Science-based Guidelines for Marine Protected Areas and MPA Networks in Canada

Quick Reference Guide

CPAWS
Canadian Parks and Wilderness Society

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Citation for full guidelines report:

Jessen, S., K. Chan, I. Côté, P. Dearden, E. De Santo, M.J. Fortin, F. Guichard, W. Haider, G. Jamieson, D.L. Kramer, A. McCrea-Strub, M. Mulrennan, W.A. Montevecchi, J. Roff, A. Salomon, J. Gardner, L. Honka, R. Menafra and A. Woodley. 2011. *Science-based Guidelines for MPAs and MPA Networks in Canada*. Vancouver: Canadian Parks and Wilderness Society. 58 pp.

Web location:

http://cpaws.org/publications/mpa-guidelines

Note on this document:

This is a companion report to the full report *Science-based Guidelines for MPAs and MPA Networks in Canada*. This document provides a shorter summary of the key guidelines, their definitions and rationales. Please refer to the full report for the full guidelines text and detailed descriptions. The full report should be used when citing these guidelines.

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1 | INTRODUCTION

Global ocean health is in decline due to a variety of human activities, and their impacts are being compounded by the multiple manifestations of climate change. Pressures on ocean resources are especially evident in Canada, a country with strong maritime traditions in three oceans, the longest coastline in the world and a larger marine jurisdictional area than any other country. Canadians have a special responsibility to assume leadership in ocean science, stewardship, and conservation.

Sustaining ocean health requires ecosystem-based approaches to management. Marine protected areas (MPAs) are a central tool in an ecosystem-based approach. The International Union for Conservation of Nature (IUCN) defines an MPA as, *"A clearly defined geographical space, recognised, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values."*

Canada has made many national and international commitments to complete a national network of MPAs and has also made considerable effort to develop a policy framework to establish a comprehensive system of MPAs. Nevertheless, MPA development in Canada, with protection of less than 1% of the country's Exclusive Economic Zone, is lagging far behind its urgent need and behind that of many other countries.

As scientists with expertise and experience in marine conservation, we are concerned that the planning and management of marine protected areas in Canada currently is not incorporating key lessons from conservation science. Effective progress in MPA development will depend on the incisive use of pertinent scientific information. Empirical research has demonstrated the myriad benefits that accrue from well-designed MPAs, and especially from no-take reserves. Such benefits include the protection of biodiversity, enhancement of ecosystem resilience and economic benefits, ***but the way in which Canadian policy and legislation is currently being implemented is unlikely to realize these benefits***. As Canada develops and implements a policy framework for MPA networks, we hope these guidelines will help to support an effective path forward.

To increase the probability of long-term success, MPAs need to be embedded in a network of interconnected protected areas. Networks are much more than the sum of their individual components. The international scientific community has produced a body of knowledge addressing both ecological and socio-economic perspectives which should underpin the development of Canadian networks of MPAs.

Our purpose is to provide guidelines for effective networks of MPAs throughout Canada's three oceans. We base our approach on scientific understanding of marine ecosystems and of human interactions with them, integrating knowledge from the biophysical and social sciences. The guidelines also reflect the prominent place of Canada's Aboriginal peoples in the stewardship of our oceans.

These guidelines affirm that in order to achieve the full benefit of MPAs in Canada, the protection of healthy marine ecosystems must be the priority, and a number of specific requirements must be met, including:

- **creating no-take reserves spanning no less than 30% of each bioregion in Canadian waters;**
- **excluding industrial uses and developments, including exploration for and extraction of non-renewable**
- **resources, dredging, dumping, and destructive fishing practices, particularly bottom trawling;**
- **planning and implementing MPAs as part of effective networks and comprehensive oceans management; and**
- **respecting the rights and interests of Aboriginal peoples.**

If the above requirements and others outlined in this report are met, marine protected areas can contribute to the protection of marine species, subspecies, biological communities and habitats, as well as ecological and evolutionary processes; and they can support sustainable relationships of people with oceans, including a sustained flow of benefits. Also relevant to the development of MPA networks is the need for just treatment of current and future people, and of nonhuman organisms and natural entities.

The guidelines are organized into five thematic categories: ecological criteria; social, cultural and economic considerations; MPAs in context; and governance. Within each category several guidelines are presented, typically with a definition, rationale, and references.

Given that the necessary legislative tools are currently in place, **Canada has the opportunity and *the responsibility* to take a leadership role in marine stewardship and protection**. These guidelines have been prepared with the goal of helping to realize this responsibility.

2 | ECOLOGICAL CRITERIA FOR MPA SITES AND NETWORKS

The design of functional networks of MPAs requires the initial identification of all sites of bioregional importance. Sites can be deemed important according to a number of ecological criteria.

2.1 Site characterization

Much research has been aimed at identifying the characteristics of sites that, if protected, would result in effective protection of large amounts or particularly important components of biodiversity. While there is not equivalent evidence for all characteristics, the features explained below are those most likely to lead to success in ensuring the long-term functioning of marine ecosystems and their key components.

All of these features have been, in some form, adopted as essential to the identification of ecologically or biologically significant areas (EBSAs) in marine environments by the Convention on Biological Diversity (Decision IX/20). The definitions used here are based on those of the CBD but have been expanded for added clarity.

1. Guideline: Characterize all areas of the seascape according to key ecological criteria to allow the identification of ecologically or biologically significant areas

Criterion	Definition	Rationale
Uniqueness, rarity or special character	• Uniqueness: a single example in a bioregion or a few examples in Canada but nowhere else • Rarity: the characteristic of interest occurs only in a few locations in a bioregion or is endemic to Canadian waters • Special character: key roles in the lives of organisms	• Areas with unique, rare or special character are valuable because they are not replaceable. Their loss would be permanent and cause a significant reduction in marine biological diversity. • The larger the spatial scale at which a characteristic is unique, rare or special, the higher the priority for protection because the effect of their loss is much greater. • The larger the number of rare, unique and special characteristics, the higher should be the priority for protection.

Criterion	Definition	Rationale
Productivity	• The rate at which plants and animals and their populations grow • Depends upon environmental conditions and factors that promote survival and reduce mortality	• Areas with comparatively high natural biological productivity play important roles in maintaining populations and fuelling ecosystems. • Such areas may support productive fisheries in adjacent areas by serving as sources of nutrients and of new members to the population.
Biological Diversity	• The variety of ecosystems, habitats, communities, species, or the genetic diversity in an area • The strong association between species and habitats means that habitats often provide a useful proxy for species richness	• High biodiversity is essential for the maintenance of evolutionary potential of species and resilience of marine ecosystems in the face of environmental change. • Sites with high diversity allow protection of more features, but at the network level some sites with low diversity might be important to represent the full range of diversity.
Degree of naturalness/ human impact	• The extent to which an area is undisturbed by human activity or introduced species	• Areas that are more natural are characterized by population and community structures, ecosystem processes and functions that resemble those of pristine marine ecosystems. • They can act as reference sites or natural archives to assess habitat recovery and decline. • They may be more resilient and can act as sources of organisms to rebuild populations in adjacent sites. • In areas of high overall naturalness it may be valuable to protect sites that are at high risk of human impact.
Sensitivity/ resistance to disturbance	• The extent to which a habitat or ecosystem changes following a disturbance • The likelihood, frequency and magnitude of both natural and human disturbances need to be considered	• Removing or lessening some human-made disturbances through protection is expected to reduce the cumulative impact of multiple disturbances and the risk of synergistic interactions among disturbances. This is particularly important for ecologically sensitive areas. • The identification of areas that are ecologically resistant to the impacts of climate change is critical for comparative assessments of sensitive areas. • Functional redundancy, i.e. the presence of several species that perform similar functions in an area, can confer resistance. Relatively simple marine communities, and ones that heavily rely on a few species, are predicted to be more sensitive.
Potential for recovery from disturbance	• The time taken by an area to return to its previous state following a disturbance • Highly productive areas and those without chronic degradation have greater recovery potential.	• Population viability and ecosystem function can be maintained or enhanced only when ecosystems have time to recover between disturbance events. • Habitats and populations with low recovery potential, and/or facing the effects of several disturbances, need more time under protection to achieve noticeable effects.

2

2.2 Assembling sites into functional networks

It is well recognized that marine protection cannot be satisfactorily achieved by protecting individual sites alone because many processes require functional connections between sites to operate over large scales. Moreover, while individual sites are usually selected on the basis of one or a few features, sites should collectively be representative of Canadian marine ecosystems and processes.

A bioregional perspective is the appropriate scale in the development of a network. Twelve marine bioregions and one Great Lakes bioregion have been identified in Canadian waters on the basis of oceanographic and bathymetric similarities. Using site-level scores and decision tools, a network of MPAs that meets to the greatest extent possible the guidelines outlined below should be implemented for each bioregion. Bioregional networks must recognize the changes to natural processes and human use that will result from rapid climate change.

Guideline	Definition	Specific recommendation	Rationale
2 Create no-take reserves	• MPAs or zones in larger MPAs in which all forms of renewable and non-renewable resource extraction and industrial activity are excluded[1]	• Within each MPA, the proportion of area under strict protection can vary according to specific conservation objectives, but a minimum of 30% of each bioregion should be within no-take reserves.	• No-take reserves are more effective than MPAs that offer lesser levels of protection. • The benefits of protection in terms of conservation and fisheries are maximised when, on average, 30% of an area is strictly protected.
3 Provide adequate representation of habitat types and sites with unique, rare and special character	• A network is representative when it consists of areas that reasonably reflect the full range of habitat types and of sites with unique, rare and special character sites found within a bioregion.	• Every broad-scale habitat type present in a bioregion must be represented in that bioregion's network. • At least 30% of the area of each habitat type should be placed in no-take reserves. For some particularly significant or particularly degraded habitat types, a larger proportion of the habitat area present may need to be protected to achieve conservation goals. It may be appropriate in some special circumstances, to redistribute the proportions of habitat protected (within the overall context of protecting 30% of each bioregion (Guideline 2)) to ensure adequate protection of high-priority habitats, even if this reduces the representation of a particular habitat below 30%. • All unique sites and most rare and special character sites must be protected.	• Unless some proportion of every broad-scale habitat type is protected, there is a risk that significant and distinct elements of biodiversity will remain unprotected. • Protecting areas that contain transition zones will be particularly important to allow for shifts in species distribution as a result of climate change. • Protecting 30% of the area of each habitat type within a bioregion will capture a substantial amount of habitat-specific diversity. • Sites with unique, rare or special character are unlikely to be naturally replicated within a bioregion. All such sites should therefore be protected. • For some particularly significant or particularly degraded habitats, a larger proportion of the habitat area present may need to be protected to achieve conservation goals. • Sites with unique, rare or special character are, by definition, unlikely to be naturally replicated within a bioregion.

1 Food, social and ceremonial use by Canada's Aboriginal peoples can be excluded only with the agreement of the relevant Aboriginal rights-holders.

Guideline	Definition	Specific recommendation	Rationale
4 Ensure connectivity among MPAs	• Linkages between geographically separate areas, which occur as a result of the movement of individual larvae, juveniles and adults, and of organic and inorganic matter • Movement among protected areas or between protected and unprotected areas • Influenced through spacing between MPAs, given current speeds and directions and relevant features of local sites • May require protection of 'stepping stone' areas, i.e. areas that play key roles in dispersal or migration	• The appropriate distance between MPAs in a network depends on the scale of dispersal of the species of concern in that network. Distances should usually vary between approximately 20 km and 200 km.	• In a functional network, individual sites can benefit one another because they are linked by a flow of dispersing or migrating organisms. • At a population level, connections mean that local populations that have declined or become extirpated might be restored by immigrants from elsewhere. • At a genetic level, connections mean a constant renewal of genetic diversity, which is important for evolutionary potential and population persistence. • Connectivity has direct implications for fisheries: when animals move from protected areas, the resulting spillover effects can benefit local fisheries. • A distance of approximately 20 to 200 km between MPAs encompasses the potential larval dispersal distance of a large number of coastal marine species with planktonic larvae. • Stepping stone areas may meet few, if any, of the ecological criteria described above but are crucial to species persistence and the ecological integrity of a bioregion..
5 Create large MPAs	• Size refers to the spatial area given a particular level of protection. In some situations, shape is also relevant.	• Size and boundaries should be determined by the size and location of the features and ecological processes to be protected. • An average MPA size of 10-20 km (in the smallest dimension) is recommended, in recognition of the fact that very small MPAs may be effective in some circumstances. • Commercially important pelagic species require even larger MPAs (minimum diameters of 30 km – 60 km) because of their higher mobility. • In general, MPA sites should be larger rather than smaller, with shapes that minimize the amount of edge.	• Larger areas generally: – hold larger populations or larger fragments of habitats, making them less vulnerable to environmental variability, climate change and human influences; – accelerate some population recovery processes; – are more effective because more of the protected area is distant from unprotected areas. • Reserves of several kms to tens of kms alongshore extending offshore to cover local migrations should be sufficient. • Small MPAs can be effective for species with restricted dispersal and movement.

Guideline	Definition	Specific recommendation	Rationale
6 Ensure multiple representation of protected habitat types and features	• Refers to the inclusion of a given feature (species, habitat type and ecological processes) in several protected sites in each bioregional network	• Networks should contain at least two, well-separated examples of each habitat type and at least three to five examples of all rare or special character sites when natural abundances allows. • Some features may require more replication than others.	• Multiple representation is necessary to reduce the risk that a given habitat type or the species it contains could be lost in a single natural or human-generated disaster. • Risk is spread more effectively when replicated sites are farther apart. • Replication across environmental gradients will ensure the protection of at least some sites that are resistant to the impacts of climate change.

2.3 Planning for climate change

Networks of MPAs must be designed today while keeping in mind that the seascape of tomorrow will be vastly altered by climate change. Several of the guidelines outlined in this document will ensure some network resilience to future impacts of climate change. Foremost among these is the necessity for **large, strictly protected areas.** Within these areas, populations will exhibit extended age structures, with many large individuals that have high reproductive potential. The risk of synergies among the more limited number of disturbances will also be reduced within these MPAs.

How connectivity will change among MPAs may be difficult to predict. However, it is expected that warmer sea temperatures will speed up larval development time, resulting in shorter dispersal distance for organisms with planktonic larvae and a possible breakdown of connectivity among MPAs that are located at the current limit of dispersal distances. A climate-wise approach would therefore be to designate **more, closely spaced MPAs rather than fewer, widely separated MPAs** to preserve connections among MPAs in the face of changing temperatures and current patterns.

Protecting areas that contain **transition zones** will be particularly important to allow for shifts in species distribution as a result of climate change.

Finally, the oceans and coastal ecosystems are the largest sink of anthropogenically emitted carbon, and as such they play a crucial role in mitigating climate change. Estuarine ecosystems such as seagrass meadows and saltmarshes are particularly effective at sequestering "blue" carbon. The **protection of large areas (i.e. more than 30%) of ecosystems that are efficient carbon sinks** is essential in planning for a warmer future.

3 | SOCIAL, CULTURAL AND ECONOMIC CONSIDERATIONS FOR MPA SITES AND NETWORKS

While ecosystem protection needs to be prioritized in the design of MPA networks, social, cultural and economic concerns shape the performance of MPAs and are fundamental pillars for the conservation planning and implementation of MPA networks. MPAs are ultimately part of systems with both ecological and human dimensions. Viewing these dimensions as linked will help to inform the selection and design of MPAs. The involvement of local communities, fishermen, recreational users, and other stakeholders in the planning of MPAs will help to ensure that their concerns are considered, and that MPAs are effectively managed over the long term. The social, cultural and economic guidelines below identify considerations for the planning and management of MPAs that should be integrated and considered.

3.1 Site characterization

The design of functional networks of MPAs requires the initial identification of all sites of bioregional importance, both for ecological reasons as noted in Section 2, and/or because they have cultural, historical and/or spiritual significance.

Guideline	Definition	Rationale
7 Identify culturally, historically and spiritually significant areas	• Many coastal and marine areas include culturally, historically and spiritually significant sites as well as environments and resources. underpin traditional and on-going use of these areas and reflect extensive, interconnected usage of land and sea that permeate the lives of coastal residents. • Aboriginal peoples may value sites and areas for their cultural and spiritual values.	• These sites underpin traditional and on-going use of these areas and reflect extensive, interconnected usage of land and sea that permeate the lives of coastal residents • Aboriginal peoples see themselves as responsible for their maintenance, and increasingly seek ways to enhance their protection.
8 Identify community-based MPA initiatives and integrate local knowledge	• Community-based MPA initiatives often involve the establishment of MPAs to protect specific resources with a desired outcome of enhancing local opportunities in the form of increased fish catches and alternative economic activities, or to address specific community cultural and identity values.	• Community-based initiatives can be incorporated into the MPA network as a way to address socioeconomic concerns and may be an important tool for managing specific marine resources. Local resource users have a unique understanding of the local environment and thus areas potentially important for conservation. There is value in integrating community-based initiatives and local knowledge with scientific knowledge when selecting sites during MPA planning. • Greater community acceptance may result from this integrative approach.

3.2 Assembling sites into functional networks

Once sites have been identified (Sections 2.1 and 3.1), the process of assembling sites into functional networks will require, in addition to meeting ecological requirements (Section 2.2), consideration of existing uses and activities, identification of a range of values associated with specific marine environments, and measures to address impacts on social and economic values.

Guideline	Definition	Rationale
9 Inventory current uses and activities	• Typical marine-based activities in Canada include commercial fishing, aquaculture, recreational and sport fishing, and many motorized and non-motorized recreation activities, such as cruising, kayaking, wildlife viewing, scuba diving and others. Industrial uses include shipping, oil and gas exploration and development, renewable energies such as wind and wave, and cable and pipeline laying.	• Coastal and marine environments in Canada are under heavy pressure from a variety of human activities • Identifying the location and intensity of current recreational, commercial and industrial activities in a region is an important step in effective marine management and critical during the design of MPA networks • This marine-use information should be shared between sectors during the stakeholder engagement process.
10 Identify opportunities for alternative uses/compatible activities within networks of MPAs	• Activities such as commercial tourism and recreation, non-invasive scientific research and education may be compatible with the ecological objectives of an MPA network and help to reduce human pressure on marine environments. • Ecotourism is nature-based, geared towards sustainable outcomes, involves education and interpretation, and is often community led. • Coastal marine ecotourism is an economic sector that is dependent on a healthy marine environment.	• One of the primary purposes of MPAs is to ensure protection from unsustainable extractive activities. • Restrictions on fisheries or other uses may initially impact local economies, however by working with stakeholders and communities the economic impacts can be offset with the introduction of less damaging, non-extractive activities within certain zones of an MPA. • MPA establishment may positively affect the local economy by enhancing tourism opportunities, as the protection and preservation of a region often enhances the attractiveness of the area to tourists. • Through well-managed ecotourism healthy ecosystems can provide benefits to local economies, and offset potential losses due to area closures.
11 Protect and enhance recreational sites and opportunities	• The marine and coastal environment in Canada is highly valued for both passive and active recreation including cruising, sailing, kayaking, wildlife viewing, scuba diving and sport fishing.	• An array of recreation uses may also contribute to individual and community well-being. • Direct experiences with wildlife and natural environments can help to foster environmental awareness and appreciation, and stimulate physical and mental health. • Often few negative effects on MPAs from these activities and they be complementary with MPA objectives. • These experiences should be maintained or enabled within networks of MPAs.

Guideline	Definition	Rationale
12 Protect spiritual sites and values	• Spiritual values of protected areas "…inspire humans to relate with reverence to the sacredness of nature". • MPAs may include sites that have special spiritual significance to people and communities. They have non-material values that are often shared by groups and may be culturally defined. • Individual spiritual values also exist and relate more to a connection to the natural environment and sense of inspiration and well-being.	• Marine ecosystems are increasingly valued for more than direct human uses, and recognized for their value in contributing to human well-being. • It is often through direct experiences in nature that people benefit from physical, emotional and spiritual well-being. • While spiritual values of sites are important to include in the decision making and design processes of MPA networks, accounting for non-material values can be challenging and requires the incorporation of local and traditional knowledge.
13 Develop a displacement policy and measures	• The displacement of people and specific users from MPAs has physical, economic and sociocultural implications. • Another way to consider this issue is through the lens of the reallocation of rights within MPAs. Rights may be both formal and informal and occur on a variety of spatial scales.	• Where MPA establishment affects existing users, it is important to ensure fairness and equity. This requires that a compensation and/or displacement policy be developed by government to indicate how social and economic impacts of MPA establishment will be addressed. • When establishing MPAs, some uses may be reduced or eliminated. In such situations, relocation of uses to other areas, or compensation for discontinuation of these activities should be part of the decision process. • Having a displacement policy and measures in place can also help to increase stakeholder support for MPAs and MPA networks, and compliance with restrictions.
14 Incorporate existence values	• People value these ecosystems for their very existence, even if they will never visit one of these sites. • MPAs across Canada are also established for the benefit of all Canadian people.	• Existence values are challenging to determine, but should be considered in the design of MPAs. If they are ignored, activities and uses which are associated with a market value may be overemphasized. • The existence value is likely to differ for the local and regional population as compared to the entire national population. Given the complexity of the marine and coastal environment, their existence value will vary as a function of their environmental quality.

4

4 | MPAS IN CONTEXT

MPAs are affected by what happens outside their boundaries. As a result, the achievement of MPA conservation goals may rely on sustaining habitats, or ecological or biophysical processes that extend outside the boundaries of MPAs (such as through recruitment or productivity dependencies), including in adjacent terrestrial ecosystems.

It also follows that successful MPA planning and management must be embedded in broader planning and management processes. A regional ecosystem based management approach is key to ensuring that MPAs and MPA networks achieve their conservation goals, and also that they in turn contribute to overall improvements in ecosystem health.

In addition, marine spatial planning, undertaken at a broader regional scale, will ensure that MPAs and MPA networks are planned in a way that they can protect the areas of most significance and importance from a conservation perspective, while at the same time, trying to avoid those areas of high-use.

	Guideline	Definition	Rationale
Marine Spatial Planning (MSP) and Ecosystem-based management (EBM)	15 Implement MPA networks through MSP embedded in EBM.	• EBM seeks to integrate full spectrum of goals within a region to design a management strategy that considers trade-offs among activities and services . • MSP is a process for analyzing and allocating ocean space for a variety of uses in order to achieve ecological, economic and social management objectives.	• Current and future integrated oceans planning process in Canada could implement MSP that would lead to MPA networks. • Success of MPAs in achieving conservation outcomes depends on integrating the networks in broader planning and EBM.
	16 Conduct a stressors/threats assessment that considers cumulative impacts.	• Stressors and Threats Assessment: Information gathered from the scientific literature, stakeholders and experts can help identify potential threats to marine ecosystems from human activities. This process relies on spatial and temporal data regarding current activities occurring on Canada's coasts.	• In order to address threats outside of MPA boundaries the relationship between human activities and stressors on marine ecosystems should be quantified. • A detailed threats assessment, which considers multiple activities and cumulative impacts, can help address potential threats to MPAs and conservation objectives. • Scientific advice is key to understanding the relationship between human activities and ecosystem stressors as well as the potential resilience of ecosystems to varying levels and types of impacts.

	Guideline	Definition	Rationale
Marine Spatial Planning (MSP) and Ecosystem-based management (EBM) (cont'd)	17 Evaluate threats in relation to Limits of Acceptable Change (LAC)	• Limits of Acceptable Change (LAC): refers to the amount of human-induced change that is acceptable to prevent significant adverse environmental effects during resource use. • The objective of the LAC process is to manage change -not prevent it-by making decisions as to what management actions are needed to maintain or enhance desired conditions.	• The LAC process consists of selecting key indicators of acceptable resource and social conditions, defining qualitative standards to measure indicators, applying different standards to resource and social conditions and implementing management actions to maintain desired conditions over time. • The LAC process attempts to answer how much impact is acceptable? for whom? and what measures should be implemented to avoid unacceptable impacts? This compromise must be developed through a collaborative process in which the resultant decisions reflect the input of numerous stakeholders.
Systematic Conservation Planning	18 Employ decision-support tools that enable the integration of the various ecological criteria and socio-economic considerations to achieve MPA objectives.	• Many benefits of systematic approach to conservation planning • Integrates ecological criteria and socioeconomic considerations to ensure MPA network objectives achieved • Decision support tools enables this integration and iterative process	• Choosing the most appropriate methodology depends on the underlying goals for establishing the set of MPAs. Clearly defining the purpose and the overall conservation goals is an important first step. • Tools include Marxan and MarineMap.
	19 Embed tools in processes to integrate socio-cultural and economic consideration	• Tools such as MARXAN can incorporate some socio-cultural and economic considerations—in the optimization process.	• Other socio-cultural and economic considerations will require other tools and/or participatory processes to account for them effectively in network design.
Social and Ecological Uncertainties and Limits of Analysis	20 Characterize uncertainties comprehensively, and proceed without certainty	• Data and analysis should be central to decision-making, but it is critical to note that uncertainties are pervasive and unavoidable, but not paralyzing.	• Since the purpose of MPAs is explicitly long-term, these uncertainties should not cripple design and implementation. • Uncertainties are rarely characterized fully: many significant uncertainties are implicitly built into analyses and models through structural assumptions.
	21 Recognize limitations of economic valuation and cost-benefit analysis	• Economic valuation is the quantification, in monetary terms, of costs and benefits. Cost-benefit analysis is the weighing of total expected costs and benefits associated with one or more actions.	• Cost-benefit analysis can provide a convenient yet incomplete frame for integrating many types of data to evaluate the merits for alternative designs for MPAs or MPA networks. Because such analyses rely upon economic valuation, it is critical to recognize that valuation cannot comprehensively represent all values.

	Guideline	Definition	Rationale
Goals and Objectives and Adaptive Management	22 Adopt an adaptive management framework with explicit and achievable objectives	• Adaptive management is a structured, iterative process of decision-making under uncertainty, where management actions and monitoring activities are designed to reduce key uncertainties, thereby enhancing future decision-making.	• Protected areas are embedded within complex and changing ecological and socio-cultural contexts. MPA planners and managers face a high degree of uncertainty in planning and decision-making. An adaptive approach is needed to effectively manage MPAs. • Ecologically sustainable management practices must be implemented that are explicit, measurable and adaptive given multiple use MPA model.
	23 Shift burden of proof	• A risk averse or precautionary approach that requires ecosystems and resources to be protected from activities until it is demonstrated that the activities are unlikely to result in substantial harm.	• By shifting the burden of proof in favour of conservation, the onus would be on users to conduct the studies and demonstrate that their activities will have either no impact or acceptable levels of impact prior to their activities being allowed. • Critical in the case of multiple use MPAs
Goals and Objectives and Adaptive Management (con't)	24 Link MPA establishment, management and monitoring processes	• Management needs should be considered during the process of establishing an MPA to ensure that decisions and understandings made during the establishment process are compatible with, and enable, effective MPA management.	• MPA networks and individual units must be supported by a monitoring assessment and report system focused on achievement of biodiversity, socio-economic and cultural objectives, outcomes and management effectiveness from the outset.
Interim protection measures	25 Provide interim protection for candidate MPAs	• Mechanism to protect values of proposed MPA until it has full legal protection.	• Addresses significant risk that the values that are identified for protection, including species at risk, could be compromised during lengthy establishment processes • Can be achieved through a number of mechanisms, including fishery regulations

5 | MPA GOVERNANCE

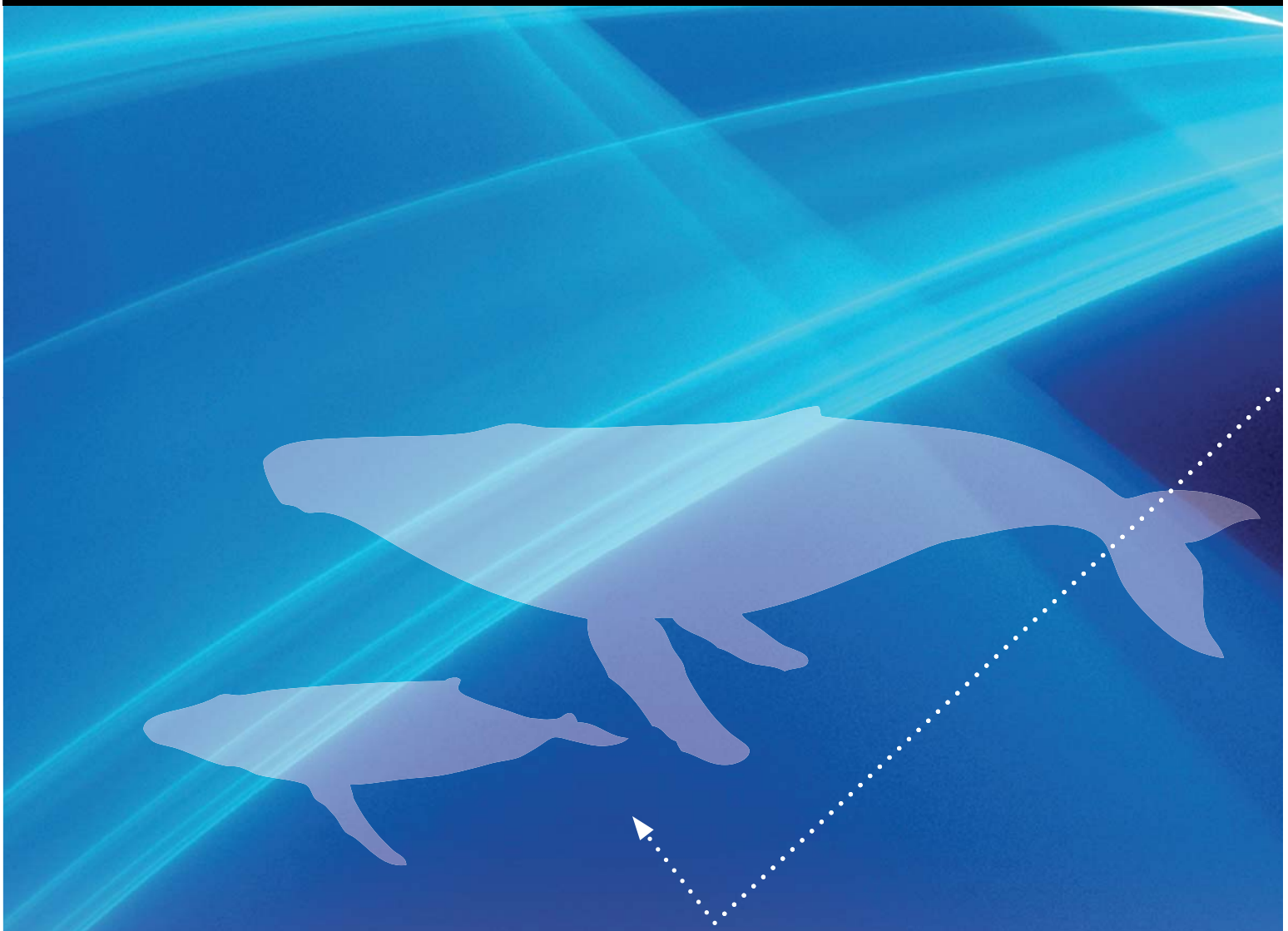
Governance is best understood as the formal and informal arrangements, institutions and norms that determine how environments and resources are utilized. It includes laws and regulations, in addition to a variety of other decision-making processes, such as public consultations, stakeholder involvement, negotiation, mediation, and conflict resolution. Governance is not the sole purview of government, but rather emerges from the interactions of many actors, including local communities, private actors, companies and not-for-profit organizations.

Several attributes of "good" governance relevant to the Canadian MPA governance context have been identified and guidelines to achieve good governance are identified below.

Good Governance Attributes	Guideline	Definition	Rationale
Commitment	26 Develop a national MPA network action plan that includes a commitment to precise timelines and milestones 27 Include strict protection and strong prohibitions in MPA legislation and policy 28 Provide adequate funding to support MPA site and network development, long term adaptive management and stakeholder participation	• The act of meeting a promise or obligation to a particular course of action • Required at a variety of levels within government and society– from elected officials to government managers to stakeholders and the public. • Must be sustained in the face of changing circumstances, over the long term • Must include adequate funding to support all phases of proposal, planning and preparation for the establishment, implementation and enforcement of MPA management objectives and regulations	• Strong political commitment can lead to a strong national or regional mandate for MPA implementation. • Can translate into adequate resources, consistent policy over time and compatible policy development by other agencies
Accountability	29 Provide regular public reporting on progress in MPA network completion. 30 Establish an independent scientific advisory process.	• Obligations imposed on authorities to provide information and explain decisions and actions or inactions • Whether decisions can be sanctioned if those explanations are unsatisfactory	• The role of government is changing • Collaborative relationships provide opportunities for governments to take a more active and effective position in governance.
Transparency	31 Provide adequate, accurate and timely information to stakeholders. 32 Improve public access to fishing data in Canada. 33 Provide public access opportunities to information, meetings and decisions.	• Visibility of decision making processes, • The clarity of the communication of the rationale for decisions • The availability of information about the performance of the decision maker(s), • Openness of decision making to public input and oversight • Essential to ensuring that decisions are fair, equitable and in the interest of the common good	• Transparent participation processes that provide accurate and up-to-date information to communities and user groups are crucial at all stages of MPA planning and management.

Good Governance Attributes	Guideline	Definition	Rationale
Cooperation	34 Ensure effective internal and cross departmental collaboration.	• The legal or other official basis for cooperation between federal, provincial and territorial, and local authorities and between agencies/enforcement units • To address cross-jurisdictional and cross-sectoral issues and conflicts	• Overlapping federal department mandates and provincial interests in marine management lead to jurisdictional complexity. • Mechanisms are needed to ensure effective cooperation (and enforcement) between different levels of government both within and between regions.
Aboriginal Partnerships	35 Clarify how MPA creation and management interacts with existing Aboriginal rights and title. 36 Respect Aboriginal institutions. 37 Establish meaningful Aboriginal engagement.	• Aboriginal and treaty rights are "recognized and affirmed" by Section 35(1) of the Constitution Act, 1982. • Several important legal decisions help define and clarify these rights in recent decades. • Because Aboriginal rights are constitutionally protected, any federal or provincial legislation cannot unjustifiably infringes those rights .	• Aboriginal peoples have a profound cultural, economic and physical relationship with the marine environment that stems from time immemorial. • Their traditional and ongoing connections to marine environments and resources are pivotal to future marine conservation management arrangements, including MPAs.
Stakeholder Engagement	38 Establish clear terms of reference, including the scope of possible stakeholder involvement and influence. 39 Use professional third party facilitation. 40 Aim to achieve realistic levels of support and acceptance.	• A wide range of key individuals and groups with an interest in marine conservation or marine resource use need to be involved in the governing planning process . • A variety of mechanisms can be used to facilitate their participation.	• Involvement needed from the early planning stages through to MPA design and implementation • Encourages a sense of ownership and commitment that can foster acceptance from local communities • Helps with long-term support and assistance with implementation and enforcement • Requires governance structures and process that support collaborative planning and decision-making

Good Governance Attributes	Guideline	Definition	Rationale
Knowledge and Social Learning	41 Provide up-to-date and comprehensive, accessible data. 42 Respect and build upon Aboriginal knowledge. 43 Create opportunities for constructive dialogue and shared learning.	• An essential ingredient of good governance is process for citizens, experts and managers to co-produce and use knowledge to address complex. • The challenge is to use the various forms of knowledge to develop a common base for the process, which is key to adaptive capacity. • Local ecological knowledge, Traditional ecological knowledge (Aboriginal knowledge are important forms of knowledge to be integrated in the process. • Social learning refers to the processes of learning among individuals or groups of people who seek to improve a common situation and take action collectively.	• Best-available knowledge and information facilitates well-informed, cooperative planning and management • Must be readily available to the institutions and stakeholders involved • Increasingly recognised that drawing on Aboriginal knowledge and local ecological knowledge as well as sound science can bring more informed decisions that serve local people and ecosystems better
Public Awareness and Support	44 Foster stewardship of the marine environment. 45 Build public awareness and support to encourage compliance.	• Gaining public acceptance is an all-encompassing process that includes learning more about the local community • Determining the expectations of the people who will be involved in management or stewardship of the area and the broader public which values conservation and the marine environment.	• Building public awareness and acceptance ultimately translates to gaining support for the establishment and continued protection of the marine environment.



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