Fisheries and Oceans Canada
Pêches et Océans Canada

MARINE PROTECTED AREAS
ON THE EASTERN SCOTIAN SHELF

Selecting the next Area of Interest

2009 CONSULTATION BOOKLET

Canada

ABOUT THIS DOCUMENT

Canada is committed to establishing a network of marine protected areas to improve the health of our oceans. Fisheries and Oceans Canada (DFO) is in the process of selecting one new Marine Protected Area (MPA) under the *Oceans Act* for the Eastern Scotian Shelf – a biologically rich area off the east coast of Nova Scotia.

This consultation booklet:

- Outlines the DFO-led process to plan a network of protected areas for the Scotian Shelf-Bay of Fundy region, within the broader context of conservation planning through integrated ocean management
- Explains how the next Area of Interest (AOI) for MPA establishment under the *Oceans Act* will be selected for the Eastern Scotian Shelf
- Describes the three candidate AOIs under consideration
- Seeks your feedback on the candidate AOIs

Based on your feedback and further analysis, one AOI on the Eastern Scotian Shelf will be recommended for approval by the Minister of Fisheries and Oceans and announced early in 2010.

Selecting an AOI is the first stage in the *Oceans Act* MPA establishment process. Once selected, the AOI will undergo a more detailed evaluation and additional public consultation before the final regulations are put into effect.

How can you get involved?
The 60-day public review period scheduled for October 13th to December 11th, 2009 provides you with an opportunity to:

- Complete the enclosed feedback form and mail it to the address below
- Complete the feedback form online at: http://www.mar.dfo-mpo.gc.ca/oceans/e/ocmd/mpa/feedback-e.html
- Contact us directly at the address below if you have any questions or concerns.

Oceans and Coastal Management Division
Fisheries and Oceans Canada
Bedford Institute of Oceanography
PO Box 1006
Dartmouth, Nova Scotia
B2Y 4A2

Phone: 902-426-9926
Fax: 902-426-3855
MaritimesMPAs@dfo-mpo.gc.ca

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1 MARINE PROTECTED AREAS IN CANADA

Canada's oceans are vast, diverse, and biologically productive but they are under increasing pressure from current and expanding activities and threats such as climate change. *Marine protected areas*[1] are management tools that can help achieve a balance between human use and conservation. This section provides some background information on marine protected areas and their establishment in Canada, including on the Eastern Scotian Shelf.

MARINE PROTECTED AREAS

In general terms, a marine protected area is a part of the ocean that is managed to contribute to the long-term conservation of nature. While most marine protected areas have some form of legal protection, others can rely on voluntary conservation measures.

Some of the most common reasons for establishing marine protected areas include the protection of sensitive areas, such as cold water coral reefs, important feeding areas for endangered species, spawning areas for commercial fishes, and areas that contain a wide variety of species and habitats.

Compared to on land, we know very little about the species and ecosystems found in our oceans. For this reason, marine protected areas can be hotbeds of discovery. They can also serve as insurance policies against the scientific uncertainty surrounding many ocean management decisions. In financial terms, marine protected areas are like savings accounts that help maintain our ecological wealth for future generations. Finally, marine protected areas have been shown to help rebuild depleted fish stocks and sustain or even increase commercial catches outside their boundaries.

There is now widespread international agreement on the need for *networks of marine protected areas* to help restore or maintain healthy oceans that can support resource use over the long term. A network can generally be defined as a set of complementary and ecologically linked marine protected areas in a particular region. Effective networks protect examples of each ecosystem or habitat type in a region in addition to special or unique areas. It is also understood that to be effective, networks of protected areas must be implemented with a variety of other measures, such as enhanced environmental assessment and monitoring, or industry stewardship and best practices, as part of a comprehensive conservation planning or integrated ocean management process.

MARINE PROTECTED AREAS IN CANADA

Establishing a national network of marine protected areas is an important component of *Canada's Oceans Strategy*.[2] There are several types of marine protected areas in Canada, just as there are different kinds of protected areas on land (e.g., national parks, provincial wilderness areas, migratory bird sanctuaries). Although a range of provincial, territorial, and federal legislation and policies can be used to protect ocean spaces, three federal programs will make up the core of Canada's national network of marine protected areas:



1 In this document, the generic term *marine protected area* is used to describe any protected area in the ocean. The acronym *MPA* is used when referring to Marine Protected Areas established under the *Oceans Act*.

2 *Canada's Oceans Strategy* is available at: http://www.dfo-mpo.gc.ca/oceans-habitat/oceans/ri-rs/cos-soc/index_e.asp.

Marine Protected Areas (MPAs) are established by DFO under the *Oceans Act* to protect important fishes or marine mammals and their habitats, endangered species, unique features, and areas of high biological productivity or biodiversity.

Marine Wildlife Areas and **National Wildlife Areas** are established by Environment Canada under the *Canada Wildlife Act* to protect migratory birds and endangered species and their habitats.

National Marine Conservation Areas are established by Parks Canada under the *National Marine Conservation Areas Act* to conserve representative examples of Canada's natural and cultural marine heritage, and to provide opportunities for public education and enjoyment.

The *Federal Marine Protected Areas Strategy*[3] released in 2005 outlines how these departments and agencies will work together to plan and establish a network of marine protected areas within the context of the ecosystem approach and integrated oceans management activities, such as the Eastern Scotian Shelf Integrated Management (ESSIM) Initiative (see Box 1).

OCEANS ACT MPAs

In 1997, the *Oceans Act* was brought into force, giving Canada a framework for modern oceans management and providing the Minister of Fisheries and Oceans with the legal authority and mandate to establish MPAs to protect and conserve:

- commercial and non-commercial fishery resources, including marine mammals, and their habitats,
- 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 necessary to fulfill the Minister's mandate.

Seven *Oceans Act* MPAs have been formally designated across Canada to protect a variety of species and habitats.[4] Examples include the Musquash Estuary in New Brunswick and the Bowie Seamount off British Columbia. Several others are currently moving through the regulatory process. The Gully, a large marine canyon on the Eastern Scotian Shelf, is currently the only *Oceans Act* MPA off Nova Scotia (see Box 2).

BOX 1: MARINE PROTECTED AREAS - AN IMPORTANT TOOL FOR IMPLEMENTING THE ECOSYSTEM APPROACH TO OCEAN MANAGEMENT

The ecosystem approach is a management strategy that aims to achieve a balance between conservation and sustainable use. As outlined in *Canada's Oceans Strategy*, DFO is working with other federal departments, provincial and territorial governments, Aboriginal organizations, environmental and community groups, and ocean industries to advance the ecosystem approach in Canada's oceans through various integrated management initiatives. Marine protected areas are recognized internationally as an important tool for implementing the ecosystem approach and achieving multiple ecosystem objectives. However, protected areas are not always the most appropriate tool and certain objectives can be met through other spatial or performance-based management measures, including industry stewardship and best practices, fisheries management zones, risk management approaches, and environmental effects monitoring.

The Eastern Scotian Shelf Integrated Management (ESSIM) Initiative is a collaborative ocean management and planning process led and facilitated by DFO in the Maritimes Region. In 2008, the initiative produced the ESSIM Strategic Plan, which outlines a series of objectives under the themes of *collaborative governance and integrated management, sustainable human use* and *healthy ecosystems*. Implementing a protected area network on the Eastern Scotian Shelf would support multiple healthy ecosystems objectives, such as *protecting and/or recovering at-risk species* or *conserving the diversity of benthic, demersal and pelagic community types*, and also contribute to several sustainable human use objectives (see: http://www.mar.dfo-mpo.gc.ca/oceans/e/essim/essim-intro-e.html).

Although conservation is the main purpose for their establishment, this does not mean that all human activities will be prohibited in all *Oceans Act* MPAs. The regulations for each MPA are unique because they are designed to meet a set of site-specific conservation objectives. However, most MPA regulations include some form of zoning, general prohibitions on harming species and habitats, activity approval requirements (e.g., for

3 Canada's *Federal Marine Protected Areas Strategy* is available at: http://www.dfo-mpo.gc.ca/oceans-habitat/oceans/mpa-zpm/fedmpa-zpmfed/index_e.asp.
4 For more information on *Oceans Act* MPAs across Canada see: http://www.dfo-mpo.gc.ca/oceans/marineareas-zonesmarines/mpa-zpm/index-eng.htm.

research, recreation), and exceptions to the regulations (e.g., for certain fishing activities that will not compromise the conservation objectives of the MPA). MPA regulations apply to all ocean activities and are intended to be permanent. Management plans can be adjusted over time to help achieve the conservation objectives.

Following the initial consultation phase on selecting an Area of Interest (AOI), the process for establishing and managing *Oceans Act* MPAs includes the following steps:[5]

Step 1: Select an AOI

Step 2: Conduct an Overview and Assessment of the AOI

Step 3: Develop Regulatory Intent

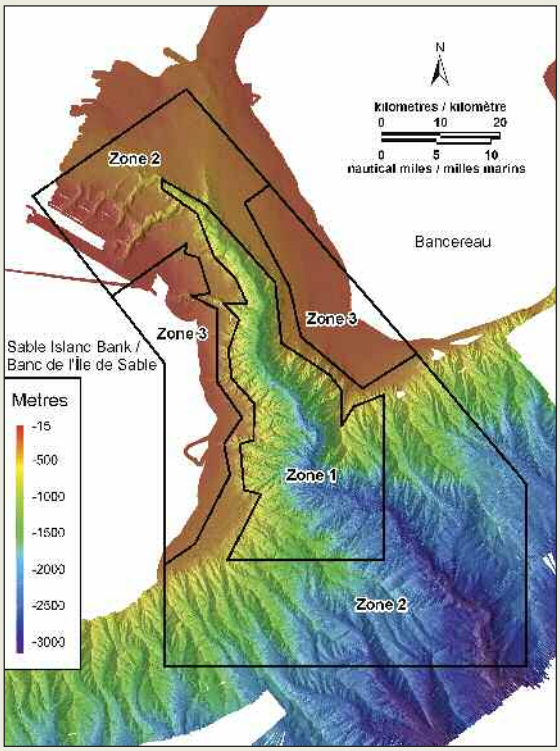
Step 4: Develop Regulatory Documents

Step 5: Manage the MPA

CANADA'S HEALTH OF THE OCEANS INITIATIVE

In October 2007, the Minister of Fisheries and Oceans announced the *Health of the Oceans Initiative*, which includes a commitment to establish six additional *Oceans Act* MPAs across Canada by 2012. One new MPA is planned for each of Canada's five priority Large Ocean Management Areas (LOMAs). The Eastern Scotian Shelf is a priority LOMA so one new MPA will be established in this area by 2012. The first step in this process, and the focus of the current consultation, is to select an AOI. The selected AOI will undergo additional evaluation and public consultation before formal designation as an MPA.

BOX 2: THE GULLY MPA



The Gully – the largest marine canyon off eastern North America – is located to the east of Sable Island on the edge of the Scotian Shelf. This unique ecosystem contains a rich diversity of habitats and species, including sensitive cold water corals and endangered northern bottlenose whales. In 2004, the Gully became Atlantic Canada's first MPA under the *Oceans Act*. The Gully MPA regulations allow for some continued use of the area through a zoning scheme (see: http://www.mar.dfo-mpo.gc.ca/oceans/e/essim/gully/essim-gully-e.html).

5 For more information on the establishment and management of MPAs under the *Oceans Act* see: http://www.dfo-mpo.gc.ca/oceans/marineareas-zonesmarines/mpa-zpm/process-processus-eng.htm.

2 SELECTING THE NEXT AREA OF INTEREST FOR THE EASTERN SCOTIAN SHELF

Fisheries and Oceans Canada (DFO) is leading a process to select an Area of Interest (AOI) for Marine Protected Area (MPA) establishment under the *Oceans Act* on the Eastern Scotian Shelf. This process is linked to a longer term effort to plan and establish a marine protected area network for the broader *Scotian Shelf-Bay of Fundy region*.[6] This section describes the process for selecting and advancing the next AOI on the Eastern Scotian Shelf. The steps in this process are:

1. Map ecological priority areas
2. Identify candidate AOIs
3. Consult stakeholders
4. Recommend an AOI to the Minister
5. Announce the AOI
6. Begin the MPA designation process
7. Continue protected area network planning (see diagram on pages 6-7)

STEP 1: MAP ECOLOGICAL PRIORITY AREAS

In June 2008, a working group of DFO scientists and conservation planners began a process to develop a network of protected areas for the offshore waters of the Scotian Shelf-Bay of Fundy region. The first phase of this longer term planning process has focused on identifying ecological priority areas that will serve as the foundation for a marine protected area network in the region. This work builds on efforts over the past decade by DFO and other organizations to describe the marine resources and natural environment of the region. For example, *ecologically and biologically significant areas* were identified through an expert workshop hosted by DFO in 2006.[7]

International guidance suggests that effective protected area networks must conserve both distinct, unique or significant areas as well as representative examples of all ecosystem or habitat types in a region.[8] Following this direction, the ecological goals for the Scotian Shelf-Bay of Fundy region are to: (1) protect examples of all habitat types in the region, and (2) protect ecologically distinctive or significant areas in the region. A suite of more specific objectives were set under these broad goals (see Box 3).

The best available species and habitat data were collected and then evaluated using *Marxan*,[9] a globally recognized computer program that assists planners, scientists, and stakeholders in developing networks that meet a wide range of conservation goals and objectives. The output of this initial analysis identified a suite of sites – or ecological priority areas – that collectively satisfy the ecological goals and objectives of the network (Figure 1). Many of the priority areas are located on the Eastern Scotian Shelf, the current area of focus. These findings were first presented at the 4th Eastern Scotian Shelf Integrated Management (ESSIM) Forum Workshop in November 2008.

STEP 2: IDENTIFY CANDIDATE AOIs

A series of evaluations were completed to select three candidate AOIs from the ecological priority areas identified on the Eastern Scotian Shelf. First, the individual priority areas were examined by DFO to determine how well they fit with the *Oceans Act* MPA criteria. Areas that were not strongly aligned with the Act were not given further consideration.

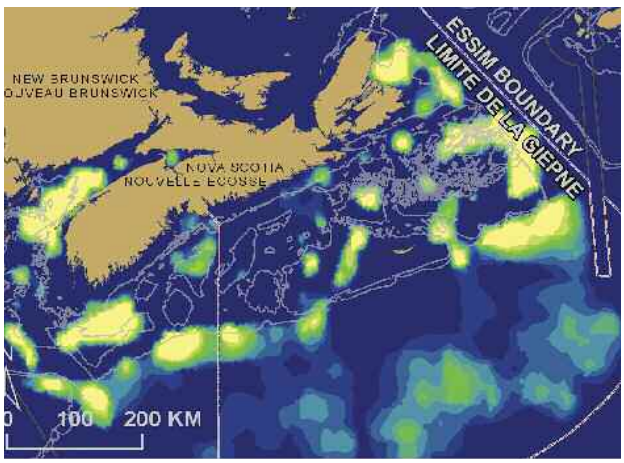


Figure 1. Preliminary ecological priority areas in the Scotian Shelf-Bay of Fundy region. Lighter areas (green to yellow) show where conservation goals can be met most efficiently in terms of area required. Lighter areas on the Eastern Scotian Shelf represent priority areas considered in the current AOI selection process.

6 For the purpose of this booklet, the Scotian Shelf-Bay of Fundy region includes the Scotian Shelf, the Bay of Fundy, and the Canadian portion of the Gulf of Maine. It does not include all coastal areas.
7 The proceedings of the workshop to identify ecologically and biologically significant areas on the Scotian Shelf are available at: http://www.dfo-mpo.gc.ca/csas/Csas/Proceedings/2006/PRO2006_002_E.pdf.
8 Convention on Biological Diversity: http://www.cbd.int/decisions/view.shtml?id=11663.
9 More information on Marxan is available at: http://www.uq.edu.au/marxan/.

BOX 3: ECOLOGICAL GOALS AND OBJECTIVES FOR A PROTECTED AREA NETWORK IN THE SCOTIAN SHELF-BAY OF FUNDY REGION

GOAL 1:
To protect examples of all habitat types in the region.

Objectives:

- Protect examples of each type of seabed feature (banks, basins, canyons, etc.)
- Protect examples of each scope for growth region
- Protect examples of each natural disturbance region

GOAL 2:
To protect ecologically distinctive or significant areas in the region.

Objectives:

- Protect important habitat for significant fish species
- Protect important habitat for dominant benthic invertebrate species
- Protect important habitat for depleted species
- Protect areas of high biodiversity
- Protect natural refuge areas
- Protect areas of high coral density and species diversity
- Protect critical habitat for endangered whale species

The data layers used to develop the preliminary network design include:·

- 29 distinct seabed features
- 5 scope for growth regions
- 4 natural disturbance regions
- 37 habitat layers for fish species
- 12 habitat layers for invertebrate species
- 3 data layers of biodiversity indices
- 1 measure of natural refugia
- 2 critical habitat data layers for endangered whale species
- 2 data layers for structure-providing coral species

Next, a range of management factors were examined for the remaining sites. These included overlap with current or planned economic activities and/or existing or planned conservation measures. For example, the slope area between Shortland Canyon and the Laurentian Channel has a number of important ecological features; but it also encompasses a coral conservation area and proposed critical habitat for northern bottlenose whales. The existing and planned conservation measures will help to achieve the conservation objectives for this area so it was not selected as a candidate AOI. This evaluation stage also involved discussions with the ESSIM Stakeholder Advisory Council, federal and provincial agencies, and other stakeholder groups. The three sites identified as candidate AOIs are: **Middle Bank, Misaine Bank & Eastern Shoal,** and **St Anns Bank** (Figure 2). Only one of the areas will be recommended as an AOI. The priority areas not selected as an AOI will continue to be evaluated to determine if any additional management measures are required to conserve important features (see Step 7).

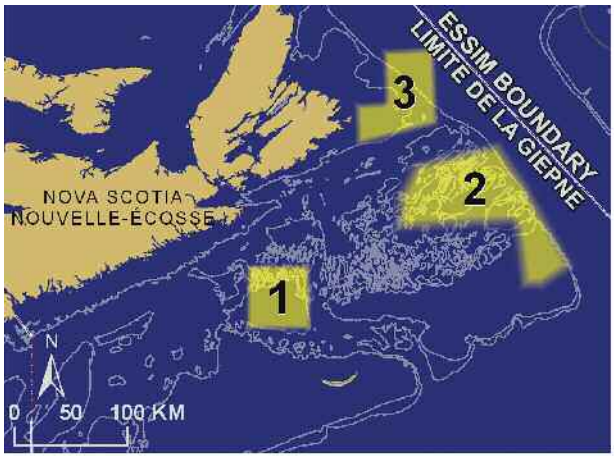


Figure 2: The candidate AOIs on the Eastern Scotian Shelf include Middle Bank (1), Misaine Bank & Eastern Shoal (2), and St Anns Bank (3). One of the sites will be recommended as an AOI.

STEP 3: CONSULT STAKEHOLDERS

The public, stakeholders, and relevant government bodies have an opportunity to provide feedback on the candidate AOIs through a 60-day consultation period. The degree of support for the different candidates will be an important consideration in recommending an AOI for MPA designation under the *Oceans Act*. Feedback will be gathered primarily through this consultation booklet and meetings with Aboriginal organizations, other stakeholders, and the ESSIM Stakeholder Advisory Council.

STEP 4: RECOMMEND AN AOI TO THE MINISTER

Following the consultation period, all feedback will be synthesized by DFO and one AOI will be recommended for approval by the Minister of Fisheries and Oceans. The remaining candidate AOIs and other priority areas will continue to be evaluated under the ESSIM Initiative or other processes to determine if further conservation measures are required (see Step 7).

STEP 5: ANNOUNCE THE AOI

DFO will formally announce the selection of one AOI and the intention of the Government of Canada to designate the area as an *Oceans Act* MPA. Information on

the MPA establishment process and expectations concerning interim protection for the AOI will also be provided at that time.

STEP 6: BEGIN THE MPA DESIGNATION PROCESS

The AOI announcement will mark the start of the MPA designation process, which will include additional consultations to develop specific conservation objectives, regulations, and boundaries for the area selected (see Section 1). The regulations will state what activities will be permitted in different parts of the MPA. In developing these regulations, due consideration will be given to the costs and benefits of various management options. Final designation will occur once the regulations are published in the *Canada Gazette II*. It is expected that the MPA will be designated by 2012.

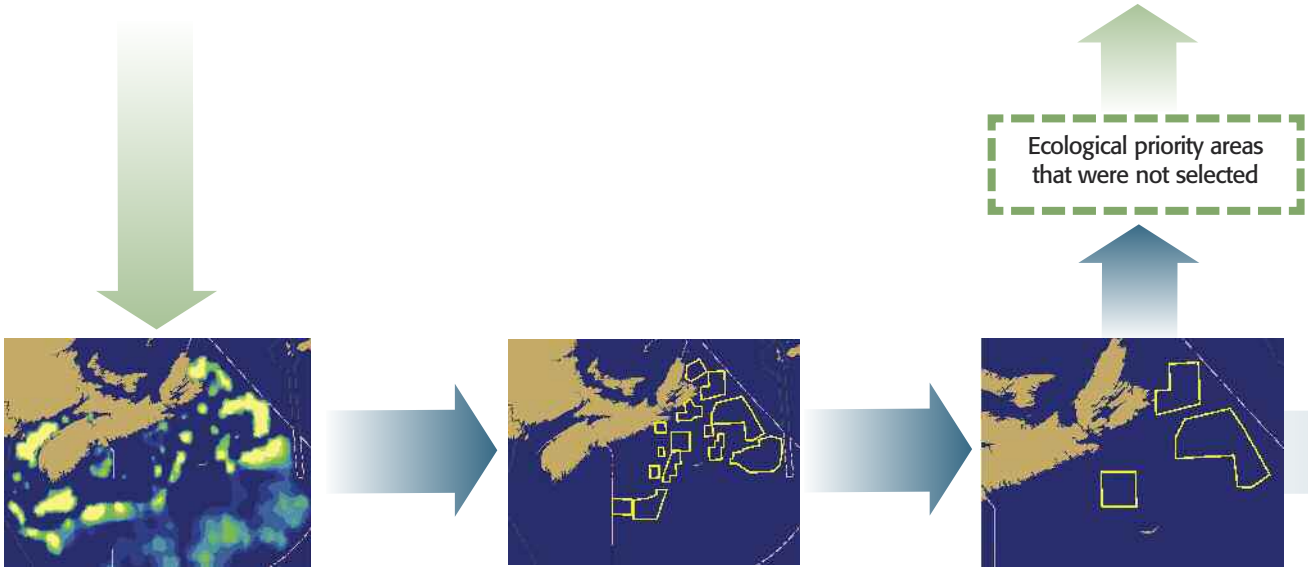
STEP 7: CONTINUE PROTECTED AREA NETWORK PLANNING

The protected area network planning process for the Scotian Shelf-Bay of Fundy region will continue following the AOI announcement. The planning process will help guide the selection of future protected areas and serve as a core component of any conservation planning activities taking place through the broader integrated ocean management initiatives. As part of this longer term effort, the candidate AOIs that were not selected, along with the other priority areas identified through the planning process, will continue to be evaluated to identify required management measures. A range of management tools is available under the *Fisheries Act, Species at Risk Act,* and other legislation and policies. Any new measures will be developed and implemented in

SELECTING THE NEXT AREA OF INTEREST

1. MAP ECOLOGICAL PRIORITY AREAS

- Set ecological goals and objectives
- Collect and analyze data



2. IDENTIFY CANDIDATE AOIs

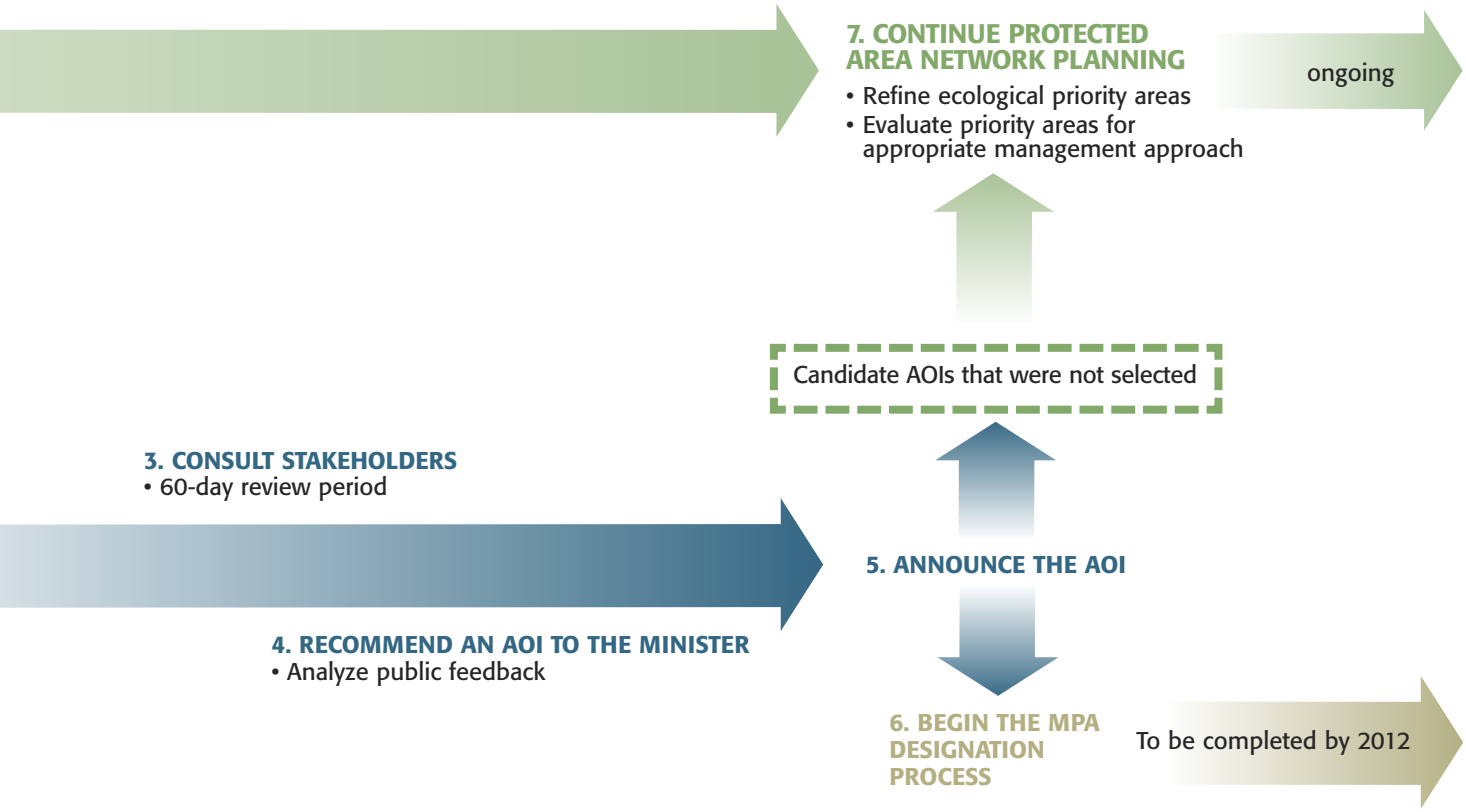
- Evaluate ecological priority areas
- Ecological, economic, and management considerations

Summer/Fall 2008 Winter/Spring 2009

collaboration with regulators and stakeholders. Where appropriate, site evaluations and stakeholder discussions will take place through ESSIM or other integrated management initiatives. Some of the sites may also be of future interest to other protected area agencies, such as Parks Canada or the Canadian Wildlife Service. Finally, certain areas may not require specific conservation measures.

The protected area network planning process for the Scotian Shelf-Bay of Fundy region will evolve over time as new information is built into the analysis. An evaluation of the network goals and objectives, and the ecological priority areas is planned for 2009-2010, which will ensure the foundation of the network is based on the current understanding of the marine ecosystem and the best overall approaches to conserving biodiversity. Work is also underway to determine how coastal areas could be incorporated into a protected area network in the region. In addition, national level discussions on the creation of networks of marine protected areas are underway, with additional guidance expected in the near future.

Over the long-term, implementation of a protected area network will require involvement by stakeholders and other regulators. A comprehensive, coordinated approach to the selection and management of marine protected areas and other conservation measures in the region will result in an effective network that helps restore and maintain healthy ecosystems that support sustainable resource use.



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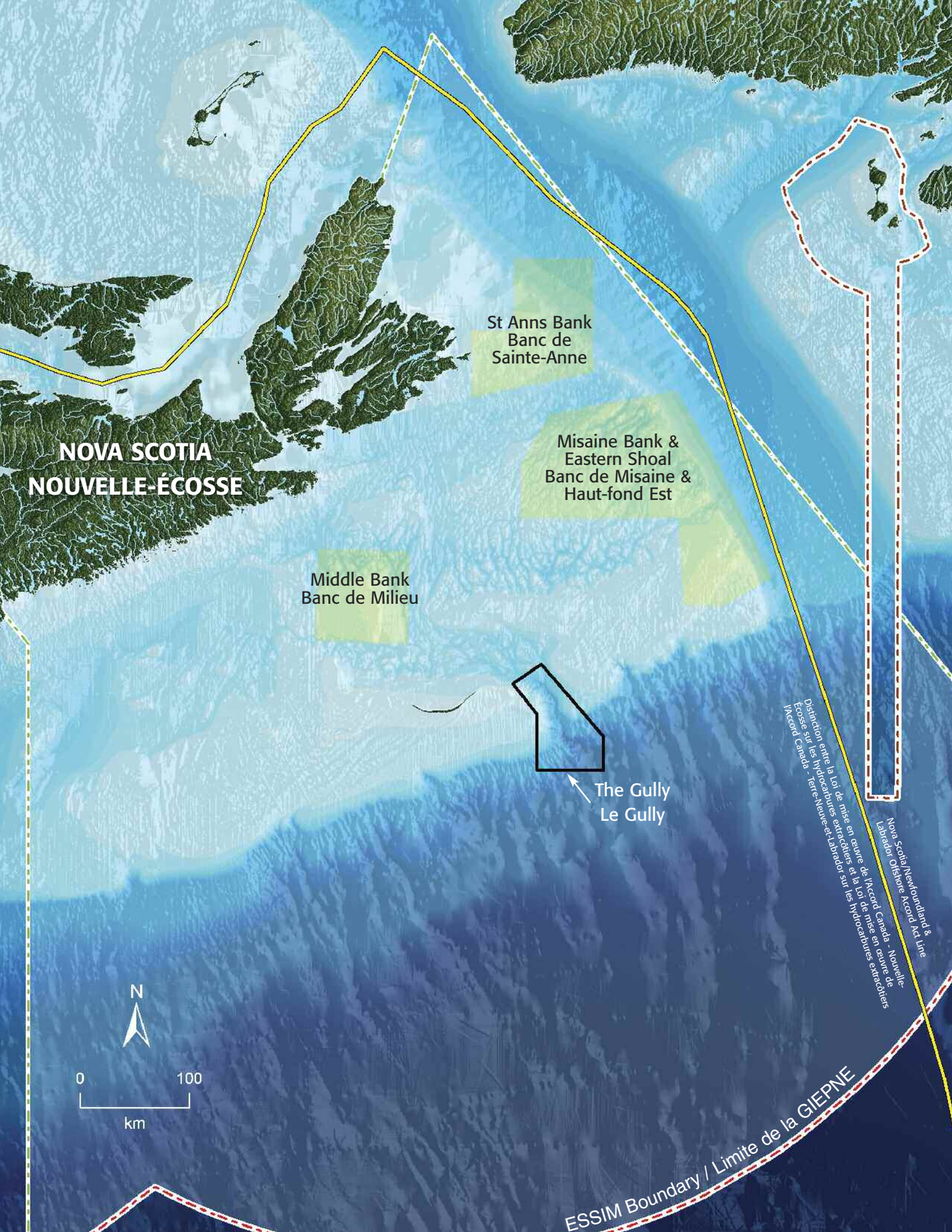
St Anns Bank
Banc de
Sainte-Anne
NOVA SCOTIA
NOUVELLE-ÉCOSSE
Misaine Bank &
Eastern Shoal
Banc de Misaine &
Haut-fond Est
Middle Bank
Banc de Milieu
The Gully
Le Gully
Distinction entre la Loi de mise en œuvre de l'Accord Canada - Nouvelle-Écosse sur les hydrocarbures extracôtiers et la Loi de mise en œuvre de l'Accord Canada - Terre-Neuve-et-Labrador sur les hydrocarbures extracôtiers
Nova Scotia/Newfoundland &
Labrador Offshore Accord Act Line
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ESSIM Boundary / Limite de la GIEPNE

3 CANDIDATE AOI FACT SHEETS

This section provides a brief overview of the Middle Bank, Misaine Bank & Eastern Shoal, and St Anns Bank candidate Areas of Interest (AOIs). The intent of the fact sheets is to give stakeholders some basic geographical, ecological, and human use information on each of the candidates. This information should assist those who wish to comment on the candidate AOIs by completing the feedback form at the end of this booklet.

As indicated in Section 2, each of the candidate AOIs was selected based on its individual ecological merits but they also represent important components of the broader protected area network that is being planned for the Scotian Shelf-Bay of Fundy region. All three candidates are closely aligned with the *Oceans Act* MPA criteria and would make strong contributions to a regional network.

There are several notable similarities between the candidate AOIs. For instance, they all include a large bank and areas with complex seafloors. These different seabed features serve as habitat for a variety of species. The offshore banks have long been recognized as playing a key role in the productivity and function of the broader Scotian Shelf ecosystem. They have been particularly important for groundfish, such as Atlantic cod and haddock, and served as productive fishing grounds for centuries. The major banks of the Eastern Scotian Shelf have been relatively well-studied whereas the complex seafloor habitats that surround them represent frontiers for discovery.

At present, there are no biodiversity-focused protected areas on the banks of the Scotian Shelf. Both the Gully MPA and the coral conservation areas were put in place to protect deeper water habitats. Establishing any of the candidate AOIs as an MPA will help address this gap in the emerging protected area network. The complex seafloor areas of the Eastern Scotian Shelf are also currently not captured by existing protected areas.

Many of the ecological priority areas – including the three candidate AOIs – identified in the first phase of the protected area network planning process are of significant size (greater than 1000 km^2). These large areas reflect the equally large ecological patterns that often characterize offshore environments. For example, many important offshore species and communities require large areas and several different habitat types throughout their life histories. From a protected area network perspective, large MPAs are typically more effective as they often encompass entire biological communities and provide greater flexibility in dealing with environmental change and scientific uncertainty.

The candidate AOI boundaries were drawn based on the ecological priority areas and attempt to capture the key physical and ecological features of the different areas. **The boundaries are for study and consultation purposes only and do not represent proposed MPA boundaries**. The final MPA boundary for the selected AOI will be developed and delineated through the MPA establishment process described in Section 1.

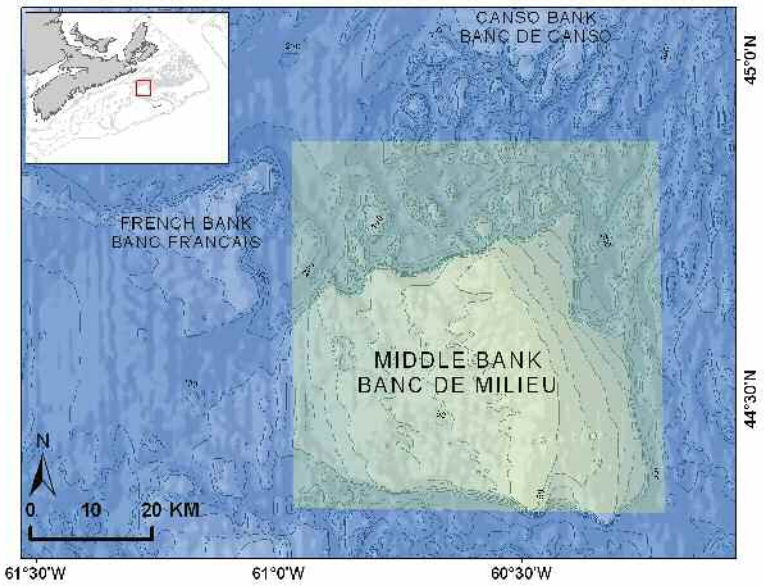


MIDDLE BANK CANDIDATE AOI

LOCATION:
North of Sable Island Bank

AREA:
Approx. 3700 km^2

DESCRIPTION: Includes Middle Bank and the channels, holes, and mounds to the north of the bank



Key ecological features:

- Area of high fish species diversity
- Includes many different habitats – sandy banks, small channels, deep holes, mounds
- Important spawning and nursery area for Atlantic cod
- Significant habitat for *at-risk species*[10] (winter skate and Atlantic cod)
- Important habitat for haddock, yellowtail flounder, shrimp, and sea cucumber

Boundaries on this map are for study and consultation purposes only and do not reflect a proposed MPA boundary. All depths are in metres.

WHY WAS THIS AREA SELECTED?

The Middle Bank candidate AOI was selected because of its importance to a wide variety of species including many groundfish (e.g., haddock, yellowtail flounder), commercial invertebrates (e.g., shrimp, sea cucumber) and at-risk species, such as winter skate and Atlantic cod. This candidate AOI is also a biodiversity hotspot that supports high fish species diversity and encompasses a variety of habitat types.

Fish species diversity

Fish species diversity on Middle Bank is high compared to other parts of the Eastern Scotian Shelf.[11] It has also been identified as an area of high larval fish diversity.[12] Ocean currents over the bank may help retain fish eggs and larvae in the area.

Habitat diversity

The Middle Bank candidate AOI includes several different seabed features. The eastern part of the bank is dominated by a shallow and dynamic sand wave field, while a distinct gravel region occurs along the northern flank, and the west is characterised by rough terrain. To the north of the bank is a complex area of deep holes, channels, and mounds. The diverse habitat types found in this candidate AOI support a variety of marine life. For example, the shallow sand wave field may suit sand lance and sand dollars while the muddy holes to the north provide habitat for shrimp, snow crab, and sponges.

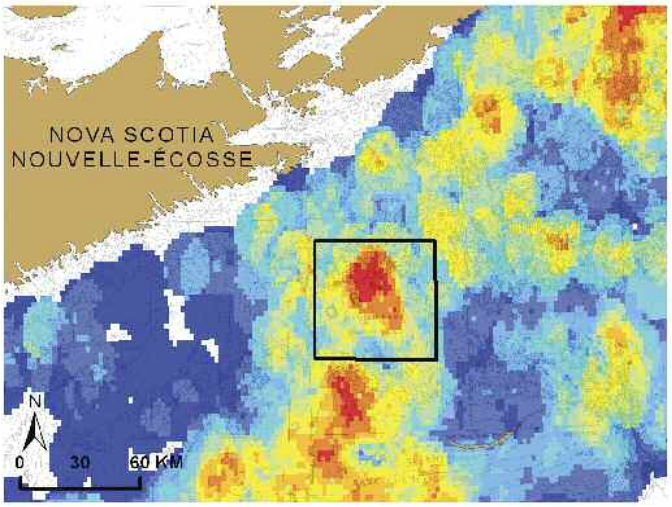
At-risk species

Middle Bank is important habitat for winter skate and Atlantic cod, considered to be "threatened" and of "special concern" respectively by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). In the 1970s large

10 For the purposes of this document, the term *at-risk species* includes any species that is listed under Schedule 1 of the *Species at Risk Act* or is considered endangered, threatened, or of special concern by the Committee on the Status of Endangered Wildlife in Canada.
11 Shackell and Frank, 2003 Aquat. Conserv 13(4): 305-321.
12 Shackell and Frank, 2000. Can J Fish Aquat Sci, 57: 1747-1760.

adult Atlantic wolffish [listed as "special concern" under the *Species at Risk Act* (*SARA*)] were also observed in this area, but have not been found in more recent scientific surveys. Protecting Middle Bank may contribute to the recovery of these species.

Atlantic cod – Middle Bank appears to be one of the most important Atlantic cod habitats on the Eastern Scotian Shelf. In addition to being a spawning and nursery area, annual surveys since 1970 show that cod abundance is consistently high on Middle Bank compared to the rest of the region. Overall abundance of this once dominant predator has sharply declined since the mid-1980s and remains extremely low despite a 15-year moratorium on directed fishing.



Relative importance of areas for Atlantic cod on the Eastern Scotian Shelf based on annual scientific trawl surveys (1970-2006). Red and yellow areas are most important for Atlantic cod. Black line denotes Middle Bank candidate AOI.

WHAT HUMAN ACTIVITIES OCCUR IN THIS CANDIDATE AOI?

Fishing was and continues to be the primary human activity on Middle Bank. Historically, this area was an important fishing ground for cod and other groundfish, with significant catches in the 1970s and 1980s. Current fisheries target mainly shrimp and snow crab along the northern edge of the bank. There are also vessels fishing for sea cucumber, scallops, halibut, and bluefin tuna in some years.

Activity by the oil and gas industry has been low in this candidate AOI, with little or no exploration in the past 20 years. However, the area is adjacent to the current gas pipeline from the Sable Offshore Energy Project and the planned pipeline from the future Deep Panuke Offshore Gas Development Project. The gravel bottom area on northern Middle Bank has been identified as having some potential for future aggregate mining, but this type of activity is not currently authorized in Canada's offshore.

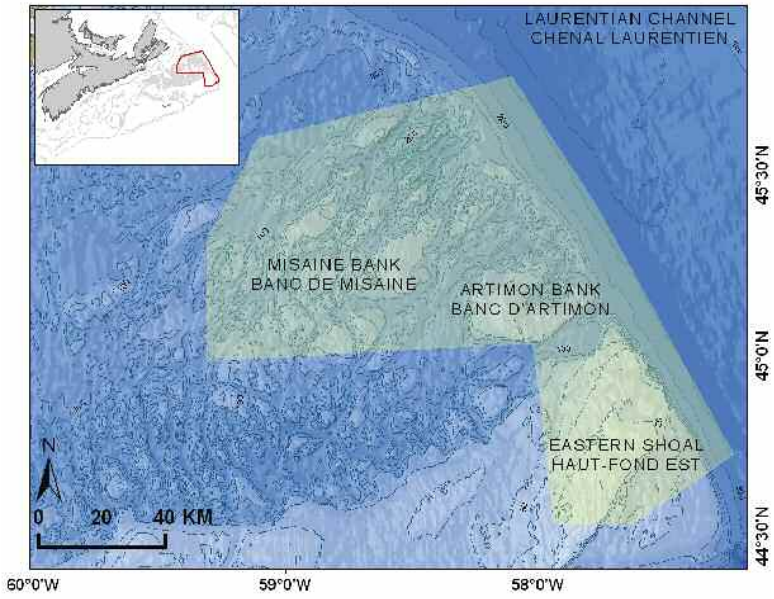
OCEANS ACT MPA CRITERIA	HOW THIS AREA MEETS THE CRITERIA
Commercial and non-commercial fishery resources, including marine mammals, and their habitats	Important habitat for Atlantic cod, haddock, yellowtail flounder, northern shrimp, sea cucumber, and long-horn sculpin
Endangered or threatened marine species and their habitats	*Special concern:* Important habitat for Atlantic cod. Atlantic wolffish were found in the area in the past. *Threatened:* Important habitat for winter skate.
Unique habitats	None identified.
Areas of high biodiversity or biological productivity	Area of high fish species diversity and habitat diversity.

MISAINE BANK & EASTERN SHOAL CANDIDATE AOI

LOCATION:
Eastern edge of the Scotian Shelf

AREA:
Approx. 11800 km²

DESCRIPTION: Includes Misaine and Artimon Banks, part of the Laurentian Channel, and most of the Eastern Shoal on Banquereau



Key ecological features:

- Unique, highly complex, and diverse seabed features
- Contains sensitive bottom habitats and species – including cold water corals
- Area of high fish and invertebrate species diversity
- Important overwintering and mixing area for Atlantic cod
- Significant habitat for at-risk species (winter skate and wolffishes)
- Important habitat for many commercial species
- Migration and feeding area for whales and fishes

Boundaries on this map are for study and consultation purposes only and do not reflect a proposed MPA boundary. All depths are in metres.

WHY WAS THIS AREA SELECTED?

The Misaine Bank & Eastern Shoal candidate AOI encompasses parts of Misaine Bank, Artimon Bank, the Laurentian Channel and the Eastern Shoal. These seabed features combine to provide habitat for a diverse range of fishes and invertebrates that includes commercial species (e.g., redfish, snow crab, and shrimp), non-commercial species (e.g., sponges, corals, anemones, and sea raven) and several at-risk species. Establishing this large candidate AOI as an MPA would contribute to many of the ecological objectives of the broader protected area network.

Bamboo coral (Keratoisis ornata) has been identified in this candidate AOI.

Unique seabed structure and diverse habitats

The complex seafloor around Misaine Bank is unique on the Scotian Shelf.[13] The deep holes and channels in this area were formed by glaciers more than 10,000 years ago and now provide ideal habitat for many species. Because of its geology and depth, areas on and around Misaine Bank have a very low degree of natural disturbance from ocean storms and other processes.[14] Such habitats tend to be sensitive to human disturbance and often contain corals, sponges and other slow-growing species. Scientific surveys and local knowledge indicate that sponges and large branching coral species occur in several parts of this candidate AOI.

Fish and invertebrate species diversity

DFO surveys indicate that fish and invertebrate species diversity is high in this candidate AOI. This diversity is likely due to the variety of habitats in the area and because the area is part of a transition zone between the Scotian Shelf and the Gulf of St. Lawrence.

At-risk species

The Misaine Bank & Eastern Shoal candidate AOI is an important habitat for several at-risk fish species.[15] Eastern Shoal appears to be particularly significant for winter skate, which is considered "threatened" by COSEWIC. The area is also important for cod, considered of "special concern" by COSEWIC. Atlantic, northern and spotted wolffishes (all listed under the *SARA*) also occur in this area.

13 Fader, 2007. Unpublished report for WWF-Canada.
14 Kostylev and Hannah, 2007. Geological Association of Canada Special Paper 47.
15 Horsman and Shackell, 2009. Can Tech Report Fish Aquat Sci, in prep.

Winter skate – The abundance of winter skate on the Eastern Scotian Shelf is estimated to have declined by more than 90% since the early 1970s and is now at a historically low level. Certain life history characteristics of this species make it vulnerable to exploitation and limit its ability to recover. Scientific surveys since 1970 indicate that the Eastern Shoal portion of Banquereau is a very important habitat for this species.

Atlantic cod – The Laurentian Channel component of this candidate AOI is an important overwintering habitat for the Sydney Bight and southern Gulf of St. Lawrence populations of Atlantic cod.[16] Southern Gulf of St. Lawrence cod are thought to be at high risk of local extinction.[17] Protecting this important mixing area may benefit both of these severely depleted populations. Cod was also once abundant on Eastern Shoal.

Wolffishes – This candidate AOI includes important habitat for the Atlantic wolffish, a large, solitary, nest-building benthic fish that has declined significantly since the 1970s. Northern and spotted wolffishes have also been found in this area. All three of these predator species are long lived and slow to mature, making them vulnerable and slow to recover from human disturbances.

Commercial species

This candidate AOI represents important habitat for many commercial species. The Eastern Shoal is a key area for groundfish, such as cod, yellowtail flounder, and thorny skate, and invertebrates, such as surf clams. Misaine Bank is important for snow crab, shrimp, urchin, and American plaice. The Laurentian Channel is a significant habitat for redfish, white hake, and witch flounder. Protecting this area may help rebuild or sustain healthy populations of these and other commercial species.

Migration route

The Laurentian Channel is the largest channel in Atlantic Canadian waters and a known migration route for a range of whales, including the endangered blue whale, and many fishes moving in and out of the Gulf of St. Lawrence. Migrating species feed on krill and other forage species that flourish in the channel.

WHAT HUMAN ACTIVITIES OCCUR IN THIS CANDIDATE AOI?

The largest fisheries in the Misaine Bank & Eastern Shoal candidate AOI over the last decade have targeted surf clams, snow crab, redfish, and flatfishes. Groundfish – including redfish, halibut, yellowtail flounder, skates, and American plaice – are still caught in this area but landings are much lower than they were in the past. Shrimp trawling has also occurred along the northern boundary of this candidate AOI. Additionally, parts of the area are being considered for a developing sea cucumber fishery.

In the 1970s there were several exploratory wells drilled in this candidate AOI. More recently, seismic surveys have been carried out and the Canada-Nova Scotia Offshore Petroleum Board (CNSOPB) expects that there will be further oil and gas interest in this area. Eastern Shoal represents a large deposit of potentially extractable silica sand, but aggregate mining is currently not permitted in Canada's offshore.

OCEANS ACT MPA CRITERIA	HOW THIS AREA MEETS THE CRITERIA
Commercial and non-commercial fishery resources, including marine mammals, and their habitats	Important habitat for Atlantic cod, redfish, white hake, American plaice, yellowtail flounder, witch flounder, thorny skate, snow crab, northern shrimp, sea urchins, whelks, longfin hake, smooth skate, longhorn sculpin, sea raven, sponges, brittle stars, sea stars, and anemones.
Endangered or threatened marine species and their habitats	*Threatened:* Important habitat for winter skate. Spotted and northern wolfish are periodically observed in this area. *Special Concern:* Important habitat for Atlantic cod and Atlantic wolffish.
Unique habitats	The area is a made up of a unique and complex seabed structure that provides a wide range of habitats, including benthic areas believed to be especially sensitive.
Areas of high biodiversity or biological productivity	Area of high fish and invertebrate species diversity.

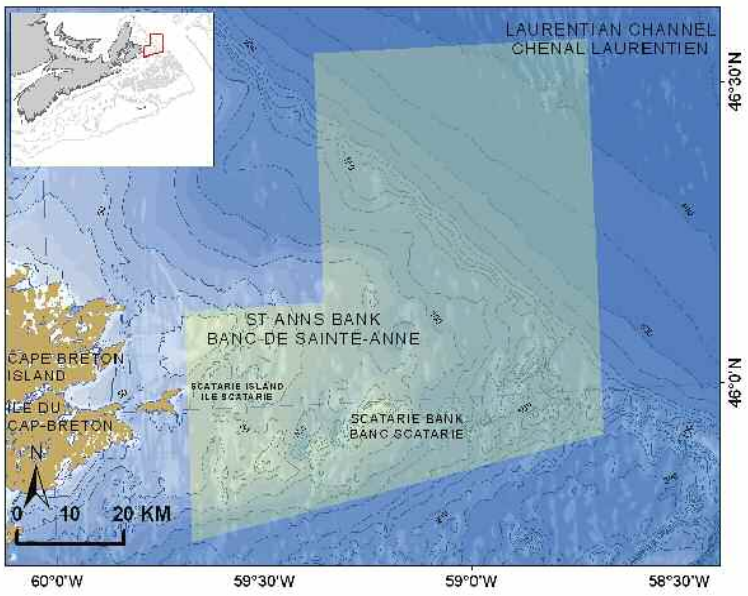
16 Campana et al. 1999. Can J Fish Aquat Sci 56: 1873-1881.
17 Swain and Chouinard, 2008. DFO Canadian Science Advisory Secretariat Research Document 2008/018.

ST ANNS BANK CANDIDATE AOI

LOCATION:
East of Scatarie Island off Cape Breton

AREA:
Approx. 5100 km^2

DESCRIPTION: Includes Scatarie Bank, most of St Anns Bank, and part of the western edge of the Laurentian Channel



Key ecological features:

- Part of a migration corridor for fish and marine mammals moving in and out of the Gulf of St. Lawrence and St. Lawrence Estuary
- Important habitat for Atlantic wolffish
- Important summer foraging area for endangered leatherback turtles
- Important overwintering habitat for the Sydney Bight and southern Gulf of St. Lawrence populations of Atlantic cod
- Contains sensitive bottom habitats and species – including cold water corals
- The only major bank on the inner Scotian Shelf

Boundaries on this map are for study and consultation purposes only and do not reflect a proposed MPA boundary. All depths are in metres.

WHY WAS THIS AREA SELECTED?

The St Anns Bank candidate AOI includes St Anns Bank, Scatarie Bank, and a portion of the Laurentian Channel. These features provide diverse habitats for a range of commercial species (e.g., redfish and halibut), non-commercial species (e.g., sponges, corals, anemones) and several at-risk species. This area is also a key migration route for many marine mammal and fish species.

Migration of fishes and marine mammals

Many species migrate in and out of the Gulf of St. Lawrence through the Cabot Strait (between Cape Breton and Newfoundland) and pass through the St Anns Bank candidate AOI and Sydney Bight in the process. Fishes that use this route include small species such as herring and mackerel, Atlantic cod and other groundfish, and large, highly migratory species like bluefin tuna. The endangered blue whale is also known to migrate through this area, as are fin, humpback, minke and pilot whales, harbour porpoises and white-sided and white-beaked dolphins.[18]

At-risk species

The St Anns Bank candidate AOI serves as important habitat for several at-risk species, including Atlantic wolffish (listed as "special concern" under *SARA*) and Atlantic cod (considered "special concern" by COSEWIC). This site is also a key foraging area for the endangered leatherback turtle (listed under *SARA*).

Atlantic wolffish – Survey data indicate that the slopes of St Anns Bank are very important habitat for this late maturing and slow growing species. While Atlantic wolffish appear to prefer the shelter of complex bottom structures, they feed on a variety of animals on the seafloor away from these sheltered sites.[19] Many of the largest catches of this species in scientific surveys have been observed in this candidate AOI.

Atlantic cod – The Laurentian Channel component of this candidate AOI is an important overwintering habitat for the resident and southern Gulf of St. Lawrence cod populations.[20] Both are currently at very low levels, and southern Gulf of St. Lawrence cod are believed to be at high risk of local extinction if their survival rates do not improve.[21]

18 Schaefer, H.L. et al., 2004. Can Manuscr Rep Fish Aquat Sci 2650: x + 213 pp.
19 Collette, B.B. and G. Klein-MacPhee. 2002. Fishes of the Gulf of Maine. Smithsonian Press. Washington.
20 Campana et al. 1999. Can J Fish Aquat Sci 56: 1873-1881.
21 Swain and Chouinard, 2008. DFO Can Sci Advis Sec Res Doc 2008/018.

Leatherback turtles – The St Anns Bank candidate AOI, particularly along the slope of the Laurentian Channel, is an important foraging area for the highly migratory leatherback turtle. This endangered species feeds on soft-bodied pelagic prey – such as jellyfish – in this area during late summer and early fall.

Fish and invertebrate species diversity

The St Anns Bank candidate AOI includes important habitat for commercial species, such as Atlantic cod, redfish, white hake, and witch flounder, as well as non-commercial species including sea anemones and sponges.[22] It is an area of high fish and invertebrate species diversity as 104 species have been recorded in this area by scientific surveys.

Sensitive bottom habitats and species

This candidate AOI also contains areas that are thought to be rarely disturbed by natural processes such as underwater currents and storms.[23] As such, they are more vulnerable to human disturbance and the habitat and species that occur there may take a long time to recover. Scientific surveys and local knowledge have identified sponges and large, slow-growing coral species in this candidate AOI.

Unique habitat

St Anns Bank is the only major bank in the inner Scotian Shelf. Like Sydney Bight, the oceanographic conditions around St. Anns Bank are largely dictated by the waters from Gulf of St. Lawrence. As a result, the area displays a large annual sea surface temperature range, which may account for the variety of species found there.

The blue whale, which is an endangered species and the largest animal in the world, is known to migrate through this candidate AOI.

Bubble gum coral (Paragorgia arborea) has been identified in this candidate AOI. Large colonies of this species can reach six metres in height but take centuries to grow and are very sensitive to disturbance.

WHAT HUMAN ACTIVITIES OCCUR IN THIS CANDIDATE AOI?

Commercial fishing and shipping are the main human activities in this candidate AOI. Redfish and some Atlantic halibut are targeted along the slope of the Laurentian Channel. Historically, Atlantic cod and pollock were also fished along the slope in this area. There is a significant lobster fishery off Cape Breton which may overlap with the western parts of this site. Scatarie Island, which is located to the west of this candidate AOI, is a Nova Scotia Wilderness Area. The island and surrounding waters are used for recreational activities such as hunting and sea kayaking. Much of the St Anns Bank candidate AOI is considered to have low potential for oil and gas resources due to the geology of the area, although information from the CNSOPB indicates there may be future interest in some portions of this area. There is considerable shipping activity through this area, both local traffic and ships traveling to and from the St. Lawrence River.

OCEANS ACT MPA CRITERIA	HOW THIS AREA MEETS THE CRITERIA
Commercial and non-commercial fishery resources, including marine mammals, and their habitats	Important habitat for cod, redfish, sea urchins, white hake, witch flounder, sea anemones, sponges, and corals.
Endangered or threatened marine species and their habitats	*Endangered:* Important leatherback turtle feeding area. *Threatened:* Periodic occurrence of northern wolffish. *Special concern:* Important habitat for Atlantic cod and Atlantic wolffish.
Unique habitats	Only major bank on the inner Scotian Shelf and has the highest annual sea surface temperature range on the Scotian Shelf.
Areas of high biodiversity or biological productivity	Area of high fish and invertebrate species diversity.

22 Horsman and Shackell, 2009. Can Tech Report Fish Aquat Sci, in prep.
23 Kostylev and Hannah, 2007. Geological Association of Canada Special Paper 47.

FREQUENTLY ASKED QUESTIONS

MARINE PROTECTED AREAS AND MARINE PROTECTED AREA NETWORKS

What is a marine protected area?

The International Union for the Conservation of Nature (IUCN) defines a marine protected area 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.*[24]

In Canada there are several types of marine protected areas, including provincial, territorial, and federal designations. At the federal level, Fisheries and Oceans Canada, Environment Canada, and the Parks Canada Agency all have mandates to establish marine protected areas. On the Eastern Scotian Shelf, there are currently two areas that could be considered "protected areas" – the Gully, an *Oceans Act* Marine Protected Area (MPA) near Sable Island, and the Lophelia Conservation Area, a fisheries closure put in place to protect corals near the Stone Fence. It is, however, important to recognize the conservation contributions made by other management measures, including those related to fisheries management, recovery of at-risk species, and various industry and ocean sector-based best practices. This booklet is focused on selecting the next Area of Interest (AOI) for MPA designation under the *Oceans Act* on the Eastern Scotian Shelf.

What activities are allowed in and around *Oceans Act* MPAs?

Each *Oceans Act* MPA has a unique set of regulations and a management plan designed to meet the conservation objectives for the area. MPAs are designated with general prohibitions to protect species and their habitats but often have a zoning scheme to allow for some activities. For instance, an MPA can contain a highly protected core zone that is surrounded by less restrictive zones where activities that will not compromise the conservation objectives of the area are permitted. The Gully MPA provides a good example of this model as fishing is not permitted in the most sensitive zone, but longline fisheries for halibut and swordfish are permitted in the outer zones.

What is a marine protected area network? What can we expect from the protected area network planning process for the Scotian Shelf-Bay of Fundy region?

Canada has committed to establishing a national network of marine protected areas through the *Oceans Act* and the 2005 Federal MPA Strategy, the latter of which defines a network as a *set of complementary and ecologically linked marine protected areas, consisting of a broad spectrum of marine protected areas, established and managed within a sustainable ocean management planning framework and linked to transboundary, global and terrestrial protected area networks.* Work is continuing at the national level to define the overall goals and an approach for designing and implementing Canada's national network of marine protected areas.

At the regional scale, DFO is leading a process to develop a protected area network plan that will help guide the selection of future protected areas and inform broader conservation planning activities in the Scotian Shelf-Bay of Fundy region. Taking a network approach to planning and selecting protected areas is more efficient than identifying and designating areas on a site by site basis. The primary conservation goals of the regional network are to protect examples of all major habitat types (e.g., banks, basins, canyons, etc.) and distinctive or ecologically significant areas (e.g., cold water coral reefs, critical habitats for endangered species, nursery areas for commercial species, etc.).

The regional network will include core designations such as *Oceans Act* MPAs or Marine Wildlife Areas, but may also include other spatial conservation measures, such as certain fisheries closures. Some important components of the network are already in place, like the Gully MPA and coral conservation areas. To fully implement a protected area network for the Scotian Shelf-Bay of Fundy is a long-term undertaking. The initial focus is on defining goals and objectives and identifying a set of ecological priority areas that will achieve them. At this early stage, there is considerable flexibility with regard to the final configuration of the network. Individual designations will be added to the network over time and within the context of conservation planning through integrated ocean management. The AOI that emerges from the current process will provide one of those contributions.

24 Laffoley, D. d'A., (ed.) 2008. Towards Networks of Marine Protected Areas. The MPA Plan of Action for IUCN's World Commission on Protected Areas. IUCN WCPA, Gland, Switzerland. http://www.iucn.org/about/work/programmes/marine/marine_our_work/marine_mpas/mpa_publications.cfm?2135/Towards-Networks-of-Marine-Protected-Areas-The-MPA-Plan-of-Action-for-IUCNs-World-Commission-on-Protected-Areas.

ABOUT THIS BOOKLET AND THE AOI SELECTION PROCESS

How will my comments be used?

Your comments at this stage are very important as they will be used by DFO staff, along with other information, to help evaluate which area will be recommended to the Minister of Fisheries and Oceans as an AOI for MPA designation under the *Oceans Act*.

When will an Area of Interest be selected?

Once the Fall 2009 public consultation process has concluded, the AOI selection process will move quickly. It is anticipated that the AOI will be selected and announced early in 2010.

What will happen once the AOI is announced?

Once an AOI is announced, the MPA establishment process will begin, which includes additional evaluation and public consultation on the area (see Section 1). The evaluation includes an assessment of the ecological and socio-economic implications of designating an MPA in the area. Additional scientific surveys may be required to confirm or further describe the species and habitats found in the AOI. Based on the assessment and consultation, draft regulations under the *Oceans Act* will be prepared for public review. Once the regulations are finalized, and the MPA is designated, it will require ongoing management through a management plan.

Will activities be allowed in the AOI during the MPA designation process?

The announcement of a site as an AOI does not automatically provide legal protection to the area under the *Oceans Act*. However, DFO – with the assistance of other regulators – will determine the specific interim protection measures required for the AOI, with a focus on restricting or limiting the impacts from new activities using existing legal tools (e.g., *Fisheries Act*). All activities in the area will be carefully monitored by DFO during the establishment process.

What happens to the candidate AOIs and other study areas that are not selected?

Designing and implementing a protected area network for the Scotian Shelf-Bay of Fundy region is a long-term undertaking that will continue to evolve over time. In the interim, the candidate AOIs that were not selected, as well as the remaining ecological priority areas identified through the protected area network planning process, may require additional management attention to minimize any impacts on the identified ecological features. Each of the areas will be evaluated to determine whether specific conservation measures are needed. Any new measures will be advanced through discussions with regulators and stakeholders. Where appropriate, this will be done through ESSIM or other integrated management initiatives. Certain areas may be better suited for protection under the *Fisheries Act* or *Species at Risk Act*, while others might be of interest to other protected area agencies, such as Parks Canada. A range of protected area designations and other spatial conservation tools will contribute to the protected area network and broader conservation objectives in the region.

It is anticipated that, in the next few years, only one of the candidate AOIs described in this booklet will be selected as an AOI. However, based on the department's evaluation, all of the candidate AOIs meet the criteria for MPA establishment under the *Oceans Act.* Therefore, these areas could be given further consideration as MPAs at some point in the future but these decisions would not be made without additional stakeholder discussions that would take place as part of the broader protected area network planning process.

How can I find out more about this process and participate in future MPA discussions?

Please contact the Oceans and Coastal Management Division at DFO if you would like to learn more about this process. To participate in future MPA discussions, please complete the enclosed Stay in the Loop form and mail it to the Oceans and Coastal Management Division or complete it online at: http://www.mar.dfo-mpo.gc.ca/oceans/e/ocmd/mpa/loop-e.html.

Fisheries and Oceans Canada | Pêches et Océans Canada

Oceans and Coastal Management Division
Fisheries and Oceans Canada
Bedford Institute of Oceanography
PO Box 1006
Dartmouth, Nova Scotia
B2Y 4A2

Phone: 902-426-9926
Fax: 902-426-3855
MaritimesMPAs@dfo-mpo.gc.ca

Printed on recycled paper.