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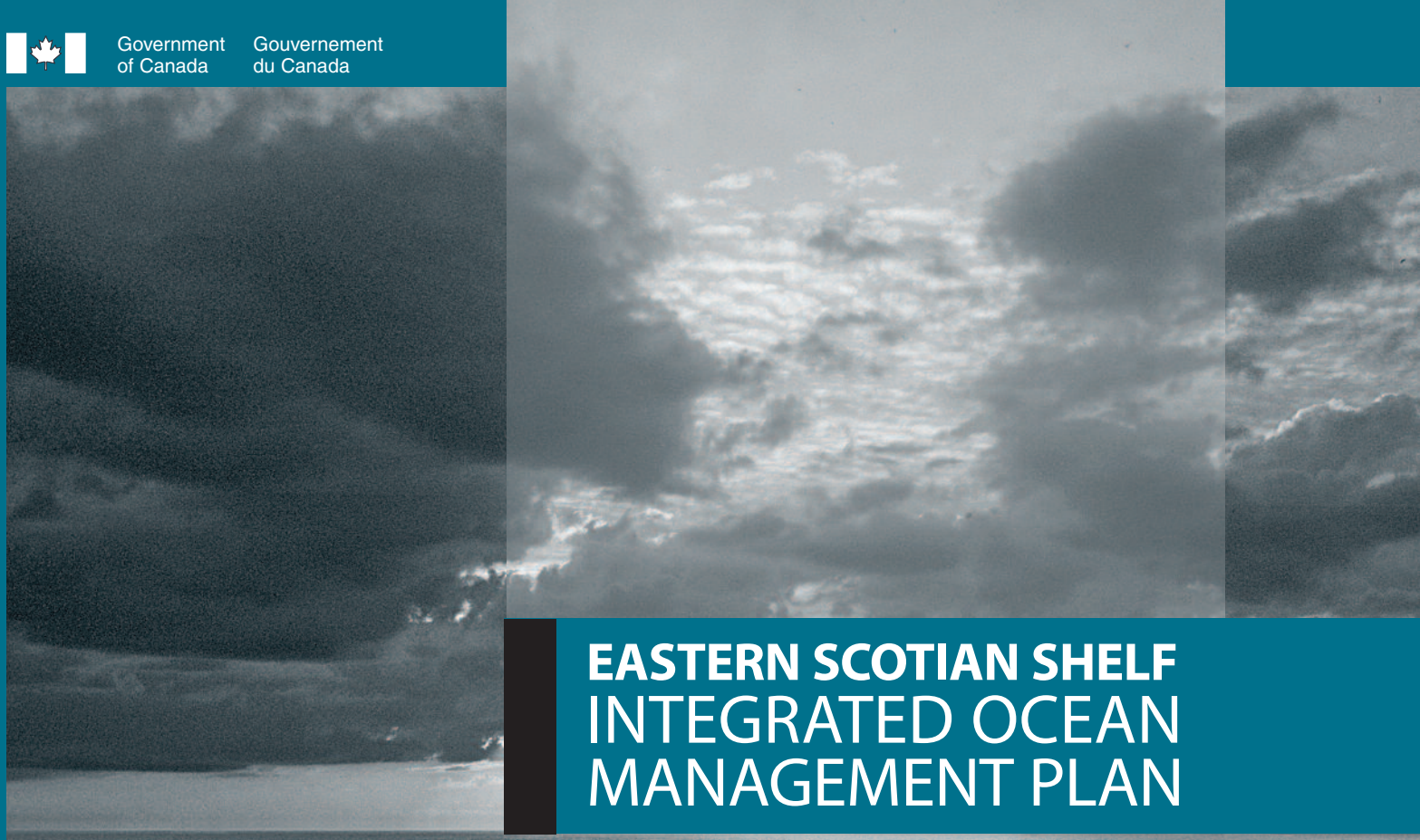

EASTERN SCOTIAN SHELF INTEGRATED OCEAN MANAGEMENT PLAN

STRATEGIC PLAN

Canada

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FOREWORD

The Eastern Scotian Shelf Integrated Management (ESSIM) Initiative is a collaborative ocean planning process being led and facilitated by Fisheries and Oceans Canada (DFO), Maritimes Region, under Canada's *Oceans Act*. In contrast to traditional 'sector-based' management, which addresses individual industries or activities on a case-by-case basis, the ESSIM planning process considers the ecosystem and all of its users comprehensively. The Initiative brings regulatory authorities from all levels of government together with a wide array of ocean stakeholders to work collaboratively. This allows for a more coordinated, comprehensive and inclusive management approach and helps to prevent conflict among different ocean users and between humans and the environment. The primary aim of the Initiative is to develop and implement an Integrated Ocean Management Plan that will guide the sustainable use, conservation, and management of this large marine region.

In February 2005, the ESSIM Planning Office, housed in DFO Maritimes' Oceans and Coastal Management Division, presented an initial draft Integrated Ocean Management Plan to stakeholders for review at the 3rd ESSIM Forum Workshop. Based on the generally positive feedback received, the Planning Office launched a broad public review of the draft Plan over the spring, summer, and fall of 2005. Following the public review, a group of stakeholders representing all major ocean sectors and government agencies in the planning area was assembled to consider the feedback received and to work with the Planning Office to revise the draft Plan. In July 2006, this group, known as the Stakeholder Advisory Council, completed a final draft Plan that was released again for broader stakeholder and government discussion. In November 2006, the Stakeholder Advisory Council assembled a final set of amendments to the Plan and provided its endorsement of the document. In December 2006, the senior intergovernmental Regional Committee on Ocean Management similarly provided its endorsement of the Plan.

The Eastern Scotian Shelf Integrated Ocean Management Plan is the product of an extensive collaborative and inclusive planning process. It has been shaped and accepted by stakeholders, supported and endorsed by government authorities, and is Canada's first Integrated Ocean Management Plan under the *Oceans Act*.

For more information on the ESSIM Initiative or the Plan, please contact:

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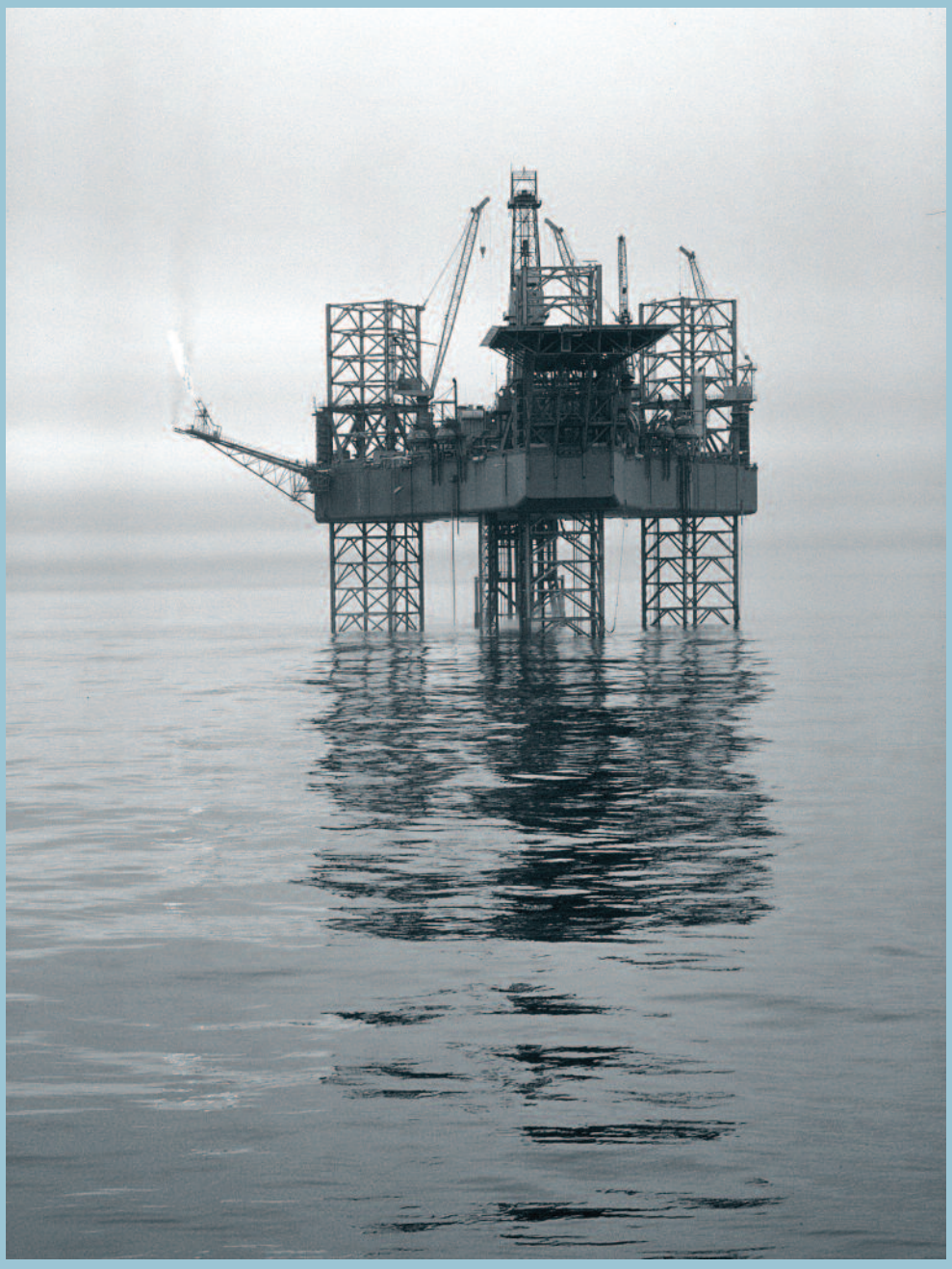


THE EASTERN SCOTIAN SHELF INTEGRATED OCEAN MANAGEMENT PLAN

INTRODUCTION

The Eastern Scotian Shelf Integrated Ocean Management Plan is a multi-year, strategic-level plan to provide long-term direction and commitment for integrated, ecosystem-based and adaptive management of all marine activities in or affecting the Eastern Scotian Shelf.

The Plan provides an objectives-based approach to ocean management. It contains a set of long-term goals for collaborative governance and integrated management, sustainable human use, and healthy ecosystems. These goals are supported by more specific objectives that express desired outcomes and conditions for the Eastern Scotian Shelf. It is these goals and objectives that underlay the Plan and provide the basis for defining management strategies and measuring progress on Plan implementation. Above all, the objectives-based approach seeks to ensure that interrelationships among ecosystem and human use objectives are recognized and reflected in the identification of management strategies and supporting actions.

The Plan functions at a level above existing sector-based management for marine activities. It focuses on the overall management of the Eastern Scotian Shelf and considers all ocean uses and the environment. This area-based approach enables marine planning, management and decision making to occur at appropriate spatial scales, from regional to site-specific. It also promotes the consideration of various interactions among human activities, and between those activities and the environment.

The Plan is not intended to provide a detailed prescription of all measures required to achieve its objectives. Rather, the aim of the Plan is to augment or enhance existing decision-making processes by linking sector planning and management to an overarching set of goals and objectives.

In many cases, this is accomplished by reference and linkages within the Plan to existing management plans and mechanisms. The Plan also identifies strategies for inclusion in sector-based management processes to support broader objectives and desired outcomes and conditions.

The Plan has been developed through a collaborative and inclusive process – the ESSIM Initiative – involving all interested and affected government departments and ocean stakeholders. The collaborative planning model for the ESSIM Initiative includes mechanisms for intergovernmental policy and program coordination, as well as real and effective participation by all stakeholders in all aspects of the planning process. Fisheries and Oceans Canada (DFO) provides leadership and facilitation for the ESSIM Initiative through its mandate under the *Oceans Act*.[1]

This process has allowed for the development of a Plan that is accepted by stakeholders and endorsed by legislative and regulatory authorities.

[1] *Oceans Act* 1996, c. 31. Available online: http://laws.justice.gc.ca/en/O-2.4/text.html

LEGISLATIVE BASIS FOR THE PLAN

The legislative basis for the Plan is drawn from Canada's *Oceans Act*, in accordance with the provisions contained in Sections 31 and 32 of *Part II, Oceans Management Strategy*:

Section 31, Integrated management plans

> The Minister [of Fisheries and Oceans] in collaboration with other ministers, boards and agencies of the Government of Canada, with provincial and territorial governments and with affected aboriginal organizations, coastal communities and other persons and bodies, including those bodies established under land claims agreements, shall lead and facilitate the development and implementation of plans for the integrated management of all activities or measures in or affecting estuaries, coastal waters and marine waters that form part of Canada or in which Canada has sovereign rights under international law.

Section 32, Implementation of integrated management plans

> For the purposes of the implementation of integrated management plans, the Minister [of Fisheries and Oceans]
>
> (a) shall develop and implement policies and programs with respect to matters assigned by law to the Minister
>
> (b) shall coordinate with other ministers, boards and agencies of the Government of Canada the implementation of policies and programs of the Government with respect to all activities or measures in or affecting coastal and marine waters
>
> (c) may, on his or her own or jointly with another person or body or with another minister, board or agency of the Government of Canada, and taking into consideration the views of other ministers, boards and agencies of the Government of Canada, provincial and territorial governments and affected aboriginal organizations, coastal communities and other persons and bodies, including those bodies established under land claims agreements,
>
> (i) establish advisory or management bodies and appoint or designate, as appropriate, members of those bodies, and
>
> (ii) recognize established advisory or management bodies; and
>
> (d) may, in consultation with other ministers, boards and agencies of the Government of Canada, provincial and territorial governments and affected aboriginal organizations, coastal communities and other persons and bodies, including those bodies established under land claims agreements, establish marine environmental quality guidelines, objectives and criteria respecting estuaries, coastal waters and marine waters.

POLICY AND MANAGEMENT CONTEXT: WHY IS THE PLAN NEEDED?

The *Oceans Act* and its supporting policy, *Canada's Oceans Strategy*[2] , affirm DFO's mandate as the lead federal authority for oceans and provide the national policy context for integrated ocean management. DFO's *Policy and Operational Framework for Integrated Management of Estuarine, Coastal and Marine Environments in Canada*[3] provides the national structure and guidance for the development of integrated ocean management and planning processes. The principles and approaches of the national policy framework are rooted in developing international ocean governance processes and Canada's ocean-related international legal and stewardship commitments.

The Plan is consistent with Canada's international ocean governance commitments, responsibilities and rights, and provides an important mechanism to respond to these on a regional basis. It also supports the national policy and governance objectives of *Canada's Oceans Strategy* and the *Policy and Operational Framework for Integrated Management*. Further, the Plan (and broader ESSIM Initiative) has a core role in moving forward with Canada's broader agenda for ocean prosperity and sustainability. In fact, the Scotian Shelf has been identified as one of five priority ocean planning areas in Canada. The Plan represents a key outcome of the inaugural phase of *Canada's Oceans Action Plan*[4] – an interdepartmental program to implement national ocean policy and management objectives – and is well positioned to respond to future phases of the ocean agenda.

Supporting our national ocean agenda

The Plan is an important regional mechanism for implementing Canada's national ocean priorities for:

- international leadership, safety, sovereignty and security
- integrated ocean management for sustainable development
- health of the oceans
- a competitive ocean economy

2 Fisheries and Oceans Canada. 2002. *Canada's Oceans Strategy*.
3 Fisheries and Oceans Canada. 2002. *Policy and Operational Framework for Integrated Management of Estuarine, Coastal and Marine Environments in Canada*.
4 Fisheries and Oceans Canada. 2005. *Canada's Oceans Action Plan: For Present and Future Generations*.

The management and regulation of ocean use in the planning area involves a large number of federal and provincial government departments and agencies. The Plan operates within this multi-jurisdictional context and respects existing legal and administrative jurisdictions within the federal Government of Canada, provincial governments and their agencies.

Regulatory authorities remain responsible and accountable for implementing management policies and measures within their established mandates and jurisdictions. However, government departments are expected to support implementation of the Plan through their respective legislative and regulatory jurisdictions.

Recognizing the fundamental importance of intergovernmental cooperation in ocean management, the Plan aims to address issues requiring interdepartmental policy, management and regulatory coordination. For example, the Plan promotes collaboration in addressing jurisdictional overlaps or inconsistencies among legislated authorities, as well as for management needs not adequately covered by existing legislated authorities.

Further, the Plan supports collaboration in improving efficiency and effectiveness of management and regulatory processes, including the promotion of research that supports effective ocean management.

Maritime jurisdiction and integrated ocean management

Integrated ocean management operates within a range of existing administrative, legal, regulatory and management jurisdictions. These are based on and are consistent with Canada's maritime zones of jurisdiction as defined in Part I of the *Oceans Act*, namely Internal Waters, Territorial Sea, Contiguous Zone, Exclusive Economic Zone, and the juridical Continental Shelf. Federal, provincial and international jurisdictions are applied variously within these maritime zones. All such jurisdictions, mandates and authorities are recognized and respected in the Plan.

The importance of First Nations and Aboriginal communities in the governance, stewardship and use of ocean resources is recognized and affirmed. There is a strong commitment to collaboration with all affected Aboriginal organizations, including those bodies established under land claims and other relevant agreements.

The need for collaboration does not end with government. Indeed, the foundation for the Plan is involvement and inclusion of all interested and affected parties in the integrated management process. The collaborative planning model for the Plan, which is described in more detail later, provides opportunities for meaningful participation and input by all stakeholders, including government, industry sectors, community and Aboriginal organizations, conservation interests, the research community, and the general public.

The integrated management and planning process seeks to achieve a sustainable and practical balance of human use, based on agreed-upon ecosystem and human use objectives. The Plan supports sustainable ocean use across a broad and diverse range of human activities. One of the main purposes of the Plan is to provide guidance on management needs resulting from interactions between and among ocean sectors and activity types.

Current and potential multiple use interactions that fall within the scope of the Plan include access to

ocean space and marine resources by different users and interests. Other potential multiple use interactions include activities within ocean sectors that may affect other sectors and activities, and human activities that create ecological pressures and impacts, including cumulative effects in terms of adjacency and timing of use.

In this context of multiple ocean use, a core purpose of the Plan is to ensure the health and integrity of the Eastern Scotian Shelf environment. The Plan contains a number of objectives and management strategies for addressing ecosystem-based management and conservation needs in the region. These are aimed primarily at issues related to marine biodiversity, productivity and environmental quality. However, the Plan also focuses on the need to increase our knowledge and understanding of marine ecosystems, reduce scientific uncertainty, and seriously address the cumulative, additive and synergistic effects often resulting from temporal and spatial use overlaps.


HUDSON
OTTAWA

VISION, GOALS AND GUIDING PRINCIPLES

VISION STATEMENT

The Vision for the Eastern Scotian Shelf is of healthy and sustainable ecosystems, economies and communities, supported by collaborative, integrated and harmonized governance and management.

GOALS

The aim of this Plan is to provide a common basis for commitment and action for sustainable use, conservation and integrated ocean management in the Eastern Scotian Shelf planning area. To achieve this, the Plan is organized around the three main goals of collaborative governance and integrated management, sustainable human use, and healthy ecosystems, as set in the box below:

COLLABORATIVE GOVERNANCE AND INTEGRATED MANAGEMENT

- Effective governance structures and processes.
- Capacity among stakeholders.
- Knowledge to support integrated management.

SUSTAINABLE HUMAN USE

- Ecologically sustainable use of ocean space and resources.
- Sustainable communities and economic well-being.

HEALTHY ECOSYSTEMS

- Resilient and productive ecosystems, with diverse habitats, communities, species and populations.
- Strong marine environmental quality supports ecosystem functioning.

These goals set the context for a comprehensive set of objectives and supporting management strategies, which are described later in the Plan.

GUIDING PRINCIPLES AND APPROACHES

The Plan is founded on the following principles:

Integration
Management and planning should be comprehensive and coordinated, based on the balanced consideration of the full range of activities, interests and environmental, social, cultural, economic and governance objectives for a management area.

Sustainable development
Decision making should take into account environmental, economic, social and cultural values in meeting the needs of the present without compromising the ability of future generations to meet their needs.

Precaution

The *Oceans Act* defines the precautionary principle as simply "erring on the side of caution." The Act promotes the "wide application…to the conservation, management and exploitation of marine resources in order to protect these resources and preserve the marine environment."

Canada and most Canadian provinces (including all Atlantic provinces) have formally committed to the precautionary principle as it is defined in the Rio Declaration on Environmental and Development.

Article 15 of the Rio Declaration states the following: *In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.*

Canada is also a signatory to the United Nations Convention on Biological Diversity, which further highlights Canada's commitment to the principle of precaution. The Convention states that: *"Where there is a threat of significant reduction or loss of biological diversity, lack of full scientific certainty should not be used as a reason for postponing measures to avoid or minimize such a threat."*

Inclusion

Another fundamental principle of the Plan is the recognition that communities, persons, and interests affected by marine resource or activity management should have an opportunity to participate in the formulation of ocean management decisions.

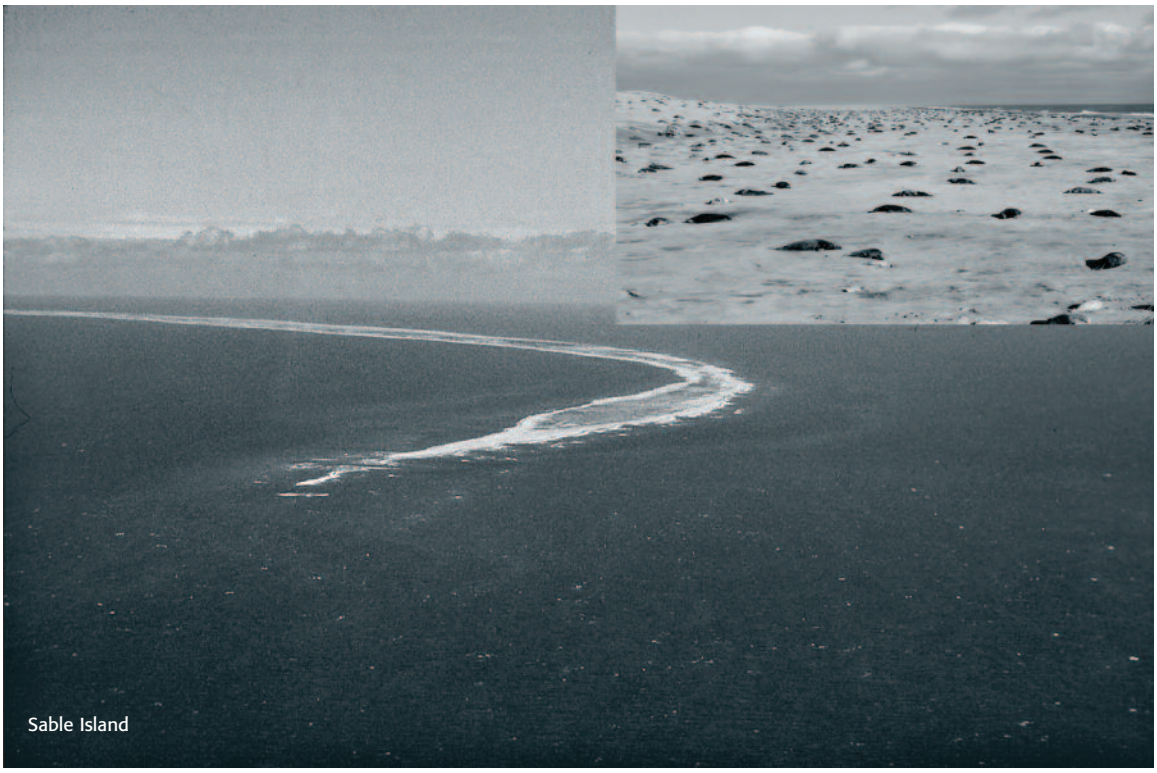
These principles are embodied in the following approaches, which better define the manner in which the Plan will be implemented:

Adaptive management

Integrated management and planning processes need to respond to changing environmental, social, economic and institutional conditions, and take into account new information and knowledge. Ongoing monitoring and regular review of management plans and actions are used to measure and evaluate progress on management objectives. They also identify alterations and revisions required to address changing conditions or improved levels of knowledge.

Collaboration

Collaboration is an approach in which all interested and affected parties are engaged in an open, inclusive and transparent planning, advisory and decision-making process. Ocean management plans and decisions are based on shared information where those with the decision-making authority and those affected by the decisions jointly seek outcomes that meet the needs and interests of all parties to the greatest possible degree. A consensus-based approach is the preferred method for collaborative planning. Under this approach, those with the authority, power and responsibility to implement agreed-upon management plans and measures will be expected to do so as part of their commitment to the planning process.



Sable Island

Conservation
Conservation is the sustainable use and management of ocean resources that safeguards ecological processes, biological diversity, living marine resources and their habitats for present and future generations.

Ecosystem-based management
The management of human activities should make every effort to ensure that the integrity of ecosystem components, functions and properties are maintained and/or restored at appropriate temporal and spatial scales.

Stewardship
An approach that fosters an ethic of active participation and sharing of responsibility to care for ocean ecosystems and resources as parts of a natural life-support system and to sustain and enhance it for generations to come. Stewardship refers to the wide range of actions and activities of individuals, communities, groups and organizations acting alone or in partnership to develop and use all natural resources in a sustainable manner, and to maintain the ecosystems on which life depends.


64°W
62°W
60°W
58°W
56°W
48°N
44°N
42°N
40°N
N
NL
Gulf of St. Lawrence
Petite Miquelon
Grande Miquelon
Ile Saint Pierre
Sydney Bight
PEI
St. Anns Bank
Laurentian Channel
NS
Canso Bank
Misaine Bank
French Bank
Middle Bank
Banquereau
Basin
Emerald
LaHave Basin
Sable Island Bank
Haldimand Canyon
Shortland Canyon
The Gully
Western Bank
Emerald Bank
LaHave Bank
Logan Canyon
Verrill Canyon
Dawson Canyon
0 50 100 km
0 25 50 nm
Eastern Scotian Shelf Planning Area
Eastern Scotian Shelf Integrated Management (ESSIM) Area
Canadian Exclusive Economic Zone (EEZ)
French Exclusive Economic Zone (EEZ)
NS/NL Offshore Accord Act Line

THE PLANNING AREA

The Eastern Scotian Shelf and the Scotian Slope encompass some 325,000 square kilometres, an area more the six times the size of the adjacent province of Nova Scotia. The area was selected for integrated ocean management because of its important living and non-living marine resources, high biological diversity and productivity, and increasing levels of use and competition for ocean space and resources.

The boundaries of the planning area comprise a mix of administrative and ecological considerations. The area corresponds with Northwest Atlantic Fisheries Organization (NAFO) fisheries management division 4VW. The western boundary is defined by the NAFO 4WX line that extends south from Halifax between LaHave Basin and Emerald Basin, bisecting the Scotian Shelf. The eastern boundary is the NAFO 4V/3PS line running through the Laurentian Channel and into the Gulf of St. Lawrence. The 4V/3PS line is also the regional administrative boundary for DFO Maritimes Region, and roughly corresponds with the eastern margin of the Scotian Shelf.

Oil and gas management in the planning area

In April 2002, an Arbitration Tribunal established a line to separate the offshore areas of Newfoundland and Labrador and Nova Scotia for the specific purpose of administering offshore oil and gas under their respective Accord Acts. This line, depicted on the planning area map, forms the jurisdictional boundary between the Canada-Nova Scotia and Canada-Newfoundland and Labrador Offshore Petroleum Boards. The Plan respects this administrative line and works within the jurisdictional and management context associated with it.

Although the overall integrated management process is being used to address ocean uses and management issues that occur both offshore and in coastal waters (e.g., commercial shipping), the focus of the Plan is the offshore, specifically beyond the 12 nautical mile Territorial Sea limit. The planning area extends seaward from the Territorial Sea limit to the outer limit of Canadian jurisdiction as defined by national and international law (i.e., the juridical Continental Shelf).

Why focus on the offshore?

The offshore was chosen as the initial focus for the Plan for several reasons, including the desire to capture the area surrounding the Gully Marine Protected Area, which lies about 200 kilometres offshore, and the need to address increasing levels of multiple human use on the shelf and along the shelf break. Recognizing that the management needs and approaches for the offshore differ in many ways from the inshore context – especially in terms of jurisdictions, use patterns, ecosystem characteristics and communities of interest – it was decided to first develop an offshore planning process. However, the longer term commitment to build complementary integrated management initiatives for coastal and inshore areas remains.

MARINE ENVIRONMENT

The Eastern Scotian Shelf ecosystem is characterized by a diversity of marine life, communities and habitats. Large shallow banks are found in the outer part of the shelf, with basins and smaller banks in the middle and inner shelf. The planning area also includes portions of the continental rise and slope, which is indented by several submarine canyons.

The Gully

The Gully – the largest marine canyon in eastern North America – is located virtually in the centre of the Eastern Scotian Shelf region. This important ecosystem contains a rich diversity of marine habitats and species, including deep-sea corals and the endangered Scotian Shelf population of northern bottlenose whales. The Gully became Atlantic Canada's first Marine Protected Area (MPA) under the *Oceans Act* in 2004.

The mean surface circulation on the eastern shelf is dominated by the Nova Scotia Current, a southwestward flowing current largely originating in the Gulf of St. Lawrence. Waters of the slope are highly influenced by the cool, relatively fresh Labrador Current, which flows southwestward along the edge of the shelf, and the warmer, saltier Gulf Stream which flows northeastward.

Waters from the Gulf Stream and Labrador Current mix over the continental slope. On the shelf itself, there are smaller scale surface circulation patterns, with anticyclonic circulation tending to occur over the banks and cyclonic circulation around the basins. The northeastern region of the shelf is the southernmost limit of winter sea ice in the Atlantic Ocean.

Sable Island: an ecological and cultural icon

Sable Island is a sand bar, about 42 kilometres long and 1.5 kilometres wide, centrally located within the Eastern Scotian Shelf planning area. With a surface area of 3400 hectares, this unique island is made up of beaches, sand dunes, fields of grass and freshwater ponds. The island is also home to wild horses, seals and sea birds. Although conditions are not as harsh as one might expect, it can be very windy and the island experiences a lot of fog.

Employees of the Sable Island Station live and work on the island year round, primarily to collect weather data and conduct atmospheric research. Many others are curious about the island and other researchers often visit and work on the island.

A number of components of the Eastern Scotian Shelf ecosystem have changed as a consequence of human actions and environmental variability. The change has been rapid (over 30 years) and large in magnitude. Important changes in water temperature, primary and secondary production, and species patterns have been observed.

From a species perspective, some groups are proliferating, such as pelagic fishes and some benthic invertebrate species, while others are not rebuilding as quickly as expected, most notably groundfish. Physical habitat changes have also occurred due to human use and species abundance and range shifts.

Eastern Scotian Shelf ecosystem overview and assessment

A significant amount of scientific research and assessment work has been undertaken by DFO in support ot the Eastern Scotian Shelf integrated management process. For example, in 2002, DFO released *The Scotian Shelf: An Ecological Overview for Ocean Planning*. This comprehensive document describes the ecosystem and its many components. The 2003 DFO ecosystem status report, *State of the Eastern Scotian Shelf Ecosystem*, identifies a number of trends and changing environmental conditions in the region. It notes that many features of the Eastern Scotian Shelf ecosystem have changed dramatically during the past thirty years. More recently, DFO released a technical report, *Implications of Ecosystem Dynamics for the Integrated Management of the Eastern Scotian Shelf*. This document provides an important description of the dynamics between the marine environment, including physical habitat, species and trophic interactions, and human activities and impacts. Building on the 2003 ecosystem status report, it notes a number of important trends and changes in the ecosystem, as illustrated by the following examples:

- The Eastern Scotian Shelf cooled from the mid 1980s to the early 1990s. This cold period is associated with increased abundance of cold-water fish (capelin, turbot) and invertebrates (snow crab, shrimp).
- Decadal trends in phytoplankton indicate that blooms start earlier now then they used to and the spring blooms are now more intense and last longer.
- Major structural changes have occurred in the fish community: groundfish have declined while small pelagic species and commercially exploited invertebrate species have increased. In addition to the overall reduction of biomass of demersal fish, the overall size structure and condition of the demersal fish communities has declined.
- Reductions in average body size of groundfish have occurred and there are currently very few large fish – a situation likely to have never been witnessed in the past.
- The abundance of grey seals has increased rapidly during the past four decades.

Notwithstanding the substantial knowledge base that exists for the Eastern Scotian Shelf, these reports demonstrate the complexities involved with ecosystem-based management and the continued need for scientific research and improved understanding.

A number of conservation and ecosystem-based management issues occur on the Eastern Scotian Shelf. These can stem from living and non-living resource extraction, marine and land-based pollution and contaminants, and human-generated acoustic levels and disturbances. Other equally important issues include ecosystem alteration and degradation, protecting endangered, rare and unique species and their habitats, conserving areas of natural biological diversity, high productivity and critical/essential habitat, and

avoiding the fragmentation of habitat or interruption of movement/migration routes. The introduction and spread of invasive species and environmental changes related to climate change are also important considerations.

HUMAN USE

Multiple ocean use involving a variety of human activities occurs both on a year-round and seasonal basis. These ocean uses are currently addressed through a complex range of sector-based management, regulatory and planning processes. Key ocean uses include:

- commercial, Aboriginal and recreational fisheries
- petroleum exploration, development, production and delivery (including pipelines and power cables)
- marine transportation and commerce
- government marine operations (such as Coast Guard and Maritime Forces)
- submarine telecommunication cables
- marine conservation
- aquaculture (currently limited to inshore areas)
- marine and coastal tourism
- scientific research and monitoring
- technology development
- marine recreation

Some portions of the planning area experience relatively high or intensive levels of use, such as regularly fished areas, hydrocarbon production areas, and high vessel traffic areas. The outer shelf and shelf break, for example, has been subject to an increasing intensity of multiple use, including oil and gas development and a variety of fisheries. Other areas remain little to moderately used. In fact, the planning area is characterized overall by relatively low-to-moderate levels and concentrations of multiple use. Current and anticipated expansion, however, of existing uses (e.g., deep water fisheries) coupled with the potential for new ocean uses, such as offshore minerals development or wind power generation, underscores the growing requirement for effective multiple use management practices.

There are also areas of importance and significance to specific user or interest groups. This importance may be derived from traditional use, or from the specific resource, ecological or cultural characteristics of an area or feature. The value placed on access to such areas must be considered when planning for and managing multiple use.

FUTURE OF THE PLANNING AREA

The current focus of the Plan on the offshore components of the Eastern Scotian Shelf needs to be considered in a broader regional context for ocean and coastal management. From the outset, there has been debate as to whether the boundaries of the planning area are the right ones to use. A number of people and organizations have recommended that the Plan be expanded to include coastal areas, as well as the western portions of the Scotian Shelf or potentially even the Gulf of Maine. On the eastern margin, there have been suggestions that the planning area boundary be harmonized with the 2002 administrative line between the Canada-Nova Scotia and Canada-Newfoundland and Labrador Offshore Petroleum Boards.

The majority of those involved in the ESSIM planning process have recommended that the Plan be completed initially for the Eastern Scotian Shelf, with an incremental approach toward a broader regional planning area in the future. All future changes to the planning area will need to be discussed and agreed through the collaborative planning structures in place for the Plan.

Notwithstanding the possibility of a future change in the western boundary of the planning area, DFO continues to advocate for coordinated planning in the Gulf of Maine and the Scotian Shelf. They have much in common – especially in the offshore – and there is no obvious dividing line between them. Many of the same stakeholders are active throughout the Gulf of Maine and the Scotian Shelf and many of the same management issues arise in both areas. It is important to recognize that integrated ocean management in the Gulf of Maine will occur through cooperation with the United States and various transboundary management mechanisms in place for that area.

Ultimately, a coordinated region-wide approach will avoid duplication of effort across initiatives. It will also move toward the longer term objective of applying integrated management in all waters.

With respect to the relationship between the eastern boundary of the planning area and the administrative line between the Canada-Nova Scotia and Canada-Newfoundland and Labrador Offshore Petroleum Boards, the Plan respects all jurisdictions and management responsibilities under the Accord Acts and promotes continued regional collaboration through existing coordination mechanisms.

In addition to the suggestion of a larger regional planning area for the offshore, there have been regular calls for the inclusion of the coastal zone in the planning process. This is based on the many human and ecological interconnections between the inshore and offshore. Developing integrated management plans for coastal areas presents a number of distinct challenges. In particular, federal, provincial and municipal government jurisdictions overlap more heavily in the inshore, requiring careful intergovernmental cooperation. Provincial and municipal governments, coastal communities and Aboriginal groups have a key role to play and may take the lead in developing integrated coastal management plans in some areas.

Land-based activities and impacts also become more significant in the coastal zone, and interactions with terrestrial ecosystems must be carefully considered. Moreover, management issues and communities of interest are often more localized in the inshore, requiring planning processes that operate at smaller scales. Given the many distinct characteristics of coastal areas, simply extending offshore integrated management plans and processes into inshore areas is unlikely to be successful. The Plan recognizes that a broader range of stakeholders needs to be engaged when dealing with coastal areas.

There continues to be a significant need for integrated coastal management in Atlantic Canada. It is important that federal, provincial and municipal governments, coastal communities, Aboriginal rights holders, industry sectors and other stakeholders work together to develop complementary management plans and processes for coastal and inshore areas. These plans will be linked to those for the offshore and will contribute to similar overall objectives, while focusing on local conditions, communities, issues and priorities.

In some areas, coastal management initiatives are already underway in the region. An excellent and longstanding example of coastal management is the Atlantic Coastal Action Program (ACAP) supported by Environment Canada. The Bras d'Or Lakes is another area where communities and Aboriginal groups, with support from all levels of government, are developing an integrated coastal management plan. This effort, known as the Bras d'Or Lake Collaborative Environmental Planning Initiative, is an important example of integrated management for the region.

COLLABORATIVE PLANNING MODEL

The ESSIM Initiative employs a multi-stakeholder, collaborative planning approach, meaning the work of developing and implementing the Plan is done by all sectors and stakeholders. The underlying premise is that a plan developed through collaboration will be broadly accepted and used by all.

This section describes the collaborative planning model designed to support the integrated management process. The collaborative planning model is not intended to supersede or interfere with the ability of federal and provincial departments and agencies to carry out their legislative mandates. They retain their authority, but work with other stakeholders to develop and pursue shared goals and objectives through the integrated management process. If policy or regulatory adjustments are needed to achieve these goals and objectives, authority for making such adjustments rests with the responsible department or agency.

Operating principles for collaborative planning

The collaborative planning model is founded upon the following operating principles:

- ***Jurisdiction:*** Management authorities and jurisdiction of government departments and agencies is acknowledged and affirmed.
- ***Inclusion:*** All stakeholders are included.
- ***Consensus:*** Decisions and recommendations are made by consensus and the process includes mechanisms for dispute resolution.
- ***Accountability:*** Accountability is expected of and demonstrated by all parties.
- ***Evolution:*** The process is designed to permit and support evolution and will be monitored and evaluated to support shared learning and adaptation.
- ***Networking:*** The process will continue to work through a network of stakeholders.
- ***Transparency:*** Decisions and recommendations are made openly, with information and results shared with all stakeholders.
- ***Efficiency:*** Issues are addressed in a timely manner.
- ***Knowledge-based:*** Decisions and recommendations are based on best available information.

The collaborative planning model has the following components:

- The ESSIM Forum
- The Stakeholder Advisory Council
- The Government Sector Structure (Regional Committee on Ocean Management and Federal-Provincial ESSIM Working Group)
- The ESSIM Planning Office (DFO)

ESSIM FORUM

Purpose: The ESSIM Forum provides an inclusive assembly for all stakeholders to participate in the collaborative planning process. It serves as a network for multi-stakeholder communications, information sharing and input to the ESSIM Initiative.

Membership: The ESSIM Forum is open to all stakeholders and interested individuals. Sectoral participation includes government, coastal communities, Aboriginal groups, fisheries, oil and gas, marine conservation, telecommunications, shipping and academia.

Leadership: The ESSIM Forum does not have a formal leadership structure, such as a chair or co-chairs. Leadership is provided jointly by the Stakeholder Advisory Council and the government sector structure, with coordination and support from the ESSIM Planning Office.

Meetings: Regular (i.e., biennial) meetings are held to review and discuss progress and to provide input and guidance for planning. Community or sector workshops may also be held for information sharing, topical discussion and feedback, as required. Ongoing communication with ESSIM Forum participants is provided through regular e-newsletters, web-based information and online discussions.

Decisions: The ESSIM Forum is not a decision-making body.

Functions and Responsibilities:

- Develop broad vision, goals and strategic direction for the ESSIM Initiative.
- Function as an inclusive, multi-stakeholder forum for information exchange and dialogue.
- Review and provide feedback on planning documents and materials, including action plans and performance evaluations.
- Provide ideas, opinions and advice on a range of topics of importance for the Plan.

STAKEHOLDER ADVISORY COUNCIL

Purpose: The Stakeholder Advisory Council (SAC) shares the responsibility for leadership and guidance in meeting the vision for the ESSIM Initiative. The SAC operates on a consensus basis for the stewardship of the Plan and undertakes monitoring and evaluation functions for plan implementation. The SAC works in partnership with the ESSIM Planning Office by providing input into content of the Plan and ongoing feedback as the Plan evolves. The SAC also works collaboratively with the various stakeholder groups and the intergovernmental Regional Committee on Ocean Management.

Membership: The SAC is broadly representative of ocean sectors, communities of interest and stakeholders. The membership is balanced by sector as well as other criteria, such as group size, capacity, commitment and history. Members represent or are representative of sectors or the public. The optimum group size is 30 (± 2), and various methods, such as coalitions and selective or rotational participation, will be used to keep the group at a manageable level. Members may be appointed for two-year and three-year staggered terms to ensure continuity.

ESSIM Stakeholder Advisory Council: current membership breakdown

Government of Canada	4 members	Conservation Groups	3 members
Government of Nova Scotia	3 members	Community Groups	2 members
Government of Newfoundland & Labrador	1 member	Academic & Private Sector Research	2 members
Offshore Petroleum Board	1 member	Transportation	1 member
Municipal Government	2 members	Telecommunications	1 member
Aboriginal Peoples	2 members	Tourism	1 member
Fisheries	5 members	Citizens at Large (proposed, optional)	1-2 members
Oil and Gas	2 members		

Total: 32 members

The number of representatives for each sector has been developed with primary consideration given to the relative size of the sector, its complexity and economic, social, environmental and legislative links to the planning area. Nomination of citizens at large may be done by the ESSIM Planning Office in consultation with the sectors and interests.

Leadership: Co-chairs are provided by a senior DFO representative and by a representative from the SAC membership. Co-chairs may rotate on an annual basis. Co-chairs should have the ability to be neutral when dealing with issues among multiple sectors or parties, have the confidence and respect of the members, and be able to resolve conflict and move a diverse group toward consensus. Co-chairs may need additional representation at the table for their respective organizations.

Meetings: The SAC meets quarterly at a minimum. As necessary, task groups may meet more frequently.

Decisions: Decisions regarding the Plan and planning process are made by consensus. Consensus means unanimous agreement of the members. Interest-based negotiation (i.e., working toward mutual gains) is the preferred format for dialogue.

The SAC has protocols for working through situations in which consensus is difficult to reach, or where conflict needs to be resolved. A facilitator is available to provide support to the SAC. The facilitator is content neutral and assists the group in conducting dialogue and reaching consensus.

Routine administrative decisions are made by consensus or, when time or other factors interfere, by majority vote.

Recognition under the *Oceans Act*

The Stakeholder Advisory Council could be formally designated or recognized as an advisory body pursuant to Section 32 of the *Oceans Act*:

For the purpose of the implementation of integrated management plans, the Minister may…

i) establish advisory or management bodies and appoint or designate, as appropriate, members of those bodies; and
ii) recognize established advisory or management bodies..." (Section 32(c))

The option of formal recognition under the *Oceans Act* may be considered by the Stakeholder Advisory Council as it evolves over time.

Functions and Responsibilities:

- Provide leadership, guidance and stewardship for development and implementation of the Plan.
- Maintain terms of reference, and develop ground rules and protocols to support and guide the work of the group.
- Develop sub-committees or working groups as needed.
- Engage in multi-stakeholder dialogue, conflict resolution and consensus-building.
- Provide input into the planning process and feedback on work done by the ESSIM Planning Office.
- Liaise with parallel sector structures, including the Federal-Provincial ESSIM Working Group, and provide advice to the Regional Committee on Ocean Management, as necessary.
- Carry out ongoing monitoring and evaluation of the Plan and its implementation, as well as collaborate on future revisions as necessary.

GOVERNMENT SECTOR STRUCTURE

The government sector structure consists of the Regional Committee on Ocean Management and Federal-Provincial ESSIM Working Group.

Regional Committee on Ocean Management (RCOM)

Purpose: The Regional Committee on Ocean Management (RCOM) is the senior executive level forum for federal and provincial departments and agencies with ocean-related programs. The RCOM provides coordination at the intergovernmental and interdepartmental levels for:

- Planning, management and regulatory matters related to integrated ocean and coastal management.
- Internal oversight, monitoring and performance assessment of regional integrated management processes.
- Formal and executive level government involvement in the development and implementation of plans for regional integrated management processes.
- Regional implementation of national ocean policies and programs.

The RCOM is a body of decision makers, each with mandated decision-making powers at the zonal and regional level. The RCOM provides advice and recommendations to mandated decision-making processes to be implemented via the relevant government departments, agencies and boards.

The geographic focus for the RCOM is Nova Scotia, New Brunswick and Prince Edward Island.

Membership: The membership is comprised of senior federal (Regional Director-General) and provincial (Deputy-Minister) representatives of government departments and agencies.

Leadership: The RCOM is co-chaired by the Regional Director-General, DFO Maritimes Region or Gulf Region, and a Deputy-Minister of the Province of Nova Scotia, New Brunswick or Prince Edward Island, on a rotational basis.

Meetings: The RCOM meets on a semi-annual basis, or as necessary.

Decisions: The RCOM makes decisions by consensus. Recommendations are non-binding on departments, agencies and boards.

Functions and Responsibilities:

- Represent the federal and provincial governments at the executive level in regional integrated ocean and coastal management processes.
- Provide direction to operational level government committees for integrated ocean and coastal management processes throughout the region (e.g., the Federal-Provincial ESSIM Working Group).
- Serve in an advisory capacity to the federal and provincial Ministerial level through existing government line mechanisms.
- Strive to reach consensus while representing departmental/organizational mandates and considering the range of opinion.
- Review and comment on integrated ocean and coastal management plans, policy papers, and initiatives.

- Provide coordination and harmonization of regulatory approaches, policies and programs across government with respect to regional integrated management processes.
- Monitor and review planning, policy coordination and program implementation across government.
- Support and oversee information sharing among departments and agencies to support initiatives led by one or more departments and agencies represented on the RCOM.

Federal-Provincial ESSIM Working Group

Purpose: The Federal-Provincial ESSIM Working Group is an intergovernmental forum that focuses on policy, management, operations and regulatory coordination for the ESSIM Initiative. The Working Group builds government support and cohesion for integrated ocean management and provides an opportunity for information sharing and discussion of issues. It carries out work in support of RCOM and as directed by RCOM.

Membership: Representatives of over 20 ocean-related federal and provincial departments, agencies and boards that have some regulatory responsibility and policy or program interest in the planning area.

Leadership: The Working Group is chaired by the Regional Manager, Oceans and Coastal Management Division (OCMD), DFO Maritimes Region.

Meetings: The Working Group meets approximately four to five times per year, or more frequently as necessary.

Decisions: The Working Group makes decisions by consensus. Decisions are advisory in nature and non-binding on departments, agencies or boards.

Functions and Responsibilities:

- Provide ongoing support and advice to the senior level RCOM in carrying out its functions and responsibilities.
- Coordinate governmental and departmental input to integrated ocean management processes.
- Provide guidance on the identification, definition and prioritization of ocean management issues and requirements.
- Support the development and implementation of the Plan, including the monitoring and evaluation of management strategies and actions.

THE ESSIM PLANNING OFFICE

Purpose: The ESSIM Planning Office in cooperation with the Stakeholder Advisory Council and the government sector structure provides shared leadership and coordination for development and implementation of the Plan.

Membership: The ESSIM Planning Office is housed within the Oceans and Coastal Management Division (OCMD) of DFO Maritimes Region. It is possible that the core resources provided by DFO could be augmented by resources from other government departments, and eventually by non-governmental groups (e.g., staff secondments and internships).

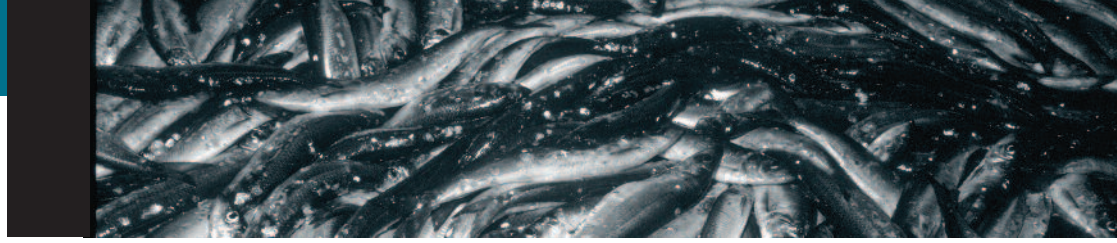
Leadership: The ESSIM Planning Office has regional and national line reporting relationships within DFO.

Meetings: The ESSIM Planning Office leads and facilitates the organization of meetings for the Stakeholder Advisory Council, the government sector structure and the broader ESSIM Forum.

Decisions: The Planning Office has decision-making authority consistent with its line reporting relationships within DFO. The Planning Office may also participate in decision making within other components of the collaborative planning model according to applicable processes (e.g., consensus-based).

Functions and Responsibilities:

- Provide expertise in development and implementation of the Plan.
- Support the collaborative planning model, including coordination functions for the ESSIM Forum, the Stakeholder Advisory Council and the government sector structure.
- Ensure that all sectors and stakeholders have input into discussions at the appropriate level, and that a range of engagement mechanisms is available to those who are unable to participate in group processes.
- Liaise with other regional, national and international integrated management processes.



OBJECTIVES-BASED MANAGEMENT FRAMEWORK

This Plan applies an objectives-based approach to integrated ocean management. The objectives-based approach is essentially an outcomes oriented system that promotes management and use of marine areas and resources in a manner that addresses the multiple needs and expectations of society, without jeopardizing the options for future generations to benefit from the full range of goods and services provided by the ocean. It is a system that requires objectives, not only to address the need for functional, healthy ecosystems, but also to address the issues surrounding governance and human use of the ocean.

The objectives-based management framework consists of a hierarchy of objectives, associated management strategies and actions, and a reporting system. It is a road map or guide to how and what needs to be done to reach our goals.

GOALS AND OBJECTIVES

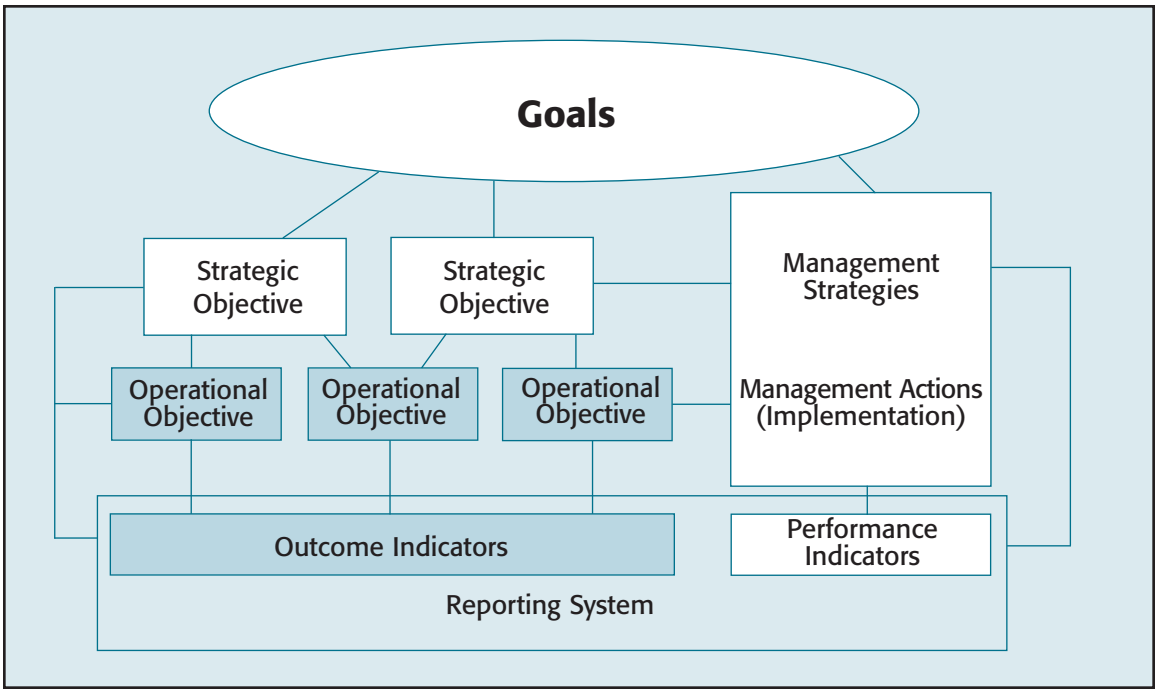
The approach is organized around a hierarchy of goals, elements, strategic-level objectives and operational objectives.

Goals are high-level statements of the desired outcome that we hope to achieve. Goals provide the umbrella for development of all other objectives and outline the principles upon which subsequent objectives are based.

Elements are recognized components or attributes for which objectives need to be developed in order to achieve the desired goals.

Strategic-level objectives are objectives that are developed for each element under the broader collaborative governance and integrated management, sustainable human use and healthy ecosystem goals. These objectives express an outcome of what we want to achieve for each element and the general management direction necessary to achieve the outcome.

Operational objectives are more specific objectives that support the achievement of strategic-level objectives. These objectives may be developed through sector management processes and are used to guide the development of management strategies and actions to meet higher level goals and objectives.



MANAGEMENT STRATEGIES AND ACTIONS

As illustrated in the diagram above, a hierarchy of management strategies and actions are aligned with the objectives. The Plan identifies specific management strategies for each strategic-level objective.

Management strategies are the methods by which the Plan will pursue the strategic-level objectives. Due to the integrated nature of the planning process, management strategies are not linked to only one objective, but may meet the requirements of more than one objective.

Management actions are undertaken to contribute to the implementation of the management strategies. Management actions are typically linked to a timeframe within which they should be implemented.

REPORTING ON OUTCOMES AND MANAGEMENT PERFORMANCE

The reporting system for the objectives-based management framework provides a method to evaluate implementation of management strategies and actions against the objectives. The reporting system is based on two main types of indicators: outcome indicators and management performance indicators.

Outcome indicators provide a measure of progress against the management objectives by reporting on the level of improvement in the planning area over time. These indicators may not cover all aspects of each objective, but should provide a good indication of the direction in which the system is moving.

Management performance indicators provide a measure of implementation of the management strategies and actions identified for the Plan. They provide an assessment of the degree to which management actions have been carried out within a given time limit.

Development of the goals and objectives: a brief history

The development of the goals and the objectives for ESSIM Initiative began as two separate processes to establish ecosystem and human use objectives, respectively.

Ecosystem objectives

In 2001, DFO held a National Workshop on Objectives and Indicators for Ecosystem-based Management (frequently referred to as the Dunsmuir Workshop) to discuss a national framework for ecosystem objectives. The resulting national DFO framework contains two overarching conceptual objectives for ecosystem-based management:

- the sustainability of human usage of environmental resources
- the conservation of species and habitats, including those other ecosystem components that may not be utilized by humans

The second of these objectives (i.e., the conservation objective) was further sub-divided into three more specific objectives, best summarized as maintaining biodiversity, productivity and habitat.

Core elements that needed to be addressed to achieve the conceptual objective were identified. In the case of biodiversity, this included communities, species and populations; in the case of productivity, the elements were identified as primary productivity, trophic structure and population generation time; and in the case of habitat, the elements were listed as critical landscapes/bottomscapes, water column properties, water/sediment quality and biota quality.

Following the national workshop, the ESSIM Planning Office used the high-level objectives as a basis for developing more specific objectives for the Eastern Scotian Shelf. A multi-stakeholder working group was established to prepare a regional list of ecosystem elements and objectives. These were further refined by DFO's ESSIM Science Working Group. The objectives contained in the Plan are based on this regional developmental work and are consistent with the overall national ecosystem-based framework. However, the Plan will need to adapt as more work and development of ecosystem objectives continues to occur.

Human use objectives

No national-level guidance for addressing human use objectives (i.e., social, cultural, economic and governance aspects) existed, so the ESSIM Planning Office used another multi-stakeholder working group to develop an initial set of human use elements and objectives. This group used a series of working sessions, a focus workshop, and a review of comparable marine management processes around the world in support of the development process.

The work done by the multi-stakeholder groups identified above has formed the basis for the current set of goals and objectives in the Plan. The Stakeholder Advisory Council has subsequently focused on the integration of the two separate sets of objectives and has been instrumental in the continued refinement of this important part of the Plan.

The main purpose for establishing indicators is to measure, monitor and report on progress toward meeting the goals and objectives. Indicators have numerous uses and potential for improving management. They include the ability to monitor and assess conditions and trends, forecast changes and trends (such as providing early warning information), as well as helping to evaluate the effectiveness of management strategies, actions and implementation.

The selection of relevant and practical (i.e., measurable) indicators is one of the most important components of the objectives-based management approach. The appropriate interpretation and use of indicators is important to their success. For example, indicators used in isolation may present a different picture than when they are used in conjunction with other indicators. The initial objectives-based management framework will therefore focus on a limited set of relatively simple indicators, with the inclusion of additional and more complex indicators as the process develops over time. The broader performance evaluation and reporting approach for the Plan is described later in this document.

GOALS AND OBJECTIVES

Marine systems are complex and dynamic. With our current understanding of the Scotian Shelf and its dynamics, it is acknowledged that there are certain limits and challenges to what can be achieved through this Plan. Similarly, it is recognized that the Plan can only have a certain amount of influence over various economic, social and governance factors, many of which are external to the planning process itself.

The goals, objectives and strategies for the Plan have been developed to express what we are striving to achieve through integrated and ecosystem-based ocean management over the long term. As our knowledge of the system improves, and as circumstances (e.g., ecosystem and human) change, the objectives will evolve to accommodate and address these changes.

Each of the three major goals of the Plan is presented as an outcome statement, with accompanying descriptive statements to clarify the intent of the goal. The goal of *collaborative governance and integrated management* is essentially the overarching goal for the Plan as it focuses on the creation of an enabling environment for achieving the goals of *sustainable human use* and *healthy ecosystems*.

COLLABORATIVE GOVERNANCE AND INTEGRATED MANAGEMENT

- Effective governance structures and processes.
- Capacity among stakeholders.
- Knowledge to support integrated management.

SUSTAINABLE HUMAN USE

- Ecologically sustainable use of ocean space and resources.
- Sustainable communities and economic well-being.

HEALTHY ECOSYSTEMS

- Resilient and productive ecosystems, with diverse habitats, communities, species and populations.
- Strong marine environmental quality supports ecosystem functioning.

Objectives and strategies have been developed for each of the goals and are presented in the tables found in this section. Within the tables, the objectives are organized around a set of core elements to describe more specifically what we want to achieve. Although these are presented in discrete cells within the tables, it is recognized that all elements and objectives are interconnected. The objectives should not be considered in isolation of one another, as it is the entire suite of objectives that will collectively support the achievement of the desired goals.

Strategies have been developed to illustrate how we intend to achieve each objective. Once again, it is recognized that some strategies may influence the outcome of more than the single objective to which they have been linked. The strategies are presented at a relatively high level, providing the basic course of action that is required if the objectives are to be met. More detail on the intent behind these management strategies is provided later in the Plan. Specific actions, time frames and resource requirements will be identified through the action planning process. In accordance with the guiding principle of adaptive management, strategies may be revised or added as implementation proceeds.

COLLABORATIVE GOVERNANCE AND INTEGRATED MANAGEMENT

As previously stated, collaborative governance and integrated management serves as the overarching goal of the Plan as it addresses the enabling mechanisms required to achieve the integration of the remaining goals of sustainable human use and healthy ecosystems. This goal is broken down into the two core elements of integrated management and information and knowledge (see Table 1).

Integrated management

The overall intent of the integrated management element is to provide a more inclusive, collaborative and horizontal approach to the management of our ocean uses and resources. Effective structures and processes must be established to bring together ocean users, regulators and decision makers from multiple sectors to address and collaborate on ocean management issues. All stakeholders must have adequate capacity and opportunity to fully participate in the process.

In addition to the establishment of collaborative structures and processes, appropriate legislation, policies, plans and programs must be in place to support integrated management. This involves ensuring that all relevant legal obligations and commitments are fulfilled, including Canada's international agreements.

The effectiveness and success of integrated management is ultimately dependent on ocean user and regulator compliance and accountability with these plans and measures. Ocean users and regulators must also act as stewards of the ocean and ensure that they implement best practices when conducting their activities. Of particular importance is the development of processes for avoiding and resolving conflict among various ocean users and interests.

Information and knowledge

The objectives under the information and knowledge element are focused on the requirements for strong research and knowledge building to support management decisions. Effective mechanisms for information sharing, communication and awareness raising among and within stakeholders and decision makers are essential components of this element. Timely processes for monitoring and reporting on performance and progress against objectives are also crucial to the effectiveness of the Plan.

TABLE 1: COLLABORATIVE GOVERNANCE AND INTEGRATED MANAGEMENT

ELEMENT	OBJECTIVE (WHAT)	STRATEGY (HOW)
Integrated Management	Collaborative structures and processes with adequate capacity, accessible to community members are established.	• Implement ESSIM collaborative planning model. • Identify and support existing multi-sectoral and inter-governmental coordinating mechanisms and establish new mechanisms where needed. • Facilitate stakeholder involvement and capacity.
	Appropriate legislation, policies, plans and programs are in place.	• Assess effectiveness and efficiency of current legislation, policies, plans and programs. • Develop mechanisms for evaluating proposed legislation, policies, plans and programs. • Initiate policies, plans and programs and identify the need for new legislation as required. • Assess international obligations and commitments and ensure that they are fulfilled. • Incorporate integrated management objectives into sector management plans. • Clarify jurisdictional relationships and fulfill constitutional obligations. • Ensure adequate resources are in place.
	Legal obligations and commitments are fulfilled.	
	Ocean users and regulators are compliant and accountable.	• Develop and implement frameworks for compliance promotion. • Develop and implement frameworks for accountability. • Develop and implement frameworks for performance monitoring, reporting and assessment.
	Ocean stewardship and best practices are implemented.	• Review existing guidelines and best practices and improve/adapt as necessary. • Develop new guidelines and best practices as necessary. • Support stewardship through education, training and awareness programs.
	Multi-sectoral resource use conflict is reduced.	• Understand existing use patterns and interactions. • Identify and characterize spatial and/or temporal conflicts. • Develop procedures and tools for addressing conflicts.

Information and Knowledge	Natural and social science research is responsive to knowledge needs.	• Initiate research program for integrated management.
		  • Establish research structures and partnerships.
		  • Identify research priorities and needs.
		• Promote core government and non-government capacity for supporting research.
		• Ensure science is evaluated through objective peer and stakeholder review processes.
		• Facilitate timely delivery of scientific advice for management.
		• Promote the use of and access to traditional knowledge, including Aboriginal/indigenous knowledge.

	Information management and communication are effective.	• Identify information needs. • Develop mechanisms for information management, sharing, and feedback. • Facilitate the use of science and social science research. • Improve ocean awareness through education and communication. • Promote awareness of the ESSIM Initiative and ensure the information about the Initiative is accessible to the public. • Promote the use of and access to traditional knowledge, including Aboriginal/indigenous knowledge.
	Monitoring and reporting are effective and timely.	• Identify monitoring needs. • Evaluate usefulness of monitoring and reporting programs and review management as necessary.

SUSTAINABLE HUMAN USE

The overall intent of the sustainable human use goal is to ensure that current and future generations continue to receive benefits from and have access to the ocean and its resources. The two interconnected elements for this goal are social and cultural well-being and economic well-being (see Table 2).

Social and cultural well-being

The main focus of the social and cultural well-being element is on sustainable communities and healthy human relationships with the ocean. The objectives under this element emphasize the need for equitable opportunities and access for coastal communities to sustainable livelihoods from the ocean.

Coastal communities may be defined in several ways, including geographic, fishing or Aboriginal communities, or broader communities of interest and common concern. A sustainable community is considered to be one that takes a long-term perspective to safeguard the interests of future generations so that social, cultural, economic and environmental assets create positive outcomes for its members.

The objective covering sustainable human relationships with the ocean shows an explicit recognition that benefits, wealth and values associated with the ocean are not exclusively monetary. They can also be intrinsic in nature and include the natural assets of the marine environment and our traditional and cultural relationships and connections with the sea.

This element also recognizes that sustainable human use is dependent on a safe, healthy and secure ocean area for people who derive their living from the sea, reap its recreational benefits or consume products of the sea.

Economic well-being

The economic well-being element addresses the economic benefits that are associated with and derived from ocean resources, including renewable and non-renewable resources found in the ocean, on the surface of the ocean, or on or below the ocean floor (e.g., fish, oil and gas). This element also includes the benefits provided by ocean infrastructure (e.g., submarine cables) and other ocean-related activities (e.g., cruise ships and commercial shipping).

The objectives presented under this element stress the fundamental requirement for sustainability in the use of marine resources and areas. In doing so, the objectives also acknowledge that wealth generation from existing sustainable ocean uses must be supported, while new sustainable opportunities are fostered.

Defining natural capital

Natural capital refers to natural resources, such as water and oil, the land which provides space on which to live and work, and the ecosystems that maintain clean water, air and a stable climate. .... Natural capital is essential to sustaining all forms of life including human life.

The *Oceans Act* states, "Canada recognizes that the oceans and their resources offer significant opportunities for economic diversification and generation of wealth for the benefit of all Canadians, and in particular

for coastal communities." The element for economic well-being supports that direction. This includes strengthening long term productivity and competitiveness, creating new employment opportunities while supporting traditional livelihoods, seeking innovation through research, and sustaining natural capital.

TABLE 2: SUSTAINABLE HUMAN USE

ELEMENT	OBJECTIVE (WHAT)	STRATEGY (HOW)
Social and Cultural Well-being	Communities are sustainable.	• Identify and characterize communities. • Identify community assets related to the ESSIM Initiative. • Promote and maintain access to sustainable livelihoods from ocean-related activities. • Enhance ocean-related education, training and awareness. • Support ocean-related services and infrastructure. • Improve government capacity (including fiscal) to implement social programs. • Involve Aboriginal peoples in planning and development decisions.
	Sustainable ocean/community relationships are promoted and facilitated.	• Recognize and celebrate coastal communities and their connection to the ocean. • Recognize the social and cultural importance of traditional livelihoods. • Recognize and preserve the social and cultural importance of heritage sites (e.g., archaeological sites). • Promote social impact assessment to inform decision-making. • Recognize and affirm intrinsic values that link people, communities, and the environment. • Ensure community inclusion in ocean planning and decision-making.
	Ocean area is safe, healthy and secure.	• Assess current status and risks and develop plans to address them. • Support ocean-related services, training and infrastructure for health, safety and security. • Monitor and manage chemical or biological contamination that could affect humans. • Maintain and enhance on integrated surveillance, monitoring and response system.
Economic Well-being	Wealth is generated sustainably from renewable ocean resources.	• Assess current and potential wealth generating activities and opportunities. • Identify, assess and link to existing policies, plans and initiatives for sustainable wealth generation/economic development. • Support existing activities and opportunities, and future economic diversification and employment. • Support a positive investment environment for ocean-related activities. • Assess constraints and enabling factors for investment (e.g., regulatory environment) and identify changes required. • Identify and implement measures to improve retention of wealth and benefits within coastal and Aboriginal communities in Nova Scotia and Canada. • Support initiatives to maintain or improve economic competitiveness for Nova Scotia. • Balance industrial capacity with resource sustainability. • Support the conservation of natural capital by recognizing, linking to and working with related ecosystem objectives and strategies. • Recognize, link to and work with key related social and cultural well-being objectives and strategies (e.g., traditional livelihoods). • Support innovation and research that may contribute to economic well-being.
	Wealth is generated sustainably from non-renewable ocean resources.	
	Wealth is generated sustainably from ocean infrastructure.	
	Wealth is generated sustainably from ocean-related activities.	

HEALTHY ECOSYSTEMS

The overall intent of the goal for healthy ecosystems is to ensure that the structure, function and environmental quality of the marine ecosystems associated with the Scotian Shelf are not compromised by our management and use. This goal is organized in the three interconnected themes of (a) biodiversity, (b) productivity and (c) marine environmental quality, each containing a set of more specific elements and supporting objectives (see Table 3).

Although these themes are useful for organizing objectives and strategies, it is recognized that ecosystems are complex and dynamic and that all of the elements and objectives are interconnected. The Plan explicitly acknowledges that the overall goal of healthy ecosystems can only be achieved through the integration of all ecosystem objectives, as well as with those for sustainable human use.

Some important terms

The objectives under the goal for healthy ecosystems use several verbs to convey the desired outcomes and directions of change required.

The verb *conserve* is used in the context of sustainable use of a marine resource or area. It is aimed at the avoidance of wasteful or destructive use and seeks to ensure that a resource or area is kept in a safe or sound state. In some cases, protection and/or restoration may be used as a tool to meet conservation requirements.

The verb *reduce* is used when describing potential adverse impacts on components of the ecosystem. It is used in situations where lessening the extent of a given impact would result in a positive outcome for the ecosystem. Although the overall intent is to decrease any potential harmful impacts on the marine system, the Plan acknowledges that negative impacts cannot always be reduced, either due to the influence of interrelated objectives or a lack of understanding of interactions in the marine system. In cases where impacts cannot be reduced to zero, it is necessary to develop and adhere to acceptable or allowable levels. As such, the use of the verb *reduce* is dependent on our knowledge of acceptable levels and the impact of the stressor.

The term *representative*, as used in the objectives for healthy ecosystems, refers to areas, communities, or habitats that are typical of the surrounding ecosystem at a chosen scale. The physical features, oceanographic processes and ecological patterns within a representative area, community, or habitat reflect those of the surrounding ecosystem.

Biodiversity

The biodiversity objectives are aimed at the conservation of ecosystem components to support a diversity of communities, assemblages, species and populations. This means that no community, species or population should be lost as a result of human activities. The specific objectives address the conserva-

tion of benthic, demersal and pelagic communities. They also consider the management of incidental mortality of all species within acceptable levels (see box below), and the protection and recovery of at-risk species, namely those species considered to be extirpated, endangered, threatened or of special concern under the *Species at Risk Act* or identified as such by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). In order to conserve native species diversity, the Plan stresses the prevention of introductions of invasive species and the reduction of their distribution and settlement if introductions have already occurred. The conservation of genetic integrity, which includes genetic fitness and diversity, is also an objective.

Managing incidental mortality of all species

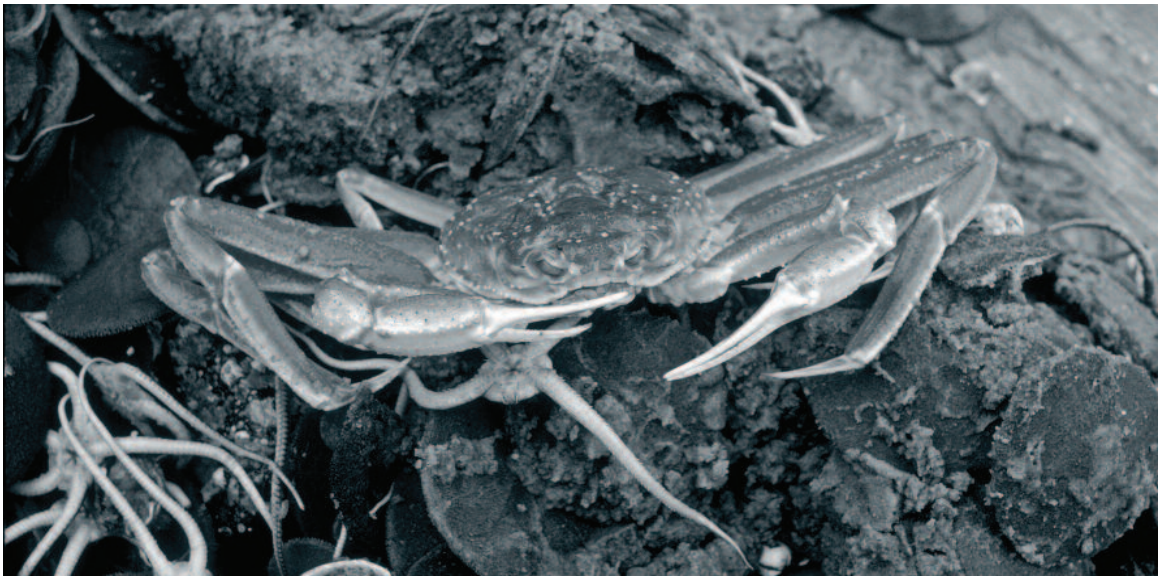
Human activities that occur in the marine environment often result in the unintentional mortality of marine organisms. The intent of the objective for incidental mortality is to manage mortality within acceptable levels. The Plan recognizes that incidental mortality of marine organisms is an unfortunate consequence of human activities and that at times unintentional mortality cannot be reduced if the cost of the reduction outweighs the benefits.

The issue of incidental mortality in commercial fisheries has garnered significant public interest in recent years. The Plan distinguishes between different kinds of incidental mortality or by-catch, and treats them somewhat differently. In some cases, fishers targeting a particular species may also catch, either intentionally or unintentionally, other commercial species for which they have a quota or which they are otherwise permitted to catch and sell. This by-catch of commercial species is accounted for and managed to ensure that the population remains healthy. By-catch of commercial species is, therefore, addressed under the Plan through the population productivity objective and not under the objective for incidental mortality.

On the other hand, the unintentional catch of non-commercial species by fishers is considered under the incidental mortality objective, as is the unintentional mortality of any marine organism by other activities. It is important to monitor the mortality of all species, including non-commercial species, in order to prevent over-exploitation of populations. The primary focus of this objective from a fishing industry perspective is to manage and monitor the incidental mortality of non-commercial species. The fishing industry is currently working on improving the accounting of mortality of non-commercial species and setting reference limits for mortality of these species. Where practical, the fishing industry will try to avoid the capture of such unwanted species.

Productivity

The productivity objectives focus on achieving healthy conditions for the elements of primary and secondary productivity, trophic structure and population productivity. The overall intent is to ensure that human activity does not cause unacceptable alterations to these core drivers for ecosystem functioning.



More specifically, the objectives apply to human activities that may result in excessive or depleted primary production (e.g., due to nutrient loading or depletion, or decreased light), alteration of species to the extent that they no longer retain their natural function in the overall trophic structure (i.e., the multi-species structure and its interactions), or alter any population to the extent that it can no longer continue to grow and reproduce.

It must be acknowledged that it is difficult to express more specific objectives related to primary productivity and trophic structure as natural fluctuations occur and the dynamic nature of the environment makes it difficult to predict human influences. Maintaining healthy biomass and productivity of harvested species, however, has always been a priority for fisheries management and will continue to be pursued in this context. Integrated management will expand on the fisheries management process to consider impacts from other activities.

Marine environmental quality

The marine environmental quality objectives are intended to safeguard the physical, chemical and habitat elements of marine ecosystems. This includes physical and chemical characteristics and conditions of the ocean bottom (e.g., sediments, biogenic structures) and the water column (e.g., currents, temperature). The objectives are aimed at ensuring that the quality of the environment is capable of supporting the growth and health of marine organisms.

In order to achieve the necessary level of environmental quality, harmful inputs to the ecosystem need to be reduced and, in certain cases, eliminated. Recognizing that some inputs and effects are inevitable and that the need to reduce impacts must be considered in relation to other interrelated objectives, the overall desired outcome is for a reduction in harmful inputs and effects.

More specifically, the marine environmental quality objectives address issues such as chemical and physical contamination of sediments and the water column, introduction of waste and debris in the environment, harmful noise levels, atmospheric pollution, and the conservation of habitat integrity.

TABLE 3: HEALTHY ECOSYSTEMS
Biodiversity, Productivity, & Marine Environmental Quality

	ELEMENT	OBJECTIVE (WHAT)	STRATEGY (HOW)
BIODIVERSITY	Communities/ Assemblages	Diversity of benthic, demersal and pelagic community types is conserved.	• Develop an integrated, coordinated conservation framework. • Identify representative, important and sensitive benthic, demersal and pelagic (including seabird) communities/assemblages. • Identify threats and management options for conservation. • Implement management measures based on framework.
	Species/ Populations	Incidental mortality of all species is within acceptable levels.	• Quantify the extent of incidental mortality and understand the impact on species/populations. • Identify acceptable levels of incidental mortality for species/populations. • Monitor the catch of non-commercial species in all fisheries. • Identify mechanisms for managing incidental mortality within acceptable levels. • Assess the risks (social and economic) of implementing management measures to address incidental mortality. • Manage human activities to address incidental mortality where practical.
		At risk species protected and/or recovered.	• Implement recovery strategies, action and management plans under the *Species at Risk Act*. • Ensure that sectoral management plans and ocean activities are consistent with SARA. • Coordinate multi-species recovery planning where appropriate.
		Invasive species introductions are prevented and distribution is reduced.	• Assess sources, vectors, extent and risks of invasive species. • Develop management plans and measures to prevent introductions and limit distribution of invasive species. • Establish a surveillance and monitoring system.
		Genetic integrity (i.e., genetic fitness and diversity) is conserved.	• Improve knowledge of genetic integrity and identify priority species. • Develop and implement management measures to conserve genetic integrity where required.

	ELEMENT	OBJECTIVE (WHAT)	STRATEGY (HOW)
PRODUCTIVITY	Primary and Secondary Productivity	Primary productivity and secondary productivity are healthy.	• Assess and review factors that influence primary and secondary productivity. • Review, evaluate and upgrade monitoring programs. • Develop management measures to address negative factors.
	Trophic Structure	Trophic structure is healthy.	• Increase knowledge of trophic interactions and human influences and define trophic structure objectives. • Recognize the importance of a healthy trophic structure in sector management plans. • Develop management measures where needed for healthy trophic structure.
	Population Productivity	Biomass and productivity of harvested and other species are healthy.	• Define biomass and productivity objectives. • Support and enhance stock assessment practices and explore effort-based management approaches. • Ensure compliance with established measures and limits. • Identify other important species and develop management measures (e.g., keystone species).

TABLE 3: HEALTHY ECOSYSTEMS (cont.)

	ELEMENT	OBJECTIVE (WHAT)	STRATEGY (HOW)
MARINE ENVIRONMENTAL QUALITY	Physical	Physical characteristics of ocean bottom and water column support resident biota.	• Identify and quantify the impacts of physical factors on biota. • Manage human influences to address negative impacts on physical properties.
		Harmful noise levels are reduced to protect resident and migratory species and populations.	• Improve knowledge of sound and its impacts in the marine environment. • Identify mechanisms for reducing sound in the marine environment. • Identify and quantify acceptable noise levels for species/populations. • Develop management measures for ocean activities to meet acceptable levels.
		Wastes and debris are reduced.	• Assess sources and impacts of wastes and debris. • Assess current measures, capabilities and infrastructure. • Develop and implement measures to limit inputs (e.g., awareness programs and compliance promotion). • Eliminate the intentional discarding of garbage at sea.
	Chemical	Chemical characteristics of ocean bottom and water column support resident biota.	• Identify and quantify the impacts of chemical factors on biota. • Manage human influences to address negative impacts on chemical properties (e.g., toxic chemicals).
		Atmospheric pollution from ocean activities is reduced.	• Identify sources and extent of atmospheric pollution from ocean activities. • Develop management measures to meet acceptable levels.
	Habitat	Habitat integrity is conserved.	• Incorporate habitat considerations in the integrated conservation framework (see communities/assemblages). • Identify and conserve rare, important and representative habitats. • Manage human influences to address negative impacts on habitat.

MANAGEMENT STRATEGIES

The Plan sets out a series of management strategies to achieve the objectives identified for healthy ecosystems, sustainable human use, and collaborative governance and integrated management. Each strategy is intended to represent a general course of actions that will be pursued in order to reach one or more objectives.

In the preceding section, the strategies are listed in the tables in relation to the objective or objectives they are intended to achieve. This section provides further detail on the strategies and their intent.

Some objectives will be achieved, at least in part, through the continuation or enhancement of existing programs and initiatives. Where this is the case, some ongoing activities in support of the objectives are described and a brief synopsis of accomplishments to date and further work required is provided. In other cases, entirely new programs and activities will be necessary. In such cases, management options and tools that could be used are outlined.

Implementation of the management strategies will occur through the collective effort of all involved with the Plan. A variety of actors from both within and outside government will play leading roles in implementation of the management strategies.

While government is likely to play a lead role in strategies involving regulatory tools, industry may take the lead in developing best practices and operating procedures. Academic institutions may provide the leadership for research programs, and community or environmental organizations may initiate stewardship projects.

This section does not provide details on the specific actions that will be pursued under each strategy or the organizations that will carry them out. Additional detail on management actions, timelines, indicators and lead organizations will be identified through the action planning process that will be used to implement the Plan.

It is not envisioned that all of the strategies outlined in this section will be fully implemented within the first 5-year phase of the Plan. Many of the objectives and strategies will only be achievable over the long term. Through the action planning process, priority issues will be identified, and management actions will initially focus on those priorities.

COLLABORATIVE GOVERNANCE AND INTEGRATED MANAGEMENT

The following strategies have been identified for the elements and objectives under the goal of collaborative governance and integrated management:

ELEMENT: INTEGRATED MANAGEMENT

Objective: Collaborative structures and processes with adequate capacity and accessible to community members are established

Strategies

- Implement ESSIM collaborative planning model
- Identify and support existing multi-sectoral and intergovernmental coordinating mechanisms and establish new mechanisms where needed
- Facilitate stakeholder involvement and capacity

Overview

The main mechanism used to achieve integrated management and develop and implement the Plan is collaborative governance. In order for collaborative governance to be effective, appropriate structures and processes must be established and all interested parties must have the ability to participate. A collaborative planning model for the ESSIM Initiative has been developed and is being implemented.

Apart from the ESSIM collaborative planning model, there are other multi-sectoral and intergovernmental mechanisms that already exist and operate. These structures will be identified and attempts will be made to develop linkages, where appropriate, to the ESSIM collaborative planning model and its components.

This will be done to avoid duplication of working groups and ensure coordination between initiatives. When issues arise that cannot be addressed by existing structures or processes, it may be necessary to establish new mechanisms.

Participating in a collaborative process, such as the ESSIM Initiative, requires a great deal of time and effort on the part of stakeholders and government officials. Many stakeholders may not have the capacity or time required to participate fully in such an initiative. The ESSIM Planning Office will provide assistance where possible to ensure that all interests have the ability and capacity to participate.

This may include, for example, working with stakeholder groups to help them engage their constituents, mobilizing resources, providing products and tools, or facilitating meetings. Since the resources of the ESSIM Planning Office are finite, it may be necessary in some cases to look to other partners and organizations for support in capacity building.

Objectives: Appropriate legislation, policies, plans and programs are in place; Legal obligations and commitments are fulfilled

Strategies

- Assess effectiveness and efficiency of current legislation, policies, plans and programs
- Develop mechanisms for evaluating proposed legislation, policies, plans and programs
- Initiate policies, plans and programs and identify the need for new legislation as required
- Assess international obligations and commitments and ensure that they are fulfilled
- Incorporate integrated management objectives into sector management plans
- Clarify jurisdictional relationships and fulfill constitutional obligations
- Ensure adequate resources are in place

Overview

Although the Plan is not regulatory in nature, implementation of the management strategies contained in it may require the use of various regulatory-based tools. Consistent with the collaborative planning approach advocated for integrated management, government departments and agencies may use their regulatory authorities and powers to fulfill or contribute to the objectives and management strategies contained in the Plan. These regulatory tools may include the following:

- sector-specific control measures as contained in legislation and supporting regulations
- sector-specific plans, authorizations, licences or permits issued pursuant to legislation and supporting regulations
- protected area designations and controls
- requirements under federal or provincial environmental assessment processes

The Plan and supporting collaborative planning process are designed to ensure that sector-specific regulatory tools are coordinated within the broader multiple use context. This will require, among other things, clarification of jurisdictional authority in some cases.

As issues are dealt with through the collaborative planning process, the effectiveness of current legislation, policies, plans and programs will be assessed in the context of integrated management. As integrated management becomes more mature, current policies, plans and programs will adapt to accommodate this new management regime. This will include incorporating agreed upon objectives into sector management plans. In certain circum-

stances, there may be a need to develop new policies, plans and programs or to identify the need for new legislation, if current mechanisms are deemed inadequate.

When new legislation, policies, plans and programs are proposed outside of the collaborative planning process, mechanisms for evaluating such proposals must be in place. This will provide a means for stakeholders to provide input and ensure consistency with the objectives of the Plan.

Legislation, policies, plans and programs must not only be assessed in the context of integrated management, but also to ensure that Canada's international obligations are being fulfilled. International conventions often guide national legislation and form the basis for many policies. It is important not only to ensure that obligations are being considered, but that they are also being fulfilled. In order to ensure that international obligations and objectives are being met, adequate resources must be in place to provide support for programs.

Objective: Ocean users and regulators are compliant and accountable

Strategies

Develop and implement frameworks for:

- compliance promotion
- accountability
- performance monitoring, reporting and assessment

Overview

Within the context of ocean and marine resource management, compliance can be viewed as a continuum of tools, techniques and approaches. This continuum essentially extends from activities associated with awareness raising and stewardship through to activities involving regulatory-based control and enforcement. The preferred means of obtaining adherence to the Plan is through the use of compliance promotion approaches. This can be achieved through a variety means, including the following:

- information sharing and communications (awareness raising, for example)
- stewardship promotion and development of best practices
- incentives programs
- effective participation in the collaborative planning process and the development of management objectives, strategies and actions
- performance monitoring and reporting

Surveillance, monitoring and enforcement of specific measures contained in the Plan can be undertaken by relevant regulatory authorities under their respective legislation and regulations. The Plan also supports ongoing efforts and arrangements for integrated approaches to marine compliance and enforcement, including regular information sharing among marine-related authorities and coordination for marine surveillance, monitoring and information collection on the water.

Accountability to the Plan is an essential and fundamental pre-requisite to successful implementation. The collaborative planning model is designed to promote a more inclusive and transparent approach to management and decision making. Participants in the planning process – both government and non-government – are expected to promote and build accountability to the Plan within their communities of interest and constituencies. This involves the incorporation of the Plan's principles, goals, objectives and strategies into sector-based planning, decision making and reporting.

The Plan recognizes that ultimate decision-making responsibility will remain with relevant regulatory authorities. However, in cases where a decision-making body is not able to meet or contribute to an aspect of the Plan, there is an expectation that the rationale for decision will be made available to other participants in the process. The specific mechanisms and requirements for reporting on performance are outlined in other parts of the Plan.

Objective: Ocean stewardship and best practices are implemented

Strategies

- Review existing guidelines and best practices and improve/adapt as necessary
- Develop new guidelines and best practices as necessary
- Support stewardship through education, training and awareness programs

Overview

The Plan may be implemented through a variety of non-regulatory management tools and approaches. These instruments include the following:

- government statements, guidelines and/or protocols for best practice
- industry-based statements and/or codes of best practice
- statements of intent or commitment

There are currently a variety of codes of practice in place to guide ocean activities, many of which have been developed by ocean users. Exxon Mobil, for example, has developed codes of practice for personnel of the Sable Offshore Energy Project relating to stewardship of Sable Island and the Gully.

As objectives begin to be implemented through sector management plans, it will be necessary to review existing guidelines and practices, and improve or adapt them to reflect the intent of the objectives. In some cases, it may be necessary to develop new guidelines and codes of practice if none exist.

Ocean stewardship refers to the careful and responsible management and use of the ocean. Stewardship involves the consideration of environmental impacts and use of best

management practices in the use of natural resources. Ocean users are more likely to make responsible decisions regarding the operation of their activities if they are informed and aware of the issues at hand.

Ocean stewardship can be promoted through education, training and awareness. This could include holding information sessions for stakeholders, inviting trained experts to discuss topics of interest, or making government documents and other information products more readily available to stakeholders.

Objective: Multi-sectoral resource use conflict is reduced

Strategies

- Understand existing use patterns and interactions
- Identify and characterize spatial and/or temporal conflicts
- Develop procedures and tools for addressing conflicts

Overview

As technology advances and more activities are taking place on the water, conflicts over ocean resources and ocean space are increasing. As new industries become active in the offshore, they often compete for ocean space with more traditional ocean users. It is the intent of the ESSIM Initiative to reduce the number of conflicts that are occurring by developing mechanisms that allow ocean users to come together to discuss and address issues before a conflict arises.

In order to reduce or prevent conflict, it is necessary to understand existing use patterns and interactions. An atlas of human activity on the Scotian Shelf has been compiled by the ESSIM Planning Office in order to map existing use patterns. This atlas is available to the public and will be updated as regularly as possible.

Based on the data gathered for the atlas and other information layers, work is continuing with the development of a GIS-based decision support tool. This tool will help to provide decision makers with accurate information about human activities and environmental characteristics across the Scotian Shelf.

Procedures must be developed to address multiple use conflicts. This will require dialogue within and across sectors. The ESSIM Initiative will provide multi-sectoral forums where proposals for new ocean activities can be tabled and discussed by the proponent and affected ocean interests in order to reach an agreement that is satisfactory to all involved. In some cases mechanisms have already been established, such as the Joint Fisheries/Submarine Telecommunications Cable Working Group.

Applying spatial and temporal approaches to management may be techniques for achieving the objectives outlined in the Plan. However, to be successful, spatial and temporal management must occur within the context of agreed-upon management objectives and applied in a coordinated and careful manner.

The coordination of ocean uses and management systems through spatial and temporal management can assist in finding appropriate balances among the ecosystem and human use objectives for the planning area. The effective application of spatial and temporal management requires the recognition of the multiple scales at which ecological systems function, with the realistic understanding that management areas and lines are limited by the dynamic nature of the marine environment.

Ocean use mapping: A tool for decision support

Understanding spatial and temporal patterns of the ecosystem and human activities is essential to the implementation of integrated management. The ESSIM Planning Office is undertaking a major project to develop a decision support tool for multiple use management on the Scotian Shelf. The first phase focused on the completion of a GIS-based atlas showing the location and extent of major human activities and related management zones and practices in the region. Areas of importance for various ocean uses will be characterized and ecological information will also be incorporated in a subsequent phase. This atlas and its underlying database will form a key component of a spatial-temporal framework to assess risks associated with a range of human activities, including ecosystem impacts and sector activity interactions. The project is designed to support regional ocean planning, management and decision making, including the Eastern Scotian Shelf planning process and the Gully Marine Protected Area. As such, the development of prototype analysis will focus on priority management needs in the region.

The completion of this geospatial assessment tool has been identified in the Plan as a key activity in support of multiple ocean use and marine ecosystem-based management.

Joint fisheries/submarine telecommunications cable working group

The joint fisheries/submarine telecommunications cable working group was formed in November 2005. Its purpose is to provide a forum for the telecommunications and fisheries sectors to discuss and resolve outstanding issues, and to develop effective processes for discussion of future projects or concerns. Decisions are made on a consensus basis. The working group is proving to be a useful forum for collaboration among the sectors.

ELEMENT: INFORMATION AND KNOWLEDGE

Objective: Natural and social science research is responsive to knowledge needs

Strategies

- Initiate research program for integrated management
- Establish research structures and partnerships
- Identify research priorities and needs
- Promote core government and non-government capacity for supporting research
- Ensure science is evaluated through objective peer and stakeholder review processes
- Facilitate timely delivery of scientific advice for management
- Promote the use of and access to traditional knowledge, including Aboriginal/indigenous knowledge

Overview

In order to achieve many of the objectives for multiple human use and healthy ecosystems, more information and knowledge of human and marine systems is required. This will require developing a research program for integrated management that is broad in scope and that responds to current knowledge needs.

Research programs should be integrated, drawing on expertise from many disciplines to provide the most comprehensive advice. This will require establishing research structures and partnerships involving government, ocean users, academics, Aboriginal communities and NGOs. It will also involve promoting the use of traditional and local knowledge, including that available from the fishing industry and Aboriginal/indigenous communities.

As an example, DFO and the Fishermen and Scientist Research Society (FSRS) are collaborating on a project to collect traditional knowledge from fishers to support the identification of ecologically and biologically significant areas on the Scotian Shelf.

In order to ensure that the research program responds to knowledge needs, it is necessary to identify research priorities for the planning area through a collaborative process. It is envisioned that this will be achieved largely through mechanisms established under the ESSIM collaborative planning model, such as the Stakeholder Advisory Council and a future science and technical expert working group.

Implementing the research program will require ensuring that adequate resources are in place, both inside and outside government. It is envisioned that a research plan for the ESSIM Initiative will be developed to outline research priorities, define the required structures and partnerships to address research questions, and identify means for mobilizing resources.

Once scientific research has been conducted, it is important that mechanisms be in place to review and validate research outcomes. These mechanisms must be transparent and robust, so that all stakeholders can have faith in research conclusions. Mechanisms including, but not limited to, peer and stakeholder review processes for new research will be promoted.

It is also important that research results be provided to private and public sector managers in a timely fashion. This will require effective communication and information sharing mechanisms.

Aboriginal traditional knowledge

The indigenous people of the world possess an immense knowledge of their environments, based on centuries of living close to nature. Living in and from the richness and variety of complex ecosystems, they have an understanding of the properties of plants and animals, the functioning of ecosystems, and techniques for using and managing them that is particular and often detailed.

In rural communities in developing countries, locally occurring species are relied on for food, medicine, fuel, building materials and other products. People's knowledge and perceptions of the environment, and their relationships with it, are often important elements of cultural identity.

Objective: Information management and communication are effective

Strategies

- Identify information needs
- Develop mechanisms for information management, sharing, and feedback
- Facilitate the use of science and social science research
- Improve ocean awareness through education and communication
- Promote awareness of the ESSIM Initiative and ensure the information about the Initiative is accessible to the public
- Promote the use of and access to traditional knowledge, including Aboriginal/indigenous knowledge

Overview

The Plan supports the use of a variety of communications and information sharing tools. The collaborative planning model and its various mechanisms for multi-sectoral and intergovernmental dialogue, such as the Stakeholder Advisory Council and ESSIM Forum workshops, should provide a valuable foundation for information exchange. The ESSIM Planning Office will also support ongoing communications with all interested and affected groups through the following tools:

- regular e-newsletters to the ESSIM Forum membership
- the ESSIM Initiative website, including the online discussion forum (e.g. moderated discussions)

- planning reports and issue/topical papers
- face-to-face dialogue through meetings and workshops

A variety of options are being considered for improving communications, ocean awareness and information sharing beyond those discussed above. These include:

- development of a web-based information portal for the ESSIM Initiative containing easy access to relevant information on ocean-related activities in the region
- development of a common source of geospatial, scientific and other types of information, using geographic information systems (GIS) and/or other tools
- a review of issues related to information and data sharing and development of recommendations for improvement
- implementing programs to research and disseminate traditional ecological knowledge related to marine ecosystems
- developing simple fact sheets, brochures, and other communications products about integrated management

In order to ensure the effectiveness of such communication tools, information needs of stakeholders and interested parties must be identified. One need that has already been identified is access to science and social science research. Often studies are not easily accessible to the public or are not presented in a manner that is commonly understood. In the future, more communication products will be produced to facilitate information sharing.

Objective: Monitoring and reporting are effective and timely

Strategies
- Identify monitoring needs
- Evaluate usefulness of monitoring and reporting programs and review management as necessary

Overview

Monitoring in this context refers both to the need to monitor progress on the implementation of the Plan, and the broader need for monitoring of socio-economic and environmental conditions in the planning area. While both are clearly interrelated, monitoring and evaluation of Plan implementation requires a specific approach that is discussed in more detail later.

In order to ensure that monitoring on the Scotian Shelf is effective, it is important to have a thorough understanding of monitoring requirements. Determining which attributes need to be monitored and assessing the extent to which existing programs are meeting monitoring needs will be an important first step. It is also important to ensure that the information being gathered through monitoring programs is being communicated to decision makers in a timely fashion, and that decision makers are adjusting their actions accordingly.

Numerous monitoring programs are already in place on the Scotian Shelf. Probably the most comprehensive of these is the Atlantic Zone Monitoring Program. This program collects environmental data related to hydrography, climate, plankton abundance, and sea level, amongst other variables. Three of the Program's seven monitoring transects are on the Scotian Shelf, and a fourth transect in the Cabot Strait is also relevant to the planning area. Various other environmental monitoring programs for specific ecosystem components are also ongoing, such as contaminant monitoring and monitoring of fish and marine animal populations.

Some effort has also been made to gather baseline economic data related to the marine environment. For example, a study was recently completed by the federal and provincial governments and private sector partners to quantify the economic value of the Nova Scotia ocean sector. Monitoring of sector-specific economic variables is also common place, but broader monitoring of overall socio-economic trends and conditions in the planning area may be necessary.

Tying the various monitoring programs that are in place together, establishing new programs where necessary to fill gaps, and communicating the results to the appropriate parties will help to ensure that all ocean users and regulators have access to the information they need to make effective decisions. Monitoring will also help to measure the success of integrated management and to adjust programs accordingly.

SUSTAINABLE HUMAN USE

The following strategies have been identified for the elements and objectives under the goal of sustainable human use:

ELEMENT: SOCIAL AND CULTURAL WELL-BEING

Objective: Communities are sustainable

Strategies

- Identify and characterize communities
- Identify community assets related to the ESSIM Initiative
- Promote and maintain access to sustainable livelihoods from ocean-related activities
- Enhance ocean-related education, training and awareness
- Support ocean-related services and infrastructure
- Improve government capacity (including fiscal) to implement social programs
- Involve Aboriginal peoples in planning and development decisions

Overview

A sustainable community is considered to be one that takes a long-term perspective to safeguard the interests of future generations so that social, cultural, economic and environmental assets create positive outcomes for its members. Communities are not limited to groups of people who live in the same geographic area, but may also include communities of interest (e.g., the fishing community or conservation interests).

Given this broad definition, many of the objectives and strategies outlined for other elements will contribute to community sustainability. The strategies outlined in this section, therefore, focus specifically on those aspects of sustainability that are not covered elsewhere. The implementation of these strategies will require input and action from a diverse array of groups and individuals.

Governments, Regional Development Authorities, community groups, industry, business associations and chambers of commerce, harbour authorities, universities and colleges, and many other organizations all have a role to play. The intention of the ESSIM Initiative is to bring together these organizations so that they can collectively work towards a common set of coordinated strategies and actions for the achievement of shared objectives related to community sustainability.

Better understanding and characterizing communities will assist the development of more detailed management actions to achieve community sustainability. In particular, identifying community assets will help to identify opportunities for sustainable development. Community assets go beyond physical assets, such as resources and infrastructure, and include social and cultural assets, such as knowledge, skills and networks.

Sustainable livelihoods are a cornerstone of sustainable communities and livelihoods provide more than just economic benefits; they contribute to overall social, cultural and individual well-being. One of the strategies proposed in the Plan is to promote access to sustainable livelihoods. It should be noted that this does not necessarily mean promoting increased access to natural resources, which may not always enhance sustainability.

Enhancing ocean-related training, education and awareness-raising will help communities to take advantage of the ocean-related assets and opportunities available to them, encourage stewardship of the ocean, and improve access to sustainable livelihoods. Actions for this strategy could include developing training programs related to ocean employment, encouraging schools to incorporate ocean issues into their curricula, or raising awareness about ocean opportunities through special events.

Supporting ocean-related services and infrastructure will also help communities to take advantage of ocean assets and opportunities and maintain ocean-based livelihoods. For example, public wharves, boat launches and marinas play a very important role in providing access to the ocean for commercial and recreational purposes.

Governments play a key role in providing much of the infrastructure and many of the services upon which coastal communities rely. Ensuring that government has the capacity to provide the programs that communities require is an important part of sustainable community development.

This can be achieved through a variety of mechanisms, including by aligning government priorities and budgets with community needs, and by undertaking activities to generate public revenues. In some cases, this may include ocean-specific revenue generation activities, such as collecting royalties from industries or developing public-private partnerships to take advantage of ocean resources.

The successful achievement of sustainable community development is much more likely to occur when local people are engaged in the planning process. Promoting collaboration is fundamental to the Plan, and the collaborative planning model is intended to be inclusive of all communities.

The Plan notes in particular the need to engage Aboriginal communities in planning and decision making. In the past, Aboriginal peoples have often been left out of key development decisions. It is, therefore, a priority to make decision-making processes more accessible to Aboriginal communities. For example, translating documents into Mi'kmaq, ensuring that public meetings and workshops are held in accessible locations, and ensuring the decision-making processes are open, transparent, and responsive to the concerns of Mi'kmaq peoples and all communities of interest will help to achieve this.

Objective: Sustainable ocean/community relationships are promoted and facilitated

Strategies

- Recognize and celebrate coastal communities and their connection to the ocean
- Recognize the social and cultural importance of traditional livelihoods
- Recognize and preserve the social and cultural importance of heritage sites (e.g., archaeological sites)
- Promote social impact assessment to inform decision making
- Recognize and affirm intrinsic values that link people, communities, and the environment.
- Ensure community inclusion in ocean planning and decision making

Overview

Individuals who derive their living from the sea or who have grown up in a community along the coast often have a special cultural link to the ocean. The objective and associated strategies for sustainable ocean/community relationships aim to recognize and honor such relationships. Although such relationships are often alluded to in ocean management, they are not often given formal consideration when making management decisions.

As ocean management becomes more complex and more activities begin to occur on the water, it is essential that managers do not lose sight of the cultural importance of the ocean or the importance of traditional livelihoods. There is a need to promote and celebrate coastal communities and their connection to the ocean.

In conjunction with the objective for sustainable communities, as communities are identified and characterized, the ESSIM process will work to ensure that their interests are understood and represented during ocean planning and decision making. Managers will be encouraged to give consideration to the views and the knowledge held by community members.

The ESSIM collaborative planning model can be used as a forum to recognize and promote ocean/community relationships. As the Plan matures and the ESSIM community (members of the Forum and the Stakeholder Advisory Council in particular) becomes more familiar, individuals will gain a greater perspective on the importance of the ocean to others. As participants share their stories and cooperate, the intrinsic values that link people, communities and the environment will be affirmed.

Objective: Ocean area is safe, healthy and secure

Strategies

- Assess current status and risks and develop plans to address them
- Support ocean-related services, training and infrastructure for health, safety and security
- Monitor and manage chemical or biological contamination that could affect humans
- Maintain and enhance an integrated surveillance, monitoring and response system

Overview

In order to achieve the goal of sustainable human use, it is necessary to ensure that the ocean area is a safe, healthy and secure environment for humans. The first task to ensuring a safe, healthy and secure ocean area is conducting an assessment of potential risks. Risks to human safety, security and health could include contaminants in the ocean, munitions dump sites, accidents at sea, severe weather events, or illegal activities, such as smuggling or terrorism.

In order to respond to risks, proper response systems need to be maintained or developed if necessary. This could include maintenance of appropriate infrastructure and support for search and rescue programs, ensuring adequate government surveillance and presence, developing health and safety education programs, developing monitoring programs, and/or managing specific threats, such as munitions dumps.

A variety of government departments and agencies can contribute to providing a safe, healthy and secure ocean area. As a result of this, it is essential that response programs are integrated and roles of each department clarified.

Several integrated programs already exist, such as the Canadian Shellfish Sanitation Program. This program is an integrated monitoring program delivered by Environment Canada, the Canadian Food Inspection Agency and DFO. Its primary objective is to protect the public from the consumption of contaminated shellfish by controlling the recreational and commercial harvesting of all shellfish within Canada.

Another important example of inter-agency coordination is found in the area of marine surveillance, enforcement and emergency response. The establishment of an inter-agency Marine Security Operations Centre (MSOC) and the maintenance of a common operating picture (known as the "Recognized Maritime Picture") to use all available sources of marine surveillance and intelligence represent practical approaches to integration and coordination. This is further illustrated by the Joint Rescue Coordination

Centre in Halifax which is staffed by the Canadian Coast Guard and National Defence for search and rescue operations in the region.

The Eastern Canada Interdepartmental Marine Operations Committee (ECIMOC) includes representatives from all federal departments and agencies with mandates for marine operations, surveillance and enforcement. The primary focus of ECIMOC is on information sharing, coordinated planning of activities, cooperative training, and improvements to communications among agencies.

The Plan supports the continued development of programs and capabilities for marine security, safety and health promotion, involving both government and non-government stakeholders.

ELEMENT: ECONOMIC WELL-BEING

Objectives: Wealth is generated sustainably from:

- renewable ocean resources
- non-renewable ocean resources
- ocean infrastructure
- ocean-related activities

Strategies

- Assess current and potential wealth generating activities and opportunities
- Identify, assess and link to existing policies, plans and initiatives for sustainable wealth generation/economic development
- Support existing activities and opportunities, and future economic diversification and employment
- Support a positive investment environment for ocean-related activities
- Assess constraints and enabling factors for investment (e.g., regulatory environment) and identify changes required
- Identify and implement measures to improve retention of wealth and benefits within coastal and Aboriginal communities in Nova Scotia and Canada
- Support initiatives to maintain or improve economic competitiveness for Nova Scotia
- Balance industrial capacity with resource sustainability
- Support the conservation of natural capital by recognizing, linking to and working with related ecosystem objectives and strategies
- Recognize, link to and work with key related social and cultural well-being objectives and strategies (e.g., traditional livelihoods)
- Support innovation and research that may contribute to economic well-being

Overview

One of the overarching goals of the Plan is to ensure sustainable human use of the ocean. Sustainable development refers to meeting the needs of the current generation, without compromising the needs of future generations. Essentially the intention is to ensure that economic activities are carried out in a manner that does not degrade the resource base or environment, and allows for future generations to have similar opportunities. The objectives for wealth generation recognize that wealth and livelihoods are derived not only from the living resources in the ocean, but also from non-living resources, ocean activities (e.g., shipping) and ocean infrastructure (e.g., telecommunications cables).

To achieve the objective of generating wealth sustainably, activities and opportunities for economic developement must be assessed, including existing activities (e.g., fishing, shipping, and oil and gas) and new opportunities (e.g., new fisheries or renewable energy). Generating wealth from ocean resources, activities and infrastructure can be achieved by supporting existing activities and fostering new activities.

When fostering new activities, it is important to ensure that existing activities are not compromised and that the new activity will be carried out in a sustainable manner. Ensuring that new opportunities are sustainable can be achieved through various mechanisms, such as environmental assessments (including project, regional, and/or strategic environmental assessments), policies for new activities (e.g., the DFO protocol for new fisheries), implementation of best practices, and multiple use planning. Ensuring sustainable development also requires that industrial capacity is balanced with resource availability and the carrying capacity of the ecosystem, and supports the conservation of natural capital. This will create conditions to sustain wealth.

The Plan supports the development of a positive investment environment to improve economic competitiveness for Nova Scotia's ocean sector. Fostering effective linkages and complementarities among existing and future policies and initiatives aimed at sustainable wealth generation and economic development will provide mutual benefits. Investing in research and innovation is also a key to success. It is important to ensure that wealth attained from those resources and activities benefits the community, province and country from which they are derived.

HEALTHY ECOSYSTEMS

The following strategies have been identified for the elements and objectives under the three themes of biodiversity, productivity and marine environmental quality for the goal of healthy ecosystems:

BIODIVERSITY

ELEMENT: COMMUNITIES/ASSEMBLAGES

Objective: Diversity of benthic, demersal and pelagic community types is conserved

Strategies

- Develop integrated, coordinated conservation framework
- Identify representative, important and sensitive benthic, demersal and pelagic (including seabird) communities/assemblages
- Identify threats and management options for conservation
- Implement management measures based on framework

Overview

A variety of management measures have been implemented in the past to conserve specific benthic, demersal and pelagic communities and assemblages, or to address specific threats. These have included spatial measures, such as marine protected areas and fisheries closures, as well as non-spatial measures, such as codes of practice for specific ocean activities. With the implementation of the Plan, the intention is to achieve a comprehensive and coordinated approach to the conservation of benthic, demersal and pelagic communities that will ensure that the diversity of community types is conserved.

To this end, the Plan proposes the development of an integrated, coordinated conservation framework that would involve the identification of representative, important, and sensitive communities and assemblages. This includes the identification of threats and management options, as well as the implementation of management measures.

A variety of activities have been envisioned or initiated to identify representative, sensitive and important communities and assemblages. In 2005, DFO began a program to identify ecologically and biologically significant areas (EBSAs) of the Scotian Shelf. This program is working to identify areas that are significant in terms of species aggregation, life history functions (e.g., spawning) and/or uniqueness. Naturalness and resilience of areas are also considered. As part of this program, DFO is identifying significant species and community properties, as well as depleted species in the region.

DFO and Natural Resources Canada are working on a benthic classification framework that will help to categorize benthic habitats and communities across the Scotian Shelf. The framework will contribute to the identification of representative and sensitive habitats, communities and assemblages.

Parks Canada has also conducted research that will contribute to this objective. It has assessed areas of the Scotian Shelf to identify potential candidates for its National Marine Conservation Areas Program, which endeavours to conserve representative and important marine ecosystems. Non-governmental organizations have also contributed. The World Wildlife Fund, for example, has conducted its own research program to identify representative communities

Coral conservation

Tropical corals have long been a focus of marine biodiversity conservation efforts worldwide, but cold-water corals have gained increasing conservation attention in recent years. Their important role in the ecosystem and their sensitivity to human impacts has made them a focus of particular interest. Several fisheries closures have been established on the Scotian Shelf over the past five years to protect corals, including a closure to protect the reef-building coral *Lophelia pertusa* in the Laurentian Channel and a larger closure to protect a variety of corals in the Northeast Channel. While these closures are successful examples of efforts to protect specific coral aggregations on a case-by-case basis, a more comprehensive approach to coral conservation is being sought.

The ESSIM Planning Office recently released a Coral Conservation Plan for the Maritimes Region, based on consultation with ocean stakeholders, scientists and government partners. The plan describes what is known about the species of corals found off Nova Scotia, identifies the key issues related to corals and managing human activities, describes existing management measures, outlines research requirements, and suggests strategies and actions for conserving areas of known and potential importance. The Coral Conservation Plan represents a more coordinated and strategic approach to conservation that will contribute to the objectives of the ESSIM Plan.

and highlight priority conservation areas.

In order to fully implement the strategy to identify important, representative and sensitive communities and assemblages, it will be necessary to continue the research programs that have been initiated, and to integrate the outcomes of the many programs into a comprehensive analysis. Identifying threats to important, representative and sensitive communities and assemblages is another key strategy for this objective.

To this end, DFO is working with government and private sector partners to conduct further research and assessments on the impacts of ocean activities on communities and assemblages. Key examples include ongoing research on the interactions between fishing activity and marine ecosystems, and research on the impacts of ocean noise. Mapping the distribution and intensity of ocean activities is another ongoing activity that will help to determine where activities overlap with important, sensitive and representative areas.

The final step proposed to achieve this objective is to identify management options and implement management measures to conserve important, representative and sensitive communities and assemblages. For all communities and assemblages identified, current threats will be considered, and existing management measures will be assessed to determine their adequacy in achieving conservation.

Where existing management measures are inadequate, additional management options will be considered in collaboration with stakeholders. These could include a wide variety of management measures ranging from enhanced monitoring to the establishment of voluntary codes of practices to spatial or temporal closures.

The establishment of marine protected areas is a specific tool that may be used in some instances to protect important, sensitive or representative marine communities and assemblages. Marine protected areas are marine zones that are given enhanced protection under legislation or regulations.

Generally, the legislation or regulations impose restrictions or special requirements on activities conducted in a specific area. In some cases, certain activities may be prohibited in all or part of an area.

In 2005, the federal government released a Marine Protected Areas Strategy outlining its commitment to continue with the development of a network of marine protected areas. The strategy commits the three lead departments – DFO, Parks Canada and Environment Canada – to work together to coordinate their programs and develop a comprehensive network. The strategy states that integrated management programs, such as the ESSIM Initiative, will be used as a primary vehicle for planning marine protected area networks regionally.

ELEMENT: SPECIES/POPULATIONS

Objective: Incidental mortality of all species is within acceptable levels

Strategies

- Quantify the extent of incidental mortality and understand the impact on species/populations
- Identify acceptable levels of incidental mortality for species/populations
- Monitor the catch of non-commercial species in all fisheries
- Identify mechanisms for managing incidental mortality within acceptable levels
- Assess the risks (social and economic) of implementing management measures to address incidental mortality
- Manage human activities to address incidental mortality where practical

Overview

A variety of human activities in many different ocean sectors can result in the unintentional mortality of marine species. One of the objectives of the Plan is to keep unintentional mortality within acceptable levels. The strategies for keeping incidental mortality within acceptable levels involve improving knowledge of incidental mortality in order to inform management, assessing the impacts on species/populations, setting limits for mortality, and implementing management measures based on a risk assessment analysis. Continuous monitoring and assessment will be necessary as acceptable levels will change over time (e.g., based on societal expectations).

Numerous programs are already underway to quantify and assess incidental mortality in the marine environment. Over the past few years, for example, DFO has worked with private sector partners to conduct research on the impacts of ocean noise on marine fish and invertebrates.

Much of this research is only preliminary and more research that is validated through appropriate mechanisms is needed.

There are a variety of management measures that can be used to keep incidental mortality within acceptable levels. Promoting technology improvements is often an excellent option to control mortality while allowing ocean activities to continue. Fishing gear improvements, for example, can prevent non-target species from being captured, while innovations in hydrocarbon exploration and development can reduce the potential for impacts on marine life.

Spatial or temporal management measures can also play a role in controlling incidental mortality. Managing activities so that they occur at times or places when and where sensitive species are least likely to be present can reduce the risk that these species will be affected. Moving shipping lanes and creating voluntary avoidance/cautionary areas are examples of options that have been used in the past for reducing ship-induced whale

mortality. Best practices or required operating procedures can also be used to reduce incidental mortality. A national statement of practice for seismic surveys that would require various mitigation procedures is currently under development. Similar codes of practice for other activities involving sound, such as sonar, may also be warranted.

Ecosystem-based fisheries management

The fishing industry, in collaboration with DFO, is currently developing a framework for implementing ecosystem-based fisheries management. This framework takes the integrated management level objectives and makes them operational for fisheries management. One of the largest priorities for fisheries management will be incidental mortality, or by-catch.

In order to quantify the extent of mortality and understand the impacts on species and populations, more knowledge is needed regarding the amount and types of species that are being caught and discarded. DFO is currently working to analyze data that are available, identify data gaps and begin to determine priority areas where incidental mortality needs to be addressed. Collaboration will continue to occur between DFO and the fishing industry to address this issue.

Objective: At-risk species are protected and/or recovered

Strategies

- Implement recovery strategies, action and management plans under the *Species at Risk Act* (SARA)
- Ensure that sectoral management plans and ocean activities are consistent with SARA
- Coordinate multi-species recovery planning where appropriate

Overview

A number of Canada's native wildlife species are considered to be at risk of extinction or extirpation. Ensuring the protection and, where applicable, promoting the recovery of these species is a national and international priority. To this end, Canada has developed the *Species at Risk Act* (SARA) and a number or complementary programs to promote the recovery and protection of at-risk species.

Under SARA and on the advice of independent experts, species may be listed as extirpated, endangered, threatened or of special concern. Several species native to the Eastern Scotian Shelf planning area have been listed in one of these four categories. The Atlantic walrus and grey whale are considered extirpated. The northern bottlenose whale (Scotian Shelf population), blue whale, North Atlantic right

whale and leatherback turtle are all listed as endangered. Northern and spotted wolffish are considered threatened, while the Atlantic wolffish is identified as a species of special concern.

SARA prohibits the harming, killing, harassing, taking, collecting, selling or trading of species listed as extirpated, endangered or threatened, although exceptions can be made under certain conditions. Damaging the residence or critical habitat of these species is also prohibited.

The Act also requires that recovery plans and action plans be developed for threatened, endangered and extirpated species. The recovery plans identify population objectives, threats and critical habitat for one or more species and propose a course of activities for achieving recovery. Action plans provide more detail on management measures and timelines. In the case of species of special concern, a management plan to prevent the species from becoming threatened or endangered is required.

The Plan does not intend to replace or duplicate existing mechanisms for the protection, recovery and management of species at risk under SARA. The intention of the objective and strategies for at-risk species contained in the Plan is to ensure that the integrated management process supports and complements SARA programs.

The Plan may provide a useful mechanism for contributing to the implementation of recovery plans, action plans and management plans. The process to identify ecologically and biologically significant areas of the Scotian Shelf, for example, may contribute to the identification of critical habitat for species at risk. Spatial management tools developed through the integrated management process, such as marine protected areas, could be used to protect identified habitats. Use analysis and decision-support tools being developed in conjunction with the Plan can contribute to ensuring the current and prospective activities are consistent with recovery plans and SARA requirements.

SARA requires consultation through the listing, planning and recovery phases. The ESSIM collaborative planning model could provide a mechanism for informing communities of interest about ongoing SARA programs and gathering input. Because the ESSIM Initiative takes an ecosystem-based approach and involves a broad array of stakeholders and decision-making authorities, it may also be a useful venue for coordinating the development of multi-species recovery plans.

Objective: Invasive species introductions are prevented and distribution is reduced

Strategies

- Assess sources, vectors, extent and risks of invasive species
- Develop management plans and measures to prevent introductions and limit distribution of invasive species
- Establish a surveillance and monitoring system

Overview

Invasive species (exotic species that displace native species or disrupt ecosystems) are becoming an increasingly serious threat to the marine ecosystem and to ocean industries. A variety of invasive species are already present in the planning area, including green crab, which out-competes local crab species and damages vegetation, and several species of tunicates, which cling to and cover hard surfaces, displacing or smothering other species.

Invasive species are a major threat to native diversity, and can also affect fisheries and aquaculture operations. The risk of additional invasive species entering the waters of the planning area is ever present. An objective of the Plan is to prevent the introduction of invasive species and to limit their distribution within the planning area.

One of the primary vectors for the introduction of invasive species is ballast water aboard ships. Large ocean-going vessels take in water when they unload cargo in order to maintain stability. When these ships take on cargo in other ports, they release ballast water, along with any organisms that may be present. Although ballast water is the suspected source of many invasives, the transmittal mechanisms – or vectors – for invasive species are imperfectly understood. Similarly, only limited information about the extent and risks posed by existing invasives is available.

Improving our understanding of the sources, vectors, extent and risks of invasive species is fundamental to the development of effective strategies for the prevention of introductions. Research in this field is already ongoing, such as research on the spread of tunicates and the factors that encourage or discourage their introduction, but this work is only preliminary. Specific research questions and priorities for invasive species will need to be developed as part of the strategic research program for the ESSIM Initiative.

Once invasive species have been introduced, it is extremely hard to limit their distribution. Management measures developed under the Plan will therefore give special attention to preventing introductions.

Work in this area is already underway. Transport Canada has promulgated regulations for the management and control of ballast water. The intention is to ensure that incoming ships exchange their ballast in offshore waters where any invasive species will be flushed out to sea, rather than releasing ballast in coastal waters or sensitive areas on the Scotian Shelf where invasive species can more easily take hold.

This is only a first step in addressing the invasive species issue, and other measures, such as promoting onboard treatment of ballast water, will also have to be considered. Although measures for limiting the distribution of introduced invasives are generally seen as a last resort, the Plan will support, where appropriate, the development of management measures to this end.

Finally, the Plan supports the establishment of a surveillance and monitoring system for invasive species. The program would help to improve understanding of the extent and spread of invasive species. It would also contribute to the evaluation of management measures and provide a mechanism for measuring progress towards the objective. The program would further serve as an early detection system that allows invasive species to be detected early when more management options for dealing with them exist.

Objective: Genetic integrity (i.e., genetic fitness and diversity) is conserved

Strategies

- Improve knowledge of genetic integrity and identify priority species
- Develop and implement management measures to conserve genetic integrity where required

Overview

Genetic integrity refers to the genetic fitness and diversity of a species or population. In biological terms, fitness refers to the ability of a species, population or individual to survive and reproduce. Genetic diversity, or the variation within the gene pool for a given species or population, is one of the factors that contributes to fitness. Greater genetic variation increases the ability of a species or population to respond to environmental change and competition and reduces the risk of inbreeding. Species or populations with low genetic diversity are less resilient and less likely to survive in a changing environment.

A variety of factors can contribute to the loss or retention of genetic diversity. Small populations are particularly susceptible to loss of genetic diversity, and any activity or occurrence that severely reduces the abundance of a species or population may in turn reduce genetic integrity. Obstructions to the interbreeding of individuals within a species or population (e.g., the construction of a dam that prevents some individuals from mating with others) can also affect genetic diversity, either positively or negatively, as can artificial propagation (e.g., breeding programs).

A first step proposed to conserve genetic integrity is to improve knowledge and identify priority species. This will involve supporting and promoting research on the genetic condition of native species and the factors affecting genetic integrity. Priority species would include species or populations that are currently in a state of reduced genetic diversity that threatens their fitness, or species that are at risk of losing genetic diversity. Species listed under the *Species At Risk Act* are particularly likely to be high priority species in

terms of genetic integrity.

Once priority species have been identified, management measures should be developed to promote the recovery and/or prevent the loss of genetic diversity within these species if possible. Managing species and populations and their habitats to ensure a viable population size is an important part of ensuring that genetic diversity is retained.

Many strategies implemented in relation to other objectives will contribute to the conservation of genetic integrity, but in some cases specific measures may be warranted in relation to this objective. Where genetic diversity has already been lost within a population or species, it may be appropriate to develop measures to enhance diversity, such as artificial propagation or removal of barriers to reproduction.

PRODUCTIVITY

ELEMENT: PRIMARY AND SECONDARY PRODUCTIVITY

Objective: Primary productivity and secondary productivity are healthy

Strategies

- Assess and review factors that influence primary and secondary productivity
- Review, evaluate and upgrade monitoring programs
- Develop management measures to address negative factors

Overview

Primary and secondary productivity provide the foundation for the food web and are essential to overall ecosystem function. A variety of human and natural factors can affect primary and secondary productivity, resulting in ecosystem impacts. In some cases, as in the case of eutrophication, excessive productivity can be a threat to the ecosystem. Eutrophication occurs when nutrient levels become too high, causing runaway productivity that ultimately results in oxygen depletion. This effect is more common in coastal and freshwater systems, but may occur locally in the offshore.

On the other end of the spectrum, nutrient depletion can result in decreased primary productivity, leading to an overall reduction in ecosystem productivity. Healthy levels of primary and secondary productivity (ensuring that it is neither too high nor too low) is, therefore, the objective of the Plan.

Directly manipulating primary and secondary productivity in the offshore ecosystem is unlikely to be feasible in most cases. It is possible, however, to manage human activities that affect productivity. The first strategy for this objective is to assess and review the factors that affect primary and secondary productivity so that they can be better understood and more effectively managed.

This will require the identification of research priorities and the implementation of research projects. Improving monitoring programs is one step that will contribute to a better understanding of the status of and changes in productivity in the offshore, which in turn will help to assess factors affecting productivity.

A variety of programs that monitor productivity, such as the Atlantic Zone Monitoring Program, are ongoing on the Scotian Shelf, but additional or enhanced programs may be needed. For many factors affecting productivity, such as climate variability and upwelling patterns, monitoring may be the only realistic management action, since it is virtually impossible to manipulate these factors directly.

Once negative factors influencing productivity have been identified, it should be possible to develop management measures to address some factors, especially those that are human-induced. Preventing excessive nutrient inputs by reducing or treating effluents, for example, may be an appropriate strategy where eutrophication is an issue. In other cases, managing biomass removals to ensure that adequate nutrients are available may be necessary. If adequate monitoring programs are in place, it should be possible to assess the effectiveness of management actions as they are implemented and adapt accordingly.

ELEMENT: TROPHIC STRUCTURE

Objective: Trophic structure is healthy

Strategies

- Increase knowledge of trophic interactions and human influences and define trophic structure objectives
- Recognize the importance of a healthy trophic structure in sector management plans
- Develop management measures where needed for healthy trophic structure

Overview

Trophic structure is a term used to describe the structure of the food web or, in other words, the hierarchy through which organisms derive their nutrients. The functioning of food webs is complex, involving interactions between multiple trophic levels (primary producers, secondary producers, higher level predators, decomposers, etc.).

Our understanding of these interactions is incomplete, but it has been recognized that activities that affect a species at one level can have impacts that reverberate through to other levels and throughout the food web. Top predator species, for example, often play an important role in controlling the population size of prey species, while primary producers and forage species provide the fuel supply for higher trophic levels. Removing species from either group is likely to have impacts on the species above and/or below and perhaps beyond.

Given the complexity and uncertainty around trophic

structure and human impacts on the food web, a first priority is to increase knowledge of trophic interactions and human influences. In particular, it is necessary to define what would constitute an healthy trophic structure and to set specific objectives, such as ensuring adequate forage species and top predators. It may be possible to manage human activities so as to control, prevent or reduce negative influences on trophic structure.

It is, therefore, important that sector management plans incorporate trophic structure objectives and include appropriate measures to meet these objectives. Where management needs go beyond what can be achieved through existing sector plans, additional management measures may need to be developed. This could include, for example, management measures to conserve or restore species that play an important role in the trophic structure of an ecosystem.

ELEMENT: POPULATION PRODUCTIVITY

Objective: Biomass and productivity of harvested and other important species are healthy

Strategies

- Define biomass and productivity objectives
- Support and enhance stock assessment practices and explore effort-based management approaches
- Ensure compliance with established measures and limits
- Identify other important species and develop management measures (e.g., keystone species)

Overview

Biomass is a measure of the mass of all living things within a community, species population or habitat. Productivity is a measure of the amount of biological material produced per unit area per unit time. In essence, these measures are the core biological indicators of the health of marine ecosystems.

Population productivity objectives in the Plan are intended to ensure that human activities do not cause unacceptable impacts, recognizing that any human activity may have some effect on population productivity.

In order to achieve the population productivity objective, human activities need to be managed and monitored, which may include establishing specific biomass and productivity objectives for harvested and other important species and/or species groups. Compliance with established management measures and limits will contribute towards the desired goal. In order to define specific objectives and establish limits, assessment practices require continued support and enhancement through, for example, the ongoing collection of appropriate scientific data in order to generate indicators of biomass and productivity. The implementation of ecosystem-based approaches through the fisheries management process and related plans will be the primary mechanism through which this objective is achieved.

MARINE ENVIRONMENTAL QUALITY

ELEMENT: PHYSICAL

Objective: Physical characteristics of ocean bottom and water column support resident biota

Strategies

- Identify and quantify the impacts of physical factors on biota
- Manage human influences to address negative impacts on physical properties

Overview

Physical characteristics of the water column include temperature, salinity and turbidity (i.e., the amount of suspended sediment), while characteristics of the ocean bottom include sediment size, type and depth, and bottom topography. The characteristics of the water column and ocean bottom play an important role in determining the communities that are found in a given area. Both natural and human induced factors can change the physical characteristics of the water column and ocean bottom, causing either positive or negative impacts on biological communities.

Improving our understanding of the impacts of physical factors on marine organisms will help to guide management. A number of research programs are already underway in this regard. DFO, for example, is currently assessing the effects of certain fishing gears on benthic habitats. This review considers, among other factors, physical impacts on the ocean bottom. Similar research programs for other activities, or for specific physical characteristics, need to be supported.

Where human influences are causing negative impacts on the physical properties of the environment, management measures may be needed to address these impacts. These may include promoting the adoption of lower-impact technologies, changing the spatial or temporal extent of activities, encouraging best practices, and compliance promotion, education, and awareness raising.

Objective: Harmful noise levels are reduced to protect resident and migratory species and populations

Strategies

- Improve knowledge of sound and its impacts in the marine environment
- Identify mechanisms for reducing sound in the marine environment
- Identify and quantify acceptable noise levels for species/populations
- Develop management measures for ocean activities to meet acceptable levels

Overview

Human activities, including shipping, seismic exploration and sonar, are increasing the amount of noise in the ocean. Many marine species rely on sound – which travels four to five times faster in water than in air – to communicate and navigate. Although the exact effects of increased noise on marine organisms remain uncertain, it is believed that excessive sound causes behavioural changes and in some cases physical damage. Marine mammals are particularly sensitive to noise which, in extreme cases, has been implicated in mass strandings and deaths of whales.

Given the uncertainty surrounding noise in the marine environment, improving knowledge is essential to effective management. Research that helps to determine the impacts of sound, define acceptable levels for species, and identify methods for reducing noise is a particular priority. Some research has been conducted over the past few years on the impacts of seismic surveys on snow crab and cod, but much of this research needs to be replicated and validated, and additional research is needed. Developing partnerships, acquiring resources, and defining priority research questions will be necessary to achieve this objective.

Management of noise will primarily be achieved by setting acceptable sound levels and developing measures to meet those levels. Management measures may include promoting the adoption of best-available technologies, establishing codes of practice, setting regulated noise levels, and using spatial and temporal management techniques to ensure that loud activities occur away from sensitive populations.

Work is already underway in several of these areas. Work on a national statement of practice that will outline guidelines and mitigation procedures for seismic operations is well under way. In addition to that, DFO is working with the U.S. government to identify biologically important areas from which low frequency active sonar should be excluded.

Objective: Wastes and debris are reduced

Strategies

- Assess sources and impacts of wastes and debris
- Assess current measures, capabilities and infrastructure
- Develop and implement measures to limit inputs (e.g., awareness programs and compliance promotion)
- Eliminate the intentional discarding of garbage at sea

Overview

Discarded wastes and debris in the ocean can pose a significant threat to marine wildlife and the environment. Abandoned ropes and cables can entangle marine mammals and amphibians. Plastic beer/pop can rings can strangle seabirds, plastics and styrofoam can resemble food, causing them to be ingested by marine animals, and other dumped items can leach toxic substances into ocean waters and sediments.

Wastes and debris in the ocean may originate from either sea- or shore-based sources. Determining with greater accuracy the origin of wastes and debris found in the planning area will assist the development of appropriate management measures.

Canada currently has regulations in place that restrict to some degree the discarding of garbage at sea by ships. These regulations prohibit the dumping of garbage in all of Canada's fishing zones and in all waters north of 60 degrees latitude. Transport Canada is currently in the process of reviewing these regulations to ensure that they are compliant with Annex V of the International Convention for the Prevention of Pollution from Ships.

Although not currently a signatory to Annex V, Canada is working towards compliance with its provisions. Annex V requires that various measures be implemented to prevent the dumping of garbage at sea. These include a total ban on the dumping of plastics, prohibitions on dumping in coastal areas, provision of adequate port infrastructure for handling wastes, and the posting of notices to passengers and crew regarding requirements for proper management of garbage. Implementing measures in relation to Annex V will help to achieve the objective of reducing wastes and debris and will represent a significant step towards eliminating the intentional discarding of garbage at sea.

Under the 1996 Protocol to the International Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, Canada is also taking steps to prevent ocean dumping. The 1996 Protocol, which came into force in 2006, prohibits any dumping at sea, except for a short list of excepted items. Environment Canada is the lead department for the domestic implementation of the Protocol.

The efforts of Environment Canada and Transport Canada described above relate primarily to garbage from large vessels or large-scale dumping. Addressing wastes and debris from land-based sources and recreational boaters will require additional effort from governments and stakeholders. Education programs, infrastructure development, enhanced monitoring and enforcement, and the promotion of non-toxic biodegradable materials can all contribute to reducing wastes and debris from these sources.

ELEMENT: CHEMICAL

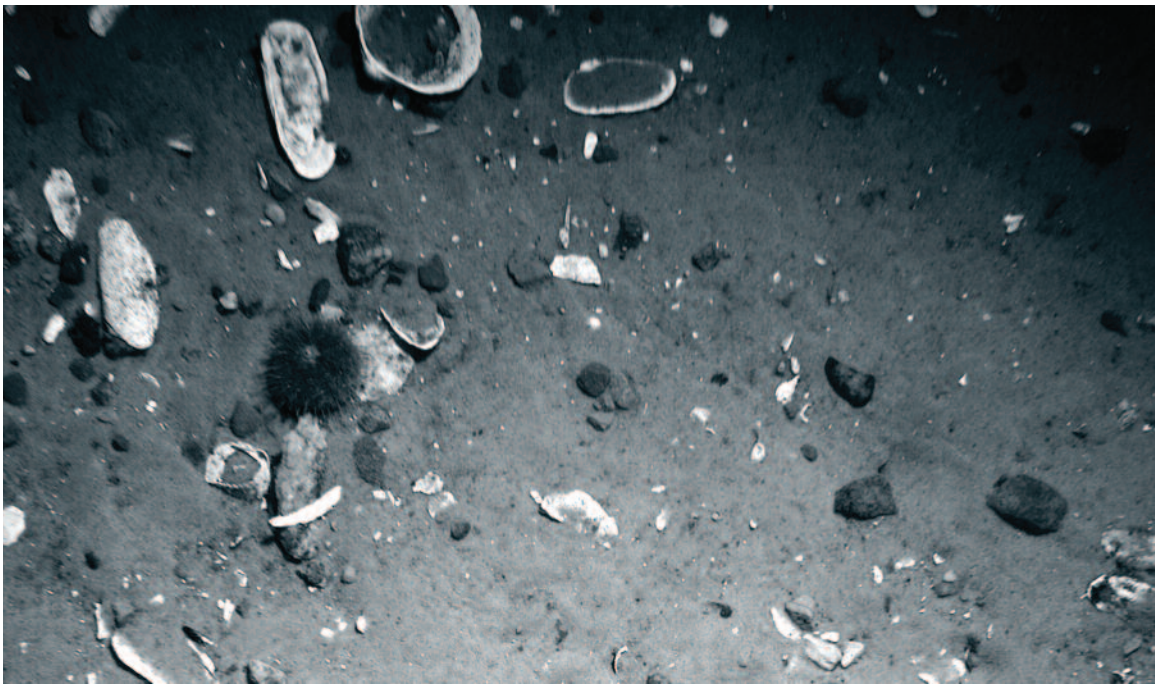
Objective: Chemical characteristics of ocean bottom and water column support resident biota

Strategies

- Identify and quantify the impacts of chemical factors on biota
- Manage human influences to address negative impacts on chemical properties (e.g. toxic chemicals)

Overview

Chemical contaminants in sediments and the water column are a concern for several reasons. Contaminants can directly



affect the health of marine organisms, especially higher level predators and many marine mammals. Chemical contaminants can cause reduced reproductive success, diminished immune response, and delayed development.

When contaminants appear in marine organisms that are harvested for food by humans, potential impacts on human health must also be considered. Recent studies have found that a number of common environmental contaminants, such as polychlorinated hydrocarbons (PCBs), heavy metals, and polycyclic aromatic hydrocarbons (PAHs), are present on the Scotian Shelf in varying concentrations.

Major ports and adjacent coastal waters tend to be the most heavily contaminated areas, while much of the offshore is relatively pristine (i.e., concentrations of contaminants are at or near background levels). Additional research on the level of contamination on the Scotian Shelf, sources of contaminants, impacts on biota, and threshold effects levels would help to inform management.

Most contaminants found in the offshore are transported there from other areas, rather than released locally. Much of the contamination on the Scotian Shelf originates from the land base of northeastern North America, most notably via the outflow of the St. Lawrence River. Although relatively less significant, there are numerous local sources of contaminants in the offshore, including accidental and illegal discharges from ships, and incidental wastes from hydrocarbon drilling and production activities.

Given that most contaminants found in the offshore originate outside the planning area, any approach to managing these contaminants will have to involve cooperation with other jurisdictions. Local sources of contaminants can be managed through various means, including compliance promotion, improved monitoring and surveillance, technology development, spatial and non-spatial regulatory tools, and the development of voluntary standards and guidelines.

Objective: Atmospheric pollution from ocean activities is reduced

Strategies

- Identify sources and extent of atmospheric pollution from ocean activities
- Develop management measures to meet acceptable levels

Overview

The marine ecosystem includes not only the waters of the ocean, but also the seabed below and the air above. A variety of activities carried out on the ocean can result in air pollution. Any activity involving the use of motorized vessels is likely to result in some degree of air pollution, although the amount is likely to vary from ship to ship, and some modern vessels may have very low emissions. Flaring from oil and gas production installations can also result in the release of air pollutants, including sulphur dioxide, nitrous oxide, and small amounts of PAHs. Greenhouse gas emissions are an additional concern related to both flaring and operating motorized vessels.

It is envisioned that the management of air pollution will be achieved largely by defining acceptable levels and

developing management measures to meet these levels. Various standards are already in place for emissions from ships and recreational vessels.

Canada is currently working to develop new regulations that would be consistent with Annex VI of the International Convention for the Prevention of Pollution from Ships. Annex VI sets limits on sulphur oxide and nitrogen oxide emissions from ship exhausts and prohibits deliberate emissions of ozone depleting substances. Although Canada has not yet acceded to this Annex, it intends to do so in the near future.

The international community is also considering options for setting standards for greenhouse gas emissions. The shipping industry is being proactive and is developing its own approaches to reducing emissions. For example, new technologies that reduce idling in port by allowing ships to access shore power are currently under development.

For small, spark-ignition marine engines (e.g., outboard motors), emissions are currently controlled through a voluntary agreement with industry that requires engines sold in Canada to meet U.S. Environmental Protection Agency emissions standards. Regulations are currently being developed under the *Canadian Environmental Protection Act* to codify emissions standards for spark-ignition marine engines sold in Canada.

Regardless, many manufacturers design and build their engines to meet California Air Resources Board emissions standards, which are more stringent than federal mandatory limits. The proliferation of four-stroke and direct-injection two stroke engines has allowed emissions from outboard motors to be reduced significantly in recent years. Continuing to promote the use and development of clean technologies such as these will help to ensure an ongoing reduction in emissions.

Currently there are no specific emissions standards for offshore oil and gas activity on the Scotian Shelf. Emissions are evaluated through the environmental assessment process and through monitoring programs. The Canada-Nova Scotia Offshore Petroleum Board is in the process of developing emissions standards for oil and gas operations to be incorporated into its Offshore Waste Treatment Guidelines.

ELEMENT: HABITAT

Objective: Habitat integrity is conserved

Strategies

- Incorporate habitat considerations in the integrated conservation framework (see communities/assemblages)
- Identify and conserve rare, important and representative habitats
- Manage human influences to address negative impacts on habitat

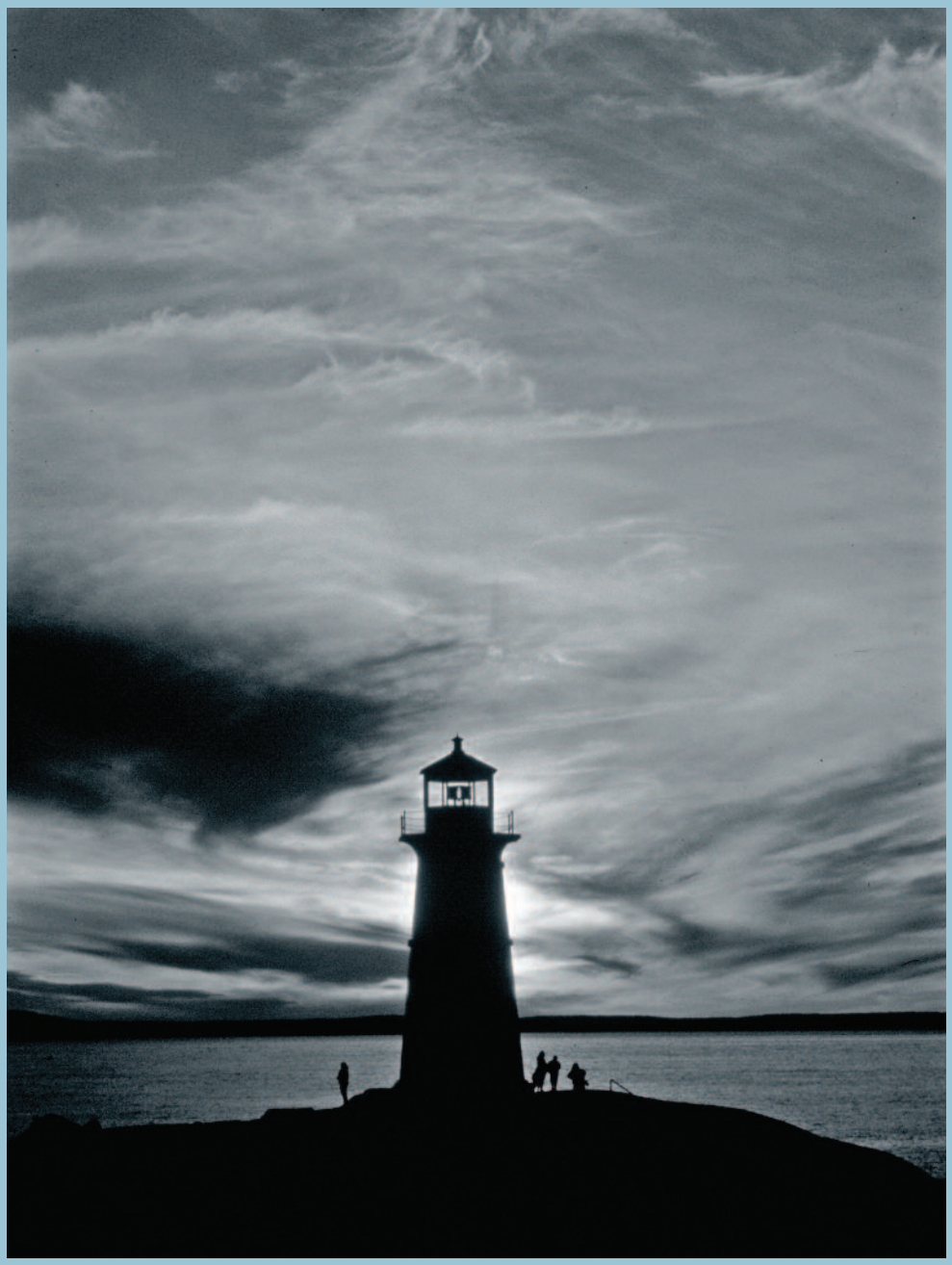
Overview

The Plan identifies several strategies for conserving benthic, demersal and pelagic communities and assemblages. One of the strategies is to develop a coordinated and integrated conservation framework that would involve identifying representative, important communities and assemblages, identifying threats and management options, and implementing management measures. Since communities are intrinsically linked to the habitat that they occupy, it is logical that marine habitat conservation should be incorporated into the conservation framework for communities, rather than addressed in isolation.

Through DFO's program for ecologically and biologically significant areas program, efforts are already underway to identify rare and important habitats and communities. This program is using empirical data, expert opinion and traditional knowledge to identify areas of aggregation, functional importance, uniqueness, sensitivity and naturalness on the Scotian Shelf.

Other programs are also underway that will contribute to this objective, such as the development of a benthic habitat classification and efforts to identify priority conservation areas.

Once rare, important and representative habitats have been identified, it will be necessary to assess threats to those habitats and develop management measures to address those threats. Known threats to habitat include physical disturbance, pollution and climate change. Examples of management measures that could be used to address these threats include adopting technologies that cause less disturbance, promoting best practices, ensuring compliance, using temporal and spatial management techniques, and reducing inputs of pollutants. Many of the strategies defined for marine environmental quality will involve developing complementary management measures that will contribute to habitat conservation.



IMPLEMENTATION AND EVALUATION

The Plan represents a long-term commitment to achieve shared goals, objectives and strategies for collaborative governance and integrated management, sustainable human use, and a healthy marine ecosystem. The success of the Plan is dependent on continued support and commitment by all stakeholders. There are many ways that government and other stakeholders can demonstrate their commitment to the Plan. The most important way to do this, however, is through meaningful and tangible actions. This section identifies the key elements required for effective implementation, monitoring and evaluation of the Plan.

GOVERNMENT-LEVEL IMPLEMENTATION

The Plan provides an intergovernmental mechanism to promote, support and implement policy, planning and management coordination. It is based on and supported by existing mandates, jurisdictions and responsibilities, and is consistent with federal and provincial policies and regulatory frameworks.

Endorsement and approval of the Plan by a government decision-making authority demonstrates a commitment to implementation of the Plan through a collaborative approach, in accordance with departmental mandates, priorities and capacities for ocean management. Ongoing participation by government authorities in the integrated management process is provided through the government sector structure (i.e., Regional Committee on Ocean Management and the Federal-Provincial ESSIM Working Group).

What happens if a government department cannot commit to something in the Plan?

In cases where a regulatory authority cannot commit to a specific part of the Plan (management strategies or actions, for example), further dialogue with affected parties will occur through appropriate mechanisms, such as those provided by the collaborative planning model.

Aspects of the Plan requiring significant policy or regulatory changes may be identified for further consideration and future action. In such cases, endorsement of the Plan by the affected authority will indicate a commitment to further consideration of the matter through appropriate processes. This approach allows the Plan to move forward in the absence of full agreement on all aspects, while ensuring that all concerns and limitations are identified for future deliberation and action.

Federal, provincial and municipal government departments may use both internal and external mechanisms to formalize, reflect and carry out their commitment to the Plan. Participating departments can incorporate the Plan and its relevant provisions in their departmental policy, program and planning documents, including:

- strategic and/or business plans
- sustainable development strategies
- strategic environmental assessments
- annual reports on plans and priorities
- annual financial planning documents and budgets, including commitments of staff and associated resources to the planning process and relevant management strategies and actions

Departments may also choose to formalize their commitment to the Plan through external mechanisms, including:

- letters of support or intent
- existing or new memoranda of understanding or agreement

Federal departments will use regional or national-level mechanisms in accordance with their organizational and line reporting structures.

STAKEHOLDER-LEVEL IMPLEMENTATION

Acceptance and implementation of the Plan by affected ocean sectors, groups and individuals may occur through a variety of ways. The collaborative planning model is designed to provide several mechanisms for stakeholder participation in the planning process. The core Stakeholder Advisory Council is essentially a standing working group comprised of ocean sector representatives to provide regular input on the Plan and related activities for integrated ocean management. The functions and responsibilities of the Stakeholder Advisory Council also require regular communications and two-way information sharing between its members and the broader communities of interest that they represent at the table.

In addition to the Stakeholder Advisory Council, the ESSIM Planning Office is committed to regular dialogue, information sharing and meetings with all interested and affected communities of interest, either through the ESSIM Forum (a collective of interests) or through directed discussions and meetings with specific groups.

Endorsement and implementation of the Plan can occur through reference in appropriate organizational documents, including:

- activity, strategic or business plans
- performance reports
- activity applications, proposals and environmental assessments
- industry standards, guidelines or codes of conduct/best practice
- letters of support or intent
- terms of reference, mission or mandate documents

Sectors will also have opportunities to implement the Plan through consultations or other engagement

mechanisms with government departments on policy, regulatory and management matters affecting their activities. For example, a sector may identify changes required in existing management processes to achieve specific or multiple objectives of the Plan.

PLANNING FOR ACTION

Implementation of the objectives and management strategies contained in the Plan will be undertaken through the regular development and implementation of shorter term action plans (e.g., 2-3 year cycles). These action plans may be sector- or issue-based, or collaborative in nature, involving parties from across sectors or communities of interest.

The action planning process enables the identification and selection of actions that are deemed to be of a priority or short-term nature. Medium and longer term actions may also be included in action plans, particularly in cases where sequential activities or steps are required for implementation. This may include short-term steps and activities for long-term actions.

The action planning process provides a higher level of detail for various management actions, including roles and responsibilities, timelines, milestones and targets, and specific activities required for successful completion.

The ESSIM Planning Office, working in conjunction with Stakeholder Advisory Council and the intergovernmental Regional Committee on Ocean Management, will encourage, monitor and evaluate the overall implementation of the Plan. Government priorities and actions will be identified through the Federal-Provincial ESSIM Working Group and reviewed and endorsed by the Regional Committee on Ocean Management. Ocean sectors and stakeholders may also put forward action priorities in support of the Plan. Biennial meetings of the full ESSIM Forum will be used to provide input.

PERFORMANCE EVALUATION AND REPORTING

Successful implementation of the Plan requires an effective and comprehensive program for performance evaluation and reporting. This is an integral component of the objectives-based approach and the key to the practice of adaptive management. There are two main, interrelated components of an effective performance evaluation and reporting program:

- **Plan outcomes:** A key aspect of the performance evaluation and reporting program is the assessment of outcomes resulting from the goals, objectives and management strategies contained in the Plan. This will be determined through the use of outcome indicators for the various objectives, as well as through the evaluation of results from the completion and implementation of the various strategies and actions. Regular status reports will be combined with specific assessments of management actions to demonstrate performance and progress against objectives and desired outcomes.

- **Plan performance:** The second main component of the performance evaluation and reporting program is focused on the effectiveness of the Plan itself, particularly in terms of the efforts being made to undertake the various strategies, actions and commitments. This includes assessments of adherence to principles and objectives, as well as reviewing the effectiveness of the collaborative planning model.

Key evaluation mechanisms for the Plan include:

- a biennial progress report describing progress and achievements
- a practical set of indicators for measuring and describing progress against objectives and strategies
- direct stakeholder participation in evaluation and reporting through the Stakeholder Advisory Council, Regional Committee on Ocean Management, and biennial Forum Workshops
- use of external specialists or reviewers
- interviews, audits or questionnaires

The Plan requires a practical and transparent reporting system to enable all participating departments and sector groups to demonstrate adherence to and implementation of the Plan. The various mechanisms identified for approving and adopting the Plan, such as those described earlier in this section for government and stakeholder-level implementation, will also fulfill many of the reporting requirements for the Plan.

PLAN REVISION

The Plan will undergo a comprehensive review every five years. This time period corresponds to the short-to-medium-term timelines for the majority of management strategies contained in the Plan. The 5-year review will cover all aspects of the Plan and will draw on information and findings obtained through the performance evaluation and reporting process, as well as emerging management needs and priorities. The ESSIM Planning Office will provide a lead role in the plan review and revision process, with the support of all components of the collaborative planning model.

APPENDIX A: BACKGROUND INFORMATION AND KEY REFERENCES FOR THE ESSIM INITIATIVE

This appendix contains a list of key references and documents for the ESSIM Initiative. The documents listed below and additional background information can be obtained from the ESSIM Initiative website ***(http://www.mar.dfo-mpo.gc.ca/oceans/e/essim/essim-intro-e.html)*** or by contacting the ESSIM Planning Office.

ESSIM Planning Office Documents

The Development of a Collaborative Management and Planning Process: A Discussion Paper prepared for the Federal-Provincial ESSIM Working Group (2001).

Issues, Challenges and Opportunities: A Discussion Paper prepared for the Federal-Provincial ESSIM Working Group (2001).

An International Survey of Integrated Ocean and Coastal Planning Initiatives (2001).

A Strategic Planning Framework for the Eastern Scotian Shelf Ocean Management Plan: A Discussion Paper prepared for the ESSIM Forum (2003).

Oceans and Coastal Management Report 2004-01. Developing Objectives and Indicators for Marine Ecosystem-Based Management: International Review of Marine Ecosystem-Based Management Initiatives throughout the World (prepared by Jay Walmsley, Jacques Whitford Environment Ltd.).

Oceans and Coastal Management Report 2004-02. Developing Objectives and Indicators for Marine Ecosystem-Based Management: Definitions of Commonly Used Terms (prepared by Jay Walmsley, Jacques Whitford Environment Ltd.).

Oceans and Coastal Management Report 2004-03. International Review of Areas where Activities are restricted to protect Deep Sea Corals (prepared by D'Entremont Environmental Ltd.).

Oceans and Coastal Management Report 2004-04. Review of Criteria for Selecting Ecologically Significant Areas of the Scotian Shelf and Slope: A Discussion Paper (prepared by Heather Breeze, Maris Consulting).

Oceans and Coastal Management Report 2004-05. Eastern Scotian Shelf Integrated Management (ESSIM) Initiative: Proposed Collaborative Planning Model – A Discussion Paper (prepared by Bruce Smith, BLSmith Groupwork Inc.).

Oceans and Coastal Management Report 2005-01. Report of the Eastern Scotian Shelf Integrated Management Community Workshops.

Oceans and Coastal Management Report 2005-03. Human Use Objectives and Indicators Framework for Integrated Management on the Scotian Shelf (prepared by Jay Walmsley, Jacques Whitford Environment Ltd.).

Oceans and Coastal Management Report 2005-05. Conflict, Collaboration and Consensus in the Eastern Scotian Shelf Integrated Management (ESSIM) Initiative (prepared by BLSmith Groupwork Inc.).

The Scotian Shelf: An Atlas of Human Activities (2005).

Oceans and Coastal Management Report 2006-01. Coral Conservation Plan – Maritimes Region (2006-2010).

Oceans and Coastal Management Report 2006-03. Approaches to the Evaluation and Assessment of Progress and Performance of the Eastern Scotian Shelf Integrated Management (ESSIM) Initiative (prepared by R.D. Walmsley).

Oceans and Coastal Management Report 2006-04. A Proposed Strategy for ensuring that Research is responsive to the Knowledge Needs of the Eastern Scotian Shelf Integrated Management (ESSIM) Initiative: A Discussion Paper (prepared by R.D. Walmsley).

ESSIM-Related DFO Documents

Below is a selection of ESSIM-related documents available through DFO's Canadian Science Advisory Secretariat (CSAS) and the Canadian Fisheries and Aquatic Sciences report series.

Proceedings Series

R. O'Boyle (ed.). 2000. Proceedings of a Workshop on the Ecosystem Considerations for the Eastern Scotian Shelf Integrated Management (ESSIM) Area. CSAS Proceedings Series 2000/014.

G. Jamieson and R. O'Boyle (eds.). 2001. Proceedings of the National Workshop on Objectives and Indicators for Ecosystem-based Management. CSAS Proceedings Series 2001/009.

J. Arbour (chair) and V. Kostylev (ed.). 2002. Proceedings of a Benthic Habitat Classification Workshop Meeting of the Maritimes Regional Advisory Process. A Framework for the Conservation of Benthic Communities of the Scotia-Fundy Area of the Maritimes Region. CSAS Proceedings Series 2002/023.

R. O'Boyle and P. Keizer. 2003. Proceedings of three Workshops to investigate the Unpacking Process in support of Ecosystem-based Management; February – July, 2002. CSAS Proceedings Series 2003/004.

J. Arbour (chair) and R. St-Laurent (compiler). 2004. Proceedings of a Benthic Habitat Classification Workshop Meeting of the Maritimes Regional Advisory Process. Benthic Classification and Usage Guidelines of the Scotia-Fundy Area of the Maritimes Region. CSAS Proceedings Series 2004/004.

H. Powles, V. Vendette, R. Siron and R. O'Boyle. 2004. Proceedings of the Canadian Marine Ecoregions Workshop. CSAS Proceedings Series 2004/016.

R. O'Boyle (chair). 2006. Proceedings of a Benthic Habitat Classification Workshop Meeting of the Maritimes Regional Advisory Process. Maintenance of Diversity of Ecosystem Types. Phase II: Classification and Characterization of Scotia-Fundy Benthic Habitats. CSAS Proceedings Series 2006/006.

C. den Heyer, P. Doherty, A. Bundy and K. Zwanenburg. 2006. DFO/FSRS Workshop on Inshore Ecosystems and Significant Areas of the Scotian Shelf. CSAS Proceedings Series 2006/002.

Science Advisory, Habitat and Ecosystem Status Reports

DFO Maritimes Region. 2003. State of the Eastern Scotian Shelf Ecosystem. CSAS Ecosystem Status Report 2003/04.

DFO National Capital Region. 2004. Habitat Status Report on Ecosystem Objectives. CSAS Habitat Status Report 2004/01.

DFO National Capital Region. 2005. Identification of Ecologically and Biologically Significant Areas. CSAS Ecosystem Status Report 2004/006.

DFO National Capital Region, 2006. Impacts of Trawl Gears and Scallop Dredges on Benthic Habitats, Populations and Communities. CSAS Science Advisory Report 2006/025.

DFO National Capital Region, 2006. Identification of Ecologically Significant Species and Community Properties. CSAS Science Advisory Report 2006/041.

Research Documents

S. Coffen-Smout, R.G. Halliday, G. Herbert, T. Potter, and N. Witherspoon. 2001. Ocean Activities and Ecosystem Issues on the Eastern Scotian Shelf: An Assessment of Current Capabilities to address Ecosystem Objectives. CSAS Research Document 2001/095.

R. O'Boyle, M. Sinclair, P. Keizer, K. Lee, D. Ricard, and P. Yeats. 2004. Operationalizing an Ecosystem Conservation Framework for the Eastern Scotian Shelf. CSAS Research Document 2004/076.

Technical and Manuscript Reports

P.L. Stewart and L. White. 2001. A Review of Contaminants on the Scotian Shelf and in Adjacent Coastal Waters: 1970 to 1995. Can. Tech. Rep. Fish. Aquat. Sci. 2351: xviii + 158 pp.

S. Coffen-Smout, G. Herbert, R.J. Rutherford and B.L. Smith (eds.). 2002. Proceedings of the 1st Eastern Scotian Shelf Integrated Management (ESSIM) Forum Workshop, Halifax, Nova Scotia, 20-21 February 2002. Can. Manuscr. Rep. Fish. Aquat. Sci. 2604: xiii + 63 pp.

H. Breeze, D.G. Fenton, R.J. Rutherford, and M.A. Silva. 2002. The Scotian Shelf: An Ecological Overview for Ocean Planning. Can. Tech. Rep. Fish. Aquat. Sci. 2393: x + 259 pp.

R.J. Rutherford, S. Coffen-Smout, G. Herbert and B.L. Smith (eds.). 2003. Proceedings of the 2nd Eastern Scotian Shelf Integrated Management (ESSIM) Forum Workshop, Halifax, Nova Scotia, 18-19 February 2003. Can. Manuscr. Rep. Fish. Aquat. Sci. 2637: x + 63 pp.

G. Chao, G. Herbert, S. Coffen-Smout, and H. Breeze. 2004. Overview of Federal, Provincial, and International Ocean Regulatory and Policy Frameworks on the Scotian Shelf. Can. Tech. Rep. Fish. Aquat. Sci. 2513: xii + 231 pp.

S. Coffen-Smout, D. Millar, G. Herbert, and T. Hall (eds.). 2005. Proceedings of the 3rd Eastern Scotian Shelf Integrated Management (ESSIM) Forum Workshop, Halifax, Nova Scotia, 22-23 February 2005. Can. Manuscr. Rep. Fish. Aquat. Sci. 2719: viii + 63 pp.

K.C.T. Zwanenburg, A. Bundy, P. Strain, W.D. Bowen, H. Breeze, S.E. Campana, C. Hannah, E. Head and D. Gordon. 2006. Implications of Ecosystem Dynamics for the Integrated Management of the Eastern Scotian Shelf. Can. Tech. Rep. Fish. Aquat. Sci. 2652: xiii + 91 pp.

Canadian Integrated Ocean Management Policy and Legislation

Government of Canada. Oceans Act 1996, c. 31.

Fisheries and Oceans Canada. Canada's Oceans Strategy. (2002).

Fisheries and Oceans Canada. Policy and Operational Framework for Integrated Management of Estuarine, Coastal and Marine Environments in Canada. (2002).

APPENDIX B: MEMBERSHIP OF MARITIME PROVINCES REGIONAL COMMITTEE ON OCEAN MANAGEMENT (RCOM)

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Debbie Windsor,
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Bill Coulter,
Canadian Environmental Assessment Agency

Freeman Libby,
Canadian Food Inspection Agency

Doug Steadman,
Canadian Food Inspection Agency

Captain (N) Bruce Belliveau,
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Jim Abraham,
Environment Canada

Jim Jones,
Fisheries and Oceans Canada, Gulf Region (co-chair)

Faith Scattolon,
Fisheries and Oceans Canada, Maritimes Region

Simon d'Entremont,
Health Canada

Sharon Chard,
Health Canada

Patricia Hearn,
Industry Canada

Dougal MacDonald,
Indian and Northern Affairs Canada

Ted Tax,
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Jacob Verhoef,
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Brendan McDonald,
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Rob Thompson,
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Ian MacDonald,
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Diana Dalton,
Canada Nova Scotia Offshore Petroleum Board

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Mike Davis,
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Paul Taylor,
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Wayne Hooper,
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Natural Resources Canada, National Capital Region

Jackie Olsen,
Environment Canada, Atlantic Region
Alternate: Larry Hildebrand

Carol Ann Rose,
Oceans and Habitat, Fisheries and Oceans Canada, Maritimes Region (chair)

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Clary Reardon,
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Alternate: Sean Weseloh McKeane

Alastair Saunders,
Nova Scotia Department of Intergovernmental Affairs
Alternate: Andrew MacDonald

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Newfoundland and Labrador Department of Natural Resources

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Canada-Nova Scotia Offshore Petroleum Board

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Victoria County Regional Development Authority

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Maritime Aboriginal Peoples Council
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Eugene O'Leary,
Guysborough County Inshore Fishermen's Association
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Christine Penney,
Clearwater
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Kevin Squires,
Maritime Fishermen's Union

Roger Stirling,
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Alternate: Bruce Chapman, Groundfish Entreprise Allocation Council or Dick Stewart, Atlantic Herring Co-op

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Marielle Thillet,
Encana
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Ecology Action Centre

Jennifer Smith,
World Wildlife Fund (Atlantic)

Bruno Marcocchio,
Sierra Club of Canada

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Grey Seal Conservation Society

Laura Hussey,
Canadian Parks and Wilderness Society

Tonya Wimmer,
Marine Animal Response Society

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Coastal Coalition of Nova Scotia

Mayor Ray White,
Town of Canso/Nova Scotia Coastal Communities Network
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Alternate: Caroline Hedley

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Ivan Lantz,
Shipping Federation of Canada
Alternate: Caroline Gravel

TELECOMMUNICATIONS

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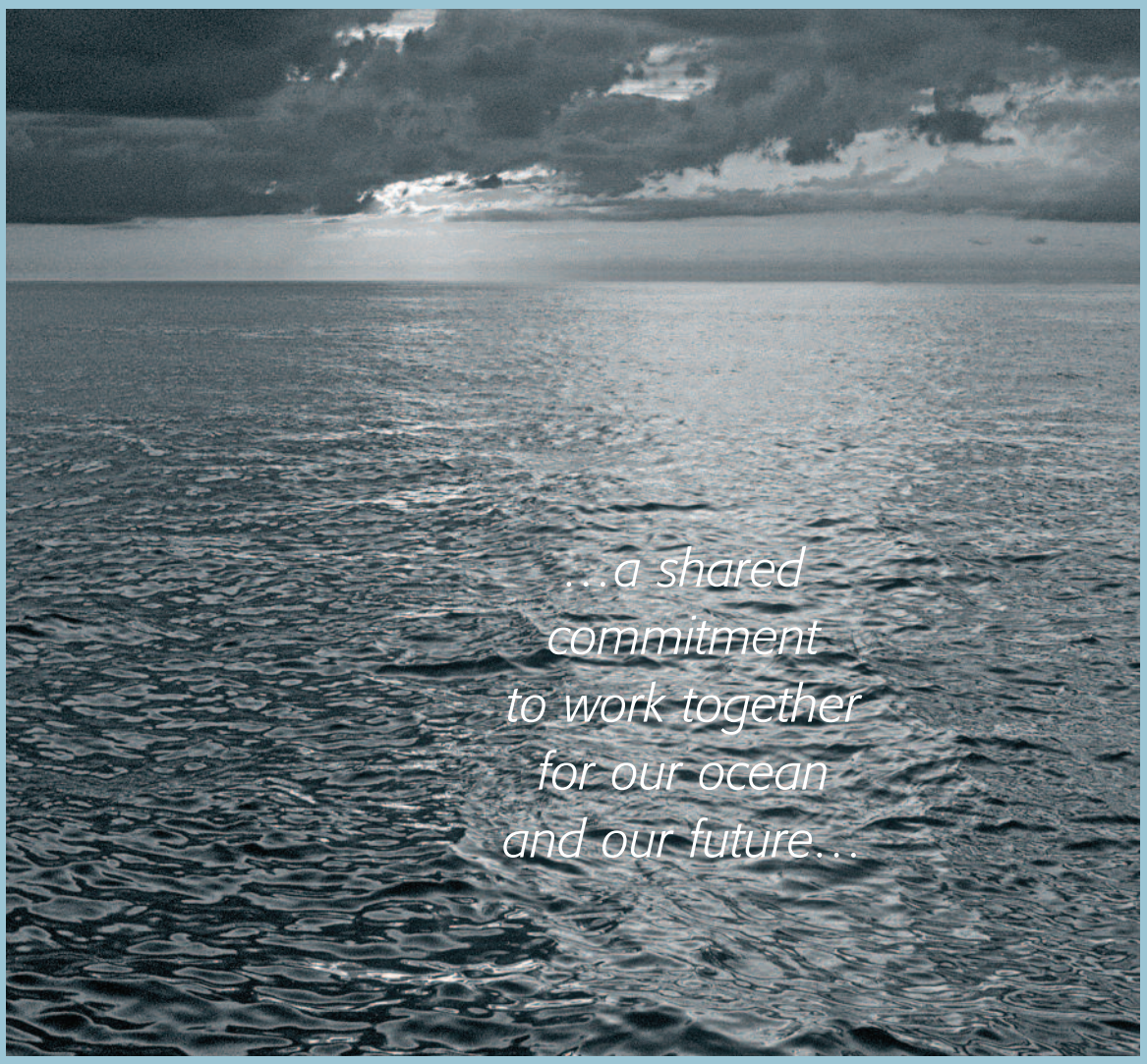
Hibernia Atlantic/North American Submarine Cable Association
Alternate: Rick Lowe

TOURISM

Currently vacant


…a shared
commitment
to work together
for our ocean
and our future…

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