Labrador – Island Transmission Link

Moose and Black Bear Supplementary Report

Labrador Transmission Corridor Option: Muskrat Falls to the Strait of Belle Isle

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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 Project's EA, a series of environmental studies have been completed to provide information on the existing biophysical and socioeconomic environments in and near the Project area.

At the time of the commencement of the EA and these associated environmental studies, the Labrador component of the Project included a converter station facility at Gull Island on the lower Churchill River, as well as a proposed transmission corridor extending from Gull Island to the Strait of Belle Isle. In mid-November 2010, Nalcor Energy advised the provincial and federal governments that it would also be assessing the potential option of locating the Project's Labrador converter station at or near the Muskrat Falls site on the lower Churchill River. If that were to be the case, the Labrador transmission corridor would potentially extend from Muskrat Falls to the Trans Labrador Highway (Phase 3) (TLH-3), and then follow generally along the south side of the highway to approximately its southernmost point before meeting and continuing along the previously identified corridor from that location to the Strait of Belle Isle (Figure 1.1).

The purpose of this Supplementary Report is to expand and update the scope of the *Moose and Black Bear Study* completed for the EA to provide similar environmental information for this additional transmission corridor option, for eventual use in Project planning and in the EIS.

Figure 1.1   Labrador - Island Transmission Link (Muskrat Falls Corridor Option)

2.0 APPROACH AND METHODS

The study involved the compilation and review of existing and available information on moose and black bear and their known and potential habitats in the area of the proposed Project, including the identified 2 km wide transmission corridor, as well as a larger regional Study Area that comprises an area approximately 15 km wide surrounding the corridor. The information and analysis provided herein focuses primarily upon the new 135 km long transmission corridor segment from Muskrat Falls, to and along a portion of the TLH-3, to the point where that corridor option joins the previously identified transmission corridor to the Strait of Belle Isle (see Figure 1.1). For completeness and consistency, however, the associated habitat quality mapping includes the entire transmission corridor and larger Study Area from Muskrat Falls to the Strait of Belle Isle.

2.1 Review of Relevant Studies

Information regarding use of the Study Area by moose and black bear was obtained by reviewing previous studies. In addition to those reports previously summarized in the initial *Moose and Black Bear Study* (Stantec 2010a), the TLH-3 EIS (Department of Works, Services and Transportation 2003) and associated reports were reviewed to provide additional information on moose and black bear within relevant portions of the corridor and Study Area.

2.2 Ecological Land Classification Habitat Mapping

An Ecological Land Classification (ELC), previously prepared for the Project (Stantec 2010b), has been applied to the Study Area (Stantec 2011). Through this initiative, vegetation types and associated habitats were identified, classified and categorized on a regional scale, with nine habitat types being identified and mapped for Southeastern Labrador. These ELC-based classifications formed the basis of the wildlife habitat mapping component of this supplementary report. Based on interpretation of the ELC units, as outlined by Stantec (2010a) and presented in Tables 2.1 and 2.2, moose and black bear habitat quality maps were produced for the Study Area. Maps were colour-coded to reflect habitat quality and indicate the percentage of primary, secondary and tertiary habitat available within specific ecoregions and for the Study Area as a whole.

Table 2.1   ELC Habitat Types and Relative Quality for Moose Habitat in the Study Area

ELC Habitat Type[1]	Habitat Quality[2]	
	Spring / Summer[3]	Fall / Winter[3]
Black Spruce Lichen Forest	Tertiary	Tertiary
Burn	Tertiary	Tertiary
Conifer Forest	Secondary	Primary
Conifer Scrub	Secondary	Tertiary
Hardwood Forest	Primary	Secondary
Lichen Heathland	Secondary	Tertiary
Mixedwood Forest	Secondary	Primary
Open Conifer Forest	Tertiary	Tertiary
Wetland	Primary	Tertiary

[1] Descriptions for habitat types provided in the ELC for the Project (Stantec 2010b)

[2] Descriptions for habitat quality provided in the initial *Moose and Black Bear Study* for the Project (Stantec 2010a)

[3] Though not included at the scale of the ELC, riparian habitats are considered secondary habitat for moose, during both spring / summer and fall / winter.

Table 2.2   ELC Habitat Types and Relative Quality for Black Bear Habitat in the Study Area

ELC Habitat Type[1]	Habitat Quality[2]	
	Spring / Early Summer[3]	Late Summer / Fall[3]
Black Spruce Lichen Forest	Primary	Primary
Burn	Secondary	Primary
Conifer Forest	Primary	Primary
Conifer Scrub	Secondary	Secondary
Hardwood Forest	Secondary	Primary
Lichen Heathland	Secondary	Secondary
Mixedwood Forest	Secondary	Primary
Open Conifer Forest	Primary	Primary
Wetland	Secondary	Secondary

[1] Descriptions for habitat types provided in the ELC for the Project (Stantec 2010b)

[2] Descriptions for habitat quality provided in the initial *Moose and Black Bear Study* for the Project (Stantec 2010a)

[3] Though not included at the scale of the ELC, riparian habitats are considered primary habitat for black bear in spring / early summer and secondary habitat quality in late summer /fall.

3.0   RESULTS AND ANALYSIS

The Study Area encompasses five ecoregions. The Low Subarctic Forest (Mecatina River) and String Bog (Eagle River Plateau) Ecoregions are dominant, comprising approximately 41 percent and 35 percent of the Study Area, respectively. The Forteau Barrens Ecoregion comprises 16 percent of the Study Area, whereas the High Boreal Forest (Lake Melville) and Mid Boreal Forest (Paradise River) Ecoregions are relatively minor, accounting for approximately 6 percent and 2 percent, respectively.

3.1   Moose

Moose are present in the Study Area but in relatively low densities compared to the Island and other boreal regions elsewhere in Canada (Brassard et al. 1974; Fryxell et al. 1988; Boer 1992; Chubbs and Schaeffer 1997; Jacques Whitford 1997; Minaskuat Inc. 2009a). The Study Area overlaps three Moose Management Areas (MMAs): 53A, 58 and 59 (Figure 3.1). Although specific data are not available for MMAs 53A, and MMAs 59, 57 and 58 were examined in 1998 prior to construction of Phase II of the TLH (Cartwright to Red Bay) and numbers were found to be low (<0.01 moose/km^2) in both management zones (Found 1998). However, the moderate percentage of cows and the presence of twinning amongst adult cows indicated that the population was stable despite low densities (Found 1998). A review of the TLH-3 EIS and its associated reports did not provide any detailed data or information pertaining to the distribution or abundance of moose within the Study Area.

Results of the ELC-based habitat model indicate that potential moose habitat is found throughout the Study Area. During the spring / summer, hardwood forests and wetlands (particularly those that support aquatic plants) provide particularly important moose habitat. Such primary habitat accounts for 21 percent (1,204.7 km^2) of the Study Area, and is primarily provided by wetlands. Secondary spring / summer moose habitat is also common and comprises 49 percent (2,805.8 km^2) of the Study Area. The major ecoregions of the Study Area (Subarctic Forest and String Bog Ecoregions) contain between 20 and 26 percent primary spring / summer moose habitat and 33 to 48 percent secondary habitat (Figures 3.2 and 3.3).

During the fall / winter, moose yarding and wintering areas are typically associated with habitats that provide a source of food and some relief from snow depths; such are often found in forested river valleys. Conifer and mixedwood forests provide such opportunities, and were therefore considered as primary habitat in the model. Although the Study Area is primarily comprised of tertiary habitat during the fall / winter (71 percent, 4,072.0 km^2), primary habitat does account for 25 percent of its area (1,461.7 km^2). However, secondary fall / winter habitat is relatively scarce, accounting for <1 percent of the Study Area. Although the shift to a reduced availability of preferred habitats during fall / winter is evident for the most of the ecoregions, the majority of the High Boreal Forest Ecoregion (62 percent) is identified as primary moose habitat during this period.
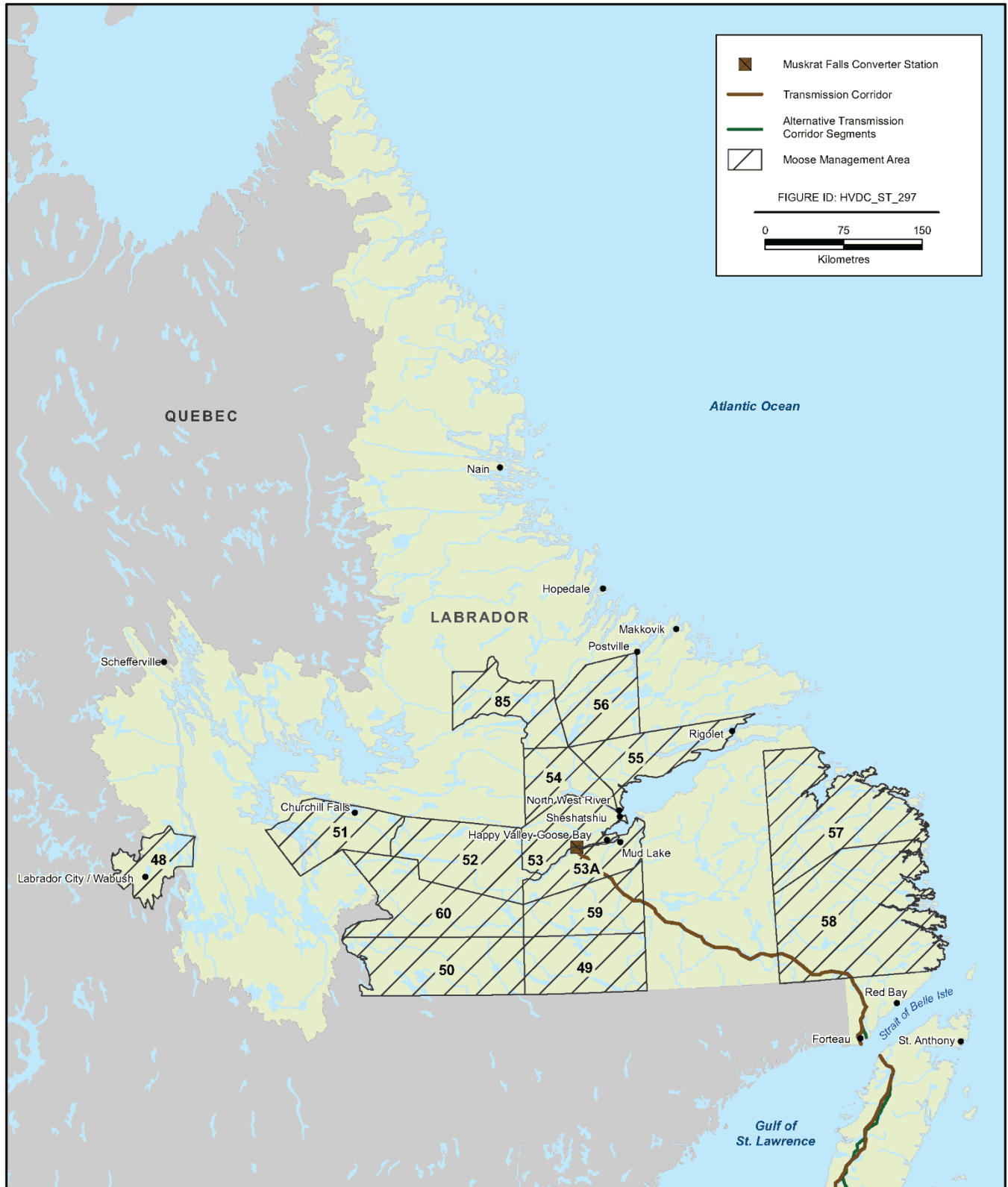
Figure 3.1   Moose Management Areas

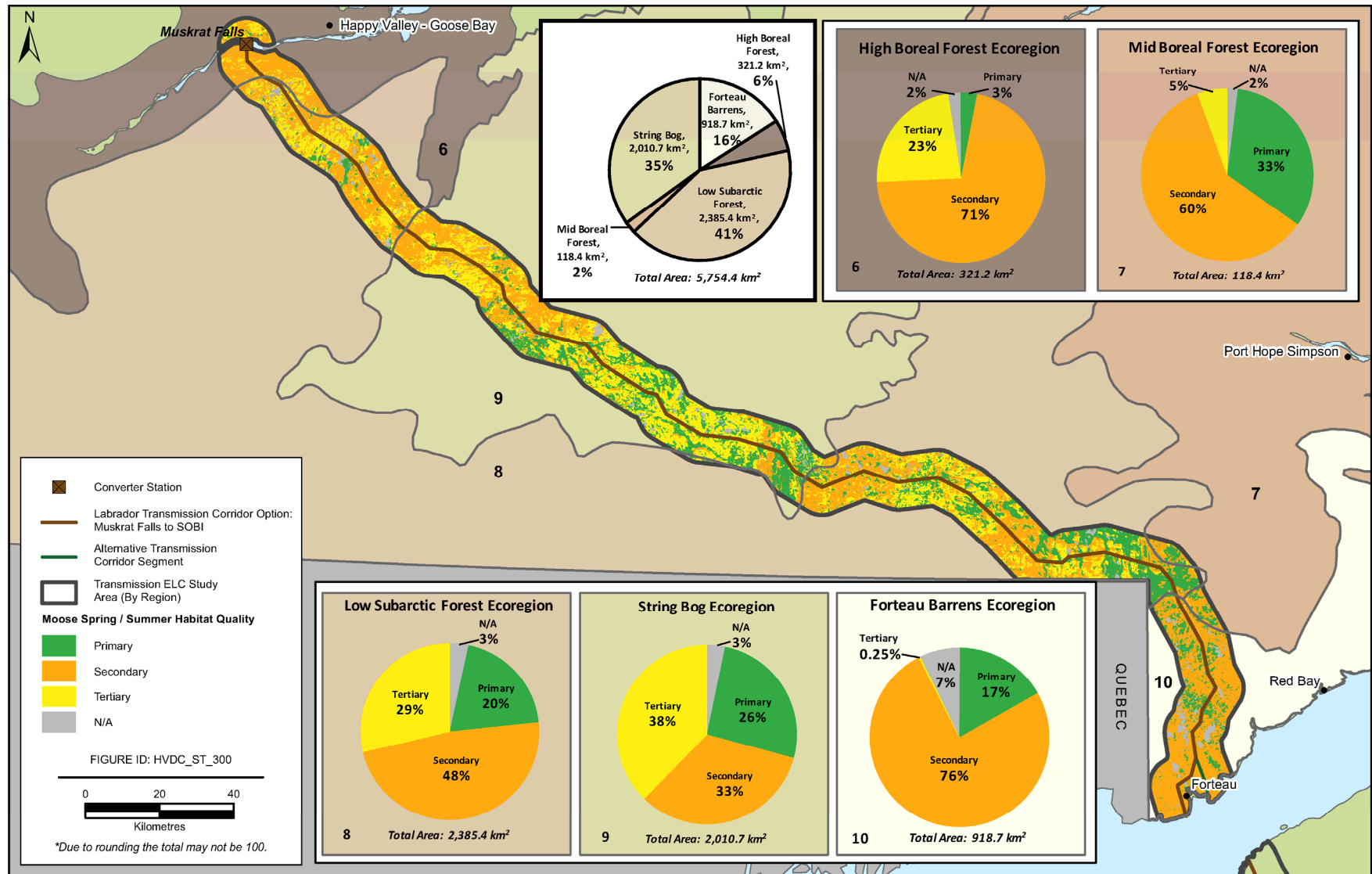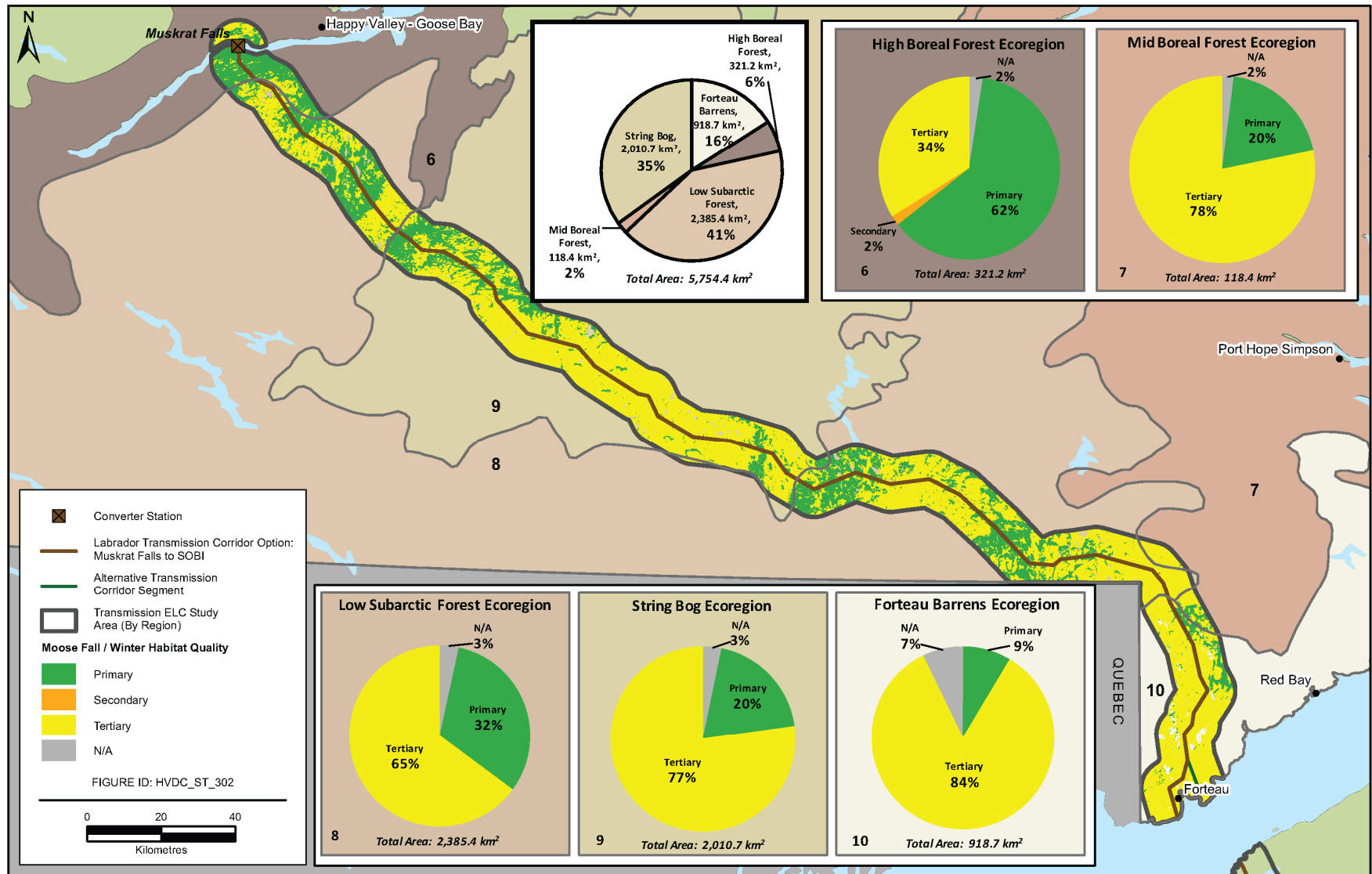**Figure 3.2**   **Moose Spring / Summer Habitat Quality in the Study Area**

Figure 3.3   Moose Fall / Winter Habitat Quality in the Study Area

3.2   Black Bear

Black bear are known to be distributed throughout the Study Area, which is located within the Labrador South Black Bear Management Area (Figure 3.4). The black bear baseline study in support of the Lower Churchill Hydroelectric Generation Project from 2006 to 2009 provides the most comprehensive overview of this species in the region (Minaskuat Inc. 2009b) and indicated that black bear are relatively common in central Labrador. Recurrent use of the river valley was evident, although the home range of bears extended beyond the lower Churchill River watershed (particularly in association with the landfill in Happy Valley-Goose Bay) (Minaskuat Inc. 2009b). Although the black bear is noted as present within Southeastern Labrador by the TLH-3 EIS, neither this document or its associated reports provide any detailed data pertaining to its distribution or use with respect to the Study Area.

Results of the ELC-based habitat model indicate that both primary and secondary black bear habitat are distributed throughout the Study Area, with little seasonal change in the distribution and abundance. Given that black bear are omnivorous and have opportunistic feeding behaviors, all habitats in the Study Area were considered either primary or secondary. During spring / early summer, primary black bear habitat occupies 50 percent (2,905.2 km^2) of the Study Area, whereas in the late summer / fall, it accounts for 52 percent (2,992.8 km^2). Primary habitat is particularly abundant in the Low Subarctic (58 and 61 percent for spring / early summer and late summer / fall, respectively), String Bog (57 percent for both the spring / early summer and late summer / fall) and High Boreal Forest (82 and 87 percent for spring / early summer and late summer / fall, respectively) Ecoregions, although the latter forms only 6 percent of the Study Area (Figures 3.5 and 3.6). Secondary black bear habitat occupies for 46 percent (2,644.1 km^2) of the Study Area, whereas in the late summer / fall, it comprises 44 percent (2,556.5 km^2) of the area.

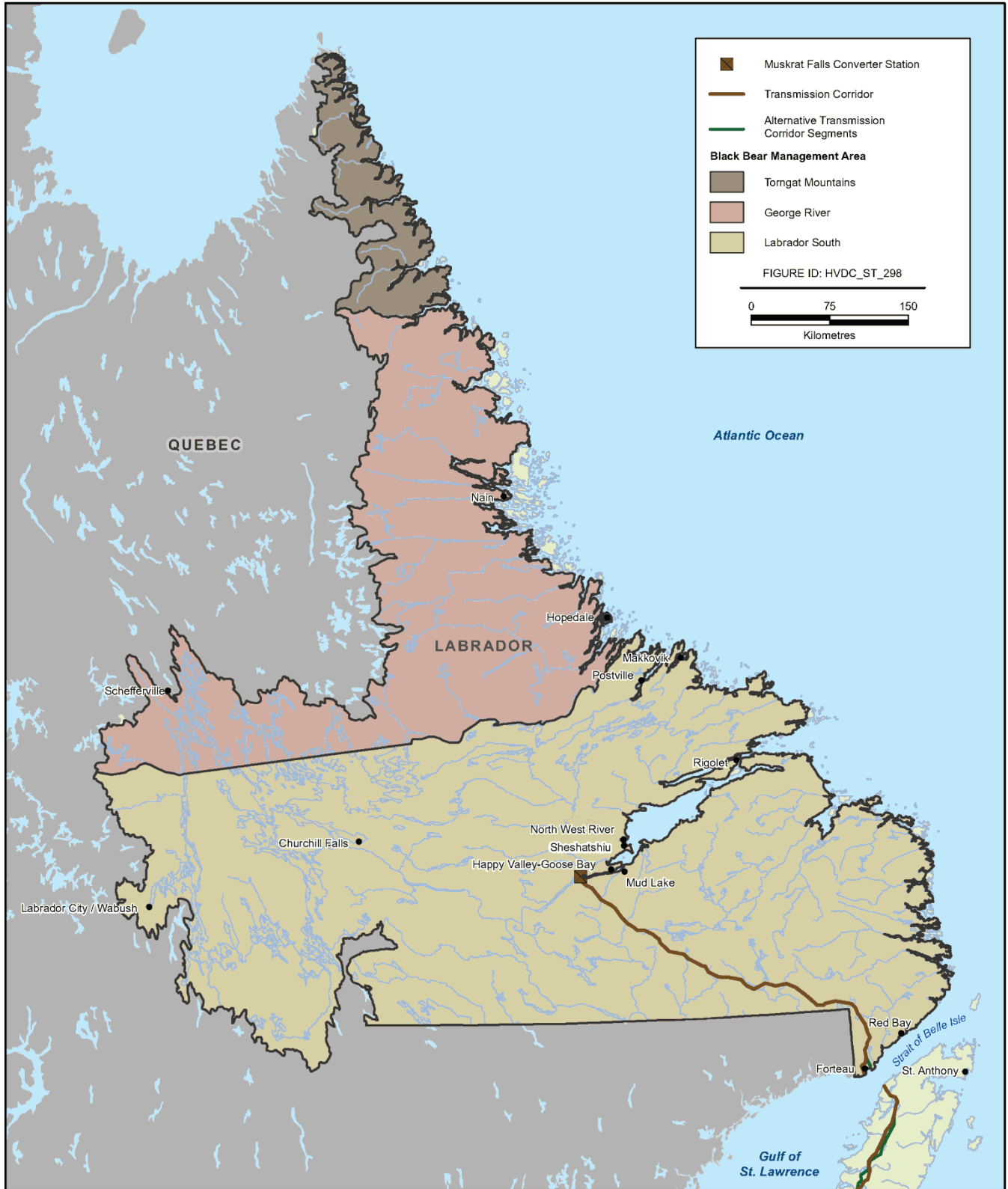**Figure 3.4   Black Bear Management Areas**

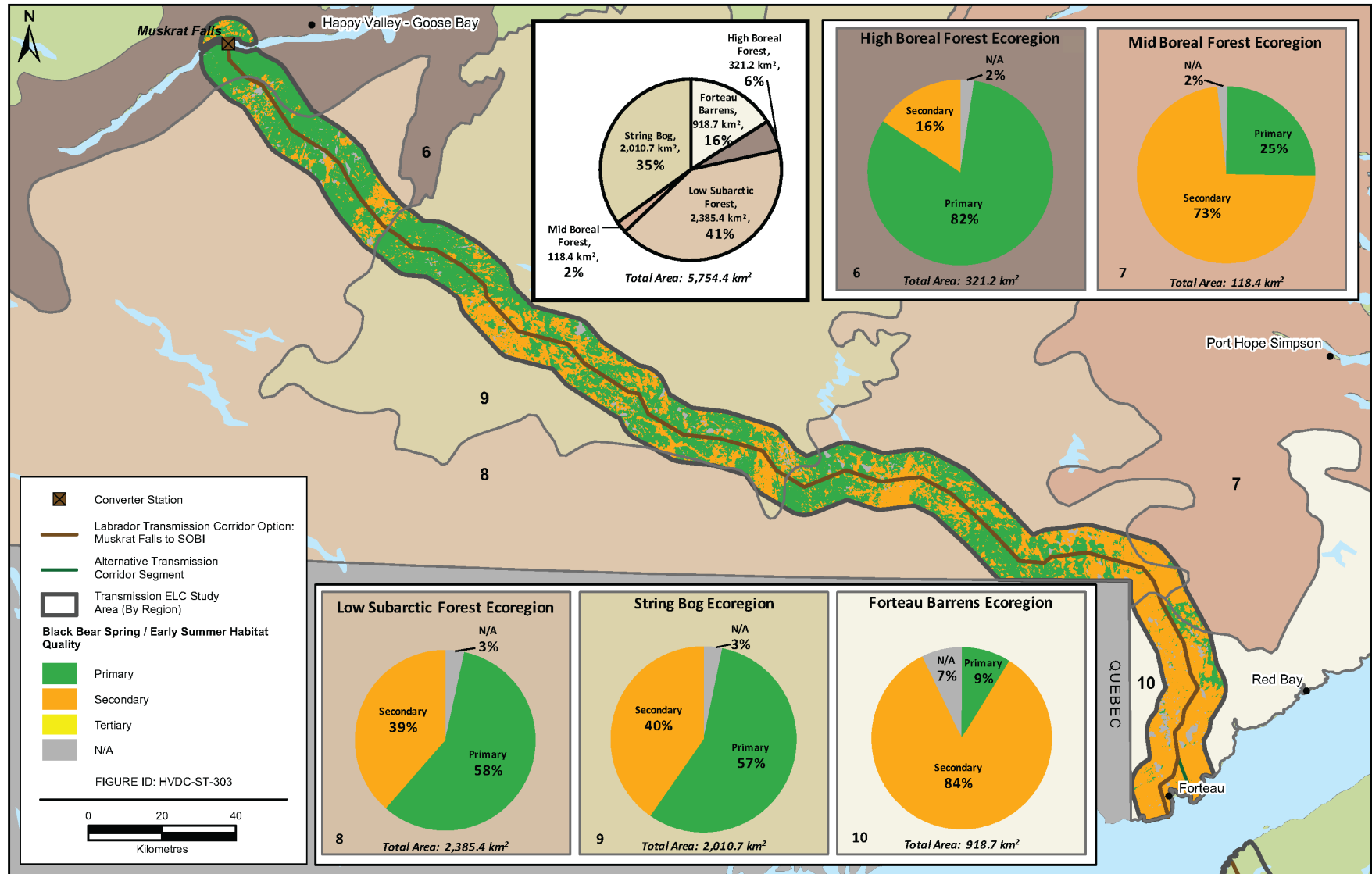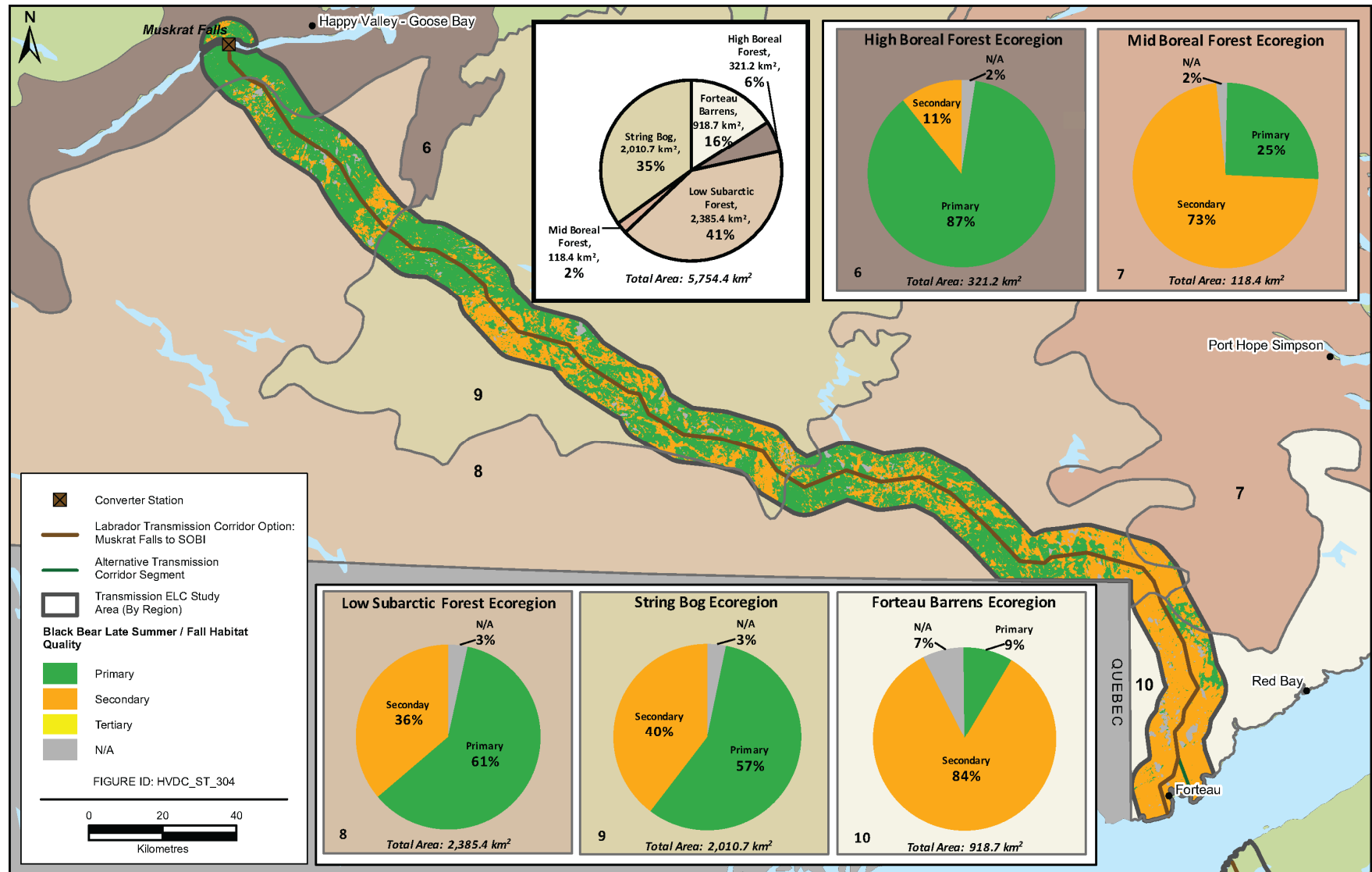**Figure 3.5   Black Bear Spring / Early Summer Habitat Quality in the Study Area**

Figure 3.6   Black Bear Late Summer / Fall Habitat Quality in the Study Area

4.0   SUMMARY

Nalcor Energy is proposing to develop the *Labrador - Island Transmission Link*, a HVdc transmission system extending from Central Labrador to the Island of Newfoundland's Avalon Peninsula. In support of the EA for the Project, this study provides information on moose and black bear and their habitats within a 15 km wide Study Area surrounding a recently identified transmission corridor option from Muskrat Falls to the Strait of Belle Isle. This supplementary report expands and updates the scope of the initial *Moose and Black Bear Study* (Stantec 2010a) prepared for the EA, for eventual use in Project planning and in the EIS.

Information on moose and black bear within the Study Area was obtained through both a review of existing reports and an update of an ELC-based habitat model. Information reviewed includes that presented in the initial *Moose and Black Bear Study*, the TLH-3 (Cartwright Junction to Happy Valley-Goose Bay) EIS and associated reports, and other sources.

Moose are known to be found in the Study Area, but in relatively low densities, with the transmission corridor overlapping three MMAs along its northwestern and southeastern potions. Black bear are likewise known to be distributed throughout the Study Area, and use a varied range of habitats.

Based on the updated ELC model, habitat quality mapping was completed for the Study Area. Maps were colour-coded to reflect habitat quality and indicate the percentage of identified primary, secondary and tertiary habitat available within the ecoregions that comprise the Study Area. The results of the habitat models indicate that:

- The Study Area is comprised of 21 percent (1,204.7 km^2) primary moose habitat during the spring / summer and 25 percent (1,461.7 km^2) during the fall / winter; and
- Primary black bear habitat accounts for 50 percent (2,905.2 km^2) during the spring / early summer and 52 percent (2,992.8 km^2) in the late summer / fall.

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