

Special Marine Areas in Newfoundland & Labrador

Areas of Interest in our Marine Backyards

Prepared for CPAWS-NL
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CPAWS
CANADIAN PARKS AND WILDERNESS SOCIETY
NEWFOUNDLAND & LABRADOR CHAPTER

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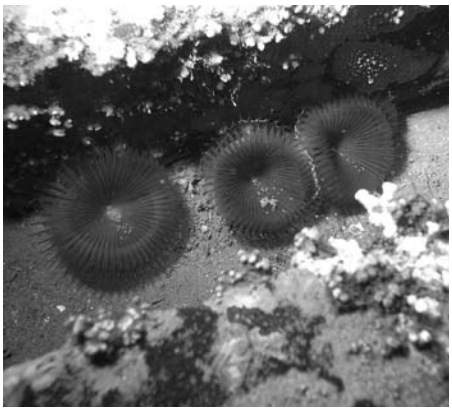


ABOUT CPAWS

Canadian Parks and Wilderness Society (CPAWS) is Canada's pre-eminent, community based, non-profit wilderness protection organization that works to protect Canada's wild ecosystems in parks, wilderness and similar natural areas, preserving the full diversity of habitats and their species. Founded in 1963, CPAWS has hundreds of committed volunteers, 20,000 members across the country, thirteen chapters, and a national office in Ottawa. We ground our work in conservation science and we create consensus for wilderness protection by engaging governments, industry and the Canadian public. On 1 November 2003, at the CPAWS National Board Meeting, Newfoundland and Labrador became a chapter of CPAWS.

The Newfoundland and Labrador chapter's mission is to promote the systematic establishment of new terrestrial and marine protected areas and to foster effective management of existing protected areas in the province. For the benefit of present and future generations, we envision the establishment of a representative system of terrestrial and marine protected areas, which incorporates the ecological, social and economic values of local communities and recognizes the importance of protected areas as an essential part of natural resource management and planning.

ACKNOWLEDGEMENTS

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SUMMARY

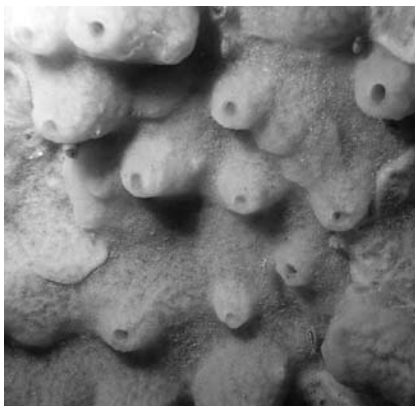
The coastal and marine region around the province of Newfoundland and Labrador is home to a number of areas that are of particular interest from ecological, social or economic perspectives. This is the first document that has integrated the input of governments, academics, non-governmental organizations and community members, as well as data from academic, government and community literature to compile information on these areas. This document is expected to aid in increasing public understanding of important areas in the province, as well as any current or potential threats to these areas; assist with education and public awareness-raising efforts concerning coastal and ocean management; and be a resource to communities, organizations and government departments involved in coastal and ocean strategy development.

A total of 73 sites are described in this document. Each site summary provides a general site description, and descriptions of the marine habitats, marine life of note, special features, existing protection and current or potential threats in each site, as well as some recommendations for protection of the integrity of the marine ecosystems in each site. Sites were suggested for inclusion for a variety of reasons, for example the presence of areas important for the spawning of commercially-important species, habitat for nesting or congregating seabirds or shorebirds, rare or endangered species, unique ecosystems or marine features, areas of high biodiversity, areas of high species abundance, migration corridors, areas determined by the scientific community to be ecologically and biologically significant, and areas identified by local communities as requiring protection.

Although each site is influenced by a number of different factors, several common concerns emerge. For example, the effects of existing and potential oil and gas development, coastal developments, the use of non-selective and destructive fishing gear, potential effects of shipping traffic such as oil pollution, and all-terrain vehicle use in sensitive areas are issues that are relevant to a number of different sites described in this document.

Common recommendations for preserving the integrity of the many special areas around the province include marine use planning to minimize or eliminate negative impacts on marine ecosystems, collaboratively-designed protection strategies for sensitive areas, and implementation of measures to prevent harmful events such as oil spills. The importance of public education and engagement, and meaningful community involvement in conservation efforts are also highlighted, as is the need for more research in significant marine areas.

This is intended as a working document to promote discussion and stimulate the gathering of further knowledge on the marine areas of interest around the province. By understanding these areas and promoting dialogue among stakeholders, we can work together to ensure that future generations will also enjoy the special marine areas in Newfoundland and Labrador.





INTRODUCTION

Why describe special marine areas?

The ocean surrounding Newfoundland and Labrador is the location of many ecologically unique, important and diverse marine areas, some of which are better known than others and many of which have supported or benefited generations of people and a cherished way of life. With the decline of many important fish populations, people around the province are questioning how to maintain the health of the ocean and everything it provides us.

One of the first steps in tackling this challenge is to identify and describe the most special marine areas in the province. A special marine area, for the purposes of the text and maps in this document, is an area where special features occur. It is not necessarily a recommendation for a protected area, and the maps in this workbook do not outline proposed boundaries.

More sophisticated processes exist for mapping special marine areas, such as the use of the decision-support tool Marxan in British Columbia. These processes require substantial time and funds, however, and organizations and individuals in Newfoundland and Labrador expressed a need to have a document produced sooner that could generate discussion and interest, a coarse first step that would lead to more sophisticated methods involving in-depth engagement of communities and other stakeholders. This workbook is that coarse first step.

The aim of this workbook is to launch a discussion about where special or representative marine features occur around the province, and to encourage interest among coastal communities and the general public about the wonders in our marine backyards. We hope that this will be a collaborative, informative and empowering tool for local communities and conservation champions to use to maintain the health of areas that are important to them.

We emphasize that this is a working document, a first edition that needs to be constructively commented on, critically analyzed and modified as necessary by you, the reader. The sites included here are suggestions based on initial discussions and research. We are aware that some sites have been overlooked in this edition, for example Gilbert Bay Oceans Act Marine Protected Area and Funk Island Spur, a coral “hotspot”. Perhaps other sites should not be included. At the end of this introduction, we have provided a comment sheet with questions for you to consider and discuss with others as you read the sections that are important to you.

The role and approach of CPAWS-NL

One of the objectives of the Canadian Parks and Wilderness Society, Newfoundland and Labrador Chapter (CPAWS-NL) is to promote the protection of special and representative areas in Newfoundland and Labrador. A challenge to achieving this objective is the lack of candidate marine areas. A need was identified by members of CPAWS-NL to compile an annotated list of special marine areas that could inform and empower local communities, and engage local people and conservation champions in the discussion of protection options.

On April 25th, 2006 CPAWS-NL organized a workshop involving 30 people from 13 organizations at the Fluvarium in St. John's, with two main purposes: to present, discuss and catalogue existing marine ecological region frameworks and to collect information in order to produce a document highlighting special marine areas. Individuals from Miawpukek First Nation; Fisheries and Oceans Canada; Parks Canada; Memorial University of Newfoundland; Ocean Sciences Centre; Fish, Food and Allied Workers; World Wildlife Fund; Quebec-Labrador Foundation; Newfoundland and Labrador Legacy Nature Trust; Natural History Society of Newfoundland and Labrador; Protected Areas Association of Newfoundland and Labrador; Whale Release and Strandings Program and CPAWS registered for the workshop. The abstracts of presentations made at the workshop have been published in the September 2007 edition of The Osprey (nature journal of Newfoundland and Labrador).

The 73 sites highlighted in this workbook include sites identified by the workshop participants, as well as additional sites identified later from scientific, government, corporate and community documents and consultation with researchers.

The identification and description of special marine areas in Newfoundland and Labrador will increase public understanding of these areas in the province, as well as any current or potential threats to them. It is our hope that this document will aid in education and public awareness-raising concerning coastal and ocean management and be a resource to communities, organizations and government departments involved in coastal and ocean strategy development. CPAWS-NL plans to continue discussions with a variety of stakeholders, including communities, Aboriginal peoples, industry, non-governmental organizations, schools, academics and various levels of government.

This document is a milestone for Newfoundland and Labrador, as it represents the first time that a local organization (CPAWS-NL) has engaged governments, academics and communities to identify special marine areas around the province. This document is a critical step in the path towards sustainable coastal and ocean management in the province.

To protect or not to protect?

Local and traditional knowledge, as well as scientific research, must inform both the selection of future protected areas and protection measures. Community involvement and public support for marine protected areas[1] are essential for their success. Key components to gaining this support and involvement include raising awareness that marine protection does not only mean the creation of no-take areas, and awareness about various ways that areas can be protected, including the legal tools that are available to establish marine protected areas. For example, zoning can allow for core areas that provide full protection from all human uses, as well as a range of buffer zones that allow for multiple uses that are consistent with the overall conservation goals of the protected area.

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1 Attempts have been made in this document to avoid confusion by making a distinction between Marine Protected Areas established under Canada's Oceans Act, and more generic marine protected areas established through other means or legislation. The former are referred to as Oceans Act Marine Protected Areas, or Marine Protected Areas designated under Canada's Oceans Act.

In Canada, marine protected areas can be established using a variety of legislative tools, including Marine Protected Areas under the Oceans Act, National Marine Wildlife Areas and National Wildlife Areas under the Canada Wildlife Act, National Marine Conservation Areas under the Canada National Marine Conservation Areas Act, and Migratory Bird Sanctuaries under the Migratory Birds Convention Act. In addition, in Newfoundland and Labrador Ecological Reserves can be established under the Wilderness and Ecological Reserves Act. Newfoundland and Labrador currently has two Oceans Act Marine Protected Areas (Eastport and Gilbert Bay), and a number of marine areas that are protected through other means or legislation, some of which are described in this document.

The collapse of Atlantic Cod is one example that has demonstrated that existing conservation mechanisms are not enough to ensure the long term health of species and ecosystems upon which coastal communities are dependent. This workbook is intended to open the door for multi-stakeholder discussion and collaboration for the protection of marine ecosystems in the province.

How to use this workbook

This workbook contains a series of maps showing the special marine areas identified in Newfoundland and Labrador, and a summary report for each area. The maps show areas that have been identified so far as containing special features. They do not indicate proposed protection boundaries. Some locations in Labrador have been indicated on the maps by name because they are referred to specifically in the summary reports for broader areas. **The summary reports include a general site description, and descriptions of the marine habitats, marine life of note, special features, existing protection and current or potential threats in each site, as well as some proposed recommendations to protect the marine environment in the area.** Some areas have been included as sub-sites of a larger area (e.g. Site 13a - L'Anse Amour is a sub-site of Site 13 – Strait of Belle Isle). To avoid repetition, not all information was included in the sub-site summary. The reader is advised to look at the summary of the larger area for more complete information.

Also included in this workbook is a list of general recommendations for special areas around the province. The list of references consulted in the preparation of this document is organized by location; some sources were used more generally and are provided at the beginning of the reference list. A list of the scientific names of species referred to in this document and a list of species at risk found in the province are included as appendices.

The National Marine Conservation Area (NMCA) regions referred to in this workbook are from the system developed by Parks Canada. The ecoregions referred to are from the classification system presented by the Protected Areas Association of Newfoundland and Labrador (2007), which is based on an assessment by Damman (1983), later refined by Meades (1990).

This document was compiled based on the best available and accessible information at the time of writing. Detailed studies were not available at the time of writing for all the special marine areas identified, and some areas are particularly data-poor, especially in terms of their marine features. There may be additional unique marine phenomena, habitats and species in these areas, but further research is required to determine this. In contrast, some information is common to many sites, but is repeated so that each site summary can be read on its own. Submission of additional information to fill in the gaps is welcome. Heritage wrecks have not been addressed in this document, but will be included in the next edition.

Please note that marine life highlighted in each site summary is not intended to be a complete list, and some marine species – particularly Leatherback Turtle and most cetaceans found in the province – can potentially occur anywhere in Newfoundland and Labrador and were not mentioned specifically in every summary. Furthermore, the described presence of certain mobile fauna at the sites, including fish, birds, seals and whales, often indicates seasonal presence. Several sites contain what are known

as Important Bird Areas (IBAs); these are sites known to provide essential habitat for one or more bird species. IBAs are identified using internationally standardized criteria, and the IBA program is coordinated by BirdLife International, a global partnership of non-governmental organizations.

It should also be noted that climate change has not been discussed at length in this document; however, after habitat loss, climate change is the biggest threat to biodiversity and potentially threatens marine ecosystems around the province. CPAWS promotes the protection of marine ecosystems to decrease stresses on natural ecosystems and increase ecological resilience, and to help these ecosystems survive and respond in the face of climate change.

Input, suggestions and responses to the discussion questions provided on the comment sheet in this workbook and at the end of each site summary are encouraged, and may be submitted to the Coordinator of CPAWS-NL:

CPAWS
CANADIAN PARKS AND WILDERNESS SOCIETY
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COMMENT SHEET

You can detach this sheet and send it to:
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St. John's, NL A1C 5M3
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11 DISCUSSION QUESTIONS:

1. Do you agree that the areas described in this document are special? Why or why not?

2. Are there additional details or special features of these areas that should be mentioned?

3. Should any other areas be included?

4. Should any areas be omitted?

5. What connections do you have with these special marine areas?

6. How can communities, governments or others act to ensure that future generations can also enjoy these special marine areas?

7. Should any of these areas be formally protected? If so, how? If not, why not?

8. How should communities, industry, government, conservation-related organizations and others be involved in protection efforts?

9. In your opinion, what are the 5 most important areas around the province that require the most urgent attention?

10. What should be done now, following the publication of this document?

11. Do you have any other comments on this document?

SPECIAL MARINE AREAS IN NEWFOUNDLAND AND LABRADOR

(These numbers and NMCA regions correspond with the numbers on the maps)

National Marine Conservation Area region 1 (NMCA 1): Hudson Strait
1 - Davis Strait - Hudson Strait

NMCA 2: Labrador Shelf
2 - Torngat Mountains Marine Area
3 - Saglek Bank
4 - Nain Coastline and Offshore Area
5 - Tessiarsuk Lake
6 - Quaker Hat Island
7 - Hamilton Inlet
7a - Gannet Islands
7b - Inner Groswater Bay
7c - Outer Groswater Bay
7d - Sandwich Bay
8 - Lake Melville
9 - Table Bay
10 - Southeast Labrador Slope
11 - Hawke Channel - Hamilton Bank
12 - St. Peter Bay

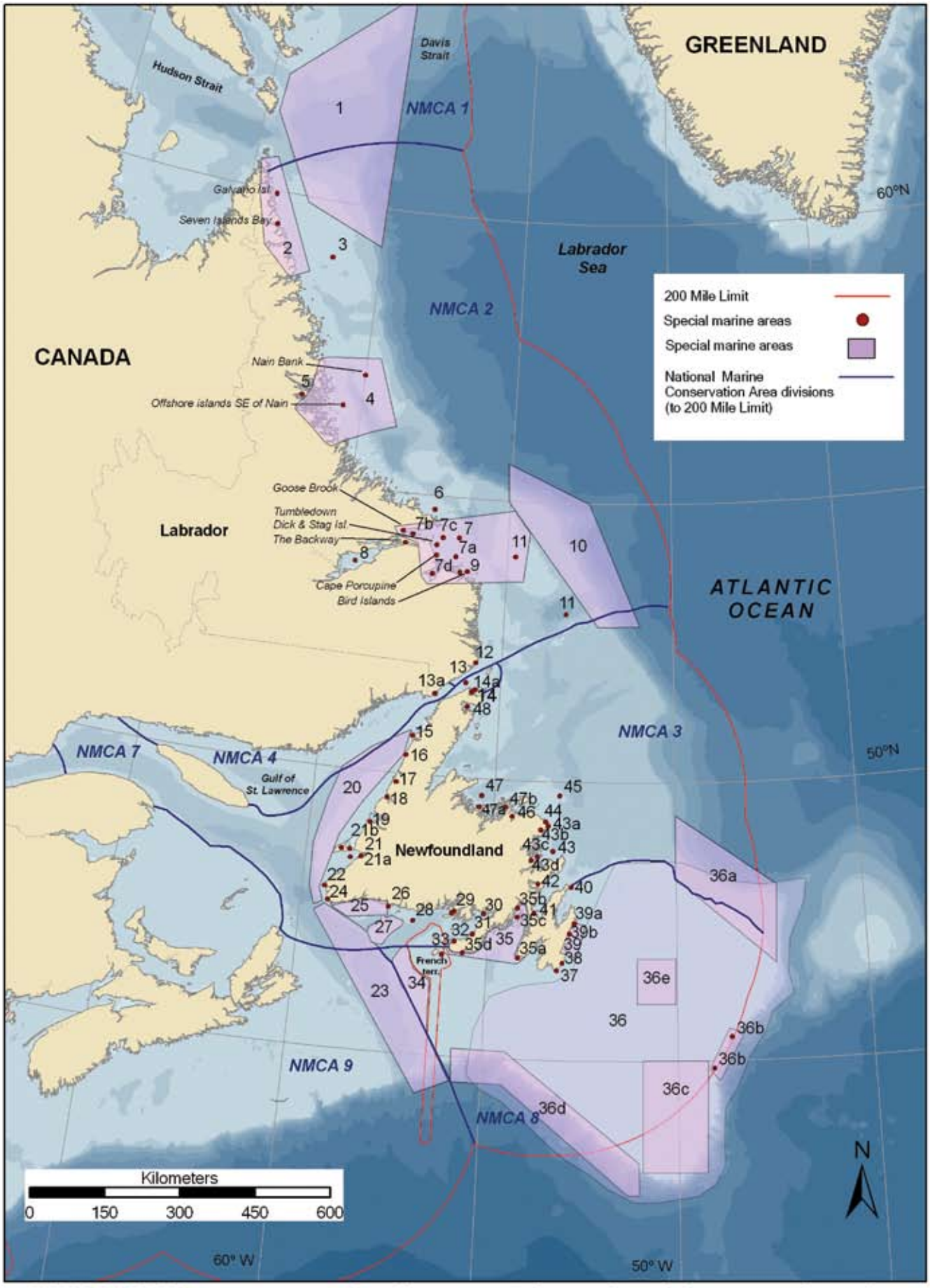
NMCA 4: North Gulf Shelf
13 - Strait of Belle-Isle
13a - L'Anse Amour - Point Amour

NMCA 7: Laurentian Channel
14 - Pistolet Bay
14a - Burnt Cape
15 - The Hole - Point Riche
16 - Table Point
17 - St. Paul's Inlet
18 - Bonne Bay
19 - Blow Me Down
20 - West Coast of Newfoundland
21 - St. George's Bay - Port au Port
21a - Sandy Point
21b - Boswarlos
22 - Codroy Valley
23 - Laurentian Channel
24 - J.T Cheeseman
25 - North Cabot Strait
26 - Sandbanks
27 - Burgeo Bank
28 - Penguin Islands
29 - Hermitage Bay - Goblin Head
30 - North Shore Fortune Bay
31 - Frenchman's Cove
32 - Fortune Head

NMCA 8: The Grand Banks
33 - Grand Colombier
34 - St. Pierre Bank
35 - Placentia Bay Extension
35a - Cape St. Mary's
35b - Bar Haven
35c - Ragged Islands, Placentia Bay
35d - Middle Lawn Island
36 - Grand Banks
36a - Northeast Shelf and Slope
36b - Lilly Canyon - Carson Canyon
36c - Southeast Shoal
36d - Southwest Grand Banks
36e - Virgin Rocks
37 - Mistaken Point - Cape Race
38 - Chance Cove
39 - Eastern Avalon
39a - Petty Harbour-Maddox Cove
39b - Witless Bay
40 - Baccalieu Island

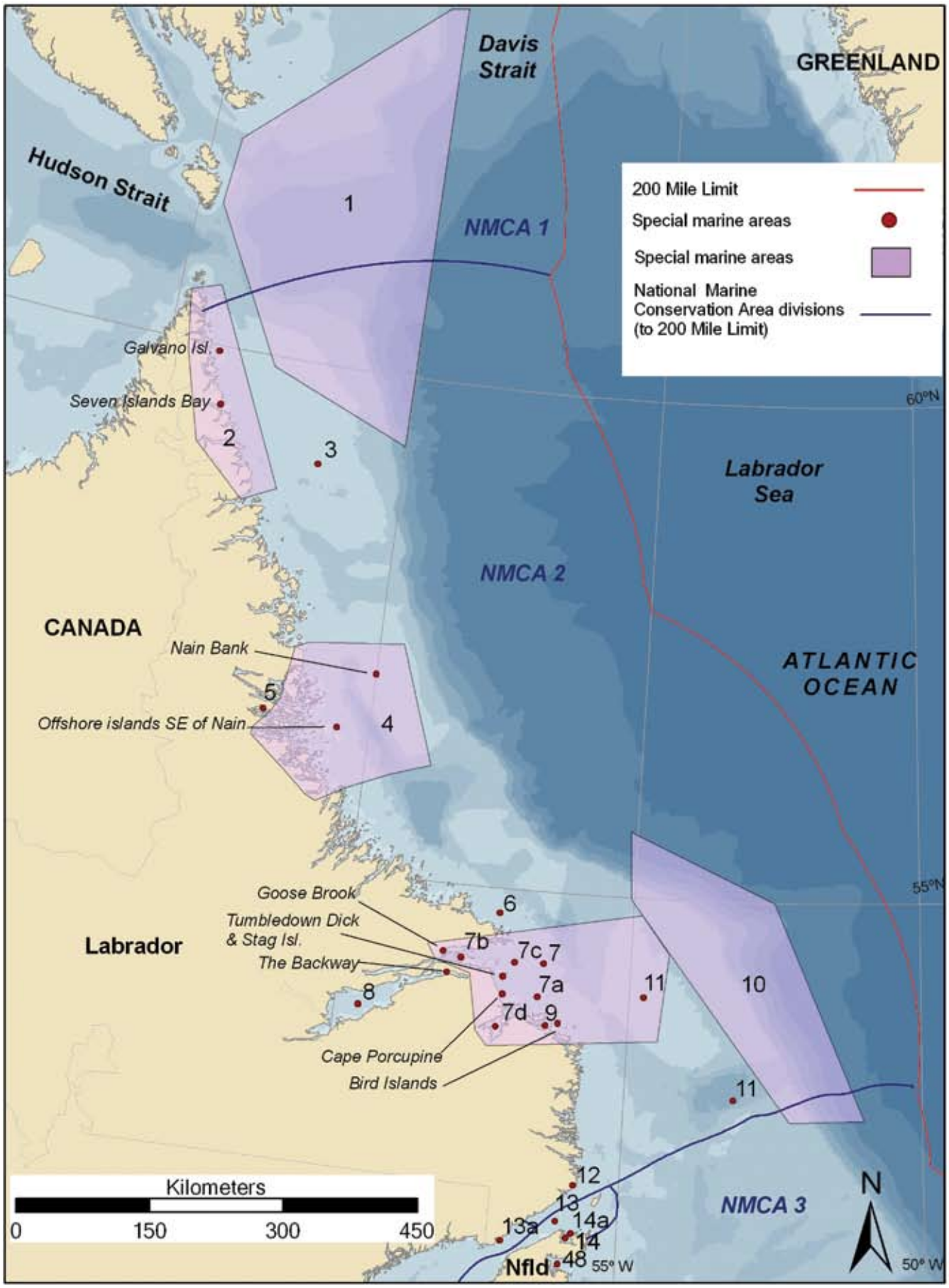
NMCA 3: Newfoundland Shelf
41 - Bellevue Beach
42 - Smith Sound
43 - Bonavista Bay
43a - Cabot Island
43b - South West Pond
43c - Eastport
43d - Newman Sound
44 - Windmill Bight
45 - Funk Island
46 - Gander Bay
47 - Notre Dame Bay
47a - Leading Tickles
47b - Dildo Run
48 - Hare Bay

Special Marine Areas in Newfoundland and Labrador



PLEASE NOTE: The areas presented on this map are study areas intended to promote discussion. They are not proposed protection boundaries.

Special Marine Areas in Labrador



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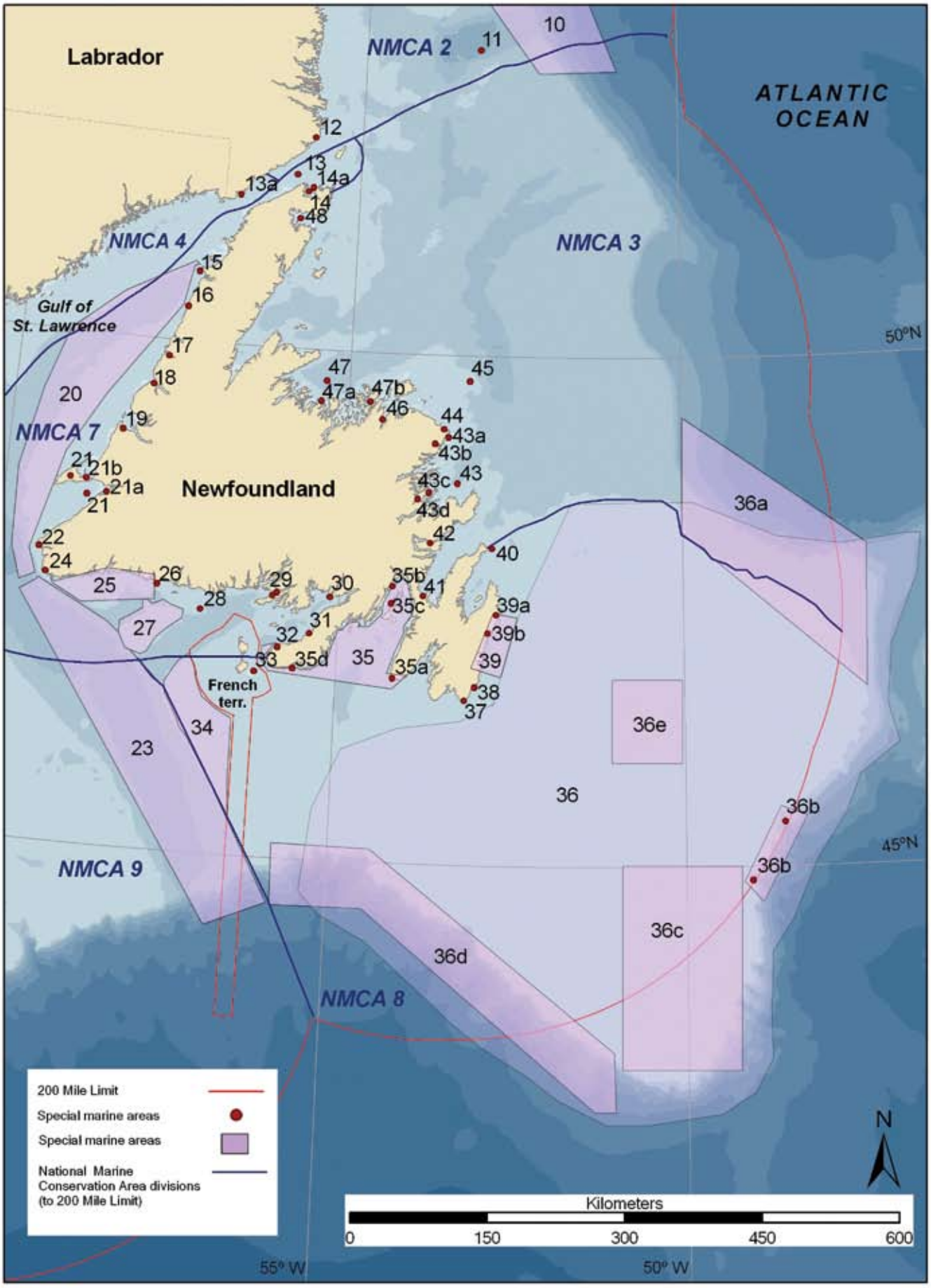
Special Marine Areas in Newfoundland



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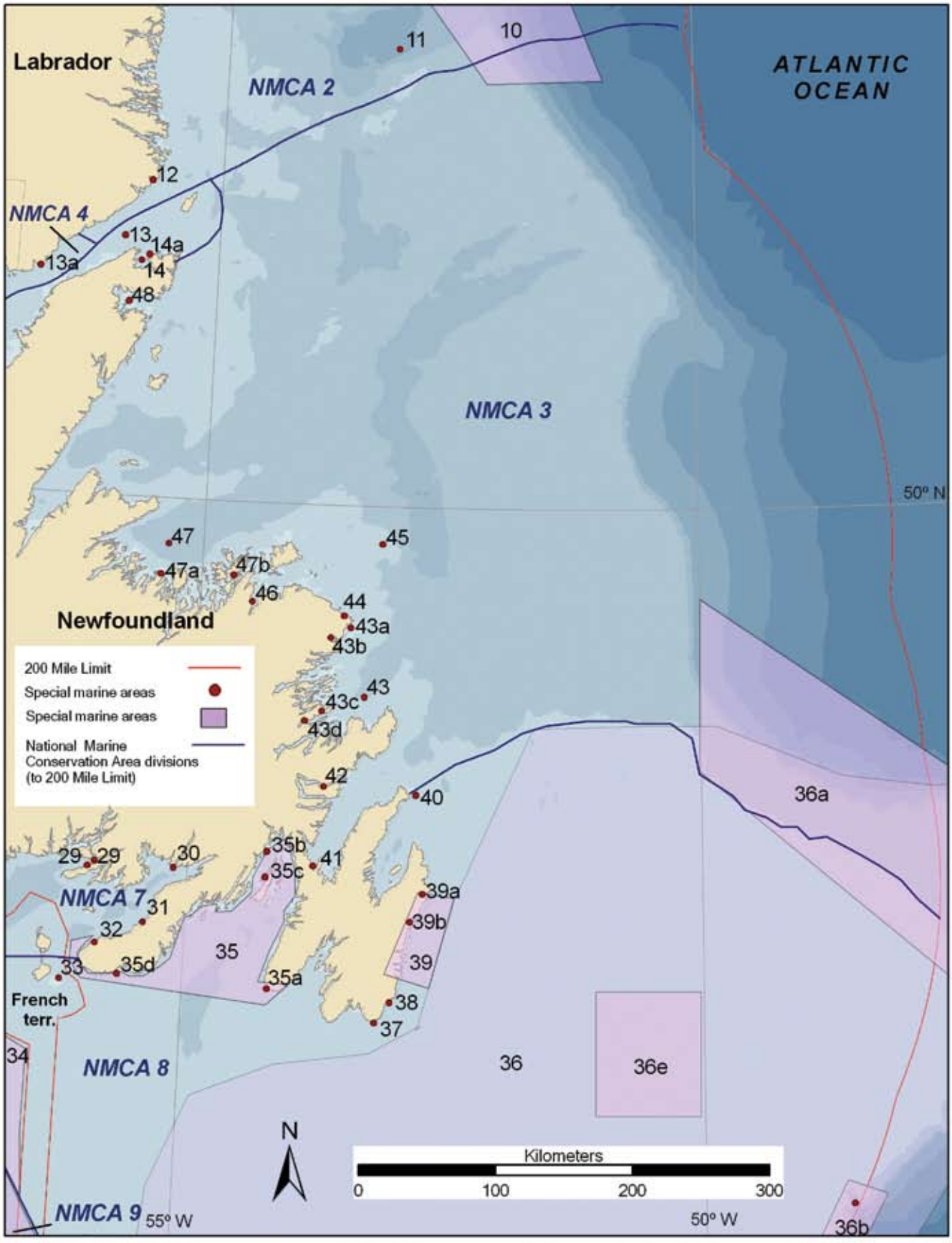
Special Marine Areas in NMCA Division 3: Newfoundland Shelf



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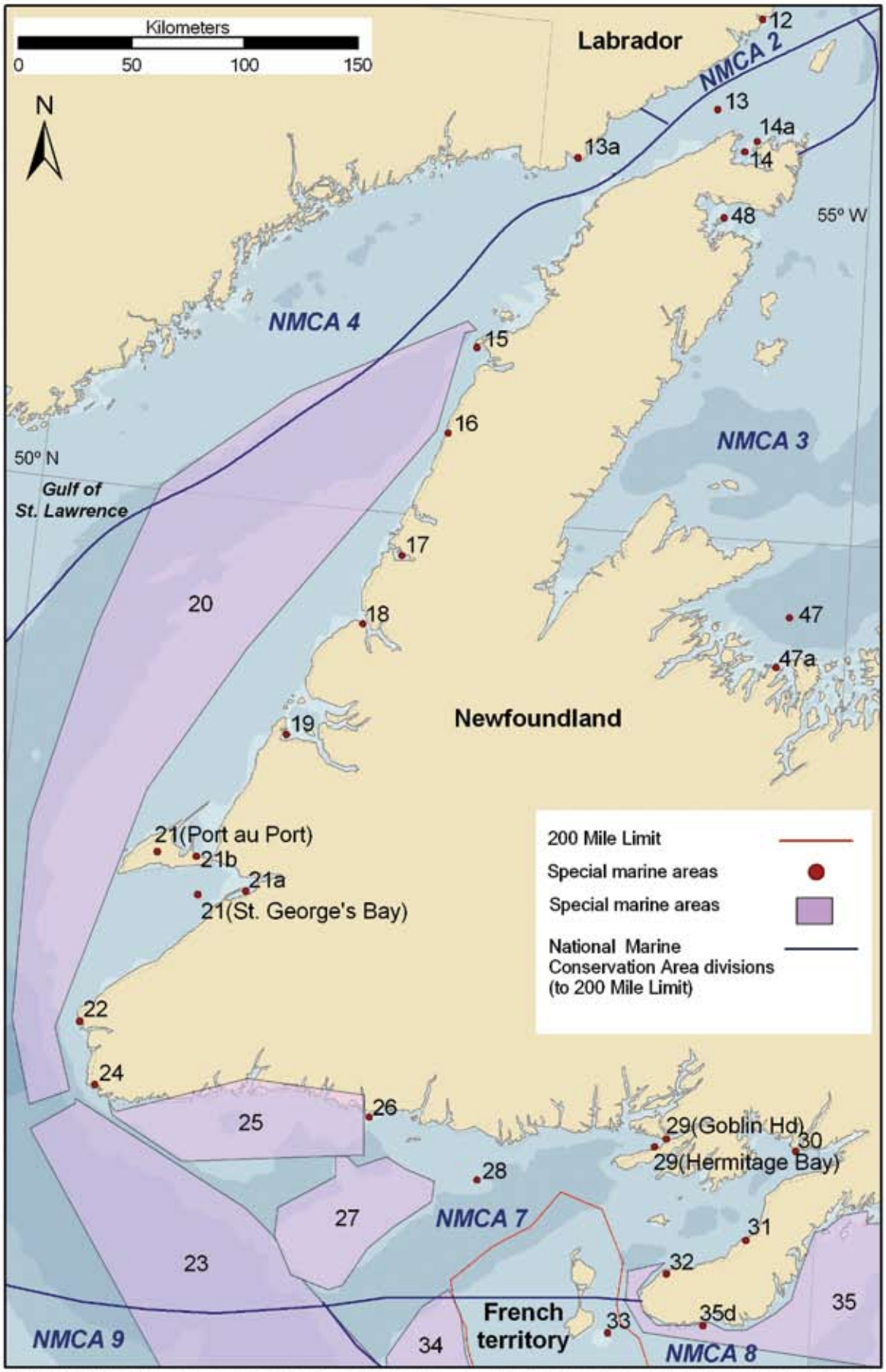
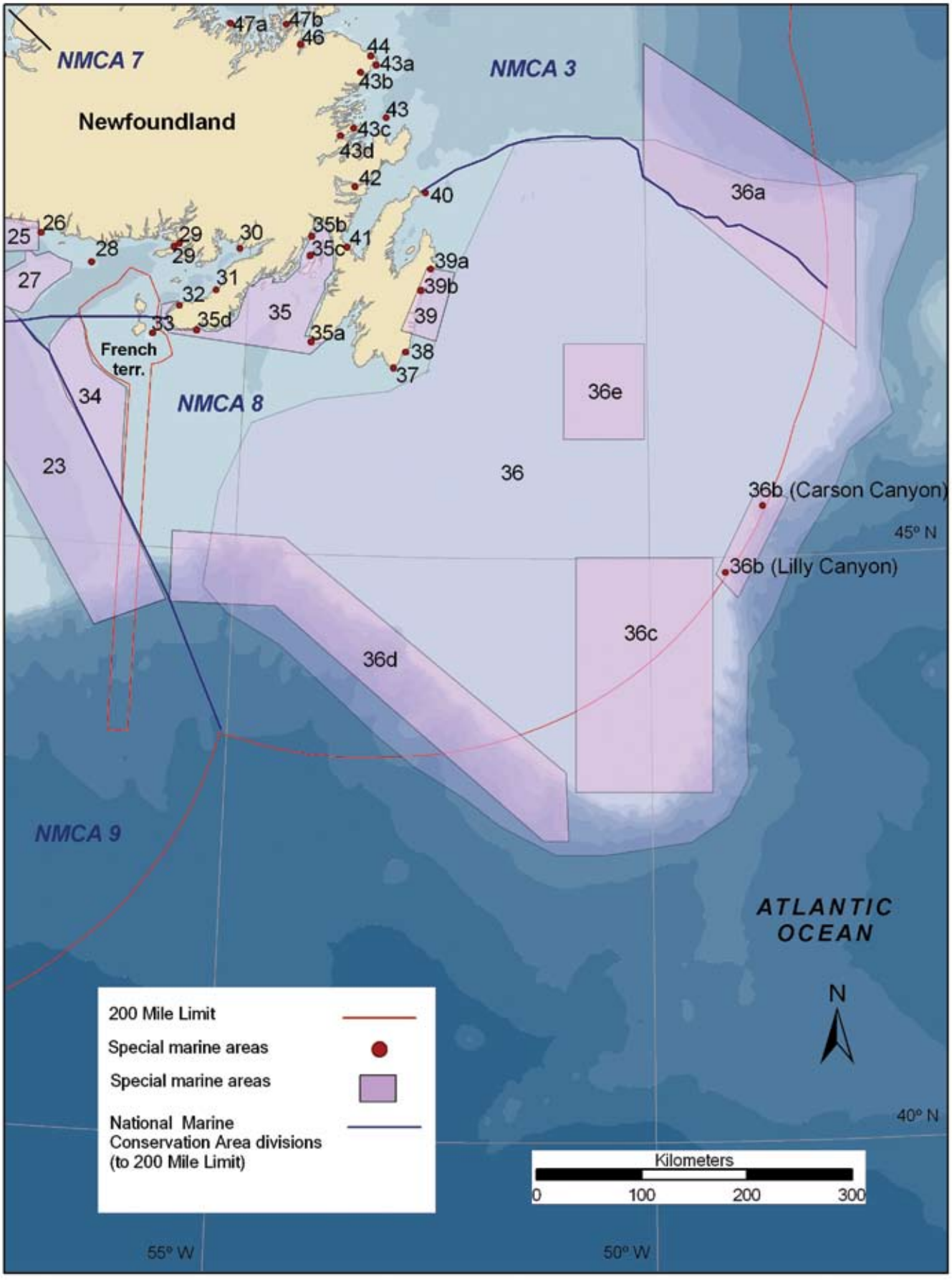
Special Marine Areas in NMCA Division 7: Laurentian Channel



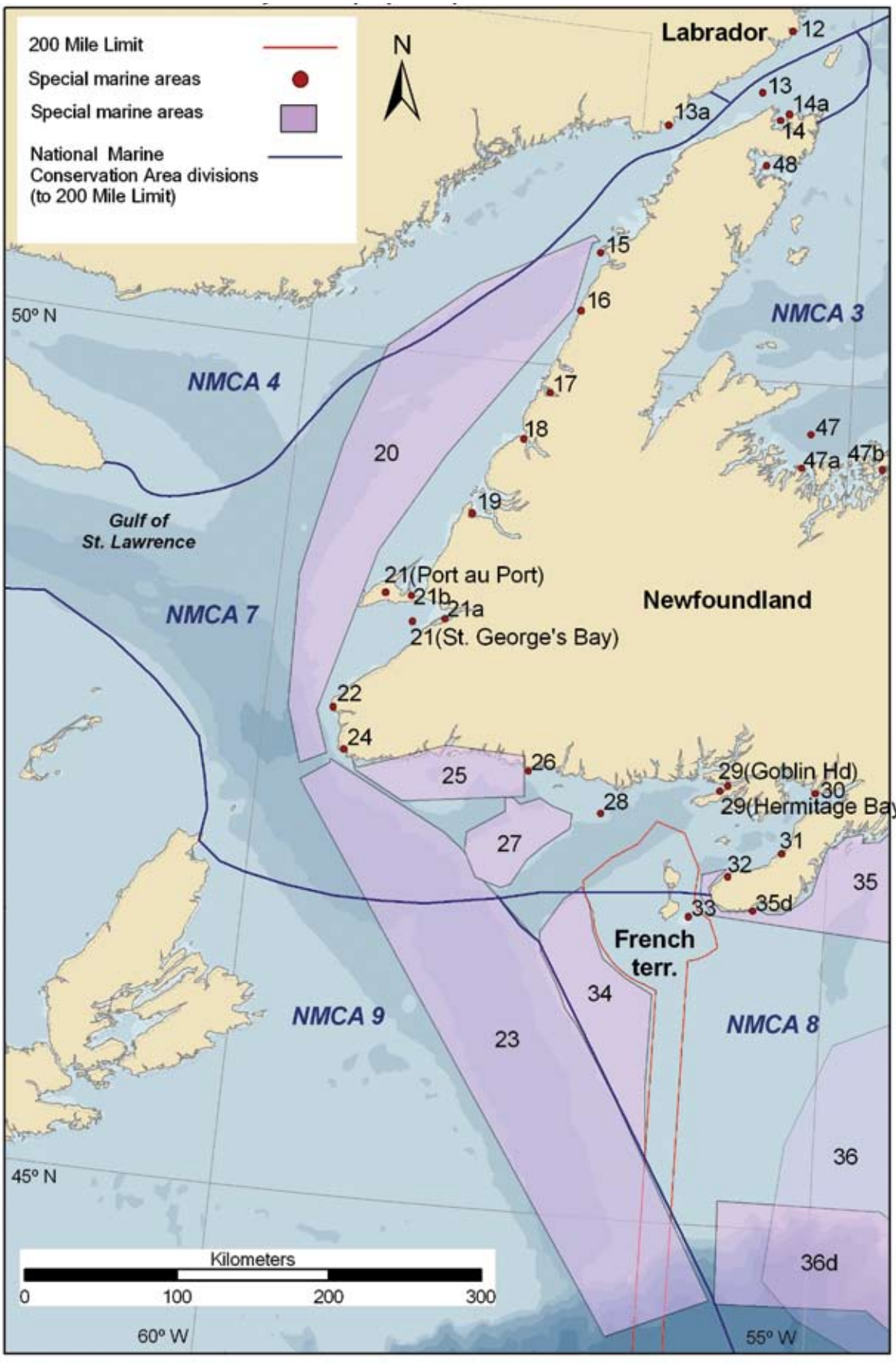
PLEASE NOTE: The areas presented on this map are study areas intended to promote discussion. They are not proposed protection boundaries.

Special Marine Areas in NMCA Division 8: The Grand Banks



PLEASE NOTE: The areas presented on this map are study areas intended to promote discussion. They are not proposed protection boundaries.

Special Marine Areas in NMCA Divisions 4, 7 and 9: North Gulf Shelf, Laurentian Channel and Scotian Shelf



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Davis Strait – Hudson Strait
64° N, 57° 15' W; 62° 17' N, 71° 23' W
Site: 1

Site Description

The Davis-Strait – Hudson Strait region is generally deep; 500 m depths are found close to shore, along underwater cliffs and canyons. Ungava Bay is the exception, with depths under 150 m. The mean tidal range is mostly 5 to 9 m, but reaches 15 to 18 m in southwest Ungava Bay. The tidal range and the resultant currents prevent the occurrence of more than 60% ice cover in winter in Hudson Strait. The bedrock coast is highly complex, comprised of inlets, islands, sounds, bays and fjords. The shoreline is dominated by 200 to 300 m cliffs and headlands, although Ungava Bay has a lower profile with tidal flats. A portion of the area of interest extends beyond the Newfoundland and Labrador marine region, into Nunavut.

Marine Habitats

Although the region is geographically within the Arctic, oceanographically it is more similar to the Atlantic marine environment. Arctic water from Hudson Bay mixes in the region with Atlantic water from the West Greenland Current. This convergence leads to high plankton, invertebrate and fish diversity.

Deep-sea corals are a significant habitat in this region. Although corals in the Northwest Atlantic do not build reefs, they provide habitat for several commercially fished species. Gorgonian corals (a type of branching, fan-shaped coral), in particular, provide smaller organisms with protection from predation, as well as resting, foraging and nesting areas.

Marine Life of Note

Over 900 species have been found in Ungava Bay, Hudson Strait and Davis Strait. Various species of **deep-sea corals** have been found in the area, for example *Primnoa resdaeformis* and, adjacent to Hudson Strait, *Paragorgia arborea*. Approximately 60 Arctic, subarctic and Atlantic marine, anadromous and freshwater fish species have been recorded in the region.

Nesting seabirds in the area include: Thick-billed Murres; Black Guillemots; Black-legged Kittiwakes; Glaucous, Iceland and Herring Gulls; Northern Fulmars and Common Eiders.

Marine mammals in the region include: Beluga, Northern Bottlenose, Sperm and Bowhead Whales; Narwhal; Ringed and Hooded Seals, and at-risk **Atlantic Walrus** and **Polar Bear**.

Special Features

The Davis Strait-Hudson Strait area is an area of concern for **deep-sea corals**, and is unique for a number of reasons. It appears to contain the **highest abundance of corals** observed in Newfoundland and Labrador waters, and perhaps in Atlantic Canada. It is also the only place in the province known to contain abundant *Primnoa*, the **longest-lived corals in the province**, and *Paragorgia*, the **tallest and largest corals in the Atlantic** region. It contains what is now called the Hudson Strait coral "hotspot", an area of particularly high coral abundance. The area also contains some of the only waters in the province that have not been fished, in the centre of a large basin up to 600 m in depth where the Hudson Strait drains into the Labrador Sea. The abundance of coral and sponges in the centre results in a rough bottom which damages fishing gear. This same area is the only location in the Newfoundland and Labrador and Arctic region where "coral forests", consisting of large gorgonian corals and other coral species, have been documented.

The striped pink shrimp, *Pandalus montagui*, has been found in large concentrations in the eastern Hudson Strait and Ungava Bay. Northern shrimp (*Pandalus borealis*), the most commercially important species found in the Canadian Northwest Atlantic, are found and harvested in the Davis Strait. This region also contains spawning aggregations of Greenland Halibut.

The eastern region of Hudson Strait is an important **seabird feeding area**. Hudson Strait is also the main **migration route** to Hudson Bay and Foxe Basin for Narwhals and Beluga and Bowhead Whales. These species winter in large numbers in the open waters of eastern Hudson Strait and the open pack ice of Davis Strait. Davis Strait contains a major Hooded Seal breeding area. The eastern part of the area contains many **polar bear** denning areas.

Protection

The region is not yet represented in the National Marine Conservation Areas system. In 2007, Canada's offshore trawling industry for shrimp and groundfish introduced a voluntary closure in a 12,500 km^2 area of Hudson Strait, near the convergence of the Hudson Strait and the Atlantic Ocean, as a Coral Protection Zone. Other coral conservation measures include: incorporation of a coral monitoring program into industry research surveys; cooperation between fishing captains and independent observers to collect coral data; cessation of fishing in areas where large branching corals are thought to exist; and avoidance of Coral Protection Zones. The closure and these measures apply to the Canadian Association of Prawn Producers, the Groundfish Enterprise Allocation Council and the Northern Coalition. The industry is only protecting certain species of corals in the area; however, including *Paragorgia arborea*, *Primnoa resedaeformis*, *Paramuricea* spp. and Antipatharian corals (black-wire corals).

Threats and Recommendations

Commercial whaling was the greatest threat to the Bowhead Whale and is the main reason why the species is at risk in this part of its range. Climate change could reduce ice coverage, thereby increasing the vulnerability of Bowhead Whales to Killer Whale predation, as well as influencing prey availability.

Criticisms of the fishing industry closure include its coverage of less than 1/3 of the Hudson Strait coral "hotspot", and only of an area that is not generally fished. The perimeter around this area is heavily fished. Also, some bottom trawlers are permitted to fish Aboriginal quotas in the area, and gill net and longline fishing is still active in the region. Voluntary closures are more appropriate where the actions of a single vessel do not inflict considerable damage; however, a single trawl operating over coral areas can collect as much as 500 kg of coral as by-catch within 15 minutes.

Bottom fishing, particularly trawling, is a major threat to **deep-sea corals**, due to by-catch or damage inflicted by the gear. Deep-sea corals are sessile suspension feeders; they are therefore affected by pollution and sediment resuspension (e.g. by discharges, trawling, dredging, seabed aggregate extraction or pipeline/cable laying) and are unable to move away from disturbances. The large protrusions exhibited by the species found in the Davis Strait-Hudson Strait region make these species

very susceptible to being damaged or collected by bottom fishing, particularly during the first tow of a trawl.

Oil and gas activity, including the possibility of future oil exploitation, also poses a threat to the unique Davis Strait-Hudson Strait marine environment. The placement of rigs, platforms and pipelines may crush corals, increase sediment resuspension, and alter currents and nutrient flows. Fine drill muds can also clog, choke and inhibit the feeding processes of individual coral polyps (animals). Deep-sea corals have such slow growth rates that recovery following damage or destruction might require more than 100 years. Oil pollution can also have devastating effects on seabirds, cetaceans and other marine organisms.

Further research is necessary on corals in Hudson Strait. Research on deep-sea corals is still in its infancy. Even less is known about Arctic corals than those on the Scotian Shelf. Due to the extreme vulnerability of corals, it is crucial to implement the precautionary principle in areas where they are present, such as Davis Strait - Hudson Strait. The voluntary fishing closure faces the danger of backfiring if fishers focus their effort in or surrounding the closed area, or in areas that may one day be closed through legislation.

Canada should immediately engage affected communities and conservation champions to discuss protection measures for the deep-sea corals found in Davis Strait - Hudson Strait, for example a more effective closure around the coral "hotspot". Additional research is necessary to identify other representative marine areas in the region. Coral locations should be identified, and oil and gas companies should work cooperatively with conservation champions to ensure that sensitive areas, including areas with high coral abundance, are not damaged.

Discussion Questions:

1. What are your comments?
2. Do you think this area is special? Why or why not?

Torngat Mountains Marine Area
60° 17' N, 64° 30' W to 58° 28' N, 63° 19' W
Site: 2

Site Description

The Torngat Mountains are the highest mountains in Canada east of the Rockies. The area has been the home of Inuit people and their predecessors for millennia. The area contains a 9700 km^2 National Park that extends along the coast from Saglek Fjord, including all islands and islets, to the northern tip of Labrador, and inland to the provincial boundary with Québec. They are within the Labrador Inuit Land Claims area, and Inuit continue to use the area for hunting, fishing and traveling.

There are three climatic zones in the coastal regions of the park: mountain alpine climate between Seven Islands Bay and Saglek Bay, characterized by high winds and sudden weather fluctuations; coastal fjords and headlands climate in the southeastern portion, influenced by the cold Labrador Current and where pack ice may remain into July; and the northern Torngat Mountains climate north of Seven Islands Bay, cooled by the waters of the Labrador Sea to the east, Ungava Bay to the west and Hudson Strait to the north.

Seven Islands Bay and Galvano Islands are of particular interest in the region. Seven Islands Bay is located between Eclipse Channel and Cape Daley. Its coastline measures 60 km. Galvano Islands consist of several small islands and offshore rocks found within a 10km by 10 km area of water. They are located 5 km east of Cape Kakkiviak, 60 km south of the northern tip of Labrador, and 400 km

north of the community of Nain. The waters surrounding both sets of islands are mostly ice-covered between December and June.

The Torngat Mountains are within the Alpine Tundra ecoregion, and their coast falls within the Labrador Shelf region of Parks Canada's National Marine Conservation Areas system.

Marine Habitats

The coast in the Torngat Mountains region consists of cliffs up to 900 m in height, several bays and fjords that extend for long distances into the mountain ranges, and a number of offshore islands. Marine sediment deposits extend many kilometres inland from the heads of the fjords.

Seven Islands Bay has a rocky coast that contains long fjord-like bays, high headlands, several small islets, offshore rocks and shoals. The Galvano Islands are low-lying, rocky and treeless.

Marine Life of Note

Fish in the area include Arctic Char, Atlantic Salmon and the at-risk **Atlantic Cod**. Birds include Common Eider and the at-risk **Harlequin Duck**, which nests along rivers in the southern part of the area, and moults along the north coast. Other bird species at risk in the area include **Barrow's Goldeneye** and **Peregrine Falcon**. Seabirds in the area include Atlantic Puffin, murres, gulls and razorbills.

Ringed, Hooded, Harp and Harbour Seals travel and feed in the area. Minke, Fin and Humpback Whales are also present. Whales migrate through the Labrador Shelf area. The at-risk **Polar Bear** hunts seals along the coast.

Special Features

Seven Islands Bay (59.42° N, 63.75° W) and Galvano Island (59.94° N, 63.97° W), located in the marine area adjacent to the Torngat mountains, have been identified by BirdLife International as **Important Bird Areas** (IBAs). Both are continentally significant for congregating bird species, and Seven Islands Bay is nationally significant for threatened species.

Some 22% of the estimated eastern North American population of the Harlequin Duck (327 birds) was observed in Seven Islands Bay in July 1994. This is the **largest concentration of Harlequin Duck recorded in Labrador**. The Harlequin Duck is a COSEWIC-listed Species of Special Concern. Galvano Island is significant for large numbers of breeding Common Eider, subspecies borealis.

Protection

The area is within a Fisheries Conservation Closed Area related to salmon fishing and conservation, administered by Fisheries and Oceans Canada under the Fisheries Act. On six days of the week, in areas where a gill net or trap net is fished inshore of a point of any bay, inlet, river or sound where such a feature is less than 6 nautical miles in width, gill net and leaders of trap nets must either be removed from the water or raised and tied to their head or float rope in such a way that they will not be able to catch salmon.

The Torngat Mountains received full National Park status in July 2008. There is currently no marine component to the National Park. Traditional activities such as fishing and hunting will be allowed within proposed park boundaries; however, the area is free from commercial, industrial and mineral development.

The Nunatsiavut Government has yet to designate any special marine areas.

Threats and Recommendations

Although the area has a long history of human use and occupation, and is still used by Inuit for hunting, fishing and traveling, it remains pristine.

Oil spills from shipping traffic, including accidental spills and illegal discharges, could threaten the birds at Seven Islands Bay and Galvano Island. The area is also threatened by potential oil exploration on the Labrador Shelf. The placement of oil rigs, platforms and pipelines can crush sessile, benthic organisms or smother them with increased sediment resuspension, and alter currents and nutrient flows. Discharges can affect water quality, rigs and vessels can attract seabirds, and artificial lighting can affect wildlife behaviour. Noise associated with oil exploration and production can impact marine mammals, particularly those that use acoustic communication and echolocation, as well as other marine species. This noise may also impact fisheries. Oil spills are possible during drilling and shipping, and can have devastating effects on seabirds, cetaceans and other marine organisms. Collisons between ships and marine mammals are also possible.

Seven Islands Bay and a radius around the Galvano Islands could be listed as a sensitive area on nautical charts. Increased enforcement, improved surveillance, higher fines and capture of polluters are also necessary to deter and prevent marine oil pollution. Convenient and accessible onshore oil disposal facilities for bilge and oil-contaminated ballast water should be established. Oil and gas companies should work cooperatively with conservation champions to ensure that sensitive areas are not damaged.

Due to the presence of a national park, the infrastructure is in place for further protection of the area. Discussions are encouraged between the management agency, Aboriginal people and other users in the area to explore options to extend protection into the adjacent marine environment. Additional research should be published regarding marine characteristics in the area.

Discussion Questions:

1. What are your comments?
2. Do you think this area is special? Why or why not?

Saglek Bank

59° 00’ N, 61° 40’ W
Site: 3

Site Description

Saglek Bank is one of the largest banks of the Labrador Shelf. It is located in northern Labrador, offshore of and adjacent to the Torngat Mountains, and extends from Cape Chidley at the northern tip of Labrador south toward Saglek Bay. It falls within the Labrador Shelf region of Parks Canada’s National Marine Conservation Areas system.

Marine Habitats

Nutrient-rich outflow from the Hudson Strait is transported by strong currents to the northern

Labrador Shelf, resulting in a high concentration of phytoplankton near the surface of the water at Saglek Bank.

Marine Life of Note

Invertebrates in the area include **cold-water corals**. Fish in the area include the at-risk **Atlantic Cod**. **Ivory Gull**, another species at risk, and Long-finned Pilot, Minke and Humpback Whales are also present.

Special Features

As mentioned previously, Saglek Bank is **rich in nutrients and phytoplankton**, particularly in summer. Zooplankton is also transported from the Hudson Strait, resulting in the presence of **unique deep water zooplankton** species at Saglek Bank that are not found in other banks of the Labrador Shelf.

The shelf break area of Saglek Bank is the most northerly region identified in scientific literature as a major spawning area for northern cod, although significant spawning no longer occurs on or near the bank. **Cod over-winter** on Saglek Bank before migrating to coastal areas of southern Labrador and northern Newfoundland. There is also wide diversity and high abundance of **cold-water corals** on the northern tip of the bank, including a high number, large sizes and shallowest records of the species *Primnoa resedaeformis*.

Protection

The area is within a Fisheries Conservation Closed Area related to salmon fishing and conservation, administered by Fisheries and Oceans Canada under the Fisheries Act. On six days of the week, in areas where a gill net or trap net is fished inshore of a point of any bay, inlet, river or sound where such a feature is less than 6 nautical miles in width, gill net and leaders of trap nets must either be removed from the water or raised and tied to their head or float rope in such a way that they will not be able to catch salmon.

The Nunatsiavut Government in Labrador has yet to designate any special marine areas.

Threats and Recommendations

There has been no significant cod spawning activity at Saglek Bank since the over-fishing of cod in the 1960s.

Deep-sea corals are sessile suspension feeders; they are therefore easily affected by pollution and sediment resuspension (e.g. by discharges, trawling, dredging, seabed aggregate extraction or pipeline/cable laying) and are unable to move away from disturbances. Bottom fishing, particularly trawling, is a major threat to deep-sea corals, due to by-catch and damage inflicted by the gear.

The area is also threatened by potential oil exploration on the Labrador Shelf. The placement of oil rigs, platforms and pipelines can crush sessile, benthic organisms or smother them with increased sediment resuspension, and alter currents and nutrient flows. Discharges can affect water quality, rigs and vessels can attract seabirds, and artificial lighting can affect wildlife behaviour. Deep-sea corals have such slow growth rates that recovery following damage or destruction might require more than 100 years. Noise associated with oil exploration and production can impact marine mammals, particularly those that use acoustic communication and echolocation, as well as other marine species, and may affect fisheries. Oil spills are possible during drilling and shipping, and can have devastating effects on seabirds, cetaceans and other marine organisms. Collisons between ships and marine mammals are also possible.

Fisheries management strategies aimed at rebuilding fish stocks could promote recolonization and recovery. In 2007, Canada's offshore trawling industry for shrimp and groundfish introduced a

voluntary closure in a 12,500 km^2 area of Hudson Strait, near the convergence of the Hudson Strait and the Atlantic Ocean, as a Coral Protection Zone. The industry should work with conservation champions to discussion expansion of this Coral Protection Zone to include coral areas at the northern tip of Saglek Bank. Oil and gas companies should work cooperatively with conservation champions to ensure that sensitive areas such as Saglek Bank are not damaged.

Discussion Questions:
1. What are your comments?
2. Do you think this area is special? Why or why not?

Nain Coast and Offshore
Offshore islands southeast of Nain: 56° 25' 12" N, 60° 34' 48" W
Nain coastline: 56° 29' N, 61° 14' W
Nain Bank: 57° N, 60° W
Site: 4

Site Description

This area is comprised of offshore islands southeast of the community of Nain in northcentral Labrador, the coastline and nearshore islands south of Nain, as well as Nain Bight as a representative area of the Nain Bank. Offshore islands southeast of Nain, between 30 and 60 km east of the mainland, include Pyramid, Barbican, the Castle, Negro, Ukallik, Kidlit and Nunaksuk Islands. They cover a total area of approximately 10 km^2. The area referred to as the Nain coastline is a 600 km^2 area bounded by Humbys Island, Dog Island, and the western and northern coasts of Paul Island. Nain Bank is one of the largest banks making up the Labrador Shelf. Circulation in the area is dominated by the cold Labrador Current. The Nain area falls within the Coastal Barrens ecoregion, as well as the Labrador Shelf region of Parks Canada's National Marine Conservation Areas (NMCAs) system. The land in the area is owned by the Labrador Inuit and governed by the Nunatsiavut Government.

Marine Habitats

This complex coastline is made up of hundreds of islands, islets and shoals with rocky shores. The Nain coast mostly exhibits two physiographical types: sloping bedrock shores on the outer coast and the sides of fjords and channels, and broad intertidal flats with boulder barricades in sheltered areas. The subtidal substrate in exposed areas consists of gravel, cobble or boulders, and in subtidal sheltered areas consists of mud and some coarser sediment. Kelp and other algae form dense stands in the sand of the latter near the boulder barricades.

There are two main rivers and many small streams that empty into the area, leading to extensive delta-related deposits and boulder-strewn intertidal flats. Dunes vegetated by stabilizing grasses, raised beaches, tide pools and salt marshes inundated by spring tides and storm surges are also present along the coastline. The inner basin of the fjord known as Nain Bay is made up of fine sediments, supporting sediment feeders and mobile carnivores, and the coarser and mixed sediments of the outer basin create a number of different habitats, supporting suspension feeders.

The offshore islands consist of bare granitic rock with scattered patches of tussock grasses. Some of the islands are steep and dome-shaped, and others have gradual slopes. Along with the many bays in the area, they shelter the shoreline. Nain Bank is relatively high in nutrients and primary

productivity, due both to local upwelling and transport of nutrients from the Hudson Strait.

Marine Life of Note

Marine invertebrates in Nain Bay include 17 species of gastropods (e.g. limpets and snails), 12 species of bivalves (e.g. clams and mussels), 11 species of polychaete worms, 30 species of amphipods (a type of crustacean) and 8 species of echinoderms (e.g. sea urchins). In the exposed areas with sloping bedrock, encrusting lichens grow above the high tide line and blue-green and filamentous algae grow below it.

The fauna in sheltered intertidal areas range from a nearshore barren zone to an area of rich algal growth, to burrowing molluscs and polychaetes in the inner and middle zones, to barnacles and molluscs at the boulder barricades and tide pools at the outer edge of the shore. Fucoids are the dominant algae. Polychaetes, molluscs and echinoderms are found in the subtidal zone.

Fish in the Nain area include Arctic Char, the at-risk **Atlantic Cod**, Atlantic Salmon, Greenland Halibut, capelin, sculpins, and Sand Lance.

Birds in the area include Atlantic Puffin; Razorbill; Surf, White-winged and Black Scoters; Glaucous, Great Black-backed and Herring Gulls; Thick-billed and Common Murres; Black Guillemot; Common Eider; Northern Phalarope and the at-risk **Harlequin Duck** and **Peregrine Falcon**.

Polar Bear, also a species at risk, uses the offshore islands throughout the year. Other marine mammals in the area include Long-finned Pilot, Beluga, Minke and Humpback Whales, White-beaked Dolphin and Ringed Seal.

Special Features

The area contains rich and diverse biota, and Nain Bank is **very productive** due to local induced upwelling from the shelf break and deep water troughs. In Nain Bay, for example, Pacific, Arctic and European fauna mix, due to the ocean circulation in the area. This results in **high species diversity** among sublittoral benthic macrofauna (organisms that live at the bottom of the ocean) in the area. At least 60% of species that had been recorded before 1981 from the eastern Canadian arctic were found in the 440 km^2 area of Nain Bay.

Portions of the coastline southeast of Nain and the offshore islands in the area have been identified by BirdLife International as **Important Bird Areas** (IBAs).

The offshore islands southeast of Nain support large numbers of nesting seabirds, and are considered globally significant with respect to congregatory species and colonial seabirds. Approximately 24,000 colonial seabirds were recorded on the islands in the late 1970s. Species present in significant numbers included over 3% of the estimated North American population of Atlantic Puffin – mostly on The Castle Island, 2.2% of the estimated North American population of Razorbill and 1.4% of the estimated North American population of Glaucous Gull – mostly on Ukallik Island. Thick-billed and Common Murres and Black Guillemot also nest in large numbers. Great Black-backed and Herring Gulls also nest on the islands.

The islands also have significant concentrations of fish, seals and whales, are rich in artifacts and provide important marine resources to local people.

The Nain coastline, including the offshore islands in the area, supports large numbers of moulting scoters. The area is considered globally and continentally significant with respect to congregatory species, and nationally significant with respect to threatened species and concentrations of waterfowl. Between 16,000 and 19,370 scoters were recorded in 1998-1999, including 12,500 Surf Scoters, representing at least 1% of its estimated global population. The greatest concentration was observed between Sandy Island and Skull Island.

A pre-moult flock of Harlequin Duck has been observed on the Nain coastline, and Peregrine Falcon nests in the area. Common Eider also nests on several islands in the area.

Protection

Nain Bight, as a representative area of the Nain Bank, has been identified as a possible NMCA (along with Hamilton Inlet/Hamilton Bank – see Sites 7 and 11) to represent the Labrador Shelf region. The Nunatsiavut Government has yet to designate any special marine areas.

The area is within a Fisheries Conservation Closed Area related to salmon fishing and conservation, administered by Fisheries and Oceans Canada under the Fisheries Act. On six days of the week, in areas where a gill net or trap net is fished inshore of a point of any bay, inlet, river or sound where such a feature is less than 6 nautical miles in width, gill net and leaders of trap nets must either be removed from the water or raised and tied to its head or float rope in such a way that it will not be able to catch salmon.

Threats and Recommendations

The area is very sensitive to pollution. Any contaminants and oil pollution has the potential of becoming trapped behind the islands and in the bays around Nain, and the coarse sediments, intertidal flats and beaches may trap and retain contaminants.

The shipping route associated with the Voisey's Bay mine, which is just south of the Nain coastline and passes among the offshore islands, is a potential threat to the birds. The presence of many shoals and small islands in the area increase the threat of shipwrecks and possible oil spills. Accidental spills and illegal discharges associated with shipping are also a threat. The area is also threatened by potential oil exploration on the Labrador Shelf. The placement of oil rigs, platforms and pipelines can crush sessile, benthic organisms or smother them with increased sediment resuspension, and alter currents and nutrient flows. Discharges can affect water quality, rigs and vessels can attract seabirds, and artificial lighting can affect wildlife behaviour. Noise associated with oil exploration and production can impact marine mammals, particularly those that use acoustic communication and echolocation, as well as other marine species. This noise may also impact fisheries. Oil spills are possible during drilling and shipping, and can have devastating effects on seabirds, cetaceans and other marine organisms. Collisons between ships and marine mammals are also possible.

It is recommended that the Nain coastline and offshore islands be listed as sensitive areas on nautical charts. Increased enforcement, improved surveillance, higher fines and capture of polluters are also necessary to deter and prevent marine oil pollution. Convenient and accessible onshore oil disposal facilities for bilge and oil-contaminated ballast water should also be established. Oil and gas companies should work cooperatively with conservation champions to ensure that sensitive areas are not damaged.

Additional studies are necessary to choose an NMCA candidate to represent the Labrador Shelf, and define its boundaries. Because NMCA lands and seabed must remain free of third party interests, the Nain coastline, offshore islands, Bight and Bank should remain free of exploration leases and licenses until the representative NMCA is chosen.

Discussion Questions:

1. What are your comments?
2. Do you think this area is special? Why or why not?

Tessiarsuk Lake
56° 30' N, 61° 57' W
Site: 5

Site Description

Tessiarsuk Lake is a permanently stratified landlocked fjord, isolated from the sea by a shallow threshold. The lake is situated at the head of Anaktalik Bay in Northern Labrador, close to the community of Nain. The lake is 4 km long and has an average width of 1.1 km. It is high in oxygen. Tessiarsuk Lake falls within the High Subarctic Tundra and Coastal Barrens ecoregions. It is located in the Labrador Shelf region of Parks Canada's National Marine Conservation Areas system. The land in the area is owned by the Labrador Inuit and governed by the Nunatsiavut Government.

Marine Habitats

Marine and coastal habitats in the area include coastal cliffs, rocky shores, inlets, coastal grasslands, salt marshes and bogs within valleys. Anaktalik Bay is a fjord. Tessiarsuk Lake is a flat-bottomed rock basin covered with a layer of fine silt deposits. It is a meromictic, stratified lake, meaning that the salt water and fresh water layers in the lake do not mix. Dense sea water enters the lake during tidal influxes and sinks to the bottom, and the surface layer remains fresh due to small river outflows.

Marine Life of Note

Marine species in the lake include a diversity of invertebrate fauna, including several copepods that are indigenous to the area, and a rare priapulid worm. Marine fish include Rock Cod and a small **population of Atlantic Cod which is probably resident**. Breeding birds in the area include the species at risk **Harlequin Duck** and **Barrow's Goldeneye**, as well as Red-breasted Merganser, Common Eider, Common Goldeneye, Canada Goose, scoters (e.g. Surf Scoter), Least Sandpiper, Red-necked Phalarope, Solitary Sandpiper and Spotted Sandpiper. **Polar Bears**, and Ringed, Bearded, Harp, Hooded, Grey and Harbour Seals are found in the Coastal Barrens ecoregion.

Special Features

In addition to being a **rare meromictic lake**, Tessiarasuk Lake is the only known North American site of the **rare species of priapulid worm** *Halicryptus spinulosus*. Fish in the ecoregions include Atlantic Salmon, Arctic Char, Three-spine and Nine-spine Sticklebacks, Northern Pike, Slimy Sculpin and Longnose and White Suckers.

The Nain coastline is an Important Bird Area, as it is important for moulting seaducks, including large numbers of scoters, and breeding seabirds, particularly on nearby islands. In addition, seals whelp on the islands, coasts and pack ice in the area, or migrate through.

Protection

The area is located within Salmon Fishing Area 1, a Fisheries Conservation Closed Area administered by Fisheries and Oceans Canada under the Fisheries Act, aimed at protecting and conserving Atlantic salmon (*Salmo salar*) stocks. The Nunatsiavut Government has yet to designate any special marine areas.

Threats and Recommendations

Potential threats in the area include oil pollution and over-harvesting. The shipping route of the Voisey's Bay nickel mine, south of this area, is a potential threat in terms of possible shipwrecks and oil spills. Harlequin Ducks in the area have been impacted by hunting, habitat destruction and oil pollution.

Maintaining the health of Tessiarsuk Lake would increase the potential for research on the rare habitats and species it contains. It is recommended that the vicinity of the lake be noted as a sensitive area on nautical charts. Surveillance, enforcement, fines and capture of polluters must be increased in order to deter and prevent marine oil pollution.

Discussion Questions:

1. What are your comments?
2. Do you think this area is special? Why or why not?

Quaker Hat Island

54° 45' N, 57° 20' W
Site: 6

Site Description

Quaker Hat Island is an isolated 10 km^2 island located 10 km northeast of the northern head of Hamilton Inlet and 40 km southeast of Cape Harrison, in Labrador. It is within the Labrador Shelf region of Parks Canada's National Marine Conservation Areas system.

Marine Habitats

The island is treeless, with rocky shores.

Marine Life of Note

There are a number of breeding seabirds on the island, including Razorbill, Thick-billed Murre, Common Murre and Atlantic Puffin. Whales are known to migrate through the Labrador Shelf area.

Special Features

Quaker Hat Island has been identified by BirdLife International as an **Important Bird Area**, and is globally significant with respect to congregatory species. Breeding seabirds observed at the island include 450 pairs of breeding Razorbill (over 1% of the estimated North American population), 650 pairs each of Thick-billed and Common Murres, and 2100 pairs of Atlantic Puffin.

Protection

The area is within a Fisheries Conservation Closed Area related to salmon fishing and conservation, administered by Fisheries and Oceans Canada under the Fisheries Act. On six days of the week, in areas where a gill net or trap net is fished inshore of a point of any bay, inlet, river or sound where such a feature is less than 6 nautical miles in width, gill net and leaders of trap nets must either be removed from the water or raised and tied to their head or float rope in such a way that they will not be able to catch salmon.

Threats and Recommendations

Oil pollution from shipping related to mining at Voisey's Bay may pose a threat to the area. Oil pollution can have devastating effects on seabirds, cetaceans and other marine organisms. The area is also threatened by potential oil exploration on the Labrador Shelf. The placement of rigs,

platforms and pipelines can crush sessile, benthic organisms or smother them with increased sediment resuspension, and alter currents and nutrient flows. Discharges can affect water quality, rigs and vessels can attract seabirds, and artificial lighting can affect wildlife behaviour. Oil spills are possible during drilling and shipping, and can have devastating effects on seabirds, cetaceans and other marine organisms.

A radius around Quaker Hat Island should be listed as a sensitive area on nautical charts. Increased enforcement and awareness, improved surveillance, higher fines and capture of polluters are also necessary to deter and prevent marine oil pollution. Convenient and accessible onshore oil disposal facilities for bilge and oil-contaminated ballast water should be established. Oil and gas companies should work cooperatively with conservation champions to ensure that sensitive areas such as Quaker Hat Island and the surrounding areas used by seabirds are not damaged. Updated surveys are needed to determine the current populations of breeding seabirds on the island.

Discussion Questions:

1. What are your comments?
2. Do you think this area is special? Why or why not?

Hamilton Inlet

54° 16' N, 57° W
Site: 7

Site Description

The coastal area around Hamilton Inlet falls within the Coastal Barrens and Mid Boreal Forest ecoregions. The entire inlet falls within the Labrador Shelf region of Parks Canada's National Marine Conservation Areas system. Important areas within Hamilton Inlet include the Gannet Islands (Site 7a), Groswater Bay (Sites 7 b and c) and Sandwich Bay (Site 7d). The communities of Rigolet and Cartwright are in the Hamilton Inlet area.

Marine Habitats

Four major rivers drain into Hamilton Inlet: Churchill (Mishta-shipu, Grand), North West (Naskaupi), Kenamu and Goose, draining a significant portion of the Ungava Peninsula. Coastal and marine ecosystems in the area include estuaries, intertidal flats, wetlands adjacent to the Mealy Mountains, coastal plains, sand dunes at Porcupine Strand, offshore islands and the open ocean. The intertidal marshes in southeastern Labrador, for example at the south shore of Groswater Bay, are part of delta complexes, and are comprised of tidal mudflats, pannes (shallow estuarine depressions frequently inundated by storm tides) and swards (grassy areas containing brackish water).

Marine Life of Note

Marine invertebrates in the area include whelk, sea urchin, scallop, Toad Crab, clams and mussels. Fish in the area include cod, Brook Trout, Arctic Char, Atlantic Salmon, Atlantic Sturgeon and capelin.

Birds in the coastal and marine area include Atlantic Puffin, murres, petrels, gannets, Whimbrel, Lesser Golden Plover, Black-bellied Plover, Canada Goose, Common Eider, Black Duck, Green-winged Teal, Mallard, American Wigeon, Gadwall, Ring-necked Duck, Greater and Lesser Scaup,

Common and Red-breasted Merganser, Hooded Merganser, Common Goldeneye, Bufflehead, Black Scoter, Surf Scoter, White-winged Scoter, Long-tailed Duck and Osprey. Bird species at risk in the area include **Harlequin Duck**, **Peregrine Falcon** and **Barrow's Goldeneye**.

Seals, Minke and Humpback Whales and the at-risk **Polar Bear** are also found in the area. Whales, porpoises and dolphins migrate through the Labrador Shelf area.

Other species at risk in the Labrador Shelf area include **Atlantic, Northern and Spotted Wolffish**, **Eskimo Curlew** (possibly extinct), **Ivory Gull**, **Blue Whale** and **Leatherback Turtle**.

Special Features

Hamilton Inlet and Lake Melville together form the largest estuary in Labrador.

The area contains several regionally, nationally and internationally significant waterfowl, seabird, and other migratory bird colonies, aggregations and habitats. **Some of the largest aggregations in the province of staging waterfowl** (birds feeding or resting during migration) in spring and fall occur in these areas. The coasts of Hamilton Inlet are also part of the historical range of the endangered Eskimo Curlew, which may now be extinct.

Some waterfowl species of special conservation concern breed extensively in the area, including Black Duck, Surf Scoter and Black Scoter. These species are the focus of the Black Duck and Sea Duck Joint Ventures, under the North American Waterfowl Management Plan, an international, multi-stakeholder action plan to conserve migratory birds throughout the continent. Lesser Scaup are receiving increasing conservation attention due to continental-level population declines. Harlequin Duck, a Species of Special Concern under the Species at Risk Act, likely breeds in a number of locations in or adjacent to the proposed Mealy Mountain National Park area, and also moults in the area. Barrow's Goldeneye, a sea duck Species of Special Concern, may also breed in the area.

Intertidal marshes in the area contain unique flora, including temperate and arctic species, as well as species that occur on both sides of the Atlantic. **Saltmarsh Cordgrass**, found in Lake Melville and Groswater Bay, is rare in Newfoundland and Labrador and this region of Labrador is its northern limit. This cordgrass plays an important role in stabilizing shorelines, particularly the sand/silt environments that exist in the area.

Protection

Hamilton Inlet has been identified by Parks Canada as a representative marine area for possible consideration as a National Marine Conservation Area.

The area is within a Fisheries Conservation Closed Area related to salmon fishing and conservation, administered by Fisheries and Oceans Canada under the Fisheries Act. On six days of the week, in areas where a gill net or trap net is fished inshore of a point of any bay, inlet, river or sound where such a feature is less than 6 nautical miles in width, gill net and leaders of trap nets must either be removed from the water or raised and tied to its head or float rope in such a way that it will not be able to catch salmon.

The estuary of the Eagle River, which flows into Sandwich Bay, is also a Fisheries Conservation Closed Area administered by Fisheries and Oceans Canada under the Fisheries Act (see Site 7d).

Threats and Recommendations

The Saltmarsh Cordgrass habitats at Lake Melville and Groswater Bay, the intertidal marshes in Groswater Bay and Sandwich Bay and the sand dunes in southeastern Labrador are fragile and sensitive to disturbance. Possible threats include creation of paths and roads, oil contamination and changes in tidal flow.

The area is also threatened by potential oil exploration on the Labrador Shelf. The placement of

oil rigs, platforms and pipelines can crush sessile, benthic organisms or smother them with increased sediment resuspension, and alter currents and nutrient flows. Discharges can affect water quality, rigs and vessels can attract seabirds, and artificial lighting can affect wildlife behaviour. Noise associated with oil exploration and production can impact marine mammals, particularly those that use acoustic communication and echolocation, as well as other marine species. This noise may also impact fisheries. Oil spills are possible during drilling and shipping, and can have devastating effects on seabirds, cetaceans and other marine organisms. Collisons between ships and marine mammals are also possible.

Proposed hydroelectric developments on the Churchill River at Gull Island and Muskrat Falls would likely result in significant downstream effects, including changes to hydrology, and sediment and nutrient transport, which would affect the estuarine, wetland and waterfowl habitat in the area, as well as food webs involving commercially-important fish species.

Oil and gas companies and other resource developers should work cooperatively with conservation champions to ensure that sensitive areas of Hamilton Inlet are not damaged. Some of the coastal areas of Hamilton Inlet should be included in the proposed Mealy Mountain National Park. This would protect the important, fragile and unique habitats in the area, and protect birds during breeding, moulting and staging. Park boundaries and regulations should be developed in collaboration with Aboriginal peoples and other stakeholders in the area.

Further research on the coastal and marine environment is necessary in the area to inventory and monitor the habitats and wildlife. For example studies are necessary to confirm the status of species at risk such as Harlequin Duck and Piping Plover in the area.

Discussion Questions:

1. What are your comments?
2. Do you think this area is special? Why or why not?

Gannet Islands

53° 56 N, 56° 32’ W
Site: 7a

Site Description

The Gannet Islands are a remote group of small islands close to the mouth of Sandwich Bay, northeast of the community of Cartwright in southcentral Labrador. The nearest point on the mainland to the Gannet Islands is Grady, 17 km away. These islands are located in the Coastal Barrens ecoregion. They are also in the Labrador Shelf region of Parks Canada’s National Marine Conservation Areas system.

Marine Habitats

All of the islands are low lying, rocky and composed of granite. The vegetation is dominated by dwarf heath scrub, with sedges and grasses characteristic of tundra ecosystems also present. Black spruce is found on one of the islands. Marine habitats include coastal cliffs and rocky shores.

Marine Life of Note

Fish in the vicinity of the islands include Atlantic Salmon and cod.

Seabirds on the islands include Atlantic Puffin, Black Guillemot, Great Black-backed Gull, Herring Gull, Leach’s Storm-petrel, Black-legged Kittiwake, Common Murre, Thick-billed Murre, Northern

Fulmar and Razorbill. Despite the name, no gannets are found on the Gannet Islands. Other nesting birds observed on the islands include Common Eider, Spotted Sandpiper, White-crowned Sparrow, American Pipit, Common Raven, Savannah Sparrow and Horned Lark. Species at risk on the islands include **Peregrine Falcon** and **Harlequin Duck**, which moults on the islands.

Marine mammals in the ecoregion include the at-risk **Polar Bear**, and Ringed, Bearded, Harp, Hooded, Grey and Harbour Seals. There have been occasional sightings of the endangered **North Atlantic Right Whale** around Labrador.

Special Features

The Gannet Islands are an Important Bird Area and contain the largest and most diverse seabird breeding colony in Labrador, with over 170,000 birds. The islands contain the largest seabird colony in Labrador, with tens of thousands of pairs of Atlantic Puffins, Common Murres and Razorbills. They contain the **largest Razorbill colony in North America** with approximately 10,000 breeding pairs, and the second largest breeding colony of Atlantic Puffin in eastern North America. They are also the **largest known moulting site for Harlequin Duck** in eastern North America, with approximately 300 individuals moulting annually. Outer Gannet Island, in particular, contains the most birds of all the islands.

Seals whelp on the islands, coasts and pack ice in the area, or migrate through.

Protection

The archipelago of seven main islands and several islets comprising the Gannet Islands, as well as their surrounding waters, is a 166.4 km^2 Seabird Ecological Reserve protecting Common Eider, Razorbills, Common Murre and Atlantic Puffin and their habitats. Visitor access is not permitted, except for scientific purposes. The marine area within the Gannet Islands Ecological Reserve falls under the jurisdiction of the Wilderness and Ecological Reserves Act, which prohibits the use of motorized vehicles or equipment within the reserve. This marine area is listed in the Sailing Directions as being part of an Ecological Reserve, and vessels are requested to maintain a distance of 500 m or more from the islands.

Threats and Recommendations

Threats to the bird colonies include gill nets, incidental takes in murre hunt, reduction in the populations of forage fish and oil pollution. Studies of bird diets in the area show a lack of capelin in their diets, indicating a lack of capelin within the area. There are few restrictions on fishing around the islands.

Management agencies should engage fishers in discussions to determine sustainable fishing methods around the Gannet Islands, for example minimum distance of gill-netting, and examine other fishing methods in the area to determine how to minimize negative effects on marine food webs. Increased enforcement, improved surveillance, higher fines and capture of polluters are also necessary to deter and prevent marine oil pollution. Convenient and accessible onshore oil disposal facilities for bilge and oil-contaminated ballast water should also be established.

Discussion Questions:

1. What are your comments?
2. Do you think this area is special? Why or why not?

Inner Groswater Bay
54° 16' N, 57° 55' W
Site: 7b

Site Description

Groswater Bay is located in southern Labrador at the western end of Hamilton Inlet. The inner part of the bay falls within the Coastal Barrens and High Boreal Forest ecoregions as well as the Labrador Shelf region of Parks Canada's National Marine Conservation Areas system.

Particular areas of interest in inner Groswater Bay include Goose Brook (54° 19' N, 58° 14' W) and the southern Groswater Bay coast. Goose Brook flows into the Labrador Sea where Lake Melville and Hamilton Inlet meet. It is located approximately 20 km northeast of the community of Rigolet.

Marine Habitats

Inner Groswater Bay is characterized by large tidal amplitude, deep glaciofluvial and fluvial deposits, outwash (sediment deposited by streams flowing away from a melting glacier) and shallow water. These phenomena create large intertidal flats that are rich in invertebrates and important for waterfowl aggregation.

The coastal habitats at inner Groswater Bay contain Saltmarsh Cordgrass (*Spartina alterniflora*), which provides important habitat for staging and breeding waterfowl such as dabbling ducks and geese, as well as breeding Common Eider.

Goose Brook empties into a small, sheltered bay in which exist large mud and sand flats, which are exposed at low tide. The bay freezes over between November and May. Due to currents and shallow water, the inshore tidal flats open earlier in the spring than surrounding waters, which provides feeding habitat for geese during spring migration.

The southern shore of Groswater Bay is relatively flat, with boulder-strewn mudflats exposed at low tide. There are many coves and shallow bays along the coastline, and there are several islands within 5 km of the coast. The intertidal marshes at the south shore of Groswater Bay are part of delta complexes and are comprised of tidal mudflats, pannes (shallow estuarine depressions frequently inundated by storm tides) and swards (grassy areas containing brackish water). The area freezes over between December and early June.

Marine Life of Note

Marine invertebrates in inner Groswater Bay include Toad Crab, mussels, scallops and sea urchins. Fish in the area include capelin, turbot, flounder, Atlantic Salmon and Rock Cod. Birds include Double-crested Cormorant, Whimbrel, Lesser Golden Plover, Black-bellied Plover, Canada Goose, Common Eider, Surf and Black Scoters and other sea ducks, gulls and terns. Harp Seal and Humpback and Minke Whales are also present. Whales, dolphins and porpoises migrate through the Labrador Shelf area.

Special Features

Intertidal marshes in the area contain unique flora, including temperate and arctic species, as well as species that occur on both sides of the Atlantic. **Saltmarsh Cordgrass** is rare in Newfoundland and Labrador and this region of Labrador is its northern limit. This cordgrass plays an important role in stabilizing shorelines, particularly the sand/silt environments that exist in the area.

The area contains **many important bird habitats**. For example, inner Groswater Bay is **important for migrating shorebirds**, and moulting scoters and other sea ducks, and contains **one of the two**

largest breeding colonies of Common Eider in the province. Significant aggregations of shorebirds such as Whimbrel, Lesser Golden Plover and Black-bellied Plover occur during late summer/fall migration in the area.

The Goose Brook estuary in inner Groswater Bay is an Important Bird Area (IBA). Goose Brook is continentally significant with respect to congregatory bird species, particularly Canada Goose. Northeastern Groswater Bay is globally significant with respect to congregatory species and colonial seabird concentrations. The bay at the Goose Brook estuary has been identified as the **most important staging area for Canada Geese in Labrador**. It supported over 6100 Canada Geese in 1987, representing approximately 5% of the estimated North Atlantic population. Fewer numbers were recorded in subsequent years.

The southern coast of Groswater Bay is also an IBA, and is considered continentally significant with respect to congregatory species. It supports significant concentrations of nesting, pre-moulting, moulting and staging waterfowl, including at least 1000 nesting pairs of Common Eider, and large numbers of scoters.

Protection

The area is within a Fisheries Conservation Closed Area related to salmon fishing and conservation, administered by Fisheries and Oceans Canada under the Fisheries Act (see Site 7).

Threats and Recommendations

The intertidal marshes in the area are extremely fragile and sensitive to small environmental disturbances such as the creation of paths and trails, oil pollution and changes to hydrology. Damaged marshes are also difficult to rehabilitate.

There is a regular freight shipping route from June to November through Groswater Bay into Lake Melville, which poses a threat of oil spills and illegal discharges, which can be lethal to birds. All ships entering Lake Melville between June and November pass within 10 km of Goose Brook. Potential oil exploration on the Labrador Shelf is also a possible threat to the area. Oil spills are possible during drilling and shipping, and can have devastating effects on seabirds, cetaceans and other marine organisms. Collisons between ships and marine mammals are also possible.

Proposed hydroelectric developments on the Churchill River at Gull Island and Muskrat Falls would likely result in significant downstream effects, including changes to hydrology, and sediment and nutrient transport, which would affect the estuarine, wetland and waterfowl habitat in the area, as well as food webs involving commercially-important fish species. Seventy per cent of fishers interviewed in the area in 1981 felt that the Churchill Falls hydroelectric project had contributed to the decline of the cod fishery in Groswater Bay, due to changes in outflow and increased mercury content in the water.

The Goose Brook estuary could be listed as a sensitive area on nautical charts. Increased enforcement, improved surveillance, higher fines and capture of polluters are also necessary to deter and prevent marine oil pollution. Convenient and accessible onshore oil disposal facilities for bilge and oil-contaminated ballast water should also be established. Oil and gas companies and other resource developers should work cooperatively with conservation champions to ensure that sensitive areas are not damaged or otherwise negatively affected.

Discussion Questions:

1. What are your comments?
2. Do you think this area is special? Why or why not?

Outer Groswater Bay
54° 16' N, 57° 10' W
Site: 7c

Site Description

Groswater Bay is located in southern Labrador at the western end of Hamilton Inlet. It is within the Coastal Barrens ecoregion and falls within the Labrador Shelf region of Parks Canada's National Marine Conservation Areas system. Outer Groswater Bay is the eastern portion of the bay, beginning approximately 65 km northeast of the community of Rigolet.

Particular areas of interest in outer Groswater Bay include Cape Porcupine, a 30 km^2 peninsula which divides the 40 km coastal area known as Porcupine Strand in the southeast portion of the outer bay. Porcupine Strand is protected to some extent by small offshore islands and shallow water. Offshore islands, many smaller than 1 km^2, such as George, Tumbledown Dick, Stag, Herring, the Doughboy, Caesar, Puffin, Tinker and North Green Islands, as well as many smaller islets are also of interest in the area.

Marine Habitats

Porcupine Strand is a sandy beach with dunes. In many places along the beach, the adjacent boreal forest or barrens extend immediately from the high tide line. The offshore islands in northeastern Groswater Bay contain gently sloping rocky hills and steep rock cliffs. Those that have soil are covered in dense heath-type vegetation and tussock grasses. Tumbledown Dick and Stag Islands are rugged and rocky with dry barrens, small bogs and stunted forests in ravines.

Marine Life of Note

Marine invertebrates in outer Groswater Bay include Iceland Scallop. Based on observations of scoters feeding in the area, there are likely other shellfish on the shallow, sandy bottom at Porcupine Strand. Fish in the area include capelin, turbot, flounder, Arctic Char, trout, Atlantic Salmon and Rock Cod. Harp Seal, White-beaked Dolphin and Killer, Humpback and Minke Whales are also present.

Birds at Cape Porcupine include Surf, White-winged and Black Scoters. The islands in Northeast Groswater Bay support many nesting seabirds. In particular, they contain large Common Murre, Razorbill and Atlantic Puffin colonies. Thick-billed Murre, Black Guillemot, Northern Fulmar, Black-legged Kittiwake, Great Black-backed Gull and Leach's Storm-Petrel also breed on the islands. Terns, Common Eider and the at-risk **Harlequin Duck** are also present.

Special Features

The area contains **many important bird habitats**.

Porcupine Strand may be important to Harlequin Ducks staging in the fall. Cape Porcupine is an Important Bird Area that is globally significant with respect to congregatory species and nationally significant with respect to waterfowl concentrations. As many as 10,000 pre-moulting scoters have been observed staging in the area at one time. Trunmore Bay, just south of Cape Porcupine, is the second most important scoter moulting site in Groswater Bay.

Northeastern Groswater Bay has also been identified as an IBA, and is globally significant with respect to congregatory species and seabird concentrations on its offshore islands. Almost 28,000 pairs of seabirds were estimated to nest on islands in the bay in 1978, the most recent estimate. The Herring Islands house the **second largest seabird colony in Labrador**. Groswater Bay is used by over 4000 pairs of Common Murres and 1645 pairs of Razorbills, one of the rarest breeding auks in North

America.

The four islands that make up Tumbledown Dick and Stag Islands are continentally significant with respect to congregatory species, and nationally significant with respect to threatened species. Approximately 11% of the estimated eastern North American population of Harlequin Duck was recorded on the islands in 1998. These islands are also important moulting locations for Harlequin Duck.

West Bay, on the southern shore of Groswater Bay, contains breeding grounds for ducks and geese.

Protection

The area is within a Fisheries Conservation Closed Area related to salmon fishing and conservation, administered by Fisheries and Oceans Canada under the Fisheries Act (see Site 7).

Threats and Recommendations

There is a regular freight shipping route from June to November through Groswater Bay into Lake Melville, which poses a threat of oil spills and illegal discharges, which can be lethal to birds.

Seventy per cent of fishers interviewed in the area in 1981 felt that the Churchill Falls hydroelectric project had contributed to the decline of the cod fishery in Groswater Bay, due to changes in outflow and increased mercury content in the water. Proposed additional hydroelectric developments on the Churchill River and potential oil exploration on the Labrador Shelf are also possible threats to the area (see Site 7).

Management strategies for this area should be developed with local communities to maintain the integrity of Harlequin Duck habitat and other sensitive areas. This would be in keeping with the National Recovery Plan for the eastern North American Harlequin Duck. Cape Porcupine and a radius around and including the islands in outer Groswater Bay could be listed as sensitive areas on nautical charts. Increased enforcement, improved surveillance, higher fines and capture of polluters are also necessary to deter and prevent marine oil pollution. Convenient and accessible onshore oil disposal facilities for bilge and oil-contaminated ballast water should also be established.

Discussion Questions:

1. What are your comments?
2. Do you think this area is special? Why or why not?

Sandwich Bay

53° 36’ N, 57° 14’ W
Site: 7d

Site Description

Sandwich Bay is located in the southern portion of Hamilton Inlet in southcentral Labrador. Cartwright is a major community on the bay. The outer portions of Sandwich Bay fall within the Coastal Barrens ecoregion. The remainder of the coast around the bay is within the Mid Boreal Forest ecoregion. The bay as a whole falls within the Labrador Shelf region of Parks Canada’s National Marine Conservation Areas system.

Marine Habitats

Paradise River empties a 5276 km^2 drainage area into Sandwich Bay. The bay is characterized by large tidal amplitudes, deep glaciofluvial and fluvial deposits, outwash (sediment deposited by streams flowing away from a melting glacier) and shallow water. These phenomena create large intertidal flats

that are rich in invertebrates and important for waterfowl aggregation. **Saltmarsh Cordgrass** is present in intertidal marshes in the area. Large, sandy shoals are also common around much of Sandwich Bay.

The sea bottom consists of rock, gravel, sand and mud. Seaweeds in the bay include *Fucus*, coralline algae, *Agarum, Plumaria, Porphyra, Rhodymenia, Laminaria, Chorda,* dulse*, Alaria, Ascophyllum,* filamentous algae, *Ectocarpus* and sea lettuce. Eelgrass is also present in the bay.

Marine Life of Note

Marine invertebrates in Sandwich Bay include scallops, Blue Mussel, soft-shelled and other clams, cockles, sea urchins, Hermit Crab, Toad Crab. Fish in the bay include flatfish, capelin, Northern Whelk and other gastropods, sea stars, sea cucumber, sponges, ascidians (sea squirts), sea anemones, periwinkle, shrimp and brittle stars.

Birds at Sandwich Bay include Whimbrel, Lesser Golden Plover, Black-bellied Plover and gulls. Marine mammals include Long-finned Pilot Whale and the at-risk **Polar Bear**.

Special Features

The area contains **many important bird habitats**. Significant aggregations of the shorebirds mentioned above occur during late summer/fall migration on the coasts of Sandwich Bay.

Saltmarsh Cordgrass reaches its northern limit in this part of Labrador, and helps to stabilize shorelines, particularly in sandy and silty areas such as Sandwich Bay.

Protection

The area is within a Fisheries Conservation Closed Area related to salmon fishing and conservation (see Site 7). The estuary of the Eagle River, which flows into Sandwich Bay, is also a Fisheries Conservation Closed Area, aimed at protecting and conserving salmon stocks. No unauthorized salmon licence holder may fish for salmon with a net in the estuary. These closed areas are administered by Fisheries and Oceans Canada under the Fisheries Act. An integrated land use management plan has been developed for Sandwich Bay.

Threats and Recommendations

Dangers associated with potential oil exploration on the Labrador Shelf are possible threats to the area (see Site 7). The intertidal marshes in the area are fragile ecosystems and are sensitive to disturbances such as trail creation, oil pollution and changes in tidal flow.

Protection of shorebird habitat at Sandwich Bay could be included with the establishment of the Mealy Mountains National Park.

Discussion Questions:

1. What are your comments?
2. Do you think this area is special? Why or why not?

Lake Melville

53° 41’ N, 59° 35’ W
Site: 8

Site Description

Lake Melville is located in southern Labrador, and is separated from Groswater Bay and Hamilton Inlet by a narrow, 2 km wide passage at the community of Rigolet. Lake Melville is tidal and up to 160 km long by 40 km wide. At the eastern region of the lake is the Backway, a fully sheltered,

narrow saltwater bay that is 35 km long and 3 km wide. At the western end of the lake are the communities of Happy Valley-Goose Bay, Sheshatshiu and North West River. The southern shore of Lake Melville is within the High Subarctic Tundra ecoregion. The northeastern portion of the Backway in Lake Melville is within the Coastal Barrens ecoregion. It falls within the Labrador Shelf region of Parks Canada's National Marine Conservation Areas system. Portions of the coast of Lake Melville are within Labrador Innu Lands or the Labrador Innu Settlement Area.

Marine Habitats

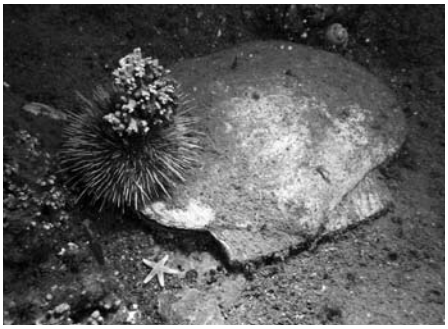
The Churchill (Mishta-shipu, Grand), Naskaupi and Kenamu are major rivers that empty into Lake Melville. There are extensive intertidal wetlands around the lake. The coastal habitats at Lake Melville contain a diversity of wetland plant species including Saltmarsh Cordgrass (*Spartina alterniflora*), which provides important habitat for staging and breeding waterfowl including dabbling ducks, diving ducks and geese. Islands are numerous in the inner lake area and vary in size from islets to larger vegetated land masses.

The coastline of the Backway is quite flat and contains sand and clay mudflats that extend far offshore. Several streams flow into the Backway, and it is relatively shallow with a few small islands.

Marine Life of Note

Whelk, Brook Trout, Arctic Char, Rainbow Smelt, Atlantic Salmon and Greenland Cod are found in Lake Melville. Scallops, sea urchins and cod are found in the narrows by Rigolet that connects the lake to Groswater Bay. This area experiences very strong tidal currents.

Birds in the lake include very large aggregations of Surf, Black and White-winged Scoters, especially during the annual feather moult. Large numbers of waterfowl stage in open water areas, especially in spring. Black-headed, Great Black-backed and Ring-billed Gulls; Caspian, Arctic and Common Terns; Double-crested Cormorant and various migratory shorebirds are common.



Seals are found throughout the lake. The at-risk **Harbour Porpoise**, dolphins and Long-finned Pilot Whale are also found in the area.

Special Features

Lake Melville and Hamilton Inlet together form the **largest estuary in Labrador**. Very large watersheds drain the interior of Labrador and empty into Lake Melville via the Churchill River and Grand Lake systems, and secondary watersheds empty along its length.

Lake Melville contains many important bird habitats. The Backway has been identified as an Important Bird Area (IBA). It is considered globally significant with respect to migratory species, notably waterfowl concentrations. Very **large concentrations of scoters**, up to 34,740 birds, have been found in the Backway. Scoters have gained conservation attention in recent years due to declines in sea duck populations in North America. In addition to being important for moulting scoters and staging sea ducks, it provides **habitat for other waterfowl species and migrating shorebirds**.

Lake Melville also provides breeding habitat for Ring-billed, Herring and Great Black-backed Gulls; and Common, Arctic and Caspian Terns. In 1983 it was the northernmost breeding record of Caspian Terns in Canada.

Saltmarsh Cordgrass is rare in Newfoundland and Labrador and this region of Labrador is its northern limit. This cordgrass plays an important role in stabilizing shorelines, particularly the sand/silt environments that exist in the area.

Protection

The area is within a Fisheries Conservation Closed Area related to salmon fishing and conservation, administered by Fisheries and Oceans Canada under the Fisheries Act (see Site 7).

Threats and Recommendations

There is a regular freight shipping route from June to November through Groswater Bay into Lake Melville, which poses a threat of oil spills and illegal discharges, which can be lethal to birds and other marine fauna. The saltmarsh and intertidal marshes are highly sensitive to contaminants and changes to salinity and sediment deposition. Tides and westerly winds could move oil spills into The Backway. Proposed hydroelectric developments on the Lower Churchill River also pose a very serious threat to wetlands in the area (see Site 7).

Potential for downstream effects of the proposed Lower Churchill hydroelectric development project needs crucial review. Increased enforcement, improved surveillance, higher fines and capture of polluters are also necessary to deter and prevent marine oil pollution. Convenient and accessible onshore oil disposal facilities for bilge and oil-contaminated ballast water should be established.

Discussion Questions:

1. What are your comments?
2. Do you think this area is special? Why or why not?

Table Bay
53° 40' N, 56° 24' W
Site: 9

Site Description

Table Bay is a 200 km^2 bay located in southcentral Labrador approximately 30 km east of the community of Cartwright. The bay contains several islands, islets and shoals. Bird Islands and other islands in the bay are of particular conservation interest. The Bird Islands are more than 10 km from the mainland, some 50 km east of Cartwright. The larger island is 500 m by 200 m. Portions of Table Bay fall within the Mid Boreal Forest and Coastal Barrens ecoregions. It falls within the Labrador Shelf region of Parks Canada's National Marine Conservation Areas system.

Marine Habitats

Table Bay is characterized by a large tidal amplitude (more than 3 m), deep glaciofluvial and fluvial deposits, a lot of organic matter from the many rivers and watersheds that drain in the area, outwash (sediment deposited by streams flowing away from a melting glacier) and shallow water. These phenomena create large intertidal flats that are rich in invertebrates and important for waterfowl aggregation. Intertidal marshes around the bay are also very rich in nutrients.

Offshore islands in the bay are largely rocky, with some heath-type vegetation and grasses. Nearshore islands are vegetated with stunted coniferous forest. The Bird Islands have steep cliffs and slopes, and some grass.

Marine Life of Note

Intertidal marshes contain zooplankton, clams, crabs and fish. Birds in Table Bay include Common Eider, scoters (e.g. Surf Scoter) and other sea ducks, Whimbrel, Lesser Golden and Black-bellied Plover, the at-risk **Harlequin Duck**, Atlantic Puffin, Razorbill, Common and Thick-billed Murre,

Great Black-backed Gull and Leach's Storm-Petrel. **Polar Bears**, another species at risk, occasionally spend time on the islands. Whales, porpoises and dolphins migrate through the Labrador Shelf area.

Special Features

Table Bay is arguably **one of the most biologically rich areas in the province**, resulting in the presence of many important bird habitats. Two Important Bird Areas (IBAs) in the bay have been identified by BirdLife International, including Bird Island and other islands. The bay is considered globally and continentally significant with respect to congregatory species, and nationally significant with respect to seabird concentrations.

Islands in the bay house **one of the two largest Common Eider breeding colonies in the province** and the **largest concentration of moulting eiders on the Labrador coast**. Table Bay also contains several nests of the nationally threatened **Peregrine Falcon**, breeding locations for various alcids (murres and auks) on offshore islands, and large moulting and staging aggregations of sea ducks such as scoters. The area is **important for migrating shorebirds**, historically including the endangered, now potentially extinct, Eskimo Curlew. Significant aggregations of shorebirds such as Whimbrel, Lesser Golden Plover and Black-bellied Plover occur during late summer/fall migration on the coasts of the bay. Moulting Harlequin Ducks aggregate annually at the Gannet Clusters in Table Bay.

The Bird Islands have supported almost 13,000 pairs of nesting seabirds, including significant numbers of Atlantic Puffin and Razorbill (approximately 2% and 4% of the estimated North American populations, respectively). Common and Thick-billed Murres, Great Black-backed Gull, Leach's Storm-Petrel and Peregrine Falcon also nest on the islands. The most recent surveys were in the 1970s.

The sedge shoots found in the intertidal marshes in the bay in early spring may also be important to nesting geese. Seeds from sedges, grasses and rushes are an important food source, and the detritus from the marsh are also important in the complex food web in the area. Intertidal marshes in the area contain **unique flora**, including temperate and arctic species, as well as species that occur on both sides of the Atlantic.

Protection

The area is within a Fisheries Conservation Closed Area related to salmon fishing and conservation, administered by Fisheries and Oceans Canada under the Fisheries Act (see Site 7). The Newfoundland and Labrador Wildlife Division and the Table Bay Eider Duck Conservation Committee are implementing nesting habitat enhancement programs and patrol eider colonies during breeding season.

Threats and Recommendations

Intertidal marshes in Table Bay are fragile and sensitive to disturbance. Possible threats include path development, oil contamination and changes in tidal flow. Damaged marshes are also difficult to rehabilitate.

Alcid colonies on the offshore islands of Table Bay are vulnerable to disturbance due to lack of formal protection in the area. Legal and illegal hunting is common in Table Bay; however, it is mostly directed toward Canada Goose and American Black Duck.

Coastal ferry and freighter traffic to Goose Bay and Cartwright passes within 5 to 15 km north and east of Table Bay, and often passes between the mainland and Bird Island. Oil spills due to accidents and illegal discharges are therefore a threat to birds in the area. Oil pollution can be lethal to seabirds.

The area is also threatened by potential oil exploration on the Labrador Shelf. The placement of

oil rigs, platforms and pipelines can crush sessile, benthic organisms or smother them with increased sediment resuspension, and alter currents and nutrient flows. Discharges can affect water quality, rigs and vessels can attract seabirds, and artificial lighting can affect wildlife behaviour. Noise associated with oil exploration and production can impact marine mammals, particularly those that use acoustic communication and echolocation, as well as other marine species. This noise may also impact fisheries. Oil spills are possible during drilling and shipping, and can have devastating effects on seabirds, cetaceans and other marine organisms. Collisons between ships and marine mammals are also possible.

Table Bay could be listed as a sensitive area on nautical charts. Increased enforcement, improved surveillance, higher fines and capture of polluters are also necessary to deter and prevent marine oil pollution. Convenient and accessible onshore oil disposal facilities for bilge and oil-contaminated ballast water should be established. Oil and gas companies should work cooperatively with conservation champions to ensure that sensitive areas such as Table Bay are not damaged.

Discussion Questions:

1. What are your comments?
2. Do you think this area is special? Why or why not?

Southeast Labrador Slope

53° N, 53° W - 53° 30' N, 51° W - 57° N, 57° W - 56° N, 58° 30' W
Site: 10

Site Description

This site refers to the continental slope along the edge of the central southeastern Labrador slope. It is located in the Labrador Shelf region of Parks Canada's National Marine Conservation Areas system.

Marine Habitats

The southern Labrador shelf contains areas that are more productive than the Grand Banks. The southeast Labrador slope is the southern limit of the subarctic climate region in eastern Canada.

Marine Life of Note

Marine invertebrates of note in the area include Northern Shrimp, Snow Crab and deep-sea corals such as *Paragorgia arborea*. Fish in the area include Atlantic Salmon, **Atlantic Cod** (a species at risk), redfish, Atlantic and Greenland Halibut and turbot. There are a number of seabirds in the area as well, including terns and the at-risk **Ivory Gull**.

Harp Seals are very common around the Southeast Labrador Slope, Ringed and Bearded Seals are common and Hooded, Grey and Harbour Seals are occasionally seen. There have been occasional sightings of the endangered **North Atlantic Right Whale** around Labrador. Several species of whales, porpoises and dolphins migrate through the Labrador Shelf area.

Special Features

This area is in a transition zone between climatic regions, and is the northern limit of many southern species of benthic invertebrates. Transition zones typically show **high diversity**. There are unknown and undescribed species of seaweed in the area, and the area is very rich with respect to

seabirds.

This area, combined with Hamilton Bank (see Site 11) contains a **deep-sea coral "hotspot"** and **significant fish habitat.** Coral distributions appear to be continuous along the outer edge of the Labrador Slope. The greatest coral species richness occurs on the Labrador shelf between Makkovik and Belle Isle Banks.

Protection

The area is located in Salmon Fishing Areas 1 and 2, which are Fisheries Conservation Closed Areas, administered by Fisheries and Oceans Canada under the Fisheries Act, intended to protect and conserve Atlantic salmon (*Salmo salar*) stocks.

Threats and Recommendations

Irresponsible fishing and petroleum exploration are potential threats to the Southeast Labrador slope.

Bottom fishing, particularly trawling, is a major threat to **deep-sea corals**, due to by-catch or damage inflicted by the gear. Deep-sea corals are sessile suspension feeders; they are therefore affected by pollution and sediment resuspension (e.g. by discharges, trawling, dredging, seabed aggregate extraction or pipeline/cable laying) and are unable to move away from disturbances. Large protuberances exhibited by some species make them particularly susceptible to damage from or collection by bottom fishing.

The placement of oil rigs, platforms and pipelines may crush corals, smother them through increased sediment resuspension, and alter currents and nutrient flows. Deep-sea corals have such slow growth rates that recovery following damage or destruction might require more than 100 years. Oil pollution can also have devastating effects on seabirds, cetaceans and other marine organisms.

Research on deep-sea corals is still in its infancy. Further research should be done on corals in the Southeast Labrador slope. Due to their extreme vulnerability, however, it is crucial to implement the precautionary principle in areas where corals are present. There may be additional unique marine phenomena, habitats and species in the area, but further research is required to determine this.

Canada should immediately engage affected communities and conservation champions to discuss protection measures for the deep-sea corals found in the Southeast Labrador slope. Oil and gas drilling should be restricted in coral protection areas. Coral locations should be identified, and oil and gas companies should work cooperatively with conservation champions to ensure that sensitive areas, including areas with high coral abundance, are not damaged.

Discussion Questions:

1. What are your comments?
2. Do you think this area is special? Why or why not?

Hawke Channel – Hamilton Bank
Hawke Channel: 53° N, 53° 10' W
Hamilton Bank: 54° N, 54° 45' W
Site: 11

Site Description

Hawke Channel is located offshore, approximately 70 km east of Snug Harbour and Hawke Harbour in southeastern Labrador. A strong current flows west of the Hawke Channel, at the Hawke Saddle, a deep trough that intersects the offshore bank. Hamilton Bank is located offshore, just over 100 km east of Cartwright, southeastern Labrador. Its average depth is 200 m, and it is surrounded by the deep Hawke Channel and Saddle on its northern and southern sides. They are within the Labrador Shelf region of Parks Canada's National Marine Conservation Areas (NMCAs) system.

Marine Habitats

The area is highly productive, due to regional upwellings of nutrient-rich deeper waters of the channels and troughs of the Hawke Channel and Hawke Saddle and a nutrient flux from the Hudson Strait which flows down the coast of Labrador with the Labrador Current.

Marine Life of Note

Marine invertebrates in the area include **cold-water corals**, sea snails, Icelandic Scallop, Short-finned Squid, Northern Shrimp and Snow Crab.

There are 51 recorded fish species in the area, including: Black and Spiny Dogfish; Greenland Shark; Thorny Skate; Atlantic Salmon; Arctic Char; American Shad; Atlantic Herring; Capelin; Atlantic Argentine; Glacier and Spotted Lanternfish; Arctic, Greenland and the at-risk **Atlantic Cod**; Atlantic Tomcod; Pollock; Longfin, White and Red Hake; Threebeard Rockling; Roughead and Rock Grenadier; Common Marlin Spike; Laval's Eelpout; Fourline snakeblenny; Green Ocean Pout; the at-risk **Atlantic Wolffish**; Snakeblenny; Daubed Shanny; Wrymouth; Atlantic Mackerel; Bluefin Tuna; Deepwater and Acadian Redfish; Shorthorn, Arctic Deepsea, Spatulate, Mailed and Atlantic Hookear Sculpin; Common Alligatorfish; Common Lumpfish; Sea Tadpole; Witch and Winter Flounder; American Plaice; and Atlantic and Greenland Halibut.

A number of seabirds are also present or potentially present in the area. Greater and Sooty Shearwaters winter on the Labrador shelf and slope, and immature fulmars and Great Skuas are present year-round in open water areas. Northern Phalaropes are also present in the Labrador Sea. Most of the global population of Dovekies winters offshore of Labrador or crosses it en route to the Grand Banks. Kittiwakes are present at Hawke Channel and Hamilton Bank. Large numbers of Red Phalaropes migrating from the Arctic feed along the continental slope and banks, including Hamilton Bank. Thick-billed and Common Murres and Razorbills migrate to the Grand Banks by swimming with the Labrador Current. The at-risk **Ivory Gull** has been observed in the area.

Marine mammals in the area include Harp and Hooded Seals, the at-risk **Harbour Porpoise**, White-beaked Dolphin and Long-finned Pilot, Fin, Humpback, Minke, Killer and Sei Whales, as well as the endangered **Blue Whale**.

Special Features

The Hawke Channel and Hamilton Bank area is **one of the most productive offshore areas** in the northwest Atlantic, and the most productive bank in the Labrador Shelf area. Primary productivity in the area is high and **fish populations are rich and diverse**. Surveys have also found peak occurrences

of corals at the mouth of Hawke Saddle. A **coral "hotspot"**, an area with high coral biodiversity, is found where Hamilton Bank overlaps with the southeast Labrador shelf edge and slope (see Site 10).

Hawke Channel contains the **largest known concentrations of Atlantic Cod**. Historically, the area was important habitat for Atlantic Cod, redfish and capelin, and supported large fisheries. It has been described as "the engine that drives the northern cod" (de Young and Rose 1993). Forty-three per cent of Canadian cod landings between 1973 and 1997 were harvested from Hawke Channel. The Hawke Channel and Hamilton Bank contain the only known offshore spawning population of Northern Cod on the Newfoundland-Labrador Shelf. This region is particularly important for this species because eggs and larvae deposited and hatched there are likely to drift with the Labrador Current to nursery habitats further south, towards the Grand Banks.

The area was also historically important for capelin; however, capelin almost disappeared from the area in the late 1980s. The capelin population has been increasing since 1997. It is currently important for the Northern Shrimp and Snow Crab fisheries.

The area is also considered **important to seabirds and marine mammals**. The Labrador shelf and slope in general are important feeding areas for migratory seabirds, and many seabirds migrate through the Hawke Channel - Hamilton Bank region. Harp and Hooded Seals form large whelping concentrations in the region, and is the source of 77% of commercial seal landings. Whales migrate through the Labrador Shelf area.

Protection

Following requests by harvesters, an area measuring 20 by 20 nautical miles was closed to shrimp trawling in 2002 in the interest of reducing mortality of other species as by-catch, and disturbance to spawning and juvenile cod. Fishing gear restrictions such as regulated mesh sizes and Nordmore grates on shrimp trawls are also in place to reduce by-catch from this fishery. Vessels fishing at Hawke Channel must carry a "black box" to help identify illegal fishing activity.

The area is within a Fisheries Conservation Closed Area related to salmon fishing and conservation, administered by Fisheries and Oceans Canada under the Fisheries Act. On six days of the week, in areas where a gill net or trap net is fished inshore of a point of any bay, inlet, river or sound where such a feature is less than 6 nautical miles in width, gill nets and leaders of trap nets must either be removed from the water or raised and tied to their head or float rope in such a way that they will not be able to catch salmon.

An extension of Hamilton Inlet (see Site 7) to include representation of Hamilton Bank, has been identified (along with Nain Bight/Nain Bank – see Site 4) as a candidate site for the creation of an NMCA to represent the Labrador Shelf.

Threats and Recommendations

The area was once very important to fishers from the province, other Atlantic provinces and other countries; however, most of the major fish stocks in the area are now greatly reduced due to overfishing, fishing during spawning season and oceanographic changes.

The use of otter trawls in the area displaces bottom sediments and leads to by-catch, including by-catch of juvenile groundfish.

Irresponsible oil and gas exploration may threaten the area, particularly since natural gas has been found under Hamilton Bank. The placement of oil rigs, platforms and pipelines can crush sessile, benthic organisms or smother them with increased sediment resuspension, and alter currents and nutrient flows. Discharges can affect water quality, rigs and vessels can attract seabirds, and artificial lighting can affect wildlife behaviour. Oil spills are possible during drilling and shipping, and can have devastating effects on seabirds, cetaceans and other marine organisms. Oil pollution can also affect

fisheries such as the current crab fishery on Hamilton Bank. Current capacity to respond to oil spills and other emergencies is considered inadequate. Noise associated with oil exploration and production can impact marine mammals, particularly those that use acoustic communication and echolocation, as well as other marine species. This noise may also impact fisheries. Collisons between ships and marine mammals are possible.

Management strategies for this area should be developed with the involvement of local communities and conservation champions to maintain the integrity of marine ecosystems, enhance fisheries production, reduce by-catch and provide an area for research on Labrador marine ecology.

Further research is necessary in the area to determine the presence and ecosystem roles of benthic and sessile marine species, as well as seabirds, marine mammals and other marine fauna that is not considered commercially important.

Additional studies are necessary to choose an NMCA candidate to represent the Labrador Shelf and define its boundaries. Because NMCA lands and seabed must remain free of third party interests, Hamilton Bank should remain free of exploration leases and licenses until the representative NMCA is chosen.

Discussion Questions:

1. What are your comments?
2. Do you think this area is special? Why or why not?

St. Peter Bay

52° 4' N, 55° 45' W
Site: 12

Site Description

St. Peter Bay is a 25 km^2 bay in southeastern Labrador, located 30 km south of the community of Mary's Harbour. The mouth of the bay is approximately 5 km wide. Its coastal regions are within the Forteau Barrens ecoregion, and the bay is within the Labrador Shelf region of Parks Canada's National Marine Conservation Areas system.

Marine Habitats

Marine habitats in the bay include the open sea, inlets, coastal cliffs and rocky shores. The bay also contains a group of islands, vegetated by sedges, grasses, stunted trees and barrens.

Marine Life of Note

Birds in the area include Double-crested Cormorant, Leach's Storm-Petrel, Common Eider and gulls, as well as the at-risk **Harlequin Duck**. Minke and Humpback Whales have also been observed in the area.

Special Features

St. Peter Bay is an Important Bird Area; it is continentally significant in terms of migratory species, and nationally significant with respect to threatened species. The bay supports **breeding and moulting Common Eider**. Over 5000 Common Eiders were observed in the bay in 1998, representing approximately 6.4% of the Atlantic population. Relatively **large numbers of Harlequin Duck** have been observed around the inlets and islands of the bay, and the species is known to moult in the bay.

Approximately 3% of the estimated eastern North American population was observed there in 1994.

Protection

St. Peter's Bay was one of the first federal migratory bird sanctuaries in Newfoundland and Labrador following confederation in 1949. Through poor management and administration, it was revoked in the late 1970s.

Threats and Recommendations

St. Peter Bay is located at the northern entrance to the Strait of Belle Isle, a heavily used shipping route between Europe and the St. Lawrence/Great Lakes system. Potential oil spills due to accidents and illegal discharges are a threat to moulting and breeding waterfowl. Illegal spring hunting has been problematic in this remote and poorly enforced area.

The bay could be listed as a sensitive area on nautical charts. Increased enforcement, public education and improved surveillance are needed. Greater fines and capture of polluters are also necessary to deter and prevent marine oil pollution. Convenient and accessible onshore oil disposal facilities for bilge and oil-contaminated ballast water should be established.

Discussion Questions:

1. What are your comments?
2. Do you think this area is special? Why or why not?

Strait of Belle Isle

51° 42' N, 56° 00' W
Site: 13

Site Description

The Strait of Belle Isle is a cold, narrow, 7403 km^2 waterway that stretches both northeast and southwest, separating Newfoundland's Northern Peninsula from southern Labrador. It is the northern outlet for the Gulf of St. Lawrence. It is approximately 125 km long, 60 m deep and ranges from 16 to 29 km in width. The topography of the area is complex. Routing through the Strait is very dangerous because of the strong currents that interact with the Labrador Current. Heavy swells and drift ice are common. Ice coverage is long (up to 140 days); sea ice can be found in the Strait 8 to 10 months of the year. The area is foggy, and frost is possible any time of the year. The Strait of Belle Isle is at the boundary between the Labrador Shelf, Laurentian Channel and North Gulf Shelf regions of Parks Canada's National Marine Conservation Areas system. The Newfoundland coast of the Strait is within the Strait of Belle Isle Barrens ecoregion, the northern portion of the Strait is in the Coastal Barrens ecoregion, and the western portion of the Strait falls within the Forteau Barrens ecoregion. Several coastal communities border the Strait, including Red Bay, West St. Modeste, L'Anse au Loup, L'Anse-Amour, Forteau and L'Anse au Clair in Labrador and a number of communities, roughly from St. Barbe to Cook's Harbour, in Newfoundland.

Marine Habitats

The Strait is influenced by the cold Labrador Current, the West Newfoundland Current and upwellings that are particularly common along its northern shores. The Strait is the biogeographic boundary between the marine sub-Arctic, and boreal regions, and is the northern limit for 30% of the marine flora and fauna of Newfoundland. There is heavy tidal mixing in the Strait. It is high in

oxygen, which is unusual for the cooler regions of the province.

Inshore habitats include extensive, productive kelp beds, beds of rhodoliths (coralline algae that deposit calcium carbonate and form balls due to the flow of current), sea urchin areas and invertebrate communities affiliated with strong, cold ocean currents. Eelgrass beds are found in shallow, sheltered coastal areas on either side of the Strait, but primarily on the Newfoundland coast. The coasts of the ecoregion consist of coastal tundra barrens. The coast adjacent to the northern portion of the Strait contains salt marshes and bogs within valleys.

Marine Life of Note

Seaweed diversity and productivity in the Strait of Belle Isle is very high. Beds of giant and finger kelps shelter several Arctic and subarctic seaweeds that live on or under the kelp. A number of seaweeds in the Strait are undescribed and, so far, are known only from this region.

The Strait of Belle Isle is home to Arctic populations. Invertebrates in the Strait of Belle Isle include several species of shrimp (Argis dentata, Pandalus montagui, Sabinea septemcarinata, Sclerocrangon boreas, Lebbeus polaris, Spirontocaris spinus, Eualus fabricii and E. macilentus), ascidians (sea squirts), numerous Arctic bivalves and gastropods, marine worms (sipunculids, priapulids and sabellid fan worms), sponges, polar sea stars, basket stars, Lesser Bobtail Squid, Arctic Lyre Crab and Icelandic Scallop.

Fish in the marine and coastal areas include the at-risk **American Eel** and **Atlantic Cod**, Three-spine Stickleback, Nine-spine Stickleback, Atlantic Salmon, Arctic Sculpin, Arctic Clingfish, Arctic Eelpout, capelin, Spiny Dogfish, Atlantic Herring, Arctic Char, Sand Lance, Longnose and White Suckers, and Greenland and Arctic.

Birds in and around the Strait include Dovekie, Thick-billed and Common Murres, Black Guillemot, shearwaters, Northern Gannet, Dovekie, skuas, Northern Fulmar, gulls such as the at-risk **Ivory Gull**, Atlantic Puffin, Common and Arctic Terns, Black-legged Kittiwake, Gyrfalcon, Greater Yellowlegs, Semipalmated Plover, Least Sandpiper, Spotted Sandpiper, Lesser Golden Plover, Long-tailed Duck, Red-breasted Merganser, Common Eider, Common Goldeneye, Canada Goose, scoters (e.g. Surf Scoter), Whimbrel, Golden Plover, White-rumped Sandpiper, Ruddy Turnstone and the at-risk **Harlequin Duck** and **Barrow's Goldeneye**.

Marine mammals in the Strait of Belle Isle include Harp, Grey, Hooded and Ringed Seals; Fin, Minke, Humpback and Beluga Whales, and the endangered Blue Whale and North Atlantic Right Whale; the at-risk Harbour Porpoise; and White-beaked and Atlantic White-sided Dolphins. Killer Whales have been sighted in the Strait of Belle Isle off of St. Anthony. The at-risk **Polar Bear** also occurs in the area, arriving on ice floes from Labrador. Seals pup in some years in the Strait.

Special Features

The Strait of Belle Isle has been identified in preliminary analyses as a representative marine area within the Laurentian Channel. Bordering the Arctic oceanic ecosystem, it is a transition zone that contains a unique mixture of marine fauna. Fisheries and Oceans Canada (2007) refers to the Strait of Belle Isle as "the only area where uniqueness, concentration and adaptive value are at their maximum", particularly in terms of pelagic fish and benthic invertebrates.

The area has high productivity. It contains endemic species of seaweed. It also contains more shrimp than do Cabot Strait or the Gulf of St Lawrence. There is a large number of capelin in the

area. Spiny Dogfish, Atlantic Herring and Sand Lance feed in the Strait in large aggregations. It is the main spawning ground for Atlantic Herring (fall spawning) and is significant for juvenile cod.

Breeding waterfowl in the ecoregion include Red-breasted Merganser, Common Eider, Common Goldeneye, Canada Goose, Harlequin Duck, Barrow's Goldeneye and scoters such as the Surf Scoter, which congregates on the coast in July and August. Whimbrels and Golden Plovers migrate through southern Labrador in late summer. Thick-billed and Common Murres, Dovekie and Ivory Gull over-winter and Black Guillemot, Atlantic Puffin, gulls, terns and kittiwakes breed in the area. Common Eiders winter on the coast.

The Strait of Belle Isle is very significant for marine mammals, and has a particularly high number of piscivorous (fish-eating) marine mammals, partially due to the abundance of capelin. Historically, it was an area for Bowhead Whales. Seals whelp on the islands, coasts and pack ice in the area, or migrate through.

The L'Anse Amour area is of particular interest in the Strait of Belle Isle (see Site 13a).

Protection

Fisheries and Oceans Canada has identified the Strait of Belle Isle as an Ecologically and Biologically Significant Area. It also falls within the Northwest Atlantic Fisheries Organization Division 4R Fisheries Management Closed Areas, initiated by fishers and banning mobile fishing gear to address conflict between mobile gear and traditional fixed gear. These areas are administered by Fisheries and Oceans Canada under the Fisheries Act.

The Pinware River Provincial Park is a 0.7 km^2 coastal park at Pinware, Labrador, aimed at protecting natural heritage and providing an opportunity for outdoor recreation. Hunting is prohibited, as are development and resource harvesting unless for park purposes.

Threats and Recommendations

The Strait of Belle Isle faces a number of known and potential threats. Its offshore area is a heavily used shipping route connecting North America (the St. Lawrence / Great Lakes system) and Europe, and has been the scene of numerous ship wrecks. During the shipping season (June to December) four to eight ships pass through the area every day. Potential increased access to the Arctic due to climate change may increase transport-related threats. Oil pollution from illegal discharges and accidental spills is a constant potential threat, and current capacity to respond to oil spills and other emergencies is considered inadequate. Ship strikes on marine mammals and entanglement in fishing gear are also current threats. Several spills in the vicinity have already devastated seabirds and can be disastrous to waterfowl, particularly when they are moulting. Harlequin Ducks have been impacted by hunting, habitat destruction and oil pollution. The exploitation of Arctic resources has resulted in population decreases of Ivory Gulls. Like many other places in the province, the Strait of Belle Isle is also over-fished. Additional possible threats include the potential laying of an underwater cable and a proposal to create an underwater tunnel between Labrador and Newfoundland.

The Strait of Belle Isle is poorly researched and requires more attention to determine what protection measures are necessary to preserve its ecological integrity. The Strait could be listed as a sensitive area on nautical charts. Increased enforcement, improved surveillance, higher fines and capture of polluters are necessary to deter and prevent marine oil pollution. Convenient and accessible onshore oil disposal facilities for bilge and oil-contaminated ballast water should also be established.

Discussion Questions:

1. What are your comments?
2. Do you think this area is special? Why or why not?

L'Anse Amour – Point Amour
51° 28' N, 56° 52' W
Site: 13a

Site Description

L'Anse Amour is a small fishing community located on the eastern shore of Forteau Bay in Southern Labrador on the northern shore of the Strait of Belle Isle. Forteau Bay is deep and wide. L'Anse Amour is located at the narrowest point of the Strait, where it is 17 km wide. The tides in the area are strong and irregular, and tidal rips (stretches of turbulent water caused by intersecting wave action) occur in the area. L'Anse Amour falls within the Forteau Barrens ecoregion. It is located in the North Gulf Shelf region of Parks Canada's National Marine Conservation Areas system.

Marine Habitats

The area is characterized by ice scouring, cold water, rocky outcrops, strong currents and upwelling. Coastal features include cliffs, rocky shores and inlets. Around Forteau Bay are brooks, inland lakes and sand dunes. Coastal waters freeze from mid January to mid April. Inshore habitats include extensive, productive kelp beds, sea urchin areas, and invertebrate communities affiliated with strong, cold ocean currents. Refer to Site 13 (Strait of Belle Isle) for more details.

Marine Life of Note

Refer to Site 13 (Strait of Belle Isle) for more details on marine life present in the area.

Invertebrates in the area around L'Anse Amour include scallop, shrimp, whelk, Toad Crab and squid. Fish include cod, flounder, lumpfish, herring, sharks, capelin, mackerel, sea-run brook trout, Atlantic Salmon, Three-spine and Nine-spine Sticklebacks, Arctic Char and the at-risk **American Eel**.

A bird migration monitoring program in April-May 1996 found large numbers of migrating birds in the L'Anse Amour area, including 62,275 Common Eiders, 5465 Black Guillemots (roughly 2% of the global population) and 43,758 larger black and white alcids (Thick-billed Murre, Common Murre and/or Razorbill). Other seaducks were not recorded in large numbers, but more may migrate through the Strait of Belle Isle in late May or early June. Dovekie, Black Guillemot, gulls including the at-risk **Ivory Gull**, terns, Black-legged Kittiwake, Thick-billed and Common Murres, Gyrfalcon, Greater Yellowlegs, Semipalmated and Lesser Golden Plovers, Least and Spotted Sandpipers, Lesser Golden Plover, Long-tailed Duck, Whimbrel, Common Eider, and scoters are also present in the ecoregion.

Harp seals are very common at L'Anse Amour and Forteau Bay. Grey Seals are common, Ringed, Bearded and Hooded Seals are occasionally seen and Harbour Seals are rarely seen. Harp Seals may pup in offshore waters in the region in some years, and Hooded Seals also pup in some offshore areas of southern Labrador. The at-risk **Blue Whale** is sighted in the Northern Gulf of St. Lawrence between May and December. Fin Whale is also present off southern Labrador. There have been occasional sightings of the endangered **North Atlantic Right Whale** around Labrador and in the Gulf of St. Lawrence. **Beluga Whale** is often found in the Gulf of St Lawrence.

Special Features

The diversity of habitats in Forteau Bay results in richness and diversity in the marine environment. The area has historically been a rich fishing ground for capelin, cod, herring, salmon and sea-run brook trout, and large shrimp beds once existed off the Labrador coast.

Large numbers of migrating seabirds and waterfowl aggregate during their movement at Point Amour - designated an Important Bird Area - and Forteau Point, rounded headlands in the area of

L'Anse Amour. This is a region in which huge numbers of birds move through a relatively small area; some of these birds stop for extended periods. Thick-billed and Common Murres, Dovekie and Ivory Gull over-winter and Black Guillemot, gulls, terns and kittiwakes nest in the ecoregion. Lesser Golden Plover and Whimbrel migrate through in the fall. Common Eiders winter on the coast.

The area contains migratory and feeding habitat for cetaceans. Many Harp Seals are also present during migration, as Forteau Bay is in the route of a herd that migrates through the Gulf of St. Lawrence and the Strait of Belle Isle. The strong currents and tide rips attract seabirds and whales in the summer and fall.

L'Anse Amour is also the location of several significant archaeological sites.

Protection

The area is within the Northwest Atlantic Fisheries Organization Division 4R Fisheries Management Closed Areas, initiated by fishers and banning mobile fishing gear to address conflict between mobile gear and traditional fixed gear. These areas are administered by Fisheries and Oceans Canada under the Fisheries Act.

Threats and Recommendations

Oil pollution from illegal discharges and larger-scale spills is a potential threat, due to shipping traffic in the area and the potential for ship wrecks. Refer to Site 13 (Strait of Belle Isle) for more details.

Increased enforcement, improved surveillance, higher fines and capture of polluters are also necessary to deter and prevent marine oil pollution. Convenient and accessible onshore oil disposal facilities for bilge and oil-contaminated ballast water should be established. A radius around L'Anse Amour could be listed as a sensitive area on nautical charts. Management strategies should be discussed to protect fisheries resources and marine food webs around L'Anse Amour, particularly during capelin spawning season, at which time fish, breeding seabirds and marine mammals are known to congregate.

Discussion Questions:

1. What are your comments?
2. Do you think this area is special? Why or why not?

Pistolet Bay

51° 32' N, 55° 49' W
Site: 14

Site Description

Pistolet Bay is a 19 by 22 km shallow-water indentation on the tip of the Great Northern Peninsula of Newfoundland, the most northerly part of the island of Newfoundland. The bay often fills with ice that remains into spring. It is part of the lowlands of the Long Range Mountains. It is close to the Table Head limestone regions, and volcanic and sedimentary rocks from the same geological periods extend into the bay. The eastern portion of Pistolet Bay falls within the Northern Coastal subregion of the Northern Peninsula Forest ecoregion. The remainder of the bay falls within the Strait of Belle Isle Barrens ecoregion. Pistolet Bay is located in the Laurentian Channel region of Parks Canada's National Marine Conservation Areas System. It is influenced by the cold Labrador

Current. Communities around Pistolet Bay include Cook's Harbour and Raleigh.

Marine Habitats

The average depth of the area is 11 to 13 m, with a maximum depth of 27 m. The effects of intense glaciations and icebergs are apparent on the ocean floor and landscape. The floor of the bay is primarily made up of sand and gravel, with some silty mud basins. Eelgrass beds are present in some parts of the bay. Other portions of the area are highly exposed. Kelp and Irish moss are found in some parts of the bay. Lithothamnion, a type of encrusting coralline algae, is common in deeper areas. The coasts of the Strait of Belle Isle Barrens ecoregion consist of coastal barrens.

Marine Life of Note

Plankton in Pistolet Bay tends to be swept out to sea by winds. Lobster is commonly found on the shoals outside of the community of Raleigh. Other invertebrates in the bay include Whelk, Rock Crab and Toad Crab. Fish recorded in the area include Three-spine Stickleback, Nine-spine Stickleback, Atlantic Salmon, Brook Trout, Rainbow Smelt, capelin, herring, mackerel, lumpfish, Winter Flounder, Arctic Char and the at-risk **American Eel** and **Atlantic Cod.**

A 1998 bird survey recorded 61 terrestrial and marine species in the area. An additional 51 species may also occur, based on geographic location and habitat characteristics. Seasonally and occasionally occurring seabirds, shorebirds and waterfowl include: Red-throated Loon, Northern Fulmar, Greater Shearwater, Sooty Shearwater, Manx Shearwater, Leach's Storm-Petrel, Northern Gannet, Ring-billed Gull, Herring Gull, Iceland Gull, the at-risk **Ivory Gull**, Lesser Black-backed Gull, Glaucous Gull, Great Black-backed Gull, Black-legged Kittiwake, Dovekie, Common Murre, Thick-billed Murre, Atlantic Puffin, Common Tern, Arctic Tern, Razorbill, Black Guillemot, Greater Scaup, King Eider, Common Eider, the at-risk **Harlequin Duck**, Surf Scoter, White-winged Scoter, Black Scoter, Long-tailed Duck, Common Goldeneye, Canada Goose, American Black Duck, Green-winged Teal, Red-breasted Merganser, Red-necked Phalarope, Red Phalarope, Great Skua, Pomarine Jaeger, Parasite Jaeger, Long-tailed Jaeger, White-rumped Sandpiper, Ruddy Turnstone, Greater Yellowlegs and Spotted Sandpiper.

Marine mammals in and around Pistolet Bay include Harp Seal, Humpback and Minke Whales, and the at-risk Harbour Porpoise and **Polar Bear** (occasional, arriving with the currents on pack ice from Labrador).

Special Features

The Pistolet Bay region contains a diversity of habitats, including prime habitat for cold ocean fish species. Parkers Brook has the only known sea run population of Arctic Char in the island of Newfoundland. Capelin use sandy beaches in the area for spawning. The bay is home to five scheduled salmon rivers and the northernmost commercial lobster fishery in eastern North America. Pistolet Bay also contains extensive shallow intertidal habitat for waterfowl. The area is used by a large number of terrestrial birds, waterfowl, shorebirds and seabirds. Approximately 100 bird species are regular, and unusual seabirds such as Ivory Gull sometimes arrive with strong northeasterly winds.

Protection

There are three fishery regulations specifically concerning Pistolet Bay which were established to preserve the unique Arctic Char population: 113 Atlantic Fishery Regulations, prohibiting gill and trap nets between April 15 and December 31 inside the line joining Blackberry Point to Forest Point; 30(e) Newfoundland and Labrador Fishery Regulations, prohibiting fishing other than angling within 365 m off of the portion of the shore between caution notices posted 180 m west and 275 m east of

Parker Brook; and Schedule 1 of the Newfoundland and Labrador Fishery Regulations indicating Scheduled Salmon Rivers. There is a provincial park in the area (Pistolet Bay Provincial Park).

Threats and Recommendations

Rich intertidal areas can be the focus of impinging uses such as aquaculture and seaweed harvesting. There is currently a mussel farm in Pistolet Bay. Developments, notably cottages, along the shoreline can increase disturbances. Many people use cottages in the Pistolet Bay area.

A local stewardship group is concerned about a dramatic decline in Arctic Char numbers seen in the area and, at the time of writing, is working with Fisheries and Oceans Canada, Memorial University of Newfoundland and other local groups to study the species.

Due to the presence of a Provincial Park, the infrastructure is in place for further protection of the area. Discussions are encouraged between management agencies and local communities to explore options to extend protection into the adjacent marine environment, taking into account the habitats and regions important for fish and birds. Burnt Cape is an area within Pistolet Bay that could be another launching point for protecting the marine environment in the area (see Site 14a).

Discussion Questions:

1. What are your comments?
2. Do you think this area is special? Why or why not?

Burnt Cape
51° 35' N, 55° 44' W
Site: 14a

Site Description

The Burnt Cape peninsula is a 4 km by 1 km limestone peninula connected to the tip of the Great Northern Peninsula by a narrow strip of land. It is surrounded on three sides by the cold waters of the Strait of Belle Isle, and is adjacent to the community of Raleigh. The climate and exposed conditions at Burnt Cape create conditions suitable for the survival of many species normally found in arctic or alpine environments. It has the shortest growing season, the lowest summer temperatures and the lowest mean annual minimum temperatures of any coastal region on the island. The area is foggy, and frost is possible any time of the year. Burnt Cape is located within the Strait of Belle Isle Barrens ecoregion.

Marine Habitats

Coastal habitats include coastal barrens, coastal meadows, salt marshes and narrow beaches. The area is influenced by the cold Labrador Current. Sea caves are prominent along the coast due to erosion by waves and wind. Kelp and Irish moss are found around the Burnt Cape peninsula. The marine habitats are representative of the cold northeast coast with heavy ice scour and low biodiversity.

Marine Life of Note

Lobster is commonly found on the shoals outside of the community of Raleigh. Fish around Burnt Cape include capelin, herring, the at-risk **Atlantic Cod**, lumpfish and Winter Flounder.

Refer to Site 14 for a list of birds found in Pistolet Bay, within which Burnt Cape is located.

Marine mammals observed in the area include Harp Seal, the at-risk Harbour Porpoise, Minke and Humpback Whales. The at-risk **Polar Bear** is an occasional visitor, arriving with the currents on

pack ice from Labrador. Ringed, Bearded, Hooded and Grey Seals are occasionally seen, and Harbour Seals are rarely seen around the Great Northern Peninsula. Harp Seals may pup in offshore areas of the region in some years, depending on ice cover.

Special Features

The main purpose for which Burnt Cape Ecological Reserve was established was the protection of unique, diverse, rare, at-risk and endemic flora, as well as limestone barrens and tuckamoor. The area also contains fossils of deep water fauna, possibly including new species.

From a marine perspective, the area provides prime habitat for cold ocean fish. Capelin use the sandy beaches for spawning. There are no unique marine features in the area, but it is representative of the exposed, ice-scoured northeast coast and is close to the northern limit for several marine temperate and boreal species including commercial quantities of lobster.

The Burnt Cape area is used by a large number of terrestrial birds and seabirds. Approximately 100 bird species are regular, and unusual seabirds such as the endangered Ivory Gull often arrive with the strong northeasterly winds.

Protection

The Burnt Cape Ecological Reserve was established in 1998 following concerns that ongoing commercial quarrying would threaten rare plants. The Reserve does not cover the entire Cape, but excludes some private land to the south and some other land marked for other purposes by the community of Raleigh. Motorized vehicles are not permitted in the Reserve, except on the existing road. Bird hunting is permitted.

The area is within the Northwest Atlantic Fisheries Organization Division 4R Fisheries Management Closed Areas, initiated by fishers and banning mobile fishing gear to address conflict between mobile gear and traditional fixed gear. These areas are administered by Fisheries and Oceans Canada under the Fisheries Act.

Threats and Recommendations

Human activities such as use of the beach for bonfires are a potential threat to the ecological integrity of the area. Seabird hunting is also permitted in the reserve area.

Due to the presence of an Ecological Reserve, the infrastructure is in place for further protection of the area. Discussions are encouraged between management agencies and local communities to explore options to extend protection into the adjacent marine environment. Further research is necessary regarding the marine features of the area and potential threats to them, for example oil and gas leases, seismic studies, fishing methods such as bottom trawling, tour boat activities, hunting, recreational vehicles, sewage and runoff from local communities, and aquaculture.

Discussion Questions:

1. What are your comments?
2. Do you think this area is special? Why or why not?

The Hole-Point Riche
50° 41' N, 57° 24' W
Site: 15

Site Description

The Hole, or the Horseshoe as some call it, is located south of Point Riche and the community of Port au Choix. It is at the northern end of the Esquiman channel, which is a branch of the Laurentian Channel. It also represents the end of the deep sea organisms in the area. It is the central focus of the shrimp fishery out of Port au Choix. Point Riche, on the coast, falls within the Coastal Plain subregion of the Northern Peninsula Forest ecoregion. The marine area is located in the Laurentian Channel region of Parks Canada's National Marine Conservation Areas System.

Marine Habitats

The Hole is an underwater canyon over 200 m deep, located not far from shore. It is surrounded on either side by a shoal. The Hole is **very productive** and diverse because of mixing and upwelling. The coastal ecoregion is mainly flat with many low plateau bogs. Eelgrass beds, kelp beds, Irish moss and rockweed are present in the shallow areas around Point Riche.

Marine Life of Note

Invertebrates at The Hole include sea pens, lobster, clams, shrimp, Snow Crab, Toad Crab, Rock Crab, scallops, whelk and sea urchins.

Fish in the area include cod, halibut, turbot, redfish, lumpfish, flounder, capelin, herring, mackerel, smelt, Three-spine and Nine-spine Sticklebacks, Atlantic Salmon and the at-risk American Eel.

Harp Seals are very common; and Harbour, Grey, Ringed and Bearded Seals are occasionally seen in the area. Harp Seals may pup in offshore areas of the region in some years, depending on ice cover. Whales have been observed in the vicinity of Point Riche. The endangered **Blue Whale** is sighted in the Northern Gulf of St. Lawrence between May and December. There have been occasional sightings of the endangered **North Atlantic Right Whale** in the Gulf of St. Lawrence. **Beluga Whale** is often found in the Gulf of St Lawrence.

Special Features

The presence of a deep water area so close to shore makes The Hole unique. Sudden depths in the sea floor at The Hole create very rich and diverse areas. It is possible that there is an oxygen-depleted layer which, if the area is not polluted, indicates that there is a great deal of biological activity that is using up the oxygen. The presence of sea pens is of particular note in this area. Halibut breed and shrimp spawn in or near The Hole. Capelin spend the winter in the deep water and spawn on the shoals.

In most years, there is an area of open water near Port au Choix that attracts seals to the area. It is likely a hotspot for other species as well.

Protection

Point Riche is at the southern limit of the St. John Bay Fisheries Conservation Closed Area, administered by Fisheries and Oceans Canada under the Fisheries Act, which aims to protect and conserve American Lobster stocks. It is adjacent to Port-au-Choix National Historic Park, which preserves archaeological sites and protects the shoreline to the high water mark, and where removal or destruction of flora, fauna and archaeological resources, and pollution, diversion, obstruction and

interference with watercourses are prohibited.

Threats and Recommendations

As is the case with many areas around Newfoundland and Labrador, a major threat at The Hole is over-fishing. Turbot and halibut fishers have mentioned that sea pens become entangled in their nets; however, no scientific research has been done to confirm this.

Because of the lack of research in the area, the extent of the productivity and diversity of the area is still unknown. Further research can be done at The Hole with local communities to examine the benthic environment, and to examine the impacts of fishing on its marine ecosystems, with the intent of minimizing these impacts.

Discussion Questions:

1. What are your comments?
2. Do you think this area is special? Why or why not?

Table Point

50° 20' N, 57° 32' W
Site: 16

Site Description

Table Point is located on the Great Northern Peninsula of Newfoundland approximately 2km north of the community of Bellburns. Table Point falls within the Coastal Plain subregion of the Northern Peninsula Forest ecoregion. It is also in the in the Laurentian Channel ecoregion of Parks Canada's National Marine Conservation Areas System.

Marine Habitats

The Coastal Plain subregion is mainly flat, less than 200 m above sea level. It contains many low plateau bogs. Irish moss grows around the coastline. The coastal area is very exposed, with extreme ice conditions.

Marine Life of Note

Invertebrates in the vicinity of Table Point include lobster, Snow Crab and whelk.

Fish found around Table Point include cod, flounder, lumpfish, halibut, skates, Winter Flounder, sharks, herring, Three-spine and Nine-spine Sticklebacks, Atlantic Salmon and the at-risk American Eel.

Birds in the subregion include Canada Goose and the at-risk **Harlequin Duck**.

Harp Seals are occasionally seen around Table Point. There are likely some Harbour Seals in the Daniel's Harbour area, given its proximity to St. Paul's Inlet, in which this species is common. Dolphins and whales have been observed around Table Point. The endangered Blue Whale is sighted in the Northern Gulf of St. Lawrence between May and December. There have been occasional sightings of the endangered North Atlantic Right Whale in the Gulf of St. Lawrence. Beluga Whale is often found in the Gulf of St Lawrence.

Special Features

The Table Point Ecological Reserve protects exceptionally well preserved fossils. The limestone exposed in the area is approximately 470 million years old.

Canada Geese nest in the coastal bog ponds of the subregion. Harlequin Duck breeds in low numbers in the upper reaches of fast-flowing rivers.

Protection

Table Point is a 1.16 km^2 Fossil Ecological Reserve aimed at protecting unique fossils. Restrictions in place include building restrictions; protection of homes, dens and nests of wildlife; protection against egging; prohibition of mining, quarrying or removal of rocks; and prohibition of obstructions in waterbodies. Motorized vehicles are prohibited, but people may walk through the site.

Threats and Recommendations

Due to the presence of an Ecological Reserve, the infrastructure is in place for further protection of the area. Discussions are encouraged between management agencies and local communities to examine the marine ecosystems around Table Point and explore options to extend protection into the adjacent marine environment.

Discussion Questions:

1. What are your comments?
2. Do you think this area is special? Why or why not?

St. Paul's Inlet

49° 50' N, 57° 45' W
Site: 17

Site Description

St. Paul's Inlet is a large, shallow brackish water inlet at the northern end of Gros Morne National Park (GMNP). It is the only salt water body within the GMNP. It falls within the Coastal Plain subregion of the Northern Peninsula Forest ecoregion, and is located in the Laurentian Channel ecoregion of Parks Canada's National Marine Conservation Areas System. It is surrounded on its western end by tidal wetlands and at the east by the Long Range Mountains. It is 11 km long and 6 km wide at its widest point. Its surface area is 30 km^2. The opening from the Gulf of St. Lawrence is only 80 m wide. The depth of the central portion is over 36 m, and the shallow entrance sill, near the community of St. Paul's, is less than 6m.

The mouth of the inlet is surrounded by extensive foreshore flats with a lack of protected mooring space. Most of the northwest shore has a low profile. The profile increases on the eastern and northern sides with the Long Range Mountains, which surround the eastern part of the inlet. 24 streams and rivers flow into the inlet, with the greatest freshwater influence coming from St. Paul's River at the eastern end.

The physical and chemical characteristics of St. Paul's Inlet are affected by its restricted opening. The restricted entrance means that salt water inflow only occurs at high tide. At low tide, surface water from the streams flows out. Western Brook, Baker's Brook and Deer Brook all empty into St. Paul's Inlet. St. Paul's Pond is 100 feet above the eastern end of the inlet. There are high falls between the pond and the inlet, preventing fish migration.

Marine Habitats

At the mouth of St. Paul's Bay are expansive mudflats on a coastal plain. The terrain in this area is swampy, flat and susceptible to gale force winds off of the Gulf of St. Lawrence. There is an extensive

salt marsh that combines the characteristics of temperate and arctic salt marshes, and may foster the formation of unique species assemblages. The area of the Gros Morne National Park contains Sphagnum moss bogs on the coastal plains, as well as fjords and coastal cliffs in other areas.

Foreshore and underwater substrates include: gravel/sand, bedrock/boulder, steep rock/cobble and subtidal slope flattening to a gravel-mud terrace, and steep rock and boulder.

The shoreline consists of thin marine drift, dwarf spruce heath, Sphagnum bog, sand shallows, reworked moraine, deltas and fans, moraines, loose rock and soil, and elevated beach complex. Coastal habitats include: tidal flats, tidal marshes, cobble and gravel beaches, sand shallows (unique to St. Paul's inlet – silt, sand, eelgrass, kelp), slumps, earth/mud flows (on steep slopes and below coastal bluffs), deltas, glacio-fluvial deposits in valley bottoms, and salt marshes.

The greatest biodiversity in the inlet occurs on hard substrate; algae are able to attach to it, and in turn provide shelter or substrate for other organisms, such as other algae, molluscs, sponges, sea urchins, sea stars, polychaetes, fish, crustaceans and sea anemones.

Sandy substrate is dominated by eelgrass from 1 to 5 m depths. Also present are Fucus, Polyides and Chondrus (algae), Enteromorpha, Chordafilum, mysids, sticklebacks, Winter Flounder, bivalves (Mya, Ensis), Polynices (moon snail) and nereid worms. The eelgrass is eaten by crabs (Cancer irroratus) and provides a home for red algal epiphytes, small snails and sand shrimp. Sandy areas from 3 to 8 m depths house sand lance and sand dollars, and from 10 to 15 m depths house polychaetes, bivalves and amphipods.

Muddy substrate, which dominates beyond a depth of 7 to 8 m, houses epibenthos (scallops, shrimps, blood star, crabs and, deeper than 10 m, shrimp, brittle stars and fish such as Daubed Shanny and Winter Flounder) and macroinfauna (bivalves and polychaete worms), with a few Phyllophora and Phycodrys.

Fucoid algae provide substrate for attachment of epiphytes, Spirorbis and hydroids; shelter for nemerteans, amphipods, mussels, sticklebacks and isopods; and food for snails (Littorina spp., Lacuna). Kelp provides substrate for sessile feeders (bryozoans, hydroids); shelter for scaleworms, nereids, clams and mussels; and food for sea urchins. Condrus-Phyllophora (red algae) provides substrate for sponges, which in turn shelter amphipods, scaleworms and nereids; substrate for mussels, bryozoans and epiphytes; and food for Asterias. Lithothamnium provides shelter for brittle stars, chitons, scaleworms, nereids, bivalves and Ptilota. Eelgrass provides substrate for epiphytes, red algae and snails.

Marine Life of Note

There is a high degree of marine influence in the biota of the inlet despite the restricted opening and freshwater input. Below a depth of 1 to 2 m, the whole inlet is characteristic of a marine basin.

The salt marsh plant assemblage is dominated by Salicornia spp., many sedges and some Spartina spp. Green algae dominate in shallow or low salinity water, brown algae dominate from 2 to 5 m on hard substrate, red algae dominate in deeper water and have high species diversity. Among plankton, phytoflagellates and diatoms dominate.

The intertidal zone is narrow and impoverished in number of species, relative to the intertidal zone of the open coast, due to the small tidal amplitude and total ice coverage most winters. The intertidal zone consists of the rough periwinkle, amphipods, and Fucus vesiculosis. Most organisms are in the subtidal zone.

There is a moderate diversity of organisms made up of a small number of dominant forms. There are 23 species of fish in the area, for example Sea Trout, Dogfish, the at-risk **Atlantic Cod**, lumpfish, herring, Ocean Pout, eelpout, mackerel, Arctic Shanny, Daubed Shanny and halibut, in relatively low numbers. Species diversity is highest at the mouth of the inlet due to the occurrence of almost all

habitat types, plus strictly marine species. The St. Paul's River basin also contains Atlantic Salmon, Brook Trout, Rainbow Smelt, the at-risk American Eel, Atlantic Tomcod, Three-spine Stickleback, Four-spine Stickleback, Nine-spine Stickleback and Black-spotted Stickleback. St. Paul's Big Pond contains Arctic Char, Brook Trout and **American Eel**.

Seabirds include Arctic and Common Terns, Greater Black-backed Gull and Herring Gull. Shorebirds and other waterfowl observed in St. Paul's Bay include: Common Merganser, Red-breasted Merganser, Semipalmated Plover, Black-bellied Plover, Killdeer, Ruddy Turnstone, Common Snipe, Whimbrel, Spotted Sandpiper, Greater Yellowlegs, Lesser Yellowlegs, White-rumped Sandpiper, Short-billed Dowitcher, Semipalmated Sandpiper, Hudsonian Godwit, Sanderling, Pectoral Sandpiper, American Golden Plover, White-rumped Sandpiper, Least Sandpiper, Buff-breasted Sandpiper, Wilson's Phalarope, Canada Goose, diving ducks, dabbling ducks and the at-risk Piping Plover, **Harlequin Duck** and Red Knot. Canada Geese stage at St. Paul's Inlet during fall migration.

Harbour Seals are common in the inlet in early summer when schools of fish such as herring are common. **Polar Bear**, a species at risk, has also been seen in the area.

Special Features

St. Paul's Inlet is a transition zone between temperate and arctic environments. Aquatic species in the area of note due to their infrequency, specific habitat requirements or life history include Bryopsis (green algae); Agarum cribrosum, Alaria esculenta and Laminaria platymeris (kelp); Namalion helminthoides (red alga); deeper water sponges; nudibranchs; moon snail; Theris lapillus (dog whelk); scallops; barnacles; lobster; Toad Crab; and sand dollar. The non-Spartina shallow saltwater marsh is also of note.

The inlet and nearby Eastern Brook and Black Brook provide spawning habitat for fish such as herring. Black Brook also provides rearing habitat. Eelgrass beds in the inlet also provide important habitat.

The mud substrate and the area adjacent to the mouth of the inlet could be considered unique and susceptible to environmental change because of physical limitations. The inlet is a restricted fjord with a wide range of habitats, communities and interactions between species in a relatively small area. Its ecological significance is heightened because the mouth of the inlet is its lifeline due to water exchange, nutrient input and recruitment of biota from the ocean.

St. Paul's Bay is the only major concentration area for waterfowl (e.g. Canada Goose, dabbling ducks, diving ducks) along the coast between Parson's Pond and the Bay of Islands. In summer and fall, a high number and variety of shorebirds are found on the mudflats north and, especially, south of the bay. It is the only known area in the GMNP for Killdeer (which is rare in Newfoundland) and Semipalmated Plover nesting. Six small islands are Common Tern nesting sites, and the inlet has one of the largest Arctic Tern nesting areas in North America. In the 1980s and 1990s the number of nesting Arctic and Common Terns increased on 3 islands in the inlet due to movement from elsewhere. After the 1990s they decreased, potentially due to disturbance. Canada Geese nest in the coastal bog ponds of the subregion. Harlequin Duck breeds in low numbers in the upper reaches of fast-flowing rivers.

A Harbour Seal colony also exists in the inlet, where it is protected from marine predators.

Protection

A portion of the eastern section of the inlet is within Gros Morne National Park. The inlet is also a Fisheries Conservation Closed Area, administered by Fisheries and Oceans Canada under the Fisheries Act, aimed at protecting and conserving herring stocks. The waters inside the Highway 430 bridge are closed to fishing from February 1st to December 31st.

Threats and Recommendations

St. Paul's Inlet is considered to be a relatively pristine marine environment; however, fishing and major expansion of residential and tourism-related industrial development are occurring in the area. A tour boat operation in the inlet may have some impacts on its natural features. Other potential threats that require monitoring include the development of a recreational fishery for tourists, and the salmon fishery in the Western Brook area.

It is recommended that tourism and usage levels be monitored in and around St. Paul's Inlet in order to protect the area from land-based pollution and excessive tourism activities that could disturb wildlife or otherwise negatively impact the marine ecosystems. Due to the presence of Gros Morne National Park, the infrastructure is in place for further protection in the area. Discussions are encouraged between management agencies and local communities to explore options for extending protection into marine areas.

Discussion Questions:

1. What are your comments?
2. Do you think this area is special? Why or why not?

Bonne Bay

49° 33' N, 57° 57' W
Site: 18

Site Description

Bonne Bay is a compound fjord, meaning that it was excavated by more than one glacier. Its deep East Arm (230 m depth) is separated from the outer Bonne Bay basin by a shallow sill 14 m deep. The outer basin is separated from the Gulf of St. Lawrence by an offshore sill which is approximately 35 m deep. Bonne Bay is located midway up the west coast of Newfoundland about 70 km north of the Bay of Islands. There are no large islands in the bay. The bottom topography of the bay is complex, with irregularities due to estuaries, sedimentary bars, mountainside slumping, hard bedrock outcrops, boulder fields and rock slides.

Bonne Bay is within the Western Newfoundland Forest Ecoregion and the Serpentine Range Subregion. Its north shore falls within the Coastal Plain subregion of the Northern Peninsula Forest ecoregion. The Coastal Plain subregion is mainly flat, less than 200 m above sea level. Bonne Bay is also within the Laurentian Channel Ecoregion of Parks Canada's National Marine Conservation Areas system.

The Bonne Bay Marine Station, located in the community of Norris Point, is affiliated with Memorial University of Newfoundland and specializes in marine research and education. Other communities around the bay include Bear Cove, Rocky Harbour, Lomond, Glenburnie, Birchy Head, Shoal Brook, Woody Point and Curzon Village.

Marine Habitats

Westerly winds help to define the marine ecology of the area. There are 20 or more different marine habitats in the area. Bonne Bay is an estuary where the circulation is characterized by salty inflow in deeper waters and estuarine outflow, primarily from land drainage, on the surface. Soft rocks, shale and limestone are common along the shores. Coastal plain lakes and ponds in the area are shallow and oval shaped with silty or sandy bottoms and wind exposed surfaces. Some of these

shallower ponds dry up in the summer, but many support fish. The Coastal Plain subregion contains many low plateau bogs. The coastal area around Gros Morne National Park consists of coastal plains, fjords and coastal cliffs.

Marine Life of Note

Eelgrass grows in extensive beds, especially in shallow areas of the bay at Lomond, Deer Arm, Neddy Harbour and Sandy Head. Seaweeds and kelp are also abundant and highly diverse. Numerous nitrogen-fixing blue-green algal species, including Rivularia spp. are found in estuaries, contributing to high primary productivity.

Invertebrates are also extremely diverse in the bay due to the large number of habitats and include Snow Crab, Rock Crab, Moon Jellyfish, starfish, sea urchins, clams, worms and sponges. Lobster and Snow Crab are common throughout Bonne Bay and are important both to the ecology of the area, and to the local commercial fishery. Soft corals are abundant in the fjords, forming a major component of the subtidal hard-bottom fauna.

Important fish in the area include most of the species found anywhere in the Gulf of St. Lawrence, including Arctic Char, trout, lumpfish, cod, herring, mackerel, Atlantic Salmon, **wolffish**, capelin, Three-spine and Nine-spine Sticklebacks, and the at-risk **American Eel**. Pelagic species are especially abundant in the summer and include mackerel, tuna, Swordfish, Porbeagle Shark, dogfish, sauries, Ocean Sunfish, butterfish and many others. Fish such as pipefish and Windowpane Flounder are at their northern limits in the bay.

All the seabirds, shorebirds and waterfowl of Atlantic Canada may be observed in Bonne Bay. Abundance is highest during migratory seasons. Large numbers of gulls, guillemots and other birds nest on the numerous sea cliffs, islands and sea stacks in the area.

Minke Whale and other cetaceans can be found in Bonne Bay. Harp and Hooded Seals are especially abundant in the bay in winter and spring, while Harbour and Grey Seals are present in summer and fall.

Special Features

Bonne Bay is adjacent to Gros Morne, named a UNESCO World Heritage Site due to the Tablelands geological site. The marine environment in the area of Gros Morne National Park is considered important by biologists. Due to the presence of a variety of habitats in Bonne Bay, the area has the highest biodiversity in Newfoundland. The thermal and seasonal stratification of seawater, and the convergence of the northern limits of boreal and temperate species and the southern limits of Arctic species all result in high species diversity in the bay. Bonne Bay contains the highest biodiversity of seaweeds and kelp in Eastern Canada.

Trout and some char spawn in small creeks which run from ponds and lakes to the ocean. Lumpfish, herring and many other species also spawn in Bonne Bay.

Canada Goose nests in the coastal bog ponds of the subregion, and the at-risk Harlequin Duck breeds in low numbers in the upper reaches of fast-flowing rivers.

Protection

Bonne Bay is surrounded by Gros Morne National Park, which protects a portion of the Western Newfoundland Highlands natural region, including the shoreline down to the high water mark, and

prohibits the removal or destruction of flora, fauna and archaeological resources, and pollution, diversion, obstruction and interference with watercourses.

Threats and Recommendations

Despite the species diversity in the area, over-fishing has led to low population sizes. Major expansion of residential and tourism-related industrial development is occurring on portions of the shoreline that are not included in Gros Morne National Park. Other threats to the area include sewage outflow, terrestrial runoff, waste from local fish plants, the effects of tourism on the intertidal zone, and runoff from terrestrial oil spills. The Rocky Cove portion of the East Arm of the bay was highly disturbed by sedimentation from a semi-permanent rock wall constructed in 1999 to contain 38,000 L of oil spilled on the highway and leaching through fractured bedrock towards Bonne Bay.

Due to the presence of Gros Morne National Park, infrastructure is in place for further protection in the area. Discussions are encouraged between management agencies and local communities to explore options for extending protection into marine areas.

Discussion Questions:

1. What are your comments?
2. Do you think this area is special? Why or why not?

Blow Me Down

49° 05' N, 58° 21' W
Site: 19

Site Description

Blow Me Down is a 226 ha Provincial Park located in the Bay of Islands between the communities of Lark Harbour and York Harbour. There are also several notable bedrock islands and shoals in the area. It is within the Western Newfoundland Forest Ecoregion and the Serpentine Range Subregion. It is also within the Laurentian Channel Ecoregion of Parks Canada's National Marine Conservation Areas system.

Marine Habitats

The coastal area of the ecoregion contains cliffs and a rough topography overall; however, there are eelgrass beds in the vicinity of Blow Me Down. Also present are rockweed, kelp and communities representative of sandy seabeds. The area is subject to heavy ice scour when the winter landfast ice melts or is broken by icebreakers.

Marine Life of Note

Invertebrates around Blow Me Down include lobster, scallop, Snow Crab, clam, sea urchin, squid and snails.

Fish in the area of Blow Me Down include cod, flounder, turbot, haddock, lumpfish, herring, mackerel, capelin, smelt, Arctic Char; Atlantic Salmon; Black-spotted, Three-spined and Nine-spined Sticklebacks and the at-risk **American Eel**.

Birds in the area include Green-winged Teal, American Black Duck, Northern Pintail, Red-breasted Merganser, Spotted Sandpiper and Common Tern, some of which nest on the islands and shoals.

There have been occasional sightings of the endangered North Atlantic Right Whale in the Gulf of St. Lawrence. Beluga Whale is often found in the Gulf.

Special Features

York Harbour, Lark Harbour and the outer Bay of Islands contain productive lobster fishing areas. There is a seabird colony in the Bay of Islands, which contains over 500 pairs of Black-legged Kittiwakes. Because Blow Me Down is already a terrestrial/coastal Provincial Park, infrastructure is in place for further protection of the area.

Protection

Blow Me Down Provincial Park aims to protect natural heritage and provide an opportunity for outdoor recreation. Hunting, development and resource harvesting are prohibited, unless for park purposes. It is also within the Bay of Islands Fisheries Conservation Area, aimed at protecting and conserving Atlantic salmon stocks.

Threats and Recommendations

Further research is needed to better understand the marine features in the area. Discussions are encouraged between management agencies and local communities to explore options to extend protection into the adjacent marine environment, so as to maintain the integrity of marine ecosystems. Efforts toward protecting local lobster stocks would enhance the productivity and sustainability of lobster fishing elsewhere in the Bay of Islands.

Discussion Questions:

1. What are your comments?
2. Do you think this area is special? Why or why not?

West Coast of Newfoundland

47° 29' N, 59° 28' W - 48° 33' N, 59° 37' W - 49° 38' N, 59° 4' W - 50° 42' N, 57° 30' W
Site: 20

Site Description

The portion of the west coast of Newfoundland that has been identified by Fisheries and Oceans Canada as an Ecologically and Biologically Significant Area (EBSA) covers 18,238 km^2, mostly offshore. It extends from Cabot Strait at its southern limit to the Esquiman Channel in the north. It is a very large and complex area.

Marine Habitats

The EBSA covers both coastal and offshore waters. The seawater temperatures in the area in winter vary from slightly higher than the freezing point in the south to much colder in the north. Summer temperatures are especially warm (more than 20 degrees) in sheltered areas such as inner St. George's Bay and Bonne Bay. Ice coverage is minimal in the south, at less than 60 days per year, but is present much longer in more northern regions. The northern reaches of the area are influenced by the Labrador Current. The southern limits are warmed by water from the Cabot Strait and the Atlantic Ocean.

Marine Life of Note

Fish present in the area include Atlantic Herring, halibut, Ribbon Barracudina, Spiny Dogfish, Silver Hake, pollock, redfish, American Plaice, capelin and the at-risk **Atlantic Cod** and **Atlantic Wolffish**. Marine mammals in the area include the endangered **Blue Whale**.

Special Features

The identification of the west coast of Newfoundland as an EBSA means that it is a priority area for conservation. It has the rare characteristic of being significant for a large abundance of fish. Several groundfish and pelagic fish species rely on the area for feeding, especially in summer. Herring and halibut over-winter in the area, and cod, capelin and herring use it for spawning. Cod spawn in early spring in St. George's Bay. The west coast is the extreme limit of some species from the Gulf of St. Lawrence. Entire populations of some species are known to congregate in certain locations. Juvenile Atlantic Cod, redfish, American Plaice and Atlantic Wolffish are known to congregate in the Esquiman Channel and shallower waters. The Esquiman Channel and its extensions are the main migratory route from the Gulf for cod, redfish and other species. Populations of these species can be quite dense in certain areas of the EBSA in spring and fall. In winter, the Esquiman Channel head serves as a refuge for large numbers of capelin from the Gulf of St. Lawrence, and the entire channel provides refuge for Atlantic Herring from the Gulf. These are the only known refuges for these populations. There is a high concentration of Atlantic Cod eggs in the northern reaches of the EBSA, and of capelin eggs in the area, particularly on the coast north of the Port au Port peninsula.

The northern regions of the EBSA, close to the Strait of Belle Isle, are significant for marine mammals, and the southern areas close to St. George's Bay are potentially significant feeding areas for Blue Whales and other cetaceans.

Protection

Protection measures exist in St. George's Bay and Port au Port Bay. St. George's Bay is a Fisheries Conservation Closed Area, aimed at the protection and conservation of Atlantic Salmon stocks and Atlantic Herring spring spawning stocks. The area within 55 m of the shore is closed to trap nets from January 1st to December 31st. Port au Port Bay is a Fisheries Conservation Closed Area aimed at protecting Atlantic herring spring spawning stocks and lobster stocks through seasonal closures. These closed areas are administered by Fisheries and Oceans Canada under the Fisheries Act. The bay is also seasonally closed to scallop fishing, and its portion known as Head Harbour is closed to commercial scallop fishing.

Threats and Recommendations

Because the west coast of Newfoundland represents the range limit of certain species, the effects of climate change on species distributions and ecosystem characteristics should be monitored. It is important to ensure that human activities do not negatively impact the features that make this area rare, unique, and suitable for aggregation, reproduction and survival of marine fauna. There is a lack of information about the area identified as an EBSA, so additional research is needed to determine its marine characteristics and conservation needs.

Discussion Questions:

1. What are your comments?
2. Do you think this area is special? Why or why not?

St. George's Bay - Port au Port
48°25' N, 58° 47' W
48° 33' N, 58° 43' W
Site: 21

Site Description

Once part of a glacier, St. George's Bay is a large, sheltered bay on the west coast of Newfoundland. The Bay contains barrier islands, locally called "The Best in Newfoundland", which protect the land. The Port au Port peninsula is a triangular peninsula located on the west coast of Newfoundland and extending out into the Gulf of St. Lawrence. The rock in the area includes sandstone and limestone, as well as a number of mineral deposits.

The Port au Port peninsula and the north shore of St. George's Bay fall within the Port au Port subregion of the Western Newfoundland Forest ecoregion, and are influenced by winds and storms from the Gulf of St. Lawrence. The eastern part of the bay falls within the St. George's Bay subregion of the Western Newfoundland Forest ecoregion. St. George's Bay and Port au Port are located in the Laurentian Channel ecoregion of Parks Canada's National Marine Conservation Areas System. There are many communities in the area, including Grand Jardin, Stephenville, Stephenville Crossing, St. George's and Flat Bay.

Marine Habitats

The coastal region of St. George's Bay is made up of hummocky ridges and marine deltas. There is a large sand spit at Sandy Point. The bay contains glacio-marine mud and deposits of sand and gravel, and in some areas there are rocky ledges. There are extensive plateau bogs on the coast, with areas up to 10 km^2. There are eelgrass and kelp beds in a number of locations on the southern shore of St. George's Bay, and around the peninsula, particularly on its northern coast. Healthy eelgrass beds provide habitat for invertebrates, fish and birds and prevent shoreline erosion by stabilizing sediment, and maintain water quality by trapping silt.

The Port au Port peninsula, including the north shore of St. George's Bay, is characterized by limestone barrens, with a series of terraces extending inland from the shoreline. There are also a number of low, steep bedrock cliffs which are largely inaccessible. It is wind-exposed, resulting in stunted, open landscapes. There is an abundance of sandy shorelines and mud flats in coastal areas. New England-type salt marshes are an important component of the coastal and marine habitat of the area. The marsh bottom is made up of sandstone, gravel and mud. Other habitats include barriers and freshwater bogs.

The erosion processes which shaped the coastline also acted on the submarine shelf. Glacial material in coastal waters provides substrate for seaweed and cover for lobsters. Ocean bottom substrate ranges from fine anaerobic muds to coarse talus (a sloping mass of rock debris at the base of a cliff). The coastal areas rarely exceed 30 fathoms within 10 m of the shore.

Marine Life of Note

Invertebrates in St. George's Bay and around the Port au Port peninsula include lobster, clams, Moon Snail, quahog, Icelandic Scallop, Giant Scallop, Rock Crab, Snow Crab, Toad Crab, sea urchins, mussels, whelk, squid and periwinkles. Scallops are abundant in Port au Port Bay.

Fish in St. George's Bay and around the Port au Port peninsula include herring, sharks, mackerel, capelin, Grey Sole, American Plaice, halibut, cod, flounder (including Witch Flounder), haddock, catfish, smelt, redfish, turbot, lumpfish, hake, Arctic Char, trout, Atlantic Salmon, the at-risk

American Eel, and Black-spotted, Three-spined and Nine-spined Sticklebacks.

Birds in the area include Arctic and Common Terns, Ring-billed and Greater Black-backed Gulls, American Widgeon, American Black Duck, Green-winged Teal, scoters (e.g. White-winged), Long-tailed Duck, Common Eider, Greater Yellowlegs, Common Snipe, Spotted Sandpiper, Willet and the at-risk Piping Plover.

Harbour and Grey Seals are common, and Harp Seals are occasionally seen in St. George's Bay and Port au Port Bay. Harbour Seals may pup in the area. Whales and dolphins, including the endangered Blue Whale, have been observed in many places around St. George's Bay and around the Port au Port peninsula. There have been occasional sightings of the endangered North Atlantic Right Whale in the Gulf of St. Lawrence. Beluga Whale is often found in the Gulf of St Lawrence.

Special Features

St. George's Bay contains many eelgrass beds and maritime New England type salt marshes. The salt marsh on the Port au Port peninsula provides important habitat for birds and other animals. Unique and rare species of cordgrass (Spartina sp.), amphipods (crustaceans such as Orchestia gryllus), and fish (e.g. Fundulus sp.) exist in the area. St. George's Bay contains submarine fans that have not been seen anywhere else in the region. Herring also spawn in the area.

Shorebirds and songbirds use the habitat in the area during fall migration and nesting season. Migratory shorebirds congregate in large numbers on tidal flats in the fall. Piping Plovers nest in the area. The only known nesting location in the province for Willet is on Flat Island in St. George's Bay. Other nesting shorebirds in the area include Greater Yellowlegs, Common Snipe and Spotted Sandpiper. Flat Island contains colonies of Common and Arctic Terns, Ring-billed Gulls and Greater Black-backed Gulls. White-winged Scoters are sometimes abundant in nearshore areas.

The area is also along an annual seal migration route.

Notable areas in St. George's Bay and the Port au Port peninsula include Sandy Point and Boswarlos (see Sites 21a and 21b, respectively).

Protection

St. George's Bay is a Fisheries Conservation Closed Area, aimed at the protection and conservation of Atlantic Salmon stocks and Atlantic Herring spring spawning stocks. The area within 55 m of the shore is closed to trap nets from January 1st to December 31st. Port au Port Bay is a Fisheries Conservation Closed Area aimed at protecting Atlantic herring spring spawning stocks and lobster stocks through seasonal closures. Lobster fishers initiated the closed area. The closed areas are administered by Fisheries and Oceans Canada under the Fisheries Act. The bay is also seasonally closed to scallop fishing, and its portion known as Head Harbour is closed to commercial scallop fishing.

Threats and Recommendations

Lobster, herring and cod fisheries in the Port au Port area had been depleted by the 1800s. Overfishing is therefore an issue that requires continued monitoring. A major concern in the area is overfishing during herring spawning, which can result in removal of fish that would otherwise reproduce and replenish future stocks.

Salt marshes in St. George's Bay are heavily impacted by humans on all-terrain vehicles and horses. To protect sensitive dune and shorebird habitat and nesting areas, it is recommended that the use of recreational vehicles such as all-terrain vehicles and off-road vehicles be limited, particularly during nesting season. Pedestrians and equestrians should remain only on wet sand during breeding season, and keep clear of nesting areas. Pets should be kept on leashes and food and trash should

be kept off of the areas. A public education and stewardship program should be part of any habitat protection strategy.

Scallop dragging, dredging and other activities that disturb the bottom can uproot eelgrass, causing extensive damage to eelgrass beds, as well cause turbidity in the water, hindering photosynthesis. Damage to eelgrass beds results in habitat loss for other organisms, including crustaceans, juvenile fish (such as cod) and waterfowl. Activities in the area should be monitored and modified as necessary to avoid damage to eelgrass beds.

A number of industrial threats exist to the area. Pulp and paper effluent has been found to affect Winter Flounder in St. George's Bay. Effluent should be treated so as to eliminate turbidity and pollutants prior to its entry into the watershed and ocean. Mining activities also occur in the Stephenville area and throughout the Port au Port peninsula. The possible impacts of these activities on the marine environment should be examined, with the aim of eliminating or minimizing any negative effects. There is also an oil field in the Port au Port area that is awaiting development. Seismic activities are planned for Cape St. George and surrounding marine areas. The health of the marine environment should be a primary concern if this industry is proposed to be developed in the area.

Discussion Questions:

1. What are your comments?
2. Do you think this area is special? Why or why not?

Sandy Point

48° 27' N, 58° 30' W

Site: 21a

Site Description

Sandy Point is a sandy island that extends 2 km into St. George's Bay. It is approximately 7 km west of the head of the bay at Stephenville Crossing, 2 km north of St. George's and 12 km south of Stephenville. It was once a sandy peninsula connected to the main island of Newfoundland until sea level rise and storm surges causing erosion made the link impassable. Sandy Point was the hub of the St. George's Bay fishery and the area was a major port and supply centre for much of the west coast of Newfoundland. It falls within the St. George's Bay subregion of the Western Newfoundland Forest ecoregion and the Laurentian Channel ecoregion of Parks Canada's National Marine Conservation Areas System.

Marine Habitats

Its sandy landscape, uncommon in Newfoundland, gave Sandy Point its name. Marine and coastal habitats in Sandy Point include tidal sand flats, salt marshes, eelgrass beds, beaches and sand dunes. There are extensive plateau bogs on the coast, with areas up to 10 km^2.

Marine Life of Note

Fish around Sandy Point include Arctic Char, herring, Atlantic Salmon, Redfish, American Plaice, Winter Flounder, Haddock, capelin, turbot and Black-spotted, Three-spined and Nine-spined Sticklebacks, and the at-risk **American Eel**, **Atlantic Wolffish** and juvenile **Atlantic Cod**.

Sandy Point houses over 100 bird species, for example Artic and Common Terns, Ring-billed and Greater Black-backed Gulls, scoters (e.g. White-winged), Long-tailed Duck, Common Eider,

American Wigeon, American Black Duck, Green-winged Teal, Semipalmated Plover, Greater Yellowlegs, Common Snipe, Spotted Sandpiper, Willet, and the at-risk **Piping Plover**.

For details on marine life in St. George's Bay more generally, refer to Site 21.

Special Features

Sandy Point contains the largest Spartina salt marsh and one of the largest eelgrass beds known to exist in the province. It also houses uncommon plant species such as Seabeach Sedge, Saltmarsh Rush, Seaside Lavender and Saltwater Cordgrass.

Large numbers of migratory shorebirds inhabit the island in the summer, some of which nest in the area. The area houses 15 to 20% of the provincial population of Piping Plover. Up to five pairs of Piping Plovers have been observed to nest in the area. The only known nesting location in the province for Willet is on Flat Island. Other nesting shorebirds include Greater Yellowlegs, Common Snipe and Spotted Sandpiper. Flat Island contains colonies of Common and Arctic Terns, Ring-billed Gull and Great Black-backed Gull. White-winged Scoter is sometimes abundant in nearshore areas. Migratory shorebirds also congregate in large numbers on tidal flats in the fall.

Protection

Several protection measures have been considered over the past several decades. In the 1970s the area was considered for a Provincial Park; in the 1980s and early 1990s it was considered for an Ecological Reserve; and in the early part of this century it was considered as a National Wildlife Area and Provincial Historic Site. Each of these protection efforts failed, however, largely because of concerns regarding private land in the area. This prompted the acquisition by the Nature Conservancy of Canada of 54 acres of the island (by the time of writing) for protection and stewardship. Local people are still interested in some form of protection for the area. Sandy Point is within the St. George's Bay Fisheries Conservation Closed Area, administered by Fisheries and Oceans Canada under the Fisheries Act, aimed at the protection and conservation of Atlantic Salmon stocks and Atlantic Herring spring spawning stocks.

Threats and Recommendations

There are private land holdings on the islands remaining from previous settlements, but the area is currently uninhabited. Irresponsible tourism and visitation can still impact the area, however. A major human threat to the area is all-terrain vehicle (ATV) and off-road vehicle (ORV) use, which can crush eggs, nests and plants and damage sand dunes. People attempt to access the island with ATVs at low tide or, more commonly, transport the vehicles to the island by boat.

To protect sensitive dune and shorebird habitat and nesting areas, it is recommended that the use of recreational vehicles such as ATVs and ORVs be limited, particularly during breeding season. Pedestrians should walk only on wet sand during breeding season, and keep clear of nesting areas. Pets should be kept on leashes and food and trash should be kept off of the areas. A public education and stewardship program should be part of any habitat protection strategy.

Seabird and shorebird populations on the island have diminished over the last few years. Predation by foxes has played a role in this population reduction.

Further discussions can be held involving local people to determine appropriate protection measures for the area.

Discussion Questions:

1. What are your comments?
2. Do you think this area is special? Why or why not?

Boswarlos
48° 34' N, 58° 49' W
Site: 21b

Site Description

Boswarlos is located at the bottom of East Bay in Port au Port Bay on the northern sheltered coast of the Port au Port peninsula, in western Newfoundland. The area contains rolling lowlands surrounded by steep hills. It falls within the Port au Port subregion of the Western Newfoundland Forest ecoregion and the Laurentian Channel ecoregion of Parks Canada's National Marine Conservation Areas System. The climate is influenced by winds and storms from the Gulf of St. Lawrence.

Marine Habitats

Land types around Boswarlos include peat moss, barrens, marsh, rocky areas, coastal beach, and quarries. The coastal area is made up of rocky ledges, low cliffs, cobbles, boulders, bedrock slabs and outcrops, with large sand-gravel beaches some 15 m long approximately 2.5 km from shore. Eelgrass beds and rockweed are found in nearshore areas, and kelp is also found in the vicinity.

Marine Life of Note

Marine invertebrates in the area include Toad Crab, Rock Crab, sea urchin, periwinkle, scallop (including Giant Scallop) and lobster. Fish in the area include capelin, flounder, American Plaice, Arctic Char, Atlantic Salmon, cod, mackerel, herring Black-spotted, Three-spined and Nine-spined Sticklebacks, and the at-risk **American Eel**.

Shorebirds using the area include Ruddy Turnstone, Semipalmated Plover, Semipalmated Sandpiper and Killdeer.

For details on marine mammals and other fauna in Port au Port Bay, refer to Site 21.

Special Features

Boswarlos provides habitat for shorebirds and songbirds during fall migration. Extensive eelgrass beds and abundant scallop beds in shallow areas are particularly important in the area. It has been estimated that over 80% of all commercial fish and shellfish species depend on eelgrass habitat for at least part of their lifecycle. Healthy eelgrass beds also prevent shoreline erosion by stabilizing sediment, and maintain water quality by trapping silt.

Protection

The area is within the Port au Port Bay Fisheries Conservation Closed area, administered by Fisheries and Oceans Canada under the Fisheries Act, aimed at protecting Atlantic herring spring spawning stocks and lobster stocks.

Threats and Recommendations

Scallop dragging, dredging and other activities that disturb the bottom can uproot eelgrass, causing extensive damage to eelgrass beds, and cause turbidity in the water, hindering photosynthesis. Damage to eelgrass beds results in habitat loss for other organisms, including crustaceans, juvenile fish (such as cod) and waterfowl. The effects of eelgrass loss on these organisms can be devastating. Activities in the area should be monitored and modified as necessary to avoid damage to eelgrass beds.

Oil reserves were found at Shoal Point, close to Boswarlos, in the early 1900s. Onshore

exploration drilling and seismic surveys, for reserves under the seabed, are planned for 2008 at Shoal Point. The health of the marine environment should be a primary concern if this industry is proposed to be developed in the area. Operators should be educated about oil pollution and its effect on the marine environment. Monitoring and enforcement mechanisms should be implemented to prevent wildlife mortality due to oil pollution.

Discussion Questions:
1. What are your comments?
2. Do you think this area is special? Why or why not?

Codroy Valley
47° 52' N, 59° 24' W
Site: 22

Site Description

The Codroy Valley is located northwest of Port aux Basques in the southwest corner of the island of Newfoundland. It is surrounded by the Long Range and Anguille Mountains, providing protection from cold northeasterly winds. The Codroy Valley estuary, surrounded by roads, is located where the Grand Codroy River flows into the Atlantic Ocean. The valley falls in the Codroy subregion of the Western Newfoundland Forest ecoregion. It is also within the Laurentian Channel ecoregion of Parks Canada's National Marine Conservation Areas System. Fifteen communities are located in the Codroy Valley, including Great Codroy, O'Regan's and Searston.

Marine Habitats

The large, broad estuary of the Grand Codroy River is 925 ha, 12 km long and up to 3 km wide, with a 100 m channel serving as the outlet to the ocean. The local landscape was shaped by glacial action. The open water of the estuary is up to 2 m deep, with deeper waters found in the river. In the estuary is a shallow, intertidal, brackish-water marsh which contains four small islands, intertidal flats and sand bars that are exposed at low tide. In addition, a 1 km long sand spit covered by dune grass (Ammophila sp.) separates the estuary from adjacent Searston Bay. Portions of the intertidal area are heavily vegetated by eelgrass, which is an important food source for migrating Canada Geese. The surrounding terrestrial area is mostly made up of farms and open fields.

Marine Life of Note

Lobster, mussels, lumpfish, trout and capelin are found in Searston Bay near the outlet of the estuary. Salmon and eel are found on the river side of the outlet. Other fish in the area include Arctic Char, Atlantic Salmon, the at-risk **American Eel**, Black-spotted, Three-spined and Nine-spined Sticklebacks.

Over 20 species of waterfowl have been observed at the estuary, including: Canada Goose, Wood Duck, American Black Duck, Tufted Duck, Ring-necked Duck, Northern Shoveler, Northern Pintail, Gadwall, Blue-winged Teal, Green-winged Teal, Eurasian Wigeon, American Widgeon, Common Goldeneye, Common Merganser, Red-breasted Merganser, Lesser Scaup, Greater Scaup and the at-

risk Piping Plover.

A dead Right Whale, an endangered species, was found on the beach in the area.

Special Features

The Codroy Valley and the Codroy Valley Estuary are **Important Bird Areas** (IBAs). The Codroy Valley IBA is a triangular area between the Little Codroy and Grand Codroy Rivers, surrounded by roads. It is of interest for a number of terrestrial birds. The Codroy Valley Estuary is located just north of the Codroy Valley IBA site. The Codroy Valley Estuary IBA site includes the open waters of the estuary up to the high tide line.

Grand Codroy is also a Ramsar site, recognized by the Convention on Wetlands of International Importance. It was chosen as an exceptional example of a large coastal estuary, and due to high diversity of waterfowl present during migration. The Grand Codroy delta and estuary wetlands are considered the most productive and important wetland habitat in the province. It is within the migration corridor of several birds and is a stopover or staging area used by birds for food and rest during spring and fall migration. It is also an important breeding site for waterfowl. Shorebirds use the intertidal bars and flats in late summer. Some rare birds blown off course during migration have been observed in the area.

The estuary and wetlands provide habitat for large flocks of Canada Goose (3000 birds) in fall and early winter, and a variety of ducks, including Black Duck (over 1000 birds) in late September. The numbers of Canada Goose using the area are considered continentally significant, at over 1% of the North Atlantic population. Rare ducks recorded at the estuary include Eurasian Widgeon and Tufted Duck. The Grand Codroy Estuary has the first breeding record in Newfoundland for Northern Shoveler. It also has the largest numbers of breeding American Widgeon and Blue-winged Teal. Piping Plover bred successfully at the mouth of the estuary from 1992 to 1998.

Protection

Codroy Valley contains a 24 ha terrestrial Provincial Park, which contains habitat for Piping Plover. It is adjacent to the Grand Codroy Estuary Wildlife Area, which is a Ramsar site aimed at protecting the internationally recognized estuary and one of the province's most important migratory bird wetlands. The Nature Conservancy of Canada (NCC) had acquired 488 acres of the estuary at the time of writing, some of which have been turned over to the province. Hunting is prohibited in the estuary and sand bars; however, development is not prohibited in the valley except in the Provincial Park and on properties owned by the NCC.

There is a small terrestrial park reserve of 8.5 ha called Grand Codroy Provincial Park. Grand Codroy has agreed to a Municipal Stewardship Agreement, which ensures protection of the wetland habitat within the municipal boundaries. The Grand Codroy Estuary Wetlands Conservation Plan was drafted in 1992 as part of the land stewardship initiatives of the Eastern Habitat Joint Venture of the North American Waterfowl Management Plan. Discussions with local landowners concerning protection of this area have been held since 1990.

Threats and Recommendations

Threats to the area within and around the Ramsar site include human developments in upland areas, which could alter or otherwise affect waterfowl use of the area. Siltation and sedimentation in the estuary is also of concern. Because of the favourable climate and rich soil, large areas of the valley have been cleared for agriculture. Use and run-off of pesticides, herbicides and fertilizers could potentially have impacts on the riparian and estuarine areas. Cottage development and slash and burn agriculture (e.g. spring burns) can result in loss of natural vegetation and impacts on wildlife use of the

area.

The Grand Codroy Estuary Wetlands Conservation Plan recommends the securement of key habitat sites and the establishment of stewardship agreements with private landowners bordering the Ramsar site. It also recommends education and public awareness programs about the area. Management and awareness strategies for the marine area should be developed with local communities.

Discussion Questions:

1. What are your comments?
2. Do you think this area is special? Why or why not?

Laurentian Channel

Area from 45°N to 47.5°N, from the slopes of the banks into the Laurentian Channel to the western boundary of the Placentia Bay-Grand Banks Large Ocean Management Area

Site: 23

Site Description

The southern fringe of the Laurentian Channel has an area of 5941 km^2. The southern slope consists of 100 to 300 m vertical drops. The Channel is a glacially-created submarine valley 1400 km long that surrounds Anticosti Island and the western and southern coasts of Newfoundland. Depths range from 180 to 550 m, with some 10 to 55 km wide subtidal shelves under 100 m in depth. The sides of the channel are relatively straight, with an average width of 100 km. The open water season is 9 months long. Ice cover consists of open pack ice, although much of southwestern Newfoundland is relatively ice free. The area considered to be of importance for the purposes of this document falls within the Laurentian Channel and Scotian Shelf regions of Parks Canada's National Marine Conservation Areas system. The channel separates Banquereau and the eastern Scotian shelf from the Grand Banks of Newfoundland. It is a seismically active portion of the Newfoundland continental shelf.

Marine Habitats

The seabed of the Laurentian Channel consists of LaHave clay, homogeneous marine mud and emerald silt. The channel bottom has been characterized as Brisaster fragilis-Ctenodiscus crispatus-Amphiura otteri-Pennatularia habitat, named after a deep water spatangoid (heart urchin), a mud sea star, a deep sea brittle star and a sea pen, respectively. The channel walls would be suitable habitat for deep sea corals.

The channel's waters are highly saline and rich in nutrients. Traveling from the Atlantic along the edge of the continental shelf, these waters come in as a deep water layer that is generally warmer than the surface layer, then are brought to the surface and mix with water from the St. Lawrence River.

Coastal environments include fjords, low rocky shores, deltas, coastal bluffs, coastal dunes, barrier beaches and tidal flats. The coast of southwestern Newfoundland contains fjords – plateaus with 200 to 450 m cliffs. The depth of the channel means that it acts as a break separating several stocks of shallow water fish species.

Marine Life of Note

Phytoplankton and zooplankton gather in the region in large numbers. Invertebrates in the Laurentian Channel include soft corals, deep sea corals, sea anemones, Icelandic Scallop, Shortfin

Squid, Lesser Bobtail Squid, Northern Atlantic Octopus, Northern Shrimp, lobster, heart urchins, mud sea stars, deep sea brittle stars, sea pens, Stone Crab, and deep sea King Crab.

The area has significant groundfish populations, including some species at risk. Fish in the Laurentian Channel include Atlantic Halibut, Atlantic Herring, Atlantic Salmon, Smooth Skate, Black Dogfish, Blue Shark, Porbeagle Shark, Greenland Halibut, haddock, hagfish, hake, whitefish, redfish, mackerel, capelin, monkfish, Witch Flounder, Swordfish and the at-risk **Northern, Atlantic and Spotted Wolffish**, **Atlantic Cod** and Cusk.

Marine birds in the area are mostly pelagic species or those that have nesting areas on coasts close to the channel. Breeding seabirds in the region mostly consist of gulls. Seabirds in the Laurentian Channel include Greater, Sooty, Cory's and Manx Shearwaters, Wilson's and Leach's Storm-Petrels, Northern Gannet, Northern Fulmar, jaegers, gulls, terns and sea ducks.

The region is a major summer feeding area for marine mammals, particularly migratory cetaceans. Harbour Porpoise (a species at risk); Atlantic White-sided, White-beaked, Short-beaked Common, Bottlenose and Striped Dolphins; Humpback, Fin, Minke, Northern Right, Sei, Sperm, Beluga, Northern Bottlenose, Killer, and Long-finned Pilot Whales have been sighted, as have the at-risk Blue Whale, Right Whale and Sowerby's Beaked Whale. The Laurentian Channel contains breeding areas for Harp and Hooded Seals. Grey Seals are abundant around Anticosti Island and Harbour Seals are residents present in all coastal areas.

Special Features

The Laurentian Channel and Slope has been identified by Fisheries and Oceans Canada as an Ecologically and Biologically Significant Area (EBSA). The variety of depths in the Laurentian Channel creates a diversity of habitats. A 1992 survey determined that it contains the highest levels of biodiversity off of the shore of Newfoundland.

Deep sea corals have been discovered in the Stone Fence area, on the southwestern side of the Laurentian Channel.

Entire populations of groundfish winter in the Laurentian Channel. The southern slope of the Cabot Strait is the only wintering area known for cod. The channel also contains spawning grounds for Cusk, Greenland Halibut, mackerel, redfish, capelin, Atlantic Cod and herring. Atlantic Salmon spawn in several coastal rivers. Black Dogfish pup and aggregate in the Laurentian Channel, and Smooth Skate use the area for nurseries and rearing. Several species of fish, pinnipeds and cetaceans migrate through the area.

Protection

Five preliminary representative marine areas within the Laurentian Channel National Marine Conservation Area (NMCA) region (which is broader than the Laurentian Channel EBSA) have been identified by Parks Canada, one of which will be considered as a possible NMCA: Anticosti Island / Gaspé Peninsula, Cow Head / Bay of Islands, Strait of Belle Isle, Cabot Strait and South Coast Fjords.

Threats and Recommendations

The effects of shipping are of concern in the Laurentian Channel. Related threats include accidental oil spills, illegal bilge dumping and ship strikes.

Offshore oil and gas development, including shipping, seismic activity, blasting, oil spills, lights and flares could impact marine communities in the area. Improved surveillance, increased enforcement, higher fines and capture of polluters can deter and prevent marine oil pollution. It is also recommended that convenient and accessible onshore oil disposal facilities for bilge and oil-contaminated ballast water be established, ship inspections be carried out more frequently and

thoroughly, and education programs regarding oil pollution be expanded for ship operators and the public.

Studies are necessary to confirm representative marine areas, and a preferred site must be selected within the Laurentian Channel region for consideration as an NMCA. The Gulf of St. Lawrence Integrated Management process should be expedited with thorough community involvement, in order to protect sensitive areas in the region.

Discussion Questions:

1. What are your comments?
2. Do you think this area is special? Why or why not?

J.T. Cheeseman
47° 37' 25.67" N 59° 16' 13.75" W
Site: 24

Site Description

J.T. Cheeseman is a Provincial Park 15 km west of Channel-Port aux Basques on the southwest corner of the island of Newfoundland, east of the community of Cape Ray. It falls within the South Coast Barrens subregion of the Maritime Barrens ecoregion. It is also located in the Laurentian Channel region of Parks Canada's National Marine Conservation Areas system.

Marine Habitats

Key coastal habitat features at J.T. Cheeseman include sand dunes, beaches, a sandy barachois (bar lagoon), bogs and forested hills. It is within the Cape Ray barrens. There are eelgrass beds in the area.

Marine Life of Note

Invertebrates at J.T. Cheeseman include lobster, Green Sea Urchin, Dogwinkle, Surf Clam and Blue Mussel.

Fish in the area include flounder, halibut, lumpfish, sharks, herring, capelin, mackerel, Atlantic Salmon, Brown Trout, Three-spine and Nine-spine Sticklebacks, and the at-risk **American Eel**.

Birds in the vicinity include Canada Goose, American Black Duck, Green-winged Teal, Common Snipe, Greater Yellowlegs, Least Sandpiper, the at-risk Piping Plover, and a number of seabirds including murres.

Harbour and Grey Seals are common, and Harp Seals are occasionally seen around J.T. Cheeseman Provincial Park. Harbour Seals pup in the area. White-beaked Dolphin, Fin Whale, Humpback Whale and the endangered Blue Whale have been observed in the area.

Special Features

J.T. Cheeseman is on the flight path of many migratory species, due to the ideal coastal bird habitat that it contains. It houses the largest variety of shorebirds in Newfoundland and Labrador. Because of the presence of the Provincial Park, infrastructure is in place for further protection in the area.

Protection

J.T. Cheeseman is a coastal Provincial Park aimed at protecting natural heritage and Piping Plover nesting habitat, and providing opportunity for outdoor recreation. Hunting, all-terrain vehicles, snowmobiles, development and resource harvesting (except for park purposes) are prohibited.

Park policy requires pets to be kept on a leash for the protection of Piping Plover and other nesting shorebirds. The area is also within Northwest Atlantic Fisheries Organization Fishing Area 3Pn Fishing Conservation Area, initiated by the Fisheries Resource Conservation Council, aimed at protecting spawning redfish (Sebastes spp.). It is also within the '100 Fathom Edge', 3Pn Fisheries Management and Conservation Closed Area, banning mobile fishing gear to resolve a gear conflict issue. These closed areas are administered by Fisheries and Oceans Canada under the Fisheries Act.

Threats and Recommendations

Human disturbance can disrupt shorebird breeding behaviour. Pedestrians should walk only on wet sand during breeding season, and keep clear of nesting areas. Food and trash should be kept off of the areas. A public education and stewardship program should be part of any habitat protection strategy.

Discussions are encouraged between management agencies and local communities regarding options for extending protection into marine regions.

Discussion Questions:

1. What are your comments?
2. Do you think this area is special? Why or why not?

North Cabot Strait

47°39' N, 58°14' W - 47°33' N, 59°08' N
Site: 25

Site Description

The Cabot Strait ranges from 89 to 97 km in width, and separates southwestern Newfoundland from Cape Breton Island, Nova Scotia. The northern limit of the Strait extends from the communities of Grand Bruit to Port aux Basques in southwestern Newfoundland. The area experiences dense fog, due to the mixing of the Gulf Stream and the Labrador Current. The terrestrial and coastal areas fall within the South Coast Barrens subregion of the Maritime Barrens ecoregion. The Strait is within the Laurentian Channel region of Parks Canada's National Marine Conservation Areas system.

Marine Habitats

The area contains several islands. Pack ice occurs in spring. Eelgrass beds are present in a number of sheltered locations on the south coast of Newfoundland, in the northern reaches of the Cabot Strait. Kelp beds are also present in several areas. There is a major deepwater upwelling in the Strait that is associated with northerly winds.

Marine Life of Note

Invertebrates in the North Cabot Strait include lobster, quahog and mussels.

Fish in the North Cabot Strait include Atlantic Salmon, sharks, mackerel, trout, capelin, smelt, White Hake, cod, flounder, lumpfish, redfish and Witch Flounder. Other fish in the ecoregion include Brown Trout, Three-spine and Nine-spine Sticklebacks and the at-risk **American Eel**.

Birds in the area include Canada Goose, American Black Duck, Green-winged Teal, Common Snipe, Greater Yellowlegs and Least Sandpiper.

Harp and Grey Seals are common during spring migration and Hooded Seals are occasional in the offshore areas of Cabot Strait. The endangered Blue Whale visits the area, mostly between March and

April due to abundance of krill during that time.

Special Features

This area is a winter upwelling zone, typically from the north winds that are prominent in winter. Currents carry the upwelled, warmer waters along the west coast, which keeps the waters from freezing over. Compared to other areas of Newfoundland, the North Cabot Strait is not as cold in the middle of winter, resulting in less cold water mortality of marine species.

The North Cabot Strait is an important breeding area for cod and many other species. It is also a source area for several marine species found on the west coast of Newfoundland. The ecoregion contains some seabird nesting areas, as well as Green-winged Teal and Least Sandpiper breeding areas.

Protection

The area is within Northwest Atlantic Fisheries Organization Fishing Area 3Pn Fisheries Conservation Closed Area, initiated by the Fisheries Resource Conservation Council, aimed at protecting spawning redfish (Sebastes spp.). It is also within the '100 Fathom Edge', 3Pn Fisheries Management and Conservation Closed Area, banning mobile fishing gear to resolve a gear conflict issue. Preliminary work has been done towards the establishment of a marine conservation area from Port aux Basques to François. These closed areas are administered by Fisheries and Oceans Canada under the Fisheries Act.

Threats and Recommendations

Human activities in the North Cabot Strait include ferry and other shipping traffic. The ferry between Cape Breton and Port aux Basques crosses the Strait. Oil pollution is therefore a possible threat to the area. Increased enforcement, improved surveillance, higher fines and capture of polluters are necessary to deter and prevent marine oil pollution. Convenient and accessible onshore oil disposal facilities for bilge and oil-contaminated ballast water should also be established.

Little research has been done in this area, other than studies of the offshore cod population. Research is needed to identify the species present in the area, including any species of concern or unique species. Additional research is necessary to determine the effects of human activities on fish breeding areas and other components of the marine environment in the Strait, with the intent of minimizing any negative effects.

Discussion Questions:

1. What are your comments?
2. Do you think this area is special? Why or why not?

Sandbanks

47° 36' N, 57° 39' W
Site: 26

Site Description

Sandbanks is a 232 ha terrestrial Provincial Park. The park is approximately 13 km long and sandy beaches make up a significant proportion of the shoreline. It is located on the south coast of Newfoundland, on the western boundary of the community of Burgeo. It experiences 1.7 m diurnal tides. The geology of the area is diverse, but consists of metamorphosed sediments and distinctive masses of igneous rock. It falls within the South Coast Barrens subregion of the Maritime Barrens

ecoregion. It is also located in the Laurentian Channel region of Parks Canada's National Marine Conservation Areas system.

Marine Habitats

The Gulf Stream and Labrador Current both influence the area. The waters remain quite cool year-round, but the warmer currents of the Gulf Stream keep the area mostly ice-free during the winter. Coastal habitats include sand dunes and long, flat sandy beaches. Among the dunes are isolated pockets of tuckamore trees, American beach grass and beach pea. There are eelgrass beds, kelp beds, rockweed and Irish moss in the area. The waters adjacent to the provincial park are relatively shallow, often not exceeding 8.5 m, but reach 100 m depths off of Fox Point. Up to 365 islands exist offshore from Sandbanks.

Marine Life of Note

Invertebrates around Sandbanks include lobster, clams, Northern Stone Crab, Rock Crab, scallops, mussels, sea urchins and squid.

Marine fish around Sandbanks include cod, flounder, lumpfish, redfish, haddock, Atlantic Salmon, brook trout, mackerel and the at-risk **American Eel**. Other fish in the ecoregion include Brown Trout, Three-spine and Nine-spine Sticklebacks.

Marine and coastal birds in the area include Canada Goose, American Black Duck, Green-winged Teal, Common Snipe, Greater Yellowlegs, Least Sandpiper, plovers such as the at-risk Piping Plover, and various seabirds.

The endangered Blue Whale visits the area, mostly between March and April due to abundance of krill during that time.

Special Features

The landscape of Sandbanks, with its sand dunes and long, expansive sandy beaches, is uncommon in Newfoundland. Sandbanks is an important site along the route of migratory birds. It contains one of the largest breeding areas in Newfoundland for the Piping Plover, at the Big Barasway Piping Plover reserve. Because of the presence of the Provincial Park, infrastructure is in place for further protection in the area.

Protection

Sandbanks was designated a terrestrial Provincial Park in 1973, which protects natural heritage and provides an opportunity for outdoor recreation. Hunting, snowmobiling and all-terrain vehicle use are prohibited, as are development and resource harvesting, unless for park purposes. The marine area is within Northwest Atlantic Fisheries Organization Fishing Area 3Pn Fisheries Conservation Closed Area, aimed at protecting spawning redfish (Sebastes spp.). It is also within a Fortune Bay Fisheries Management Closed Area initiated by inshore fishers that prohibits commercial scallop fishing by vessels 45' and larger, to resolve a gear use conflict. These closed areas are administered by Fisheries and Oceans Canada under the Fisheries Act.

Threats and Recommendations

The sandy habitat at Sandbanks is threatened by human activities. There is a campground within the park. Sea level rise due to climate change is also expected to increase erosion in the area. The presence of dogs off-leash was suspected as playing a role in the death of one family of Piping Plover chicks.

To protect sensitive dune and shorebird habitat and nesting areas, it is recommended that the use

of recreational vehicles be limited. Pedestrians should walk only on wet sand during breeding season, and keep clear of nesting areas. Pets should be kept on leashes and food and trash should be kept off of the areas. A public education and stewardship program should be part of any habitat protection strategy. Increased surveillance and stricter fines would help to deter irresponsible activity.

Discussions are encouraged between management agencies and local communities regarding options for extending protection into marine regions.

Discussion Questions:

1. What are your comments?
2. Do you think this area is special? Why or why not?

Burgeo Bank
South of 47.5° N, and following the 200 m isobath
47° 4' 60" N, 57° 49' 60" W
Site: 27

Site Description

Burgeo Bank is located off the western portion of the south coast of Newfoundland, southwest of the community of Burgeo and the Ramea islands. It falls within the Laurentian Channel region of Parks Canada's National Marine Conservation Areas system.

Marine Habitats

No information was available at the time of writing.

Marine Life of Note

Fish species around Burgeo Bank include redfish, American Plaice, Witch Flounder, pollock and the at-risk **Atlantic Cod**.

Special Features

Burgeo Bank has been identified by Fisheries and Oceans Canada as an Ecologically and Biologically Significant Area (EBSA). 3Pn4RS and 3PS cod stocks mix in this area in spring, and over-winter in the area. They aggregate in the area to spawn, particularly in March and April. Redfish also spawn in the area.

Protection

Efforts have been made to reduce by-catch of American Plaice in the area through the use of different hook sizes. Burgeo Bank is within Northwest Atlantic Fisheries Organization Fishing Area 3Ps (southern), an 81,890 km^2 fisheries conservation area established to protect spawning redfish. The area is closed to redfish harvesting by fixed and mobile gear by vessels less than 65' from May 1 to June 30.

Threats and Recommendations

Although the Burgeo Bank itself is relatively intact, the remaining cod population and ecosystem in the area have been altered by fishing and are therefore sensitive to disturbance. In particular, American Plaice, a species that is under moratorium, is often caught as by-catch in the cod fishery on Burgeo

Bank.

Management strategies for this EBSA should be developed in a participatory and inclusive manner with concerned communities.

Discussion Questions:

1. What are your comments?
2. Do you think this area is special? Why or why not?

Penguin Islands
47° 23' 10.2372" N, 56° 59' 23" W
Site: 28

Site Description

The Penguin Islands are an archipelago located some 20 km off the south shore of Newfoundland, east of the island community of Ramea. The islands are therefore highly exposed. They fall within the Eastern Hyper-oceanic Barrens ecoregion, and are also located in the Laurentian Channel region of Parks Canada's National Marine Conservation Areas system.

Marine Habitats

The Penguin Islands are a cluster of islands and sea stacks. The coast within the ecoregion is rocky, with frequent fog due to the mixing of the warm Gulf Stream and the cold Labrador Current. The waters around the Penguin Islands are ice free and very clear.

Marine Life of Note

Fish in the vicinity of the Penguin Islands include American Plaice, Winter Flounder, haddock, Atlantic Halibut, cod and redfish. Snow Crab is also present.

Birds in the ecoregion include Razorbill, Thick-billed Murre, Black Guillemot, Herring Gull, Great Black-backed Gull, Ring-billed Gull, Common Eider, Northern Fulmar, Manx Shearwater, and Common, Arctic and Caspian Terns.

Harbour Seals are common around the Penguin Islands and Grey and Harp Seals are seen occasionally. Harbour Seals may pup in the area. White-beaked Dolphin, Fin Whale, Humpback Whale and the endangered Blue Whale have been observed in the area.

Special Features

The area is highly productive and contains some of the most productive and diverse wave-exposed kelp beds in the province. The Penguin Islands are a sensitive bird area, as they contain seabird breeding colonies and house large numbers of over-wintering birds. Some species at risk are found on the islands. The numbers of seabirds and whales found around the Penguin Islands in the summer suggests that it is a very rich and abundant feeding area.

Protection

The area is within Fisheries Conservation Closed Area 3Ps, aimed at protecting populations of spawning redfish. It is also within a Fortune Bay Fisheries Management Closed Area initiated by inshore fishers that prohibits commercial scallop fishing by vessels 45' and larger, to resolve a gear use conflict. These closed areas are administered by Fisheries and Oceans Canada under the Fisheries Act.

Threats and Recommendations

More research is required in this area, particularly given its high productivity. Management strategies should be explored with concerned communities to protect seabirds and other wildlife that tend to be caught as by-catch. A radius around and including the Penguin Islands could be listed as a sensitive area on nautical charts.

Discussion Questions:

1. What are your comments?
2. Do you think this area is special? Why or why not?

Hermitage Bay - Goblin Head - Outer Bay d'Espoir
Hermitage: 47° 34' N, 55° 58' N
Goblin Head: 47° 36' N, 55° 54' W
Site: 29

Site Description

Hermitage Bay is a small coastal bay on the South Coast of Newfoundland. Goblin is an abandoned fishing community on the north shore of Goblin Bay in eastern Hermitage Bay. Goblin Head is the entrance to the eastern arm of Bay d'Espoir. Current communities in the bay include Hermitage, McCallum and Gaultois.

The climate in the area is mild in the winter and cool in the summer, because of prevailing southerly winds. The bay is mostly ice free. The Hermitage Bay Fault separates two different geological zones within the bay. The bay falls within the South Coast Barrens subregion of the Maritime Barrens ecoregion. It is located in the Laurentian Channel region of Parks Canada's National Marine Conservation Areas system.

Marine Habitats

The bay is practically ice free all year round and the bottom consists of gravel and rock. This bay has a rugged coastline, with fjords, sheltered inlets and steep cliffs up to 377 m high. Goblin Head is in a sheltered inlet surrounded by high cliffs. Goblin Bay is ice free with very rich diversity and upwellings. The 800 m deep sea basin at Goblin Head and Outer Bay d'Espoir (Goblin Deeps) is strongly stratified. The first 600 m is a vertical underwater cliff totally covered with sealife. The first 150 m can be very cold, but the bulk of the basin is filled with high salinity seawater from the Laurentian Channel, which can be 5 to 7 °C and support unique assemblages of deep-sea benthic and planktonic animals.

Marine Life of Note

The seaweeds in the area are very similar to those in Nova Scotia. Their diversity is extremely high, especially in the intertidal zone where lack of ice scour permits the development of stable, complex, perennial communities.

Marine invertebrates in Hermitage Bay include lobster, squid and sea urchin. Invertebrates around Goblin Head include lobster and squid. The deep sea basin supports spectacular deep-sea fauna, including typical deep-sea bivalves such as Lima, deep-sea gooseneck barnacles, Porcupine Crab, brachiopods (lamp shells), **deep-sea corals** and sponges.

Fish in Hermitage Bay and around Goblin Head include cod, redfish, turbot, Atlantic Salmon, halibut, perch, mackerel, herring and capelin. The most unique fish in the area are its many deep-sea

species such as Long-fin Hake and Lantern Fish. Other fish in the ecoregion include Brown Trout, Three-spine and Nine-spine Sticklebacks and the at-risk **American Eel**.

Birds in the area include Canada Goose, American Black Duck, Green-winged Teal, Common Snipe, Greater Yellowlegs and Least Sandpiper.

Harbour and Grey Seals are common in Hermitage Bay, and are seen occasionally at Goblin Head and Bay d'Espoir. Harp Seals are rare in the area. Harbour Seals may pup in Hermitage Bay. Sperm Whale is a frequent visitor, and Fin Whale, Humpback Whale and the endangered Blue Whale have been observed in the area. White-beaked Dolphin has also been observed.

Special Features

The area is rich in marine biodiversity. Deep water fauna exists just offshore of Hermitage Bay, and in Goblin Deeps, an unusual phenomenon in waters so close to shore. There has historically been an abundance of fish at Fox Islands in Hermitage Bay. The ecoregion contains some seabird nesting areas, as well as Green-winged Teal and Least Sandpiper breeding areas.

Archaeological evidence exists of Maritime Archaic Indians, Paleo-Eskimo, Dorset Eskimo and Beothuk presence on Long Island at the entrance to Hermitage Bay.

Protection

The area is within Fisheries Conservation Closed Area 3Ps, aimed at protecting populations of spawning redfish. It is also within Fortune Bay Fisheries Management Closed Areas, initiated by inshore fishers, that are closed to otter trawling by vessels less than 65', and prohibit commercial scallop fishing by vessels 45' and larger to resolve gear use conflicts. These closed areas are administered by Fisheries and Oceans Canada under the Fisheries Act.

Threats and Recommendations

Hermitage Bay is on a ferry route, therefore there is a threat in the area of oil pollution due to accidental spills and illegal discharges. Increased enforcement, improved surveillance, higher fines and capture of polluters are necessary to deter and prevent marine oil pollution. Convenient and accessible onshore oil disposal facilities for bilge and oil-contaminated ballast water should also be established.

The Goblin Deeps have been used as a dumping ground for old ships. At least two old side-trawlers from the Gaultois fish plant were scuttled (deliberately sunk) there, without being decontaminated in advance. There are no data on the state of these ships and whether they are an environmental threat.

The impacts on the marine environment of transport, scuttling, fishing, aquaculture and the use of water from Bay d'Espoir for power plants in the area should be examined with local communities with the intent of minimizing negative impacts. Deep water fauna in the area require particular attention.

Discussion Questions:

1. What are your comments?
2. Do you think this area is special? Why or why not?

North Shore, Fortune Bay
47°35' N, 55°08' W
Site: 30

Site Description

Fortune Bay is the largest bay on the southern shore of Newfoundland. It extends some 105 km inland and is more than 183 m at its deepest. It has a cold deep-water mass with relatively low levels of salinity. Fortune Bay is typically ice free year-round. The north shore of Fortune Bay falls within the South Coast Barrens subregion of the Maritime Barrens ecoregion. Fortune Bay is located in the Laurentian Channel ecoregion of Parks Canada's National Marine Conservation Areas System. Communities along the North Shore of Fortune Bay include Pool's Cove, Rencontre East, English Harbour, Terrenceville and Little Harbour East.

Marine Habitats

There are several small islands and offshore rocks in Fortune Bay. An unusual upwelling situation occurs in the bay, which results in a biannual deep-water renewal of the water column which keeps the entire bay relatively cold, especially along its north shore. Eelgrass beds exist in the northeastern part of Fortune Bay.

Marine Life of Note

The north shore of Fortune Bay has the biggest giant kelp (Saccharina longicruris) beds in Newfoundland. These are responsible for high primary productivity which helps contribute to complex food webs. They also serve as habitat for an extremely diverse array of invertebrates and other seaweeds. The total number of species present here is rivaled only by Bonne Bay (Site 18).

Marine invertebrates around the north shore of Fortune Bay include lobster, squid, scallop and Snow Crab.

Fish around the north shore of Fortune Bay include cod, flounder, haddock, capelin, turbot, redfish, skate, American Plaice, Pollock, lumpfish, sharks, Atlantic Salmon, herring and mackerel. Other fish in the ecoregion include Brown Trout, Three-spine and Nine-spine Sticklebacks, and the at-risk **American Eel**.

Birds in the area include Canada Goose, American Black Duck, Green-winged Teal, Common Snipe, Greater Yellowlegs and Least Sandpiper.

Harbour Seals are common around the north shore of Fortune Bay, Harp and Grey Seals are seen occasionally, and Hooded Seals are rare. Harbour Seals may pup in the area. Dolphins and whales are present around the north shore of Fortune Bay.

Special Features

The area contains giant kelp beds, highly significant biodiversity and extreme productivity. Several species are common in the area that are not common elsewhere in the province. An example is the kelp Phaeosiphoniella, a type of brown seaweed that lives in sheltered areas. This kelp is endemic to the south coast of Newfoundland, and is found in St. Mary's Bay, Placentia Bay and Fortune Bay. It has never been found anywhere else in the world. There are also disjunct populations of rare arctic seaweeds such as Omphalophyllum.

Fortune Bay has an abundance of inshore fish and a longer fishing season than most of the island. The Bay du Nord River, which flows into northern Fortune Bay, is part of the Canadian Heritage River system.

The ecoregion contains some seabird nesting areas, as well as Green-winged Teal and Least Sandpiper breeding areas.

Protection

The area is within Fisheries Conservation Closed Area 3Ps, aimed at protecting populations of spawning redfish. The northeastern part of Fortune Bay is within a Fisheries Management Closed Area, closed to all vessel types fishing for herring with mobile gear throughout the year, aimed at protecting Atlantic herring stocks. Fortune Bay is a Fisheries Management Closed Area closed to otter trawling by vessels less than 65', to resolve a gear use conflict. The area is also within Fortune Bay Fisheries Management Closed Areas initiated by inshore fishers and closed to the use of mobile gear by vessels less than 65' and prohibiting commercial scallop fishing by vessels 45' and larger, to resolve gear use conflicts. These areas are administered by Fisheries and Oceans Canada under the Fisheries Act.

Threats and Recommendations

Over-fishing and irresponsible aquaculture are potential threats in the area. There has been heavy fishing in the bay since early settlement, so the area has a history of being over-fished. Aquaculture can kill the endemic Phaeosiphoniella.

Further research is necessary to determine the possible impacts of these activities on the marine ecosystems in the north shore region of Fortune Bay, with the intent of exploring methods to minimize any negative impacts. Aquaculture projects should be designed so as to have no negative impact on the marine environment.

Discussion Questions:

1. What are your comments?
2. Do you think this area is special? Why or why not?

Frenchman's Cove

47° 13' 01.65" N, 55° 23'59.71" W
Site: 31

Site Description

Frenchman's Cove is a fishing community located on the west side of the Burin Peninsula, 40 km north of Grand Bank and 15 km west of Marystown. It falls within the Southeastern Barrens subregion of the Maritime Barrens ecoregion. It is located in the Laurentian Channel ecoregion of Parks Canada's National Marine Conservation Areas System.

Marine Habitats

The gravel strand plain at Frenchman's Cove represents the largest sediment deposits on the Burin Peninsula. Marine habitats in and around Frenchman's Cove include a large barachois (bar lagoon), shallow and sheltered cove, pebble beach, marsh, a stream, sand and mud flats and a tidal lagoon. Eelgrass beds are present in the area.

Marine Life of Note

Marine invertebrates around Frenchman's Cove include lobster, Snow Crab and squid. Marine fish in the area include cod, Atlantic Salmon, capelin, lumpfish, herring and mackerel. Fish in the

ecoregion include Brown Trout, Three-spine and Nine-spine Sticklebacks, and the at-risk **American Eel**.

Frenchman's Cove is noted for shorebirds and waterfowl including Lesser Yellowlegs, Red Knot (a species at risk), Dunlin, sandpipers, Canada Goose, American Black Duck, Green-winged Teal, Northern Pintail, Ring-necked Duck, scaup and Wilson's Snipe. Seabirds include Thick-billed Murre, Dovekie, Northern Gannet, Leach's Storm-Petrel, Common Tern and Ring-billed Gull. Migratory breeding birds in the ecoregion include Common Snipe, Greater Yellowlegs and Least Sandpiper.

Harbour and Grey Seals are common in the area, and Harp Seals are seen occasionally. Harbour Seals may pup in the area. Dolphins and whales are also present in and around Frenchman's Cove.

Special Features

Frenchman's Cove is a bar lagoon wetland and is important to waterfowl and shorebirds. The shoreline in the area contains protected waterfowl breeding and nesting areas. Many migratory birds, including unusual and rare birds, use the area in spring and fall. Nesting species include Northern Pintail and Wilson's Snipe. Eelgrass is an important habitat for shellfish, fish and birds; it also traps silt to maintain water quality and stabilizes shorelines.

Protection

A Provincial Park is located in the terrestrial area. It protects natural heritage and provides an opportunity for outdoor recreation. Hunting is prohibited, as are development and resource harvesting, unless for park purposes. The marine area is within Fisheries Conservation Closed Area 3Ps, aimed at protecting populations of spawning redfish. The area is within Fortune Bay Fisheries Management Closed Areas closed to otter trawling and the use of mobile gear by vessels less than 65', and prohibiting commercial scallop fishing by vessels 45' and larger, to resolve gear use conflicts. These closed areas are administered by Fisheries and Oceans Canada under the Fisheries Act.

Threats and Recommendations

A golf course at Frenchman's Cove has impacted migratory bird habitat. Proposed golf course expansion and development in the area, including in the Provincial Park, are potential threats to the marine environment. A proposal in 2007 included partially infilling the bar lagoon in Frenchman's Cove Provincial Park and wetlands on private land with 30,000 m^3 of material. These activities would disrupt the shoreline, threaten or destroy marine and bird habitat and increase the risk of floods in the town of Frenchman's Cove. Expansion of the golf course would also likely result in changes to water levels and the hydrology of the area, and increase pesticide levels in the groundwater and sea water. The proposed expansion would transform a complex, vegetated natural coastline into a highly simplified artificial coastline.

Proposed developments in and around Frenchman's Cove should undergo properly researched, thorough Environmental Impact Assessments before any action is taken on the ground. Developments should be designed so as not to compromise marine and coastal ecosystems and important habitats. Adequate buffer zones between developments and the shoreline, following national standards, should be ensured. The provincial park and adjacent waters should not be available for developments that would negatively impact terrestrial or marine ecosystems.

To protect the park and sensitive habitat in the area from future encroachments, it is also recommended that the provincial government purchase the private wetland to the west of Frenchman's Cove, or contribute funding to conservation organizations such as nature trusts that would purchase it.

Other threats to the area include over-fishing of lump roe and annual dredging in the harbour and around the breakwater. Management strategies for the lump roe fishery should be explored with

local communities to prevent over-fishing. Dredging can uproot eelgrass beds and causes turbidity (cloudiness) in the water column. The extent and health of the eelgrass beds in the area should be monitored and activities should be modified as necessary in order to preserve this habitat.

Discussion Questions:
1. What are your comments?
2. Do you think this area is special? Why or why not?

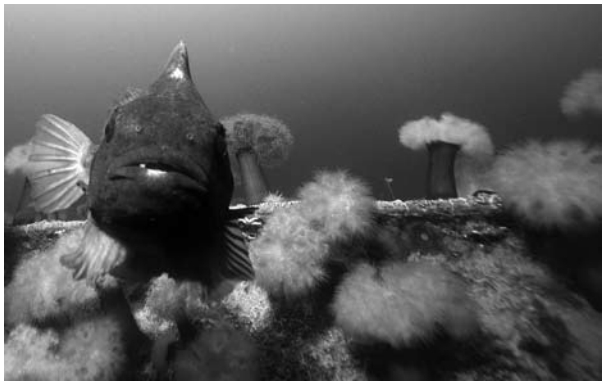
Fortune Head
47° 04' N, 55° 51' W
Site: 32

Site Description

Fortune Head is a minor headland located on the southwestern edge of the Burin Peninsula in Newfoundland, 1.6 km west of the community of Fortune. It falls within the Southeastern Barrens subregion of the Maritime Barrens ecoregion. It is located in the Laurentian Channel ecoregion of Parks Canada's National Marine Conservation Areas System.

Marine Habitats

Habitats in the area include exposed bedrock, low cliffs and extensive barrens. The shore substrate is composed of rocky outcrops and boulders which are often scoured by sub-tidal sand and gravel during storms.



Marine Life of Note

Marine invertebrates around Fortune Head include lobster, whelk, scallop and shrimp. Marine fish around Fortune Head include herring, mackerel, tuna, cod and lumpfish. These biota are representative of the western shore of the Burin Peninsula with rather low biodiversity because of unstable substrates.

Fish in the ecoregion include Atlantic Salmon, Brown Trout, Three-spine and Nine-spine Sticklebacks, and the at-risk **American Eel**. Birds in the ecoregion include Common Snipe, Greater Yellowlegs and Least Sandpiper.

Special Features:

Due to the presence of an Ecological Reserve, the infrastructure is in place for further protection in the area. The exposed rock at Fortune Head shows the geological boundary between the Precambrian Era and the Cambrian Period. The abundant, diverse and well-preserved fossils and rocks in the area are some 540 million years old.

Protection

Fortune Head is a 2.21 km^2 Fossil Ecological Reserve, aimed at protecting unique fossils. Restrictions in the Reserve include building restrictions; protection of homes, dens and nests of wildlife; protection against egging; no mining, quarrying or removal of rocks and sand; no obstructions permitted in water bodies within the area. The area is within Fisheries Conservation

Closed Area 3Ps, aimed at protecting populations of spawning redfish. The area is within Fortune Bay Fisheries Management Closed Areas closed to otter trawling by vessels less than 65', and prohibiting commercial scallop fishing by vessels 45' and larger, to resolve gear use conflicts. These closed areas are administered by Fisheries and Oceans Canada under the Fisheries Act.

Threats and Recommendations

An old landfill site is located on the cliffs west of Fortune Head; however, some mitigation and clean up of the site has taken place. It is recommended that studies be done of the marine ecosystem around Fortune Head to identify current threats (including potential degradation due to the landfill site) and, with local communities, explore options for extending protection into the adjacent marine area.

Discussion Questions:

1. What are your comments?
2. Do you think this area is special? Why or why not?

Grand Colombier

46° 49' N, 56° 10' W
Site: 33

Site Description

Colombier (Grand Colombier) is an island located 500 m north of the island of St. Pierre in the French archipelago St. Pierre and Miquelon. Politically it falls within French jurisdiction, but geographically it falls on the boundary between the Grand Banks and Laurentian Channel regions of Parks Canada's National Marine Conservation Areas system.

Marine Habitats

The island is treeless with steep sides, and contains rocky outcrops with a gently rolling top. Large seabird colonies produce large quantities of guano which subjects the surrounding biota to associated chemical compounds.

Marine Life of Note

The benthic biota here is very similar to that found off other large seabird colonies such as Cape St. Mary's (Site 35a) and in Witless Bay (Site 39b). Seaweed productivity is enhanced by nutrients from guano, and kelps are particularly large and rapidly-growing. Swarms of shrimp-like mysids and amphipods, and other invertebrates, thrive in the rich seaweed gardens and attract large numbers of predatory fish and diving seabirds.

Capelin are found in the area. Seabirds on and around Grand Colombier include murres, Northern Fulmar, Manx Shearwater, Atlantic Puffin and Leach's Storm-Petrel. Other possible birds in the area include Black-legged Kittiwake, Herring Gull, Great Black-backed Gull, Great Cormorant, and Razorbill.

Killer Whales have occasionally been seen off of St. Pierre and Miquelon.

Special Features

Grand Colombier has been identified as an **Important Bird Area**. It houses several thousand Black-legged Kittiwakes, over 300 Leach's Storm-Petrels, a few hundred breeding Herring Gulls and at least

800 breeding pairs of Atlantic Puffins. It also contains a breeding colony of Northern Fulmars. Manx Shearwaters have been prospecting on Grand Colombier.

Protection

No information about the protection status in the area was available at the time of writing.

Threats and Recommendations

Oil pollution from illegal discharges and spills threatens seabirds around Grand Colombier, due to the proximity of shipping routes around the Gulf of St. Lawrence. In particular, Grand Colombier is located close to the route of oil tanker traffic traveling to Come By Chance Refinery. It is also close to the ferry route between Newfoundland and St. Pierre, and ferries to Miquelon use the narrow channel between Grand Colombier and St. Pierre.

Human disturbance is a possible impact on the island during the summer because people go to the area to pick berries.

A radius around and including Grand Colombier could be listed as a sensitive area on nautical charts. Increased enforcement, improved surveillance, higher fines and capture of polluters are also necessary to deter and prevent marine oil pollution. Convenient and accessible onshore oil disposal facilities for bilge and oil-contaminated ballast water should also be established.

Grand Colombier, along with Middle Lawn and Offer Lawn islands (see Site 35d), is being proposed by scientists for an ecological reserve. The Gulf of Maine Action Plan is an example of international collaboration in marine protection that could be adapted to explore marine protection options with concerned communities at Grand Colombier.

Discussion Questions:

1. What are your comments?
2. Do you think this area is special? Why or why not?

St. Pierre Bank

45° 44’ 52.9” N, 56° 0’ 22.3” W

Site: 34

Site Description

St. Pierre Bank is south and west of the Canada-France International Boundary, southwest of the St. Pierre and Miquelon islands to the 200 m isobath. It falls within the Grand Banks region of Parks Canada’s National Marine Conservation Area (NMCA) system.

Marine Habitats

No information was available at the time of writing.

Marine Life of Note

Marine invertebrates around the St. Pierre Bank include corals, sea pens, sea cucumbers and scallops.

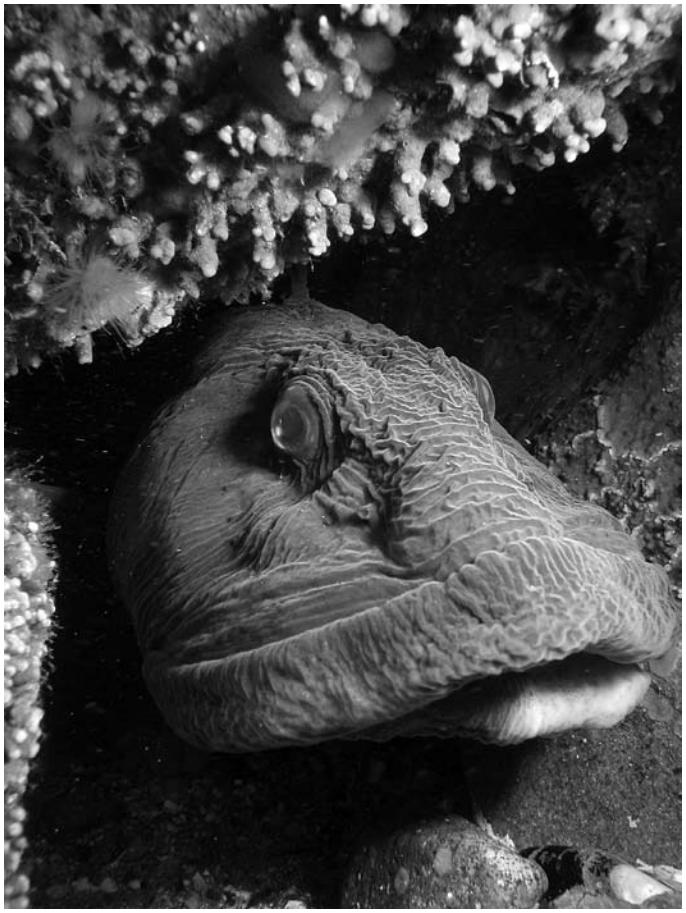
Fish include herring; Arctic and Greenland Cod; the at-risk Atlantic Cod; Fourbeard and Threebeard Rockling; Blue Whiting; haddock; Silver, Longfin and White Hake; Marlin-spike; monkfish; lanternfish; barracudina, including White Barracudina; the at-risk **Northern, Spotted and Striped Wolffish**; Sea Raven; Atlantic Hagfish; Northern Sand Lance; American Plaice; Hookear,

Arctic Deepsea, Arctic Staghorn, Deepsea, Fourhorn, Longhorn, Shorthorn and Mailed Sculpins; Common and Spiny Lumpfish; redfish; Arctic, Esmark's, Vahl's, Soft and Laval's Eelpouts; Witch, Winter and Yellowtail Flounders; Atlantic and Greenland Halibut; Deepwater, Barndoor, Winter, Spinytail, Thorny and Smooth Skates; Atlantic Argentine; capelin; alewife; Roundnose Grenadier; Green and Common Ocean Pout; Wolf and Verrill's Wolf Eel; Black and Spiny Dogfish and pollock.

A number of cetacean species are also seasonally present in the area.

Special Features

St. Pierre Bank has been identified by Fisheries and Oceans Canada as an **Ecologically and Biologically Significant Area**. It contains the **highest and only concentration of scallops in the Grand Banks NMCA region**, as well as spawning and feeding areas for scallops. The southern tip of the bank is an important area for *Keratoisis ornata*, a large, slow-growing and long-lived gorgonian coral. Other **corals** are found in the southern part of St. Pierre Bank, and **sea pens** and cup corals are found on the Laurentian Channel side of the bank.



The bank also contains the **highest concentration of Spiny Dogfish at their northernmost extent in the Northwest Atlantic**, and aggregation and pupping sites for this species. Several species of **cetaceans aggregate, feed and migrate** in the area. In particular, it is potentially an important spring feeding area for over-wintering and migrating whales.

Protection

St. Pierre Bank is within Northwest Atlantic Fisheries Organization Fishing Area 3Ps (southern), an 81,890 km^2 fisheries conservation area established to protect spawning redfish. The area is closed to redfish harvesting by fixed and mobile gear by vessels less than 65' from May 1 to June 30.

Threats and Recommendations

St. Pierre Bank has been heavily dragged for scallops, but its benthic community structure appears to recover successfully due to the sandy bottom substrate, suggesting long-term stability. Scallop dragging activities should be closely monitored, however, due to the destructive abilities of the gear used.

Discussion Questions:

1. What are your comments?
2. Do you think this area is special? Why or why not?

Placentia Bay Extension
The entire bay, from 46° 55' N, 55° 58' W to 46° 49' N, 54° 12' W and to the 50 m isobath
Site: 35

Site Description

The site labeled Placentia Bay Extension includes all of Placentia Bay in Newfoundland, as well as the area from Point Crewe on the Burin Peninsula across the 145 km mouth of the bay to Point Lance on the Avalon Peninsula, and out to the 50 m isobath. The bay is approximately 125 km long and is 240 m deep at its midpoint. Placentia Bay Extension is in the Grand Banks region of Parks Canada's National Marine Conservation Areas system. Major communities around Placentia Bay include Burin, Marystown, Arnold's Cove and Placentia.

Marine Habitats

Placentia Bay contains a number of islands, shoals, reefs and banks, and three well-defined channels. Coarse-grained gravel deposits and cliffs dominate the coastline, with estuaries at the heads of deep embayments. Form and texture of beaches in the area are constantly changing. Phytoplankton blooms occur in Placentia Bay in early spring and autumn. The gyre in the area is counter-clockwise. Localized upwellings occur at headlands – Burin Peninsula and Cape St. Mary's – where currents meet. The temperature and salinity in the area is stable compared to other embayments. Placentia Bay is deep and ice free, and exposed to southwesterly winds and currents.

Marine Life of Note

Eelgrass is present in most shallow, sheltered areas of Placentia Bay that have freshwater input. Knotted wrack and Irish moss are found in several areas of the bay, and corals are also present in some areas. Coralline algae and sour weed are present on cobble and small boulder habitats. Filamentous brown, green and red algae, fucoids and kelp are found in sheltered subtidal areas. Kelp and short filamentous brown algae are present in deeper waters.

Invertebrates in and around Placentia Bay include Snow and Rock Crab, mussel, squid, clam, lobster, scallop (including Icelandic and Giant Scallops) and whelk.

At least 14 species of groundfish and 9 species of pelagic fish live in the bay, including mackerel, shark, Atlantic Salmon, capelin, herring, brook trout, sunfish, eel, the at-risk **Atlantic Cod**, lumpfish, flounder, turbot, skate, sculpin, haddock, pollock, Sand Lance, at-risk **wolffish**, sturgeon and American Plaice.

Seabirds include Great and Double-crested Cormorants; Atlantic Puffin; Black-legged Kittiwake; Black Guillemot; Common and Thick-billed Murres; Razorbill; Great Black-backed, Ring-billed, Glaucous and Iceland Gulls; Dovekie; Great and South Polar Skuas; Leach's Storm-Petrel; Common and Arctic Terns; Greater, Sooty and Manx Shearwaters; Northern Fulmar and Northern Gannet. Waterfowl include Common Loon, Red-necked Grebe, Canada Goose, Black Duck, Green-winged Teal, Common Eider, King Eider, Long-tailed Duck, Common Goldeneye, Common and Red-breasted Mergansers, Greater Scaup, and White-winged, Surf and Black Scoters. Shorebirds include Greater Yellowlegs; Spotted, Purple, Least and Semipalmated Sandpipers; Wilson's, Northern and Red Phalaropes; Whimbrel; Semipalmated Plover; Ruddy Turnstone, Sanderling and the at-risk **Harlequin Duck**.

The endangered **Leatherback Turtle** is found in the bay. Harbour, Grey and Harp Seals; otters; Atlantic White-sided, White-beaked and Common Dolphins; the at-risk **Harbour Porpoise**; Humpback, Sei, Fin, Long-finned Pilot and Minke Whales are also present, in some cases seasonally,

as is the endangered **Blue Whale**.

Special Features

Placentia Bay Extension is within the top three priority **Ecologically and Biologically Significant Areas** (EBSAs) identified by Fisheries and Oceans Canada for conservation in the Placentia Bay-Grand Banks Large Ocean Management Area (LOMA), and has also been identified as a Coastal Management Area. The Placentia Bay-Grand Banks LOMA is recognized by Fisheries and Oceans Canada as one of five priority LOMAs in Canada.

High primary and secondary production occurs in Placentia Bay and its headlands. Placentia Bay contains **standing and bay stocks of certain fish** species. It contains **concentrations of ichthyoplankton** of fish such as cod, cunner, plaice and capelin, as well as **spawning and nursery habitat** for these same species. Placentia Bay contains the **largest spawning stock of Atlantic Cod** in the northwest Atlantic Ocean. There is **high pelagic and demersal diversity** in the bay.

Placentia Bay and its extension are an **Important Bird Area** due to the presence of nesting, feeding, aggregation, refuge and overwintering sites of many bird species, including seabirds such as Atlantic Puffin, Black-legged Kittiwake, Black Guillemot, Common Murre, Great Black-backed Gull, Greater Shearwater, Northern Fulmar and Northern Gannet.

Harbour Seals, otters and some cetaceans use the area throughout the year, and Leatherback Turtle and migratory cetaceans aggregate and feed in the region in spring and summer. The area is particularly important for **Harbour Porpoise and Humpback Whale feeding**, due to prey concentrations. The area may be along the migration path of Leatherback Turtles. Harbour Seals haul out and pup in three sites, including Point May. **Otters reproduce** in the area. **Female cetaceans with young are found in the bay during critical feeding times**.

Areas of note in the Placentia Bay area include Cape St. Mary's, Bar Haven, Ragged Islands and Middle Lawn and Offer Lawn Islands (see sites 35a, b, c and d, respectively).

Protection

Placentia Bay as a whole, from Point Crewe to Cape St. Mary's, is a fisheries management area established to protect scallop stocks from commercial harvesting. A fisheries management area was set up in 1992 to resolve gear use conflicts; the area from Point Verde to Red Harbour Head is closed to recreational scallop fisheries. The bay contains Fisheries Management Closed Areas closed to otter trawling for the protection of scallop stocks for commercial harvesters and prohibiting commercial scallop fishing by vessels 45' and larger. The 3L area is closed to gill nets and trap nets throughout the year. Fisheries Conservation Closed Area 3Ps is aimed at protecting populations of spawning redfish. A Fisheries Management Closed Area closes a portion of the bay to recreational scallop fishing to resolve gear use conflict. These closed areas were initiated by fishers and harvesters, and are administered by Fisheries and Oceans Canada under the Fisheries Act. Cape St. Mary's houses a Seabird Ecological Reserve, and Come by Chance is a Wetland Stewardship Area that protects waterfowl staging habitat. An Integrated Management Plan is under development for Placentia Bay.

Threats and Recommendations

Coastal spawning and nursing areas and coastal bird breeding areas in Placentia Bay are very sensitive to disturbance. High levels of commercial and industrial activity - for example an oil refinery, shipyard facility, fabrication facility, ferry terminal and offshore oil transshipment facility - in and around Placentia Bay have led to contamination and disturbance in a number of regions. Marine transportation and coastal development are expanding in Placentia Bay, particularly with the growth of the oil and gas industry in the province. It contains the largest oil handling port in Canada.

There is therefore a high risk of oil spills due to accidents or deliberate bilge discharges. In 1990, the Brander-Smith Public Review Panel on Tanker Safety and Marine Spills Response Capability identified Placentia Bay as the marine area with the highest potential for an oil-related environmental accident in Canada. Sediments in Placentia Bay move in an onshore-offshore direction rather than parallel to the shore, meaning that sedimentation and contaminants introduced into the bay remain within coves and embayments.

Additional developments are planned around the bay, including a nickel processing facility at Long Harbour, a liquefied natural gas transshipment and storage terminal at Grassy Point and a crude oil refinery at Southern Head. Aquaculture may also be expanded in the bay.

Aquatic invasive species (AIS) are also a threat to the ecosystems in Placentia Bay. AIS in the bay include Lacy Crust Bryozoan (*Membranipora membranacea*), which kills kelp and eelgrass beds, destroying juvenile fish habitat; Golden Star Tunicate (*Botryllus schlosseri*); and European Green Crab (*Carcinus maenus*) which feeds on anything it can and could therefore impact ecosystems due to predation and habitat destruction. AIS can be brought into an area through ballast water, attachment to marine vessels and fishing gear, deliberate introductions, transfers of aquaculture stock, the aquarium trade, and migration. Current response measures in Placentia Bay include the development of monitoring protocols and the establishment of an AIS steering committee.

Improved surveillance, increased enforcement, higher fines and capture of polluters can deter and prevent marine oil pollution. It is also recommended that convenient and accessible onshore oil disposal facilities for bilge and oil-contaminated ballast water be established, ship inspections be carried out more frequently and thoroughly, and education programs regarding oil pollution be expanded for ship operators and the public. Working with community groups such as the Placentia Bay Integrated Management Committee will aid in facilitating future protection and conservation. The process of protecting this EBSA should be expedited in a participatory and inclusive manner involving all concerned communities.

Discussion Questions:

1. What are your comments?
2. Do you think this area is special? Why or why not?

Cape St. Mary's

46° 49' N, 54° 11' W

Site: 35a

Site Description

Cape St. Mary's is located on the southwestern tip of the Avalon Peninsula in Newfoundland, between Placentia and St. Mary's Bays, south of the community of St. Bride's and west of the community of Point Lance. It is a steep cliff which rises out of the sea approximately 76 m. Along the Cape there are many shoals which are deemed very dangerous but are also some of the best and most famous fishing grounds in Newfoundland. Historically, it housed much of the inshore cod fishery. Cape St. Mary's Ecological Reserve is one of Newfoundland and Labrador's major seabird colonies. Geologically, the rocks were formed some 550 to 600 million years ago. Coastal erosion continues today. Cape St. Mary's falls within the Eastern Hyper-oceanic Barrens ecoregion, and the Grand Banks region of Parks Canada's National Marine Conservation Areas system.

Marine Habitat

The cold, southward-traveling Labrador Current mixes with the warm Gulf Stream in the Cape St. Mary's area, causing mixing and upwelling of nutrients which foster primary productivity. The abundance of plankton supports the food web, which includes species consumed by humans such as capelin and cod. The coastal area is characterized by high barrens, rocky and uneven terrain, and rugged cliffs, mostly over 100 m high. Seabirds nest on ledges or sea stacks that are close to shore. For example, most of the Northern Gannets nest on "Bird Rock", a 90 m-tall sandstone sea stack a few metres away from the shoreline. Nests can be made of seaweed, grass, peat, sticks or other materials, and in the case of some species, can be located in areas such as cliff ledges, in the shelters of cliffs, in rock crevices or alcoves. Shallow waters off the headland provide important feeding grounds, and coastal rocky outcrops provide shelter and resting habitat for wintering seabirds and sea ducks.

Marine Life of Note

The waters around Cape St. Mary's contain huge concentrations of plankton, which feed a complex food web of invertebrates, fish, seabirds and marine mammals. Blue Mussel, sea urchins and various other shellfish and invertebrates inhabit the area. Fish in the area include capelin, herring, mackerel, and the at-risk **Atlantic Cod**.

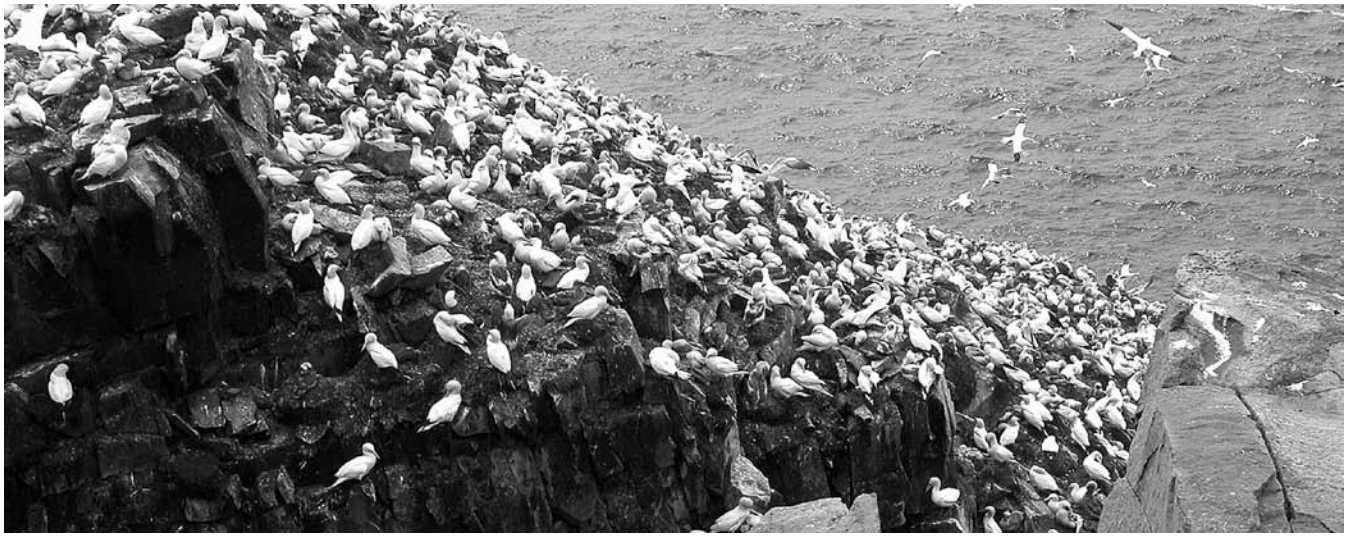
Over 180 different bird species have been recorded at Cape St. Mary's. Ten seabird species breed in the area, including Northern Gannet (24,000 birds, March-October), Black-legged Kittiwake (20,000 birds, March-August), Common Murre (20,000 birds, March-August), Thick-billed Murre (2000 birds, March-August), Razorbill (over 100 pairs, early spring to August), Black Guillemot (over 60 pairs), Great Cormorant, Double-crested Cormorant, Herring Gull and Great Black-backed Gull. Sea ducks such as the at-risk **Harlequin Duck** (250 birds), Common Eider, Black Scoter, White-winged Scoter, Red-breasted Merganser, and Long-tailed Duck arrive in late fall to spend the winter at Cape St. Mary's. Thick-billed Murres, Dovekies and Common Murres also winter in the area. Migrating shorebirds that pass through the area include Whimbrel, Lesser Golden Plover, and Black-bellied Plover. Other birds that have been observed in the area include Manx, Sooty and Greater Shearwaters; Leach's Storm-Petrel; Northern Fulmar; Atlantic Puffin; Pomarine, Parasitic and Long-tailed Jaegers; Great and South Polar Skuas; Canada Goose; Red and Red-necked Phalaropes; Glaucous, Iceland, Ring-billed and Sabine's Gulls; American Black Duck; Common and Red-throated Loon; Greater Golden and Semipalmated Plovers; Wilson's Storm-Petrel; Green-winged Teal; Arctic, Caspian and Common Terns; Ruddy Turnstone; Baird's, Least, Pectoral, Purple, Buff-breasted, Semipalmated, Spotted and White-rumped Sandpipers; Surf Scoter and Greater Yellowlegs.

Marine mammals in the ocean around Cape St. Mary's include Minke, Pothead, Humpback and Fin Whales; Atlantic White-sided and White-beaked Dolphins; Grey and Harbour Seals.

Special Features

The area is **very productive** with respect to plankton and seaweeds, and the food webs that they support.

Of the various bird reserves in Newfoundland, Cape St. Mary's is unique because it is on a part of the mainland rather than on an offshore island. It is one of Newfoundland and Labrador's most **massive seabird breeding colonies**. The colony extends along 100 to 125 m-high coastal cliffs for over 5 km and consists of some 53,000 seabirds. Gannets have nested in the area at least since the 1870s; it is currently the 4th largest gannet colony in North America. It is the southernmost breeding area for both Northern Gannets and Thick-billed Murres. It is also an important wintering site for thousands of sea ducks. It houses the **largest wintering population of Harlequin Duck** in the province. Furthermore, the area is an important **feeding area for cetaceans**.



Protection

Cape St. Mary's was established as a Seabird Ecological Reserve in 1983 to preserve the internationally important seabird breeding colony and over-wintering site, maintain the coastal headland ecosystems and surrounding waters, provide the public with controlled educational opportunities, and foster scientific studies that allow the above to be achieved. Cape St. Mary's Ecological Reserve covers 64 $km^{2,}$ 54 km^2 of which is the marine portion. Hunting, snaring and shooting are prohibited within waters surrounding the reserve. The area is within Fisheries Conservation Closed Area 3Ps, initiated by fishers and harvesters and administered by Fisheries and Oceans Canada under the Fisheries Act, aimed at protecting populations of spawning redfish. St. Mary's Bay is closed to commercial scallop fishing to resolve conflict with aquaculture sites. The new Sailing Directions include a map of the marine portion of the ecological reserve.

Threats and Recommendations

Because seabirds depend entirely on food obtained from the sea, they are good bio-indicators of marine health. Murre and Razorbill breeding populations have been depleted, and Harlequin Ducks in Cape St. Mary's decreased to three dozen in the mid-1990s. Threats to the ecosystem at Cape St. Mary's include marine pollution such as oil spills, over-fishing and depleted food stocks, interactions with fishery activities, and human disturbance.

One of the greatest threats to the gannet colony is accumulation of toxic chemicals. The colony is located close to a major shipping route from Hibernia oilfield to storage facilities in Placentia Bay. In 1994, before Hibernia was fully operational, 4600 large vessels passed annually through Placentia Bay, and over 15,000 passed by the vicinity of Cape St. Mary's en route elsewhere. Now that Hibernia is operational, this traffic may have doubled or tripled. Ship traffic to and from St. John's also often travels in the vicinity of Cape St. Mary's. Most ship traffic occurs some 16 km offshore, but smaller vessels have been seen to circle in nearby areas prior to entering Placentia Bay, and some vessels have been observed traveling within 1.5 km of Cape St. Mary's. Vessel traffic is a significant threat to the seabirds due to the possibility of oil pollution from accidental spills and deliberate discharges (e.g. bilge flushing). Wind, tides and currents can bring marine oil from somewhat distant areas towards the Reserve. Oil pollution is lethal to breeding and wintering seabirds.

Fishing is permitted in the marine component of the Reserve. By-catch of birds in gill nets is one of the most significant anthropogenic causes of bird kills in the Cape St. Mary's area. Between 1980 and 1994 the Common Murre breeding population was found to decline by 31% in study plots in

Cape St. Mary's, most likely due to drowning in the local gill net fishery. Black Guillemots, Northern Gannets and Greater Shearwaters are also caught in gill nets, but not as frequently as Common Murres. Monofilament gill nets are a relatively new pressure for seabirds. Seabird kills occur most frequently in the 4 to 6 week period when capelin move inshore to spawn. Additional population declines result because these deaths occur during the peak of the breeding season, and a seabird is unlikely to raise a chick successfully without its mate.

Increased enforcement, improved surveillance, higher fines and capture of polluters are necessary to deter and prevent marine oil pollution. Convenient and accessible onshore oil disposal facilities for bilge and oil-contaminated ballast water should also be established.

Any further developments proposed in Placentia Bay should consider sensitive bird areas both within the bay and in the vicinity, and minimize related threats, prior to approval and implementation.

The Reserve's management plan recommends that experimentation be undertaken with alternative fishing gear types in order to eliminate gear that results in by-catch.

Discussion Questions:

1. What are your comments?
2. Do you think this area is special? Why or why not?

Bar Haven - Northwest Placentia Bay

47° 43' N, 54° 14' W
Site: 35b

Site Description

Bar Haven is a small island in northwestern Placentia Bay, between Merasheen Island and the main shore of Newfoundland. Prior to resettlement, it was an important fishing and trading area, with the cod fishery as its economic backbone. It falls within the Southeastern Barrens subregion of the Maritime Barrens ecoregion, and the Grand Banks region of Parks Canada's National Marine Conservation Areas system.

Marine Habitats

The northern and western portions of Placentia Bay experience upwellings. There are eelgrass and kelp beds in the area, as well as Irish moss.

Marine Life of Note

Marine invertebrates around Bar Haven include lobster, scallops, sea urchins, squid, Snow Crab, and corals. Fish around Bar Haven include lumpfish, American Plaice, skates, flounder (including Winter Flounder), Sandlance, pollock, capelin, herring, mackerel, Atlantic Salmon, Brook Trout, Brown Trout, Three-spine and Nine-spine Sticklebacks, and the at-risk **Atlantic Cod** and **American Eel**.

Birds in the ecoregion include Common Snipe, Greater Yellowlegs and Least Sandpiper. The at-risk **Leatherback Turtle** and **Harlequin Duck**, and whales and seals have also been sighted in the area. For more details on species present in Placentia Bay as a whole, refer to site 35.

Special Features

Bar Haven is a **very productive** area with high benthic diversity. A coastal population of **cod spawns consistently** at Bar Haven Island, returning to this same spawning ground in consecutive years.

Bar Haven is home to the **largest known contemporary Atlantic Cod stock in Newfoundland** waters. Each season more than 400,000 cod visit this area to spawn. Placentia Bay contains standing and bay stocks of certain fish species, and the area west of Merasheen Island has been highlighted in a previous study (Bryant *et al.* 1995) as a particular candidate for a marine conservation area.

Common Snipe, Greater Yellowlegs and Least Sandpiper are migratory breeders found in the wetland areas of the ecoregion.

Protection

The area is within Fisheries Conservation Closed Area 3Ps, aimed at protecting populations of spawning redfish. It is also within a Fisheries Management Closed Area, closed to recreational scallop fishing to resolve gear use conflict. These closed areas were initiated by fishers and harvesters and are administered by Fisheries and Oceans Canada under the Fisheries Act.

Threats and Recommendations

Capturing fish before or during spawning threatens future generations of fish and therefore future stocks. In the interest of maintaining cod stocks for future generations, management strategies should be explored with local communities, for example to protect fish during spawning and hatching season.

Oil pollution is also a threat in Placentia Bay. Refer to Site 35 for more details.

Discussion Questions:

1. What are your comments?
2. Do you think this area is special? Why or why not?

Ragged Islands

47° 33' N, 54° 14' 24" W
Site: 35c

Site Description

The Ragged Islands are a group of about 300 small sheltered islands, shoals and basins west of Merasheen Island in Placentia Bay, Newfoundland. The islands are within the Southeastern Barrens subregion of the Maritime Barrens ecoregion, and the Grand Banks region of Parks Canada's National Marine Conservation Areas system.

Marine Habitats

The area is generally ice-free in the winter. Intertidal rockweed beds and kelp beds are important components of the marine ecosystem of the area.

Marine Life of Note

Invertebrates in the vicinity of the Ragged Islands include corals, lobster, Snow Crab and scallops. Fish in the vicinity of the Ragged Islands include cod, lumpfish, herring and American Plaice. Other fish in the ecoregion include Atlantic Salmon, Brown Trout, Three-spine and Nine-spine Sticklebacks, and the at-risk **American Eel**.

Birds in the ecoregion include Common Snipe, Greater Yellowlegs, Least Sandpiper and significant aggregation of Purple Sandpiper in winter.

Harbour Seals are common, and Harp, Hooded and Grey Seals are present in the area. Whales are also present in the area (see Site 35 for details on marine life in Placentia Bay).

Special Features

The area west of Merasheen Island has been highlighted (Bryant *et al.* 1995) as a candidate for a marine conservation area.

The area is **high in biodiversity**, and contains **endemic seaweeds** such as *Phaeosiphoniella* sp., a type of kelp that lives in sheltered areas. This kelp is endemic to the south coast of Newfoundland, and is found in St. Mary's Bay, Placentia Bay and Fortune Bay. It has never been found anywhere else in the world.

The western coastal areas of the Ragged Islands are **very productive** and important for fish and seabirds. Harbour seals pup in the area, and there are important feeding areas for whales north of the islands.

Protection

The area is within Fisheries Conservation Closed Area 3Ps, aimed at protecting populations of spawning redfish. It is also within a Fisheries Management Closed Area, closed to recreational scallop fishing to resolve gear use conflict. The 3L area in the vicinity of the Ragged Islands is closed to gill nets and trap nets throughout the year. These closed areas were initiated by fishers and harvesters and are administered by Fisheries and Oceans Canada under the Fisheries Act.

Threats and Recommendations

Fishing, aquaculture and summer cabins in and around the Ragged Islands can have impacts on marine ecosystems in the area. For example, aquaculture can kill *Phaeosiphoniella*. Further research is needed in cooperation with local communities to investigate the impacts of human activities on the marine environment at Ragged Islands, as well as protection methods that could minimize these impacts. These protection measures could become part of the Placentia Bay Integrated Management Plan.

Discussion Questions:

1. What are your comments?
2. Do you think this area is special? Why or why not?

Middle Lawn and Offer Lawn Islands

46° 52' 12" N, 55° 37' 12" W
Site: 35d

Site Description

Middle Lawn Island is a 370 by 290 m island located off the southern tip of Newfoundland's Burin Peninsula, 4 km south of the community of Lord's Cove. Other nearby communities include Taylors Bay and Point au Gaul. The south coast of the island faces the open Atlantic Ocean, meaning that ice does not usually form on that side of the island. Offer Lawn Island is close to Middle Lawn Island. They fall within the Eastern Hyper-oceanic Barrens ecoregion, and the Grand Banks region of Parks Canada's National Marine Conservation Areas system.

Marine Habitats

The terrain of Middle Lawn Island consists of coastal cliffs, rocky shores, rugged hills vegetated with grass and ferns, and sedge/grass meadows. The nearby coastal area contains eelgrass beds.

Marine Life of Note

Invertebrates in the area include lobster, crab and scallop. Marine fish in the area include lumpfish and Winter Flounder, and the at-risk **Atlantic Cod**. Seabirds include: Manx Shearwater, Leach's Storm-petrel, Herring Gull, Great Black-backed Gull and Black Guillemot. Seals and whales are also present in the area. Refer to Site 35 for details on marine life present in Placentia Bay as a whole.

Special Features

Middle Lawn Island is an Important Bird Area with globally significant concentrations of colonial seabirds, particularly Leach's Storm-petrel and Manx Shearwater. It supports the **largest concentration of nesting Manx Shearwaters** (360 birds) in North America, and the only location in North America where the species **nests regularly**. Leach's Storm-petrels (over 13,000 pairs), Herring Gulls, Great Black-backed Gull and Black Guillemot also nest on the island.

Offer Lawn Island contains colonies of terns and some 500 Herring and Great Black-backed Gulls.

Protection

The area is within Fisheries Conservation Closed Area 3Ps, aimed at protecting populations of spawning redfish. Placentia Bay is a Fisheries Management Closed Area, closed to otter trawling for the protection of scallop stocks for commercial harvesters. The area is being proposed as a provincial ecological reserve. These closed areas were initiated by fishers and harvesters and are administered by Fisheries and Oceans Canada under the Fisheries Act.

Threats and Recommendations

Oil pollution from illegal discharges and spills threatens seabirds on these islands, due to the proximity of shipping routes around the Gulf of St. Lawrence. A radius around and including Middle Lawn and Offer Lawn islands, as well as surrounding islands, could be listed as a sensitive area on nautical charts. Increased enforcement, improved surveillance, higher fines and capture of polluters are also necessary to deter and prevent marine oil pollution. Convenient and accessible onshore oil disposal facilities for bilge and oil-contaminated ballast water should also be established. The ecological reserve proposal should be pursued with local community involvement.

Discussion Questions:

1. What are your comments?
2. Do you think this area is special? Why or why not?

Grand Banks
45° 34' N, 50° 26' W
Site: 36

Site Description

The Grand Banks are a series of shallow banks that are part of the continental shelf around Newfoundland. The entire area is 730 km long and covers 280,000 km^2. Depths of the shallow banks range from 25 to 100 m. Between the banks exist troughs several hundred metres deep. Intense storms are frequently experienced in the region. They are located in the Grand Banks ecoregion of Parks Canada's National Marine Conservation Areas System.

Marine Habitats

Upwellings and mixing of the cold Labrador Current and warm Gulf Stream make the area highly productive and particularly important for marine mammals and seabirds. Zooplankton richness in the Grand Banks is the highest in the Northwest Atlantic. The Grand Banks area is also influenced by the Cabot Strait and coastal runoff. The area is ice free, but icebergs are common.

Marine Life of Note

Marine invertebrates of note in the Grand Banks include cold water corals, Queen Crab (Snow Crab), Wedge Clam, Blue Mussel, lobster and scallops (including Iceland Scallop).

Fish species include Northern Cutthroat Eel; Blue Antimora; slickhead (*Alepocephalus sp.*); dogfish; eelpout; the at-risk **Atlantic Cod**; haddock; Roughhead Grenadier; Northern Sand Lance; herring; Atlantic Capelin; Atlantic and Greenland Halibut; Barndoor Skate; Salmon; Redfish; American Plaice; mackerel; the at-risk **Northern, Striped and Spotted Wolffish**; and Yellowtail, Witch and Winter Flounders. Cod and capelin were historically the most abundant species in the Grand Banks.

Seabirds observed in the Grand Banks include Northern Gannet; Razorbill; Atlantic Puffin; Black Guillemot; Arctic and Common Terns; Northern Fulmar; Manx, Greater and Sooty Shearwaters; Leach's, Fea's and Wilson's Storm-Petrels; Herring and Great Black-backed Gulls; Dovekie; Thick-billed and Common Murres; Black-legged Kittiwake; jaegers; skuas; and sea ducks such as the at-risk **Harlequin Duck**.

There is much evidence that the endangered **Leatherback Turtle** is found in the Grand Banks. At-risk marine mammals in the Grand Banks include **Blue Whale**, **North Atlantic Right Whale** and **Harbour Porpoise**. Other marine mammals observed in the Grand Banks include: Fin, Minke, Humpback, Sperm, Killer, Sei, Pilot and Northern Bottlenose Whales; Common, White-beaked and Atlantic White-sided Dolphins; and Hooded, Harbour, Ringed, Grey and Harp Seals.

Special Features

The Grand Banks contain a number of **Ecologically and Biologically Significant Areas** (EBSAs), including the Northeast Shelf and Slope, Lilly Canyon and Carson Canyon, the Southeast Shoal and Tail, the Southwest Shelf Edge and Slope (Southwest Grand Banks) and Virgin Rocks (see Sites 36a, b, c, d and e, respectively). The Southeast Shoal and Tail and the Southwest Shelf Edge and Slope are within the top three priority EBSAs for conservation in the Placentia Bay-Grand Banks Large Ocean Management Area.

The Grand Banks have been considered **some of the richest fishing grounds in the world**, and have been identified as a **"hotspot" of fish biodiversity**. They contain areas important for spawning fish,

as well as nursery, feeding and wintering grounds for a wide variety of invertebrates such as lobsters and scallops; and fish such as Atlantic Cod, haddock, Sand Lance, herring, Capelin, Atlantic Halibut, Canadian Plaice, and Yellowtail, Witch and Winter Flounders.

The area has also been called the **"Seabird Crossroads of the Atlantic"**. It is a very important seabird wintering area, and a feeding ground for young seabirds. The Grand Banks contains the second largest Northern Gannet population in North America, and the only North American population of Manx Shearwaters. It also provides important habitat for many other pelagic seabirds.

A high **diversity of marine mammals** has also been observed in the Grand Banks, along with a high frequency of cetacean sightings.

Respondents in a survey by Bryant *et al.* (1996) indicated support for part or all of the Grand Banks being protected. Protection of the Grand Banks could be an opportunity for the creation of an international marine protected area.

Protection

In 2007, the Northwest Atlantic Fisheries Organization (NAFO) closed an area around the southwest Grand Banks (NAFO Division 3O) for five years, to allow research to be conducted on strategies to protect deep water corals living on the continental slope.

No other formal protection is known to exist in the area, but Fisheries and Oceans Canada has identified a number of EBSAs in the Placentia Bay-Grand Banks Large Ocean Management Area (LOMA), many of which are in the Grand Banks (see Sites 36a through 36e). These EBSAs are considered to require a greater-than-usual degree of risk aversion in order to protect ecosystem structure and function. Fisheries and Oceans Canada has also identified a number of Conservation Objectives for the LOMA and the EBSAs.

Threats and Recommendations

Fishing, oil extraction and production, as well as shipping, pose threats to marine ecosystems in the Grand Banks.

Fishing pressure has increased in the Grand Banks since the 1950s. Unsustainable fishing practices have contributed to the collapse of groundfish stocks; virtually all stocks are now well below historical levels. By-catch of corals in commercial fisheries, for example by trawls, gill nets and longlines, is of particular concern in the southwest Grand Banks, and protection measures are necessary to conserve coral areas. For details, refer to Site 36d.

Offshore oil and gas development can pose a number of threats to several areas of the Grand Banks, including Lilly and Carson Canyons, the Southeast Shoal and Virgin Rocks, if not carried out in an environmentally- and ecologically-responsible manner. The Hibernia oil platform is located approximately 85 km north of Carson Canyon. Such development has boosted economic growth in the province; however, its proximity to sensitive biological areas has the potential to threaten the health of these rich and diverse areas. Offshore oil platforms have attracted birds for roosting and feeding. Oil spills of any size can have a negative effect on birds, fish and other marine species in the area. The extent of seabird mortality due to oil spills depends on both timing and location; even small spills in densely-occupied areas can lead to high mortality. Between 10,000 and 16,000 seabirds are estimated to have been put at risk by a crude oil spill from the Terra Nova floating production, storage and offloading vessel in the Grand Banks in November 2004. Gas flaring often attracts birds and can also lead to mortality. Overall, offshore oil platforms can have a negative effect on bird population trends.

Shipping in the Grand Banks has also led to chronic oil pollution due to illegal dumping of bilge water. Permanent structures established for oil exploration and extraction, oil pipelines, and

other activities associated with oil exploration such as the use of explosives can disrupt the marine ecosystems in their vicinity.

Guided by the conservation objectives of the EBSAs and LOMA, an Integrated Management Plan should be developed and implemented in the Grand Banks area without delay. Management strategies should be revised to protect ecosystem health while still benefiting from fishing and oil and gas developments. With the involvement of concerned communities, protection options should be explored in the Grand Banks, including the EBSAs identified in the area, with the aim of recovering depleted fish stocks and maintaining the health of marine ecosystems.

Scientifically rigorous monitoring programs by independent observers are necessary on oil platforms to document episodic wildlife mortality. Independent studies should be conducted to examine the impact of oil and gas development on the ecosystem health of the Grand Banks, and alternative management techniques should be investigated and adopted to protect seabirds and other marine fauna. The Grand Banks could be listed as a sensitive area on nautical charts.

Increased enforcement, improved surveillance, higher fines and capture of polluters are necessary to deter and prevent marine oil pollution. Convenient and accessible oil disposal facilities for bilge and oil-contaminated ballast water should also be established. Any further developments proposed in the Grand Banks should consider sensitive ecological areas and minimize related threats prior to approval and implementation.

Discussion Questions:

1. What are your comments?
2. Do you think this area is special? Why or why not?

Northeast Shelf and Slope

On northeastern Grand Bank, starting at the Nose of the Bank, from 48°W to 50°W, and from the edge of the shelf to the 1000 m isobath

Site: 36a

Site Description

The Northeast Shelf and Slope is located in the Grand Banks ecoregion of Parks Canada's National Marine Conservation Areas System.

No further information specific to this area was available at the time of writing.

Marine Habitats

No information specific to this area was available at the time of writing.

Marine Life of Note

Refer to Site 36 for a description of marine life in the Grand Banks. Corals at the Northeast Shelf and Slope include sea pens, gorgonians (branching, fan-shaped corals), cup corals and soft corals.

Special Features

The Northeast Shelf and Slope region of the Grand Banks has been identified by Fisheries and Oceans Canada as an Ecologically and Biologically Significant Area (EBSA). It contains two **important coral areas** at Tobin's Point and Funk Island Spur. It also exhibits relatively high concentrations of Greenland Halibut and the threatened **Spotted Wolffish** in spring. The area is important to the latter species' short- and long-term sustainability. There is also an **aggregation of marine mammals** in the

area, particularly Harp and Hooded Seals, and Pilot Whale. The area may provide important feeding habitat for marine mammals.

Protection

Refer to Site 36 for information on the protection status of the Grand Banks.

Threats and Recommendations

The Northeast Shelf and Slope is heavily fished. With the involvement of concerned communities, protection options should be explored in the Grand Banks, including the Northeast Shelf and Slope, with the aim of recovering depleted fish stocks and maintaining the health of marine ecosystems. Refer to Site 36 for additional concerns and recommendations for the Grand Banks as a whole.

Further information about this region of the Grand Banks needs to be made public and accessible.

Discussion Questions:

1. What are your comments?
2. Do you think this area is special? Why or why not?

Lilly Canyon – Carson Canyon

From 44° 48' N to 45° 36' N along the 200 m isobath of the southeast slope of Grand Bank
Site: 36b

Site Description

Lilly and Carson Canyons are located on the southeastern slope of the Grand Banks, and in the Grand Banks ecoregion of Parks Canada's National Marine Conservation Areas System.. Carson Canyon in particular is the northernmost canyon and is 10 km wide, 80 km long and 700 m deep where it intersects the shelf break. Storms are common.

Marine Habitats

The continental shelf at Lilly and Carson Canyons is highly but variably productive. The upper slope is species poor with low diversity; diversity and species numbers peak on the mid-slope. The Labrador Current strongly influences the environment at these canyons. It flows along the shelf edge with shallow water on its right, and has an offshore branch that passes over Carson Canyon. Upwellings occur over canyons, which contain layers of cold and warmer waters which mix. Wind also induces upwellings at the shelf break and downstream.

Marine Life of Note

Refer to Site 36 for a description of marine life in the Grand Banks.

Special Features

Lilly Canyon and Carson Canyon have been identified by Fisheries and Oceans Canada as an Ecologically and Biologically Significant Area. The canyons contain areas with **high primary productivity and high biodiversity. Sponges and corals**, particularly soft corals, are present in the canyons. They are also important to the feeding and productivity of **Iceland Scallop**, which occurs in abundance in the canyons. **Cetaceans and pinnipeds** aggregate in the area throughout the year to feed and over-winter.

Protection

Refer to Site 36 for information on the protection status of the Grand Banks.

Threats and Recommendations

The Hibernia oil platform is located approximately 85 km north of Carson Canyon. Although such development has boosted economic growth in the province, its proximity to sensitive biological areas threatens the health of these rich and diverse areas. Offshore oil platforms have attracted birds for roosting and feeding. Even small oil spills have a negative effect on birds, fish and other marine species in the area. Sewage pollution also increases nitrogen levels in the water. Gas flaring often attracts birds and leads to mortality. Overall, offshore oil platforms can have a negative effect on bird population trends. Permanent structures established for oil exploration and extraction, oil pipelines, and other activities associated with oil exploration such as the use of explosives also disrupt the marine ecosystems in their vicinity.

With the involvement of concerned communities, protection options should be explored in the Grand Banks, including Lilly Canyon and Carson Canyon, with the aim of recovering depleted fish stocks and maintaining the health of marine ecosystems. Refer to Site 36 for additional concerns and recommendations for the Grand Banks as a whole.

Discussion Questions:

1. What are your comments?
2. Do you think this area is special? Why or why not?

Southeast Shoal

East of 51°W and south of 45°N, extending to the edge of Grand Bank
Site: 36c

Site Description

The Southeast Shoal of the Grand Banks, approximately 350 km off of the coast of Newfoundland, is the highest point on the Grand Banks. Its area is 3092 nautical miles squared. It is intersected by the 200 nautical mile limit of Canadian waters, meaning that a portion of it is within Canadian jurisdiction and the remainder is within international waters. It is comprised mostly of bedrock, and has been underwater for some 16,000 years. Glaciers have influenced the development of surficial geological formations. The area has traditionally been very significant for the commercial groundfish fishery, but overexploitation of these resources has led to severe depletion of fish stocks. It is located in the Grand Banks ecoregion of Parks Canada's National Marine Conservation Areas System.

Marine Habitats

The Southeast Shoal is a shallow sandy area only 40 to 60 m in depth, with glacial influence. It is shallow enough that the shoal projects into the warm surface layer in summer months. Because the Southeast Shoal is located where the cold Labrador Current and the warm Gulf Stream meet, its waters are nutrient rich and therefore very productive. The Southeast Shoal contains habitat for a large diversity of organisms, including important habitat throughout several life stages of forage species, and habitat for species at risk as well as commercially valuable species.

Marine Life of Note

There is high productivity of phytoplankton in the Southeast Shoal, resulting in high productivity and diversity of zooplankton. This productivity, combined with the shallow water and weak currents in the area, create good conditions for development of benthic communities.

For more details on marine life in the Grand Banks more generally, refer to Site 36.

Special Features

The Southeast Shoal and Tail has been identified by Fisheries and Oceans Canada as one of the top three priority Ecologically and Biologically Significant Areas (EBSAs) for conservation in the Placentia Bay-Grand Banks Large Ocean Management Area.

Because the Southeast Shoal was submerged relatively recently in geological time, it demonstrates **unique geology, high biodiversity, high primary productivity, and unique fauna and species assemblages that are more typical of inshore Newfoundland**. It contains some rare species, and some benthic species that are endemic to the Northwest Atlantic. This area has the **highest benthic biomass in the Grand Banks**, and is considered **one of the most productive ecosystems in the Northwest Atlantic**. It is inhabited by several southern invertebrates that have not otherwise been recorded east of Sable Island. It contains relict populations of Blue Mussel and Wedge Clam.

The Southeast Shoal is a **unique shallow, sandy offshore habitat** and provides a **shallow spawning area** for several species, including Atlantic Cod. It is the only offshore spawning ground for the Northwest Atlantic capelin. It also provides **nursery habitat** for Atlantic Cod, American Plaice, capelin, Yellowtail Flounder and other species. Haddock are present in huge numbers, feeding on capelin eggs. The Southeast Shoal contains newly settled juveniles, older juveniles and adults of a number of commercial species. Several fish species on the Southeast Shoal are suspected to be at risk, including **wolffish**, American Plaice, Barndoor Skate, haddock, Greenland Halibut, Roughhead Grenadier and Witch Flounder. The area is important for the reproduction and survival of Striped Wolffish.

Localized concentrations of food in the Southeast Shoal signify important feeding and aggregation habitat for seabirds and marine mammals. It is estimated that **15 to 30% of the population of Northwest Atlantic Humpback Whales feed** in the Southeast Shoal. Endangered species such as the Leatherback Turtle and the North Atlantic Right Whale are also believed to use the Southeast Shoal. Seven species in the Southeast Shoal are listed as at risk by COSEWIC, and 12 additional species are suspected to be at risk.

Protection

Refer to Site 36 for information on the protection status of the Grand Banks.

Threats and Recommendations

By the 1980s, there were serious concerns about the management of the fish stocks along the Southeast Shoal, within both Canadian and international ocean jurisdictions. Unsustainable fishing practices have contributed to the collapse of groundfish stocks in the Grand Banks; virtually all stocks are now well below historical levels.

Offshore oil and gas development is another potential threat to the ecosystem of the Southeast Shoal. Although such development has boosted economic growth in the province, its proximity to sensitive biological areas threatens the health of the Southeast Shoal. Even small oil spills have a negative effect on birds, fish and other marine species in the area. Gas flaring often attracts birds and leads to mortality.

Scientifically rigorous monitoring programs by independent observers are necessary on oil

platforms to document episodic wildlife mortality. Independent studies should be conducted to examine the impact of oil and gas development on the ecosystem health of the Southeast Shoal, and investigate and adopt alternative management techniques to protect seabirds and other marine fauna.

With the involvement of concerned communities, protection options should be explored in the Grand Banks, including the Southeast Shoal, with the aim of recovering depleted fish stocks and maintaining the health of marine ecosystems.

Refer to Site 36 for additional concerns and recommendations for the Grand Banks as a whole.

Discussion Questions:

1. What are your comments?
2. Do you think this area is special? Why or why not?

Southwest Grand Banks

45°N, 56°W - 43°N, 51°W - 44°N, 56°W
(from 55°W to 52°W, encompassing the shelf edge of Grand Bank to the 2000 m isobath)
Site: 36d

Site Description

The southwest Grand Banks is located in the Grand Banks ecoregion of Parks Canada's National Marine Conservation Areas System. It includes the continental slope containing and connecting the areas known as Halibut Channel, Haddock Channel and Whitbourne Canyon. Halibut and Haddock Channels have a depth of at least 300 m.

Marine Habitats

Deep water corals in the southwest Grand Banks provide habitats for other invertebrates and fish.

Marine Life of Note

Refer to Site 36 for a description of marine life in the Grand Banks.

Special Features

The Southwest Shelf Edge and Slope of the Grand Banks has been identified as one of the top three priority Ecologically and Biologically Significant Areas (EBSAs) for conservation in the Placentia Bay-Grand Banks Large Ocean Management Area.

A study of deep water coral regions found that the southwest Grand Banks has relatively **high coral species richness** compared to other areas in the province, including a number of fragile cup corals and aggregations of a highly diverse array of branching, fan-shaped corals called gorgonian corals. Corals provide structural habitat, and the area also shows high fish species richness. Gorgonian corals are found along the edge and slope of the southwest Grand Banks.

The amount of **groundfish biomass** in the southwest Grand Banks is significant, and it contains spawning and aggregation areas for haddock, as well as spawning sites for redfish. Atlantic Cod migrate through the area, and the area contains a concentration of Atlantic Halibut.

The southwest Grand Banks contains **unique species biodiversity**, including biodiversity of seabirds. Fea's Petrel and other rare birds have been observed in the area, for example in the warm core eddies produced by the Gulf Stream. Seabirds, cetaceans and Leatherback Turtles aggregate and feed in the area.

Protection

In 2007, the Northwest Atlantic Fisheries Organization (NAFO) closed a 14,040 km^2 area around the southwest Grand Banks (NAFO Division 3O) for five years, to allow research to be conducted on strategies to protect deep water corals living on the continental slope.

Threats and Recommendations

By-catch of corals in commercial fisheries is of particular concern in the southwest Grand Banks. Gorgonian corals are the most sensitive to disturbance due to their slow growth rate and stiff skeletons. Long-lived corals such as these may take centuries to grow back following damage, if they are able to grow back at all. The Greenland Halibut, redfish, monkfish and Atlantic Halibut fisheries catch the most corals in the southwest Grand Banks, compared to other coral areas studied. Gear that catches corals includes trawls, longlines, crab pots and gill nets. Gill nets and longlines have been observed to catch high densities of corals on the southwest Grand Banks. The highest concentrations of coral by-catch in scientific surveys and commercial fisheries coincide with areas of highest fish species richness.

The southwest Grand Banks has been identified as a priority area for coral conservation in Newfoundland and Labrador, and it has been recommended that protection measures be implemented in the area that would prevent damage to corals. Further research should be conducted, with the involvement of concerned communities, to explore protection options and extent. Research should include direct observation of high-diversity coral areas, and more in-depth study of coral biology and various species' sensitivity to fisheries impacts.

Refer to Site 36 for additional concerns and recommendations for the Grand Banks as a whole.

Discussion Questions:

1. What are your comments?
2. Do you think this area is special? Why or why not?

Virgin Rocks

from 46 - 46°48' N and from 50 - 51°W

Site: 36e

Site Description

Virgin Rocks is located in the northern central area of the Grand Banks and consists of shallow shoals of jagged underwater ridges, covering several square kilometres. The rocks are nearly exposed in some areas – as shallow as 3.6 m from the surface of the water, and the sea breaks over the rocks in bad weather. It is located in the Grand Banks ecoregion of Parks Canada's National Marine Conservation Areas System.

Marine Habitats

Bedrock, glacial till, glaciomarine silt, sand and gravel are prominent in the Virgin Rocks area. The area has high plankton productivity and diverse and productive kelp beds.

Marine Life of Note

Refer to Site 36 for a description of marine life in the Grand Banks.

Special Features

The shallowness of the rocks renders them a **unique geological feature and habitat** within the Placentia Bay-Grand Banks Large Ocean Management Area. The Virgin Rocks area provides important **spawning habitat** for Atlantic Cod, American Plaice and Yellowtail Flounder, and a **congregation area** for capelin. Seabirds also congregate and feed at the rocks. Some 1000 to 2000 Common Eiders often winter around the Virgin Rocks.

Protection

Refer to Site 36 for information on the protection status of the Grand Banks.

Threats and Recommendations

Intensive fishing has occurred around the Virgin Rocks, which has altered the community and ecosystem. Several of the historically abundant species in the area have been depleted.

Offshore oil and gas development threatens several areas of the Grand Banks, including Virgin Rocks. Although such development has boosted economic growth in the province, its proximity to sensitive biological areas threatens the health of these rich and diverse areas. Offshore oil platforms have attracted birds for roosting and feeding. Even small oil spills have a negative effect on birds, fish and other marine species in the area. Sewage pollution also increases nitrogen levels in the water. Gas flaring often attracts birds and leads to mortality. Overall, offshore oil platforms can have a negative effect on bird population trends. Permanent structures established for oil exploration and extraction, oil pipelines, and other activities associated with oil exploration such as the use of explosives also disrupt the marine ecosystems in their vicinity.

With the involvement of concerned communities, protection options should be explored in the Grand Banks, including Virgin Rocks, with the aim of recovering depleted fish stocks and maintaining the health of marine ecosystems.

Refer to Site 36 for additional concerns and recommendations for the Grand Banks as a whole.

Discussion Questions:

1. What are your comments?
2. Do you think this area is special? Why or why not?

Mistaken Point – Cape Race

46° 37’ N, 53° 09’ W

Site: 37

Site Description

Mistaken Point is a headland located on the southeastern tip of the Avalon Peninsula of Newfoundland, 16 km southeast of the community of Portugal Cove South and 7.5 km southwest of Cape Race. The community of Long Beach is at the northeastern boundary of the Mistaken Point Ecological Reserve. It is representative of the Eastern Hyper-oceanic Barrens Ecoregion. Under the system of Parks Canada’s National Marine Conservation Areas, it is in the Grand Banks region. It often experiences cool, foggy, wet weather. It is part of the Precambrian Conception Group of geological formations.

Marine Habitats

Mistaken Point to Cape Race is the most extreme wave-exposed, usually ice-free, rocky shoreline

in Newfoundland. Fog, resulting from the mixing of the warm Gulf Stream with the cold Labrador Current, is more frequent and abundant here than almost anywhere else. Marine habitats in the area include coastal inlets and offshore kelp beds.

The heavy surf increases the landward extent of the shoreline. Seaweed and invertebrate species are able to survive 15 m or more above the official high tide level because they are constantly bathed with seawater surf and spray. The almost constant fog prevents these organisms from drying out, which helps them to survive.

Marine Life of Note

Invertebrates and seaweeds in the Mistaken Point to Cape Race area are extremely diverse, particularly in the kelp beds. Because ice scouring is rare and wave energy is high in the area, kelps grow to gigantic sizes and support a huge variety of seaweeds that grow both on and under the kelp, as well as sessile invertebrates such as hydroids and bryozoans.

Marine fish around Mistaken Point include American Plaice, lumpfish, and flounder (including Winter Flounder), and the at-risk **Atlantic Cod**. Other fish in the ecoregion include Atlantic Salmon, Three-spine and Nine-spine Sticklebacks, Brown Trout and the at-risk **American Eel**.

Marine bird species in the area include Leach's Storm-Petrel, Razorbill, Common Eider (12,000 birds in summer and 688 in winter), Purple Sandpiper (64 to 224 birds in winter) and Ruddy Turnstone (5 birds in winter). Whales, dolphins and seals also use the area.

Special Features

The currents around Cape Race cause nutrient upwelling, which supports **extremely high primary production** by seaweeds and phytoplankton. In turn, this supports **unusually high marine biodiversity**.

The coastline and offshore waters near Mistaken Point from Cape Race to The Drook has been named an **Important Bird Area**. It contains globally significant numbers of congregating seabird species. For example, it houses over 1% of the estimated North American Purple Sandpiper population. There is evidence that relatively large numbers of Purple Sandpipers may use the 4 km stretch of beach between Long Beach and Mistaken Point during migration. Common Eiders have been found in the area in large numbers during winters with heavy ice; for example 12,000 (4% of the estimated northeast Canada population) were recorded in 1987 at the leading edge of pack ice adjacent to Long Beach. Also of note is the regular presence of a few over-wintering Ruddy Turnstones, since this species normally winters much further south.

Mistaken Point is one of the most important fossil sites in Canada and internationally. The fossils are over 500 million years old. They are the impressions of soft-bodied organisms, including jellyfish, sea pens and various extinct organisms, some of which have not been seen elsewhere in the world. Mistaken Point is on Canada's Tentative List for UNESCO World Heritage Sites.

Protection

Mistaken Point was declared a provincial Fossil Ecological Reserve in 1987 aimed at protecting unique fossils and preventing damage to an internationally significant Precambrian fossil area. The protected area is 5 km long, extending approximately 650 m inland from the low tide line, for a total area of 2.95 km^2. Restrictions include building restrictions; protection of homes, dens and

nests of wildlife; protection against egging; no mining, quarrying or removal of rocks and sand; no obstructions permitted in water bodies within the area. The 2.7 km^2 Mistaken Point Extension was added as an emergency reserve in 2002 to protect additional fossil sites.

Threats and Recommendations

Hunting, fishing, berry picking and cattle herding are permitted in the Reserve. The Mistaken Point area is also susceptible to oil spills and other oil pollution, due to relatively heavy shipping traffic in the vicinity, with freighters and other ships entering the Gulf of St. Lawrence.

Because there is an Ecological Reserve at Mistaken Point, some infrastructure is in place for further protection in the area. Discussions are encouraged between management agencies and local communities to explore options to extend protection into the marine environment, with particular attention on the Important Bird Area and Cape Race.

Discussion Questions:

1. What are your comments?
2. Do you think this area is special? Why or why not?

Chance Cove

46° 45' N, 53° 0' 30" W
Site: 38

Site Description

Chance Cove is located on the southeast corner of Newfoundland's Avalon Peninsula, 20 km south of the communities of Renews and Cappahayden. It falls within the Southeastern Barrens subregion of the Maritime Barrens ecoregion, as well as the Eastern Hyper-oceanic Barrens ecoregion. It is part of the Grand Banks ecoregion of Parks Canada's National Marine Conservation Areas System and the Placentia Bay-Grand Banks Large Ocean Management Area.

Marine Habitats

The coast is cold and rocky, with frequent fog due to the mixing of the warm Gulf Stream and the cold Labrador Current. A barachois (bar lagoon) in the area provides habitat for migratory shorebirds. The adjacent bay is shallow with offshore islets, and kelp beds are present.

Marine Life of Note

Invertebrates in the vicinity of Chance Cove include Toad Crab, Snow Crab and squid.

Fish in the vicinity and the ecoregion include flounder (including Winter Flounder), American Plaice, cod, lumpfish, capelin, herring, Atlantic Salmon, Brown Trout, Three-spine and Nine-spine Sticklebacks, and the at-risk **American Eel**.

Birds in the area include Razorbill, Thick-billed Murre, Black Guillemot, Herring Gull, Great Black-backed Gull, Ring-billed Gull, Northern Fulmar, Manx Shearwater, Common Tern, Arctic Tern, Caspian Tern, Common Snipe, Greater Yellowlegs, Least Sandpiper, Common Eider, Surf Scoter, White-winged Scoter, **Harlequin Duck** (a species at risk), Common Goldeneye, scaup, Black Duck, Green-winged Teal and occasionally Bufflehead.

Harbour Seals are present around Chance Cove.

Special Features

Chance Cove is well-used by **sea ducks** and its bar lagoon provides **shorebird habitat**. The Chance Cove River supports runs of Atlantic Salmon and Brown Trout that are anadromous (migrate from salt water to spawn in fresh water). Due to the presence of a Provincial Park, the infrastructure is in place for further protection of the area.

Protection

Chance Cove is a 2068 ha terrestrial Provincial Park that protects natural heritage and provides an opportunity for outdoor recreation. Notably, it protects the bar lagoon. Hunting is prohibited, as are development and resource harvesting, except for park purposes.

Threats and Recommendations

Frequent illegal hunting of waterfowl, particularly sea ducks, takes place in the Chance Cove area. The coastal waters adjacent to the park are not protected and there is considerable disturbance from power boats and associated sea duck hunting.

Improved surveillance and enforcement is necessary in the area. Discussions are encouraged between management agencies and local communities to explore options to extend protection into the adjacent marine environment. Further research can be done on the marine features in the area.

Discussion Questions:

1. What are your comments?
2. Do you think this area is special? Why or why not?

Eastern Avalon

47° 31’ 31” N, 52° 37’ 14” W to 46° 52’ 48” N, 52° 56’ W and offshore to 100 km
Site: 39

Site Description

The Eastern Avalon area of interest is on the east coast of the Avalon Peninsula in eastern Newfoundland, from Cape Spear south to the community of Cappahayden, out to approximately 100 km offshore. It is located within the Grand Banks region of Parks Canada’s National Marine Conservation Areas system.

Marine Habitats

The area is dynamic, with open access to larger oceanic areas. There are kelp beds and Irish moss in the area, as well as corals. Eelgrass is present in some shallow, sheltered areas with freshwater input.

Marine Life of Note

Marine invertebrates off the Eastern Avalon include Snow, Toad and Rock Crabs, shrimp, mussels, lobster, scallop, squid, periwinkle, sea urchin, corals and jellyfish.

Fish in this area include cod, flounder (including Winter Flounder), lumpfish, haddock, skate, capelin, herring, salmon, sunfish and sharks.

Harp Seals and cetaceans such as dolphins and Humpback, Fin and Minke Whales are present off the Eastern Avalon, as is the endangered **Leatherback Turtle**.

Refer to Sites 39a and 39b for more details on marine fauna present in the Eastern Avalon area.

Special Features

The Eastern Avalon marine region has been identified by Fisheries and Oceans Canada as an **Ecologically and Biologically Significant Area**. It contains **aggregation and feeding areas for seabirds, sea ducks, Leatherback Turtle, seals and cetaceans**, especially Humpback Whale, particularly from spring to fall in association with prey concentrations. The aggregations of breeding seabirds are spectacular and the focus of some of the most developed ecotourism in Newfoundland and Labrador. For example, more than 75% of the northwest Atlantic population of Atlantic Puffin and huge numbers of other seabirds breed in the Witless Bay archipelago (see Site 39b).

Protection

The community of Petty Harbour-Maddox Cove has established a Protected Fishing Area (see Site 39a), and the Witless Bay islands are within an Ecological Reserve (see Site 39b).

Threats and Recommendations

There have been few large developments to date in the area; however, shipping traffic to and from St. John's has been implicated in the high frequency of chronic oil pollution of seabirds along the southern Avalon. Oil spills can be lethal to seabirds and other marine wildlife. The commercial fishery can impact seabird and whale populations through competition for resources, and by-catch in monofilament nets continues in the area and has the potential to cause significant mortality.

More progressive action is required to reduce potential impacts of the activities in the Eastern Avalon area, and to refine measurement of these impacts. For example, management agencies should engage fishers in discussions to determine sustainable fishing methods in areas important to seabirds and whales, for example minimum distance of gill-netting to seabird colonies.

Areas of particular conservation interest in the Eastern Avalon area include Petty Harbour-Maddox Cove and Witless Bay (see Sites 39a and b, respectively).

Discussion Questions:

1. What are your comments?
2. Do you think this area is special? Why or why not?

Petty Harbour-Maddox Cove

47° 28' N, 52° 43' W

Site: 39a

Site Description

Petty Harbour and its extension Maddox Cove are small, sheltered communities located 15 km south of St. John's, on the east coast of the Avalon Peninsula of Newfoundland. It falls within the Southeastern Barrens subregion of the Maritime Barrens ecoregion and the Grand Banks region of Parks Canada's National Marine Conservation Areas system. The community of Petty Harbour-Maddox Cove has historically been sustained by fisheries.

Marine Habitats

The area has the appearance of a fjord, with steep hills rising from the shore. A number of small islands and offshore rocks are in the vicinity. Kelp beds and Irish moss are in the area.

Marine Life of Note

Marine invertebrates around Petty Harbour-Maddox Cove include corals, jellyfish, lobster, Snow Crab, Rock Crab, Toad Crab, shrimp, sea urchin, squid, whelk and scallops.

Fish around Petty Harbour-Maddox Cove include Atlantic Salmon, capelin, mackerel, sharks, tuna, sunfish, herring, cod, flounder, skate and lumpfish. Other fish in the ecoregion include Brown Trout, Three-spine and Nine-spine Sticklebacks, and the at-risk **American Eel**.

Migratory breeding birds found in the wetlands of the ecoregion include Black Duck, Green-winged Teal, Common Snipe and Greater Yellowlegs. In winter and during migration, Common Eider and Long-tailed Duck utilize the adjacent headlands. Scoters and the at-risk **Harlequin Duck** are more transient in this area.

Seals and whales are present in the vicinity of Petty Harbour-Maddox Cove.

Special Features

Petty Harbour and Maddox Cove are within the Eastern Avalon Ecologically and Biologically Significant Area (see Site 39), identified by Fisheries and Oceans Canada. The area contains **one of the best fishing grounds** in Newfoundland. The **local community initiated protection measures** in the area and has knowledge of sustainable fishing practices, knowledge which they have shared internationally. Petty Harbour is one of the first community-based fishery management initiatives in Newfoundland to establish gear restrictions. The community has set precedents and standards for managing fish and fish habitat.

Protection

In 1961, the community of Petty Harbour-Maddox Cove established a Protected Fishing Area to protect the area against the use of gill nets (and the continued "fishing" effects of abandoned or lost gill nets, or "ghost nets") and longlines (trawls), which has contributed to the sustainability of the local fishery. The area is protected under Regulation of the Fisheries Act. The regulation prohibits the use of cod trawls and cod nets on either side of the community from North Head to Long Point (11 km), from the shoreline to a distance of 2.4 km offshore. This followed protection that existed from trawls between 1895 and 1960, at which point the protection was removed without local (hand-line) fishers' consultation.

Threats and Recommendations

The level of protection in the area is not comprehensive or strong enough to provide adequate protection for the marine environment. For example, draggers and non-renewable resource extraction are not prohibited. Also, protection under Regulation can be easily withdrawn, and enforcement has been inadequate. Some of the restrictions have been weakened in the Protected Fishing Area. For example a 1990 amendment permitted fishers from the nearby community of Bay Bulls to use longlines in a portion of the area. Following the 1992 cod moratorium, Petty Harbour-Maddox Cove fishers permitted lumpfish gill nets to be used. The negative impacts on the sea floor of longline trawls and by-catch and "ghost net" phenomena are therefore renewed threats to the area.

Enhanced community support and solidarity, increased support from Fisheries and Oceans Canada and stronger legislative protection have been recommended for the area.

In 1997, the Petty Harbour Fishermen's Committee and the Protected Areas Association of Newfoundland and Labrador examined the feasibility of creating a marine protected area in Petty Harbour-Maddox Cove. The study noted some support for a marine protected area; however, additional research and discussions are required, for example to examine marine protected area objectives, implications, benefits, costs and management strategies (including gear restrictions), to aid the community in decision-making.

Discussion Questions:

1. What are your comments?
2. Do you think this area is special? Why or why not?

Witless Bay
47° 17' N, 52° 50' W
Site: 39b

Site Description

Witless Bay is a community located off the east coast of the Avalon Peninsula of Newfoundland, between the communities of Bay Bulls and Mobile. Four islands – Gull, Green, Great, and Pee Pee Islands – comprise Witless Bay Seabird Ecological Reserve. Witless Bay is within the Southeastern Barrens subregion of the Maritime Barrens ecoregion.

Marine Habitats

A lack of pack-ice in the area makes it suitable for overwintering marine birds. The four islands in the Reserve are rocky, with low cliffs and steep, grassy slopes. The two largest islands contain coniferous forests.

Puffins nest in the steep grassy slopes of the islands and storm-petrels nest on slopes that are less steep near the top of the islands and in peaty ground in the conifer forests of Gull and Green Islands. Black-legged Kittiwakes nest on small outcrops on cliff faces. Common Murres nest on narrow cliff ledges. Black Guillemots and Razorbills nest on sheltered cliff ledges, either between boulders or in crevices. Herring Gulls and Great Black-backed Gulls use a variety of nesting habitats such as grassy hills, grassy flats and rocky outcrops. Northern Fulmars lay eggs on wide cliff ledges.

Marine Life of Note

Fish species in the Reserve include cod, mackerel, salmon, plaice, Winter Flounder and capelin.

Seabirds in Witless Bay include Atlantic Puffin, Leach's Storm-petrel (in large concentrations), Black-legged Kittiwake, Herring Gull, Great Black-backed Gull, Glaucous Gull, Iceland Gull, Razorbill, Common Murre, Thick-billed Murre, Dovekie, Black Guillemot, Greater Shearwater, Manx Shearwater and Northern Fulmar (small concentrations). Wintering and migrating sea ducks include Long-tailed Duck, Common and King Eiders, White-winged and Surf Scoters. Common Loon is also present. Migratory breeding birds in the ecoregion include Common Snipe, Greater Yellowlegs and Least Sandpiper.

During capelin season, Witless Bay provides feeding grounds for cetaceans such as Minke, Humpback, Fin and Pothead Whales; Atlantic White-sided and White-beaked Dolphins and the at-risk **Harbour Porpoise**. Harbour Seals are occasionally present in the winter.

Special Features

Witless Bay has been designated an Important Bird Area, due to its **massive and globally significant seabird breeding colonies**. Species at risk inhabit the islands that make up the Reserve. More than one million pairs of seabirds of 10 different species breed on the Witless Bay Islands. The Witless Bay Ecological Reserve contains the largest Atlantic Puffin colony in North America with 140,429 pairs estimated on Gull Island in 2003. The Reserve houses one of the largest Leach's Storm-petrel colonies in the world, with approximately 270,000 breeding pairs. It also has the largest colony of Black-legged Kittiwakes in Newfoundland and Labrador with 40,000 pairs, making up approximately 50% of the breeding population of kittiwakes in Newfoundland and Labrador and 16-22% of the western Atlantic breeding population. It has the 2nd largest colony of Common Murres in eastern North America with 77,000 pairs, signifying 2% of the Atlantic and 13% of the eastern North American breeding populations. The Witless Bay islands contain breeding populations of Razorbills, Black

Guillemots and the first known Northern Fulmars to breed in Newfoundland. Gull and Great Islands were found to house over 4300 breeding pairs of Herring Gulls and over 100 pairs of Great Black-backed Gulls in 2000. Common and King Eiders, Thick-billed Murres and Dovekies winter in the waters surrounding the Witless Bay islands, and the area is important for migrating sea ducks.

Capelin spawn in Witless Bay, for example at Gull Island, and **migrating populations of whales** also go through the area.

Gull Island and the other Witless Bay islands are within the Eastern Avalon Ecologically and Biologically Significant Area (see Site 39) identified by Fisheries and Oceans Canada.

Protection

The Witless Bay Islands and a 1 km area of marine water surrounding each island (as well as a 2 km stretch between Great and Green Islands) have been designated a Seabird Ecological Reserve. The Ecological Reserve was established to preserve internationally important seabird breeding and overwintering colonies, to maintain the natural communities of the Reserve, foster scientific studies that support the above and provide the public with controlled observation and educational opportunities. An Ecological Reserve Manager, responsible for monitoring activity around and in the reserve, is hired seasonally.

Hunting, snaring and shooting are prohibited in the Reserve. The following are also prohibited: chasing and harassment of whales; dumping, depositing or emitting substances; operating a motorized boat within 20 m of Gull, Great and Pee Pee Island from April 1 to September 1 (except for commercial fishers to the extent that it is necessary for proper conduct of their fishing activity); operating an unmotorized boat within 15 m of these islands in the same time period; operating a motorized boat within 100 m and an unmotorized boat within 50 m of Green Island in this period; operating a dragger, tanker, freighter, barge or any vessel larger than 20 m; operating a boat in a manner that disturbs wildlife, including through noise; operate or cause to operate a tour boat or guiding enterprise within the reserve without a permit. Aircraft activity over the Reserve is also restricted. Tour boat operators in the area are guided by a voluntary Code of Conduct.

The new Sailing Directions for Newfoundland: East and South Coasts includes a map of the Ecological Reserve and a description of restrictions on activities within the reserve.

Threats and Recommendations

Colonial breeding by seabirds has adaptive advantages, but also makes them vulnerable to negative impacts of human presence, interactions with fishing activities, marine pollution and depletion of food stocks. The population of Black-legged Kittiwakes on Gull and Great Island have been declining since the 1990s, a trend occurring in most kittiwake colonies monitored in eastern North America.

There is increasing concern about the levels of ecotourism in the Witless Bay area, particularly the impact of tour boat activities. In peak tourism season, as many as 10 to 15 tour boats visit the Ecological Reserve every day, with a total of more than 10,000 people visiting each year. Close approaches by boats, as well as their speed and the activities of passengers, can disturb breeding

colonies. Auks are particularly sensitive to such disturbance. For example, disturbances can cause adult fly-offs in Common Murre breeding areas, resulting in loss of eggs or chicks. Close approaches to whales such as humpbacks can result in behavioural reactions. Tour boat operators under permit and commercial fishers are not subject to the distance restrictions when approaching islands in the Ecological Reserve.

Commercial and recreational fishing are permitted within the Reserve. Research has shown that there is a high rate of bird kills, particularly Common Murres, due to drowning in monofilament gill nets in the waters surrounding the islands, particularly during the period when capelin move inshore to spawn. High concentrations of gill nets have been observed, and high numbers of drowned birds with capelin in their stomachs have been found close to these nets around Gull Island from late July to mid August. Common Murres and Atlantic Puffins are caught most often in the Reserve area, although Greater Shearwaters, Black Guillemots, Common Loons and Razorbills are also caught. Davoren (2007) found localized bycatch mortality of 3053 to 14054 murres per year due to entanglement in gill nets while feeding on capelin.

The waters off the east coast of the Avalon Peninsula are within a major shipping route, resulting in a significant amount of large vessel traffic. This vessel traffic brings with it a threat of oil pollution due to spills and illegal discharges. Because of the currents, wind and tides, pollution occurring outside of the Reserve may also impact areas within the Reserve. Marine oil pollution is lethal to seabirds.

Other cumulative anthropogenic causes of seabird mortality include seismic surveys, recreational boating, hunting and reduction in food supply.

Continued monitoring of seabird populations, particularly kittiwakes, is necessary in the area. Due to the high level of visitation, on-site patrolling by a ranger has been recommended to deter behaviour that would disturb wildlife. As per the Reserve Management Plan, alternate fishing gear types should be explored with fishing communities, with the intention of eliminating the possibility of incidental by-catch. Discussions should also be held with fishers regarding minimum distance of gill-netting to seabird colonies. Increased enforcement, improved surveillance, higher fines and capture of polluters are also necessary to deter and prevent marine oil pollution. Convenient and accessible onshore oil disposal facilities for bilge and oil-contaminated ballast water should be established.

Discussion Questions:

1. What are your comments?
2. Do you think this area is special? Why or why not?

Baccalieu Island

48° 07’ N, 52° 48’ W
Site: 40

Site Description

Baccalieu Island is 6.3 km long and 1 km wide and located 6 km off the northwestern tip of the Avalon Peninsula, in the Eastern Hyper-oceanic Barrens ecoregion of Newfoundland. It is 6.3 km long and 1 km wide. It is found in the climatic region of Newfoundland that is the most influenced by maritime conditions, and fog is a frequent feature on the island. The island’s topography consists of hills and valleys, cliffs and steep slopes. Baccalieu Island is located northeast of the fishing community of Bay de Verde. It is located within the Grand Banks region of Parks Canada’s National Marine Conservation Areas system.

Marine Habitats

The ecoregion contains harsh and open landscapes. It is dominated by an oceanic climatic influence. Bedrock cliffs averaging 90 m surround the island. There are also occasional sandy or coarse-grained pocket beaches. Rolling valleys and hills, grassy slopes and rock scree create a range of habitats, particularly for birds.

Marine Life of Note

The water surrounding the island has historically been one of the richest fishing grounds in Newfoundland. Fish species present include: Atlantic Salmon, American Plaice, Winter Flounder, haddock, capelin, cod, redfish, Atlantic Halibut, Turbot, Brook Trout, Brown Trout, Rainbow Smelt, Three-spine Sticklebacks, Nine-spine Sticklebacks, and the at-risk **American Eel**.

Seabirds in the area include: Leach's Storm-petrel, Atlantic Puffin, Common Tern, Arctic Tern, Black-legged Kittiwake, Herring Gull, Ivory Gull (a species at risk), Great Black-backed Gull, Common Murre, Thick-billed Murre, Dovekie, Razorbill, Northern Fulmar, Greater Shearwater, Sooty Shearwater, Manx Shearwater, Double-crested Cormorant, Northern Gannet and Black Guillemot. Sea ducks include Common and King Eiders, Long-tailed Duck, White-winged Scoter and the at-risk **Harlequin Duck**. Other birds include Black Duck, Red-throated Loon, Whimbrel, Solitary Sandpiper, White-rumped Sandpiper and Greater Yellowlegs. Approximately 3,360,000 pairs of Leach's Storm Petrel return from the open Atlantic in late April and leave in September. In 1987 there were 650 breeding pairs of Northern Gannets recorded. There are approximately 20 breeding pairs of Northern Fulmars, but this is expected to increase. In 1981 there were 181 pairs of Thick-billed Murres. There are a minimum of 100 breeding pairs each of Razorbills and Black Guillemots.

Marine mammals present include: Minke, Humpback, Pilot and Fin Whales; White-Beaked and Atlantic White-sided Dolphins; **Harbour Porpoise** (a species at risk); Harp, Hooded and Harbour Seals and Sea Otter.

Special Features

Trinity Bay to Bay de Verde, including Baccalieu Island, has been identified as a marine natural area of significance in Canada. **Capelin spawn in high concentrations** on sandy or gravel beaches on Baccalieu Island.

Seventy-seven species of migrating, overwintering and terrestrial birds representing 28 families either breed, reside, migrate or overwinter on or around Baccalieu Island.

Baccalieu Island's **breeding seabird colonies are of international significance**. It is an Important Bird Area, and has the greatest abundance and seabird species diversity in eastern North America. It is the largest seabird island in the province and supports the greatest diversity of breeding seabirds in the province. It hosts the largest Leach's Storm-petrel breeding colony in the world with over 3 million nesting pairs, making up 40% of the global population and 70% of the western Atlantic population of the species. It supports one of only six known breeding colonies of Northern Gannets in North America, and is one of four islands in Eastern Canada where Northern Fulmars breed (this bird has only recently extended its breeding range southward from the Arctic). It contains the second largest Atlantic Puffin colony in Newfoundland (30,000 pairs), the second largest colony of Black-legged

Kittiwakes in the province (13,000 pairs) and the third largest Common Murre colony in the province (ca. 4000 pairs). During the time of the capelin run the waters are most abundant with food which attracts seabirds and whales, as well as fishers. Between September and April the island also provides an important refuge for sea ducks, primarly Common Eiders and Long-tailed Ducks, with smaller numbers of scoters during migration. Between 5000 and 10,000 eiders over-winter in the near-coastal waters of the island, which is significant, given the long-term population decline of Common and King Eiders. Harlequin Duck is transient in the area in fall and spring.

The Hyper-oceanic Barrens Ecoregion is not normally associated with a high level of avian activity, which highlights the significance of the number of birds on and around Baccalieu Island.

Protection

Baccalieu Island is a provincial Ecological Reserve aimed at the protection of Leach's Storm Petrel, Black-legged Kittiwake, Northern Gannets, Common Murres and Atlantic Puffins and their habitats. More generally, it aims to preserve an internationally important seabird breeding colony, to maintain the natural communities in the area, to provide a refuge for non-breeding (e.g. migrating, over-wintering) birds, to foster scientific studies to support the above, to provide an opportunity for education and to protect the integrity of the ecosystem. The area of the reserve is 5 km^2, with a marine component extending an additional one km around the island. Hunting is prohibited in the reserve; a permit is required to visit sensitive nesting areas on the island; motorized boats are not permitted within 100 m and non-motorized boats within 20 m of cliffs containing nesting birds during breeding season except at designated landing sites; noise must be kept below a level that would disturb the birds.

Threats and Recommendations

Breeding in colonies offers adaptive advantages for birds, but also makes them highly vulnerable to human activities. Threats to seabirds in general, which apply to Baccalieu Island, include oil spills and discharges from large vessel traffic through the major shipping route off the east coast of the Avalon; chemical poisoning; disturbance and destruction of breeding, migrating and over-wintering sites; human presence and the introduction of unnatural predators; by-catch in commercial fishing; illegal hunting; aircraft activity (mostly helicopters to Transport Canada facilities) and disturbance due to research and observation.

Commercial fishing activities are not restricted in the area. Use of gill nets leads to some of the worst impacts, due to by-catch and resultant mortality of seabirds and small cetaceans. The Baccalieu Island Ecological Reserve Management Plan suggests no restrictions on commercial fisheries in the marine component of the Ecological Reserve; recreational fishing must adhere to the restrictions in Section 2.11 of the regulations for reserves.

Management agencies should work with local communities to explore alternative gear types to reduce the amount of bird by-catch in the area, and to explore options for extending protection further into the waters surrounding the island that are used by the birds and their prey. Discussions should also be held regarding a minimum distance of gill-netting to seabird colonies and potential restrictions during capelin spawning season, at which time fish, breeding seabirds and marine mammals are known to congregate and seabird by-catch rates are at their highest.

Discussion Questions:

1. What are your comments?
2. Do you think this area is special? Why or why not?

Bellevue Beach
47° 38' N, 53° 47' W
Site: 41

Site Description

Bellevue Beach falls within the Southeastern Barrens subregion of the Maritime Barrens ecoregion. It is located in the southernmost area of Trinity Bay, in the Newfoundland Shelf region of Parks Canada's National Marine Conservation Areas system. Nearby communities include Bellevue and Chance Cove.

Marine Habitats

The area is characterized by a beach of sand, pebbles and cobbles, which shelters a large bar lagoon (barachois), supporting salt marsh and intertidal habitat for migrating birds. There are well developed sand dunes at Bellevue Beach, which are rare in Newfoundland. The gravel beach is used extensively by capelin for spawning. Demersal (sea-bottom) spawning may also occur. There are eelgrass and kelp beds in the area, as well as Irish moss.

Marine Life of Note

Bellevue Beach contains extensive beds of Blue and Horse Mussels. Other invertebrates in the area include bryozoans, periwinkles (*Littorina*), barnacles (*Balanus* spp.), limpets (*Acmaea* spp.), *Polynices heros,* lobster, clams, whelk, Rock Crab, Toad Crab, sea urchins, starfish, snails, oysters and squid.

Fish present around Bellevue Beach include Atlantic Salmon, sharks, herring, capelin, cod, halibut, lumpfish, skate, smelt, Winter Flounder, American Plaice and the at-risk **American Eel**. Other fish in the ecoregion include Brown Trout, and Three-spine and Nine-spine Sticklebacks.

Birds in the ecoregion include Bald Eagle, Osprey, Common Snipe, Greater Yellowlegs and Least Sandpiper.

Harp Seals are seen at Bellevue Beach, but are rare in the area. Sperm Whales are found in Trinity Bay. The endangered **Blue Whale** is occasionally found in the bay in the summer months.

Special Features

Trinity Bay to Bay de Verde has been identified as a marine natural area of significance in Canada. **Sand dunes** such as those found at Bellevue Beach are rare in Newfoundland.

Bellevue Beach is **one of the largest beach spawning areas for capelin** on Newfoundland's east coast. Capelin usually spawn intensively only once in June to early July, when water conditions are favourable. The area also provides **habitat for migrating shorebirds**, and waterfowl commonly occur there. Osprey are abundant and breed locally.

Protection

Bellevue Beach is a Provincial Park Reserve. Protection under this reserve extends to the low water mark. All-terrain vehicle and snowmobile use is not permitted within park boundaries.

Threats and Recommendations

Over-fishing threatens the marine ecosystems in the area. Capturing fish before or during spawning threatens future generations of fish and therefore future stocks. There is also considerable cottage development in this area, which is currently not guided by management or stewardship plans. The potential for anthropogenic disturbances to the protected bar lagoon environment is considerable.

Further research is recommended to determine the impacts of fishing on the marine ecosystem in the area, as well as possible methods for minimizing these impacts. Management agencies should work with local communities to explore options for protecting spawning and hatching fish. Due to the presence of a Provincial Park, infrastructure is in place for further protection of the marine area.

To protect sensitive dune and wetland habitat and nesting areas at Bellevue Beach, pedestrians could be confined to designated trail areas, away from nesting and other sensitive areas. Pets should be kept on leashes and food and trash should be kept off of sensitive areas. A public education and stewardship program should be part of any habitat protection strategy.

Discussion Questions:

1. What are your comments?
2. Do you think this area is special? Why or why not?

Smith Sound

48° 9' 30" N, 53° 42' W

Site: 42

Site Description

Smith Sound is a zigzag-shaped 28 km sheltered region fjord on the north side of Random Island, Trinity Bay. It is one of the longest inshore waterways in Newfoundland and Labrador. It falls within the Northeastern Barrens subregion of the Maritime Barrens ecoregion. It is also located in the Newfoundland Shelf region of Parks Canada's National Marine Conservation Areas system. The region experiences frequent fog and strong southeasterly winds. Communities along Smith Sound include Burgoynes, Georges Brook and Lower Lance Cove.

Marine Habitats

The coastal area of Smith Sound is made up of ground moraine, boulders, barrens, slope and basin bogs, and fens. Estuaries in the area have sand and gravel bottoms. Eelgrass beds are present in Aspey Cove and the westernmost reaches of Smith Sound, near Random Island's causeway. The seabed is typical of a fjord, with extensive, steep bedrock and boulder underwater cliffs and a muddy substrate on the isolated fjord basin. Smith Sound is often extremely stratified with respect to temperature and sometimes salinity.

Marine Life of Note

The rocky seabed is covered with kelp beds or sea urchin/coralline algae communities. The fauna and flora are representative of Bonavista and Trinity Bays.

Marine fish in Smith Sound include American Plaice, Winter Flounder, haddock, capelin, redfish, Atlantic Halibut, lumpfish, turbot and the at-risk **Atlantic Cod**. Herring spawn in great abundance every spring. Moon jellies are frequently abundant.

Shorebirds that live in wetland areas of the ecoregion include: Green-winged Teal, Ring-necked Duck, Common Goldeneye, American Black Duck, Canada Goose, Common Snipe, Greater Yellowlegs and Least Sandpiper.

Marine mammals in the area include Grey Seal, Hooded Seal, Harbour Seal and Harp Seal. The at-risk **Blue Whale** is occasionally found in Trinity Bay in the summer months.

Special Features

Smith Sound has been called a sensitive coastal area and has been identified by Fisheries and Oceans Canada as an **Ecologically and Biologically Significant Area,** almost entirely because of the existence of a **unique local Atlantic Cod population**. Smith Sound is important for Northern Atlantic Cod spawning, nursing, migration and refuge. It houses the fastest growing population of cod since the 1992 implementation of the cod moratorium. The good capelin food base and the presence of eelgrass beds may be contributing factors to this phenomenon. Smith Sound contains the largest remaining spawning aggregation of Northern Atlantic Cod. Cod have over-wintered and spawned in Smith Sound since 1995. Cod also migrate into the area from Trinity and Bonavista Bays. An unusually large and dense population of cod was found in Smith Sound in 1995. Cod move into Smith Sound in late fall, over-winter in a dense, size- and age-structured aggregation, spawn between late March and early June and then disperse into and beyond Trinity Bay in summer to feed.

The ecoregion is important for migratory breeding birds such as Common Snipe, Greater Yellowlegs and Least Sandpiper, and nesting birds such as Green-winged Teal, Ring-necked Duck, Common Goldeneye, American Black Duck and Canada Goose.

Protection

No information was available at the time of writing.

Threats and Recommendations

Capturing fish before or during spawning threatens future generations of fish and therefore future stocks. Management agencies should work with local communities to explore options for protecting important habitats in the area to help maintain cod stocks for posterity.

Discussion Questions:

1. What are your comments?
2. Do you think this area is special? Why or why not?

Bonavista Bay

48° 45’ N, 53° 20’ W
Site: 43

Site Description

Bonavista Bay is a large bay on the North Atlantic coast of Newfoundland. It is physically dynamic and strongly influenced by the inshore arm of the Labrador Current, as well as dominant winds. The mouth of the bay is very wide and exposed, but its southwestern portion contains many forested islands that shelter the mainland from northeasterly winds and create hundreds of kilometres of landlocked waters, including deep, sheltered sounds. The influence of the Labrador Current keeps the water cold; ice and icebergs are common into summer. Its southwestern portion falls within the North Central subregion of the Central Newfoundland Forest ecoregion, its eastern portion falls within the Northeast Barrens subregion of the Maritime Barrens ecoregion and its fringes are in the Eastern Hyper-oceanic Barrens ecoregion. The remainder of the bay is within the North Shore Forest ecoregion. The coast of Bonavista Bay as a whole is within the Newfoundland Shelf region of Parks Canada’s National Marine Conservation Areas system. Major communities around Bonavista Bay include New-Wes-Valley, Gambo, Glovertown, Eastport, Port Blandford, Musgravetown, Summerville and Bonavista.

Marine Habitats

The area is highly productive, due to the Labrador Current. There is a variety of coastal habitats around Bonavista Bay. The coast in the ecoregion is irregular, containing several narrow bays and sounds, inlets, coves and islands, which extend the ocean's influence far inland. The islands and coastline provide ideal nesting locations for a number of birds. There are barrens on exposed coastal areas; the east coast in particular is a rocky, barren headland. There are many salt marshes around the bay, as well as intertidal flats and some sandy beaches. Other parts of the coastline are composed of cliffs ranging from 6 to 91 m in height. Marine habitats in Bonavista Bay include hard, rough cobble bottom; bedrock; sparse algae with cobble; dense algae, including macroalgae such as kelp (*Laminaria sp*. and *Agarum* sp.), and Irish moss (*Chondrus* sp.); gravel bottom in low relief areas subject to waves and currents and likely containing crinoids (sea lilies/feather stars), sea stars and sea anemones; loose gravel, a mixture of mud and gravel; true mud bottoms and wood chips. Several shallow, sheltered areas of Bonavista Bay contain eelgrass beds, which provide habitat for species such as Atlantic cod.

Marine Life of Note

Marine invertebrates in Bonavista Bay include: soft shallow and deepwater corals, Snow Crab, Rock Crab, Toad Crab, squid, sea urchins, jellyfish, lobster, clams, crinoids, starfish and sea anemones.

Bonavista Bay contains at least 40 species of marine fish, including Arctic and temperate species. Fish species include American Plaice, flounder, lumpfish, pollock, mackerel, Atlantic Salmon, turbot, herring, capelin, lumpfish, Arctic Char, Sea Lamprey, Three- and Nine-spined Sticklebacks, and the at-risk **Atlantic Cod** and **American Eel**.

Birds in Bonavista Bay include Common Snipe, Greater Yellowlegs, Least Sandpiper, Green-winged Teal, Ring-necked Duck, Common Goldeneye, American Black Duck, Canada Goose, Bald Eagle, Leach's Storm-Petrel, Common and Arctic Terns, Black-legged Kittiwake, Black Guillemot, Atlantic Puffin, murres, and Great Black-backed, Herring and Ring-billed Gulls.

Harp, Harbour and Hooded Seals are present in spring. Humpback, Sperm, Minke, Fin, Killer and Pilot Whales, dolphins, and the at-risk **Harbour Porpoise** and **Leatherback Turtle** are also present in the bay. Northern Bottlenose Whales have stranded in the area.

Special Features

Subtidal fauna, seabirds and marine mammals in Bonavista Bay are diverse and abundant. Bonavista Bay provides **habitat for many species, but particularly cod**. It contains many spawning sites for cod, herring, capelin and lumpfish, for example in deep-water trenches. There is a high diversity of fish species on the northwest coast of the bay.

There are several seabird breeding colonies within the ecoregion, including Leach's Storm-Petrel,

Common and Arctic Terns, Black-legged Kittiwake, Atlantic Puffin, and Great Black-backed, Herring and Ring-billed Gulls. Common Eiders nest in some parts of the ecoregion; however, their numbers were severely reduced due to hunting around the turn of the century, and are only now increasing slowly.

Within Bonavista Bay is Alexander Bay which has been called the most **ecologically unusual marine area** in Terra Nova National Park due to abnormally high water temperatures that allow the growth of species not normally found in Newfoundland and Labrador waters. For example, it contains seaweeds and invertebrates which, with the exception of Prince Edward Island, are normally only found South of Cape Cod. Examples of notable organisms in the area include certain molluscs (*Petricola sp.*), bryozoans (*Bowerbankia sp.*) and seaweeds (*Bryopsis sp.*). Similar species are found in other landlocked embayments in Bonavista Bay such as Cat Bay.

Parks Canada has identified the area from Cape Bonavista to North Head (Notre Dame Bay), and offshore to Funk Island as an Area of Interest, a preferred site for consideration as a **possible National Marine Conservation Area** in the Newfoundland Shelf region. Bonavista Bay has also been identified as a marine natural area of Canadian significance.

Protection

Within southeast Bonavista Bay is a Fisheries Management Closed Area, administered by Fisheries and Oceans Canada under the Fisheries Act, closed to gill nets from August 11 to June 30 to resolve a gear use conflict. Terra Nova National Park is within the terrestrial and coastal area of part of Bonavista Bay, but offers limited marine protection. An Oceans Act Marine Protected Area, established through the collaboration of the Eastport LobsterProtection Committee and Fisheries and Oceans Canada and designated under Canada's Oceans Act, exists at Eastport (see Site 43c).

Threats and Recommendations

Over-fishing in Bonavista Bay during spawning season prevents eggs from being laid or fertilized, and thereby prevents successful reproduction. Over the long term this activity can result in fish population declines. Another threat to the area is causeways, which have blocked certain areas of the bay, dissecting the marine environment and inhibiting species' movements. There are also a number of ocean dumping sites in the bay; some people predict that as smaller landfills are phased out ocean dumping will increase.

A coastal and oceans issues scan prepared for the Department of Fisheries and Aquaculture in July 2008 reported concerns regarding release of untreated sewage and wastewater into the ocean, over-fishing by foreign vessels and the impacts of fishing on the ocean bottom, for example by trawls. Fish harvesters expressed concern about changing ocean conditions and temperature, and increased ice flow due to climate change. Bonavista residents expressed a need for regulations on by-catch to reduce the amount of fish waste, and improved capacity to respond to emergencies such as natural disasters such as coastal flooding, and accidental events such as oil spills.

A National Marine Conservation Area proposal for the area adjacent to Terra Nova National Park is currently stalled, due to inadequate community consultation. Parks Canada's idea of the Marine Conservation Area could be revisited with improved community consultation methods.

Areas of particular concern in Bonavista Bay include Cabot Island, South West Pond, Eastport and Newman Sound (see Sites 43a, b, c and d, respectively).

Discussion Questions:

1. What are your comments?
2. Do you think this area is special? Why or why not?

Cabot Island
49° 12' N, 53° 29' 17" W
Site: 43a

Site Description

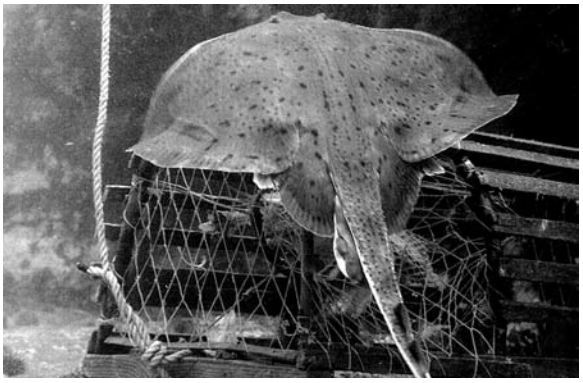
Cabot Island is a small rocky island on the Northeast Coast of Newfoundland, in the Eastern Hyper-oceanic Barrens ecoregion. It is located within the Newfoundland Shelf region of Parks Canada's National Marine Conservation Areas system. It is located near the communities of Templeman, Newtown and Cape Freels.

Marine Habitat

The coast of Cabot Island is cold and rocky, with frequent fog due to the mixing of the warm Gulf Stream and the cold Labrador Current.

Marine Life of Note

Marine flora in the area includes kelp, eelgrass, rockweed and Irish moss. Marine and coastal fish include smelt, eel, Brook Trout, cod, skate, Winter Flounder and other flounders, salmon, capelin, herring, mackerel and lumpfish.



Seabirds in the ecoregion and the northeastern coast of Newfoundland include Northern Gannet, Atlantic Puffin, Razorbill, Thick-billed and Common Murres, Black Guillemot, Herring Gull, Great Black-backed Gull, Ring-billed Gull, Common Eider, Northern Fulmar, Black-legged Kittiwake, Leach's Storm-Petrel, Common Tern, Arctic Tern, Caspian Tern, and Manx, Greater and Sooty Shearwaters.

Marine mammals in the area include Harp and Harbour Seals.

Special Features

Capelin, herring and lumpfish spawn in the vicinity of Cabot Island. The island contains **seabird breeding colonies**, including approximately 2600 pairs of Common Murres.

Protection

Cabot Island is within a Fisheries Management Closed Area, closed to otter trawling from 1 May to 30 November to resolve a gear conflict issue and administered by Fisheries and Oceans Canada under the Fisheries Act.

Threats and Recommendations

Overfishing threatens the marine food webs in the area. Gill nets are also known to result in by-catch of seabirds. The murre colony on Cabot Island is highly sensitive to human disturbance. Murres' fishing and diving behaviour makes them particularly vulnerable to entanglement in gill nets, as well as to oil pollution, which is known to have lethal effects on seabirds.

Discussions with local communities are necessary to explore options for protecting the area around Cabot Island, particularly during seabird breeding season. Alternative fishery management strategies should be explored to reduce the impacts of fishing on food webs in the area, for example minimum

distance of gill-netting to the island and possible restrictions during capelin spawning season, at which time fish, breeding seabirds and marine mammals are known to congregate. A radius around and including Cabot Island could be listed as a sensitive area on nautical charts. Increased enforcement, improved surveillance, higher fines and capture of polluters are necessary to deter and prevent marine oil pollution. Convenient and accessible onshore oil disposal facilities for bilge and oil-contaminated ballast water should also be established.

Discussion Questions:
1. What are your comments?
2. Do you think this area is special? Why or why not?

South West Pond
49° 8' N, 53° 41' 6.288" W
Site: 43b

Site Description

South West Pond is located near the community of Greenspond, 10 km west of the community of Wesleyville, in north central Newfoundland. It falls within the Eastern Hyper-oceanic Barrens ecoregion, and is located in the Newfoundland Shelf region of Parks Canada's National Marine Conservation Areas system.

Marine Habitats

The pond bottom consists of rock and mud. The coastline of the ecoregion is rocky, with frequent fog due to the mixing of the warm Gulf Stream and the cold Labrador Current.

Marine Life of Note

Fish in the area include Atlantic Salmon, Three-spine and Nine-spine Sticklebacks, Brown Trout, herring, capelin lumpfish and the at-risk **American Eel**.

Birds in the ecoregion include Razorbill, Thick-billed Murre, Black Guillemot, Herring Gull, Great Black-backed Gull, Ring-billed Gull, Common Eider, Northern Fulmar, Manx Shearwater, Common Tern, Arctic Tern and Caspian Tern. Common Eiders over-winter in this general area.

Special Features

South West Pond contains a **unique race of Atlantic Salmon** (ouananiche) which does not over-winter at sea, but feeds locally inshore and offshore. Juvenile and adult salmon migrate to the estuary or beyond the estuary in the spring. Unlike other anadromous salmon, however, rather than over-wintering there, immature and mature individuals return upriver in late summer and fall and feed in fresh water as adults.

Spawning areas for herring, capelin and lumpfish also exist in the vicinity of South West Pond.

Protection

Winter angling is not permitted in the area. Only summer angling is permitted, from June 1 to September 7.

Threats and Recommendations

Gill-netting may seriously impact this relatively small salmon population. Local communities and

conservation champions should explore precautionary options until studies are done to determine whether gill nets pose a threat to the population. Watershed management measures are also necessary to prevent excessive sedimentation and runoff of harmful substances or excess nutrients from terrestrial areas into the pond and adjacent marine area.

Discussion Questions:

1. What are your comments?
2. Do you think this area is special? Why or why not?

Eastport
48° 39' N, 53° 45' W
Site: 43c

Site Description

The Eastport Peninsula is located at the head of Bonavista Bay on Newfoundland's northeast coast. It is characterized by a rugged coastline interrupted by a number of headlands, coves, and beaches, and experiences a full range of wave exposure. There is high biological activity around the numerous islands found in the area which provide productive habitat for a variety of marine species. One of the province's two Marine Protected Areas (MPAs) designated under Canada's Oceans Act is located at Eastport, around Round Island and Duck Island. Eastport falls within the North Shore Forest ecoregion, and is located in the Newfoundland Shelf region of Parks Canada's National Marine Conservation Area system. The Eastport Peninsula includes seven towns: Salvage, Happy Adventure, Sandy Cove, Eastport, Burnside, St. Chad's, and Sandringham.

Marine Habitats

Marine habitats from 0-20 m depth around Round Island and Duck Island include a mixture of coarser-sized particles (large cobble and boulder) and finer substrates (gravel and sand), which are utilized by burrowing organisms, and larger substrate which provides attachments for marine plants and algae. Larger animals find refuge amid kelp beds or in cavities within bedrock outcrops. Aquatic plants at Eastport include eelgrass, Irish moss and kelp.

Marine Life of Note

Invertebrates include mussels, scallop, whelk, squid, lobster, Snow crab, Toad crab, sea urchin, sea stars and polychaetes.

Fish in the area include American Plaice, lumpfish, turbot, skates, wolfish, flounders, Grey Sole, capelin, mackerel, herring, Atlantic Salmon, Arctic Char, Three- and Nine-spined Sticklebacks and the at-risk **Atlantic Cod** and **American Eel**.

Seabirds in the ecoregion include Leach's Storm-Petrel, Common and Arctic Terns, Black-legged Kittiwake, Atlantic Puffin, and Great Black-backed, Herring and Ring-billed Gulls. Waterfowl such as Bufflehead, Common Goldeneye and the at-risk **Barrow's Goldeneye** stage and over-winter in some of the protected estuaries. Humpback and Pilot Whales and seals are also present in the area.

Special Features

The waters around Round Island and Duck Island provide habitat for commercially-important animals such as lobster, and threatened or endangered species such as **wolffish**. The Eastport Peninsula contains excellent cod, salmon and lobster grounds and has a **very diverse fishery** relative to neighbouring areas. Other species actively harvested in the area include squid, mackerel, seal, capelin,

lumpfish, herring, whelk, snow crab, toad crab, scallop, turbot, and sea urchin. The area contains spawning grounds for some species, including capelin.

The **community-led protection initiatives** in this area represent a unique synergy of residents concerned for and engaged in sustainable development that can serve as a model for other areas.

Protection

Lobster stocks were found to be declining in the early 1990s, presumably due to increased lobster fishing pressure following groundfish closures. Local harvesters formed the Eastport Peninsula Lobster Protection Committee (EPLPC) in 1995 to implement a lobster conservation strategy for the area. In 1997 they established a lobster management area including two prime lobster habitat locations closed to fishing – Round Island in Newman Sound, and Duck and Grassy Islands across Morris Channel from Burnside. The EPLPC members felt that establishing a Marine Protected Area would support and build on these conservation measures to conserve lobster stocks and help sustain the fishery. Eastport Lobster Management Area is a Fisheries Conservation Area for the protection of 2 areas of prime lobster habitat from harvesting in order to conserve the overall lobster resource in the area.

On 11 October 2005, after consultation with local lobster harvesters, Round Island and Duck Island were formally announced as Eastport's Oceans Act MPAs by the Department of Fisheries and Oceans. The MPAs create a refuge for lobster and protects the productive lobster habitat around the islands. These sites were chosen because they were centrally located; they did not conflict with the grounds of people living outside the boundary; their locations allow them to be easily monitored and protected by committee members; their closure would not unduly impact any single harvester; and they were thought to include productive and significant lobster grounds. The disturbance, damage, destruction, or removal of any living organism or any part of its habitat is prohibited within the MPAs. Also prohibited is the depositing, discharging, or dumping of substances that result in the disturbance, damage, destruction, or removal of any living organism or any part of its habitat within the MPAs.

There is evidence that suggests that the establishment of the Oceans Act Marine Protected Area has led to increased size and survival of American Lobster in no-take areas.

Threats and Recommendations

Its sandy beaches, relatively warm water, scenery and proximity to Terra Nova National Park make the Eastport Peninsula a popular tourist destination in the summer. Although tourism can have impacts, the alternative income source may result in decreased fishing pressure among local people.

Harvesters, scientists and other stakeholders have expressed concern about lack of research and monitoring to assess or address conservation success, larval drift patterns, increased fishing pressure from outside communities in the buffer zone between the inner and outer boundaries of the MPAs, adequate resources for year-round enforcement, continued overexploitation of lobsters, long-term funding for committee activities and research, continuity of personnel, loss of local control and autonomy, and ecosystem unpredictability in the area.

Although the area is already protected, local people feel that it is time to revisit the MPA and expand its size. MPA steering committee members have also expressed concern about the limitations of the current MPA regulations to address land-based impacts on marine areas, and about capacity for enforcement.

Discussion Questions:

1. What are your comments?
2. Do you think this area is special? Why or why not?

Newman Sound
48°35' N, 53°55' W
Site: 43d

Site Description

Newman Sound is a fjord in southwestern Bonavista Bay adjacent to Terra Nova National Park. The inner and outer portions of Newman Sound are separated by a sill. It is a U-shaped glacially carved valley with very steep bedrock walls. The maximum depth of the inner sound is 63 m and of the outer sound is 332 m. Its western portion falls within the North Central subregion of the Central Newfoundland Forest ecoregion, and its eastern portion falls within the North Shore Forest ecoregion. Newman Sound is located in the Newfoundland Shelf ecoregion of Parks Canada's National Marine Conservation Areas System.

Marine Habitats

The coast of Terra Nova National Park contains small salt marshes, mud flats, tide pools, cliffs, holes, caves and arches, as well as gravelly and sandy beaches, sandbars, spits and deltas. This coast contains an extensive intertidal feeding zone and good roosting sites for many bird species. The waters of Newman Sound are sheltered. Cobble, rock and bedrock are the most abundant nearshore bottom habitat. The floor of the inner basin is covered by organic rich mud, inhabited by worms and clams. The floor of the main basin of the outer sound is also muddy. Shallow areas with sand, mud or gravel bottom contain eelgrass beds. Sea oats (*Ammophilia brevugulta*) grow on gravel beaches. Coralline algae are present in subtidal areas. The sides of the basin are gravelly with several types of attached kelp and rockweed.

Marine Life of Note

Invertebrates in Newman Sound include eight species of sponges, Moon and Red Arctic Jellyfish, Blue Mussel, Iceland Scallop, Razor Clam, Soft Shell Clam, lobster, Rock Crab, Snow Crab, Toad Crab, Green Sea Urchin, Common Sea Star, Blood Star, brittle stars, octopus, Bottle Ass Squid and Newfoundland Squid.

Fish in Newman Sound include Atlantic and Rock Cod, Cunner, herring, flounder (including Winter Flounder), lumpfish, Shorthorn Sculpin, capelin, mackerel, White Hake, smelt and Ocean Pout. Other fish in Newman Sound include Atlantic Salmon, Arctic Char, Sea Lamprey, Three- and Nine-spined Sticklebacks, and the at-risk **American Eel**. Peak abundance of many species occurs in August.

Birds on the coast of Terra Nova National Park and offshore islands include Semipalmated Plover, Blackbellied Plover, Greater Yellowlegs, Spotted Sandpiper, Least Sandpiper, White-rumped Sandpiper, Green-winged Teal, Ring-necked Duck, American Black Duck, Canada Goose, Black Guillemot, Double-crested Cormorant, Leach's Storm-Petrel, Common and Arctic Terns, Black-legged Kittiwake, Atlantic Puffin, and Great Black-backed, Herring and Ring-billed Gulls. Bald Eagle nests around Newman Sound.

Harbour Seal, Minke, Pilot and Humpback Whales and dolphins are found in Newman Sound. Marine mammals observed in the waters adjacent to Terra Nova National Park include Beluga, Killer, Pilot, Fin, Minke, Sei, Humpback and Right Whales, and the endangered **Blue Whale**; Common, Atlantic White-sided and White-beaked Dolphins; the at-risk **Harbour Porpoise**, and Harbour, Ringed, Harp, Bearded, Grey and Hooded Seals.

Special Features

The **tidal flats and river flats** at Big Brook River, which flows into Newman Sound, represent a relatively rare ecosystem on Newfoundland's east coast, and are the largest such formation in the National Park.

The **eelgrass** of Newman Sound provides **habitat for young cod**. Capelin, herring and lumpfish spawn in Newman Sound, making it an important site for the reproduction of these species. There is a high diversity of fish species on the northwest coast of Bonavista Bay.

A **rhodolith bed** exists on the sill between the inner and outer sound. Rhodoliths are coralline algae that deposit calcium carbonate and form balls due to the flow of current. Rhodolith beds provide habitat for benthic communities. High invertebrate diversity has been recorded in the Newman Sound rhodolith bed. The **bedrock fjord** walls of the Sound are also very rich in biota. The rhodolith bed and the bedrock fjord are the two most unique habitats in Newman Sound.

Common Eiders nest in some parts of the ecoregion, but their numbers were severely reduced by hunting around the turn of the century; their numbers are now slowly increasing.

Protection

The shoreline of the inner third of Newman Sound falls within Terra Nova National Park, although park jurisdiction ends at the high water mark. The major capelin spawning beaches are outside the park boundary.

No development is permitted along the 165 km of coastline of the park that is shoreward of the mean low water mark. The inner basin of Newman Sound is also a Migratory Bird Sanctuary aimed at conserving migratory bird diversity by controlling human activities within important areas. Seabird hunting and any other activities which may be harmful to the habitat and nesting sites of migratory birds are prohibited in 870 ha shallow tidal embayments. These prohibitions apply to the area shoreward of a straight line connecting the narrows entering the Sound. Preliminary work has been done towards the establishment of a marine conservation area adjacent to the National Park.

The Round Island portion of the Eastport Oceans Act Marine Protected Area (MPA, see Site 43c), which was established following the initiative of local fishers, is in Newman Sound. There is evidence that suggests that the establishment of the Oceans Act MPA has led to increased size and survival of American Lobster in no-take areas.

Threats and Recommendations

Terra Nova National Park and its surrounding waters receive visitors every year, but protection measures are focused on terrestrial areas. Human disturbance during seabird breeding season threatens breeding success. Commercial fishing in the area is also a threat to marine fish and food webs. There are currently few restrictions on fishing at the Terra Nova Bird Sanctuary.

A National Marine Conservation Area proposal for the area adjacent to the National Park is currently stalled. Improved efforts are necessary to engage the community in this regard. Although Round Island is already protected, local people feel it is time to revisit the MPA and expand its size.

Discussion Questions:

1. What are your comments?
2. Do you think this area is special? Why or why not?

Windmill Bight
49° 16' 40" N, 53° 33' 39.132" W
Site: 44

Site Description

Windmill Bight is located in northeastern Newfoundland 3 km from the community of Lumsden. It is within the Newfoundland Shelf region of Parks Canada's National Marine Conservation Areas system. It is also within the Eastern Hyper-Oceanic Barrens ecoregion.

Marine Habitats

Important marine habitats at Windmill Bight include a sandy beach and dunes, a lagoon, rocky headlands and Atlantic plateau bog. Eelgrass beds are present in the vicinity.

Marine Life of Note

Marine flora in the area includes kelp, eelgrass, rockweed and Irish moss. Fish include smelt, Three-spine and Nine-spine Sticklebacks, Brown Trout, Brook Trout, cod, skate, Winter and other flounders, Atlantic Salmon, capelin, herring, mackerel, lumpfish and the at-risk **American Eel**.

Seabirds in the ecoregion and the northeastern coast of Newfoundland include Northern Gannet, Atlantic Puffin, Razorbill, Thick-billed and Common Murres, Black Guillemot, Herring Gull, Great Black-backed Gull, Ring-billed Gull, Common Eider, Northern Fulmar, Black-legged Kittiwake, Leach's Storm-Petrel, Common Tern, Arctic Tern, Caspian Tern, and Manx, Greater and Sooty Shearwaters.

Marine mammals in the area include Harp and Harbour Seals, and Minke, Humpback and Fin Whales.

Special Features

Windmill Bight is an ecologically significant area containing **fragile sand dunes**. It is one of only five protected sand dune systems in Newfoundland and Labrador and also contains the only protected Eastern Hyper-Oceanic Atlantic **plateau bog**. It is a rare example of the Eastern Hyper-Oceanic Barrens ecoregion in northeastern Newfoundland.

Capelin, herring and lumpfish spawn in the vicinity. More than 44 species of birds use the habitat in the area. The lagoon serves as a **feeding area for migratory seabirds**. Endangered Piping Plovers used to nest on the sandy coastline.

The area is considered to be pristine, relative to other similar sites.

Protection

Windmill Bight is a Provincial Park Reserve. All-terrain vehicle and snowmobile use is not permitted within park boundaries.

Threats and Recommendations

A golf course had been proposed to be built within the boundaries of the park. Developments should be designed so as not to compromise marine and coastal ecosystems and important habitats, especially in protected areas. Adequate buffer zones between developments and the shoreline, following national standards, should be ensured. The provincial park and adjacent waters should not be available for developments that would negatively impact terrestrial or marine ecosystems.

Windmill Bight supports suitable habitat for the at-risk Piping Plover, and management actions

should be guided by actions outlined in the National Piping Plover Recovery Plan. Pedestrians should walk only on wet sand during breeding season, and keep clear of nesting areas. Pets should be kept on leashes and food and trash should be kept off of the areas. A public education and stewardship program should be part of any habitat protection strategy.

Because of the existence of the Provincial Park Reserve, infrastructure is in place that could support further protection. Discussions are encouraged between management agencies and local communities to explore options for extending protection into the marine area. Further research of the marine ecosystems in the area is needed.

Discussion Questions:

1. What are your comments?
2. Do you think this area is special? Why or why not?

Funk Island

49° 45' 6.7" N, 53° 11' 32.4348" W
Site: 45

Site Description

Funk Island is located off the northeast coast of Newfoundland, approximately 60 km northeast of the community of Cape Freels, and northeast of Fogo Island. The island measures 0.8 km by 0.4 km. It is mostly flat, with some low cliffs and boulder-strewn areas. Its highest point is 14 m above sea level. It falls within the Eastern Hyper-oceanic Barrens ecoregion, and is also located in the Newfoundland Shelf region of Parks Canada's National Marine Conservation Areas system.

Marine Habitats

Funk Island's marine habitats include coastal cliffs and low rocky shores. There are two small rocky outcroppings. The island consists mostly of bare granite, washed over by the sea in the fall and winter. One small area of the island is a meadow of grassy turf, lichens and moss, on soil made from rotten carcasses of Great Auks, birds which were hunted to extinction in the early 1800s. The cold, productive waters of the Labrador Current and upwellings on the Funk Island Banks lead to an abundance of zooplankton and breeding fishes around the island.

Marine Life of Note

Subtidal fauna, seabirds and marine mammals around Funk Island are diverse and abundant. Several species of seabirds breed on Funk Island, including: Common Murre, Northern Gannet, Atlantic Puffin, Sooty and Greater Shearwaters, Leach's Storm-Petrel, Razorbill, Northern Fulmar, Herring Gull, Great Black-backed Gull, Black-legged Kittiwake and Thick-billed Murre. Prey species found around the island used by the breeding birds include crustaceans (euphausiids, decapods, amphipods), squid (*Gonatus fabricii*), mackerel, saury, Atlantic Salmon and capelin. Cod are also present in the area.

Marine mammals in the area include Harp, Hooded and Harbour Seals; and Humpback, Minke, Pilot, Sperm and Fin Whales.

Special Features

Parks Canada has identified the area from Cape Bonavista to North Head (Notre Dame Bay), and offshore to Funk Island as an Area of Interest, or a potential marine conservation area or marine

protected area.

Funk Island is a **significant area for fish and seabirds**. The cod stock that over-winters on the Funk Island Bank contributes significantly to inshore fisheries in White, Notre Dame and Bonavista Bays.

Funk Island is an Important Bird Area with globally significant numbers of colonial seabirds present during breeding season. It houses the **second largest concentration of breeding seabirds in eastern North America**. Funk Island's Common Murre breeding colony is the largest in the western North Atlantic (412,000 pairs reported in 2007), and represents approximately 4% of the global population, 67% of the eastern North American population and 75% of the Northwestern Atlantic breeding population. Funk Island also supports approximately 6000 breeding pairs of Northern Gannets (over 2% of the global population and almost 14% of the North American population). The island also supports the largest and southernmost colony of Thick-billed Murres (250 pairs). The area is highly productive in terms of benthic organisms, plankton and fish. The breeding population of Northern Fulmars has shown steady growth since 1975, from a single pair to 46 chicks recorded in 1998.

Protection

Funk Island is a provincial Seabird Ecological Reserve and International Biological Program Special Site, aimed at protecting Northern Gannets and Common Murres. The area within 3 nautical miles of Funk Island is closed to hunting, and access to the island is restricted.

Threats and Recommendations

The seabirds on Funk Island are vulnerable to the effects of human disturbance, toxic pollutants, oil pollution and fisheries – including both entanglement in gear and competition for food resources. Some 40,000 to 50,000 murres were killed annually in the late 19th century, following the extinction, due to hunting, of the Great Auk. Illegal visits to the island are still common, despite prohibition of unauthorized human activity. The Common Murre colony is particularly sensitive to disturbance during the breeding season (mid May to early August). Murres are also sensitive to the health of fish stocks, particularly capelin, their primary food source during breeding season. Murres' fishing and diving behaviour makes them particularly vulnerable to entanglement in gill nets, as well as to oil pollution, both of which have lethal effects on seabirds. There are currently few restrictions on fishing around Funk Island.

Management agencies should engage fishers in discussions to determine sustainable fishing methods around Funk Island, for example minimum distance of gill-netting, particularly during capelin spawning season, at which time fish, breeding seabirds and marine mammals are known to congregate. A radius around and including Funk Island could be listed as a sensitive area on nautical charts. Increased enforcement, improved surveillance, higher fines and capture of polluters are also necessary to deter and prevent marine oil pollution. Convenient and accessible onshore oil disposal facilities for bilge and oil-contaminated ballast water should also be established.

The idea of the marine conservation area should be revisited with improved community consultation.

Discussion Questions:

1. What are your comments?
2. Do you think this area is special? Why or why not?

Gander Bay
49° 21' N, 54° 29' W
Site: 46

Site Description

Gander Bay is a shallow water estuary. Its southern portion falls within the North Central subregion of the Central Newfoundland Forest ecoregion. Its remainder falls within the North Shore Forest ecoregion. Gander Bay as a whole is within the Newfoundland Shelf region of Parks Canada's National Marine Conservation Areas system. Communities in the bay include Victoria Cove, Dormans Cove, Gander Bay South, Davidsville and Beaver Cove.

Marine Habitats

The coast in the ecoregion is irregular, containing several bays and islands, which extend the ocean's influence far inland. The islands and coastline provide ideal nesting locations. There are barrens on exposed coastal areas.

Marine Life of Note

Irish moss and rockweed are found in Gander Bay. Invertebrates in the bay include lobster, scallop (including Giant Scallop), sea urchin, Rock Crab, Toad Crab and mussels.

Fish in and around Gander bay include cod, lumpfish, Winter Flounder, herring, capelin, mackerel, smelt, Atlantic Salmon, Sea Trout, Arctic Char, Sea Lamprey and Three- and Nine-spined Sticklebacks, and the at-risk **American Eel**.

Birds in Gander Bay and its vicinity include Green-winged Teal, Ring-necked Duck, American Black Duck, Canada Goose, Leach's Storm-Petrel, Common and Arctic Terns, Black-legged Kittiwake, Atlantic Puffin, and Great Black-backed, Herring and Ring-billed Gulls.

Seals, whales and dolphins are present in Gander Bay.

Special Features

Gander Bay is **representative of sheltered locations along Bonavista Bay to Notre Dame Bay**. It falls within an area from Bonavista Bay to Notre Dame Bay identified by Parks Canada as a potential Marine Conservation Area. Gander Bay contains spawning sites for herring. There are also several seabird breeding colonies within the ecoregion, including Leach's Storm-Petrel, Common and Arctic Terns, Black-legged Kittiwake, Atlantic Puffin, and Great Black-backed, Herring and Ring-billed Gulls. Common Eiders nest in some parts of the ecoregion, but their numbers were severely reduced by hunting at the turn of the century; their numbers are now slowly increasing.

Protection

There is a voluntary closed area for lobster in Gander Bay.

Threats and Recommendations

Capturing fish before or during spawning threatens future generations of fish and therefore future stocks. In the interest of maintaining fish stocks, the Gander Bay area could be designated as a no take area during spawning and hatching season.

Fertilizer, pesticide use and herbicide use associated with silviculture and logging upstream on the Gander River may affect water quality in the watershed draining into Gander Bay. Regulations

must be implemented and enforced to ensure that waste water and runoff flowing into the watershed does not contain pollutants.

Discussion Questions:
1. What are your comments?
2. Do you think this area is special? Why or why not?

Notre Dame Bay
49°42' N, 55°21' W
Site: 47

Site Description

Notre Dame Bay is a 6000 km^2 inlet of the Atlantic Ocean located on the northeast coast of Newfoundland. It contains many islands including Fogo Island, Change Islands, Exploits Islands and Twillingate. The tides are semi-diurnal with a height difference of approximately 1 m between high and low tides. Fast ice persists in the small bays and inlets for most of the season. Notre Dame Bay falls within the North Shore Forest ecoregion, and is located in the Newfoundland Shelf region of Parks Canada's National Marine Conservation Areas System. Major communities around the bay include Springdale, Botwood and Lewisporte.

Marine Habitats

The coast in the ecoregion is irregular, containing several bays, inlets and islands, which extend the ocean's influence far inland. The dominant coastline features are bedrock cliffs, coarse beach and onshore boulders. There are barrens on exposed coastal areas. Eelgrass beds exist in many sheltered areas of the bay. There are also many salt marshes and estuaries around the bay. The islands and coastline provide ideal nesting locations for seabirds and shorebirds.

Marine Life of Note

There are large populations of some Arctic corals and Basket Stars in the area. Arctic seaweeds are common at moderate depths; however, warm water species inhabit the surface water.

Plant life in the area includes eelgrass, seaweeds and kelp. Invertebrates include jellyfish, Hermit Crab, Rock Crabs, Atlantic Snow Crab, American Lobster, Sand Shrimp, Northern Red Shrimp, periwinkles, scallops, clams, squid, sea urchins, sand dollars, and Blue and Horse Mussels.

Fish in and around Notre Dame Bay include Basking Shark, Blue Shark, Porbeagle Shark, Spiny Dogfish, Thorny Skate, mackerel, Bluefin Tuna, capelin, herring, Atlantic Salmon, sunfish, sculpins, sea raven, Cunner, redfish, lumpfish, wolffish (many species of which are at risk), Ocean Pout, rockfish, haddock, Atlantic Halibut, Atlantic Plaice; Winter Flounder, turbot, Arctic Char, Three- and Nine-spined Sticklebacks and the at-risk **Atlantic Cod** and **American Eel**. Reptiles include the endangered **Leatherback Turtle**.

Birds in the bay include Osprey; Leach's Storm-Petrel; Great Black-backed, Herring and Ring-billed Gulls; Arctic and Common Terns; Black-legged Kittiwake; Common and Thick-billed Murres; Razorbill; Atlantic Puffin; Black Guillemot; Dovekie; Northern Gannet; King and Common Eiders; loons; and Red-breasted and Common Merganser. Black Duck, Green-winged Teal and Common Goldeneye associate with estuaries and protected bays in late summer and early fall.

Marine mammals in Notre Dame Bay include Humpback, Killer, Sperm, Pilot, Fin and Minke Whales; **Harbour Porpoise** (a species at risk); White-beaked and Atlantic White-sided Dolphins; and

Harbour, Hooded and Harp Seals.

Special Features

Notre Dame Bay has been identified as a **marine natural area of Canadian significance** due to its coastal habitats. Notre Dame Bay is a **refuge of warm water seaweeds and invertebrates**. **Spawning areas** for cod, herring, capelin and lumpfish are found in many locations throughout the bay, for example in deep-water trenches.

There are several **seabird breeding colonies** within the ecoregion, including Leach's Storm-Petrel, Common and Arctic Terns, Black-legged Kittiwake, Atlantic Puffin, and Great Black-backed, Herring and Ring-billed Gulls. Common Eiders nest in some parts of the ecoregion, but their numbers were severely reduced by hunting around the turn of the century; their numbers are now slowly increasing.

Large herds of Harp and Hooded Seals breed annually on pack ice in Notre Dame Bay.

Protection

Parks Canada has identified the area from Cape Bonavista to North Head (Notre Dame Bay), and offshore to Funk Island as an Area of Interest, or a potential Marine Conservation Area. Charles Arm, within Notre Dame Bay, is a Fisheries Management Closed Area, administered by Fisheries and Oceans Canada under the Fisheries Act, closed to commercial and recreational scallop fishing to address gear conflict with aquaculture sites.

Threats and Recommendations

Overfishing and unsustainable fisheries management practices are an identified threat in many parts of the northwest Atlantic, including Notre Dame Bay. There are also a number of ocean dumping sites in the bay. Marine dumping of raw sewage, effluent, fish offal and other waste threatens marine quality in the bay, and can affect aquaculture sites. The amount of shipping traffic in the Bay of Exploits area is increasing, and people are concerned about the possibility of oil spills. Ice conditions in Notre Dame Bay are changing, potentially due to climate change.

It is recommended that the idea of the Marine Conservation Area be revisited with improved community consultation. Areas that can serve as launching points for marine conservation within the bay include Leading Tickles and Dildo Run (see Sites 47a and b respectively).

Discussion Questions:

1. What are your comments?
2. Do you think this area is special? Why or why not?

Leading Tickles
49° 30' N, 55° 25' W
Site: 47a

Site Description

Leading Tickles is located in Notre Dame Bay on the northeast coast of Newfoundland. It is influenced by the cold Labrador Current, originating at Cape Chidley. Sea ice arrives in the area in late January, with icebergs present from April to June. The highest elevation in the area is 99 m.

Marine Habitats

The coastline around Leading Tickles consists of highly exposed rock dominated by cliffs, wave-

washed rock ramps and rocky headlands, coves, and beaches. The outer coast is semi-exposed rock-dominated fjords with rocky platforms, rock cliffs and a few beaches. The beaches consist of pebble, gravel and cobble. Nearby are several large islands including Burnt Island, Cull Island and Alcock Island. The marine substrate consists of bedrock, post-glacial mud, gravel and cobble. There is also an estuarine area containing eelgrass beds, which provide habitat and protection for fish, shellfish and waterfowl.

Marine Life of Note

Aquatic plants at Leading Tickles include eelgrass, Irish moss, kelp and rockweed.

Invertebrates in the vicinity of Leading Tickles include lobster, Snow Crab, Rock Crab, Toad Crab, clam, sea urchin, snail, mussel, scallops (including Giant Scallop), periwinkle, and squid.

Fish in the area include American Plaice, Arctic Char, Three- and Nine-spined Sticklebacks, skate, flounder (including Winter and Witch Flounder), lumpfish, Rock Cod, Sand Lance, Cunner, Sculpin, Rock Gunnel, White Hake, Atlantic Herring, redfish, mackerel, Rainbow Smelt, sea-run Brook Trout, Atlantic Salmon, Spiny Dogfish, sharks, capelin, and the at-risk **American Eel** and **Atlantic Cod**.

Birds in the area include Osprey, Northern Gannet, Greater and Sooty Shearwaters, Northern Fulmar, Common and Thick-billed Murre, Leach's Storm-Petrel, cormorants, Black Guillemot, Common and Arctic Terns, Black-legged Kittiwake, Atlantic Puffin, and Great Black-backed, Herring and Ring-billed Gulls.

Humpback and Minke Whales; White-beaked Dolphin; the at-risk **Harbour Porpoise**; and Grey, Hooded, Harp and Harbour Seals are found in the area of Leading Tickles.

Special Features

The overall marine biology of the Leading Tickles area does not contain many outstanding or unique special features, but it is **representative of the northeast coast**.

The waters surrounding Leading Tickles contain a **diversity** of groundfish, pelagic fish, shellfish, marine mammals, and aquatic plants. The area is considered ecologically significant for several marine species such as lobster, capelin and herring. It is known to be important for juvenile fish.

The many islands in the area provide habitat for marine waterfowl such as eider ducks, black ducks, terns, and cormorants. There are several seabird breeding colonies within the ecoregion, including Leach's Storm-Petrel, Common and Arctic Terns, Black-legged Kittiwake, Atlantic Puffin, and Great Black-backed, Herring and Ring-billed Gulls. Common Eiders nest in some parts of the ecoregion, but their numbers were severely reduced by hunting which occurred at the turn of the century; their numbers are now slowly increasing.

In 1997, **local fishers, developers and conservationists proposed the establishment of a marine protected area** (MPA) in Leading Tickles as a response to the decline in marketable species, the cod fishing moratorium and increased fishing pressure on lobster in the area. Studies have highlighted the cooperative and conflict-free nature of this initiative as a strong example of integrated management. Leading Tickles has been identified as an area of interest for the establishment of an MPA, with the inshore region of the northeast Newfoundland shelf, from White Bay to western Bonavista Bay. The purpose of this MPA would be to conserve and protect local lobster stock and their habitat, local capelin beaches, important Atlantic Cod nursery areas, and important areas for Winter Flounder.

Protection

Following a proposal submitted by the local community, Fisheries and Oceans Canada began working towards the designation of Leading Tickles as an MPA. A 50 km^2 area following the 100 m contour line was proposed for protection. Other related activities included a lobster tagging and

landings monitoring program, collection of aerial photographs and bathymetric data, and biophysical and socio-economic overviews. The initiative lost support from some local people, however, and has not been seen through to completion.

Threats and Recommendations

Human impacts and possible threats to the area include effluent or small contaminant spills from coastal communities, effluent from sawmills, and sewage outfalls. There has also been a noticeable increase in water temperature on the northeast coast of Newfoundland since the mid 1990s. The potential impacts of these threats should be studied further.

The plan for an MPA at Leading Tickles should be revisited with improved community engagement. In addition to fishing-related concerns, the actual and potential impacts of other human activities such as cod aquaculture and the harvesting of icebergs for bottled water should be taken into account.

Discussion Questions:

1. What are your comments?
2. Do you think this area is special? Why or why not?

Dildo Run

49° 31' N, 54° 41' W
Site: 47b

Site Description

Dildo Run is located on New World Island, on the north coast of Newfoundland between Notre Dame Bay and Hamilton Sound. It is located south of the local fishing and commercial centre of Twillingate.

Marine Habitats

The coast around Dildo Run is rocky and boulder-strewn. The landscape descends toward the ocean in undulating hills and valleys. Lakes, fens and bogs have formed within many of the valleys. The surrounding water is relatively shallow and very sheltered. The salinity and temperature of tide pools fluctuates dramatically in the summer, due to exposure at low tide. Several intertidal organisms live in and around these tide pools.

Marine Life of Note

Aquatic plants at Dildo Run include eelgrass, rockweed and kelp. Marine invertebrates in and around Dildo Run include Toad Crab, mussels, squid, lobster and sea urchins. Fish in the region include cod, lumpfish, smelt, Atlantic Salmon, Arctic Char, Three- and Nine-spined Sticklebacks, skates, capelin, mackerel, herring and the at-risk **American Eel**. Marine mammals in the area include Pilot Whales.

This area also supports a number of **disjunct benthic invertebrates**, like the clam *Petricola* and seaweeds such as *Bryopsis* and *Callithamnion* which are probably relicts from thousands of years ago when seawater temperatures were warmer.

Birds in the ecoregion include Leach's Storm-Petrel, Common and Arctic Terns, Black-legged Kittiwake, Atlantic Puffin, and Great Black-backed, Herring and Ring-billed Gulls.

Special Features

Herring spawning sites are located in the vicinity of Dildo Run, around an island south of

Summerford and on the northeastern coast of New World Island. The geographical characteristics of the area around Dildo Run suggest that the marine environment may contain a number of special features; however, it has not been studied in depth. Because of the existence of the Provincial Park, infrastructure is in place that could support further protection.

Protection

Dildo Run is a 327 ha terrestrial Provincial Park which protects natural heritage and provides an opportunity for outdoor recreation. It prohibits hunting, and development and resource harvesting except for park purposes. The park extends to the low water mark.

Threats and Recommendations

The existing park is too small to adequately represent the ecoregion in which it is located, and does not include a marine component. Discussions are encouraged between management agencies and local communities to explore options for extending protection into the marine area. Further research of the marine ecosystems in the area is needed.

Discussion Questions:

1. What are your comments?
2. Do you think this area is special? Why or why not?

Hare Bay

51° 16' N, 55° 55' W
Site: 48

Site Description

Hare Bay is a rectangular-shaped bay on the northeast side of the Great Northern Peninsula in Newfoundland. The southern portion of Hare Bay falls within the Beavers Brook Limestone subregion of the Northern Peninsula Forest ecoregion. Its northern portion falls within the Northern Coastal subregion of this ecoregion. Its northwestern portion falls within the Strait of Belle Isle Barrens ecoregion, which is foggy and in which frost can occur any time of the year. Hare Bay is located in the Newfoundland Shelf region of Parks Canada's National Marine Conservation Areas system. St. Anthony, Goose Cove and Main Brook are communities around the bay.

Marine Habitats

Hare Bay is characterized by many inlets, bays, coves and islands. It is influenced by the cold Labrador Current. Sea ice is present between December and May. The Beavers Brook Limestone subregion as a whole contains extensive low-lying plateau bogs. The Strait of Belle Isle Barrens ecoregion contains coastal barrens. Islands in Hare Bay consist of bare rock with scattered shrubs, which provide habitat for birds. Eelgrass and kelp beds are also present in several areas of the bay. Portions of the northern coast of Hare Bay are highly exposed.

Marine Life of Note

Invertebrates in Hare Bay include scallop, Rock Crab, whelk, lobster, sea urchin, mussels and squid.

Fish in and around Hare Bay include cod, flounder (including Winter Flounder), lumpfish, mackerel, herring, Arctic Char, Brook Trout, capelin, Three-spine and Nine-spine Sticklebacks,

Atlantic Salmon and the at-risk **American Eel**.

Birds in Hare Bay include: White-rumped Sandpiper, Ruddy Turnstone, Black-legged Kittiwake, Arctic and Common Tern, Great Black-backed Gull, Ring-billed Gull, Double-crested Cormorant and Common Eider.

Harp Seals are very common; Ringed, Bearded, Hooded and Grey Seals are occasionally seen; and Harbour Seals are rarely seen in Hare Bay. Harp Seals may pup in offshore areas of the region in some years, depending on ice cover. Whales are also present in Hare Bay. Killer Whales have been sighted off of St. Anthony. Certain species are occasional visitors to the area from Labrador, including some seals and species at risk such as **Polar Bear** and **Ivory Gull**.

Special Features

Hare Bay is a productive area, leading to **significant benthic diversity**. The bay contains a salmon river and a cod spawning area.

Hare Bay is a **sensitive area for seabirds and waterfowl**. There are several seabird nesting colonies on the islands in Hare Bay, for example Black-legged Kittiwake, Arctic and Common Tern, Great Black-backed Gull, Ring-billed Gull, Double-crested Cormorant and a large colony of Common Eiders. The Hare Bay Islands Ecological Reserve protects one of the largest assemblages of Common and Arctic Terns in the province.

Protection

The Hare Bay Islands are an Ecological Reserve and Wildlife Area, established specifically to protect the eider colony and its habitat, and to aid in increasing its population. Fossils are also protected. The reserve covers a marine area measuring 442 hectares, which includes Brent, Spring and Duck Islands. Hunting, snaring and shooting are prohibited within 3 nautical miles of Spring, Brent and Duck Islands. Parks Canada had identified Hare Bay as one of three potential Marine Conservation Areas.

Threats and Recommendations

There are few restrictions, for example on fishing, around Hare Bay. Seal, cod, salmon, capelin and herring fisheries have operated in the area. It is recommended that the idea to establish Hare Bay as a Marine Conservation Area be revisited, in cooperation with local communities.

Discussion Questions:

1. What are your comments?
2. Do you think this area is special? Why or why not?

GENERAL RECOMMENDATIONS

The following recommendations can be applied to special marine areas throughout Newfoundland and Labrador:

GENERAL

- The health of the marine environment should be a primary concern if industries are proposed to be developed near special marine areas.
- Engaging stakeholders in marine conservation has been shown to result in building and maintenance of momentum through social networking, access to collective knowledge,
- consensus-building and leadership capacity development.
- Marine protected areas and other marine planning, management and protection strategies are necessary to improve the health, integrity and productivity of our marine ecosystems and to maintain the sustainability of marine ecosystems for present and future generations.

- Considerations for selecting areas and strategies for protection include protection of: entire ecosystems and habitats; spawning, nursery and other essential habitats; essential ecological functions; certain ages, sizes or conditions of species; certain species during certain seasons; endangered species and habitats; and representative areas. The different needs of users and stakeholders in the area should also be taken into consideration.
- Financial and political commitment for Marine Protected Areas under the Oceans Act must be provided by goverment from the beginning of the MPA planning process in order not to lose momentum.
- It is important to apply the precautionary principle to protect special marine areas pending further study and investigation.
- Dredging and other activities which disturb the sea floor should not take place in areas containing sensitive habitat such as eelgrass.
- The potential effects of climate change should be researched and taken into consideration when developing protection measures.
- Marine protection measures in special areas could include restrictions on activities that cause long term or large scale disruption to ecosystem structure and function, for example mining, seismic surveys for hydrocarbon reserves, exploratory drilling, oil and gas development, dumping, dredging, gill nets, bottom-impact fishing gear and open-cage fish aquaculture.
- Operators should be educated about oil pollution and its effect on the marine environment. Monitoring and enforcement mechanisms should be implemented to prevent wildlife mortality due to oil pollution.

COMMUNITIES AND THE PUBLIC

- Thorough discussions with local communities are necessary to assist in decision-making regarding conservation of special marine areas, and to establish local stewardship or guardian programs.
- Public education and stewardship programs should be part of any marine habitat protection strategy.
- More community involvement is needed in science and marine environmental management
- Education efforts for ship operators and the public regarding oil pollution should be expanded.

FISHING

- Development of fishery management strategies and establishment of national marine conservation areas – as well as awareness-raising about marine biodiversity, by-catch and the effects of different types of fishing gear – should be a collaborative effort involving all stakeholders, including various levels of government, Aboriginal groups, industry, scientists, local communities and conservation groups.
- Strategies suggested by fishers for protecting spawning areas have included closed seasons, gear restrictions and closed areas. Management strategies should address concerns about maintenance of livelihoods and the feasibility of the protection measures.
- Further research is recommended to determine the impacts of fishing on special marine areas, as well as possible methods for minimizing these impacts.

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APPENDIX 1: SCIENTIFIC NAMES OF SPECIES REFERRED TO IN THIS DOCUMENT

Plants

Eelgrass	*Zostera marina*
Irish Moss	*Chondrus crispus*
Knotted Wrack	*Ascophyllum nodosum*
Rockweed	*Fucus spp.*
Saltmarsh Rush	*Juncus gerardii*
Saltwater Cordgrass	*Spartina alterniflora*
Seabeach Sedge	*Carex silicea*
Sea Lettuce	*Ulva lactuca*
Seaside Lavender	*Limonium latifolium*

Invertebrates

American Lobster	*Homarus americanus*
Arctic Lyre Crab	*Hyas coarctatus*
Atlantic Snow Crab	*Chionoecetes opilio*
Blood Star	*Henricia sp.*
Blue Mussel	*Mytilus edulis*
Bottle Ass Squid	*Rossia palpebrosa*
Deepsea King Crab	*Lithodes maja / l. Maia*
Dogwinkle	*Thais lapillus*
European Green Crab	*Carcinus maenas*
Giant Scallop	*Placopecten magellanicus*
Green Sea Urchin	*Strongylocentrotus droebachiensis*
Horse Mussel	*Modiolus modiolus*
Icelandic Scallop	*Chlamys islandica*
Lesser Bobtail Squid	*Semirossia tenera*
Lobster	*Homarus americanus*
Moon Jelly	*Aurelia aurita*
Moon Jellyfish	*Aurelia aurita*
Newfoundland Squid	*Illex illecebrosus*
Northern Atlantic Octopus	*Bathypolypus arcticus*
Northern Red Shrimp	*Pandalus borealis*
Northern Shrimp	*Pandalus borealis*
Northern Stone Crab	*Lithodes maia*
Periwinkle	*Littorina spp.*
Porcupine Crab	*Neolithodes grimaldii*
Razor Clam	*Ensis directus*
Red Arctic Jellyfish	*Cyanea capillata*
Rock Crab	*Cancer irroratus*
Quahog	*Mercenaria mercenaria*
Queen Crab	*Chionoecetes opilio*
Sand Dollar	*Echinarachnius parma*
Sand Shrimp	*Crangon septemspinosa*
Sea Urchin	*Strongylocentrotus droebachiensis*
Shortfin Squid	*Illex illecebrosus*
Snow Crab	*Chionoecetes opilio*
Soft Shell Clam	*Mya arenaria*
Stone Crab	*Lithodes maia / l. Maja*
Surf Clam	*Spisula solidissima*
Toad Crab	*Hyas araneus*
Wedge Clam	*Mesodesma arctatum*

Mammals

Atlantic Walrus	*Odobenus rosmarus*
Atlantic White-sided Dolphin	*Lagenorhynchus acutus*
Bearded Seal	*Erignathus barbatus*
Beluga Whale	*Delphinapterus leucas*
Blue Whale	*Balaenoptera musculus*
Bottlenose Dolphin	*Tursiops truncatus*
Bowhead Whale	*Balaena mysticetus*
Common Dolphin	*Delphinus delphis*
Fin Whale	*Balaenoptera physalus*
Grey Seal	*Halichoerus grypus*
Harbour Porpoise	*Phocoena phocoena*
Harbour Seal	*Phoca vitulina*
Harp Seal	*Pagophilus groenlandicus*
Hooded Seal	*Cystophora cristata*
Humpback Whale	*Megaptera novaeangliae*
Killer Whale	*Orcinus orca*
Leatherback Turtle	*Dermochelys coriacea*
Long-finned Pilot Whale	*Globicephala melas*
Minke Whale	*Balaenoptera acutorostrata*
Narwhal	*Monodon monoceros*
North Atlantic Right Whale	*Eubalaena glacialis*
Northern Bottlenose Whale	*Hyperoodon ampullatus*
Northern Right Whale	*Eubalaena glacialis*
Pilot Whale	*Globicephala melas*
Polar Bear	*Ursus maritimus*
Pothead Whale	*Globicephala melas*
Pygmy Sperm Whale	*Kogia breviceps*
Right Whale	*Eubalaena glacialis*
Ringed Seal	*Pusa hispida*
Sei Whale	*Balaenoptera borealis*
Short-beaked Common Dolphin	*Delphinus delphis*
Sowerby's Beaked Whale	*Mesopolodon bidens*
Sperm Whale	*Physeter catodon*
Striped Dolphin	*Stenella caeruleoalba*
White-beaked Dolphin	*Lagenorhynchus albirostris*

Fish

Acadian Redfish	*Sebastes fasciatus*
Alewife	*Alosa pseudoharengus*
American Eel	*Anguilla rostrata*
American Plaice	*Hippoglossoides platessoides*
American Shad	*Alosa sapidissima*
Arctic Char	*Salvelinus alpinus*
Arctic Cod	*Boreogadus saida*
Arctic Eelpout	*Lycodes reticulatus*
Arctic Staghorn Sculpin	*Gymnocanthus tricuspis*
Arctic Shanny	*Stichaeus punctatus*
Atlantic Argentine	*Argentina silus*
Atlantic Cod	*Gadus morhua*
Atlantic Hagfish	*Myxine glutinosa*
Atlantic Herring	*Clupea harengus*
Atlantic Hookear Sculpin	*Artediellus atlanticus*
Atlantic Halibut	*Hippoglossus hippoglossus*
Atlantic Mackerel	*Scomber scombrus*
Atlantic Salmon	*Salmo salar*
Atlantic Sturgeon	*Acipenser oxyrhynchus*
Atlantic Tomcod	*Microgadus tomcod*
Atlantic Wolffish	*Anarhichas lupus*
Barndoor Skate	*Dipturus laevis*
Basking Shark	*Cetorhinus maximus*
Black Dogfish	*Centroscyllium fabricii*
Black-spotted Stickleback	*Gasterosteus wheatlandi*
Blue Antimora	*Antimora rostrata*
Blue Shark	*Prionace glauca*
Blue Whiting	*Micromesistius poutassou*
Bluefin Tuna	*Thunnus thynnus*
Broadhead Wolffish	*Anarhichas denticulatus*
Brook Trout	*Salvelinus fontinalis*
Brown Trout	*Salmo trutta*
Capelin	*Mallotus villosus*
Common Alligatorfish	*Aspidophoroides monopterygius*
Common Lumpfish	*Cyclopterus lumpus*
Common Marlin Spike	*Nezumia bairdi*
Common Ocean Pout	*Macrozoarces americanus*
Cunner	*Tautogolabrus adspersus*
Cusk	*Brosme brosme*
Daubed Shanny	*Lumpenus maculatus*
Esmark's Eelpout	*Lycodes esmarki*
Fourbeard Rockling	*Enchelyopus cimbrius*
Fourhorn Sculpin	*Myoxocephalus quadricornis*
Fourline Snakeblenny	*Eumesogrammus praecisus*
Four-spine Stickleback	*Apeltes quadracus*
Glacier Lanternfish	*Benthosema glaciale*
Greenland Cod	*Gadus ogac*
Greenland Halibut	*Reinhardtius hippoglossoides*
Greenland Shark	*Somniosus microcephalus*
Green Ocean Pout	*Gymnelus viridis*
Grey Sole	*Glyptocephalus cynoglossus*
Haddock	*Melanogrammus aeglefinus*
Hookear Sculpin	*Artediellus sp.*
Laval's Eelpout	*Lycodes lavalaei*
Longfin Hake	*Urophycis chesteri*
Longhorn Sculpin	*Myoxocephalus octodecimspinosus*
Lumpfish	*Cyclopterus lumpus*
Mailed Sculpin	*Triglops nybelini*
Marlin-spike	*Nezumia bairdi*
Monkfish	*Lophius sp.*
Nine-spine Stickleback	*Pungitius pungitius*
Northern Cutthroat Eel	*Synaphobranchus kaupii*
Northern Sand Lance	*Ammodytes dubius*
Northern Wolffish	*Anarhichas denticulatus*
Ocean Pout	*Macrozoarces americanus*
Pollock	*Pollachius virens*
Porbeagle Shark	*Lamna nasus*
Rainbow Smelt	*Osmerus mordax*
Redfish	*Sebastes sp.*
Red Hake	*Urophycis chuss*
Ribbon Barracudina	*Arctozenus risso*
Rock Grenadier	*Coryphaenoides rupestris*
Rock Gunnel	*Pholis gunnellus*
Roughhead Grenadier	*Macrourus berglax*
Roundnose Grenadier	*Coryphaenoides rupestris*
Sand Lance	*Ammodytes sp.*
Sea Lamprey	*Petromyzon marinus*
Sea Raven	*Hemitripterus americanus*
Sea Tadpole	*Careproctus reinhardti*
Shorthorn Sculpin	*Myoxocephalus scorpius*
Silver Hake	*Merluccius bilinearis*
Smooth Skate	*Raja senta*
Snakeblenny	*Lumpenus lumpretaeformis*
Soft Eelpout	*Bothrocara molle*
Spatulate Sculpin	*Icelus spatula*
Spiny Dogfish	*Squalis acanthias*
Spiny Lumpfish	*Eumicrotremus spinosus*
Spinytail Skate	*Raja spinicauda*
Spotted Lanternfish	*Myctophum punctatum*
Spotted Wolffish	*Anarhichas minor*
Striped Wolffish	*Anarhichas lupus*
Sunfish	*Mola mola*
Swordfish	*Xiphias gladius*
Thorny Skate	*Raja radiata*
Threebeard Rockling	*Gaidropsarus ensis*
Three-spine Stickleback	*Gasterosteus aculeatus*
Turbot	*Reinhardtius hippoglossoides*
Vahl's Eelpout	*Lycodes vahlii*
White Barracudina	*Arctozenus risso*
White Hake	*Urophycis tenuis*
White Sucker	*Catostomus commersonii*
Windowpane Flounder	*Scophthalmus aquosus*
Winter Flounder	*Pseudopleuronectes americanus*
Winter Skate	*Leucoraja ocellata*
Witch Flounder	*Glyptocephalus cynoglossus*
Wolf Eel	*Anarrhichthys ocellatus*
Wolffish	*Anarhichas spp.*
Wrymouth	*Cryptacanthodes maculatus*
Yellowtail Flounder	*Limanda ferruginea*

Birds

American Black Duck	*Anas rubripes*
American Golden Plover	*Pluvialis dominica*
American Pipit	*Anthus rubescens*
American Wigeon	*Anas americana*
Arctic Tern	*Sterna paradisaea*
Atlantic Puffin	*Fratercula arctica*
Baird's Sandpiper	*Calidris bairdii*
Barrow's Goldeneye	*Bucephala islandica*
Black Duck	*Anas rubripes*
Black Guillemot	*Cepphus grylle*
Black Scoter	*Melanitta nigra*
Black-bellied Plover	*Pluvialis squatarola*
Black-headed Gull	*Larus ridibundus*
Black-legged Kittiwake	*Rissa tridactyla*
Blue-winged Teal	*Anas discors*
Buff-breasted Sandpiper	*Tryngites subruficollis*
Bufflehead	*Bucephala albeola*
Canada Goose	*Branta canadensis*
Caspian Tern	*Hydroprogne caspia*
Common Eider	*Somateria mollissima*
Common Goldeneye	*Bucephala clangula*
Common Loon	*Gavia immer*
Common Merganser	*Mergus merganser*
Common Murre	*Uria aalge*
Common Raven	*Corvus corax*
Common Snipe	*Gallinago gallinago*
Common Tern	*Sterna hirundo*
Cory's Shearwater	*Calonectris diomedea*
Double-crested Cormorant	*Phalacrocorax auritus*
Dovekie	*Alle alle*
Dunlin	*Calidris alpina*
Eskimo Curlew	*Numenius borealis*
Eurasian Wigeon	*Anas penelope*
Fea's Storm-petrel	*Pterodroma feae*
Glaucous Gull	*Larus hyperboreus*
Great Black-backed Gull	*Larus marinus*
Great Cormorant	*Phalacrocorax carbo*
Greater Scaup	*Aythya marila*
Harlequin Duck	*Histrionicus histrionicus*
Herring Gull	*Larus argentatus*
Iceland Gull	*Larus glaucoides*
Ivory Gull	*Pagophila eburnea*
Gadwall	*Anas strepera*
Great Skua	*Stercorarius skua*
Greater Golden Plover	*Pluvialis apricaria*
Greater Scaup	*Aythya marila*
Greater Shearwater	*Puffinus gravis*
Greater Yellowlegs	*Tringa melanoleuca*
Green-winged Teal	*Anas carolinensis*
Gyrfalcon	*Falco rusticolus*
Herring Gull	*Larus argentatus*
Hooded Merganser	*Lophodytes cucullatus*
Horned Lark	*Eremophila alpestris*
Hudsonian Godwit	*Limosa haemastica*
Killdeer	*Charadrius vociferous*
King Eider	*Somateria spectabilis*
Leach's Storm-petrel	*Oceanodroma leucorhoa*
Least Sandpiper	*Calidris minutilla*
Lesser Black-backed Gull	*Larus fuscus*
Lesser Golden Plover	*Pluvialis dominica*
Lesser Scaup	*Aythya affinis*
Lesser Yellowlegs	*Tringa flavipes*
Long-tailed Duck	*Clangula hyemalis*
Long-tailed Jaeger	*Stercorarius longicaudus*
Mallard	*Anas platyrhynchos*
Manx Shearwater	*Puffinus puffinus*
Northern Fulmar	*Fulmarus glacialis*
Northern Gannet	*Morus bassanus*
Northern Phalarope	*Phalaropus fulicarius*
Northern Pintail	*Anas acuta*
Northern Raven	*Corvus corax*
Northern Shoveler	*Anas clypeata*
Osprey	*Pandion haliaetus*
Parasitic Jaeger	*Stercorarius parasiticus*
Pectoral Sandpiper	*Calidris melanotos*
Peregrine Falcon	*Falco peregrinus*
Piping Plover	*Charadrius melodus*
Pomarine Jaeger	*Stercorarius pomarinus*
Purple Sandpiper	*Calidris maritima*
Razorbill	*Alca torda*
Red Knot	*Calidris canutus*
Red Phalarope	*Phalaropus fulicarius*
Red-breasted Merganser	*Mergus serrator*
Red-necked Grebe	*Podiceps grisegena*
Red-necked Phalarope	*Phalaropus lobatus*
Red-throated Loon	*Gavia stellata*
Ring-billed Gull	*Larus delawarensis*
Ring-necked Duck	*Aythya collaris*
Ruddy Turnstone	*Arenaria interpres*
Sabine's Gull	*Xema sabini*
Sanderling	*Calidris alba*
Savannah Sparrow	*Passerculus sandwichensis*
Semipalmated Plover	*Charadrius semipalmatus*
Semipalmated Sandpiper	*Calidris pusilla*
Short-billed Dowitcher	*Limnodromus griseus*
Solitary Sandpiper	*Tringa solitaria*
Sooty Shearwater	*Puffinus griseus*
South Polar Skua	*Stercorarius maccormicki*
Spotted Sandpiper	*Actitis macularia*
Surf Scoter	*Melanitta perspicillata*
Thick-billed Murre	*Uria lomvia*
Tufted Duck	*Aythya fuligula*
Whimbrel	*Numenius phaeopus*
White-crowned Sparrow	*Zonotrichia leucophrys*
White-rumped Sandpiper	*Calidris fuscicollis*
White-winged Scoter	*Melanitta fusca*
Willet	*Tringa semipalmata*
Wilson's Phalarope	*Phalaropus tricolor*
Wilson's Snipe	*Gallinago delicata*
Wilson's Storm-petrel	*Oceanites oceanicus*
Wood Duck	*Aix sponsa*

APPENDIX 2:
SPECIES AT RISK IN NEWFOUNDLAND AND LABRADOR

The following marine and coastal species considered to be at risk nationally by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), and/or listed in the Canadian Species at Risk Registry, are found in the province of Newfoundland and Labrador:

The following marine and coastal species on IUCN's Red List of Threatened Species are found in the Canadian northwest Atlantic:

Common Name	Scientific Name	Status
Mammals		
Atlantic Walrus	*Odobenus rosmarus rosmarus*	Special Concern
Blue Whale	*Balaenoptera musculus*	Endangered
Grey Whale (Atlantic population)	*Eschirichtius robustus*	Extirpated
Harbour Porpoise (Northwest Atlantic population)	*Phocoena phocoena*	Special Concern
North Atlantic Right Whale	*Eubalaena glacialis*	Endangered
Polar Bear	*Ursus maritimus*	Special Concern
Sowerby's Beaked Whale	*Mesoplodon bidens*	Special Concern
Birds		
Barrow's Goldeneye, Eastern population	*Bucephala islandica*	Special Concern
Eskimo Curlew	*Numenius borealis*	Endangered
Harlequin Duck, Eastern population	*Histrionicus histrionicus*	Special Concern
Ivory Gull	*Pagophila eburnea*	Endangered
Peregrine Falcon, anatum/tundrius	*Falco peregrinus anatum/tundrius*	Special Concern
Piping Plover, subspecies melodus	*Charadrius melodus melodus*	Endangered
Red Knot, subspecies rufa	*Calidris canutus rufa*	Endangered
Roseate Tern	*Sterna dougallii*	Endangered
Reptiles		
Leatherback Turtle	*Dermochelys coriacea*	Endangered
Fish		
American Eel	*Anguilla rostrata*	Special Concern
Atlantic Cod	*Gadus morhua*	Endangered (Newfoundland & Labrador population) Threatened (Laurentian North population)
Atlantic Wolffish	*Anarhichas lupus*	Special Concern
Banded Killifish, (Newfoundland population)	*Fundulus diaphanous*	Special Concern
Cusk	*Brosme brosme*	Threatened
Great White Shark, (Atlantic population)	*Carcharodon carcharias*	Endangered
Northern Wolffish	*Anarhichas denticulatus*	Threatened
Spotted Wolffish	*Anarhichas minor*	Threatened

The following marine and coastal species on IUCN's Red List of Threatened Species are found in the Canadian northwest Atlantic:

Common Name	Scientific Name	Status
Mammals		
Beluga	*Delphinapterus leucas*	Vulnerable
Blainville's Beaked Whale	*Mesoplodon densirostris*	Data deficient
Blue Whale	*Balaenoptera musculus*	Endangered
- North Atlantic Stock		- Vulnerable
Bottlenose Dolphin	*Tursiops truncatus*	Data deficient
Bowhead Whale	*Balaena mysticetus*	Lower risk: conservation dependent
- Baffin Bay-Davis Strait Stock		- Endangered
- Hudson Bay-Foxe Basin Stock		- Vulnerable
Cuvier's Beaked Whale	*Ziphius cavirostris*	Data deficient
Fin Whale	*Balaenoptera physalus*	Endangered
Grey Dolphin	*Grampus griseus*	Data deficient
Grey Whale	*Eschrichtius robustus*	Lower risk: conservation dependent
Harbour Porpoise	*Phocoena phocoena*	Vulnerable
Humpback Whale	*Megaptera novaeangliae*	Vulnerable
Killer Whale	*Orcinus orca*	Lower risk: conservation dependent
Minke Whale	*Balaenoptera acutorostrata*	Near threatened
Narwhal	*Monodon monoceros*	Data deficient
North Atlantic Right Whale	*Eubalaena glacialis*	Endangered
Northern Bottlenose Whale	*Hyperoodon ampullatus*	Lower risk: conservation dependent
Polar Bear	*Ursus maritimus*	Vulnerable
Sei Whale	*Balaenoptera borealis*	Endangered
Short-Finned Pilot Whale	*Globicephala macrorhynchus*	Lower risk: conservation dependent
Sowerby's Beaked Whale	*Mesoplodon bidens*	Data deficient
Sperm Whale	*Physeter macrocephalus*	Vulnerable
Striped Dolphin	*Stenella coeruleoalba*	Lower risk: conservation dependent
True's Beaked Whale	*Mesoplodon mirus*	Data deficient
Birds		
Black-tailed Godwit	*Limosa limosa*	Near threatened
Marbled Murrelet	*Brachyramphus marmoratus*	Endangered
Piping Plover	*Charadrius melodus*	Near threatened
Fish		
Albacore Tuna	*Thunnus alalunga*	Data deficient
Atlantic Cod	*Gadus morhua*	Vulnerable
Atlantic Halibut	*Hippoglossus hippoglossus*	Endangered
Atlantic Sturgeon	*Acipenser oxyrinchus*	Near threatened
Barndoor Skate	*Dipturus laevis*	Endangered
Basking Shark	*Cetorhinus maximus*	Vulnerable
Blue Shark	*Prionace glauca*	Near threatened
Bluntnose Sixgill Shark	*Hexanchus griseus*	Near threatened
Cape Shark	*Squalus acanthias*	Vulnerable
- Northwest Atlantic Subpopulation		- Endangered
False Catshark	*Pseudotriakis microdon*	Data deficient
Great Lanternshark	*Etmopterus princeps*	Data deficient
Great White Shark	*Carcharodon carcharias*	Vulnerable
Greenland Shark	*Somniosus microcephalus*	Near threatened
Haddock	*Melanogrammus aeglefinus*	Vulnerable
Northern Bluefin Tuna	*Thunnus thynnus*	Data deficient
Northern Seahorse	*Hippocampus erectus*	Vulnerable
Portuguese Dogfish	*Centroscymnus coelolepis*	Near threatened
Porbeagle	*Lamna nasus*	Vulnerable
- Northwest Atlantic Subpopulation		- Endangered
Redfish	*Sebastes fasciatus*	Endangered
Shortnose Sturgeon	*Acipenser brevirostrum*	Vulnerable
Smooth Hammerhead	*Sphyrna zygaena*	Near threatened
Swordfish	*Xiphias gladius*	Data deficient
Thresher Shark	*Alopias vulpinus*	Data deficient
Wreckfish	*Polyprion americanus*	Data deficient

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