

LABRADOR – ISLAND TRANSMISSION LINK ENVIRONMENTAL ASSESSMENT

Species of Special Conservation Concern Component Study

November 2011



LABRADOR – ISLAND TRANSMISSION LINK ENVIRONMENTAL ASSESSMENT
Environmental Component Studies: Introduction and Overview

Nalcor Energy is proposing to develop the *Labrador – Island Transmission Link* (the Project), a High Voltage Direct Current (HVdc) electrical transmission system extending from Central Labrador to the Avalon Peninsula on the Island of Newfoundland.

The Project was registered under the Newfoundland and Labrador *Environmental Protection Act (NLEPA)* and the *Canadian Environmental Assessment Act (CEAA)* in January 2009 (with subsequent amendments and updates), in order to initiate the provincial and federal environmental assessment (EA) processes. Following public and governmental review of that submission, an Environmental Impact Statement (EIS) was required for the Project. The EIS is being developed by Nalcor Energy, in accordance with the requirements of both *NLEPA* and *CEAA* and the *EIS Guidelines and Scoping Document* issued by the provincial and federal governments.

In support of the Project's EIS, Nalcor Energy has undertaken a series of environmental studies to collect and/or compile information on the existing biophysical and socioeconomic environments and to identify and assess potential Project-environment interactions. This environmental study program has included field surveys, associated mapping and analysis, environmental modeling, and the compilation and analysis of existing and available information and datasets on key environmental components. This report comprises one of these supporting environmental studies.

A general guide to these Environmental Component Studies, some of which are comprised of multiple associated reports, is provided on the opposite page.

The information reported herein will be incorporated into the Project's EIS, along with any additional available information, to describe the existing (baseline) environmental conditions and/or for use in the assessment and evaluation of the Project's potential environmental effects and in the identification and development of mitigation.

This study focuses on the relevant aspects of the proposed Project – including the proposed and alternative HVdc transmission corridors, marine cable crossings, and/or other Project components and activities – as known and defined at the time that the EA process was initiated and/or when the study commenced. Project planning and design are ongoing, and as is the case for any proposed development, the Project description has and will continue to evolve as engineering and EA work continue. The EIS itself will describe and assess the specific Project components and activities for which EA approval is being sought, and will also identify and evaluate other, alternative means of carrying out the Project that are technically and economically feasible as is required by EA legislation.

The EIS and these Component Studies will be subject to review by governments, Aboriginal and stakeholder groups and the public as part of the EA process.

LABRADOR-ISLAND TRANSMISSION LINK: ENVIRONMENTAL COMPONENT STUDIES (CSs)		
1) Vegetation CS	Report 1a Ecological Land Classification	Report 1b Wetlands Inventory & Classification
	Report 1c Regionally Uncommon Plants Model	Report 1d Timber Resources
	Report 1e Vegetation Supplementary Report	
2) Avifauna CS		
3) Caribou & Other Large Mammals CS	Report 3a Caribou & Their Predators	Report 3b Moose & Black Bear
4) Furbearers & Small Mammals CS		
5) Marine Environment: Fish & Fish Habitat, Water Resources CS	Report 5a Marine Fish: Information Review	Report 5b Marine Flora, Fauna & Habitat Survey
	Report 5c Marine Habitats (Geophysical) Survey	Report 5d Water, Sediment & Benthic Surveys
	Report 5e Marine Surveys: Electrode Sites	Report 5f Marine Surveys: Supplementary
6) Freshwater Environment: Fish & Fish Habitat, Water Resources CS		
7) Marine Environment: Marine Mammals, Sea Turtles & Seabirds CS	Report 7a Marine Mammals, Sea Turtles & Seabirds: Information Review	Report 7b Marine Mammal & Seabird Surveys
	Report 7c Ambient Noise & Marine Mammal Surveys	
8) Species of Special Conservation Concern CS		
9) Marine Environment & Effects Modelling CS	Report 9a Strait of Belle Isle: Oceanographic Environment & Sediment Modelling	Report 9b Strait of Belle Isle: Marine Sound Modelling - Cable Construction
	Report 9c Electrodes: Environmental Modelling	
10) Historic & Heritage Resources CS		
11) Socioeconomic Environment: Communities, Land & Resource Use, Tourism & Recreation CS	Report 11a Communities, Land & Resource Use, Tourism & Recreation	Report 11b Current Levels of Accessibility Along the Transmission Corridor
12) Socioeconomic Environment: Aboriginal Communities & Land Use CS		
13) Socioeconomic Environment: Marine Fisheries in the Strait of Belle Isle CS		
14) Viewscapes CS		
Environmental Component Study Required Under the EIS Guidelines: Comprising Reports (Shaded cells above)		
Avifauna: 2, 7a, 7b	Furbearers: 4	
Caribou (and Predators): 3a	Timber Resources: 1d	
Water (Quality and Quantity): 5a, 5d, 5e, 5f, 6	Marine and Freshwater Fish and Fish Habitat: 5, 6, 7, 13	
Species at Risk: 8	Historic Resources: 10	
Viewscapes: 14	Socioeconomics: 11, 12, 13	
Environmental study reports submitted as additional background information: 1a, 1b, 1c, 1e, 3b, 9		

Labrador – Island Transmission Link

Species of Special Conservation Concern Component Study

Preface

This Component Study has been prepared and submitted as part of the Environmental Assessment (EA) of the proposed **Labrador-Island Transmission Link**.

This *Species of Special Conservation Concern Component Study* has been completed with the objective to identify, and compile information on all provincially and / or federally listed species of special conservation concern, which may occur in or near the proposed Project area. To ensure consideration of all relevant species of special conservation concern, those currently recommended for status, previously considered to be of special conservation concern, and those yet to be re-assessed for formal status have also been included in this report.

The original Project concept for the proposed Strait of Belle Isle cables saw the preliminary identification of potential cable landing sites at Forteau Point, Labrador and Mistaken Cove, Newfoundland (with alternatives at L'Anse Amour and Yankee Point in Labrador and on the Island, respectively). From there, multiple cables would be placed in two marine corridors across the Strait, as illustrated in the map provided.



Since that time, Nalcor Energy has continued with its Project planning and engineering work, and in doing so, has proceeded to evaluate other possible design options and alternatives. The Proponent is continuing to focus on Forteau Point as the likely Labrador cable landing site. On the Newfoundland side of the Strait of Belle Isle, Shoal Cove has also been identified as a possible site.

With this option, the cables would be placed within one marine corridor (rather than two) across the Strait. This corridor option is essentially an amalgamation of the two marine cable corridors described above - utilizing portions of each corridor along with a new short segment in to Shoal Cove, as illustrated in the map. Therefore, this Component Study includes consideration of the Shoal Cove area as a part of the study area.



The environmental information presented in this *Species of Special Conservation Concern Component Study* will be incorporated and used in the Project's eventual Environmental Impact Statement (EIS), which will provide a summary description of the existing environment and an environmental effects assessment for the proposed Project.

Labrador – Island Transmission Link

Species of Special Conservation Concern Component Study

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November 2, 2011

EXECUTIVE SUMMARY

Nalcor Energy is proposing to develop the *Labrador – Island Transmission Link* (the Project), a High Voltage Direct Current (HVdc) transmission system extending from Central Labrador to the Island of Newfoundland's Avalon Peninsula. As part of the Project's environmental assessment (EA), this *Species of Special Conservation Concern Component Study* has been completed in order to provide an overview of such species which are known, or considered likely, to occur in or near the Project area. Protected plant, wildlife, fish, and marine mammal and sea turtle species are addressed integrally as a key element of the various component studies prepared and submitted for the Project's EA. The purpose of this report is to present a summary of these species for use in the EA and on-going Project planning.

The *Newfoundland and Labrador Endangered Species Act (NL ESA)* provides protection for species considered to be endangered, threatened, or vulnerable within the province. The federal *Species at Risk Act (SARA)* provides protection to species at the national level to prevent extinction and extirpation, facilitate the recovery of endangered and threatened species, and to promote the management of other species to prevent them from becoming at risk in the future.

The sources of information used in this report included a review of the *NL ESA* and the *SARA* (including all associated schedules), and a review of Committee on the Status of Endangered Species in Canada (COSEWIC) and Species Status Advisory Committee (SSAC) designated species. The review focused on species, sub-species and distinct populations of special conservation concern within the province and / or associated with its marine environment, with a particular focus on the known, or with the potential to, occur in the vicinity of the Project. As *NL ESA* and *SARA* species are legally protected, these species are described in detail, through a species by species discussion. The key descriptors for each species included: 1) reasons for designation; 2) description; 3) distribution / habitat requirements; 4) limiting factors; and 5) management or recovery plan, including the identification of critical habitat.

Species currently assessed by COSEWIC / SSAC and their respective recommendations to the relevant government processes are also identified and discussed later in the report.

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1.0 INTRODUCTION

Nalcor Energy is proposing to develop the *Labrador – Island Transmission Link* (the Project), a High Voltage Direct Current (HVdc) transmission system extending from Central Labrador to the Island of Newfoundland's Avalon Peninsula.

The environmental assessment (EA) process for the Project was initiated in January 2009 and is in progress. An Environmental Impact Statement (EIS) is being prepared by Nalcor Energy, which will be submitted for review by governments, Aboriginal and stakeholder groups and the public.

In preparation for and support of the EA of the Project, this *Species of Special Conservation Concern Component Study* has been completed with the objective to identify and compile information on all provincially and / or federally listed species of special conservation concern which may occur in or near the proposed Project area. To ensure consideration of all relevant species of special conservation concern, those currently recommended for status, previously considered to be of special conservation concern, and those yet to be re-assessed for formal status have also been included in this report (i.e., species on Schedule 2 and Schedule 3 and SSAC assessed – see Section 1.2.2 for further explanation).

Species of special conservation concern are considered in detail and integrally within the various relevant environmental component studies that have been proposed and submitted as part of the Project's EA, including:

- Vegetation
- Avifauna
- Furbearers and Small Mammals
- Caribou and Other Large Mammals
- Freshwater Environment: Fish and Fish Habitat, Water Resources
- Marine Environment: Fish and Fish Habitat, Water Resources
- Marine Environment: Marine Mammals, Sea Turtles, and Seabirds

This compilation is intended to provide a summary overview of all species of special conservation discussed within the various environmental component studies submitted for the Project's EA.

1.1 Project Overview

The proposed Project involves the construction and operation of transmission infrastructure within and between Labrador and the Island of Newfoundland. Nalcor Energy is proposing to establish a High Voltage Direct Current (HVdc) transmission system extending from Central Labrador to Soldiers Pond on the Island's Avalon Peninsula. The Project will include the installation and operation of submarine power cables across the Strait of Belle Isle (SOBI) between Labrador and insular Newfoundland.

The proposed transmission system, as currently planned, will include the following key components:

- an ac-dc converter station in Central Labrador, at either Muskrat Falls or Gull Island near the Churchill River adjacent to the switchyard for the Lower Churchill Hydroelectric Generation Project;
- an HVdc transmission line extending from Central Labrador across Southeastern Labrador to the SOBI. This overhead transmission line will be approximately 400 km in length with a cleared right-of-way averaging 60 m wide, and consisting of single galvanized steel lattice towers;
- cables crossing the SOBI with associated infrastructure, including cables placed under and across the seafloor through various means to provide the required cable protection;
- an HVdc transmission line (similar to that described above) extending from the SOBI across the Island of Newfoundland to the Avalon Peninsula, for a distance of approximately 700 km;
- a dc-ac converter station at Soldiers Pond on the Island of Newfoundland’s Avalon Peninsula; and
- electrodes in Labrador and on the Island, with overhead lines connecting them to their respective converter stations.

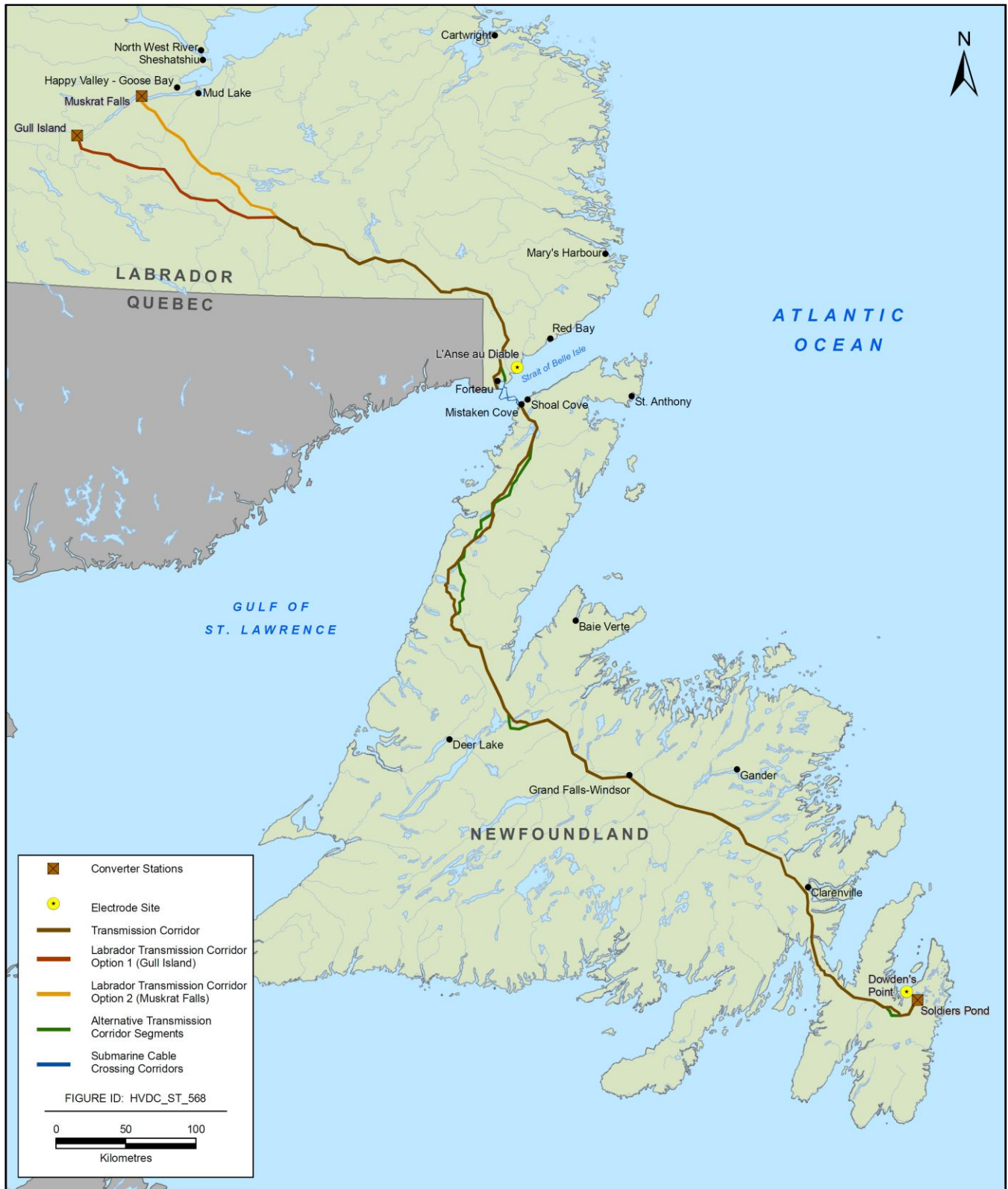
Project planning and design are currently at a stage of having identified a 2 km wide corridor for the on-land portions of the proposed HVdc transmission line and 500 m wide corridors for the proposed SOBI cable crossings, as well as various alternative corridor segments in particular areas (Figure 1.1). Sites have also been identified for the proposed shoreline electrode sites at L’Anse au Diable in the SOBI, and Dowden’s Point in Conception Bay.

It is these proposed transmission corridors and components that were the subject of Nalcor Energy’s environmental baseline study program. Project planning is in progress, and it is anticipated that the Project description will continue to evolve as engineering and design work continue. The EA of the Project will also identify and evaluate alternative means of carrying out the Project that are technically and economically feasible. In conjunction and concurrent with the EA process, Nalcor Energy will be continuing with its technical and environmental analyses of the corridors, in order to identify and select a specific routing for the Project. The eventual transmission routes and locations will be selected with consideration of technical, environmental and socioeconomic factors.

1.2 Species of Special Conservation Concern: Definition and Overview

The *Newfoundland and Labrador Endangered Species Act (NL ESA)* provides protection for species considered to be endangered, threatened, or vulnerable within the province. The federal *Species at Risk Act (SARA)* provides protection to species at the national level to prevent extinction and extirpation, facilitate the recovery of endangered and threatened species, and to promote the management of other species to prevent them from becoming at risk in the future.

Figure.1.1 Labrador – Island Transmission Link



1.2.1 Newfoundland and Labrador

The *NL ESA* applies to indigenous species, sub-species and populations (but it does not include marine fish, bacteria and viruses, and non-indigenous species are only considered under the *NL ESA* under extraordinary circumstances). Designation follows recommendations from the national Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and / or the provincial Species Status Advisory Committee (SSAC). Both COSEWIC and SSAC are independent committees and consist of government and non-government scientists who determine the status of species, subspecies and significant populations considered to be at risk of extinction or extirpation both nationally and provincially, respectively. The evaluation processes of both are independent, open and transparent, and based on the best available information on the biological status of species including scientific, community and traditional knowledge. Various species protected under the *NL ESA* are also protected under the *SARA*. Differences in designation are likely to be observed when a species is at risk in a province, and is more common from a national perspective.

Provincially, there are three designations:

- *Endangered*: a wildlife species that is facing imminent extirpation or extinction;
- *Threatened*: a wildlife species that is likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction; and
- *Vulnerable*: a wildlife species that has characteristics which make it particularly sensitive to human activities or natural events.

Habitat that is important to the recovery and survival of endangered or threatened species can be designated as critical habitat or recovery habitat, and protected under the *NL ESA*. Critical habitat is a key contributor to the survival of a species and can include all, or a portion of, suitable habitat for some or all known locations of the species. Critical habitat must include an appropriate amount of habitat to support individuals of a species to ensure the survival of the species. The *NL ESA* also identifies recovery habitat that is not considered to be critical to the survival of the species, however it may serve in helping the species become self-sustaining.

There are currently 32 species, subspecies, and populations designated under the *NL ESA*. Ten of these species are listed as endangered, nine as threatened, and 13 as vulnerable.

1.2.2 Canada

Canada's indigenous species, subspecies and distinct populations that are considered "at risk" are protected under the *Species at Risk Act (SARA)*. As previously stated, the key purposes of the Act are to prevent these indigenous species from extirpation or extinction, recovery of endangered and threatened species, and to promote the management of other species to prevent them from becoming at risk. Designation under the Act follows recommendation and advice provided by the COSEWIC.

Under the *SARA*, there are three schedules, species officially protected are listed on Schedule 1, where species are classified under the following designations (three of which mirror the provincial definitions):

- *Extirpated*: a wildlife species that no longer exists in the wild in Canada, but exists elsewhere;
- *Endangered*: a wildlife species that is facing imminent extirpation or extinction;

- *Threatened*: a wildlife species that is likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction; and
- *Special Concern*: a wildlife species that has characteristics which make it particularly sensitive to human activities or natural events.

Schedule 1 of *SARA* is the official list of wildlife species at risk. Once a species is listed, the measures to protect and recover a listed wildlife species are implemented. Species that were designated at risk by the COSEWIC prior to the existence of the *SARA* require reassessment before being placed on Schedule 1. These species are listed on Schedule 2 if they were previously assessed by COSEWIC as endangered or threatened, and on Schedule 3 if they were previously assessed by COSEWIC as special concern. Both Schedules 2 and 3 are not provided with legal protection under the *SARA*. The differentiation by schedule under the *SARA* will be eliminated following all reassessments.

Following a species being listed and officially protected under the *SARA*, a recovery strategy is developed. Species designated as endangered must have a strategy developed within one year, and for threatened or extirpated species, it must be developed within two years. Such recovery strategies define goals and objectives, identifies critical habitat, and describes the research and management activities required. Critical habitat by definition under the *SARA*, is defined as habitat that is required for the species' survival or recovery.

Newfoundland and Labrador currently has nine species listed as endangered under the *SARA*, nine as threatened, and 11 are listed as special concern. Additionally, listed species known to occur in the marine environment surrounding the Island and along the coast of Labrador include several additional species.

1.3 Study Purpose and Objectives

This *Species of Special Conservation Concern Component Study* has been completed with the objective to identify, and compile information on all provincially and / or federally listed species of special conservation concern, which may occur in or near the proposed Project area. To ensure consideration of all relevant species of special conservation concern, those currently recommended for status, previously considered to be of special conservation concern, and those yet to be re-assessed for formal status have also been included in this report (i.e., Schedule 2 and Schedule 3 species, COSEWIC designated, and SSAC designated).

Species of special conservation concern are considered in detail and integrally within the various relevant environmental component studies that have been proposed and submitted as part of the Project's EA. This compilation is intended to provide a summary overview of all species of special conservation concern which are also discussed within the various environmental component studies submitted for the Project's EA.

2.0 APPROACH AND METHODS

The following sections provide an overview of the study area, and the approach methodology used in the preparation of this *Species of Special Conservation Concern* report.

2.1 Study Area

The proposed Project involves the construction and operation of an HVdc transmission system within and between Labrador and the Island of Newfoundland, including an on-land transmission line and a marine cable crossing of the Strait of Belle Isle.

For the terrestrial environment, the study area encompasses the proposed and alternative transmission corridors from Gull Island to Soldiers Pond, and the Muskrat Falls corridor option segment (Figure 1.1). As the eventual 60 m wide right-of-way will be routed within the 2 km wide transmission corridor, the report focuses on the known occurrences of species of special conservation concern in the 2 km wide transmission corridor including all proposed and alternative transmission corridors.

The Project concept for the proposed Strait of Belle Isle (SOBI) marine cables - as described in the January 2009 EA Registration submitted to initiate the EA process - saw the preliminary identification of potential cable landing sites at Forteau Point, Labrador and Mistaken Cove, Newfoundland (with alternatives at L'Anse Amour and Yankee Point in Labrador and on the Island, respectively). On-going engineering analysis for the Project has continued to focus on Forteau Point as the Labrador cable landing site, and the current intent is to bring this into the EIS as the proposed option. On the Newfoundland side, Nalcor Energy has also identified Shoal Cove as a possible landing site, which is located several kilometres northeast of Mistaken Cove (see Figure 1.1). If these site options were to be finalized, on-land horizontal directional drilling technology may be used to install the marine cables from these locations, out to and under the Strait for up to several kilometres. The on-land transmission corridor would also remain essentially the same, but would extend northeastward in some manner for several kilometres from Mistaken Cove to Shoal Cove (see Figure 1.1). To accommodate this potential corridor extension, the terrestrial study area in this area was extended to Shoal Cove on the Newfoundland side as this site occurs in the vicinity of known populations of two plant species of special conservation concern.

For the marine environment, a regional study area was defined for the Strait of Belle Isle, which included the identified submarine cable corridors and the potential shoreline electrode site at L'Anse au Diable (Figure 2.1). A second marine study area was also defined to include Conception Bay, as Dowden's Point has also been identified as a potential site for a shoreline electrode (Figure 2.2).

Given the geographic scale of the Project and the resulting scope of this Component Study, the analysis and discussion that follows is structured according to the following geographic regions (Figure 2.3):

Southeastern Labrador – The area encompassing the HVdc transmission corridor from Gull Island to the Strait of Belle Isle, as well as recently identified corridor option between Muskrat Falls extending to and along the TLH-3 to its southernmost point.

Figure 2.1 Strait of Belle Study Area

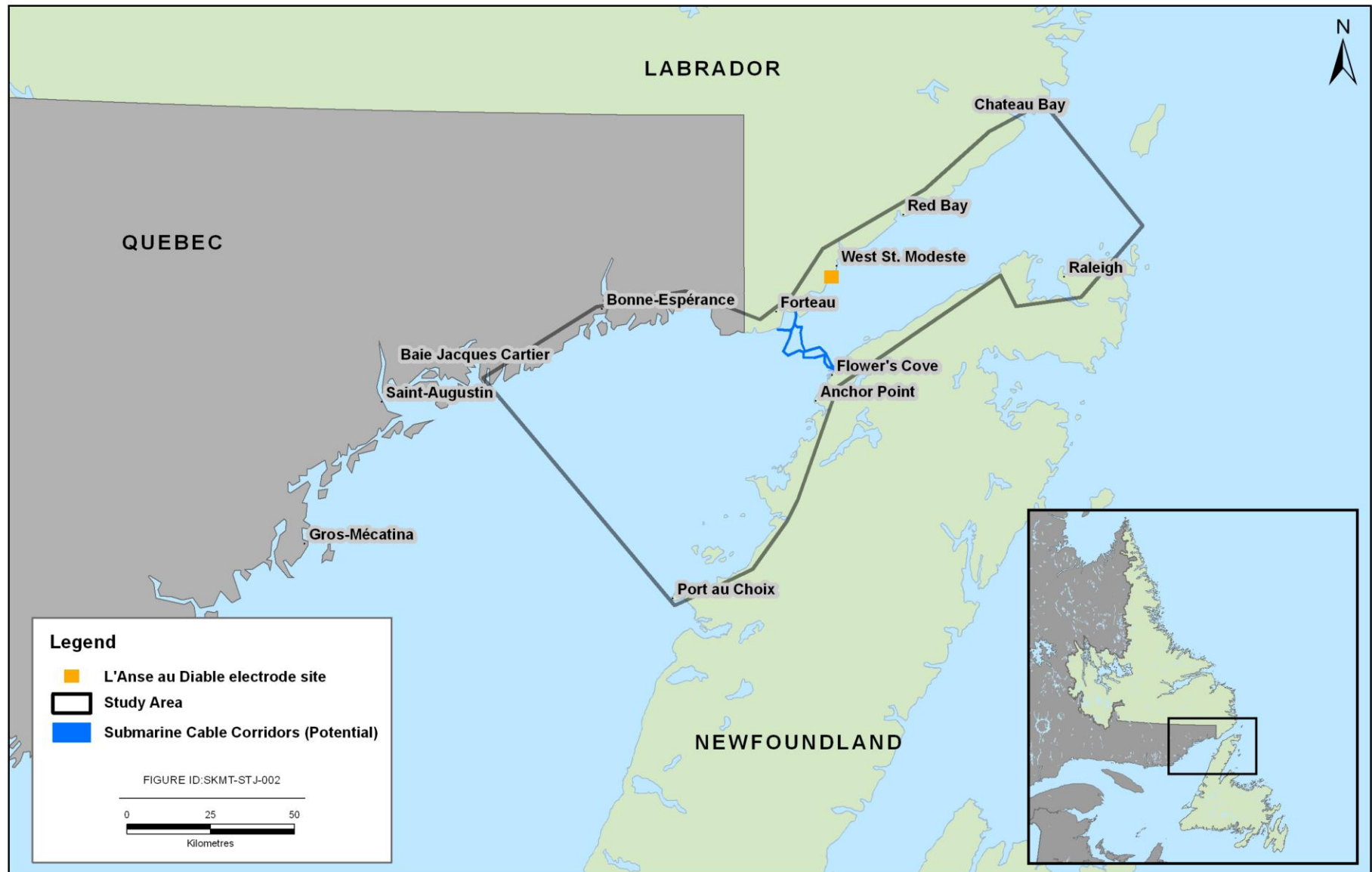


Figure 2.2 Conception Bay Study Area

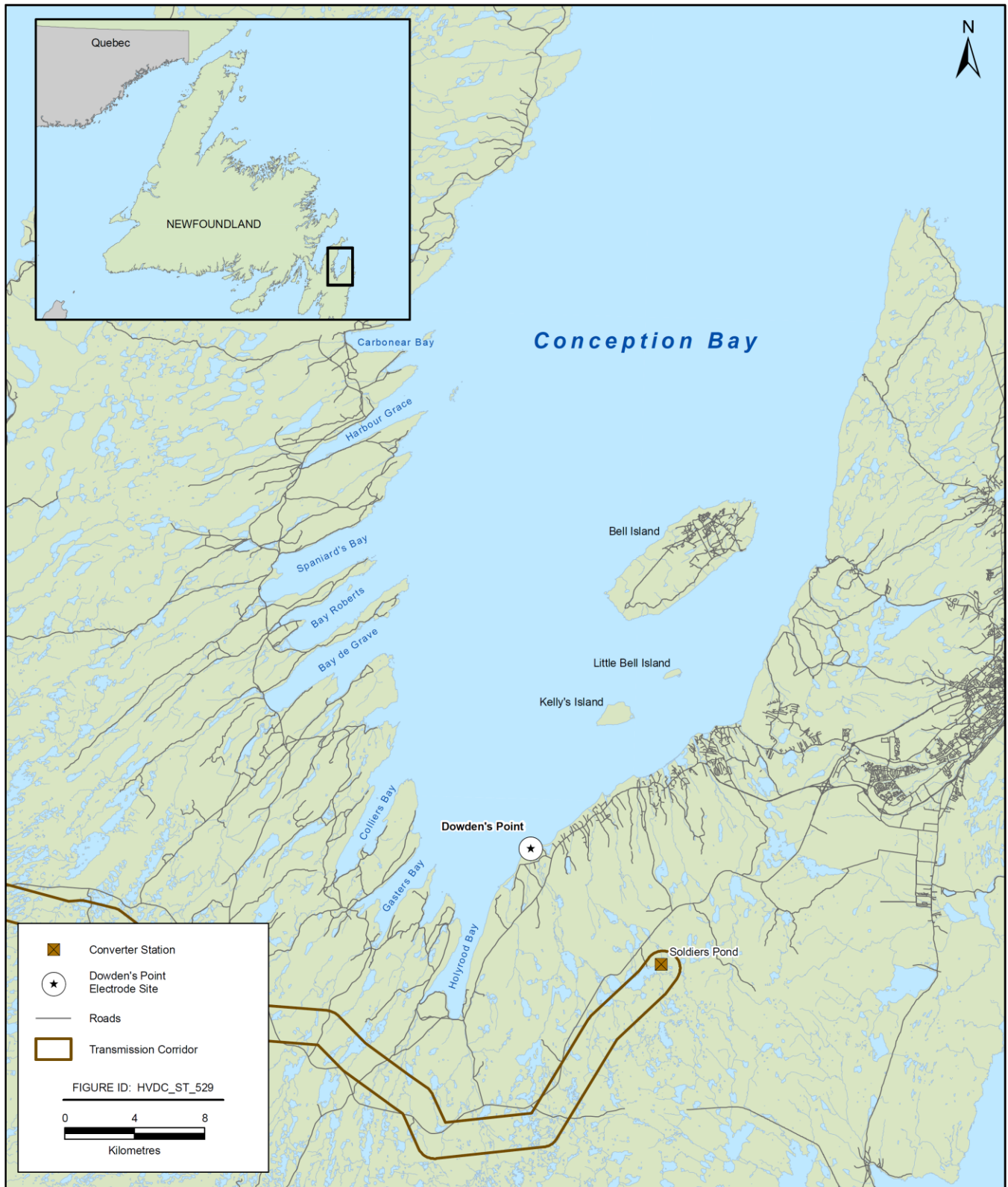
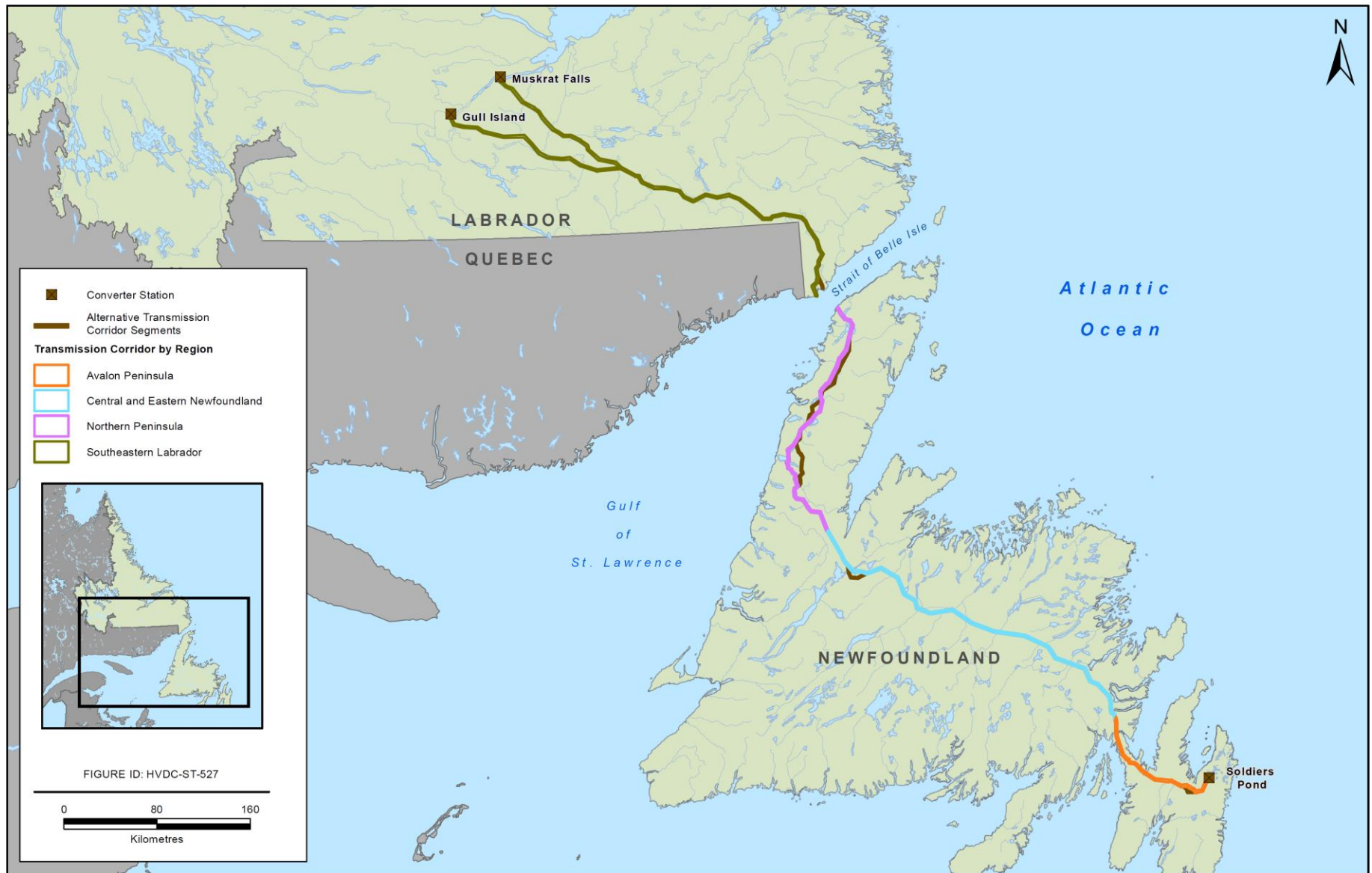


Figure 2.3 Transmission Corridor by Geographical Region



Northern Peninsula – The area encompassing the HVdc transmission corridor from the SOBI southwards to the Deer Lake area, including consideration of the potential extension in the transmission corridor to Shoal Cove.

Central and Eastern Newfoundland – The area encompassing the HVdc transmission corridor between approximately Deer Lake and Clarenville.

Avalon Peninsula – The area encompassing the HVdc transmission corridor from the Clarenville area to Soldiers Pond.

Marine Environment – The SOBI area which includes the marine cable crossing corridors and extends to include the general area and includes the potential electrode site at L’Anse au Diable. This also includes the Conception Bay area as a potential electrode site at Dowden’s Point has been identified.

2.2 Identification of Species of Special Conservation Concern

A review of the *NL ESA* (GNL DEC, 2011h, internet site) and the *SARA* (including all associated schedules) (*SARA* 2011, internet site), and a review of the *COSEWIC* (*COSEWIC* 2011, internet site) and *SSAC* (GNL DEC, 2011g) listed species including those being considered for listing, was conducted. The review then focused on species, sub-species and distinct populations of special conservation concern within the province and / or associated with the province’s marine environment. This listing was then further analyzed for known or likely presence within the study areas as defined in Section 2.1.

2.2.1 Determination of Known or Likely Presence in or Near the Project Area

The known or likely presence of each identified species in or near the Project area was determined by reviewing the *SARA*, the *NL ESA*, *COSEWIC* Status Reports, Atlantic Canada Conservation Data Centre (ACDC, 2010, internet site), existing literature, both provincial and / or federal recovery and management plans, and observations made during fieldwork completed as a part of the environmental baseline program for the Project.

2.2.2 Previous Studies Relevant to the Transmission Link

As noted previously, species of special conservation concern have been addressed integrally within the various environmental studies that have been completed and submitted as part of the Project’s EA. The purpose of this report is to present a summary overview of these species to inform the EA and on-going Project planning.

A listing and short description of these relevant environmental studies are provided below and organized under the following headings: plants, terrestrial mammals, avifauna, marine mammals and sea turtles, marine fish and freshwater fish.

Plants

Labrador-Island Transmission Link Ecological Land Classification (Stantec 2010b, 2011d)

A regional ELC identifying and delineating regional vegetation and habitat types along the transmission corridor and surrounding (15 km wide) area was conducted using air photos and satellite imagery with field validation from Gull Island to Soldiers Pond. The study outputs include a detailed ELC study report outlining field and mapping methods, ecological descriptions of habitat types by area and associated mapping, as well as a GIS

produced at a scale of 1:75,000 covering the regional study area. As part of the ELC for the proposed transmission corridor, selected wildlife species and evidence of their presence (e.g., sightings, tracks, scat, browse, dams), were recorded by a wildlife biologist during field surveys in July and August 2008, in selected plots in Labrador and on the Island of Newfoundland. Information from these surveys, where relevant, has been fully incorporated in this Component Study. A supplementary report for the Muskrat Falls corridor option was also completed.

Wetlands Inventory and Classification (Stantec 2010e, 2011d)

This study identifies and classifies all wetlands within the proposed 2 km wide transmission corridor, based on the ELC and associated imagery and fieldwork. High resolution satellite images, aerial photographs and data collected during field surveys was used in a GIS to delineate and classify all of the approximately 1,700 wetlands within the proposed transmission corridor. The study provides a detailed wetlands atlas and GIS at the 1:50,000 mapping scale, as well as a functional analysis overview of each identified wetland class. A total of 88 wetland plots were established and sampled within the proposed transmission corridor. The percent occurrence and average cover of vegetation, at the species level, were presented for each wetland class. A supplementary report for the Muskrat Falls corridor option was also completed.

Regionally Uncommon Plant Species: Potential Mapping (Stantec 2010d, 2011d)

A modelling and mapping exercise was conducted to identify the general location and potential extent of potential habitats for regionally uncommon plant species within the transmission corridors and larger 15 km wide ELC study area. Some of the regionally uncommon plants include designated species of special conservation concern. Information on the known distribution of such plants was acquired from the Atlantic Canada Conservation Data Centre and other sources, and used to develop a habitat model to determine the potential for these to occur in the various ELC Habitat Types and to identify any specific known locations. The study report provides an atlas that indicates the areas estimated to have Low, Moderate, High and Very High potential for the occurrence of regionally uncommon plant species, for use in the EA and eventual transmission line route selection and any follow-up work. A supplementary report for the Muskrat Falls corridor option was also completed.

2011 Listed and Regionally Uncommon Plant Survey: Strait of Belle Isle Cable Landing Areas and Shore Electrode Sites Supplementary Report (Stantec 2011e, in prep)

In July 2011, detailed plant surveys were conducted of both cable landing sites, and the electrode sites for listed and regionally uncommon (rare) plant species. The purpose of the surveys was to identify locations of listed plants and regionally uncommon plant species in the transmission corridor and in the vicinity of Project components.

Terrestrial Mammals

Caribou and Their Predators (Stantec 2011b)

This study identifies and presents information on caribou and their predators in and adjacent to the transmission corridor. In doing so, it incorporates relevant surveys and other field surveys undertaken by Nalcor Energy and its predecessors, as well as the published and unpublished literature, information and datasets obtained from government agencies, and other sources. Recent research by the provincial government is an important data source for this study including Schmelzer et al. (2004) for the Labrador caribou herds and NLDEC

(2011) for the Newfoundland herds. The study utilizes the ELC to evaluate and map habitat suitability (primary, secondary and tertiary habitats) for caribou within the transmission corridor and regional (15 km wide) ELC study area.

Furbearers and Small Mammals (Stantec 2010c, 2011c)

This study identifies and presents information on furbearers and small mammals in and adjacent to the transmission corridor. In doing so, it incorporates relevant surveys and other field surveys undertaken by Nalcor Energy and its predecessors, as well as the published and unpublished literature, information and datasets obtained from government agencies, and other sources. The study presents a region by region overview of the likely presence, distribution and status of furbearers and small mammals in and near the 15 km wide study area, followed by more detailed information for a number of key and representative species, including any species of special conservation concern, i.e., Newfoundland marten. The study also utilizes the ELC to evaluate and map habitat suitability (primary, secondary and tertiary habitats) for select species within the transmission corridor and regional (15 km wide) ELC study area. A supplementary report for the Muskrat Falls corridor option was also completed.

Birds

Avifauna (Stantec 2010a, 2011a)

This study includes recent and previous avifauna baseline studies including 2008 passerine surveys, waterfowl surveys, birds of prey surveys and seabird surveys carried out in 1998 for the transmission project. These studies were supplemented with data provided by the Canadian Wildlife Service for the spring migration along the SOBI. Based on the findings of these studies and the literature review, regional overviews of the presence, abundance and distribution of waterfowl, passerine, birds of prey and other species are provided. These studies have identified, reviewed and presented information on these species / groups in and adjacent to the transmission corridor, which is followed by more detailed information for a number of key and representative species, including any species of special conservation status. The studies also utilize the ELC to evaluate and map habitat suitability (primary, secondary and tertiary habitats) for select species within the transmission corridor and regional (15 km wide) ELC study area. A supplementary report for the Muskrat Falls corridor option was also completed.

Marine Mammals and Sea Turtles

Marine Mammals and Seabirds in the Strait of Belle Isle (Jacques Whitford and Kingsley 2000)

Aerial and boat-based marine mammal and seabird surveys were conducted in the Strait of Belle Isle in the summer and fall of 1998, along with a detailed and comprehensive review of known sightings and other information from the available literature and other datasets. The study objective was to describe the occurrence, spatial and temporal distribution and relative abundance of marine mammals and seabirds in the Strait and surrounding area during the ice-free season.

Marine Mammals, Sea Turtles and Seabirds in the Strait of Belle Isle: Information Review and Compilation (Sikumiut 2010b)

This study includes the identification, compilation, review, and presentation of other existing and available information on marine mammals, sea turtles and seabirds in the SOBI area, as a supplementary update to the

1998 marine mammal and seabird study described above. Marine mammal and sea turtle observation data was obtained from DFO, and was provided with several caveats as noted in Sikumiut (2010b). Species of special conservation concern known to be present in the SOBI are identified.

Strait of Belle Isle: Ambient Noise and Marine Mammal Survey (Jasco 2011)

A 2010 marine acoustic survey of ambient noise and marine mammal vocalizations at three locations within and near identified SOBI cable crossing corridors was conducted. Marine mammal vocalizations were identified to the species level, and some of the vocalizations were those of species of special conservation concern.

Marine Fish

Marine Fish and Fish Habitat in the Strait of Belle Isle: Information Review and Compilation (Sikumiut 2010a)

This study involves the identification, compilation, review and presentation of existing and available information on marine fish and fish habitat in the Strait of Belle Isle area. This includes information on the physical environment / marine habitats (climate, wind, bathymetry, water temperature and salinity, currents, tides, waves, icebergs and sea ice, and surficial geology) and the biological environment (plankton, benthic invertebrates, algae and fish species presence, abundance and distribution) in the area. The study identifies fish species in the study area that are listed as species of special conservation concern.

Marine Flora, Fauna and Habitat Survey – Strait of Belle Isle Submarine Cable Crossing Corridors, 2008 and 2009 (AMEC 2010b, 2011b)

A marine survey field program was conducted in 2008 and 2009 to gather detailed information on marine habitats, flora and fauna along the proposed submarine cable corridors in the SOBI. A 2008 vessel-based survey was carried out using a drop-video camera system, and resulted in seafloor video coverage over approximately 52 km (85 percent) of the two identified corridors. A 2009 dive survey in the shallow inshore area on the Newfoundland side covered an additional 2.8 km. The video collected was subsequently reviewed and analyzed in detail to identify, classify and map the type, occurrence / abundance and distributions of marine habitat (substrate), macroflora and macrofauna within the submarine cable corridors. No species of special conservation concern were identified during these surveys. A shoreline and intertidal survey was also conducted at four potential cable landing sites on the Labrador and Newfoundland sides of the SOBI.

Strait of Belle Isle Corridor Segment: Marine Water, Sediment, Benthos and Habitat Survey Supplementary Report (Sikumiut 2011c)

A 2011 marine-vessel based survey of the marine habitat for the corridor segment to Shoal Cove. Video survey of marine habitat, macroflora and macrofauna within the corridor, marine water, sediment and benthic samples were also collected from within this same corridor segment and the results of these surveys are provided.

Marine Water, Sediment, Benthos and Nearshore Habitat Surveys: Potential Electrode Sites (Sikumiut 2011a)

This study involves a 2010 marine sampling survey to collect information on water and sediment quality, benthic invertebrates, bathymetry, substrate, macroflora and macrofauna distribution and backshore characteristics at two proposed shore electrode sites for the Project, L'Anse au Diable (Labrador) and Dowden's Point (Newfoundland).

Freshwater Fish

Fish and Fish Habitat / Water Resources (Amec 2010a, 2011a)

This study uses air photos, mapping and high quality satellite imagery to identify and describe all of the watercourses and watersheds crossed by the transmission corridor. Each stream crossing was examined using a GIS to characterize slope / flow morphology, substrate, wetted and channel widths and adjacent riparian vegetation. A field survey of select and representative sites was then carried out to ground-truth these results and to gather additional information on the key physical and biological characteristics, including stream morphology, fish species presence and water and sediment quality. This information, and that obtained through an associated review of the literature and other available datasets, was used to describe water quality and quantity, fish habitat and known and likely fish species presence, including species of special conservation concern, in the watercourses crossed by the proposed transmission corridor. A supplementary report for the Muskrat Falls corridor option was also completed.

3.0 RESULTS AND DISCUSSION (NL ESA / SARA)

Provincially and / or federally designated species of special conservation concern are presented by category: plants, terrestrial mammals, avifauna, marine mammals and sea turtles, marine fish and freshwater fish. Each classification includes a listing of all known species of special conversation concern status (NL ESA and / or SARA listed) within the province.

Then, to focus the discussion, a summary table of species of special conservation concern known, or likely present within the 2 km wide transmission corridor, and the regional marine study areas, including their respective designations under the NL ESA and the SARA, are presented.

A species by species discussion of the known or likely present species within the study areas is presented which focuses on the following themes and descriptors:

- Reasons for designation;
- Description;
- Distribution / habitat requirements;
- Limiting factors; and
- Management or recovery plan, including the identification of critical habitat.

Species designated by COSEWIC, SSAC or listed on Schedules 2 and 3 of the SARA, including all species proposed for designation, are not provided the same legal protection as NL ESA and SARA designations. These species are discussed in Section 3.7.

3.1 Plants

Several plants species within the province are considered to be species of special conservation concern by the NL ESA and / or SARA. These species include:

- barrens willow (*Salix jejuna*)
- crowded wormseed mustard (*Erysimum inconspicuum* var. *coarctatum*)
- Long’s braya (*Braya longii*)
- low northern rockcress (*Neotorularia humilis*)
- Fernald’s braya (*Braya fernaldii*)
- Porsild’s bryum (*Mielichhoferia macrocarpa*)
- mountain fern (*Thelypteris quepaertensis*)
- Fernald’s milk-vetch (*Astragalus robbinsii* var. *fernaldii*)
- boreal felt lichen (*Erioderma pedicellatum*)
- mountain holly fern (*Polystichum scopulinum*)

- graceful felt lichen (*Erioderma mollissimum*)

Of these eleven plant species, two are known to be, or likely present within the study area: Long’s braya and Fernald’s braya. Table 3.1 presents the designations for these two species both provincially and federally. The table also indicates the known presence of each species within the transmission corridor, including consideration of the Shoal Cove area as discussed in Section 2.1. Following Table 3.1, a species description of these plants is provided.

Table 3.1 Plant Species of Special Conservation Concern Occurrence by Region within the Study Area

Species	Designation		Known or Likely Presence in the Study Area			
	NL ESA	SARA	Southeastern Labrador	Northern Peninsula	Central and Eastern Newfoundland	Avalon Peninsula
Long’s Braya <i>Braya longii</i>	Endangered	Schedule 1, Endangered	–	✓	–	–
Fernald’s Braya <i>Braya fernaldii</i>	Threatened	Schedule 1, Threatened	–	✓	–	–

Note: “–” signifies no known occurrence and “✓” signifies known potential occurrence

3.1.1 Long’s Braya

Reasons for Designation

Long’s braya has been designated as an endangered species under the NL ESA and SARA. Amongst the reasons for its designation are its specific limestone barren habitat requirement, restricted range, and that it is found nowhere else in the world (i.e., endemic to the Northern Peninsula) (Hermanutz et al. 2002).

Description

This plant is a scapous perennial whereby the flower-stalk grows directly from the ground. It has fleshy, basal leaves that are greyish-green to blue and is approximately 1 to 10 cm or more in height (Species at Risk Public Registry 2011d, internet).

Distribution / Habitat Requirements

Long’s braya occurs only within the Northern Peninsula region of the study area. Specifically, within this region populations are known to occur in the area around Sandy Cove, Yankee Point, Shoal Cove and Anchor Point. The original (type) population, discovered by M.L. Fernald at Sandy Cove in 1924, has been nearly completely destroyed by gravel quarry activities (Hermanutz et al. 2002) and less than 50 plants remain at a second Sandy Cove location (Species at Risk Public Registry 2011d). The Yankee Point site, along an abandoned parking area associated with a previous project, had supported more than 200 Long’s braya plants during the late 1990s. The present size of this population is unknown. In 2000, the combined populations of Long’s braya from four separate locations in Savage Point were estimated at approximately 7,000 plants; these populations were classified as stable at that time (Species at Risk Public Registry 2011d).

Of the known populations within the study area, Long’s braya occurs from Yankee Point to Shoal Cove. Listed plant surveys of the Shoal Cove area (Stantec 2011e, *forthcoming*) identified more than 400 Long’s braya plants in the general Shoal Cove area. Additional surveys focussed on the potential cable landing area identified 21 plants.

Long's braya is found in habitats with tundra-like vegetation and shallow, calcium-rich soils, and areas typically well-drained and often windswept in the winter (Species at Risk Public Registry 2011d, internet). Listed plant surveys conducted in 2011 for the Project identified Long's braya in habitat described as anthropogenically disturbed (associated with previous highway construction) on moist gravelly substrate (Stantec 2011e, *forthcoming*).

Limiting Factors

Limiting factors include the restricted distribution and small population size. Populations have been disturbed by human activity associated with quarrying and road development. Currently, populations are limited by off-road vehicle activity, insect herbivory by the diamondback moth (*Plutella xylostella*), and various diseases (Species at Risk Public Registry 2011d, internet).

Management Plan / Recovery Plan

A national recovery plan for this species and Fernald's braya was released in 2002 (Hermanutz et al. 2002), and a draft updated plan is currently under review (Environment Canada 2010). Critical habitat has not yet been identified for this species by the *NL ESA* or the *SARA*.

3.1.2 Fernald's Braya

Reasons for Designation

Fernald's braya has been designated as threatened under the *NL ESA* and *SARA* for similar reasons as Long's braya. These reasons include, it is found nowhere else in the world (i.e., endemic to the Northern Peninsula) and it has adapted to the harsh conditions of the limestone barrens (Hermanutz et al. 2002).

Description

It has small white to pink to purplish petals, and purple seed capsules covered with minute hairs and can grow to 8 cm tall and in some places rarely exceed 2 cm (Wildlife Division undated).

Distribution / Habitat Requirements

This plant is known to occur in the Northern Peninsula region of the study area. The known populations occur at Shoal Cove, Anchor Point, and historically at Savage Cove (Environment Canada 2010). The habitat requirements for this species are similar to Long's braya in that it requires limestone barren habitat.

Fernald's braya has a larger natural range than Long's braya with 15 disjunct locations between Point Riche and Burnt Cape Ecological Reserve. In 2008, approximately 3,400 Fernald's braya were estimated, with most of the population occurring outside the Northern Peninsula region's study area at Burnt Cape and Green Island Brook (Environment Canada 2010).

There are known occurrences of this species within the study area in the vicinity of Yankee Point and Shoal Cove. Listed plant surveys conducted in 2011 for the Project identified three Fernald's braya in habitat described as sparsely vegetated and exposed with gravelly substrate, within the long-term monitoring plots established by the Limestone Barrens Species at Risk Recovery Team (Stantec, 2011e, *forthcoming*).

Limiting Factors

The populations of Fernald's braya are threatened by the same limiting factors as Long's braya including human activity (i.e., quarrying and road development). Current risks also include off-road vehicle activity, insect herbivory by the diamondback moth and various diseases (Species at Risk Public Registry 2011b, internet).

Management Plan / Recovery Plan

A national recovery plan for this species and Long's braya was released in 2002 (Hermanutz et al. 2002), and a draft updated plan is currently under review (Environment Canada 2010). Critical habitat for this species has not been identified.

3.2 Terrestrial Mammals

Within the province there are three designated terrestrial mammals of special conservation concern by both the NL ESA and SARA:

- American marten (*Martes americana atrata*);
- wolverine (*Gulo gulo*); and
- woodland caribou (*Rangifer tarandus caribou*) (Lac Joseph herd, Red Wine Mountains herd and Mealy Mountains herd).

Table 3.2 presents the designations for two of these species / populations both provincially and federally and indicates the known presence of each species / population within the four geographical regions. A species by species description of these two species / populations follows the table.

Table 3.2 Terrestrial Mammal Species of Special Conservation Concern Occurrence by Region within the Study Area

Species	Designation		Known or Likely Presence in the Geographical Regions			
	NL ESA	SARA	Southeastern Labrador	Northern Peninsula	Central and Eastern Newfoundland	Avalon Peninsula
American Marten (Newfoundland population) <i>Martes americana atrata</i>	Endangered	Schedule 1, Threatened	–	✓	✓	–
Woodland Caribou (Boreal population) (Red Wine Mountains Herd) (Mealy Mountains Herd) <i>Rangifer tarandus caribou</i>	Threatened	Schedule 1, Threatened	✓	–	–	–
Note: “–” signifies no known occurrence and / or does not apply to the listed species, i.e., Newfoundland marten are only known to be present in Newfoundland and “✓” signifies potential known occurrence						

3.2.1 American Marten (Newfoundland Population)

Reasons for Designation

Marten populations in Newfoundland have declined substantially over the last century, with the current population consisting of 300 to 600 marten distributed in five subpopulations. It is still at risk for several reasons explained under ‘Limiting Factors’. Marten are one of the few land mammals native to Newfoundland and the subspecies *atrata* is endemic to Canada. The Newfoundland population is considered to be genetically and ecologically distinct from other populations (COSEWIC 2007c).

Description

American marten, also known as the pine marten, marten cat, and Newfoundland marten, is a member of the weasel family. The Newfoundland population of American marten is a genetically and geographically distinct population of the subspecies which is found in Labrador. The *atrata* subspecies is larger and darker than the other subspecies to the south or west (COSEWIC 2007c).

Distribution / Habitat Requirements

There are two main forested areas in Newfoundland where marten are currently found: western Newfoundland (near Main River, Little Grand Lake and Red Indian Lake) and eastern Newfoundland, near Terra Nova National Park (Figure 3.1) (COSEWIC 2007c). Therefore, marten are known to occur within the Northern Peninsula and the Central and Eastern Newfoundland regions. The transmission corridor does overlap with areas with a high probability of marten occupancy.

It was believed that old-growth forests were a habitat requirement for marten until recently, with recent research suggesting it is forest structure rather than age that is the requirement (Bowman and Robitaille 1997). Marten habitat use on the Island of Newfoundland was most recently examined by Hearn et al. (2010), who evaluated habitat selection by this species across landscapes composed of a range of habitat types. Their study found that at both the landscape and stand scales, adult resident marten utilized a broad range of habitat types, including recent cuts, regenerating forests, pre-commercially thinned stands, and mature and overmature forests, indicating that habitat selection by marten in Newfoundland is considerably more general than was traditionally inferred. It is also important to recognize that while marten are willing to use several different habitat types, home range composition appears to require minimum amounts of high quality habitat (E. Herdman, pers. comm.).

Limiting Factors

In Newfoundland, incidental mortality related to snaring and trapping and habitat loss due to forest harvesting limit marten distribution and abundance. It is worth noting, that the Newfoundland marten's habitat requirements are likely not limited to mature and overmature coniferous forests (Hearn et al. 2010), and therefore habitat loss may not be as important of a limiting factor as once suggested (COSEWIC 2007c).

Management Plan / Recovery Plan

A recovery plan for the American marten was released in 2010 (Newfoundland Marten Recovery Team 2010). Critical habitat for American marten in Newfoundland has been identified. These areas are a subset of the known core distributions of American marten. Figures 3.2 and 3.3 present the proximity of these areas to the Transmission Link. The recovery plan also proposes a number of areas that offer partial protection to American marten and its habitat. Some of these areas manage development and forest harvest through the NL *Environmental Protection Act* and the land use and resource planning process, and others prohibit land-based traps. Other areas prohibit forest harvesting, but snaring and trapping are permitted using snaring modifications (Newfoundland Marten Recovery Team 2010).

Figure 3.1 Marten Core Areas and Important Habitats in Relation to the Study Area in Newfoundland

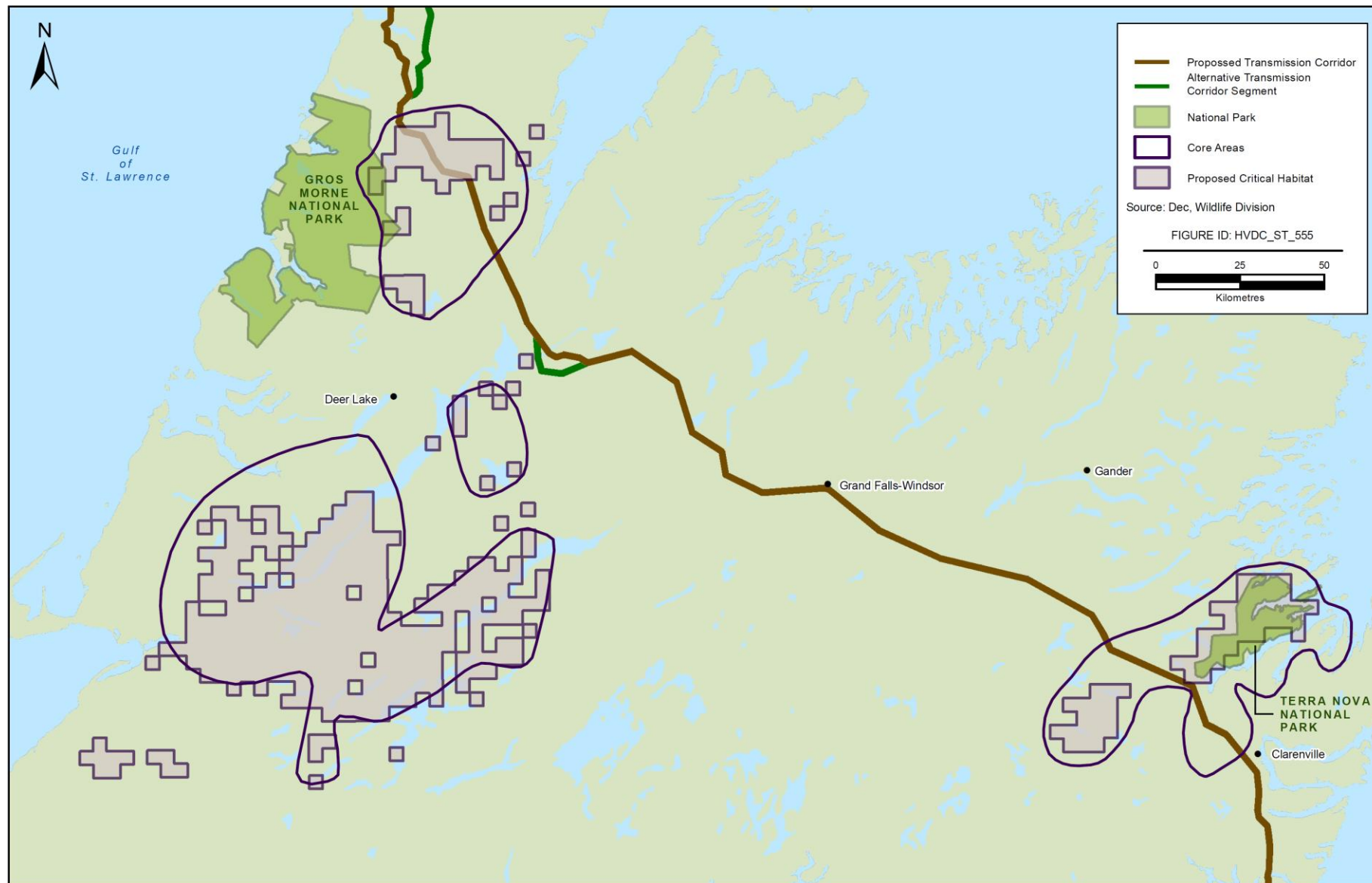


Figure 3.2 Marten Core Areas and Important Habitat – Northern Peninsula

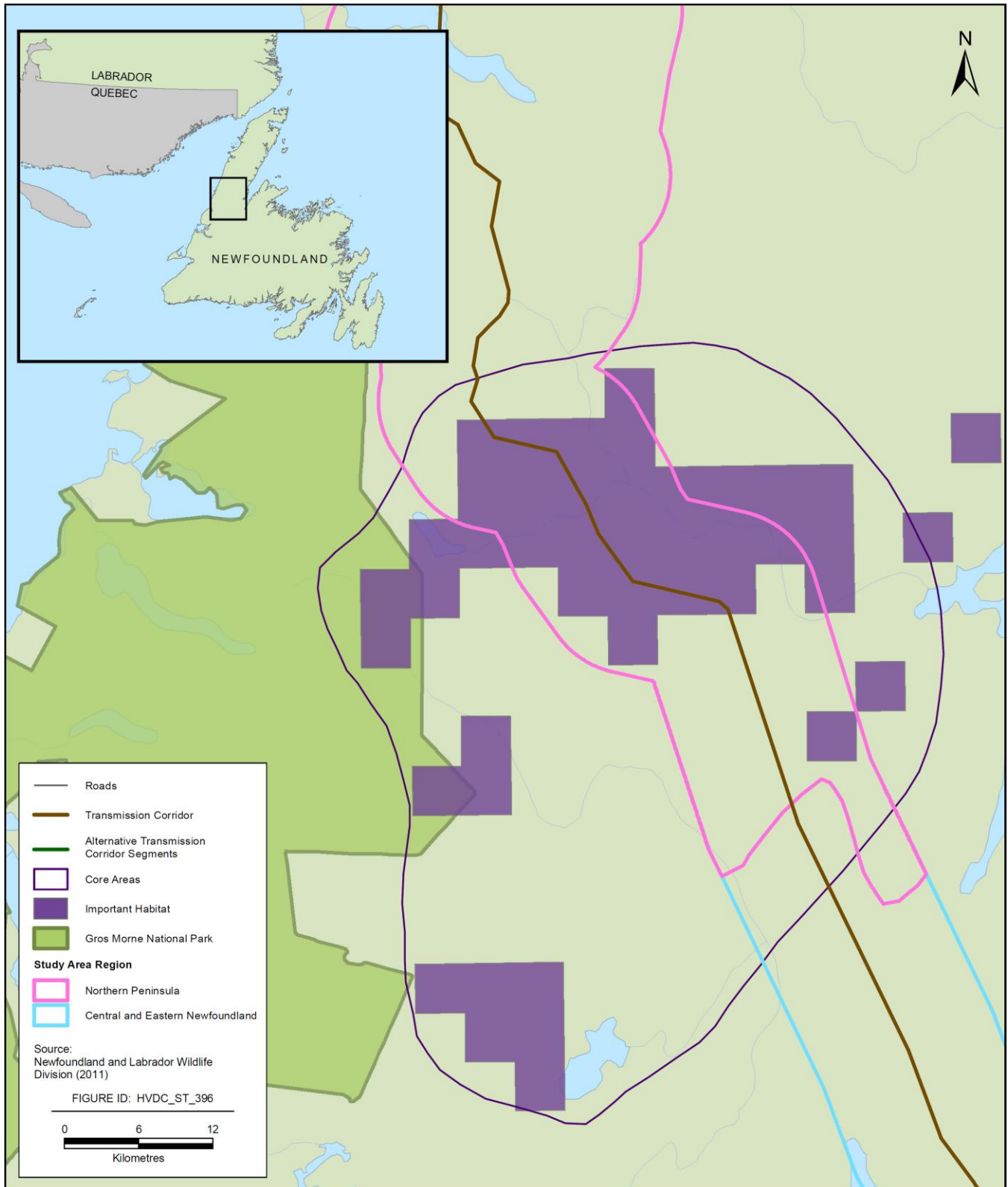
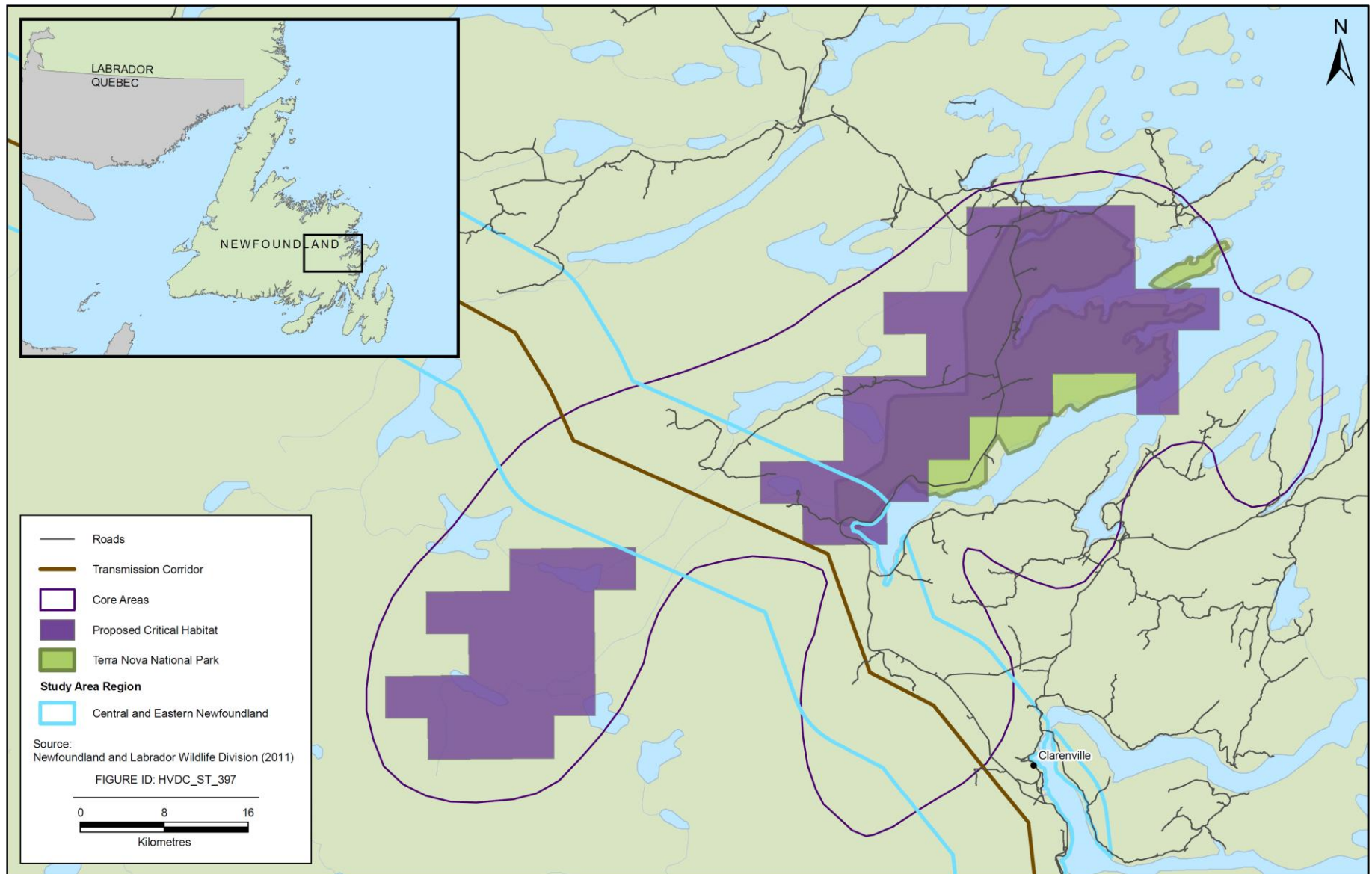


Figure 3.3 Marten Core Areas and Important Habitat – Central and Eastern Newfoundland



3.2.2 Woodland Caribou (Red Wine Mountains Herd and the Mealy Mountains Herd)

Reasons for Designation

Caribou populations have decreased throughout most of the range across the boreal forests of northern Canada.

Description

Woodland caribou are medium sized members of the deer family, weighing between 110 to 150 kg for females, and 160 to 210 kg for males. This species is dark brown with a white mane and white on their sides (Thomas and Gray 2002).

Distribution / Habitat Requirement

The range of the Mealy Mountains Herd (MMH) (Figure 3.4) covers approximately 28,000 km² extending from the Kenamu River in southern Labrador, northeast to Double Mer and Groswater Bay and south along the coast as far as the headwaters of the Alexis and St. Augustine Rivers. Included in this range are offshore islands, coastal areas and the Mealy Mountains (Schmelzer et al. 2004). Recently released data identify the Joir River group of caribou as a subpopulation of the MMH (Blake 2011). The range of the Joir River subpopulation, which overlaps the MMH range at its southwest margin, is approximately 5,420 km² and encompasses the Joir River and portions of the Kenamu River and Minipi Lake.

Both Labrador transmission corridor options overlap the MMH range. Option 1 (Gull Island) overlaps the northern edge of the range of the Joir River subpopulation and from there crosses through the southernmost portion of the MMH's range. Option 2 from Muskrat Falls does not overlap the Joir River range, nor does it cross between it and the associated MMH. The Muskrat Falls corridor option follows the existing TLH-3 through the southern edge of the MMH's range (Figure 3.4).

The traditional range of the Red Wine Mountains Herd (RWMH) encompassed an area 26,000 km² in central Labrador (Brown and Theberge 1990) and included several major river valleys, string bogs, upland boreal plateaus and numerous water bodies (Schmelzer et al. 2004). The prominent feature of this range is the Red Wine Mountains, a 2,000 km² area at 600 to 900 m above sea level, surrounded by a plateau 400 m in elevation (Schaefer et al. 1999). More recently, the home range of the herd was estimated at 46,000 km², based on data from 1982 to 2004 (Schmelzer et al. 2004).

Both transmission corridor options (Gull Island and Muskrat Falls) overlap a small portion of the range of the RWMH, southeast of the Churchill River. Within the 2 km wide transmission corridor, more RWMH range is overlapped by the Gull Island option than by the Muskrat Falls option; however, in both cases, this represents a small portion of the RWMH range (Figure 3.4). The Gull Island option runs along the northern margin between the range of the Joir River subpopulation and the MMH range. It is also important to note the Trans Labrador Highway (Phases I and III) also overlap the range of both the RWMH and the MMH.

The general habitat requirements of woodland caribou would be a mosaic of habitat containing large, contiguous patches of older forest with terrestrial lichens, and bog complexes, during winter regions with snow depths in an acceptable range and limited human disturbance (Schmelzer et al. 2004).

Limiting Factors

Caribou have a low rate of reproduction relative to other ungulates resulting in an increased susceptibility to declines. Subsequently, the recovery from declines, coupled with a small population results in the population being vulnerable to environmental changes (Schmelzer et al. 2004). Limiting factors for both these herds include illegal and legal hunting of caribou. In addition, RWMH caribou have been observed emigrating to the George River caribou herd (a legally hunted herd) (Schaefer et al. 1999); an additional threat to its population.

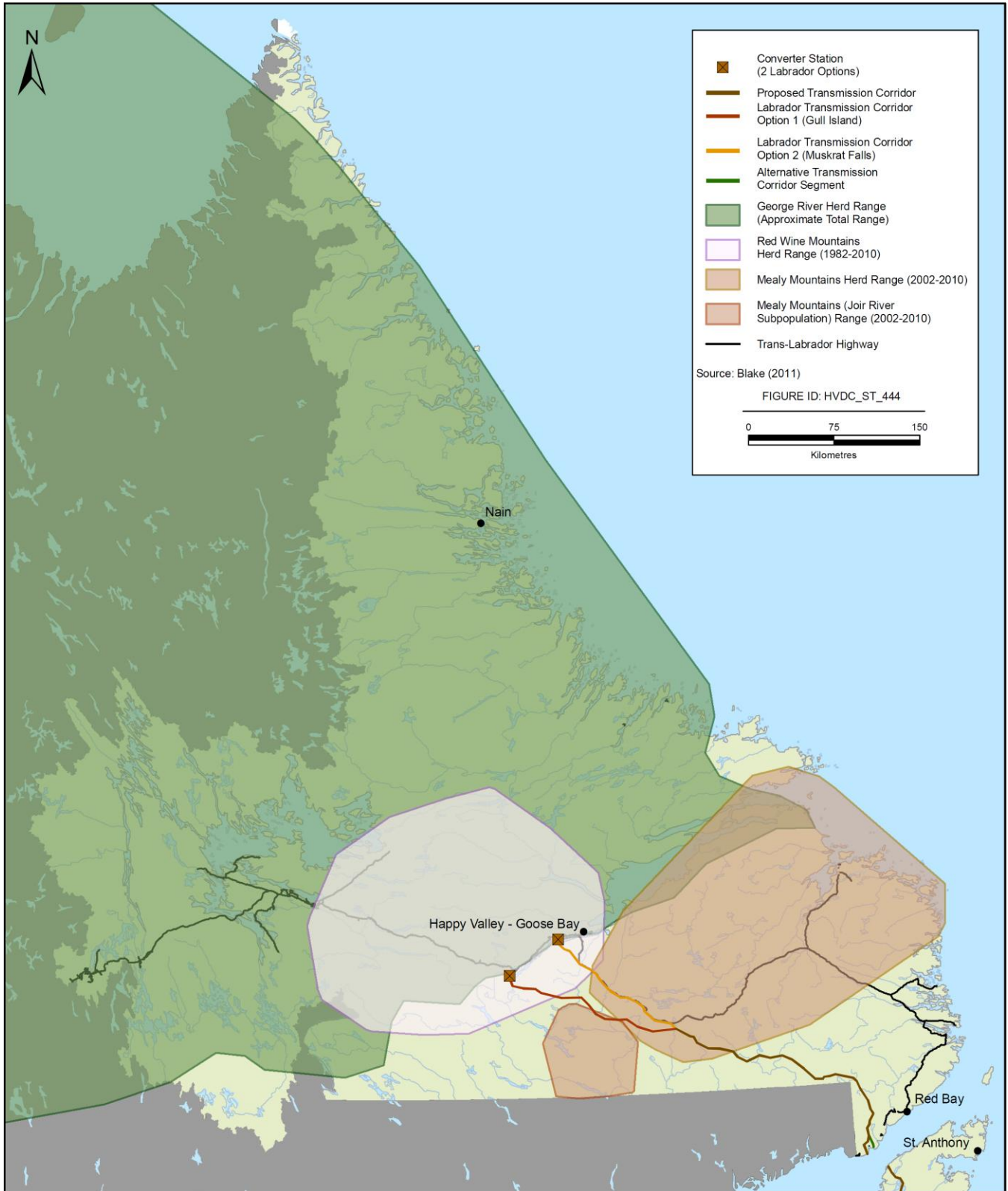
Predation by wolves primarily, and black bears secondarily has been suggested by Schmelzer et al. (2004) as limiting factors on the RWMH. These two predators are also known to occur in the MMH range.

Habitat loss as a result of human developments and activities has also been stated by Schmelzer et al. (2004) as a limiting factor for these populations.

Management Plan / Recovery Plan

A recovery strategy for the three woodland caribou herds in Labrador was released in 2004, which includes the RWMH and MMH (Schmelzer et al. 2004). Critical habitat has not been defined for these populations.

Figure 3.4 Caribou Herds in Southeastern Labrador



3.3 Avifauna

The province has several avifauna listed species of special conservation concern both provincially and / or federally and includes the following:

- Eskimo Curlew (*Numenius borealis*)
- Ivory Gull (*Pagophila eburnea*)
- Red Knot (*Calidris canutus rufa*)
- Piping Plover (*Charadrius melodus melodus*)
- Red Crossbill (*Loxia curvirostra percna*)
- Chimney Swift (*Chaetura pelagica*)
- Common Nighthawk (*Chordeiles minor*)
- Barrow’s Goldeneye (*Bucephala islandica*)
- Rusty Blackbird (*Euphagus carolinus*)
- Peregrine Falcon (*Falco peregrinus anatum*)
- Peregrine Falcon (*Falco peregrinus tundrius*)
- Harlequin Duck (*Histrionicus histrionicus*)
- Gray-cheeked Thrush (*Catharus minimus*)
- Olive-sided Flycatcher (*Contopus cooperi*)
- Short-eared Owl (*Asio flammeus*)

Of these fifteen avifauna species, nine are known, or potentially present within the four geographical regions that comprise the study area. Species of avifauna known as coastal and marine birds that could potentially occur within the SOBI were considered within the two regions on either side of the Strait. Table 3.3 presents the designations for each of these species both provincially and federally. A species by species description of each of these avifauna species is presented for the key descriptors for the species as described previously.

Table 3.3 Avifauna Species of Special Conservation Concern Occurrence by Region within the Study Area

Species	Designation		Known or Likely Presence in the Study Area			
	NL ESA	SARA	Southeastern Labrador	Northern Peninsula	Central and Eastern Newfoundland	Avalon Peninsula
Red Crossbill <i>Loxia curvirostra percna</i>	Endangered	Schedule 1, Endangered	–	✓	✓	✓
Common Nighthawk <i>Chordeiles minor</i>	Threatened	Schedule 1, Threatened	✓	–	–	–
Rusty Blackbird <i>Euphagus carolinus</i>	Vulnerable	Schedule 1, Special Concern	✓	–	–	–
Olive-sided Flycatcher <i>Contopus cooperi</i>	Threatened	Schedule 1, Threatened	✓	✓	✓	✓
Harlequin Duck <i>Histrionicus histrionicus</i>	Vulnerable	Schedule 1, Special Concern	✓	✓	–	–
Ivory Gull <i>Pagophila eburnea</i>	Endangered	Schedule 1, Endangered	✓	✓	–	–
Barrow's Goldeneye <i>Bucephala islandica</i>	Vulnerable	Schedule 1, Special Concern	–	–	–	✓
Gray-cheeked Thrush <i>Catharus minimus</i>	Vulnerable (March 2005)	–	✓	✓	✓	✓
Short-eared Owl <i>Asio flammeus</i>	Vulnerable	Schedule 3, Special Concern	✓	✓	–	✓

Note: “–” signifies no known occurrence and / or does not apply to the listed species, and “✓” signifies known and potential occurrence

3.3.1 Red Crossbill

Reasons for Designation

The Red Crossbill subspecies *percna*, was once common in Newfoundland, however it has experienced sharp declines since the mid-1990s (Environment Canada 2006) leading to its designation.

Description

Red Crossbills are a medium-sized finch which uses its crossed bill to open conifer cones. Males are a dull red colour with brown shading and the females are a gray-olive colour with yellow rumps (Environment Canada 2006).

Distribution / Habitat Requirement

This subspecies of Red Crossbill is endemic to eastern Canada, and it is likely restricted to insular Newfoundland. Red Crossbills are associated with conifer forests (Environment Canada 2006). This species could potentially occur in all of the Newfoundland regions: the Northern Peninsula, Central and Eastern Newfoundland, and the Avalon Peninsula. Observations of two Red Crossbills were recorded in the Central and Eastern Newfoundland region during field surveys conducted for the Project (Stantec 2010a).

Limiting Factors

Red Crossbills appear to be limited by changes to their habitat and / or food abundance (Environment Canada 2006). Such changes have possibly resulted from a combination of anthropogenic and non-anthropogenic

factors including deforestation, insect infestation and alterations to forest fire regimes (Environment Canada 2006).

Management Plan / Recovery Plan

A recovery strategy for this species was released in 2006. Critical habitat has not been determined due to a lack of understanding regarding this species distribution and habitat associations (Environment Canada 2006).

3.3.2 Common Nighthawk

Reasons for Designation

The Common Nighthawk is a rare bird that has experienced significant long-term population decreases averaging 4.2 percent per year in Canada, although provincial population trends are not known (GNL, DEC, Species at Risk, 2011b, internet).

Description

This species is a medium-sized bird, with a large flattened head, small bill, long, slender wings and a long, slightly notched tail. Its plumage is dark brown, and mottled with black, white and buff (GNL, DEC, Species at Risk, 2011b, internet).

Distribution / Habitat Requirements

Common Nighthawks are found across Canada however, in Eastern Canada, they only breed in the southern part of Labrador and are uncommon in Newfoundland (GNL, DEC, Species at Risk, 2011b, internet). Observations of this species are rare, and no observations were recorded during baseline field surveys conducted for the Project (Stantec 2010a). This bird breeds on bare ground in a variety of environments (i.e., sand dunes, rocky outcrops, peatbogs, forest clearings, and burned areas) (GNL, DEC, Species at Risk, 2011b, internet).

Limiting Factors

The Common Nighthawk has been affected by a variety of factors including a decrease in prey abundance (i.e., a decrease in the abundance of insects) and habitat loss and alteration (COSEWIC 2007a).

Management Plan / Recovery Plan

No management plan or recovery plan exists for this species.

3.3.3 Rusty Blackbird

Reasons for Designation

The Rusty Blackbird has experienced a severe decline that appears to be ongoing, with suggestions that the rate of decline may have slowed, however there is no evidence to suggest this decline will be reversed (COSEWIC 2006a). Christmas bird counts suggest that their decline has been 85 percent since the mid-1960s (GNL, DEC, 2011e, internet).

Description

This species is a medium-sized passerine with a slightly rounded tail, pale yellow eyes and a black slightly curved bill. During the breeding season, the male has black plumage with a green and violet iridescence, while the

female is grayish brown during this season. During the winter, both sexes are rust-coloured (GNL, DEC, 2011e, internet).

Distribution / Habitat Requirements

Within Newfoundland and Labrador, the distribution is thought to occur throughout the boreal forest, breeding in forest wetlands, bogs, and meadows, and wintering in the United States (COSEWIC 2006a; GNL, DEC, 2011e, internet). Rusty Blackbird was observed at 23 point locations during the 2008 passerine surveys conducted for the Project, with 22 in the Southeastern Labrador region and one other observation in the Avalon Peninsula region (Stantec 2010a).

Limiting Factors

One of the key limitations for this species during the breeding season is habitat loss, whereby wetlands are converted for agriculture and urban development (COSEWIC 2006a).

Management Plan / Recovery Plan

No management plan or recovery plan exists for this species.

3.3.4 Olive-sided Flycatcher

Reasons for Designation

The Olive-sided Flycatcher has experienced a population decline over the last 30 years, with the decline estimated to have been 79 percent from 1968 to 2006, and 29 percent from 1996 to 2006 (COSEWIC 2007b).

Description

This bird is approximately 18 to 20 cm in length and the adults are deep brown olive-gray plumage, with white on the throat area, the centre of the breast and the belly, with both sexes similar in appearance. The wings are dark with pale wing bars, and it has a stout and blackish bill (COSEWIC 2007b).

Distribution / Habitat Requirements

This species is most often associated with open areas containing perching locations (COSEWIC 2007b). These open areas include forest openings including near wetlands and human-made openings like clearcuts (COSEWIC 2007b). During passerine surveys for this Project, the Olive-sided Flycatcher was observed at 11 point counts: three in the Central and Eastern Newfoundland region and eight in the Northern Peninsula region (Stantec 2010a).

Limiting Factors

The reasons for the decline for this species are not certain, however it has been suggested that habitat loss and alteration has been one of the limiting factors for this species. Also, undocumented but a suggested limiting factor is the reduction in prey abundance resulting from insect control (COSEWIC 2007b).

Management Plan / Recovery Plan

No management plan or recovery plan exists for this species.

3.3.5 Harlequin Duck

Reasons for Designation

The Harlequin Duck was designated based on low population estimates, and localized decreases in the number of birds at several of the known wintering areas in eastern North America (Environment Canada 2007).

Description

The Harlequin Duck is a subarctic sea duck. The males have slate blue plumage, with chestnut sides and streaks of white on their head and body, and a black stripe on their head with a chestnut stripe on either side. Females have brown-grey plumage with patches of white near their eyes (Species at Risk Public Registry 2011c, internet).

Distribution / Habitat Requirements

This species spends most of the year in coastal marine environments and move inland to breed along fast-flowing rivers (Species at Risk Public Registry 2011c, internet). During wintering, the ducks are often associated with offshore islands, headlands and rocky coastlines where they feed close to rocky shorelines (Species at Risk Public Registry 2011c, internet).

In Labrador, Harlequin Ducks are common and the population appears to be stable or increasing (Trimper et al. 2008). In Newfoundland however, relatively low numbers are present year-round. Breeding mostly occurs on the Northern Peninsula with some evidence of breeding in remote areas of the eastern part of Newfoundland. A large molting area is found on the Grey Islands off the east coast of the Northern Peninsula, and wintering occurs on the south coast of Newfoundland (Thomas 2008).

Limiting Factors

The cause of the decline in population for this duck is not clearly known, however overhunting could be an important contributor. The preferred habitat near shore, and the resemblance of females and immatures to other legally hunted species increases their vulnerability to overhunting. Other suggested limiting factors include contamination, destruction and habitat alteration (including forestry, mining, and hydroelectric developments) (Thomas 2008; Species at Risk Public Registry 2011c, internet).

Management Plan / Recovery Plan

A management plan for the Harlequin Duck was released by Environment Canada (2007). Critical habitat has not been identified for this species.

3.3.6 Ivory Gull

Reasons for Designation

The Ivory Gull has been designated because it is a relatively rare species with few breeding colonies. This species is also susceptible to human activity and disturbance especially when they congregate (COSEWIC 2001a; Stenhouse 2004).

Description

The Ivory Gull is a medium-sized gull with distinctive plumage at all ages, but particularly in its pure white plumage as an adult. Immature birds have a black face and chin, and black spots on the wings and tail (GNL, DEC,

2011d, internet). This species has relatively short legs, which are black at all ages. It has a round chest, and is a stocky built bird and both sexes are similar (Stenhouse 2004).

Distribution / Habitat Requirements

In Canada, it breeds exclusively in Nunavut. This species winters among the pack ice of the Davis Strait, Labrador Sea, SOBI, and northern Gulf of St. Lawrence. It has been occasionally seen ashore along the east coast of Newfoundland and Labrador, particularly the Northern Peninsula region (Stenhouse 2004). One observation of this species is known from within the study area on the Avalon Peninsula in 1998 (ACCDC 2010, internet site). This species is primarily known as a coastal bird whose occurrences inland are considered accidental (Haney and MacDonald 1995).

Limiting Factors

Ivory Gulls have a relatively low adult survival rate compared with other gull species. Like most seabird species, they have a delayed maturity and presumably do not breed until two or three years old, and have a relatively low clutch size. These biological factors, and the extreme and variable nature of breeding in the High Arctic are all contributing limiting factors for this species (Stenhouse 2004).

Management Plan / Recovery Plan

A management plan for the Ivory Gull has been prepared by Stenhouse (2004). Critical habitat has not been identified for this species.

3.3.7 Barrow's Goldeneye

Reasons for Designation

Specific population trends are unknown however it is believed that the eastern population has declined during the 20th Century and that it may still be declining. There has been a significant reduction in the amount of suitable breeding habitat due to logging and fish introduction, as well as a reduction in the quality of wintering habitat (Species at Risk Public Registry, 2011a, internet).

Description

Barrow's Goldeneye is a medium-sized diving duck. Breeding males have black and white plumage, purplish black head and a crescent shaped patch at the base of their bill (GNL, DEC, 2011a, internet). Females have a grayish brown back and are whitish on their flanks and belly, with a dark brown head. In addition, adult females have bright orange bills in winter and spring (Species at Risk Public Registry, 2011a, internet).

Distribution / Habitat Requirements

This species primarily breeds and winters in Canada (Species at Risk Public Registry, 2011a, internet). This species is represented in the wintering waterfowl population of the St. Lawrence estuary with small numbers along the Atlantic coast, including the coast of Newfoundland (Eadie et al. 2000, internet; GNL, DEC, 2011a, internet) where they winter. There have been numerous sightings in northern Labrador during the moulting season (Schmelzer 2006). Some authors have suggested breeding may occur in northern Labrador and Newfoundland, but this remains unconfirmed (Eadie et al. 2000, internet site). One observation within the study area has been recorded at Arnold's Cove on the Avalon Peninsula (ACCDC 2010, internet site).

Limiting Factors

This species is susceptible as 90 percent of the total population congregates in a few areas along the St. Lawrence corridor during late fall, winter and early spring. It could face considerable losses in the event of an oil spill on its winter range. Secondly, bioaccumulation of contaminants in sediments, habitat loss during the breeding season, and harvesting, have all been identified as potential risk factors to the survival of Barrow's Goldeneye (Schmelzer 2006).

Management Plan / Recovery Plan

A management plan for Barrow's Goldeneye has been prepared by the GNL, DEC to identify recovery strategies to monitor and manage this species (Schmelzer 2006). Critical habitat has not been identified for this species.

3.3.8 Gray-cheeked Thrush

Reasons for Designation

In Newfoundland and Labrador, the Gray-cheeked Thrush has a declining population, at 11.5 percent per year from 1968-2008, with a sudden decrease in 1990 (GNL, DEC, 2011c, internet).

Description

This species of thrush is slightly larger than other species of thrush (GNL, DEC, 2011c, internet). As its name suggests its plumage is primarily gray, with Newfoundland birds having chestnut edging on their wings and tail (GNL, DEC, 2011c, internet).

Distribution / Habitat Requirements

The Gray-cheeked Thrush winters in South America and breeds in boreal forests across North America and northeastern Siberia (GNL, DEC, 2011c, internet). In Newfoundland, they have most commonly been observed on the Northern Peninsula, the northeast coast, and the Avalon Peninsula, and less commonly observed on the west coast and the interior (Dalley et al. 2005). In Labrador, they have been observed throughout (GNL, DEC, 2011c, internet). During passerine surveys for the Project, four individuals were observed in Southeastern Labrador and on the Island, 16 individuals were observed, 14 of which were within the Northern Peninsula region, and two were within the Central and Eastern Newfoundland region (Stantec 2010a).

Limiting Factors

Limiting factors for the Gray-cheeked Thrush have not been identified. However suggested threats include loss of habitat, nest predation, and mortality during migration from collisions with anthropogenic structures (GNL, DEC, 2011c, internet).

Management Plan / Recovery Plan

A management plan has been established for the Gray-cheeked Thrush by the GNL, DEC (Endangered Species and Biodiversity Section 2010). Critical habitat has not been identified for this species.

3.3.9 Short-eared Owl

Reasons for Designation

This species has been continually declining over the past 40 years, including a decrease of 23 percent in the last decade alone (COSEWIC 2008).

Description

The Short-eared Owl is a medium-sized owl, with a round head, and yellow eyes. The plumage is brown on the back and creamy-buff on the chest with brown streaks, with both sexes similar in appearance (COSEWIC 2008).

Distribution / Habitat Requirements

Unforested habitats are used by this species including tundra, bog, sand dunes, and coastal barrens in Newfoundland and Labrador. However, it has been proposed that the primary factor influencing habitat choice is food abundance (COSEWIC 2008). These habitats are particularly abundant on the west coast and the Northern Peninsula, the coastal barrens and above the treeline in Labrador (GNL, DEC, 2011f, internet).

Limiting Factors

Habitat loss and degradation of its wintering habitat has been proposed as the major threat to the Short-eared Owl, while habitat loss and degradation to its breeding habitat in Canada and pesticide use are also suggested as threats to this species (COSEWIC 2008). Limitations on this species in the province are prey abundance, predation on eggs and juveniles, competition for resources and human disturbance of nests (Schmelzer 2005).

Management Plan / Recovery Plan

A management plan for the Short-eared Owl was released in 2005 (Schmelzer 2005). Critical habitat has not been identified for this species.

3.4 Marine Mammals and Sea Turtles

Newfoundland and Labrador and the Atlantic Ocean have several federally listed marine mammal and sea turtle species of special conservation concern, and one provincially listed (the polar bear). These species are:

- polar bear (*Ursus maritimus*)
- beluga whale (*Delphinapterus leucas*) (St. Lawrence Estuary population)
- blue whale (*Balaenoptera musculus*)
- fin whale (*Balaenoptera physalus*)
- gray whale (*Eschrichtius robustus*)
- North Atlantic right whale (*Eubalaena glacialis*)
- leatherback sea turtle (*Dermochelys coriacea*)
- Sowerby’s beaked whale (*Mesoplodon bidens*)

Three of the above listed species are known or likely present in the geographical regions of the Strait of Belle Isle Area and / or Conception Bay Area. The species potentially present are found in Table 3.4.

Table 3.4 Marine Mammal and Sea Turtle Species of Special Conservation Concern Occurrence within the Strait of Belle Isle Area and Conception Bay Area

Species	Designation	Known or Likely Presence	
	SARA	Strait of Belle Isle	Conception Bay
Blue Whale (Northwest Atlantic Ocean population) <i>Balaenoptera musculus</i>	Schedule 1, Endangered (May 2002)	✓	✓
Fin Whale (Atlantic Ocean population) <i>Balaenoptera physalus</i>	Schedule 1, Special Concern (May 2005)	✓	✓
Leatherback Sea Turtle <i>Dermochelys coriacea</i>	Schedule 1, Endangered (May 2001)	✓	✓
Note: Only SARA designations are listed as these marine species are protected under federal processes only; and “✓” signifies potential known occurrence			

3.4.1 Blue Whale (Northwest Atlantic Population)

Reasons for Designation

There are fewer than 250 mature individuals and strong indications of a low calving rate and low rate of recruitment are reasons for this species’ designation as endangered (COSEWIC 2002).

Description

The blue whale is known to be the largest animal on Earth with recorded lengths and weights in the 30 m range and 80 to 150 tons, respectively. Blue whales are gray, and have a tapered elongated body, widest at the eye, with a prominent rostral ridge and baleen measuring up to 1 m (Sears and Calambokidis 2002).

Distribution / Habitat Requirements

The Northwest Atlantic population is distributed along the north shore of the St. Lawrence River estuary and the SOBI (NEFSC NOAA 2002). Blue whales partake in long seasonal migrations from the equatorial regions to productive feeding waters of subarctic latitudes (Beauchamp et al. 2009). However, it has also been suggested that some individuals may not undergo this seasonal migration (Beauchamp et al. 2009). Historical blue whale sightings in the SOBI are illustrated in Figure 3.5, and for Conception Bay in Figure 3.6. Note, the sighting dataset has several caveats which are stated in Sikumiut (2010b).

An acoustic recorder deployed in the SOBI nearest the Newfoundland side (see Figure 3.7), detected concurrent calling of blue whales in late July 2010 which suggested that more than one blue whale was present in the area at that time. Blue whale callings were not detected at any other time during the recording period June to August or September to December 2010 (Jasco 2011).

Limiting Factors

Threats to this species include anthropogenic factors such as noise, ship strikes, disturbance from whale watching activity, entanglement in fishing gear and pollution (COSEWIC 2002; Beauchamp et al. 2009). There are also potential limits from climate change, which could affect zooplankton (prey) abundance (COSEWIC 2002) and natural mortality, including injury from ice and predation by other whale species (Beauchamp et al. 2009).

Management Plan / Recovery Plan

A recovery strategy for the Northwest Atlantic blue whale population was released in 2009 (Beauchamp et al. 2009). Critical habitat for the species has yet to be identified.

Figure 3.5 Historical Blue Whale and Fin Whale Sightings in the Strait of Belle Isle

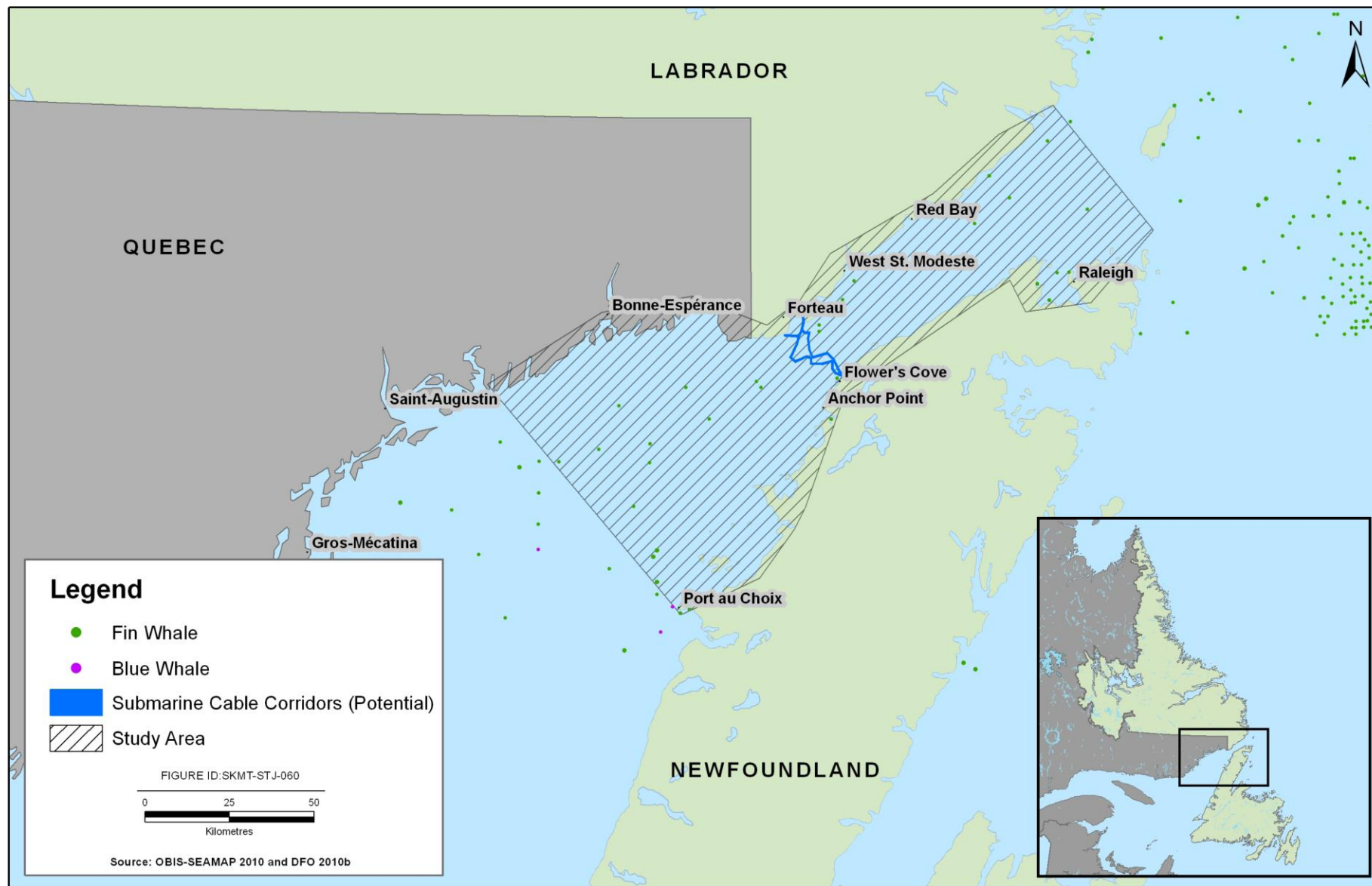


Figure 3.6 Historical Observations of Blue Whale and Fin Whale Sightings in Conception Bay

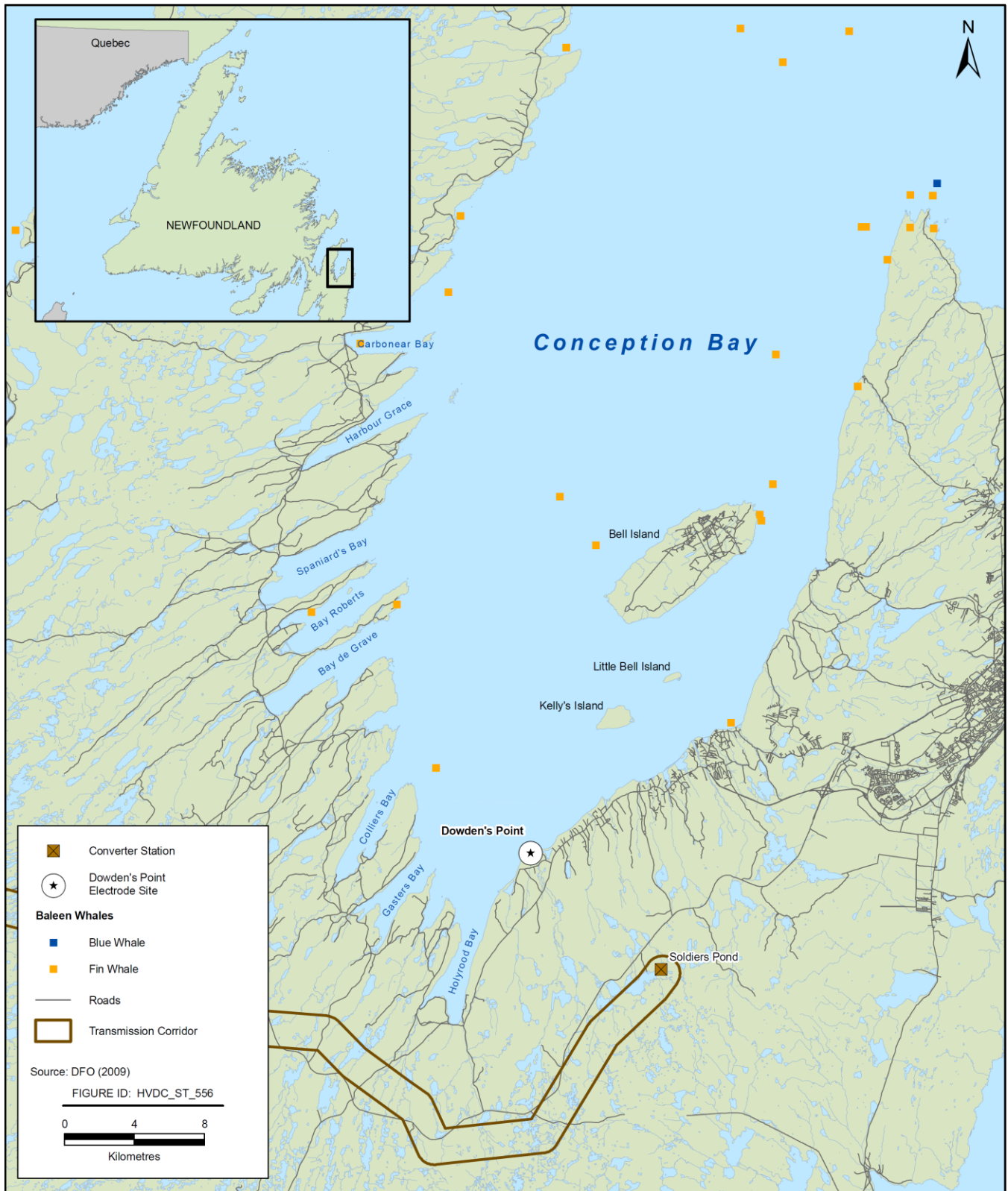
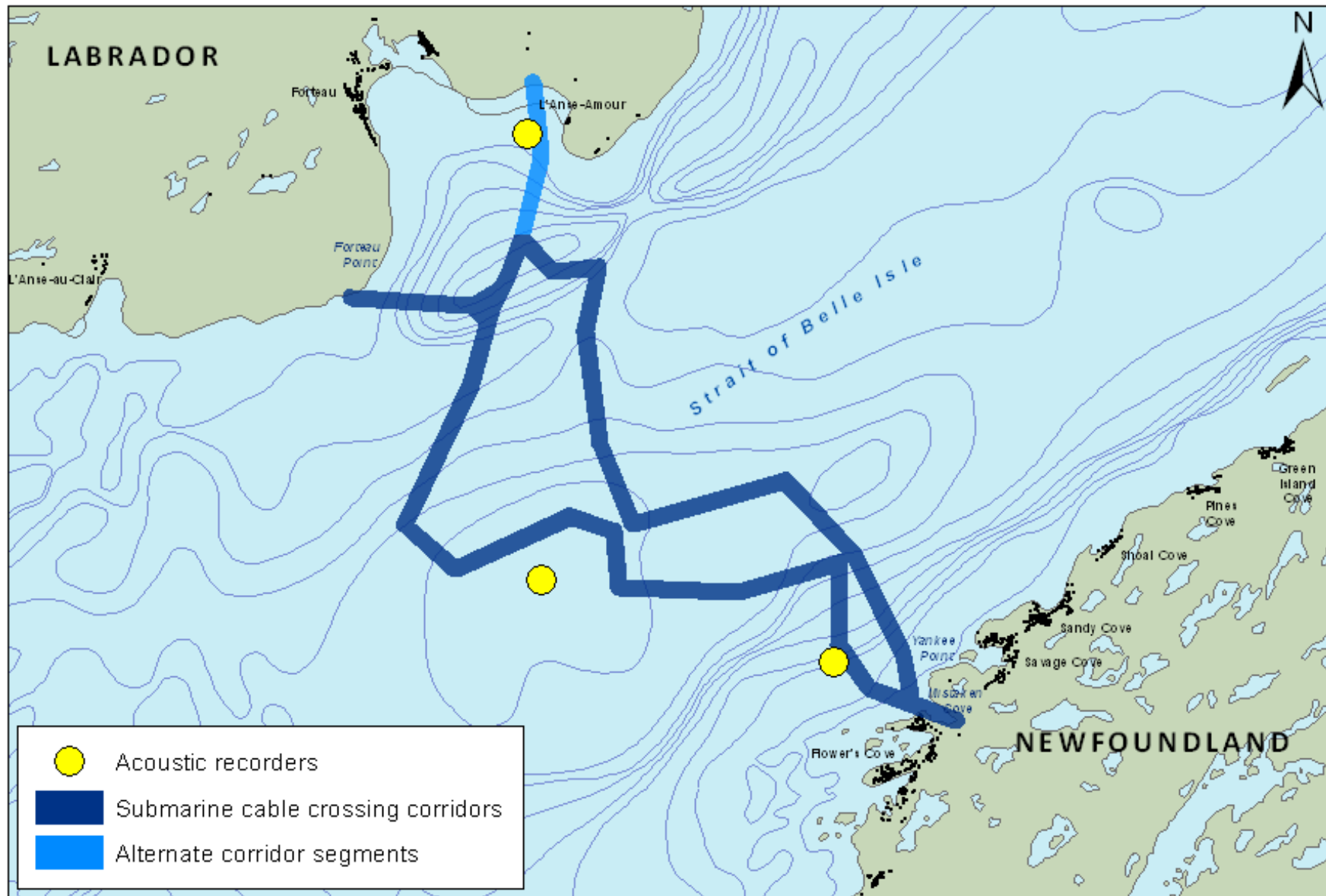


Figure 3.7 Acoustic Recorder Locations (Jasco 2011)



3.4.2 Fin Whale

Reasons for Designation

The fin whale population was reduced by whaling during much of the 20th Century. However, sightings remain relatively common off Atlantic Canada, and they have not been hunted since 1971. The current abundance and level of depletion compared with pre-whaling numbers are uncertain (COSEWIC 2005).

Description

The fin whale is the second largest whale in the world. This whale is characterized by fast swimming speeds and a streamlined body. It has a distinguishing feature on its lower jaw with an asymmetrical pigmentation – dark on the left and light on the right (COSEWIC 2005).

Distribution / Habitat Requirements

Fin whales generally make seasonal migrations from low-latitude wintering areas to high-latitude summer feeding grounds. Summer concentrations in the western North Atlantic are in the Gulf of St. Lawrence, on the Scotian Shelf, in the Bay of Fundy, in the nearshore and offshore waters of Newfoundland, and off Labrador (COSEWIC 2005). Historical fin whale sightings in the SOBI are illustrated in Figure 3.5, and for Conception Bay in Figure 3.6. Note, the sighting dataset has several caveats which are stated in Sikumiut (2010b).

Acoustic recorders located at the Labrador and Middle Stations (Figure 3.7) recorded fin whale calls in July and August 2010 (Jasco 2011).

Limiting Factors

Fin whale populations may be limited by a variety of factors including ship strikes, increasing noise, and reduced prey. Other threats include entanglements in fishing gear and whaling (COSEWIC 2005).

Management Plan / Recovery Plan

A recovery strategy for the fin whale (Atlantic population) has not been released.

3.4.3 Leatherback Sea Turtle

Reasons for Designation

This species has experienced a severe global decline of greater than 70 percent in 15 years (James 2001).

Description

The leatherback turtle is a large marine turtle, which has a teardrop-shaped body, and front and rear flippers and no claws. The upper carapace is a dark bluish black colour, covered in a leathery skin, and it does not have a hard shell. It also has a pink patch on the top of its head (COSEWIC 2001b).

Distribution / Habitat Requirements

The leatherback turtle has been found in waters off the coast of Newfoundland and Labrador, and is most abundant in Atlantic Canada from July through to the end of October (DFO 2011, internet). This species nests on the warm tropical beaches of the Atlantic, Pacific, and Indian Oceans (DFO 2011, internet). The literature,

namely, Goff and Lien (1988), Witzell (1999) and James (2000) have compiled the distribution of leatherback turtles in Atlantic Canada which illustrates the known distribution within the SOBI and Conception Bay (Figure 3.8).

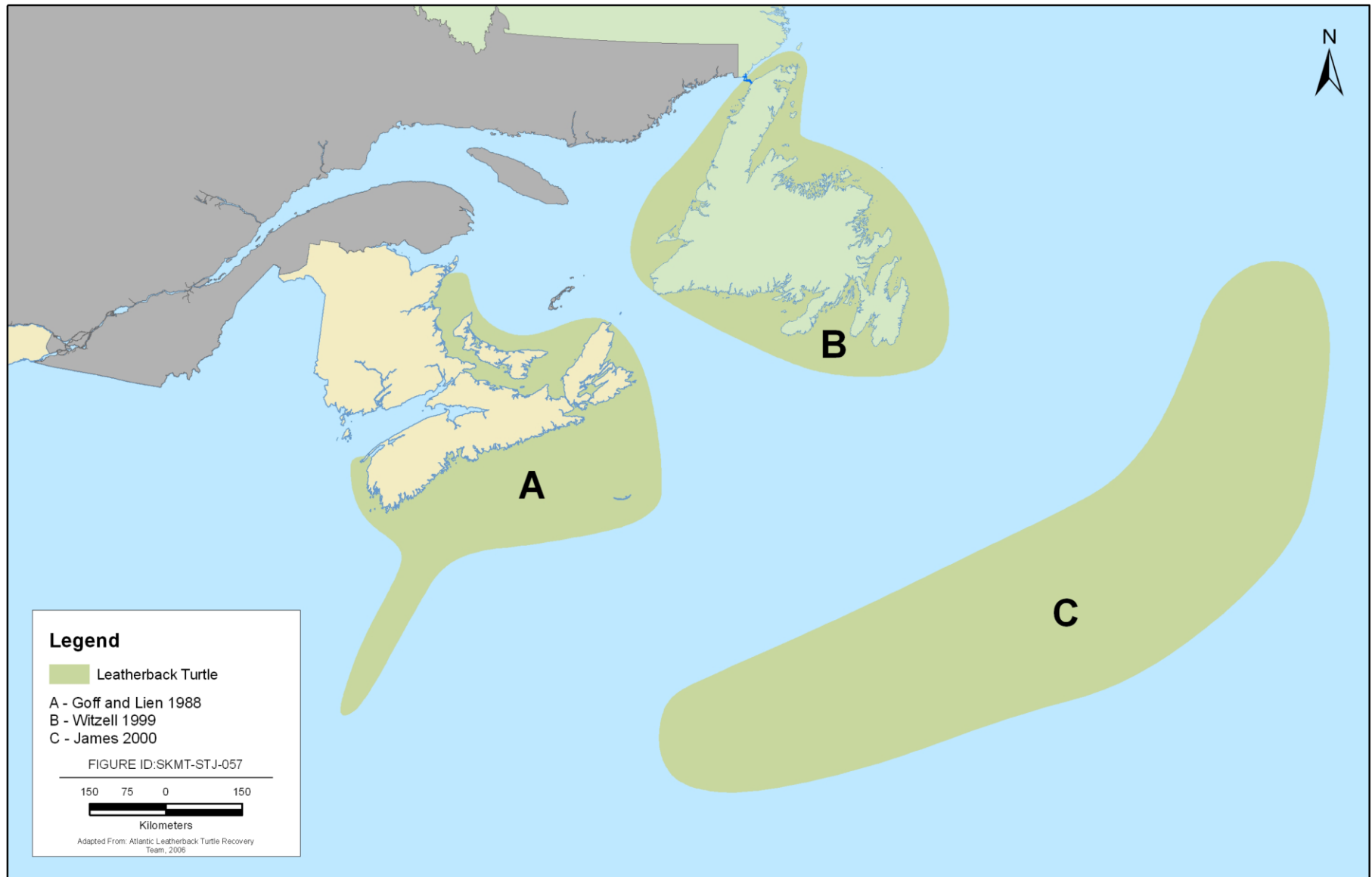
Limiting Factors

Incidental capture by fishing gear is a major cause of mortality. A long lifespan, very high rates of egg and hatching mortality, and late age of maturity all increase this species' vulnerability (James 2001).

Management Plan / Recovery Plan

A recovery strategy for the leatherback turtle was released in 2006 (Atlantic Leatherback Turtle Recovery Team 2006). Critical habitat for the species has yet to be identified.

Figure 3.8 Distribution of Leatherback Turtle in Atlantic Canada



3.5 Marine Fish

Newfoundland and Labrador and the Atlantic Ocean have several federally listed marine fish species of special conservation concern. These designated species of marine fish include three species of wolffish and one shark species:

- Atlantic wolffish (*Anarhichas lupus*)
- Northern wolffish (*Anarhichas denticulatus*)
- Spotted wolffish (*Anarhichas minor*)
- White shark (*Carcharodon carcharias*)

Table 3.5 presents the federal designations for all of the species with known occurrence in the study area and indicates the known presence of these species within the SOBI and Conception Bay geographical regions which includes all of the above fish species.

Table 3.5 Marine Fish Species of Special Conservation Concern Occurrence within the Strait of Belle Isle Area and Conception Bay Area

Species	Designation	Known Presence in the Geographical Regions	
	SARA	Strait of Belle Isle	Conception Bay
Atlantic Wolffish <i>Anarhichas lupus</i>	Schedule 1, Special Concern (2004)	✓	✓
Northern Wolffish <i>Anarhichas denticulatus</i>	Schedule 1, Threatened (May 2001)	✓	✓
Spotted Wolffish <i>Anarhichas minor</i>	Schedule 1, Threatened (May 2001)	✓	✓
White Shark <i>Carcharodon carcharias</i>	Schedule 1, Endangered	✓	–

Note: Only SARA designations are listed as these marine fish species are protected under federal processes only, and “✓” signifies potential known occurrence

3.5.1 Atlantic Wolffish

Reasons for Designation

The population of this large, solitary benthic fish has declined significantly since the 1970s. It is a slow-growing, late-maturing fish. Threats to the species are related to fishing and habitat alteration, perhaps compounded by environmental change (O’Dea and Haedrich 2000).

Description

The Atlantic wolffish is a large, bottom-dwelling predatory fish and is distinguished from the other two Atlantic species by the dark transverse bars on the body and its firm musculature. Wolffish are characterized by the prominent, canine-like teeth in the front of the jaws, elongate body, and lack of pelvic fins. Atlantic wolffish vary

in colour depending on their surroundings, from slate blue to dull olive green to purplish brown (O’Dea and Haedrich 2000).

Distribution / Habitat Requirements

This species is widely distributed across the North Atlantic, and occurs in the SOBI. The Atlantic wolffish is found principally in the deep cool waters of the continental shelf on rocky or hard clay bottoms, and only occasionally on sand or mud. It is most prevalent and abundant on the deep shelf off northeastern Newfoundland and Labrador. Like other wolffish species, its migrations are local and limited and it does not form large schools. It is, however, known to perform small seasonal inshore-offshore migrations.

DFO sentinel fisheries data and scientific surveys conducted in the SOBI between 1999 and 2009 have recorded capture locations of this species near the proposed cable crossing corridors (Figure 3.9).

Wolffishes (unspecified species) were also identified in the CCRI database as occurring within Conception Bay (CCDA 2001).

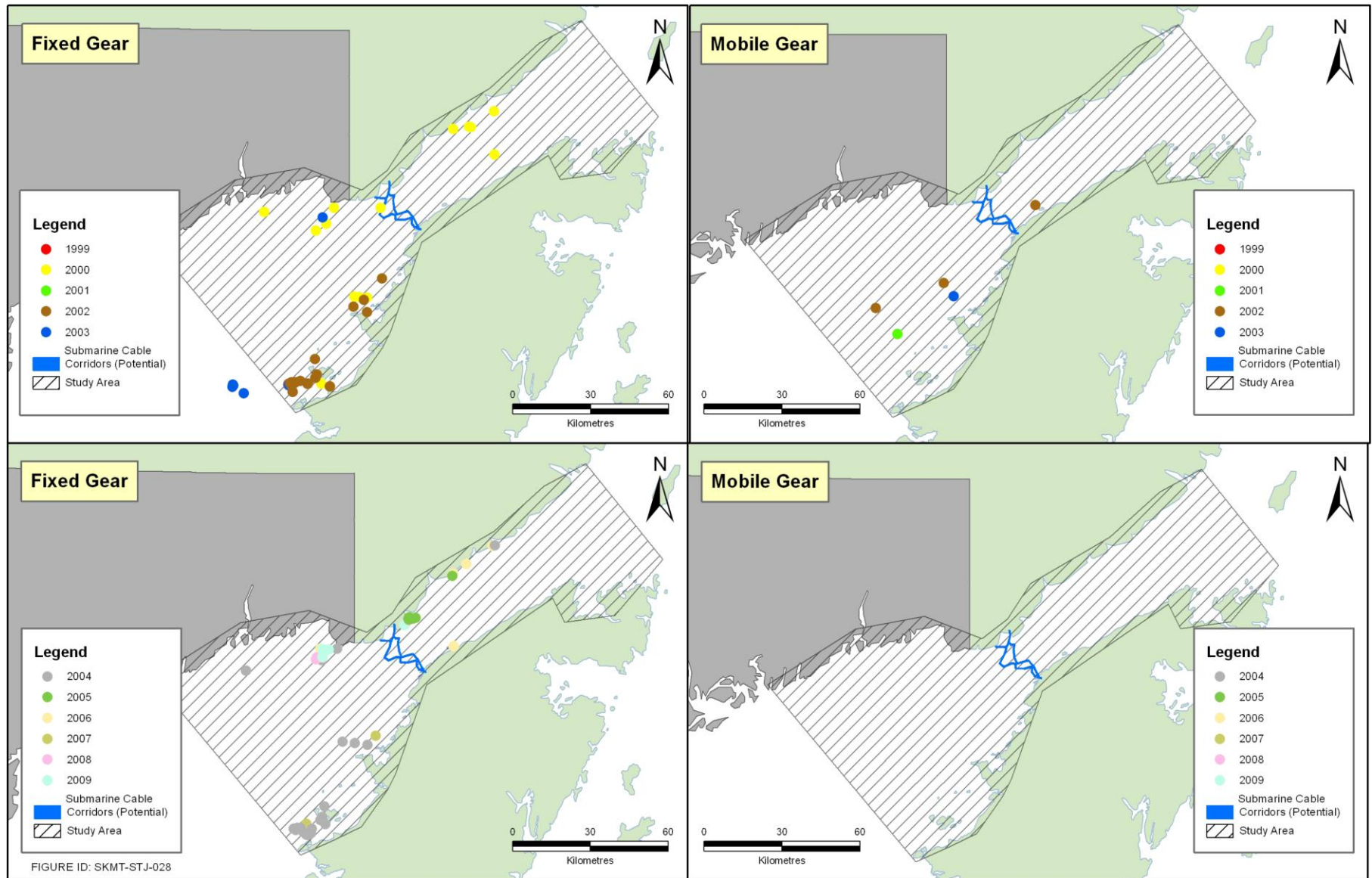
Limiting Factors

There are no direct studies of factors responsible for the declines observed in wolffish abundance, although overfishing was clearly the major cause of the declines observed in most groundfish species (O’Dea and Haedrich 2000).

Recovery Plan / Management Plan

A management plan is in place for the Atlantic wolffish under the SARA (Kulka et al. 2007).

Figure 3.9 Sentinel Fisheries and DFO Scientific Surveys – Atlantic Wolffish (1999 to 2009)



3.5.2 Northern Wolffish

Reasons for Designation

The Northern wolffish have declined over 95 percent in three generations, and the number of locations where this fish has been found has also decreased (O’Dea and Haedrich 2001a).

Description

Like the Atlantic wolffish, the Northern wolffish has prominent, canine-like teeth in the front of the jaws, and have an elongate body and lack pelvic fins. It is a thick, heavy-set fish with a heavy head, pointed snout and small eyes. It is gray to dark brown with a light violet sheen, and often has several dark spots or bars. It can be distinguished from the other wolffish species by its more uniform body colour and its soft jelly-like musculature (O’Dea and Haedrich 2001a).

Distribution / Habitat Requirements

The Northern wolffish can be found across the North Atlantic, and in Canada it occurs primarily off the northeast coast of Newfoundland. This species is found offshore in cold (less than 5°C), continental shelf waters at depths between the surface and 900 m, but mostly at depths greater than 100 m (O’Dea and Haedrich 2001a).

DFO sentinel fisheries data and scientific surveys conducted in the SOBI in 2008 recorded capture locations of this species near the proposed cable crossing corridors (Figure 3.10).

Wolffishes (unspecified species) were also identified in the CCRI database as occurring within Conception Bay (CCDA 2001).

Limiting Factors

Threats to this species are mostly fisheries related, and include by-catch and habitat disruption, and alteration by bottom trawling. During trawling activities, bottom sediments are re-suspended which potentially smother spawning areas and damage gills (O’Dea and Haedrich 2001a).

Recovery Plan / Management Plan

A recovery plan exists for the Northern wolffish under the SARA (Kulka et al. 2007).

Figure 3.10 Sentinel Fisheries and DFO Scientific Surveys – Northern Wolffish (1999 to 2009)



3.5.3 Spotted Wolffish

Reasons for Designation

The spotted wolffish have declined over 96 percent in three generations, and the number of locations where this fish has been found has also decreased (O’Dea and Haedrich 2001b).

Description

Similar to the two wolffish species described previously, the spotted wolffish also has prominent, canine-like teeth in the front of the jaws, and an elongate body, lacking pelvic fins. This species has a large head, and a rounded snout. It is yellowish or greyish brown to dark brown with several distinct spots on its body which distinguishes it from the Atlantic and the Northern wolffish species. It also possesses a long dorsal fin and has firm musculature (O’Dea and Haedrich 2001b).

Distribution / Habitat Requirements

The spotted wolffish is found across the North Atlantic, and occurs primarily off the northeast coast of Newfoundland in the western North Atlantic. This species occurs in cold (lower than 5° C), on the continental shelf and slope between water depths of 50 m to 600 m, over sand / mud substrate, with large boulders nearby.

DFO sentinel fisheries data and scientific surveys conducted in the SOBI between 1999 and 2009 recorded capture locations of this species within the SOBI, however these observations were not in the general vicinity of the proposed cable crossing corridors (Figure 3.11).

Wolffishes (unspecified species) were identified in the CCRI database as occurring within Conception Bay (CCDA 2001).

Limiting Factors

Threats to this species are mostly fisheries related, and include by-catch, and habitat disruption and alteration by bottom trawling. During trawling activities, bottom sediments are re-suspended which potentially smother spawning areas and damage gills (O’Dea and Haedrich 2001b).

Recovery Plan / Management Plan

A recovery plan exists for the spotted wolffish under the SARA (Kulka et al. 2007).

3.5.4 White Shark

Reasons for Designation

The white shark has been estimated to have declined 80 percent over 14 years in areas of the Northwest Atlantic Ocean (COSEWIC 2006c).

Description

The white shark has a stout body, with adults being 3.8 to 6 m long. The dorsal surface is gray, and the ventral surface is white, with a clear delineation between the two surfaces (COSEWIC 2006c).

Distribution / Habitat Requirements

Distribution of the white shark is wide, from sub-polar to tropical seas of both hemispheres, but is mostly observed and captured in inshore temperate waters over the continental shelves of the western North Atlantic, Mediterranean Sea, southern Africa, southern Australia, New Zealand, and the eastern North Pacific. The Atlantic population of white shark has been recorded from the Northeast Newfoundland shelf, the SOBI, the St. Pierre Bank, among others (COSEWIC 2006c).

The white shark occurs in both inshore and offshore waters, with a known bathymetric range throughout the water column, from near the surface to depths of at least 1,280 m. It has been observed in the breakers off sandy beaches, rocky shores, and in enclosed bays, lagoons and harbours (COSEWIC 2006c).

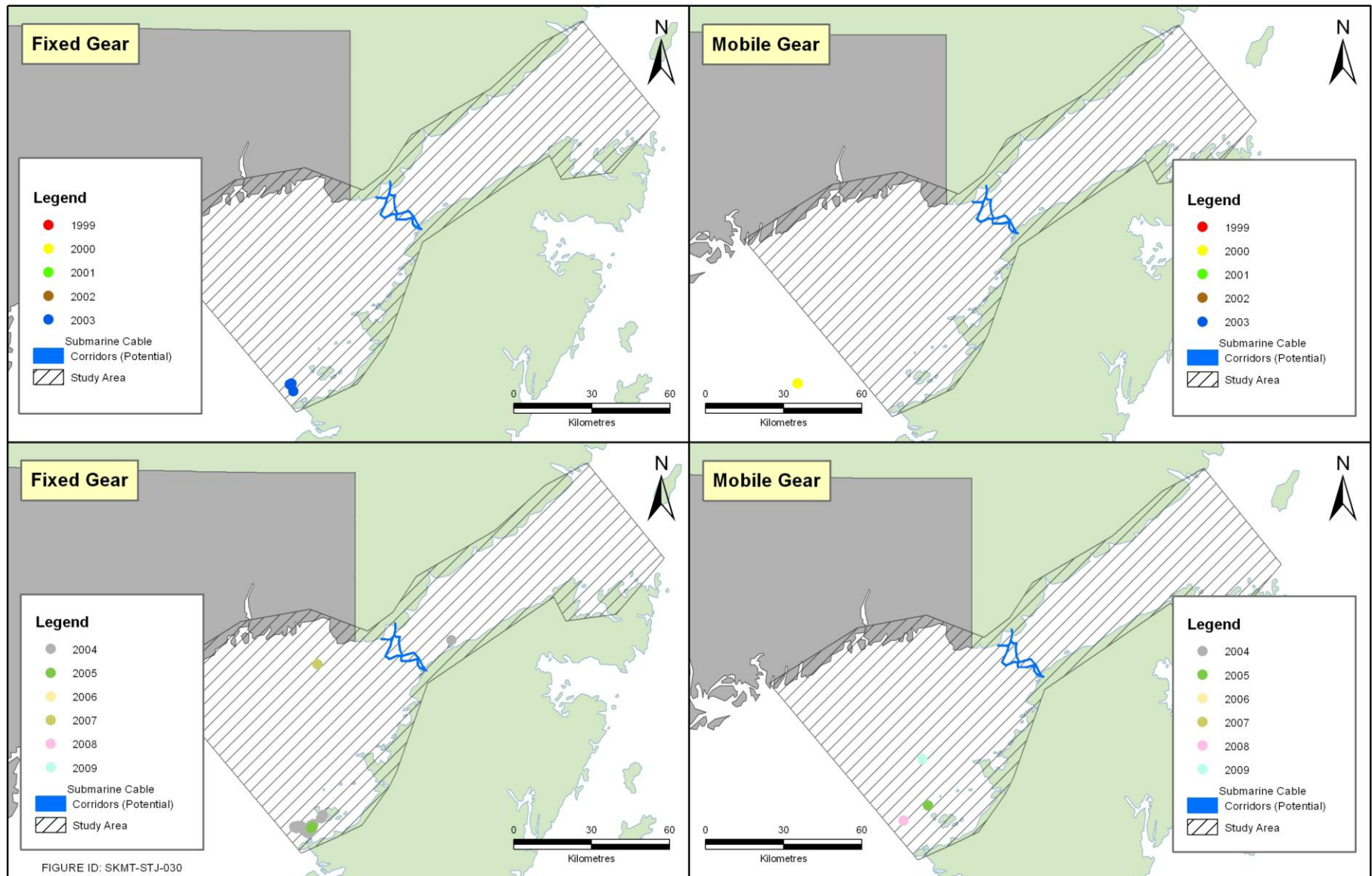
Limiting Factors

The most significant predators of white shark are humans from sport fishing, commercial pelagic by-catch, and international trade of their body parts. This species has a tendency to investigate boats and other floating objects which brings them to the surface, increasing their vulnerability to being hooked, shot or harpooned. The long generation time and low reproductive rates limit its ability to withstand mortality rates (COSEWIC 2006c).

Recovery Plan / Management Plan

A recovery plan does not exist for the white shark under the SARA.

Figure 3.11 Sentinel Fisheries and DFO Scientific Surveys – Spotted Wolffish (1999 to 2009)



3.6 Freshwater Fish

In Newfoundland and Labrador, there are two species of freshwater fish that are designated as protected under the *NL ESA* and / or the *SARA*:

- American eel (*Anguilla rostrata*)
- Banded killifish (*Fundulus diaphanus*)

Table 3.6 presents the provincial designation for the species with known occurrence in the study area, including the known presence of this species within the four geographical regions, as well as the two marine regions of the study area.

Table 3.6 Freshwater Fish Species of Special Conservation Concern Occurrence by Region within the Transmission Corridor and Marine Components

Species	Designation	Known or Likely Presence in the Geographical Regions					
	<i>NL ESA</i>	Southeastern Labrador	Strait of Belle Isle	Northern Peninsula	Central and Eastern Newfoundland	Avalon Peninsula	Conception Bay
American Eel <i>Anguilla rostrata</i>	Vulnerable (October 2006)	✓	✓	✓	✓	✓	✓
Note: Only <i>NL ESA</i> designations are listed as American eel are not designated under the <i>SARA</i> and “✓” signifies potential known occurrence							

3.6.1 American Eel

Reasons for Designation

In central Canada, populations have collapsed 99 percent, and downward trends have also been recorded in surveys conducted on the Avalon Peninsula and the west coast of Newfoundland (Wildlife Division 2010).

Description

American eels have extremely elongated bodies with a wedge shaped head. Females are larger than the males and can grow up to a metre and weigh several kilograms (Wildlife Division 2010).

Distribution / Habitat Requirements

American eels can be found in most coastal areas, adjacent to accessible rivers in Newfoundland and Southeastern Labrador (Clarke et al. 2007). They spawn only in the Sargasso Sea in the Mid-Atlantic Ocean (Wildlife Division 2010). Growing eels are primarily benthic, utilizing substrate (rock, sand, mud) and bottom debris such as snags and submerged vegetation for protection and cover (COSEWIC 2006b).

During field surveys conducted for the Project, American eel were only captured in the Northern Peninsula region of the study area (Amec 2010a).

Limiting Factors

Several possible causes for this species' decline include habitat alteration, dams, fishery harvest, changes in ocean conditions, acid rain, and contaminants (COSEWIC 2006b; Clarke et al. 2007). However, Clarke et al. (2007) state that the province is believed to have an abundance of suitable habitat, much of which remains unexploited and relatively pristine.

Recovery Plan / Management Plan

A draft management plan does exist for the American eel under the *NL ESA* (Wildlife Division 2010).

3.7 COSEWIC / SSAC Designated and SARA Schedule 2 and 3 Species

Provincial species currently assessed by COSEWIC / SSAC and SARA Schedule 2 and 3, and their designations are presented in Table 3.7. These species are yet to be legally protected under the relevant legislations (SARA and NL ESA). Likely presence of each of these species within the Project area (e.g., transmission corridor, SOBI, Conception Bay) is also presented based on available literature including COSEWIC / SSAC status reports.

Table 3.7 COSEWIC and SSAC Designated and SARA Schedule 2 and 3 Species of Special Conservation Concern within Newfoundland and Labrador

Common Name	Scientific Name	Species Designation COSEWIC / SSAC / SARA - Schedule 2 or 3	Likely Presence within the Project Area
Plants and Lichens			
Graceful felt lichen	<i>Erioderma mollissimum</i>	COSEWIC (Endangered) SSAC (Endangered)	–
Blue felt lichen	<i>Degelia plumbea</i>	COSEWIC (Special Concern)	–
Alaska rein orchid	<i>Platanthera foetida</i>	SSAC (Endangered)	–
Cutleaf fleabane	<i>Erigeron compositus</i>	SSAC (Endangered)	–
Feathery false Solomon's seal	<i>Maianthemum racemosum</i> subsp. <i>Racemosum</i>	SSAC (Endangered)	–
Gmelin's watercrowfoot	<i>Ranunculus gmelinii</i>	SSAC (Endangered)	–
Oval-leaved creeping spearwort	<i>Ranunculus flammula</i> var. <i>ovalis</i>	SSAC (Endangered)	–
Rock dwelling sedge	<i>Carex petricosa</i> var. <i>misandroides</i>	SSAC (Endangered)	–
Bodin's milkvetch	<i>Astragalus bodinii</i>	SSAC (Threatened)	–
Sharpleaf aster	<i>Oclemena acuminata</i>	SSAC (Threatened)	–
Shaved sedge	<i>Carex tonsa</i> var. <i>tonsa</i>	SSAC (Threatened)	–
Tradescant's aster	<i>Symphyotrichum tradescantii</i>	SSAC (Threatened)	–
Water pygmyweed	<i>Tillaea aquatic</i>	SSAC (Vulnerable)	–
Marine Fish			
Atlantic cod (Newfoundland and Labrador population)	<i>Gadus morhua</i>	COSEWIC (Endangered)	✓
Porbeagle shark	<i>Lamna nasus</i>	COSEWIC (Endangered)	Rare
Roundnose grenadier	<i>Coryphaenoides rupestris</i>	COSEWIC (Endangered)	–

Common Name	Scientific Name	Species Designation COSEWIC / SSAC / SARA - Schedule 2 or 3	Likely Presence within the Project Area
Deepwater redfish (Various populations)	<i>Sebastes mentella</i>	COSEWIC (Endangered, Threatened)	Rare
Atlantic salmon (South Newfoundland population)	<i>Salmo salar</i>	COSEWIC (Endangered, Threatened, Special Concern)	–
Cusk	<i>Brosme brosme</i>	COSEWIC (Threatened)	Rare
American plaice (Newfoundland and Labrador population)	<i>Hippoglossoides platessoides</i>	COSEWIC (Threatened)	✓
Blue shark (Atlantic population)	<i>Prionace glauca</i>	COSEWIC (Special Concern)	–
Basking shark (Atlantic population)	<i>Cetorhinus maximus</i>	COSEWIC (Special Concern)	–
Roughhead grenadier	<i>Macrourus berglax</i>	COSEWIC (Special Concern)	–
Spiny dogfish (Atlantic population)	<i>Squalus acanthis</i>	COSEWIC (Special Concern)	✓
Acadian redfish (Bonne Bay population)	<i>Sebastes fasciatus</i>	COSEWIC (Special Concern)	Rare
Shortfin mako	<i>Isurus oxyrinchus</i>	COSEWIC (Threatened)	Rare
Marine Mammals			
Harbour porpoise (Northwest Atlantic population)	<i>Phocoena phocoena</i>	SARA - Schedule 2 (Threatened)	✓
Atlantic walrus	<i>Odobenus rosmarus rosmarus</i>	COSEWIC (Special Concern)	–
Killer whale (Northwest Atlantic population)	<i>Orcinus orca</i>	COSEWIC (Special Concern)	✓
Beluga whale (Eastern Hudson Bay population; Ungava Bay population; Western Hudson Bay population)	<i>Delphinapterus leucas</i>	COSEWIC (Threatened, Endangered, Endangered, Special Concern)	Rare
Narwhal	<i>Monodon monoceros</i>	COSEWIC (Special Concern)	Rare
Humpback whale (Western North Atlantic population)	<i>Megaptera novaeangliae</i>	SARA - Schedule 3 (Special Concern)	✓
Avifauna			
Bobolink	<i>Dolichonyx oryzivorus</i>	COSEWIC (Threatened)	–
Barn swallow	<i>Hirundo rustica</i>	COSEWIC (Threatened)	–
Reptiles			
Loggerhead sea turtle	<i>Caretta caretta</i>	COSEWIC (Endangered)	–
Freshwater Fish			
Fourhorn sculpin	<i>Myoxocephalus quadricornis</i>	SARA – Schedule 3 (Special Concern)	–
Note: “–” signifies no known occurrence and / or does not apply to the listed species , and “✓” signifies known and potential occurrence.			

4.0 SUMMARY

Nalcor Energy is proposing to develop the *Labrador – Island Transmission Link* (the Project), a High Voltage Direct Current (HVdc) transmission system extending from Central Labrador to the Island of Newfoundland's Avalon Peninsula. As part of the Project's environmental assessment (EA), this *Species of Special Conservation Concern Component Study* has been completed in order to provide an overview of such species which are known, or considered likely, to occur in or near the Project area. Protected plant, wildlife, fish and marine mammal and sea turtle species are addressed integrally as a key element of the various component studies prepared and submitted for the Project's EA. The purpose of this report is to present a summary of these species for use in the EA and on-going Project planning.

Provincially and / or federally designated species of special conservation concern are presented by category: plants, terrestrial mammals, avifauna, marine mammals and sea turtles, marine fish and freshwater fish. Each classification includes a listing of all known species of special conservation concern status (*NL ESA* and / or *SARA* listed) within the province. Then, to focus the discussion, a summary table of species of special conservation concern known, or likely present within the 2 km wide transmission corridor, and the regional marine study areas, including their respective designations under the *NL ESA* and the *SARA*, are presented. A species by species discussion of the known or likely present species within the study areas is presented which focuses on the following themes and descriptors: 1) reasons for designation, 2) description, 3) distribution / habitat requirements, 4) limiting factors, and 5) recovery plans and managements for the species.

Provincial species currently assessed by COSEWIC / SSAC and *SARA* Schedule 2 and 3, and their designations are also presented. These species are yet to be legally protected under the relevant legislations (*SARA* and *NL ESA*). Likely presence of each of these species within the Project area (e.g., transmission corridor, SOBI, Conception Bay) is also noted.

The information presented in this *Species of Special Conservation Concern* report is considered to be accurate as of the date of this submission.

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