Labrador – Island Transmission Link

2011-2012 Wildlife Reconnaissance Surveys

Prepared for:

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Project # 121510805

April 12, 2013
EXECUTIVE SUMMARY

Nalcor Energy (Nalcor) is proposing to develop the Labrador – Island Transmission Link (the Project), a High Voltage Direct Current (HVdc) transmission system extending from the lower Churchill River in Central Labrador to Soldiers Pond on the Island of Newfoundland’s Avalon Peninsula, approximately 1,100 km in length. This baseline study was completed to provide information on wildlife and existing static features in the area of, and which may interact with, the proposed Project.

The specific objectives of this study were to:

a) document existing environmental conditions in the vicinity of the Project, specifically observations and locations of wildlife species and existing static features in the Study Area, with emphasis on species of conservation status; and

b) support the Environmental Protection Plan (EPP) that would oversee implementation of mitigation measures during the Project.

Given the large geographic scale of the Project, the Study Area was divided into four geographic regions: Central and Southeastern Labrador, Northern Peninsula, Central and Eastern Newfoundland, and Avalon Peninsula.

Between June 2011 and May 2012, five aerial surveys, each 1 or more days in duration and covering five important biological periods for species of interest, were completed in the 2 km wide by 1,100 km long Study Area. Approximately 1,900 observations were recorded of wildlife (mobile) and fixed (static) features. Maps were produced to indicate the distribution and relative abundance of these observations within each of four geographic regions, and to allow an assessment of seasonal changes in distribution and abundance.

Species protected under the federal Species at Risk Act (SARA) and the Newfoundland and Labrador Endangered Species Act (NL ESA) confirmed in the Study Area were Harlequin Duck and Short-eared Owl (both listed as Vulnerable under NL ESA and Special Concern under SARA), and Woodland Caribou (Labrador herds listed as Threatened under NL ESA and SARA). Harlequin Duck were observed on the upper reaches of the East River (one duckling) and on the Torrent River (adult pair), both on the Northern Peninsula. A single Short-eared Owl was observed flying over a wetland complex south of Catamaran Park in the Central and Eastern Newfoundland region, and two observations of caribou (four animals) were recorded east of the St. Augustine River, in Central and Southeastern Labrador.

Habitats with special protection and/or potentially biologically important areas were also identified. Provincial legislation protects a known red pine stand in the West Brook Ecological Reserve, and potentially important waterfowl habitats were identified in Central and Southeastern Labrador on the St. Paul’s River System, and on the Northern Peninsula, including Brien’s River, River of Ponds, and headwaters of the East River. In addition, 47 nests of Osprey, Bald Eagle and possibly other raptors were recorded.

Additional wildlife observations in the Study Area were as expected giving the survey methodology (aerial surveys) and timing. Mammal observations included moose, caribou, beaver, hare, porcupine, fox, and coyote. Avifauna observations included several species of waterfowl (Canada Goose, Common and Red-breasted Merganser, Ring-necked Duck, American Black Duck, Black Duck / Mallard hybrids, Common Goldeneye, Green-winged Teal, Scoter, Scaup, Common Loon, and Harlequin Duck), raptors (Osprey, Bald Eagle, Red-tailed Hawk, Rough-legged Hawk, Great-horned Owl, Northern Goshawk, Northern Harrier, and Short-eared Owl), and other
Labrador – Island Transmission Link 2011-2012 Wildlife Reconnaissance Surveys


Static features recorded in the Study Area were dominated by the presence of beaver lodges and/or dams, and approximately 45% of those recorded had signs of current activity. Cabins were common in most regions of the Study Area, and quarries and/or associated activities were particularly common in Central and Southeastern Labrador in proximity to the recently completed Phase III Trans-Labrador Highway.

The information collected can be used in the design of the EPP during the construction and operation phases of the Project. Detailed results have been presented in the form of a map folio and/or individual regional maps for key species of interest are applicable for both temporal and spatial mitigation considerations.
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1.0 INTRODUCTION

Nalcor Energy (Nalcor) is proposing to develop the Labrador – Island Transmission Link (the Project), a High Voltage Direct Current (HVdc) transmission system extending from the lower Churchill River in Central Labrador to Soldiers Pond on the Island of Newfoundland’s Avalon Peninsula. This baseline study was completed to provide information on wildlife and existing static features in the area of, and which may interact with, the proposed Project.

1.1 Overview of the Labrador-Island Transmission Link

The proposed Project involves the construction and operation of transmission infrastructure within and between Labrador and the Island of Newfoundland. The proposed transmission line will extend over a distance of approximately 1,100 km, and includes the following key components:

- an alternating current to direct current (ac to dc) converter station at Muskrat Falls near the lower Churchill River in Central Labrador;
- an overhead transmission line from Muskrat Falls to the Strait of Belle Isle (approximately 400 km);
- marine cable crossings of the Strait of Belle Isle with associated infrastructure;
- an overhead transmission line from the Strait of Belle Isle to Soldiers Pond on the Island’s Avalon Peninsula (approximately 700 km);
- a dc to ac converter station at Soldiers Pond, with some associated Island system upgrades; and
- electrodes, or high capacity grounding systems, in the Strait of Belle Isle (Labrador) and Conception Bay (Newfoundland), connected to their respective converter station by a small overhead transmission line.

A series of component studies were completed as a requirement of the environment assessment (EA) of the Project to identify existing environmental conditions in the vicinity of the Project, specifically along a 2 km wide corridor for the on-land portions of the proposed HVdc transmission line, and a 500 m wide corridor for the proposed Strait of Belle Isle cable crossings. This document reports the observations and locations of wildlife species and existing static features collected during a series of aerial surveys along the 2 km wide corridor from Muskrat Falls to Soldiers Pond, between 2011 and 2012.

1.2 Purpose and Study Objectives

The purpose of this baseline study is to provide information on wildlife and existing static features in the area of the Project. The approach for this study is based on methods used for similar transmission line projects in Eastern Canada. A series of seasonal aerial and ground-based surveys were carried out, designed to coincide with specific life history stages (e.g., migration, calving). Information gathered from these surveys support existing information presented in the component studies submitted under the EA process in 2011 and 2012, including:
1. Caribou and Their Predators Component Study and associated documents (Stantec 2010a; 2011a; 2011b; 2012a);

2. Furbearers and Small Mammals Component Study (Stantec 2010b; 2011c); and

3. Avifauna Component Study (Stantec 2010c; 2011d; 2012b).

The specific objectives of this study included:

a) documentation of existing environmental conditions in the vicinity of the Project, specifically observations and locations of wildlife species and existing static features in the Study Area, with emphasis on species of conservation status; and

b) support for the development of an Environmental Protection Plan (EPP) that would oversee implementation of mitigation measures during the Project.

1.3 Project Setting

This study focuses on the 2 km wide area along the entire length of the Project, and coincides with information compiled from an Ecological Land Classification Study (ELC) conducted in support of the Project (Stantec 2010d; 2001e). The Project intersects two Ecozones and ten Ecoregions within Canada and the province of Newfoundland and Labrador, respectively.

1.3.1 Ecozones and Ecoregions in the Study Area

Ecological land classification in Canada employs a method of describing regional ecological units at a range of scales, in which larger ecological units encompass successively smaller ones. At the top of the hierarchy, Ecozones are defined on the basis of generalized characteristics and global and continental climate. There are 15 Ecozones (Natural Resources Canada 2007) delineated for Canada, with the Project crossing two of these: the Boreal Shield Ecozone and the Taiga Shield Ecozone (Figure 1.1).

1. **Boreal Shield Ecozone:** The Island of Newfoundland and the Churchill River valley and southeast coast of Labrador form the eastern extent of this region. A massive rolling plain of ancient bedrock blanketed with gravel, sand and other glacial deposits, its topography is comprised of broadly rolling uplands that form poorly drained depressions covered by lakes, ponds and wetlands. The climate of the Boreal Shield is continental with long, cold winters, short, warm summers and abundant precipitation. Cool temperatures and a short growing season along with acidic soils challenge plant life in the Ecozone, although most of the area is forested (primarily coniferous species, intermixed with hardwoods), which is mixed with bogs, marshes and other wetlands. Lichens and shrubs are common on areas of exposed bedrock.

2. **Taiga Shield Ecozone:** The interior of southeastern Labrador is within this Ecozone, which consists of the taiga forest and the Canadian Shield, a primarily coniferous forest area located south of the tundra. The terrain is broadly rolling, and the landscape is composed of many lakes and wetlands. The subarctic climate is characterized by short, cool summers and long, cold winters, and precipitation is low to moderate. The open, stunted forests are dominated by species such as black spruce, and are intermixed with numerous bogs and other wetlands, scattered hardwood stands, and rock outcrops dominated by lichens and low shrubs.
These two Ecozones are further divided into a number of Ecoregions. Ecoregions are smaller land units within Ecozones that have distinctive, recurring patterns of vegetation and soil that are determined and controlled by local climate and geology. Ecoregions also differ from each other in their combination of plant communities, landscapes, geology and other features (Marshall and Schutt 1999; PNAD 2008).

There are 19 Ecoregions within the province, nine in Newfoundland (Damman 1983) and 10 in Labrador (Meades 1990). The proposed transmission corridor will pass through 10 of these Ecoregions (Figure 1.1). A description of the Ecoregions and relevant subregions crossed by the transmission corridor and ELC study is presented in Table 1.1. Note, an additional Ecoregion (Mid-Boreal Forest-Paradise River Ecoregion) is included since it marginally intersects with the 15 km wide Study Area of the Ecological Land Classification, but is not intersected by the 2 km wide transmission corridor.
Figure 1.1   Ecoregions Crossed by the Study Area
### Table 1.1 Ecoregions and Subregions crossed by the Study Area

<table>
<thead>
<tr>
<th>Ecoregions and Subregions</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td><strong>LABRADOR</strong></td>
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<tr>
<td>High Boreal Forest-Lake Melville Ecoregion (Boreal Shield Ecozone)</td>
<td>encompasses the Churchill River valley and the coastal plain surrounding Lake Melville. River terraces are composed of coarse-textured, alluvial soils and uplands have shallow, well-drained soils. This region has the most favorable climate in Labrador. Summers are cool and winters cold. The forests are closed-canopied and highly productive. Richer slopes are dominated by balsam fir, white birch and trembling aspen. Black spruce is present in most stands, but only dominates in upland areas and lichen woodlands, which occupy river terraces. Ribbed fens occur in upland depressions; plateau bogs occur on coastal plains.</td>
</tr>
<tr>
<td>Mid Boreal Forest-Paradise River Ecoregion (Boreal Shield Ecozone)</td>
<td>encompasses coastal areas of Southeastern Labrador, from the area surrounding Sandwich Bay and south where it meets the Forteau Barrens Ecoregion. Undulating bedrock with many rock outcrops and fairly productive, closed-crown forests characterize this Ecoregion. The climate is considered boreal and is moister and cooler than the Lake Melville area. Summers are cool to warm and winters are short and cold. Black spruce and balsam fir are dominant tree species; hardwoods are also commonly encountered. Raised bogs are characteristic of valleys in the area.</td>
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<tr>
<td>Low Subarctic Forest-Mecatina River Ecoregion (Taiga Shield Ecozone)</td>
<td>- the main portion of this Ecoregion is located in southern Labrador, with two separate areas to the north of Lake Melville and the Red Wine Mountains. Broad river valleys and rolling hills covered by shallow till, drumlins and eskers are characteristic of the region. Summers are cool and winters are long. Somewhat open black spruce forests are the dominant vegetation. String bog-ribbed fen complexes cover extensive areas throughout the region.</td>
</tr>
<tr>
<td>String Bog – Eagle River Plateau Ecoregion (Taiga Shield Ecozone)</td>
<td>includes the Eagle River Plateau that comprises most of this Ecoregion. This upland plateau is composed of extensive string bogs with numerous open pools surrounded by fen vegetation. Bog hummocks are dominated by scrub spruce, Labrador tea and feathermoss. The peatland expanses are occasionally interrupted by only a few conspicuous eskers, which support open, lichen woodland. Alder thickets are common along river banks.</td>
</tr>
<tr>
<td>Forteau Barrens Ecoregion (Boreal Shield Ecozone)</td>
<td>located at the southeastern tip of Labrador, adjacent to the Strait of Belle Isle. Low hills are covered with scrub spruce, crowberry barren and slope bogs. Strong winds and frequent storms occur because of the proximity to the Strait of Belle Isle. Tree growth is limited by a combination of wind, wet soils and a history of repeated burns. Black spruce and larch can reach 10 to 12 m only along rivers, where soils are better drained.</td>
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<tr>
<td><strong>ISLAND OF NEWFOUNDLAND</strong></td>
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<tr>
<td>Strait of Belle Isle Barrens Ecoregion</td>
<td>dominated by almost treeless tundra vegetation. White spruce and balsam fir occur as krummholz, interspersed with Arctic-alpine plants even near sea level. The soils are generally very shallow and outcrops of calcareous bedrock are common throughout. Large stone polygons created by freeze-thaw cycles are common on shallow-exposed mineral soil. Rare and endangered species of calciphillic plants are numerous in these rock barrens.</td>
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<tr>
<td>Northern Peninsula Forest Ecoregion</td>
<td>differs from most other forested parts of the Island by the shortness of the vegetation season. The frost-free period is similar to other areas and somewhat longer than central Newfoundland. Soils are comparable to those of western Newfoundland, with limestone underlying most of the region. Acidic rock is more common on the eastern side of the peninsula. Balsam fir is the dominant tree in the forest stands, except at high elevations on the eastern side of the peninsula, where it is replaced by black spruce. Limestone barrens are common along the west coast, with dwarf shrub and crowberry barrens on the east coast. Plateau bogs cover extensive areas of the coastal lowlands.</td>
</tr>
<tr>
<td>Coastal Plain Subregion</td>
<td>includes the western side of the Northern Peninsula to the lower slopes of the Long Range Mountains. Most of the coastal plain is dominated by bogs and scrub forest. The area around Hawkes Bay and the foothills of the mountains are important exceptions to this generalization.</td>
</tr>
<tr>
<td>Beaver Brook Limestone Subregion</td>
<td>occupies the central lowlands north of the Highlands of St. John on the Northern Peninsula. This sheltered outlier maintains the most productive forests in the Ecoregion. Limestone, shale and...</td>
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### Ecoregions and Subregions

<table>
<thead>
<tr>
<th>Ecoregion</th>
<th>Description</th>
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<tbody>
<tr>
<td>Labrador Island Ecoregion</td>
<td>This ecoregion is characterized by extensive areas of sandstone bedrock types. The till is formed from sandstone on the western side of the peninsula, east and south of Ten Mile Pond. The landscape is undulating to hilly in the extreme west. The Dryopteris-Balsam Fir and Clintonia-Balsam Fir types are most common on moderate to deep tills. The Pleurozium-Balsam Fir and Black Spruce-Feathermoss types are dominant on shallow tills. Soil textures in these types are generally sandy loam to loamy sand.</td>
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<tr>
<td><strong>Eastern Long Range Subregion</strong></td>
<td>Includes the productive but inaccessible forest on the eastern slopes of the Long Range Mountains up to 450 m in elevation. The forests tend to be somewhat open balsam fir-black spruce mixtures. The treeline decreases towards the northern end of the subregion.</td>
</tr>
<tr>
<td><strong>Long Range Barrens Ecoregion</strong></td>
<td>A discontinuous region of highlands (Southern Long Range, Buchans Plateau-Topsails and Northern Long Range) from the southwest coast to the northern part of the Long Range Mountains. Most of the Ecoregion is characterized by rock barrens, with dwarf shrub heaths, shallow ribbed fens and areas of low, wind-stunted trees. <strong>Northern Long Range Subregion</strong></td>
</tr>
<tr>
<td><strong>Central Newfoundland Forest Ecoregion</strong></td>
<td>Has the most continental climate of any part of insular Newfoundland. It has the highest summer and lowest winter temperatures. Because of warm summers and high evapo-transpiration rate, soils in the northern part of this Ecoregion exhibit actual soil-moisture deficiency. The Hylocomium-Balsam Fir forest type is characteristic of this area. Forest fires have played a more important role in this ecoregion’s natural history than in other regions. Thus, much of the Balsam Fir-Feathermoss forest types have been converted to black spruce, and some of the richer site types are dominated by white birch and aspen. In areas that have been burned repeatedly, dwarf shrub (Kalmia) barrens have replaced forest stands. Raised bogs are the characteristic wetland type. <strong>Northcentral Subregion</strong></td>
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### Ecoregions and Subregions

<table>
<thead>
<tr>
<th>Ecoregion</th>
<th>Description</th>
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<tr>
<td>the coast. The tills are generally a shallow, rolling ground moraine with sandy loam to loam texture. The Hylomomum-Balsam Fir type occupies midslopes, and it is usually associated with gleyed podzols or gleysols.</td>
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<tr>
<td><strong>Southeastern Barrens Subregion</strong> - has landscape dominated by heathlands, with the forest occurring in small acreages that escaped fire. The dominant heath shrub on uplands is <em>Emetrum nigrum</em>, with <em>Kalmia angustifolia</em> forming a dense cover only in protected valleys. The topography is generally undulating with shallow, heavily compacted till and numerous large erratics. The Clintonia-Balsam Fir type is most common where the forest is still present. Good forest growth only occurs in a few large, protected valleys where the Dryopteris-Balsam Fir type dominates the slopes. Good specimens of yellow birch are also found in these stands.</td>
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</tr>
<tr>
<td><strong>Central Barrens Subregion</strong> - occurs south of the Central Newfoundland Ecoregion and north of the South Coast Barrens Subregion. Residual forests that have not been destroyed by fire have moderate forest capability. The dwarf shrub heaths are robust and <em>Rhododendron canadense</em> is a conspicuous component, suggesting deep snow cover. Arctic-alpine species are poorly represented and yellow birch is absent from the forest.</td>
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<tr>
<td><strong>Avalon Forest Ecoregion</strong> - represents a sheltered outlier within the more open and exposed Maritime Barrens Ecoregion. Pure stands of balsam fir with a high mixture of white and yellow birch dominate this region. The Avalon Forest Ecoregion has been spared the ravages of fire that decimated the forests in the surrounding landscape, converting them to open heathland. The very moist climate and ribbed morainal topography give this small (500 km²) Ecoregion its uniqueness. Raised bogs occur between moraines. The excessive frequency of fog is clearly evidenced by the abundance of pendant, arboreal lichens hanging from the branches of balsam fir.</td>
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#### 1.3.2 Geographic Regions of the Study Area

Given the extensive geographic scale involved, this study uses a regional approach to describing the presence, abundance and distribution (both spatial and temporal) of wildlife species and existing static structures in the vicinity of the Project. Specifically, the 2 km wide transmission corridor is divided into four geographic regions: Central and Southeastern Labrador, Northern Peninsula, Central and Eastern Newfoundland, and Avalon Peninsula (Figure 1.2).

The Central and Southeastern region of the Study Area encompasses the 2 km wide HVdc transmission corridor from Muskrat Falls to the Strait of Belle Isle. Ecoregions in this portion of the Study Area are represented primarily by Low Subarctic Forest (48 percent), Eagle River Plateau (32 percent) and Forteau Barrens (15 percent). The High and Mid Boreal Forest Ecoregions are also present, but make up a relatively small portion (5 percent) of the Study Area in this region.

The Northern Peninsula region of the Study Area encompasses the 2 km wide HVdc transmission corridor from the Strait of Belle Isle southwards to the Deer Lake area. Dominant ecoregions within this region include the Northern Peninsula Forest (50 percent), and the Long Range Barrens (44 percent). The Strait of Belle Isle Barrens constitutes six percent of the Northern Peninsula study region.

The Central and Eastern Newfoundland region of the Study Area encompasses the 2 km wide HVdc transmission corridor between (approximately) Deer Lake and Clarenville. The dominant Ecoregion in this region is the Central Newfoundland Forest (92 percent), with small amounts of the Long Range Barrens (2 percent) and Maritime Barrens (6 percent) Ecoregions.

The Avalon Peninsula region of the Study Area encompasses the 2 km wide HVdc transmission corridor and associated Project components from Clarenville to Soldiers Pond and Conception Bay. The Avalon Peninsula region of consists of the Avalon Forest (13 percent) and Maritime Barrens (87 percent) Ecoregions.
Figure 1.2 Study Area by Region
2.0 APPROACH AND METHODS

Surveys were designed to collect baseline information on a variety of species, over a range of important biological periods. Of particular interest were species of conservation concern, as well as any areas where species tend to concentrate and may be particularly vulnerable to anthropogenic activities.

2.1 Aerial Surveys

Five aerial (helicopter) surveys were completed between June 2011 and May 2012. The surveys were timed to coincide with important biological seasons or periods (Table 2.1). Aircraft height, speed, type and configuration, and participants were selected based on the seasonal priority of these wildlife species, during each survey.

<table>
<thead>
<tr>
<th>Survey Period</th>
<th>Survey Dates</th>
<th>Important Biological Season or Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>I – Early Summer</td>
<td>16–19 June 2011</td>
<td>Waterfowl breeding Caribou and Moose Calving period Raptor nesting</td>
</tr>
<tr>
<td>II – Mid-summer</td>
<td>20-22 July 2011</td>
<td>Waterfowl breeding Caribou and Moose Post-calving period Raptor nest activity</td>
</tr>
<tr>
<td>III – Late Summer</td>
<td>29 August – 1 September 2011</td>
<td>Waterfowl staging Raptor nest success</td>
</tr>
<tr>
<td>IV – Mid-fall</td>
<td>24-25 October and 6-7 November 2011</td>
<td>Caribou and Moose Rutting Beaver activity</td>
</tr>
<tr>
<td>V – Spring</td>
<td>14-15 and 30 May 2012</td>
<td>Waterfowl breeding pair nesting</td>
</tr>
</tbody>
</table>

1 Surveys were completed on 24-25 October in Labrador and 6-7 November in Newfoundland.
2 Surveys were completed on 14-15 May in Newfoundland and 30 May in Labrador. Survey timing was designed to reflect phenological differences in waterfowl breeding activities within the Study Area.

The field team during surveys consisted of four participants, including the pilot with Universal Helicopters Newfoundland Limited (UHNL) (Appendix A). All participants have extensive aerial wildlife survey experience. Each survey had two components (or legs): the transect south and east from Muskrat Falls to Soldiers Pond, and the return transect north and west from Soldiers Pond back to Muskrat Falls. During the first leg, the survey route followed the centre line of the proposed 2 km wide transmission corridor, maintaining a speed of approximately 120 to 130 km/h and an altitude of approximately 60 to 90 m agl (above ground level) (See Appendix B for additional survey specific details). The route was displayed digitally on the aircraft’s GPS (Global Positioning System) (to guide the pilot) and on a hand-held GPS (Nomad) as a back-up for rear observers. A paper map folio of the entire route at a scale of 1:50,000 was used by the front navigator to record observations directly (See Appendix D). An area of approximately 100 to 200 m (depending on terrain and forest cover) was searched on either side of the aircraft. All observations (e.g., wildlife sightings, signs of wildlife, man-made (static) structures) were reported according to location (described using a 12-hour clock reference system for orientation and communication), species, and number and composition described where applicable. A hand-
held GPS was used to record the location for each sighting that corresponded to details abbreviated in the map folio. During the second survey leg, the aircraft followed terrain features of interest (e.g., waterbodies, cliff faces) searching for species of interest such as Harlequin Duck and nesting raptors, for example. Several items identified on the previous transect were investigated more closely upon return (e.g., location of cabins, activity of raptor nests). During the survey of the return transect, the aircraft speed and height varied.

Note that to reduce disturbance to wildlife, and in particular caribou (*Rangifer tarandus*), the Field Team did not pursue these (or other animals) to gain additional information, such as age / sex confirmation or the presence and number of young.

### 2.2 Data Recording and Organization

All recorded observations were organized in two categories: static observations and mobile observations, within each of the four geographic regions. The static observations, consisting of sightings of fixed objects (e.g., cabins, raptor nests, beaver dams, trails), from all surveys were compiled in a master list. Mobile observations were sightings of objects that were not fixed (e.g., caribou, moose (*Alces alces*), waterfowl). The species observed were grouped into several categories: caribou, moose, raptors, waterfowl, other mammals, and other avifauna (general and species other than waterfowl associated with waterbodies (e.g., shorebirds)). As the return transect was always surveyed within one to two days of the first transect, it was likely that many of the same animals were counted during both legs. As such, the number of sightings or observations was generally used for discussion rather than the total number of individuals recorded, to remove possible duplication. Within each geographic region, and for each category of species, a regional map was produced showing the distribution of observations compared across surveys.
3.0 RESULTS

3.1 Route and Weather Conditions

Weather conditions usually varied within each survey given the large geographic area of interest. Fog was common, particularly along the Avalon Isthmus and surrounding area, and precluded survey effort during some surveys. Surveys were efficient, and with the exception of the following, provided thorough coverage of the Study Area:

- Survey I – The Avalon Peninsula, and portions of the Northern Peninsula and the Central and Eastern Newfoundland regions were not surveyed due to persistent fog;
- Survey II – A section between Come by Chance and Bellevue, and another section in the highlands south of Clarenville were not surveyed due to fog;
- Survey III – A section south of Hampden, where ground fog obscured visibility, could not be surveyed;
- Survey IV – portions of the Central and Southeastern Labrador region were not surveyed due to persistent fog and low cloud cover, and visibility was reduced between Birchy Narrows and Grand Falls as a result of flat light caused by cloud cover and the low angle of the sun.

Detailed information on route and weather conditions is provided in Appendix B.

3.2 Wildlife Observations

A total of 1,482 observations of mammals and avifauna were recorded throughout these surveys (Table 3.1 and Appendix C), including three species of conservation concern (Table 3.2). Several habitats or features of interest, or potentially important biological areas were identified (Table 3.3).

Table 3.1 Sightings of Wildlife and Total Individuals Observed by Geographic Region, June 2011 to May 2012

<table>
<thead>
<tr>
<th>Species Category</th>
<th>Central and Southeastern Labrador</th>
<th>Northern Peninsula</th>
<th>Central and Eastern Newfoundland</th>
<th>Avalon Peninsula¹</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caribou</td>
<td>2 (4)</td>
<td>118 (&gt;868)</td>
<td>116 (254)</td>
<td>0</td>
<td>236 (&gt;1,126)</td>
</tr>
<tr>
<td>Moose</td>
<td>15 (24)</td>
<td>186 (243)</td>
<td>180 (235)</td>
<td>35 (42)</td>
<td>416 (544)</td>
</tr>
<tr>
<td>Waterfowl</td>
<td>137 (&gt;517)</td>
<td>210 (&gt;720)</td>
<td>69 (&gt;198)</td>
<td>16 (50)</td>
<td>432 (&gt;1,485)</td>
</tr>
<tr>
<td>Raptors²</td>
<td>48 (58)</td>
<td>31 (36)</td>
<td>15 (16)</td>
<td>8 (11)</td>
<td>102 (121)</td>
</tr>
<tr>
<td>Other Mammals</td>
<td>12 (&gt;13)</td>
<td>10 (10)</td>
<td>10 (10)</td>
<td>2 (7)</td>
<td>34 (&gt;40)</td>
</tr>
<tr>
<td>Other Avifauna</td>
<td>General</td>
<td>22 (35)</td>
<td>15 (23)</td>
<td>5 (&gt;7)</td>
<td>5 (18)</td>
</tr>
<tr>
<td></td>
<td>Waterbirds</td>
<td>100 (239)</td>
<td>90 (&gt;293)</td>
<td>11 (&gt;13)</td>
<td>14 (85)</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>336 (&gt;890)</td>
<td>660 (&gt;2,193)</td>
<td>406 (&gt;733)</td>
<td>80 (213)</td>
</tr>
</tbody>
</table>

¹The entire Avalon Peninsula region of the Study Area was not surveyed during Survey I due to persistent fog.
²Includes observations of raptors and their nests

( ) Indicates the total number of individuals observed
### Table 3.2  Species of Conservation Concern Observed During Surveys

<table>
<thead>
<tr>
<th>Species</th>
<th>Provincial and/or Federal Status</th>
<th>Date Observed</th>
<th>Approximate Location</th>
<th>Number of Observations (Total Number)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Harlequin Duck (Histrionicus histrionicus)</td>
<td>Vulnerable (NL ESA); and Special Concern (Schedule 1, SARA)</td>
<td>1 September 2011 and 14 May 2012</td>
<td>Northern Peninsula – Upper reaches of the East River (duckling) and Torrent River (adult pair)</td>
<td>2 (3)</td>
<td>Single unconfirmed duckling recorded in late summer and an adult pair in spring</td>
</tr>
<tr>
<td>Short-eared Owl (Asio flammeus)</td>
<td>Vulnerable (NL ESA); and Special Concern (Schedule 1, SARA)</td>
<td>17 June 2011</td>
<td>Central and Eastern Newfoundland – Wetland complex south of Catamaran Park</td>
<td>1 (1)</td>
<td>Location was investigated for nesting activity on return transect but nothing confirmed</td>
</tr>
<tr>
<td>Woodland Caribou (Labrador) (Rangifer tarandus caribou)</td>
<td>Threatened (NL ESA and Schedule 1, SARA)</td>
<td>30 May 2012</td>
<td>Central and Southeastern Labrador – East of the St. Augustine River</td>
<td>2 (4)</td>
<td>Between, and south, of the ranges of the Mealy Mountain Herd and the Joir River subpopulation</td>
</tr>
</tbody>
</table>

### Table 3.3  Habitats of Interest Observed During Surveys

<table>
<thead>
<tr>
<th>Habitat or Species of Interest</th>
<th>Geographic Region</th>
<th>Approximate Location</th>
<th>Associated Wildlife</th>
<th>Individuals Recorded</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red Pine (Pinus resinosa) Stand</td>
<td>Central and Eastern Newfoundland</td>
<td>14 km Southwest of Springdale</td>
<td>n/a</td>
<td>n/a</td>
<td>This stand is protected by the West Brook Ecological Reserve</td>
</tr>
<tr>
<td>Potentially important production and moulting area</td>
<td>Central and Southeastern Labrador</td>
<td>St. Paul River System</td>
<td>American Black Duck and other waterfowl</td>
<td>~100 American Black Duck</td>
<td>Broods, pre-moulting and moulting aggregations; a large concentration of staging black duck observed in late summer</td>
</tr>
<tr>
<td>Potentially important production and moulting areas</td>
<td>Northern Peninsula</td>
<td>Brien’s River, River of Ponds and headwaters of the East River</td>
<td>Canada Goose, Common Merganser, Common Goldeneye</td>
<td>Groups of 3-26 geese, 6-11 Common Mergansers, 6 Common Goldeneye</td>
<td>Waterfowl widespread; several production and moulting areas identified</td>
</tr>
<tr>
<td>Raptor Nests</td>
<td>All</td>
<td>See Figures 3.12 to 3.15</td>
<td>Osprey, Bald Eagle</td>
<td>102</td>
<td>An 800 m no-cut buffer and a 200 m no activity buffer are required during the nesting season (March 15 - July 15)</td>
</tr>
</tbody>
</table>
Relevant observations are presented below under the following categories: Caribou, Moose, Waterfowl, Raptors, Other Mammals, and Other Avifauna.

### 3.2.1 Caribou

Only two caribou sightings (four individuals) were made in Central and Southeastern Labrador (Figure 3.1; Table 3.4). Although affiliation cannot be determined, these sightings were within the range of woodland caribou (between the ranges of the Mealy Mountain Herd and Joir River subpopulation), which are listed as Threatened under the provincial and federal species at risk legislation (caribou in insular Newfoundland are currently not listed).

Caribou were observed most commonly in the Northern Peninsula (Figure 3.2) and Central and Eastern Newfoundland (Figure 3.3) regions, where they were sighted on all surveys (Table 3.4). Within the Northern Peninsula caribou were observed at the greatest number of locations in the fall (Survey IV), pre-calving (Survey V), and calving periods (Survey I; 42 observations), while far fewer were observed during the post-calving period (Survey II) (Figure 3.2). The largest aggregations of caribou (10 to >400) were observed on Surveys I, II and IV during the calving, post-calving and fall seasons, respectively.

A similar temporal pattern was observed in the Central and Eastern Newfoundland region (Figure 3.3), where caribou were at the most locations during pre-calving and calving periods, however unlike in the Northern Peninsula Region, few caribou were observed during the fall period. The largest group sizes (11 to 22) were also encountered during Surveys I and II (pre-calving and calving periods). Although there were areas where the distribution of caribou observations were concentrated, observations of caribou were distributed throughout the survey transect in both regions, across all surveys (Figures 3.1 – 3.3).

#### Table 3.4 Caribou Observations in the Study Area, 2011-2012

<table>
<thead>
<tr>
<th>Survey</th>
<th>Central and Southeastern Labrador</th>
<th>Northern Peninsula</th>
<th>Central and Eastern Newfoundland</th>
<th>Avalon Peninsula</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>I – Early Summer</td>
<td>0</td>
<td>26 (139)</td>
<td>42 (87)</td>
<td>1</td>
<td>One group of 20 adults + 9 calves on Northern Peninsula. Lone females with calves generally in forested vs. open areas.</td>
</tr>
<tr>
<td>II – Mid-summer</td>
<td>0</td>
<td>11 (&gt;498)</td>
<td>16 (62)</td>
<td>0</td>
<td>5 groups of 10-15 observed, one group of 65 on the Northern Peninsula, and one group with &gt;400 animals (minimum of 8 calves) also on the Northern Peninsula.</td>
</tr>
<tr>
<td>III – Late Summer</td>
<td>0</td>
<td>8 (12)</td>
<td>7 (7)</td>
<td>0</td>
<td>Generally single adults; one group with 2 adults and 2 calves on the Northern Peninsula.</td>
</tr>
<tr>
<td>IV – Mid-fall</td>
<td>0</td>
<td>37 (160)</td>
<td>2 (6)</td>
<td>0</td>
<td>Group of 22 on the Northern Peninsula, with no calves identified; groups generally 11 or fewer caribou. Caribou on the Northern Peninsula appeared to have moved to lower elevations. Many caribou may have shifted southward to wintering habitats.</td>
</tr>
<tr>
<td>V – Spring</td>
<td>2 (4)</td>
<td>36 (59)</td>
<td>49 (92)</td>
<td>0</td>
<td>Mainly in small groups (≤4); no calves identified (survey preceded the calving period). Caribou located in areas similar to Survey I.</td>
</tr>
</tbody>
</table>

(1) Indicates the total number of individuals observed

*The Avalon Peninsula was not surveyed during Survey I due to persistent fog.*
Figure 3.1  Caribou Observations in Central and Southeastern Labrador Region of the Study Area
Figure 3.2 Caribou Observations in the Northern Peninsula Region of the Study Area
FIGURE 3.3

Caribou Sightings from Surveys I-V,
Central and Eastern Newfoundland
Caribou in the Central and Southeastern Labrador region of the Study Area were found in association with Conifer Forest and Wetland habitats. On the island, Caribou were observed in a variety of habitat types, with the greatest number of locations and individuals observed in the Scrub / Heathland / Wetland and Wetland habitats (Table 3.5).

Table 3.5  Number of Individual Caribou recorded and associated ELC Habitat Unit, 2011-2012

<table>
<thead>
<tr>
<th>ELC Habitat Unit</th>
<th>Central and Southeastern Labrador</th>
<th>Northern Peninsula</th>
<th>Central and Eastern Newfoundland</th>
<th>Avalon Peninsula</th>
<th>Total</th>
<th>Comments / Season Observed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conifer Forest</td>
<td>2</td>
<td>81</td>
<td>3</td>
<td></td>
<td>86</td>
<td>Majority of observations in early summer (21), mid-fall (37), and spring (22)</td>
</tr>
<tr>
<td>Conifer Scrub</td>
<td>1</td>
<td>14</td>
<td></td>
<td></td>
<td>15</td>
<td>Most observations in spring (11)</td>
</tr>
<tr>
<td>Cutover</td>
<td>4</td>
<td>30</td>
<td></td>
<td></td>
<td>34</td>
<td>Most observations in spring (22)</td>
</tr>
<tr>
<td>Kalmia Lichen / Heathland</td>
<td></td>
<td></td>
<td></td>
<td>24</td>
<td></td>
<td>Observations almost exclusively in early summer (23)</td>
</tr>
<tr>
<td>Mixedwood Forest</td>
<td>12</td>
<td>46</td>
<td></td>
<td></td>
<td>58</td>
<td>Observations fairly distributed throughout seasons, but most common in spring (18)</td>
</tr>
<tr>
<td>Open Conifer Forest</td>
<td>50</td>
<td>32</td>
<td></td>
<td></td>
<td>82</td>
<td>Most observations in mid-summer (19), mid-fall (36) and spring (25)</td>
</tr>
<tr>
<td>Rocky Barrens</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td>4</td>
<td>Mid-summer</td>
</tr>
<tr>
<td>Wetland</td>
<td>2</td>
<td>107</td>
<td>82</td>
<td></td>
<td>191</td>
<td>Majority of observations in mid-summer (112)</td>
</tr>
<tr>
<td>Scrub / Heathland / Wetland</td>
<td></td>
<td></td>
<td></td>
<td>150</td>
<td>166</td>
<td>Majority of observations in early summer (98)</td>
</tr>
<tr>
<td>Exposed Earth</td>
<td></td>
<td></td>
<td></td>
<td>6</td>
<td>6</td>
<td>Early summer</td>
</tr>
<tr>
<td>Shallow water with vegetation¹</td>
<td></td>
<td></td>
<td></td>
<td>30</td>
<td>30</td>
<td>Most observations in mid-fall (22)</td>
</tr>
<tr>
<td>Unknown (cloud/shadow)</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td>4</td>
<td>Mid-summer</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>4</strong></td>
<td><strong>439</strong></td>
<td><strong>253</strong></td>
<td><strong>0</strong></td>
<td><strong>700</strong></td>
<td></td>
</tr>
</tbody>
</table>

Notes:
Numbers are based on the total number of individual caribou associated with a particular ELC habitat, versus observations of pairs or groups of caribou.

¹ Not an ELC habitat unit.

3.2.2  Moose

In Labrador, one to three Moose sightings were recorded during each survey (Figure 3.4; Table 3.6), and were often associated with riverine habitats (e.g., St. Augustine and St. Paul River systems). Compared to Labrador, moose were relatively abundant across the island portion of the Study Area (77 to 103 animals recorded throughout surveys) (Figures 3.5-3.7), with the greatest number of sightings on the Northern Peninsula (Table 3.6). Throughout the Study Area, observations of individual moose were most common however pairs (calf-cow pairs or two adults) were recorded throughout all surveys. The fewest number of moose were recorded during Survey IV (September).
<table>
<thead>
<tr>
<th>Survey</th>
<th>Central and Southeastern Labrador</th>
<th>Northern Peninsula</th>
<th>Central and Eastern Newfoundland</th>
<th>Avalon Peninsula</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>I – Early Summer</td>
<td>1 (1)</td>
<td>34 (49)</td>
<td>42 (56)</td>
<td>-</td>
<td>The majority of observations were of single animals; there were 18 observations of an adult female with one or two calves. Calves estimated at 1-2 weeks, with one estimated at one day (near Badger).</td>
</tr>
<tr>
<td>II – Mid-summer</td>
<td>3 (5)</td>
<td>40 (48)</td>
<td>33 (37)</td>
<td>15 (17)</td>
<td>Most observations of single adults; 13 cow-calf pairs.</td>
</tr>
<tr>
<td>III – Late Summer</td>
<td>4 (5)</td>
<td>45 (57)</td>
<td>36 (45)</td>
<td>6 (7)</td>
<td>Most observations in Labrador on the St. Paul and St. Augustine River systems, and single animal north of Forteau. In general, single animals are most common, with some pairs (two adults or cow-calf) observed. Many observations associated with higher elevations on Northern Peninsula.</td>
</tr>
<tr>
<td>IV – Mid-fall</td>
<td>2 (7)</td>
<td>28 (34)</td>
<td>17 (28)</td>
<td>6 (9)</td>
<td>Moose in Labrador on the St. Paul and St. Augustine River systems; one group of 5 in Labrador. Mostly single animals, with few calves. Seldom encountered in areas of higher.</td>
</tr>
<tr>
<td>V – Spring</td>
<td>5 (6)</td>
<td>39 (55)</td>
<td>52 (69)</td>
<td>8 (9)</td>
<td>Moose in Labrador associated with St. Paul and St. Augustine River systems, and Brennan Lake. In general, most sightings of single animals or pairs, and a small number of groups of 3; only one cow-calf pair.</td>
</tr>
</tbody>
</table>

( ) Indicates the total number of individuals observed

1 The Avalon Peninsula was not surveyed during Survey I due to persistent fog.
Figure 3.4  Moose Observations in the Central and Southeastern Labrador Region of the Study Area
Figure 3.5  Moose Observations in the Northern Peninsula Region of the Study Area
Figure 3.6  Moose Observations in the Central and Eastern Newfoundland Region of the Study Area
Figure 3.7 Moose Observations in the Avalon Peninsula Region of the Study Area
In the Labrador portion of the Study Area, moose were most commonly associated with wetland habitat (12 animals), with an equal number of sightings distributed among Conifer Forest, Conifer Scrub and Open Conifer Forest habitats (Table 3.7). On the island portion of the Study Area, moose were distributed throughout a variety of habitats, with most observations occurring in Scrub / Heathland / Wetland, Mixedwood, and Cutover habitats. Open Conifer habitat was also commonly used by moose on the Northern Peninsula, compared to other habitats in this region. The Study Team noted that moose on the Northern Peninsula, in particular, were associated with areas of higher elevation during Survey III in late Summer, but appeared to move from these areas (and were less frequently encountered in general) by Survey IV in mid-Fall.

Table 3.7 Number of Individual Moose recorded and associated ELC Habitat, 2011-2012

<table>
<thead>
<tr>
<th>ELC Habitat Unit</th>
<th>Central and Southeastern Labrador</th>
<th>Northern Peninsula</th>
<th>Central and Eastern Newfoundland</th>
<th>Avalon Peninsula</th>
<th>Total</th>
<th>Comments / Season Observed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conifer Forest</td>
<td>4</td>
<td>41</td>
<td>7</td>
<td>5</td>
<td>57</td>
<td>Observations throughout seasons, with most in early summer (18)</td>
</tr>
<tr>
<td>Conifer Scrub</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td></td>
<td>8</td>
<td>Half of observations from mid-summer</td>
</tr>
<tr>
<td>Cutover</td>
<td>13</td>
<td>71</td>
<td>4</td>
<td></td>
<td>88</td>
<td>Most observations in spring (26) and early summer (25)</td>
</tr>
<tr>
<td>Kalmia Lichen / Heathland</td>
<td>5</td>
<td></td>
<td>2</td>
<td></td>
<td>7</td>
<td>Observations in mid (2) and late (2) summer, and mid-fall (3)</td>
</tr>
<tr>
<td>Mixedwood Forest</td>
<td>17</td>
<td>74</td>
<td>5</td>
<td></td>
<td>96</td>
<td>Observations most common in spring (28), and early (21) and late (24) summer</td>
</tr>
<tr>
<td>Open Conifer Forest</td>
<td>5</td>
<td>62</td>
<td>15</td>
<td></td>
<td>82</td>
<td>Observations throughout seasons surveyed but most common in fall (24)</td>
</tr>
<tr>
<td>Wetland</td>
<td>12</td>
<td>17</td>
<td>34</td>
<td></td>
<td>63</td>
<td>Observations in early (6), mid (14) and late (10) summer, mid-fall (17) and spring (16)</td>
</tr>
<tr>
<td>Scrub / Heathland / Wetland</td>
<td>78</td>
<td>23</td>
<td>23</td>
<td></td>
<td>124</td>
<td>Most observations in mid (32) and late (32) summer, and spring (27)</td>
</tr>
<tr>
<td>Shallow water with vegetation</td>
<td>12</td>
<td>3</td>
<td>2</td>
<td></td>
<td>17</td>
<td>Observations from all seasons with exception of mid-fall</td>
</tr>
<tr>
<td>Exposed Earth</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td>2</td>
<td>One observations in each of early and late summer</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>24</strong></td>
<td><strong>243</strong></td>
<td><strong>235</strong></td>
<td><strong>42</strong></td>
<td><strong>544</strong></td>
<td></td>
</tr>
</tbody>
</table>

Notes:
Numbers are based on the total number of individual moose associated with a particular ELC habitat, versus observations of pairs or groups of moose.

¹ Not an ELC habitat unit.

3.2.2.1 Waterfowl

Waterfowl were recorded throughout surveys, though were relatively more common in the Central and Southeastern Labrador (512 observations; Figure 3.8) and Northern Peninsula (716 observations; Figure 3.9), compared to other regions [198 observations in the Central and Eastern Newfoundland Region (Figure 3.10) and 50 observations in the Avalon Peninsula Region (Figure 3.11)] (Table 3.8). A total of 11 species of waterfowl...
were confirmed, with Canada Goose (*Branta Canadensis*), mergansers (*Mergus merganser* and *M. serrator*), Ringed-necked Duck (*Aythya valisineria*), and American Black Duck (*Anas rubripes*) observed most frequently. American Black Duck / Mallard hybrids were also recorded, one in each of the Central and Southeastern Labrador and the Northern Peninsula regions. Other species of waterfowl included Common Goldeneye (*Bucephala clangula*), Green-winged Teal (*Anas crecca*), Scoter (*Melanitta sp.*), Scaup (*Aythya sp.*), Common Loon (*Gavia immer*), and Harlequin Duck (*Histrionicus histrionicus*).

Harlequin Duck, a species of “Special Concern” under the federal *Species at Risk Act*, were recorded during surveys with one unconfirmed sighting of a Class III (i.e., fully feathered, flightless) duckling on the upper reaches of the East River during survey III, and one adult pair on the Torrent River during Survey V, both on the Northern Peninsula.

Timing of surveys provided coverage of the breeding, brood-rearing, moulting, staging and migratory period for many species of waterfowl. As expected, spatial differences were noted among the different regions of the Study Area. For example, during Survey I, Canada Goose were on eggs in Labrador, while young broods were recorded in Newfoundland.

Potentially important production and moulting areas were identified in the Central and Southeastern Newfoundland and Northern Peninsula regions of the Study Area, during surveys in mid- and late-summer (Tables 3.3 and 3.8).
<table>
<thead>
<tr>
<th>Survey</th>
<th>Central and Southeastern Labrador</th>
<th>Northern Peninsula</th>
<th>Central and Eastern Newfoundland</th>
<th>Avalon Peninsula</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>I – Early Summer</td>
<td>27 (51)</td>
<td>49 (&gt;152)</td>
<td>11 (18)</td>
<td>-</td>
<td>Near the end of the breeding period for most species. Canada geese on the Northern Peninsula were mostly adults with young or moulting birds; geese were on eggs in Labrador.</td>
</tr>
<tr>
<td>II – Mid-summer</td>
<td>29 (&gt;119)</td>
<td>49 (242)</td>
<td>7 (42)</td>
<td>9 (32)</td>
<td>Broods, pre-moulting and moulting aggregations of ducks and geese observed. Potentially important moulting area on the St. Paul’s River system in Labrador. Concentrations of waterfowl near Brien’s River, River of Ponds and headwaters of the East River, on the Northern Peninsula.</td>
</tr>
<tr>
<td>III – Late Summer</td>
<td>33 (&gt;232)</td>
<td>37 (117)</td>
<td>16 (42)</td>
<td>3 (4)</td>
<td>Observations primarily of staging waterfowl. Approx. 100 Black Duck observed at one location on the St. Paul’s River. Black Duck and Canada Geese broods were capable of flight but flightless merganser broods observed.</td>
</tr>
<tr>
<td>IV – Mid-fall</td>
<td>0</td>
<td>8 (46)</td>
<td>0</td>
<td>1 (10)</td>
<td>Fewer waterfowl in general, as survey was conducted after many species had migrated.</td>
</tr>
<tr>
<td>V – Spring</td>
<td>48 (&gt;115)</td>
<td>67 (163)</td>
<td>35 (&gt;96)</td>
<td>3 (4)</td>
<td>Noted 20 individual Scaup sp. in Labrador, with 2 confirmed as Greater Scaup.</td>
</tr>
</tbody>
</table>

( ) Indicates the total number of individuals observed

¹The Avalon Peninsula was not surveyed during Survey I due to persistent fog.
Figure 3.8  Waterfowl Observations in the Central and Southeastern Labrador Region of the Study Area
Figure 3.9   Waterfowl Observations in the Northern Peninsula Region of the Study Area
Figure 3.10  Waterfowl Observations in the Central and Eastern Newfoundland Region of the Study Area
Figure 3.11  Waterfowl Observations in the Avalon Peninsula Region of the Study Area
3.2.3 Raptors

A total of eight species of raptors were confirmed during surveys, comprised of Osprey (*Pandion haliaetus*), Bald Eagle (*Haliaeetus leucocephalus*), Red-tailed Hawk (*Buteo jamaicensis*), Rough-legged Hawk (*Buteo lagopus*), Great-horned Owl (*Bubo virginianus*), Northern Goshawk (*Accipiter gentilis*), Northern Harrier (*Circus cyaneus*), and Short-eared Owl (*Asio flammeus*) (Figures 3.12-3.15). Of these, the Short-eared Owl, observed in the Central and Eastern Newfoundland region of the Study Area during Survey I (Figure 3.14), is listed as ‘Vulnerable’ under the *Newfoundland and Labrador Endangered Species Act*, and a species of ‘Special Concern’ under Schedule I of the federal *Species at Risk Act*.

The greatest diversity of species was identified on the Northern Peninsula (six of eight species), although observations of raptors – particularly Osprey – were relatively more common in Labrador (Table 3.9). A total of 48 observations were recorded in Central and Southeastern Labrador, 31 on the Northern Peninsula, 15 in Central and Eastern Newfoundland, and 8 on the Avalon Peninsula (Table 3.9).

### Table 3.9 Raptor Observations in the Study Area, 2011-2012

<table>
<thead>
<tr>
<th>Survey</th>
<th>Central and Southeastern Labrador</th>
<th>Northern Peninsula</th>
<th>Central and Eastern Newfoundland</th>
<th>Avalon Peninsula</th>
<th>Comments (Nest Activity&lt;sup&gt;1&lt;/sup&gt;)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I – Early Summer</td>
<td>6 (6)</td>
<td>5 (5)</td>
<td>4 (4)</td>
<td></td>
<td>Osprey (5 active, 2 inactive, 1 unknown status) and Bald Eagle (1 active) nests only observed in Labrador; Short-eared Owl observed in Central and Eastern NL</td>
</tr>
<tr>
<td>II – Mid-summer</td>
<td>14 (15)</td>
<td>7 (8)</td>
<td>1 (1)</td>
<td>1 (1)</td>
<td>Osprey (4 active, 2 inactive, 6 unknown) and Bald Eagle (1 active) nests observed in Labrador; 1 Osprey nest on the Northern Peninsula with unknown activity</td>
</tr>
<tr>
<td>III – Late Summer</td>
<td>18 (26)</td>
<td>7 (7)</td>
<td>0</td>
<td>3 (3)</td>
<td>7 of 13 Osprey nests in Labrador active, all with only 1 fledgling; one previously identified Bald Eagle nest with a single eaglet; Possible Osprey nest identified in Central and Eastern NL</td>
</tr>
<tr>
<td>IV – Mid-fall</td>
<td>1 (1)</td>
<td>12 (16)</td>
<td>5 (6)</td>
<td>1 (1)</td>
<td>Majority of sightings in insular Newfoundland were Bald Eagle</td>
</tr>
<tr>
<td>V – Spring</td>
<td>9 (10)</td>
<td>0</td>
<td>5 (5)</td>
<td>3 (6)</td>
<td>Two active Bald Eagle nests, one active Osprey nest and one empty nest recorded in Labrador</td>
</tr>
</tbody>
</table>

<sup>1</sup> Indicates the total number of individuals observed

<sup>1</sup>The Avalon Peninsula was not surveyed during Survey I due to persistent fog.

<sup>1</sup>Total does not include old or damaged nests that would be considered unavailable for nesting.

Forty-seven raptor nests of Osprey (37 active, inactive, and old or damaged nests), Bald Eagle (five active nests) and unconfirmed species (four nests) were recorded in the Study Area (Table 3.9), with the majority (35) identified in Central and Southeastern Labrador.
Figure 3.12  Raptor Observations in the Central and Southeastern Labrador Region of the Study Area
Figure 3.13  Raptor Observations in the Northern Peninsula Region of the Study Area
Figure 3.14   Raptor Observations in the Central and Eastern Region of the Study Area
Figure 3.15  Raptor Observations in the Avalon Peninsula Region of the Study Area
3.2.4 Other Mammals

Other mammal observations included American Black Bear (Ursus americanus), American Beaver (Castor canadensis), Coyote (Canis latrans), Porcupine (Hystricomorph hystricidae), Snowshoe Hare (Lepus americanus), Red Fox (Vulpes vulpes) and cattle.

Black bear were observed in Central and Southeastern Labrador (spring and summer surveys), on the Northern Peninsula (spring and summer surveys), and in the Central and Eastern Newfoundland (late summer, fall and spring surveys) regions of the Study Area. Bears were noted in highland habitats during Survey II, particularly along the coastal highlands north of Forteau and between the Castor and Torrent Rivers on the Northern Peninsula.

Coyote were recorded in insular Newfoundland only, on Survey I in early summer (Central and Eastern Newfoundland) and Survey IV in mid-fall, the latter in an area of transition between forest and upland habitats, south of Portland Creek Pond (Northern Peninsula).

Porcupine occur only in the Labrador portion of the Study Area (Banfield 1974), and a single observation was recorded during Survey V in spring. Beaver were observed in all regions of the Study Area in insular Newfoundland. Only a single red fox was observed throughout surveys, in the Central and Eastern Newfoundland region, and there were three observations of snowshoe hare (one in each of the Central and Southeastern Labrador, Northern Peninsula, and Central and Eastern Newfoundland regions of the Study Area). Hereford cattle were also noted on the Avalon Peninsula.

Figures 3.16 through 3.19 show locations of other mammal observations recorded during surveys in the various regions of the Study Area.
Figure 3.16  Other Mammal Observations in the Central and Southeastern Labrador Region of the Study Area
Figure 3.17 Other Mammal Observations in the Northern Peninsula Region of the Study Area
Figure 3.18 Other Mammal Observations in the Central and Eastern Newfoundland Region of the Study Area
Figure 3.19 Other Mammal Observations in the Avalon Peninsula Region of the Study Area

[Map of the Avalon Peninsula with symbols representing wildlife observations]
3.2.5 Other Avifauna

Other avifauna observations included American Crow (Corvus brachyrhynchos), Common Raven (Corvus corax), Spruce Grouse (Falcipennis canadensis), Tree Swallow (Tachycineta bicolor), Herring Gull (Larus smithsonianus), Greater Black-backed Gull (Larus marinus), Greater Yellowlegs (Tringa melanoleuca), Belted Kingfisher (Megaceryle alcyon), Northern Waterthrush (Parkesia noveboracensis), Common Snipe (Gallinago gallinago), Gray Jay (Perisoreus canadensis), and unconfirmed species of ptarmigan (Lagopus sp.), passerines, shorebirds (including sandpiper), tern, and gulls. It was noted during the first survey in early summer that Spruce Grouse were likely still incubating eggs and males would be moultling at that time, owing to the low number of observations.

Figures 3.20 through 3.23 show locations of other avifauna observations recorded during surveys in the various regions of the Study Area.
Figure 3.20  Other Avifauna Observations in the Central and Southeastern Labrador Region of the Study Area
Figure 3.21  Other Avifauna Observations in the Northern Peninsula Region of the Study Area
Figure 3.22   Other Avifauna Observations in the Central and Eastern Newfoundland Region of the Study Area
Figure 3.23 Other Avifauna Observations in the Avalon Peninsula Region of the Study Area
3.3 Static Features

Approximately 400 static features were identified. Static observations associated with wildlife were dominated by beaver lodges and dams (185 records), with 63 observations in Central and Southeastern Labrador (Figure 3.24), 42 on the Northern Peninsula (Figure 3.25), 54 in Central and Eastern Newfoundland (Figure 3.26), and 26 on the Avalon Peninsula (Figure 3.27) (Appendix C). Other static wildlife features included game trails, a muskrat lodge, several large mammal carcasses, and a den of unknown species. Other static features associated with anthropogenic activity included cabins (91), an old camp and one potential outfitter lodge, as well as quarries and/or associated activities (29), sawmills (2), three signs of trapping activity (e.g., trappers tilt, Labrador marten traps), a substation and one landfill (Figures 3.28 – 3.31). The location of a known, and rare, Red Pine (*Pinus resinosa*) stand was documented in the Central and Eastern Newfoundland region (Figure 3.30). This stand is protected by the West Brook Ecological Reserve, an 11 km$^2$ reserve located approximately 14 km southwest of Springdale.

Effort was focused at examination of beaver dams / lodges during Survey IV (mid-fall), for signs of activity. It was noted that, across all regions, approximately 45% of lodges or dams had indications of current use. The amount of use was fairly consistent among most regions (Central and Southeastern Labrador – 45%; Northern Peninsula – 42%; Central and Eastern Newfoundland – 52%), but was lower in the Avalon Peninsula region (36%).

As indicated in the methods, following each survey, the map folio (produced at a scale of 1:50,000) was updated to reflect any static feature of interest (See Appendix D). This map folio may be used for more detailed planning in association with the Project.
Figure 3.24  Static Wildlife Observations in the Central and Southeastern Labrador Region of the Study Area
Figure 3.25 Static Wildlife Observations in the Northern Peninsula Region of the Study Area
Figure 3.26  Static Wildlife Observations in the Central and Eastern Newfoundland Region of the Study Area
Figure 3.27  Static Wildlife Observations in the Avalon Peninsula Region of the Study Area
Figure 3.28 Other Static Features in the Central and Southeastern Labrador Region of the Study Area
Figure 3.29  Other Static Features in the Northern Peninsula Region of the Study Area
Figure 3.30  Other Static Features in the Central and Eastern Newfoundland Region of the Study Area
Figure 3.31  Other Static Features in the Avalon Peninsula Region of the Study Area
4.0 SUMMARY AND DISCUSSION

The Study Area for the Labrador-Island Transmission Link is comprised of four regions: Central and Southeastern Labrador, Northern Peninsula, Central and Eastern Newfoundland, and Avalon Peninsula. Aerial wildlife surveys were conducted along the 2 km wide Study Area to identify existing environmental conditions, based on observations of wildlife (mobile) and static features (e.g., osprey nests, cabins, quarries) documented over a series of five surveys from June 2011 to May 2012.

The information collected can be used as mitigation to inform temporal and spatial Project planning during construction and operations phases. The associated map folio of relevant static observations for this purpose are included with this report (See Appendix X).

4.1 Species at Risk and Habitats of Interest

Species protected under the federal Species and Risk Act (SARA) and the Newfoundland and Labrador Endangered Species Act (NL ESA) confirmed in the Study Area were Harlequin Duck and Short-eared Owl (both listed as Vulnerable under NL ESA and Special Concern under SARA), and woodland caribou in Labrador (herds listed as Threatened under NL ESA and SARA).

Harlequin Duck were observed on the upper reaches of the East River (one duckling unconfirmed) and on the Torrent River (adult pair), both on the Northern Peninsula. Observation of Harlequin Duck in this region are not unusual, as there are several known and historic breeding locations for this species on the Northern Peninsula (Thomas 2008), including the Torrent River (Goudie and Gilliland 2008; Stassinu Stantec 2010).

A single Short-eared Owl was observed flying over a wetland complex south of Catamaran Park. This species is known to occur in wetland (bog) and other (tundra, coastal barrens, sand dune, and field) habitats in the province, typically in coastal areas along the west coast and Northern Peninsula (Schmelzer 2005). Observations of Short-eared Owl in the interior of central Newfoundland were not reported in the Management Plan for this species, although it was noted that “because Short-eared Owls track irruptions of small mammals over the landscape, the population trends, distribution and migratory patterns are difficult to monitor and hence poorly understood” (Schmelzer 2005). While nests of Short-eared Owls have been documented in the province, particularly in Labrador, most Short-eared Owls in Newfoundland are likely migrants (Schmelzer 2005). However, it is possible that a few birds may overwinter in the province (Schmelzer 2005).

Herd affiliation of woodland caribou observed in Labrador cannot be ascertained however the location of the four animals observed in the Study Area falls between, and south, of the documented range of the Mealy Mountains Herd and the Joir River subpopulation (Schmelzer et al. 2004; Jeffrey et al. 2006). While no caribou were recorded within the boundaries of these ranges, approximately 149 linear kilometers of the Study Area (based on the centerline of the 2 km wide transmission corridor) passes through the range of the Mealy Mountains Herd.

In addition to species protected under federal and/or provincial legislation or policies, potentially important waterfowl habitats were identified in southeastern Labrador on the St. Paul’s River System, and on the Northern Peninsula, including the Brien’s River, River of Ponds, and headwaters of the East River.
4.2 Other Wildlife and Static Observations

In general, the number and composition of species recorded in the Study Area was expected, given the nature and timing of surveys. That is, species of sufficient size to be detected using aerial survey methods, and present in the Study Area during the season surveyed, were expected. Wildlife (mammal) observations included moose, caribou, beaver, hare, porcupine, fox, and coyote. Avifauna observations included several species of waterfowl (Canada Goose, Common and Red-breasted Merganser, Ring-necked Duck, American Black Duck, Black Duck / Mallard hybrids, Common Goldeneye, Green-winged Teal, Scoter, Scaup, Common Loon, and Harlequin Duck), raptors (Osprey, Bald Eagle, Red-tailed Hawk, Rough-legged Hawk, Great-horned Owl, Northern Goshawk, Northern Harrier, and Short-eared Owl), and other species (American Crow, Common Raven, Spruce Grouse, Tree Swallow, Herring Gull, Greater Black-backed Gull, Greater Yellowlegs, Belted Kingfisher, Northern Waterthrush, Common Snipe, Gray Jay, and unconfirmed species of ptarmigan, passerines, shorebirds, tern, and gulls).

The typical static features recorded were the presence of beaver lodges and/or dams, with additional observations added with each successive survey. Approximately 45% of lodges or dams had signs of activity. Cabins were common in most regions of the Study Area, and quarries and/or associated activities were particularly common in the Central and Southeastern Labrador region.
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