regional scales in terms of adding to the greenhouse gas emission problems plaguing the world. Hence protection of these areas is critical to avoid adding to the release of green house gases.
Socio-economic values

Increasingly, protected areas, particularly those listed in IUCN Categories IV, V and VI (Appendix 4), are valued as areas where sustainable resource use and rural development practices can be tested in partnership with a wide range of stakeholders.

Just as on land, many marine protected areas have been created to achieve long-term biodiversity conservation but many are also contributing to sustainable fisheries and local livelihoods. Some 250 million people globally are dependent on small-scale fisheries for their protein (FAO 2009). A growing body of empirical evidence suggests that marine reserves can rejuvenate depleted fish stocks in a matter of years when they are managed collaboratively with the resource users.

Fishing communities, both freshwater and coastal, are increasingly setting aside areas of water to provide safe nursery grounds for fish to maintain stocks. A review of 112 studies in 80 MPAs found strikingly higher fish populations and larger fish inside the reserves compared with surrounding areas, or the same area before the reserve was established; as well fish from within the MPA help to replenish adjacent fished areas (Halpern 2003). A specific example is illustrated within Figure 1 where 42% of the USA catch of haddock is taken within 1 km of a closed area boundary and 73% within 5 km.

Elsewhere, MPAs are also being recognized for their contribution to sustainable fisheries. In Indonesia many of the archipelago’s coral reefs and the small-scale fisheries they support have reached a level and mode of exploitation where the only way to increase future production and local incomes is to protect critical habitats and reduce fishing effort. With government support, 1500 villages within 12 coastal districts off Sulawesi, Aru and Indonesian Papua, are establishing collaboratively-managed marine reserves, many within existing marine parks, contributing towards a government target of protecting 30% of the total area of coral reefs in each participating district (World Bank 2010). Such community-managed reserves are now being extended throughout the Coral Triangle, covering Indonesia, the Philippines, Papua New Guinea and the Solomon islands, helping to protect the world’s richest coral reefs and exceptional marine biodiversity. Locally-managed marine areas in the Pacific, based on traditional or locally-based reef and marine conservation customs, also play an important role in marrying sustainable use objectives with marine conservation targets (Mills et al. 2011).
Many studies have demonstrated the social and economic benefits of marine protected areas for fisheries and livelihoods (e.g. TEEB, 2009). Mauritania for example with an EEZ of 230,000 km² and a shelf of 39,000 km² has one of richest fishery resources in the world. Fisheries contribute about 6% of GDP, 25-30% of the state budget and 35-40% of export earnings. Half of the Banc d'Arguin National Park is marine. These marine waters play a crucial role as an important breeding and nursery ground. Since 2006 the Mauritanian government has been investing part of revenues from fisheries agreements with the European Union (about 1 million €/year) in the management of this park. Similarly the Rio Cacheu mangroves natural park in Guinea-Bissau covers an area of 88,615 hectares, with 68% covered with mangrove forests. The Rio Cacheu is important both for biodiversity conservation and as a nursery ground for several species with high economic value including shrimps. A preliminary study assesses the economic and social value of coastal and marine ecosystems within Rio Cacheu Park to Euros 8.969 million/year with most value from the mangrove ecosystems, including both direct uses (artisanal fisheries) and indirect services (coastal protection, water treatment, carbon sequestration, etc.). (Lopoukhine, et. al, 2012)

The point is simply that decision makers should not be overwhelmed by costs for establishing and operating a system of MPAs once benefits are incorporated in their analysis.

**Socio-cultural Values**

The Convention on Biological Diversity (CBD) recognizes that protected areas also provide opportunities for rural development, generating income and creating jobs, for research and monitoring, for conservation education, for recreation and tourism, as well as improving local governance (CBD, 1992). Further, it includes the protection and promotion of “knowledge, innovations and practices of Indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity”.

According to the "Fourth Global Environment Outlook", biodiversity also incorporates human cultural diversity, which can be affected by the same drivers as biodiversity, and which has impacts on the diversity of genes, other species and ecosystems. Correlations have been made between high levels of
biodiversity and linguistic diversity. One cannot help but wonder how the loss of aboriginal languages in Canada is to affect our biodiversity. The rich linguistic value, which give special meaning to the names of peoples and places are concepts that do not exist in Western languages. Creating MPAs with and by local and indigenous peoples also assures a cultural diversity.

In coastal West African countries, where fisheries play an important role both as the main source of animal proteins and as a source of income for the governments, the role of well-managed MPAs for the renewal of fisheries resources has been increasingly recognized and endorsed. Fisheries monitoring in the Bamboung MPA in Senegal, for instance, has demonstrated an increase in fish size, species biodiversity and biomass less than five years after its establishment (De Morais et al. 2007). As a result, in 2007, seven countries (Mauritania, Senegal, Cape Verde, The Gambia, Guinea Bissau, Guinea and Sierra Leone) have collaborated and established a regional network of MPAs (RAMPAO), which now covers 25 protected areas. The overall mission is summarized as follows: “An effective network of marine protected areas in West Africa, managed in a participatory manner by strong institutions and that enhances natural and cultural diversity, in order to contribute to the sustainable development of the sub region”.

**RECOMMENDATION 3:** Canada must develop and implement a communications plan using the latest information technology and social media and include all stakeholders to ensure that a common consistent message is delivered by all stakeholders, ensuring a broader comprehension by all Canadians of the values of MPAs.

**United Nations Convention on Biological Diversity (CBD)**

Canada was the first country to ratify the Biological Diversity Convention in 1992. Over 190 members (USA is a major exception) are now Parties to the Convention. Canada has been a strong supporter of this Convention by providing funding that houses the Secretariat in Montreal and by being prominent in the negotiations that refined and further defined the Convention.

In 2004, the Programme of Work on Protected Areas (POWPA) was negotiated. This is considered the most prescriptive but also the most successful Programme of Work under the Convention. While the directions under the POWPA are recommendations to Parties, it has been the basis of enormous funding infusions to developing world countries through the Global Environmental Framework (GEF), bilateral and ENGO contributions. The investment totals over $1.89 billion which leveraged an additional $5.95 billion in co-financing from project partners. This investment has benefited over 2,300 protected areas, covering more than 634 million hectares.

The POWPA consists of four programme elements and each of them has their own goals. Altogether, the Programme sets 16 goals and 91 activities. As such, it is a globally accepted framework for creating comprehensive, effectively managed and sustainably-funded national and regional protected area systems. Since 2004, nearly 6,000 new protected areas have been established, covering more than 60 million hectares. There are now about 130,000 protected areas, covering nearly 13% of the world’s terrestrial surface, and over 6% of territorial marine areas. Many of these are embedded in comprehensive national and regional networks of connected protected areas and corridors.
At the 2010 meeting of the CBD Parties in Nagoya, Japan, a strategic plan was adopted with 20 targets (now known as the Aichi Targets) to be met by 2020. A particularly important target in the context of MPAs is target 11.

**Target 11:** By 2020, at least 17 per cent of terrestrial and inland-water areas and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well-connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscape and seascape.

Unfortunately, most of the CBD Parties are not on track to meet this commitment. Canada has set the stage for achieving this target by adopting a representative approach with the National Framework Plan of a network of MPAs. Connectivity, equitable and effective management of MPAs are additional criteria that are crucial to make the target an effective biodiversity conservation target. Creating MPAs with the objective of just attaining the right percentage is not what is intended by this target.

Target 11 wording "other effective area-based conservation measures" has led to speculation that other forms of "protection" can also be counted. Given that the WDPA uses the IUCN definition as its primary criteria for listing an area, the conservation of nature must be a priority for an area to be listed. In an editorial of "Parks" journal the IUCN WCPA Chair and the CBD Executive Secretary suggest that the inclusion of the wording "other effective area-based conservation measures" is specifically aimed at indigenous and private protected areas that are not as yet officially enumerated by a Party (Lopoukhine and Ferreira de Souza Dias, 2012).

**RECOMMENDATION 4:** Canada’s MPAs must meet the definition of a protected area and should be established with the aim to safeguard areas of high biodiversity and their associated ecosystem services, be equitably and effectively managed and connected to other MPAs.

**World Data Base on Protected Areas**

The World Database on Protected Areas is a foundation dataset containing over 138,000 listed protected areas. It is a dataset used for conservation decision-making as it contains crucial information from national governments, non-governmental organizations, academic institutions, international biodiversity convention secretariats and many others. It is used for ecological gap analysis, environmental impact analysis and increasingly for private sector decision-making. It is the basis for reporting on the extent of the achievement of the Aichi CBD Target 11 of protecting 10% of the marine biome by 2020.

The WDPA uses the definition of a protected area (terrestrial, freshwater, and marine) as adopted by IUCN as the main criteria for a locations entry into the database. Canadian jurisdictions have set up the Conservation Areas Reporting and Tracking System (CARTS) under the auspices of the Canadian Council on Ecological Areas (http://www.ccea.org/en_cartsreports.html) to capture Canadian protected area data, which is then made available to the WDPA.
RECOMMENDATION 5: Canada must annually report its achievements to the WDPA through CARTS in establishing MPAs and as such its contribution towards meeting the global commitment of protecting 10% of the marine biome.

Opportunities (partnerships)

How well protected areas deliver on their objectives depends on how effectively they are managed, how they are integrated with surrounding seascapes and related strategies and whether they are supported by local communities. Protected areas exist under a range of management and governance regimes, from strict no-access areas to protected seascapes and indigenous reserves that include human use and cultural values. Establishing, expanding, and improving a MPA system, requires engagement of multiple partners, from communities to NGOs, government agencies and the private sector. Building partnerships with the fishery industry, Indigenous peoples, local communities and non-government organizations yields progress. This is the necessary and logical response to both climate change and the crisis of biodiversity loss.

The United Nations Food and Agricultural Organization has recognizes marine protected areas as a complementary measure to conventional fisheries management measures in achieving sustainable fisheries management objectives. FAO references the fact that in fisheries management, spatial management tools, including MPAs, has been used for centuries and as such do not constitute a new management tool. Protection of specified areas through bans or types of gear or fishing activities have long been part of the fisheries management toolbox. Communities employing traditional management arrangements around the world continue to use this tool.

FAO suggests that the use of a MPA as a fisheries management tool that it:

- is intended to contribute to achieving conservation and sustainability objectives of fisheries management, while contributing to biodiversity and habitat conservation (with intended or unintended social and economic consequences);
- is temporally and geographically specified in three dimensions for a portion of the geographic range of the fishery management unit;
- would afford fishery resources a higher degree of protection within the geographic boundaries of the MPA than the resource is afforded elsewhere within the geographic range of the fishery management unit;
- is established through legally binding mechanisms and/or other effective means; and
- is usually expected to have resource conservation and sustainability benefits, other ecological benefits, and/or social benefits, beyond the boundaries of the MPA.

Unfortunately, the benefits of MPAs are usually focused on economic and societal costs rather than their myriad of economic, cultural, and environmental benefits. This is odd given the overwhelming evidence that returns exceed costs. The benefits of Great Barrier Reef Marine Park for example is estimated at approximately 130 times greater than the costs of management. A strong argument can be
made for reframing MPAs in a more balanced appraisals of benefits relative to costs, including trade-offs between biodiversity conservation and livelihoods (Hastings, 2012).

The growth of social media as a "game changer" offers an opportunity to building up a constituency in support of MPAs. Political change brought on by the use of social medias is exemplified by the phenomena of the "Arab Spring" movement and the recent mobilization of students in Quebec. It is a tool that offers much opportunity for connecting communities with their local marine environments as well as building global constituencies. Information technologies are supplanting the traditional communication methods of printing brochures and pamphlets that Canadian MPA agencies continue to issue. Social media and other forms of information technologies can and need to deliver the needed messages in order to lock up personal engagement as a way to build understanding and support for MPAs. (Hastings, 2012)

Canada's Non-Government Organizations (NGOs) have been focused on the importance of MPAs. A coalition put together a submission into the 2013 budgetary process (Appendix 3). The Canadian Parks and Wilderness Society (CPAWS) has tracked progress on a dozen priority sites. They noted in their 2013 report that, for the most part, Canada's track record of protecting marine ecosystems through the use of MPAs is an abject failure as not one of the sites they are tracking has as yet been legally protected. The commitment of interested NGOs offers an opportunity for partnership in publicising the advantages of MPAs for protection and livelihoods. Striking such a partnership can serve Government agencies well particularly if Aboriginal peoples, fishers and the fishery industry joined in such a concerted effort of conservation.

An interesting example of cooperation between industry and NGOs and other interests is the Canadian Boreal Initiative (http://www.borealcanada.ca/index-e.php) which includes not just conservation groups, but leading resource development companies and First Nations. A similar approach may prove helpful in pushing for increased protection of the marine biome through the establishment of MPAs.

RECOMMENDATION 6: Using the Boreal Forest Imitative as an example, Canada should bring other governments, fishers, fishing industry, local communities and Aboriginal Peoples representatives to work towards striking a similar agreement with the objective of protecting 10% of Canada's marine biome by 2020 while also committing to a common publicity campaign on the need to conserve marine biodiversity.

Challenges

The under-representation of the marine biome in Canada's and in other countries' array of protected areas occurs for a number of reasons. Marine ecosystems are mostly out of view. The general public's imagination or aesthetic seems better captured by an ice-capped mountain that is used in so many promotional tourism features. While marine life has been better documented in recent years, there seems to be a focus on the unusual or freakish to get the public's attention. Added to this is a reluctant self-interest group; the fishery industry. The fishing community (be it industrial, local or sport fishery) commands gargantuan levels of attention whenever a marine protected area is proposed to be located on "their" fishing grounds. The challenge of protecting oceans from fishing interests plays itself out across the world, in Canada and even within Canada's own Fisheries and Oceans department, with its parallel mandates.
A major issue is the immediate fear of fishing grounds closures - a cost borne locally for the wider benefit of biodiversity and global conservation targets. In Australia and other countries fair compensation for lost fishing opportunities has been useful in getting agreements for establishing MPAs. However, as elsewhere, MPAs can support, through proper design, protection of species and habitats while still permitting fisheries. The design of MPA systems must consider not only the economic opportunity but also the assurance for a flow-through of genetic material and organisms to replenish the genetic variability and populations of organisms within a MPA. Changes expected from climate change make this consideration a priority consideration in the design of the MPA system. A favoured approach is to create buffer zones in adjacent areas to MPAs or within very large MPAs through complementary zonation. The Great Barrier Reef in Australia leads the way in this approach.

Added to the "socio-cultural-economic" challenges in establishing MPAs, there are added challenges of demarcating where best to locate an MPA. Expressions of boundaries between terrestrial ecosystems are relatively easy to identify using conventional means. Marine ecosystems boundaries, on the other hand, are not as easy to differentiate. Water temperature, currents, and saline content along with physical features are used to determine ecological boundaries which require more effort than on land. A further challenge is the three dimensional nature of the water column and thus its fluidity. Hence, small to medium-sized MPAS cannot be expected to retain the full cycle of marine life. Both large and small species depend on other parts of the world’s oceans for various critical aspects of their life cycle. Planning and regulating human use is much more difficult in a marine environment than on land. In effect, the skills and qualifications of staff, though related to those affiliated with staff managing terrestrial protected areas do differ and can be more demanding.

MPAs hold great potential for conserving habitat-specific fish species and conserving sensitive habitats such as beds of ancient calcareous algae and deep water corals, species that are highly exploited, large-bodied, high in the food chain and sedentary species such as sea scallops and fish that have restricted movements. That being said the best managed and properly planned MPAs do not unto themselves present a panacea for fixing fishery penuries. Indeed, fishing management quotas and practices will always be an effective means of increasing spawning stock biomass. Hence MPAs as a fishery management tool must be done in association with other fishery management tools such as effort reduction, catch quotas and closed seasons. A fundamental requirement is to assure science provides the basis of decisions and not political expediency. The cod collapse drives home the latter point.

Establishing any protected area, marine or terrestrial is relatively easy in comparison to their management or monitoring. Globally there are many "paper parks" which exist in name only as they have neither management plans nor personnel or funds to manage them. Some of Canada’s provincial parks fall into this category. The Auditor General pointed out in his 2012 report that both Fisheries and Oceans and Parks Canada have not met all of the obligations they have under their respective legislative mandates, policies and good practices.

There is much more to do to convince the general public that marine protected areas must be a priority not just for conservation of biodiversity purposes but for other values as well.
RECOMMENDATION 7: Canada’s planning of an MPA system should favour establishing large protected areas and buffer zones and take into consideration of management regimes beyond MPA boundaries with the intent of building connectivity, using biological corridors and ecological stepping-stones, and thus building resilience to climate change.

RECOMMENDATION 8: Before the establishment of an MPA, Canada must have a statement of objectives and an assigned IUCN Category and within five years of establishment must have a Management Plan that defines zones to guide use and activities that is based on stakeholder input.

RECOMMENDATION 9: On establishment of a MPA, Canada must allot a cadre of trained staff in marine sciences with adequate budgets and equipment to carry out their responsibilities.

Canada in a Global Context
Canada's Marine Scientists are still well respected among their peers, However, recent federal government policies restricting travel and even curtailing the expression of opinions at learned society meetings is affecting their and Canada's reputation. This is very unfortunate as there is much to learn from the many countries that have surpassed Canada in establishing a system of MPAs.

In comparison with other countries or regions of the world, Canada is a laggard in protecting its Oceans with the use of MPAS. The following graph tells the story quite clearly.

Figure 2  2010 global comparison of % of marine waters protected (country name labels include their rank among 34 OECD countries) "Data sources: United Nations (Millennium Development Goals Indicators) and CARTS (for Canada)"
Pacific States
The small island states of the Pacific have worked closely with NGOs and set records in the size of area protected. For example, the Phoenix Islands Protected Area (PIPA) was established by Kiribati in 2008 covering 408,342 km$^2$. Most designations in the Pacific as elsewhere allow some form of extractive use within the protected areas. PIPA allows some fishing activity, although this is to be phased out, eventually rendering 25% of the protected area to a "no take" zone.

Australia
In 1998, the Commonwealth and state and territory governments committed to the creation of a National Representative System of Marine Protected Areas (NRSMPA) by 2012.

In 2012, the Australian Government established 40 new Commonwealth marine reserves around Australia building on existing marine reserves begun in 1982. The new Commonwealth marine reserves add more than 2.3 million square kilometres to Australia's marine reserve estate, resulting in a total area of 3.1 million square kilometres of ocean being managed primarily for biodiversity conservation, fulfilling the Australian Government's part in the creation of the national system. More recently, the newly elected Australian coalition government followed through on their pre-election threat to Australia's national network of marine parks by suspending the management plans for 33 new marine parks, including parks in the Coral Sea, the Kimberley and the Great Australia Bight. much to the opposition of environmental groups within that country. A new round of consultations is to be undertaken.

The Auditor General's fall 2012 report attributes the Australian success to factors such as sustained leadership, communication, active stakeholder engagement, and public support, as well as commitment to financial assistance for those affected. According to California officials, progress in that state has resulted from similar factors, including sustained leadership over successive governments and consensus-driven consultations.

North America
The United States of America has recently established three large Marine National Monuments (MNMs) in its Pacific territories: Papah¯anaumoku¯akea MNM, established in 2006 covers 336,154 km$^2$; the Mariana Trench MNM, established in 2009 covers 247,179 km$^2$; and, the Pacific Remote Islands MNM, established in 2009 covers 212,788 km$^2$.

According to the US National MPA Center, as of April 2011 the U.S. had more than 1,600 MPAs, which amounts to about 40% of all U.S. waters in some form of MPA (reserves, refuges, preserves, sanctuaries, areas of special biological significance, and others). The inclusion of several large federal fishery management areas greatly expands the applied definition of protection by MPAs within U.S. waters. Basic standards have been defined under the Framework for the National System of MPAs (Presidential Executive Order 13158). At this point, applying these standards, of the 1600 MPAs, 297 meet the criteria. An additional 723 sites are eligible for national system membership.

(http://www.mpa.gov/pdf/helpful-resources/us_mpas_snapshot.pdf)
Nearly all (86%) U.S. MPAs are multiple use. "No-take" MPAs occupy only about 3% of all U.S. waters so less than 8% of the area in MPAs in the U.S. is "no-take". State and territorial governments manage approximately 75% of the nation’s MPAs but these are quite small and so most of the US MPA area is managed by federal agencies.

Mexico reported in 2010 that it had 16.67 % of territorial waters in MPAs.

**High Seas (seas beyond national jurisdictions)**

The responsibilities of states for the protection of the marine environment and its biodiversity are defined within international conventions and agreements. These are United Nations Convention on the Law of the Sea (UNCLOS), the UN Fish Stocks Agreement, the Convention on Biological Diversity (CBD), the resolutions of the UN General Assembly (UNGA) and the FAO International Guidelines for the Management of Deep-sea Fisheries in the High Seas.

This framework has led to the establishment of regional fisheries management organizations (RFMOs) that focus on an ecosystem-based approach with a limited number of fishing restrictions focused on discrete deep-sea fish stocks and their vulnerable habitats. There is consensus that MPAs (in particular areas closed to certain fishing activities) could constitute valuable means to reduce the impact of fishing on vulnerable marine habitats and species. However, at this point only 0.03% of High Seas are protected.

**RECOMMENDATION 10:** Canada must encourage its scientists and policy makers to learn through travels abroad and exchanges with their international colleagues as a means of building a strong MPA system in Canada.

**Canadian Context**

**Current governing and legislative frameworks**

Canada has approximately eight federal and 40 provincial/territorial legislative or regulatory tools for establishing protected areas with a marine component, including those located within the Great Lakes (Government of Canada, 2010).

**PARKS CANADA** operating under the **National Marine Conservation Act** (in force from 2002 and subsequently modified) has a mandate to establish at least one Canada National Marine Conservation Area (NMCA) in each of Canada’s 29 distinct marine regions (Figure 2). NMCAs are marine areas...
managed for sustainable use and containing smaller zones of high protection. They include the seabed, the water above it and any species, which occur there. They may also take in wetlands, estuaries, islands and other coastal lands. While entitled marine, NMCAs also include fresh water zones of the Great Lakes. These cannot be considered as contributing to Canada's commitment to the Aichi Target of 10% marine protection by the year 2020.

Parks Canada is responsible for both protecting ecosystems and managing them for visitors to understand, appreciate, and enjoy in a sustainable manner. Fishing and shipping, for example, are allowed in national marine conservation areas but with the proviso that they would be limited or even eliminated from zones protecting sensitive features such as nesting areas, spawning beds, whale calving areas and cultural sites. Moreover, they would be carefully managed to protect the greater ecosystem. Other activities, namely ocean dumping, undersea mining and oil and gas exploration and development, are not permitted in a national marine conservation area.

FISHERIES AND OCEANS CANADA operating under the OCEANS ACT establishes Marine Protected Areas to protect and conserve important fish and marine mammal habitats, endangered marine species, unique features and areas of high biological productivity or biodiversity. Fisheries and Oceans Canada is responsible for leading and coordinating the development and implementation of a national network of marine protected areas on behalf of the Government of Canada. It also provides the Department with the mandate to establish and manage marine protected areas to conserve and protect:

- commercial and non-commercial fish, marine mammals, and their habitat;
- endangered or threatened marine species and their habitats;
- unique habitats;
- marine areas of high biodiversity or biological productivity; and
- any other marine resource or habitat as needed to fulfill the mandate of the Minister.

ENVIRONMENT CANADA establishes Marine Wildlife Areas under the CANADA WILDLIFE ACT and the MIGRATORY BIRDS CONVENTION ACT to protect unique, critical and productive terrestrial, wetland and marine habitats/ecosystems for wildlife in Canada. Established national wildlife areas (areas on land or within the territorial sea), marine wildlife areas (MWAs – areas beyond the territorial sea) and migratory bird sanctuaries protect marine "ecozones" and near-shore areas. Environment Canada is currently responsible for the largest number of MPAs and MPA area.

PROVINCIAL INITIATIVES are mostly limited given that offshore water beyond low water mark is a federal jurisdiction. Provinces do lay claim within most bays ("headland to headland"). Some specific areas have been legally determined to be of provincial jurisdiction through recognized historic title or title given as result of Supreme Court decisions. The main ones are Bay of Fundy (half to New Brunswick and half to Nova Scotia), St. Lawrence River/Eastern coast of Anticosti Island belongs to Quebec and Strait of Georgia, which belongs to British Columbia. According to the Fisheries and Oceans Canada website this latter exception can be traced to when British Columbia entered Confederation in 1871 with the waters and submerged lands of the Strait of Juan de Fuca, the Strait of Georgia, Johnstone Strait and
Queen Charlotte Strait and the waters and submerged lands between major headlands (bays, estuaries and fjords). This ownership includes natural resources — “the rocks and docks” and the marine resources — “flora and fauna” attached and all subsurface resources. As such, provincial laws apply to activities such as standing on a beach, sailing in a passage, mooring in a bay, building a marina/dock or raising oysters in the same way that those laws apply to activities on land. Fisheries and Oceans Canada has responsibility for management of the fishery in these waters. British Columbia MPAs add considerably to the marine protected area estate.

An unique arrangement is the Province of Quebec - Parks Canada cooperation in the joint management of the Saguenay–St. Lawrence Marine Park in association with local bodies. Parks Canada estimates that the marine protected area in the Saguenay region generates $3.16 in government revenues for every dollar spent on managing the site. In addition to the joint Saguenay Marine Park, Quebec lists extensive marine protected areas. Most of these are seasonal waterfowl resting areas.

### Regional Approaches

Having three separate mandates leads to different approaches. Much effort has been expended to find common ground. A common high level strategy and a National Framework for a Canadian Network is in place. These efforts though commendable have little to show for in the water, in the form of established MPAs.

Working towards a common framework was the basis of a project conducted by the Commission on Environmental Cooperation (CEC) under the North American Free Trade Agreement. The project defined marine ecoregions for North America. These areas, defined by scientists in the early 2000’s from all three countries, are displayed in Figure 3. Three levels of detail are displayed on this map capturing ecosystem differences. The largest scale groups large water masses and currents, enclosed seas, and regions of coherent sea surface temperature or ice cover. Six such Marine ecoregions encompass Canada’s EEZ. Secondary and tertiary regions subdivide the Regions.

The same scientists focused on the Baja to Bering Sea corridor and came up with 28 priority conservation areas. Four occur in Canadian waters; Dixon Entrance/Langars Island/Forester Island, Northern Queen Charlotte Sound/Hectate Strait/Gwaii Haanas, Scott Islands/ Queen Charlotte Strait and Southern Straight of Georgia/San Juan Islands.

In addition to the above work, scientists involved in this project developed an ecological scorecard that visually summarises the status and trends of water quality, habitat, and living resources. Canada’s Pacific
Rim National Park Reserve and Race Rocks were pilot areas in the development of this tool. (NAMPA, 2011)

In developing the National Framework, the three federal Department/Agency with stakeholders arrived at a somewhat different framework from the CEC regional breakdown (Government of Canada, 2011). The National Framework sets out the strategic direction for establishment of a national network of marine protected areas. Planning is to be conducted using bioregions as a common foundation but these may be subdivided into smaller planning areas.

Figure 4 represents the Bioregional breakdown that splits the marine biome into 12 Marine plus one Great Lakes Bioregion. However, adding to the confusion, five Large Ocean Management Areas, or LOMAs, that existed prior to the development of a bioregional approach are being retained as a framework for delivering on MPAs.

Then, Parks Canada's framework for MPA planning and establishment is different again. Its overall mandate is to establish a Canada National Marine Conservation Area in each of the 29 identified Region. (Figure 2)

Environment Canada's approach is site or species specific and does not reflect a bioregional framework, though their sites contribute to representation within the National Planning Framework.

Having different legislative and regional frameworks for planning is indicative of a fragmented approach that is confusing at best. Previous and different perspectives are still in effect and make for a difficult rationale. Much effort has been expended on trying to find common approaches to a Bioregional classification at the expense of actually establishing MPAs.

**Jurisdiction challenges**

Having three federal departments working on implementing a MPA network at first blush might be viewed as a cooperative opportunity. However, it has been difficult from the start given that Departmental priorities and mandates differ. While personnel have good will and commitment, the lack of clarity of purpose has confused and on occasion deflated their enthusiasm over the years. Through considerable effort Canadian MPA planning and legislative frameworks have been in place for some time and yet the rate of success is pitiful at best. True, resources have not been always been what they could be and political will has and is lagging. Shortage of resources invariably limits the extent of planning and of course engagement with the public and Aboriginal peoples. Establishing MPAs and assuring effective management cannot be accomplished without resources and, of course, political will.
Even, if there were unlimited resources, the reality is that to establish MPAs at the federal level requires securing a number of Department level approvals: Fisheries and Oceans for fisheries and coast guard policy; Transport Minister for shipping issues; Defense Minister for military considerations; Aboriginal peoples (including land claims) and provincial considerations require further departmental involvement. This is internal to federal government levels of approvals. Getting local support from civic leaders, local industry interests and the general public takes time and effort as well. Then after Parliamentary Committee hearings the site eventually moves forward to be listed under the appropriate piece of legislation. The above is noted here to point out that MPA establishment is indeed a time-consuming process.

The establishment of MPAs in Canada cannot circumvent the above consultations and the consideration of the interests of others. However, with political will at the highest levels, streamlining these agreements can and does happen much faster than the past has shown. Such is the case, to a point, with the expansion by almost 50% of the Canadian national parks system over the past decade and an additional 28,399 sq mi set aside for future parkland (McNamee, 2010).

Then looking beyond Canada we see that comparable countries such as Australia and others have circumvented lethargy and are quickly becoming leading protectors of their seas through a robust system of MPAs.

**RECOMMENDATION 11: The Government of Canada should review departmental authorities under which MPAs are planned, established and managed with the objective of creating an Agency with autonomy from Departments and with the full responsibility for establishing and management of MPAs under one authority and approach. The Parks Canada Agency Act may provide a good example.**

### Aboriginal Peoples

Variable realities influence Aboriginal interests in MPAs. Undoubtedly, proposals for MPAs within Aboriginal territorial interests are a paramount priority. However, involvement in MPA planning and establishment processes will compete with their limited resources taken up with, for example, land claim processes or other more pressing social, economic, and/or environmental pressures. To establish a partnership in moving forward on MPAs with aboriginal peoples with traditional territorial interests requires immediate engagement at the beginning of the planning process and making resources available to assure full participation throughout the planning, establishment and management activities. Resourcing is a first step in giving clear evidence of political will to move forward in partnership.

Where claims are unsettled, future NMCAs and MPAs are more likely to be established as Reserves. While the creation of the Gwaii Haanas NMCA Reserve took some twenty years it does set out an example of cooperation. Parks Canada and the Council of the Haida Nation arrived at joint decisions in defining boundaries and are now working through a zoning plan that will define, among others, areas of strict protection.
Resourcing

The Auditor General's 2005 audit noted that progress in establishing a national network of MPAs was impeded by insufficient resources. Subsequently, the Auditor General notes in the 2012 report that both Parks Canada and Fisheries and Oceans management expressed concern that recent budget cuts may further affect the rate of establishing MPAs.

The 2013 Federal budget allotted $4 million as per the details in the adjoining text box for specific MPA related projects to Fisheries and Oceans and Environment Canada. This nominal sum does not measure up to the Green Budget Coalition's recommended $35M ongoing budget increase for MPA establishment and another $30M for tools and monitoring (See Appendix 3)

The 2012 Auditor General's review concludes with an observation as to whether the human and financial resources being allocated are enough to get the job done in a timely manner. The projected rate of progress is such that many decades will pass before Canada has a fully functioning MPA network. Meanwhile the global target of 10% protection of the marine biome by 2020 under the United Nations Convention on Biological Diversity will not be met and more importantly our marine biodiversity will be further at risk and with it the substantive portion of our economy dependent on it.

A worldwide survey of the running costs of 83 MPAs suggests that a global MPA network meeting a target of conserving 20–30% of the world’s seas might cost between $5 billion and $19 billion annually to run. Such expenditure would probably create around one million jobs. They also ignore potential private gains from improved fisheries and tourism and are dwarfed by likely social gains from increasing the sustainability of fisheries and securing vital ecosystem services. (Lopoukhine, et. al, 2012). Although at first glance the funding needs may seem substantial, the projected gross network costs are less than current government expenditures on harmful subsidies to industrial fisheries - conservatively estimated in 2006 between US$30-34 billion per year for the period from 1995 to 2005 (Sumaila, U. and Daniel Pauly, Eds., 2006).

Fisheries subsidies can be classified according to their potential impact on fish stocks as; ‘Good’, 'Bad' and the 'Ugly'. For Canada in the year 2000, the "Good" subsidies which focus on MPA expenditures, research and fishery management were estimated to be almost $344M. The "Bad" aimed at boat...
construction fuel subsidies and ports and market support expenditures were estimated at around $250M. The Ugly subsidies which consist of direct assistance and buy back of vessels amounted to $267M in the year 2000 (http://www.seaaroundus.org/Subsidy/default.aspx?GeoEntityID=31). Subversive subsidies in effect totalled $500M.

The ecosystems within protected areas provide a multitude of benefits which far outweigh costs. However, benefits from protection are often broadly disbursed, long term and non-market while the costs of protection and the earning potential from non-protection choices are often short-term and concentrated. Policy actions are needed to address the distribution of benefits and costs. Such policies are vital to make protected areas a socially and economically attractive choice and to maximize their contribution to human well-being at all scales (TEEB, 2009).

RECOMMENDATION 13: Canada should reduce subversive subsidies and transfer such funds to safeguarding marine biodiversity and dependent livelihoods by expanding the MPAs network to meet international obligations and thus contributing to conserving Canada's marine biodiversity.

RECOMMENDATION 14: To cover some of the costs of MPAs Canada should explore other sources of funding such as payments for ecosystem services, support or direct payments from communities and/or industries which benefit from the services provided. Assure that such payments stay with the MPAs and not be returned to the central treasury.

**Recommendations**

RECOMMENDATION 1: Canada's adoption of the IUCN definition of a protected area is an appropriate standard providing the basis for measuring progress in meeting international commitments. Pressure to count areas that do not meet the IUCN definition should be guarded against.

RECOMMENDATION 2: Canada should work towards using all of the IUCN Protected Area Management and Governance categories (Apendix 4) in building up its MPA system. Such an approach assures a broad representation of activities, levels of protection and broadens the consituency in support of MPAs.

RECOMMENDATION 3: Canada must develop and implement a communications plan using the latest information technology and social media and include all stakeholders to ensure that a common consistent message is delivered by all stakeholders, ensuring a broader comprehension by all Canadians of the values of MPAs.

RECOMMENDATION 4: Canada's MPAs must meet the definition of a protected area and should be established with the aim to safeguard areas of high biodiversity and their associated ecosystem services, be equitably and effectively managed and connected to other MPAs.

RECOMMENDATION 5: Canada must annually report it's achievements to the WDPA through CARTS in establishing MPAs and as such its contribution towards meeting the global commitment of protecting 10% of the marine biome.
RECOMMENDATION 6: Using the Boreal Forest Imitative as an example, Canada should bring other
governments, fishers, fishing industry, local communities and Aboriginal Peoples representatives to
work towards striking a similar agreement with the objective of protecting 10% of Canada’s marine
biome by 2020 while also committing to a common publicity campaign on the need to conserve marine
biodiversity.

RECOMMENDATION 7: Canada’s planning of an MPA system should favour establishing large protected
areas and buffer zones and take into consideration of management regimes beyond MPA boundaries
with the intent of building connectivity, using biological corridors and ecological stepping-stones, and
thus building resilience to climate change.

RECOMMENDATION 8: Before the establishment of an MPA, Canada must have a statement of
objectives and an assigned IUCN Category and within five years of establishment must have a
Management Plan that defines zones to guide use and activities that is based on stakeholder input.

RECOMMENDATION 9: On establishment of a MPA, Canada must allot a cadre of trained staff in marine
sciences with adequate budgets and equipment to carry out their responsibilities.

RECOMMENDATION 10: Canada must encourage its scientists and policy makers to learn through travels
abroad and exchanges with their international colleagues as a means of building a strong MPA system in
Canada.

RECOMMENDATION 11: The Government of Canada should review departmental authorities under
which MPAs are planned, established and managed with the objective of creating an Agency with
autonomy from Departments and with the full responsibility for establishing and management of MPAs
under one authority and approach. The Parks Canada Agency Act may provide a good example.

RECOMMENDATION 12: Using lessons learned from the Gwaii Haanas partnership Canada should
explore with Aboriginal peoples holding interests in the marine biome on setting up partnerships to
move forward together in planning, establishing and managing MPAs.

RECOMMENDATION 13: Canada should reduce subversive subsidies and transfer such funds to
safeguarding marine biodiversity and dependent livelihoods by expanding the MPAs network to meet
international obligations and thus contributing to conserving Canada's marine biodiversity.

RECOMMENDATION 14: To cover some of the costs of MPAs Canada should explore other sources of
funding such as payments for ecosystem services, support or direct payments from communities and/or
industries which benefit from the services provided. Assure that such payments stay with the MPAs and
not be returned to the central treasury.

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NAMPA, 2011, A Guide to Ecological Scorecards for Marine Protected Areas in North America, Commission for Environmental Cooperation, Montreal, Canada 50pp

TEEB – The Economics of Ecosystems and Biodiversity for National and International Policy Makers (2009) - Chapter 8 - Recognizing the value of protected areas.


APPENDIX 1 - CANADIAN MPA STATISTICS

The following statistics as of December 31st 2012 as compiled by CARTS summarise the number and amount of federal, provincial, and territorial government marine protected areas (using the IUCN definition of a protected area). As of Canada has protected only 0.88% of its marine biome.

### NATIONAL statistics of marine protected areas

<table>
<thead>
<tr>
<th>Marine (ha)</th>
<th># of Protected Areas</th>
<th>% of Biome protected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada (all Provinces &amp; Territories)</td>
<td>4,932,800</td>
<td>7,492</td>
</tr>
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</table>

### FEDERAL managed MPAs

<table>
<thead>
<tr>
<th>Marine (ha)</th>
<th># of Protected Areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parks Canada Agency</td>
<td>1,288,245</td>
</tr>
<tr>
<td>Environment Canada</td>
<td>1,958,900</td>
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</table>

### MPAs in BRITISH COLUMBIA

#### Provincially Administered

<table>
<thead>
<tr>
<th>Marine (ha)</th>
<th># of Protected Areas</th>
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</thead>
<tbody>
<tr>
<td>Parks Canada Agency</td>
<td>366,100</td>
</tr>
<tr>
<td>Environment Canada</td>
<td>297</td>
</tr>
</tbody>
</table>

### MPAs in MANITOBA

#### Provincially Administered

<table>
<thead>
<tr>
<th>Marine (ha)</th>
<th># of Protected Areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parks Canada Agency</td>
<td>80,325</td>
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</tbody>
</table>

### MPAs in NEW BRUNSWICK

#### Provincially Administered

<table>
<thead>
<tr>
<th>Marine (ha)</th>
<th># of Protected Areas</th>
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</thead>
<tbody>
<tr>
<td>Parks Canada Agency</td>
<td>4,050</td>
</tr>
<tr>
<td>Environment Canada</td>
<td>1,369</td>
</tr>
</tbody>
</table>

### MPAs in NEWFOUNDLAND AND LABRADOR

#### Provincially Administered

<table>
<thead>
<tr>
<th>Marine (ha)</th>
<th># of Protected Areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environment Canada</td>
<td>1,341</td>
</tr>
</tbody>
</table>

### MPAs in NORTHWEST TERRITORIES

<table>
<thead>
<tr>
<th>Marine (ha)</th>
<th># of Protected Areas</th>
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</thead>
<tbody>
<tr>
<td>Parks Canada Agency</td>
<td>9,700</td>
</tr>
<tr>
<td>Environment Canada</td>
<td>115,520</td>
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</table>

### MPAs in NOVA SCOTIA

<table>
<thead>
<tr>
<th>Marine (ha)</th>
<th># of Protected Areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parks Canada Agency</td>
<td>270</td>
</tr>
<tr>
<td>Environment Canada</td>
<td>1,947</td>
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</table>

### MPAs in NUNAVUT

<table>
<thead>
<tr>
<th>Marine (ha)</th>
<th># of Protected Areas</th>
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</thead>
<tbody>
<tr>
<td>Parks Canada Agency</td>
<td>694,900</td>
</tr>
<tr>
<td>Environment Canada</td>
<td>1,804,322</td>
</tr>
</tbody>
</table>

### MPAs in ONTARIO
<table>
<thead>
<tr>
<th>MPA Type</th>
<th>Volume 1</th>
<th>Volume 2</th>
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</thead>
<tbody>
<tr>
<td>Environment Canada</td>
<td>544</td>
<td>18</td>
</tr>
<tr>
<td><strong>MPAs in PRINCE EDWARD ISLAND</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provincially Administered</td>
<td>806</td>
<td>82</td>
</tr>
<tr>
<td>Island Nature Trust</td>
<td>213</td>
<td>26</td>
</tr>
<tr>
<td>Co-managed</td>
<td>298</td>
<td>5</td>
</tr>
<tr>
<td>Nature Conservancy Canada</td>
<td>21</td>
<td>3</td>
</tr>
<tr>
<td>Private</td>
<td>17</td>
<td>14</td>
</tr>
<tr>
<td><strong>MPAs in QUEBEC</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provincially Administered</td>
<td>344,507</td>
<td>3,661</td>
</tr>
<tr>
<td>Parks Canada Agency and Quebec</td>
<td>124,472</td>
<td>1</td>
</tr>
<tr>
<td>Parks Canada Agency</td>
<td>500</td>
<td>3</td>
</tr>
<tr>
<td>Environment Canada</td>
<td>33,429</td>
<td>35</td>
</tr>
<tr>
<td><strong>MPAs in YUKON</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parks Canada Agency</td>
<td>7,800</td>
<td>3</td>
</tr>
</tbody>
</table>
Appendix 3  - GREEN BUDGET COALITION - RECOMMENDATION FOR THE 2013 FEDERAL BUDGET

Recommended an ongoing $65 million per year for the following priorities:

1. Establishing a network of Marine Protected Areas

(MPAs) to protect marine biodiversity, help recover fish stocks, boost nature-based tourism, and maintain stable jobs for the future. MPAs contribute to Canada’s $30 billion a year ocean economy.

Canada has committed to protecting 10% of our oceans by 2020. Currently less than 1% is protected. To ensure Canada is on track to achieve this international commitment, the Green Budget Coalition recommends that Canada designate new marine protected areas covering at least 4% of Canada’s waters within the next three years. This increase will ensure Canada is half way towards its 2020 commitment, and has done more than any previous government by doubling the current area protected.

INVESTMENT NEEDED: $35 million per year of ongoing funding ($25 million for Parks Canada to create and manage National Marine Conservation Areas, $9 million for Fisheries and Oceans Canada to designate Oceans Act marine protected areas and $1 million for Environment Canada to establish Marine Wildlife Areas).

2. Investing in marine management tools

To ensure intertwined economic and ecological health an array of marine management tools need to be developed and deployed. These tools will support responsible resource development, providing certainty and a stable investment climate for industry, and identify thresholds and ecological limits of the ocean ecosystem.

The tools should include:

- Cumulative effects and risk assessment — a whole-of-ocean approach that establishes thresholds is essential to maintaining the long-term health of the ocean ecosystem and the communities that depend on it.
- Human use mapping to ensure the highest and best use of our oceans — those critical to local and regional livelihoods and economies are happening without conflict, and operators and regulators have the information they need for decision making.
- Valuing ecosystem services (e.g., climate regulation, pollination, water filtration) and integrating these values into decision-making. Ecological mapping will be an important tool to identify nature’s services critical for long-term human and economic well-being. Tie these foundational elements together and
- implement Marine Spatial Planning to help ensure an integrated, ecosystem-based approach to the planning, protection, management and responsible use of marine areas and their resources.

INVESTMENT NEEDED: $20 million per year of ongoing funding

3. Invest in state of the ocean reporting

The intent is to set marine environmental quality standards for responsible resource development, and to track how well these standards are being met.
• Up-to-date science on the health of Canada’s oceans is essential to establish a clear and accountable baseline for planning and implementing industrial development and conservation. Setting evidence-based standards will help support stable long term jobs and protect the resources which maintain those jobs. Environmental quality standards and regulations can then be set which benefit both development and ecosystems.

**INVESTMENT NEEDED:** $10 million per year of ongoing funding.
Appendix 4 - IUCN PROTECTED AREA MANAGEMENT CATEGORIES AND GOVERNANCE TYPES

IUCN recognizes six management categories (one with a sub-division) of protected areas. These are summarized below.

Ia Strict nature reserve: Strictly protected for biodiversity and also possibly geological/geomorphological features, where human visitation, use and impacts are controlled and limited to ensure protection of the conservation values

Ib Wilderness area: Usually large unmodified or slightly modified areas, retaining their natural character and influence, without permanent or significant human habitation, protected and managed to preserve their natural condition

II National park: Large natural or near-natural areas protecting large-scale ecological processes with characteristic species and ecosystems, which also have environmentally and culturally compatible spiritual, scientific, educational, recreational and visitor opportunities

III Natural monument or feature: Areas set aside to protect a specific natural monument, which can be a landform, sea mount, marine cavern, geological feature such as a cave, or a living feature such as an ancient grove

IV Habitat/species management area: Areas to protect particular species or habitats, where management reflects this priority. Many will need regular, active interventions to meet the needs of particular species or habitats, but this is not a requirement of the category

V Protected landscape or seascape: Where the interaction of people and nature over time has produced a distinct character with significant ecological, biological, cultural and scenic value: and where safeguarding the integrity of this interaction is vital to protecting and sustaining the area and its associated nature conservation and other values

VI Protected areas with sustainable use of natural resources: Areas which conserve ecosystems, together with associated cultural values and traditional natural resource management systems. Generally large, mainly in a natural condition, with a proportion under sustainable natural resource management and where low-level non-industrial natural resource use compatible with nature conservation is seen as one of the main aims. The category should be based around the primary management objective(s), which should apply to at least three-quarters of the protected area – the 75 per cent rule. The management categories are applied with a typology of governance types – a description of who holds authority and responsibility for the protected area.

IUCN defines four governance types.

Governance by government: Federal or national ministry/agency in charge; sub-national ministry/agency in charge; government-delegated management (e.g. to NGO)

Shared governance: Collaborative management (various degrees of influence); joint management (pluralist management board; transboundary management (various levels across international borders)

Private governance: By individual owner; by non-profit organisations (NGOs, universities, cooperatives); by for-profit organisations (individuals or corporate)

Governance by indigenous peoples and local communities: Indigenous peoples’ conserved areas and territories; community conserved areas – declared and run by local communities