Fisheries and Oceans Canada

Pêches et Océans Canada

Marine Protected Area Network
Strategy for the
Estuary and Gulf of St. Lawrence Bioregion

Canada

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List of Initialisms and Acronyms

CBD :	Convention on Biological Diversity

COP:	Conference of Parties

CSAS:	Canadian Science Advisory Secretariat

DFO:	Department of Fisheries and Oceans

EBSA:	Ecologically and Biologically Significant Area

IUCN:	International Union for Conservation of Nature

MPA:	Marine Protected Area

PA:	Protected Area

UNEP:	United Nations Environment Programme

UNESCO:	United Nations Educational, Scientific and Cultural Organization

WCPA:	World Commission on Protected Areas

Introduction

The important role of marine protected area networks in providing long-term conservation of marine biodiversity, ecosystem functions and special natural features is reflected in provincial, territorial, national and international commitments made by various government authorities. Fisheries and Oceans Canada (DFO) is combining its efforts with those of other federal departments and the provinces (bordering the Estuary and Gulf of St. Lawrence) with mandates, expertise or interest in establishing marine protected areas. The O*ceans Act* states: "For the purposes of integrated oceans management, the Minister (Fisheries and Oceans Canada) will lead and coordinate the development and implementation of a national system (network) of Marine Protected Areas." This task is carried out on behalf of the Government of Canada.
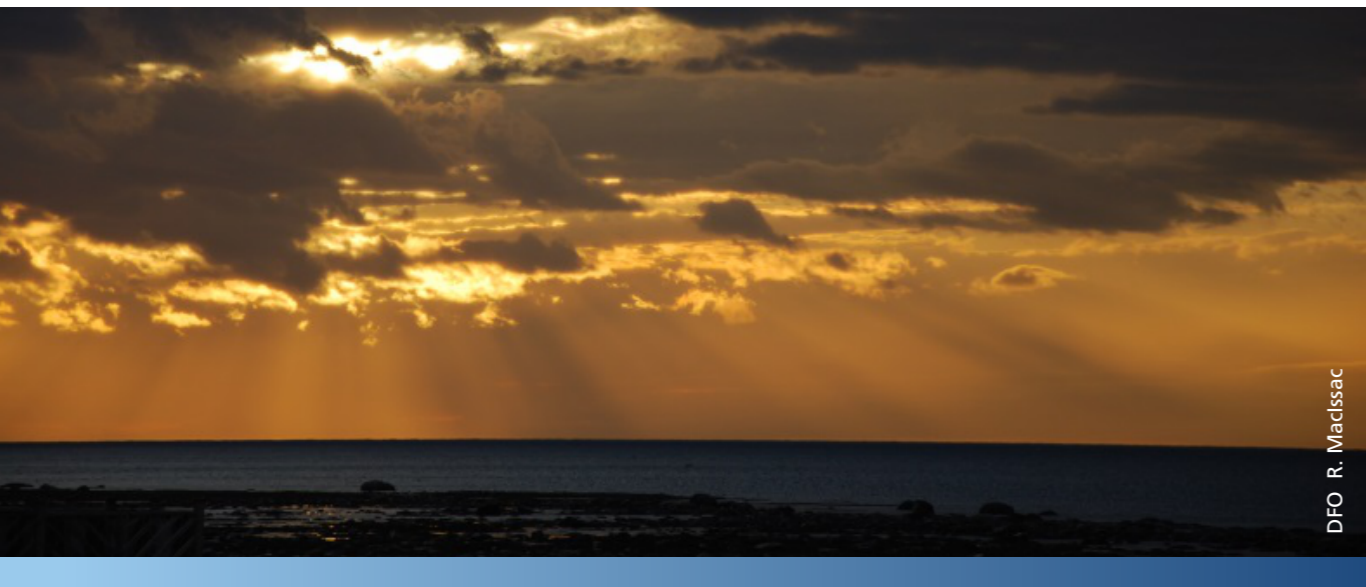
Aboriginal groups and interested parties will be engaged in a marine protected area network development covering the Estuary and Gulf of St. Lawrence Bioregion. This initiative contributes to the continuing implementation of the *Gulf of St. Lawrence Integrated Management Plan*[1] published in 2013.

A platform for the coordination of efforts is needed at both national and regional levels. Wherever possible, the existing governance structures will be utilised. The various departments, each with different mandates, conservation measures and legal statutes, will be involved in network development. It is therefore necessary to establish a common basis for achieving the network objectives in a coordinated, coherent and effective way.

DFO R. MacIssac

This strategy is developed as a guiding framework, designed to provide a comprehensive understanding for partners involved in the development of a Marine Protected Area Network in the Estuary and Gulf of St. Lawrence Bioregion. It outlines the guidance needed to establish a marine protected area network in accordance with national and international recommendations and practiceswhile incorporating the visions and goals of the provinces and the Government of Canada. The strategy is also designed to standardize and clarify terminology and harmonize the various approaches to developing the marine protected area network.

The initialisms and acronyms used are presented at the beginning of this document, and key terms are defined in the glossary (Appendix 1).

International Context
In 2010, the Conference of the Parties (COP) to the Convention on Biological Diversity (CBD) established aspirational targets (so called International Aichi Biodiversity Target) for members to achieve by the year 2020 including the Target 11 to conserve 10% of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, through effectively and equitably managed, ecologically representative and well-connected systems of protected areas and other effective area-based conservation measures[2]. Canada is a signatory to the CBD. To attempt to meet this target Canada developed its own set of biodiversity targets including one to conserve 10% of coastal and marine areas, through networks of marine protected areas and other effective area-based conservation measures by 2020[3]. Meeting the 10% targets is not the endpoint of MPA network development. Rather, these targets provide a means for measuring and reporting Canada's progress at national level in establishing conservation measures. However, Canada is employing an objectives-based approach to network development at the bioregional level, where the total conservation area coverage required to achieve network goals and objectives will be determined through bioregional network development processes. Thus, there is no formal percentage target for total area coverage at the bioregional level.

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1 http://www.qc.dfo-mpo.gc.ca/gestion-management/doc/2013_12_16_FINAL%20ANGLAIS_web.pdf
2 Aichi Biodiversity Targets, target 11 (CBD, 2010). https://www.cbd.int/sp/targets/rationale/target-11/
3 Biodiversity Goals and Targets for Canada. http://www.biodivcanada.ca/default.asp?lang=En&n=9B5793F6-1

Geographic Scope

The Gulf of St. Lawrence Bioregion is the spatial basis for this MPA network. This biogeographic unit was identified from a DFO Science direction - led peer review process in 2009, which reflects the spatial extent of this ecosystem. The boundary for the Gulf of St. Lawrence Biogeographic unit covers the Gulf and Estuary of St. Lawrence as is shown in Figure 1 below (area bounded by black line). However, for operational needs, this strategy will apply to the area of this unit illustrated in purple in Figure 1 and will be referred to as the Estuary and Gulf of St. Lawrence Bioregion. Network development in the adjoining biogeographic units (the Scotian Shelf and the Newfoundland and Labrador Shelf) will be led by the corresponding DFO administrative region. Where administrative boundaries do not align with recommended biogeographic units, a high level of interregional collaboration and cooperation will be required.

Thus, the network of marine protected areas will be designed and established throughout the area covering the upper Estuary, the lower Estuary and Gulf of St. Lawrence (Figure 1). The exact physiographic limits of the area under study include:

- **The coastal boundary:** is defined as the high water mark or in estuaries where the salinity is at least 1 Practical Salinity Unit (PSU)[4] at the bottom with minimal freshwater flow. Also includes the Saguenay Fjord.

- **The area covered and offshore boundaries:** begins at the upper estuary, off the eastern tip of Île d'Orléans (QC) and extends to the bioregion boundaries in the north and the Large Ocean Management Area boundaries in the east.

Figure 1 : Geographic Boundaries of the Marine Protected Area Network for the Estuary and Gulf of St. Lawrence Bioregion

4 PSU: practical salinity unit, term which refers to a unit of salinity used in science, roughly equivalent to 1 part of salt per thousand of water (1‰).

Vision

The overall vision for the Network of Marine Protected Areas in the Estuary and Gulf of St. Lawrence Bioregion is:

A resilient network of marine protected areas, which is eco-logically representative, protects ecological diversity and main-tains the ecological services of the marine environment for the benefit of present and future generations.
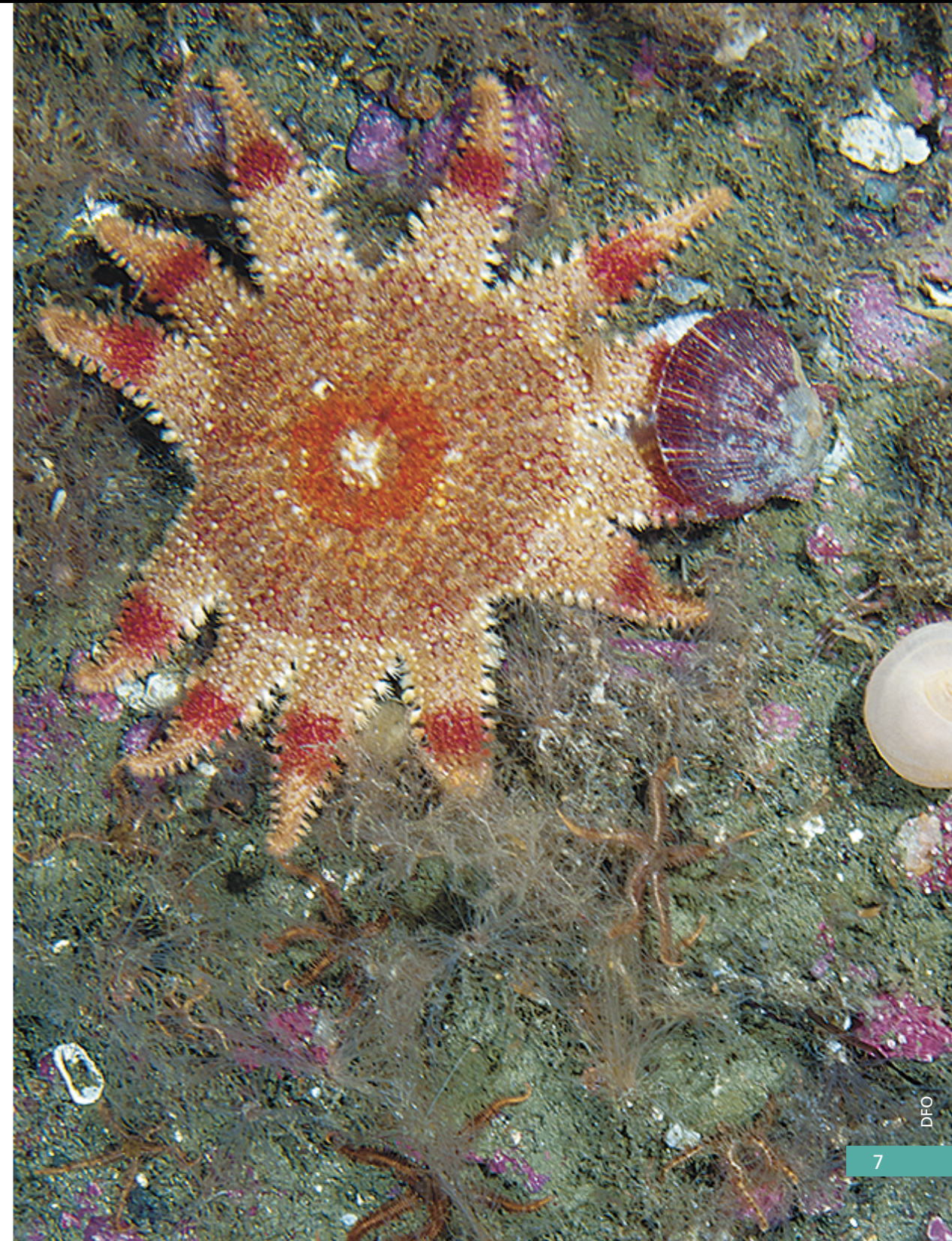
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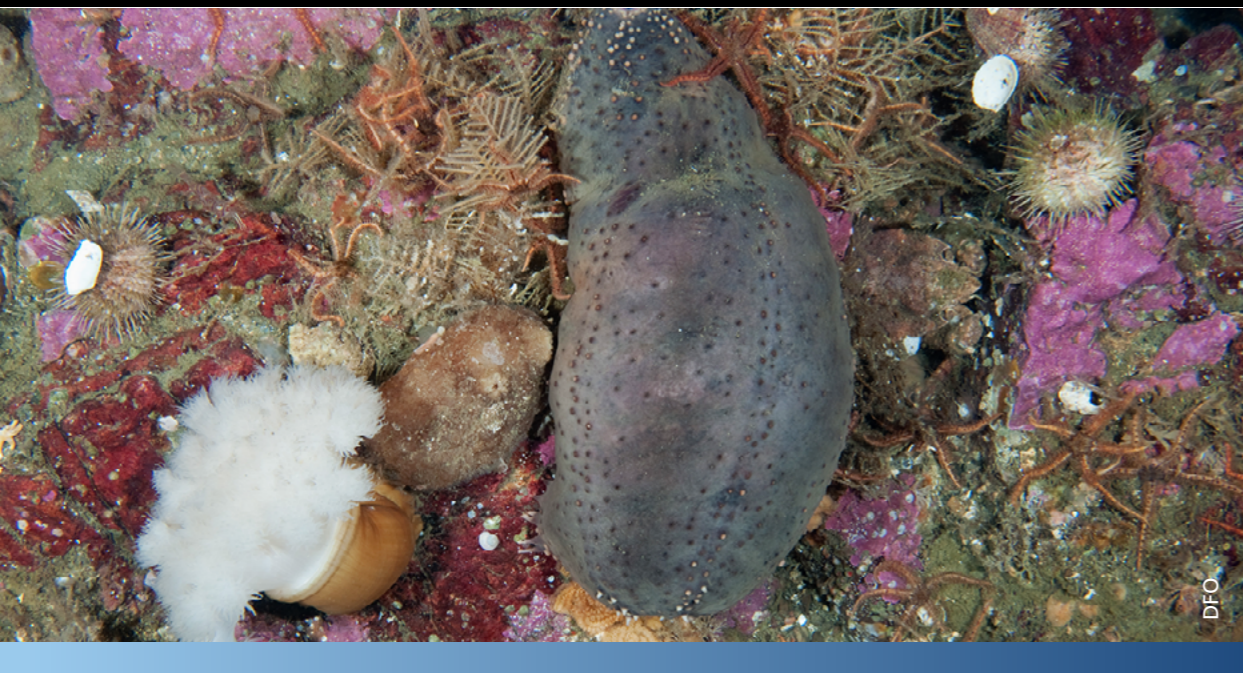
Marine Protected Area

The definition adopted is a modified version of the definition proposed in 2008 by the International Union for Conservation of Nature and the World Commission on Protected Areas (IUCN/WCPA), which has been adapted to the marine environment:

"A clearly defined marine 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 functions and cultural values."

Therefore, a marine protected area is guided by the IUCN principles listed below:

- To conserve nature is the main objective (this can include other goals, but in case of conflict, the conservation of nature will be the priority);
- To take the necessary measures to control any exploitation or management practice that will be harmful to the conservation objectives for which a marine protected area was established;
- To ensure that protected areas maintain or, ideally, increase the degree of naturalness of the target ecosystem;
- To manage protected areas in perpetuity and not on a temporary basis.

However, network development will respect the various federal and provincial statutes that will be used to establish MPAs depending on the conservation objective of the area. With respect to *Oceans Act* designated marine protected areas an adaptive management approach will be applied as required.

Network of Marine Protected Areas

The definition adopted for this strategy reads as follows:

"A collection of individual marine protected areas that operates complementary and synergistically, at various spatial scales, and with a range of protection levels, in order to fulfill ecological aims more effectively and comprehensively than individual sites could do alone."

This definition of an MPA network was proposed by IUCN in 2007 and informed the development of the *National Framework for Canada's Network of Marine Protected Areas*.

Transport Canada R. Laperrière

Expected Benefits of the Network

The expected outcome of creating a network of MPAs is to derive multi-dimensional benefits from an ecological, economic, social and cultural standpoint[5]. Some examples:

Ecological Benefits:
■ Help maintain the ecological services of the Estuary and Gulf of St. Lawrence Bioregion;

■ Contribute to the conservation of the structure, function and integrity of ecosystems, including important habitats (e.g., breeding, foraging, rearing and nursery grounds) and safe places for endangered or depleted species;

■ Contribute to the overall biodiversity of the ecosystem of the Estuary and Gulf of St. Lawrence Bioregion through spillover effects;

■ Conserve control sites for scientific research and monitoring marine biodiversity;

■ Help mitigate climate change impacts by building resilience and redundancy (e.g., through carbon storage in protected sea grasses and salt marshes).

Economic Benefits:
■ Help conserve and restore fish habitat and commercial, recreational and Aboriginal fishery resources;

■ Help enhance productivity of adjacent fishing grounds via spillover effect of fish and fish larvae from MPA boundaries;

■ Facilitate opportunities for the fishing, tourism and other industries to achieve eco-certification in the context of ecosystem management and sustainable development of these industries;

■ Help maintain and develop tourism and recreational activities, which will help to diversify regional economies.

Social and Cultural Benefits:
■ Increase predictability for resource users and thereby help reduce user conflicts of the natural environment;

■ Enable development of the natural and cultural heritage of the Gulf of St. Lawrence region;

■ Help conserve traditional uses (ceremonial and subsistence activities), cultural heritage and archaeological sites (including shipwrecks among others);

■ Provide opportunities for scientific research, education and public awareness.

5 Fisheries and Oceans Canada. 2011. Marine Protected Areas and MPA Networks: The Benefits and Costs to the Fishing Industry. Fisheries and Oceans Canada. Ottawa. 4 pp.

Guiding Principles

The process of developing the MPA network will apply the following principles:[6]

Working in Conjunction with Aboriginal Groups
Aboriginal groups can contribute to the development of the MPA network, providing a platform to voice their concerns and interests. The provisions of this document respect Aboriginal groups' rights, potential or established, as set out in agreements, titles and treaties and will not abrogate or derogate these rights.

Working in Conjunction with Key Stakeholders in the Area
Interested parties can contribute to the network development. Strong communication and the active participation of key stakeholders are considered an important component of the process. This engagement promotes the integration of ecological, social, economic and cultural considerations into the network. Targeted engagement activities help to increase awareness and encourage key stakeholders' participation and support.

Respecting Existing Regulatory Authorities and Legislation
Federal, provincial, territorial and other government bodies' existing jurisdictions and mandates are respected, as are existing rights and activities related to permits, regulations and other legal arrangements.

DFO V. Haeberle

Applying the Precautionary Approach
Management decisions are based on the best information available, and the absence of full scientific certainty is offset by employing a precautionary approach.

Adopting a Holistic, Ecosystem-based Approach
Networks of marine protected areas contribute to broader integrated ocean management initiatives, including those implemented in marine and adjacent land areas, and are based on principles of sustainable development.

Taking into Account Existing Conservation Initiatives
Existing and potential MPAs, and other effective area-based conservation measures, are considered in order to achieve the goals of the MPA network.

Making Use of the Best Available Knowledge
It is necessary to include scientific, Aboriginal traditional, industrial and local community knowledge.

Acknowledging and Considering Economic, Social and Cultural Aspects
The configuration of the network takes into account both ecological data and social and economic information. Specific areas of social, cultural and educational importance could also be included in the MPA network.

Minimizing the Economic, Social and Cultural Impacts on Aboriginal Groups, Stakeholders and Coastal Communities
Economic, social and cultural values are integrated in the MPA network design to minimize potential economic and social consequences. In addition, the network is intended to make a positive contribution to the sustainability of coastal communities, economic activities, and cultural and spiritual values.

DFO F. Hazel

Using Adaptive Management
New ecological or economic, social and cultural data related to the design or implementation of the network are used to support continuous improvement of management practices.

Defining Types of Effective Protection for Marine Protected Areas
- Promote marine protected area statutes that are most effective from a conservation standpoint and manage activities that are contrary to the conservation objective(s) set;
- Adopt the latest peer reviewed scientific recommendations on marine protected areas;

Encourage adoption of a variety of management approaches, including more flexible area-based conservation measures where appropriate, based on the opportunities and constraints within the bioregion.

6 Adapted from the National Framework for Canada's Network of Marine Protected Areas, http://dfo-mpo.gc.ca/oceans/publications/dmpaf-eczpm/framework-cadre2011/page01-eng.html

Goals

The goals of the Marine Protected Area Network for the Estuary and Gulf of St. Lawrence Bioregion are consistent with the national goals as set out in the *National Framework for Canada's Network of Marine Protected Areas*.

The primary goal of the bioregion MPA network is *to provide long-term protection of marine biodiversity, ecosystem functions and special natural features of the marine environment*.

The network also targets the following secondary goals consistent with attaining the primary goal

■ Support the conservation and sustainable management of living marine resources and their habitats in order to preserve the social and economic values and ecosystem services associated with them;

■ Raise public awareness of the value of marine environments and the cultural and historic values associated with them.

Network Design Properties and Components

These design properties and components are directly related to the primary goal. They echo the five properties and components (in bold below) of a representative network of marine protected areas as presented in Annex III of the document entitled UNEP/CBD (2007), commonly known as the *Azores Report.*

Give priority to Ecologically and Biologically Significant Areas for protection within the network
Priority will be given to the protection of **Ecologically and Biologically Significant Areas** (EBSAs), which are geographically or oceano-graphically well-defined areas that provide important services to one or more species or populations of an ecosystem. These areas meet at least one of the Convention on Biological Diversity (Annex II – *Azores Report*) or DFO scientific criteria for identifying these areas.

Ensure the full range of biodiversity within the bioregion
In order to maintain ecosystem resilience, the network will be, where possible, **representative** of the biotic and abiotic diversity of the marine environment. It will therefore consist of areas representing the various biogeographical subdivisions of the environment (by habitat or community) to reasonably reflect the full range of ecosystems in the area under consideration.

Ensure the conservation of ecological links between marine protected areas
Other Convention on Biological Diversity design properties will be considered in the network design. First, effort will be made to help maintain the **connectivity** between the various MPAs, which will allow MPAs within the network to benefit from one another and pre-serve functional links that already exist within the ecosystem (e.g., links between larval production areas and other areas required for subsequent stages of the life cycle).

Ensure the sustainability of the network
The network will be designed so that ecosystem resilience persists over time. The MPAs and other area-based management measures put in place will provide adequate protection to ensure the sustainability of the network.

For this reason, as additional design properties, sites should be **adequate and viable** (size, shape, etc.) to provide the maximum contribution to the network and ensure the sustainability of each marine protected area. For example, it is important to make certain that the individual MPAs in the network will be of sufficient size to reach the objectives for the area and the network as a whole. Where possible, the shape of each marine protected area will also be considered so as to respect ecological bounda-ries, prevent habitat fragmentation and facilitate management, follow-up and monitoring.

Replication of particular ecological features (conservation priority) within the network will make it less vulnerable to threats from human activity or unforeseen natural events, which will favour the long-term maintenance of the network.

Strategic Conservation Objectives

The strategic conservation objectives largely reflect the selection criteria identified in the *Azores Report*.

■ Provide protection for marine areas that contain **unique** or **rare** features (populations, communities, species or habitats).

■ Help protect **species at risk** and their **habitats** to ensure their survival and possibly improve their state.

■ Provide protection for marine areas containing high **biodiversity**.

■ Provide protection for marine areas of high **biological productivity**.

■ Provide protection for **vulnerable, fragile and sensitive** marine areas or those with little resilience.

■ Provide protection for areas of special importance for the **life history stages** of the populations and communities that depend on them.

■ Help maintain the **functions** and dynamic **structure** of ecosystems.

■ Help maintain the **genetic diversity** of species, communities and populations.

■ Help maintain or restore the **quality of marine habitats** (benthic, pelagic, coastal, etc.).

■ Contribute to the protection of the various **representative** ecosystems of the bioregion.

Economic, Social and Cultural Considerations

Economic, social and cultural benefits can result from the development of a network and the establishment of marine protected areas or other conservation measures, but may also generate actual or potential costs to activities incompatible with the conservation objectives of the MPA network. The integration of economic, social and cultural considerations is an important component of the network design process.

The goals and guiding principles of the network guide the incorporation of economic, social and cultural elements into the network design. An open and transparent dialogue with interested parties is sought in order to:

■ acknowledge and consider the economic, social and cultural aspects;

■ reduce the potential economic and social impacts of the network implementation.

Throughout the network development process, interested parties, particularly Aboriginal groups and key stakeholders, have the oppor-tunity to:

■ receive up-to-date information on network development;

■ provide and validate economic, social and cultural information;

■ discuss methods and criteria for the inclusion of this information in the network design;

■ share their opinions and concerns about possible marine protected area network scenarios.

Given the size of the bioregion and the number of stakeholders, information sessions and targeted meetings will be implemented and existing forums will be used to the extent possible.

The inclusion of ecological, economic and social information helps in designing a network that can maximize conservation efforts while minimizing negative impacts. The result of the process will be an MPA network design in map form. This design will be a decision-making support tool that could help the various jurisdictions with mandates and responsibilities related to the MPAs and could facilitate the identification of potential sites of interest for the creation of future MPAs or the implementation of other conservation measures. It will also allow industries to better predict future actions to conserve these sites of interest and facilitate the development planning of their activities.

It is important to mention that, in a future process to create a marine protected area, an economic impacts assessment as well as an extensive consultation process will be conducted by responsible authorities for each of the specific sites of interest selected.

The creation of the network for the Estuary and Gulf of St. Lawrence Bioregion is consistent with the previously defined guiding principles and design elements and also the *National Framework for Canada's Network of Marine Protected Areas*. It will involve several major elements that are described in Appendix 2 of this document.

Identify and Involve Interested Parties Throughout the Process

In the spirit of promoting understanding, support and participation, interested parties will continue to be informed throughout the MPA network initiative. Communication activities provide proper explanation on the initiative and clear descriptions of governmental obligations related to network creation. This includes providing the rationale for the various stages of the process, communicating the expected results of the network and clarifying the relationship between this initiative and other existing projects and processes currently underway in the Estuary and Gulf of St. Lawrence Bioregion.

To begin the dialogue between the federal and provincial governments with roles and responsibilities for marine protected area development, existing governance mechanisms are used (e.g. the Bilateral Group on Marine Protected Areas in the DFO Québec Region, the agreed upon bilateral federal-provincial processes in the DFO Gulf Region or the Regional Oversight Committee on Oceans Management in the DFO Newfoundland and Labrador Region).

Specific approaches for engaging Aboriginal groups will be implemented including existing mechanisms and protocols for consulting where applicable throughout the process.

For engaging key stakeholders (e.g. industry, non-governmental organizations and academia), the use of existing committees and working groups or other participation approaches, including bilateral discussions or workshops on specific issues, are pursued when appropriate.

This engagement approach will be used throughout the MPA network development and implementation process.

Determine the Strategic Conservation Objectives and Guiding Economic and Social Principles

As mentioned in the previous section, the strategic conservation objectives have been determined based on the criteria identified in the *Azores Report*. Economic and social principles that have been selected are among the guiding principles outlined earlier in the *Guiding Principles* Section of this document, namely, to recognize and consider the economic, social and cultural aspects and minimize the negative economic and social impacts of network implementation. Determining strategic conservation objectives and economic and social principles is a critical step in the process and has a major influence on the development of network design.

Gather, Map and Analyze the Best Available Ecological, Economic, Social and Cultural Information

The best available data for the marine environment are compiled, sorted, processed and mapped during this phase. Scientific reports and databases are the primary sources of information. Supporting data are collected from government departments (federal and provincial), organizations, groups or other stakeholders that have a connection to the marine environment, with preference for data that covers all of the Estuary and Gulf of St. Lawrence Bioregion to avoid fragmented data.

Ecological information consists of oceanographic data and information on a wide range of marine species (e.g., fish, seabirds, marine mammals, invertebrates, etc.) and habitats (e.g., coral and sponge concentrations, salt marshes, eelgrass beds, special natural features, etc.) and is linked to the strategic conservation objectives for the network.

It is also at this stage of the process that economic, social and cultural considerations must be documented and integrated into network design. A detailed inventory of marine uses for the Estuary and Gulf of St. Lawrence Bioregion is compiled and organized by the type and level of use, and their distributions. The goal is to minimize negative impacts of the network on human activities. Review of maps of human activities and ecological data can provide a summary assessment of the locations where biological components are under most intense pressure and can also show areas that have ecological value and where human activities are limited.

The collaboration of scientists and experts is critical at this stage since they provide subject matter expertise and help validate the methodology used to integrate the data layers. Meetings and consultation workshops must therefore be organized with scientists and experts at this stage of the process.

Aboriginal groups and key stakeholders are also invited to participate in the process to assist in the completion of economic, social and cultural data compilation (providing opportunity to include information that may have been unknown to scientists and experts). This is recognized as a critical component of the network design process to complement the methods, criteria, and mapping techniques used to integrate this information into the network design.

Define Marine Protected Area Network Design Options

MPA network scenarios are maps of potential designs for the bioregional network of MPAs which identifies areas for inclusion in the network, and which is developed in accordance with consideration of network design properties and principles. If these areas are effectively and efficiently protected, the pre-defined conservation objectives will likely be achieved.

Areas of high conservation value are identified via the decision support tool (spatial analysis), taking into consideration ecological and biological information. In seeking to understand and mitigate the possible social and economic impacts of each proposed area and contribute to the secondary goals of the network, economic, social and cultural data are also included in the analysis. This involves taking into account the ecological, economic, social, and cultural information to generate network scenarios that still reach the conservation objectives and contribute to positive long term economic and social impacts and incorporate cultural features, while minimizing short-term negative economic and social impacts to the extent possible.

The involvement of Aboriginal groups and interested parties is sought at this stage. The scenarios are presented and discussed to refine them according to relevant additional knowledge and concerns they may have.

In addition to MPAs, there are various types of other effective area based conservation measures in Canada's oceans that may be considered for inclusion in the network. A gap analysis of these conservation management tools is then undertaken to identify which areas in the network design are left unprotected or do not carry sufficient protection to meet conservation objectives. In some cases, it may be necessary to adjust the management regimes of certain existing sites to enhance their conservation value. This gap analysis also helps determine where new MPAs or other conservation measures could potentially be implemented to complete the network design and achieve strategic conservation objectives.

Develop a Marine Protected Area Network Design

Once the gap analysis is completed, the potential network scenarios are established and key interested parties are consulted, an MPA network design can be identified.

Following the completion of the analysis of the conservation management tools and the identification of gaps, conservation measures or legal statutes that may be applied are proposed for each unprotected area (gap) in the network design. Since the network cannot be established all at once, it is appropriate to identify priority conservation areas that will receive earliest protection as network implementation proceeds. For example, sites where parts of the ecological environment are threatened or subject to high anthropogenic pressure may be identified as priority conservation areas. Risk is one of many factors used to prioritize which areas in the network will be protected first. However, it is important to note that an area does not have to be at risk to be protected in the network (e.g. pristine areas, significant ecological importance, significant cultural importance, among others). The prioritization will be determined during implementation.

Implement the Network Design by the Responsible Authorities

The implementation of the network design is the duty of the responsible authorities who act according to their own mandates, priorities and timelines. Moreover, each authority responsible for establishing a marine protected area or other conservation measure does so in accordance with its own legal and policy framework.

The network implementation will occur over time based on available resources and assessment of available conservation measures to achieve the conservation objectives established for an individual site.

The responsible authorities will undertake consultations for each area of interest for the creation of future MPAs or other conservation measures. For Fisheries and Oceans Canada this action will occur at a Regional basis within the Bioregion.

Manage and Monitor the Marine Protected Area Network

A monitoring program that promotes adaptive management is implemented to determine whether conservation measures in the network enable network goals and objectives to be achieved. Scientific advice may be necessary to identify indicators for monitoring marine protected area and network objectives.

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Glossary of Terms

Adaptive management
A systematic process for continually improving management policies and practices by learning from the outcomes of previously used policies and practices.

Adequacy and viability
Adequate and viable sites indicate that all sites within a network should have size and protection sufficient to ensure the ecological viability and integrity of the feature(s) for which they were selected (Annex III– *Azores Report*).

Biological diversity
The full range of variety and variability within and among living organisms and the ecological complexes in which they occur; the diversity they encompass at the ecosystem, community, species and genetic levels; and the interaction of these components.

Biological productivity
The production of plant and animal matter; nature's ability to reproduce and regenerate living matter.

Community knowledge
Knowledge or expertise held by communities (e.g., fishing community), characterized by common or communal ownership.

Connectivity
Connectivity in the design of a network allows for linkages whereby protected sites benefit from larval and/or species exchanges, and functional linkages from other network sites. In a connected network individual sites benefit one another (Annex III– *Azores Report*).

Conservation
The maintenance or sustainable use of the Earth's resources in order to maintain ecosystem, species and genetic diversity and the evolutionary and other processes that shape them. In the context of the IUCN definition of an MPA, conservation refers to the in situ maintenance of ecosystems and natural and semi-natural habitats and of viable populations of species in their natural surroundings.

Ecosystem approach
A strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way (CBD 2004).

Ecosystem integrity
Refers to the degree to which a given area (potential MPA) functions as an effective, self-sustaining ecological unit. MPAs will be designed at an ecosystem level, recognizing patterns of connectivity within and among ecosystems. In general, an MPA that is designed to protect a diverse array of habitat types will also conserve the ecological processes and integrity of the ecosystems.

Ecosystem (or ecological) services
Ecosystem services are the benefits people obtain from ecosystems. These include provisioning services such as food and water; regulating services such as regulation of floods, drought, land degradation, and disease; supporting services such as soil formation and nutrient cycling; and cultural services such as recreational, spiritual, religious and other nonmaterial benefits.

Ecosystem-based management
Ecosystem-Based Management (EBM) is the management of human activities to ensure that marine ecosystems, their structure (e.g., biological diversity), function (e.g., productivity) and overall environmental quality (e.g., water and habitat quality) are not compromised and are maintained at appropriate temporal and spatial scales.

High water mark
Line which marks the shoreline and banks of lakes and waterways. The high water mark or natural high water mark is located in:

a) the transition zone where predominantly terrestrial plants succeed predominantly aquatic plants, or where there are no aquatic plants, the point closest to the water where terrestrial plants no longer grow;

b) if the information is available, the 2-year flood limit, considered to correspond to the mark established according to the botanical criteria defined above.

Holistic approach
Involves expanding the field of observation of scientific disciplines, but requires multidisciplinarity and a multi-scale approach. The objective is to understand the interactions between the biology of living beings and environmental conditions where the whole is greater than the sum of its parts.

Integrated Oceans Management
A continuous process by which decisions are made for the sustainable use, development and protection of areas and resources.

Precautionary approach
A management approach which recognizes that the absence of full scientific certainty will not be used as a reason for postponing decisions where there is a risk of serious or irreversible harm.

Other effective area-based conservation measures
Spatial marine management measure that does not meet the definition of a marine protected area, but that contributes to marine conservation in Canada.

Protection
Any regulatory or other provision to reduce the risk of negative impact of human activities on an area.

Representativity
Representativity is captured in a network when it consists of areas representing the different biogeographical subdivisions of the global oceans and regional seas that reasonably reflect the full range of ecosystems, including the biotic and habitat diversity of those marine ecosystems (Annex III– *Azores Report*).

Resilience (ecological)
The ability of a system to undergo, absorb and respond to change and disturbance whilst maintaining its functions and controls.

Sustainable development
Development that meets current requirements without compromising the ability of future generations to meet their own needs.[7]

Sustainable use
The use of components of biological diversity in a way and at a rate that does not lead to the long-term decline of biological diversity, thereby maintaining its potential to meet the needs and aspirations of present and future generations (1995 Canadian Biodiversity Strategy).
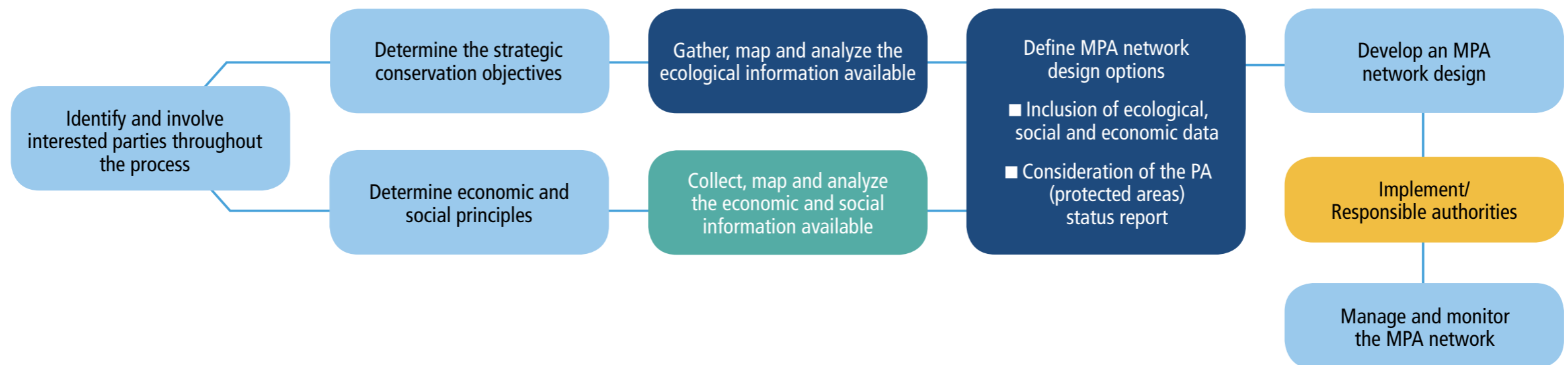

DPO R. Larocque

Appendix 2

Network Design Phases

MPA network goals

- Provide long-term protection of marine biodiversity, ecosystem functions and the specific natural features of the marine environment.
- Support the conservation and sustainable management of living marine resources and their habitats in order to preserve the social and economic values and ecosystem services associated with them.
- Raise public awareness regarding the value of marine environments and the cultural and historic values associated with them.

Identify and involve interested parties throughout the process

Determine the strategic conservation objectives

Gather, map and analyze the ecological information available

Define MPA network design options
- Inclusion of ecological, social and economic data
- Consideration of the PA (protected areas) status report

Develop an MPA network design

Determine economic and social principles

Collect, map and analyze the economic and social information available

Implement/ Responsible authorities

Manage and monitor the MPA network

Scientific consultation

Expert consultation

This stage is not the responsibility of the network planners. Implementation of the network design is rather the duty of the responsible authorities who will act according to their own mandates.