

Raptor Component Study Addendum:

Cartwright Junction to Happy Valley - Goose Bay Trans Labrador Highway



**JACQUES WHITFORD ENVIRONMENT LIMITED
AND
MINASKUAT LIMITED PARTNERSHIP**

**JW Project No.: NFS09308-0007
Minaskuat Project No.: M6-0007**

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CARTWRIGHT JUNCTION TO HAPPY VALLEY-GOOSE BAY
TRANS LABRADOR HIGHWAY**

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TRANS LABRADOR HIGHWAY**

PREPARED FOR

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EXECUTIVE SUMMARY

The Department of Works, Services and Transportation (WST) is proposing to construct a two-lane, all-season gravel surface highway from Happy Valley-Goose Bay to Cartwright Junction that will link the existing TLH highway sections to the east (Phase II) and west (Phase I). As part of the environmental assessment for the project, detailed study (a component study) was required on raptors in the vicinity of the proposed route for the highway.

A component study on raptors for the TLH - Phase III project was prepared and submitted, along with the Environmental Impact Statement (EIS)/Comprehensive Study and other related documents to the Department of Environment in January 2003. On April 24, 2003, the Minister of Environment issued a statement that the Raptor Component Study, which presented survey data for the preferred route for the TLH - Phase III, was accepted as satisfactory. However, WST was advised that any alternative route determined to be viable upon review of the alternative methods for carrying out the project (as outlined in the EIS/Comprehensive Study) must have a raptor component study completed for that alternative route.

The only alternative route that was determined to be a viable alternative to the preferred route for the TLH - Phase III was the alternative route (referred to as the outfitter route) that had been identified by the Newfoundland and Labrador Outfitters Association. The outfitter route encompasses the western and eastern portions of the preferred route, but the central portion of this route extends further to the south. It is the central portion of the outfitter route (or A13 as it is identified in the EIS/Comprehensive Study) that is the focus of the recent field survey. This addendum to the Raptor Component Study provides details on the field survey carried out along the outfitter (A13 section) route and the results of that survey.

The objective of this study was to conduct original research to identify raptor nests along the outfitter (A13 section) route. The results of this component study will be used to predict the local and regional effects of the proposed routing on raptors and to determine appropriate mitigative measures.

Similar to the study conducted on the preferred route, the current study area consisted of a 2-km wide corridor centered on the route alternative. Original survey data were collected during a specific survey designed for raptors or incidental observations made during waterfowl surveys conducted within the same area. The raptor survey followed a predetermined route outlined on 1:50,000 topographic map sheets, that covered approximately 500 m on each side of the highway right-of-way. The survey route varied (was widened) in some locations of greater potential habitat, such as river valleys and lake/pond networks, within the 2-km-wide survey corridor.



The specific aerial survey for raptors was conducted on June 20, 2003. The 206L Bell helicopter was maintained at a height of 50 to 100 m above ground. Flights were conducted at a speed of approximately 100 km/h and particular attention was placed on higher points of land within the coverage area and on trees adjacent to smaller tributary streams. All observations were recorded on 1:50,000 topographic maps and locations confirmed using the aircraft global positioning system (GPS).

A total of 13 osprey nests were identified within the 2-km study area. No bald eagle nests or cliff nests were observed during the survey. Eight of the thirteen osprey nests were active; five were empty and, of these, three were considered old and in disrepair. Several nests were concentrated in complexes of wetlands and waterbodies associated with the western portion of the outfitter (A13 section) route as it turned north back toward the Eagle River area.

Eight osprey nests fall within 800 m of the centre line of the outfitter (A13 section) route. Of these eight, two are within 200 m of the centre line of the outfitter (A13 section) route. No nests are located within 50 m of the centre line of the outfitter (A13 section) route.



KATAKUPEKASHT TIPATSHIMUN MASHINEIKAN

Ntshent meshkinanu kanakituatak (Department of Works, Services, and Transportation) nantuenitamuat tshetshi tutakinut ussi meshkinanu tshetshi aitu pampinitshi utapana. Ne meshkinanu nete tshika itimu uta Apipani nuash nete Nutapineuant. Ne assi kanitussenitakanit, tshika minu nanitussenimakanut mitshishut, kushimesheut kie nutshineueshut, nete miam uatutakanit ussi meshkinanu.

Ne kananitussenimakanit aueshishat nete ussi meshkinanu katutakanit ne tsheishinikatet anutshish (Phase III). Shash ne tshinanitussenitakanu kie mashineikan shash tshi itisheikanu. Ne mashineikan kaishinitatet - Environment Impact Statement/Comprehensive Study- itisheikanipan nete Department of Environment nete TshishePishum etshishtauakanitshi umue anutshish mishte tshitashun 2003. Ne kananitussenimakanit mitshishut, kushimesheut kie nutshineueshut tutakanipan mashineikan kuet minuanut ne mashineikan tshetshi tshitatikanit eku kuet tapuetakanikue menupanit katsi nanitussenimakanit netshenit aueshishat. Eku ne meshkinanu kanakituatak issishuepanit kutak meshkinanu apishtakanitshi kie ma kutak uitutakanitshi minuat tshika nanitussenimauat netshenit aueshishat.

Ne muk kutak meshkinanu tshatshi iapishtakanu nete tsheitamut mishta meshkinat ne kaishinikatet TLH - Phase III ne ishinikateu (outfitter route-meshkinanu) ne ishinikatimupanit Newfoundland and Labrador Outfitters Association. Ne outfitter route-meshkinanu nete miam takun apitu meshkinat. Eukun umue meshkinanu tshenakituatikanit kie tshe nanitussenitakanit. Netshent shash kanitussenimakanit aueshishat (Raptor Component Study) nete meshkanu tshetutakant eukun tsheiapishtakant mashineikan katutakanit.

Umue kuet nenitussenitakant, tshetshi ma natu itakuenit netshenit aueshishat kapiniauet nete meshkinanu (A13 section) kaishinikatet outfitters route. Umue kanitussenimakanit aueshishat nikatshi uitshikunan nete aishkat kie netshent aueshishat miam mitshishut, kushimesheut kie nutshineueshut.

Ne peikutau tsheishinanitussenitakanit ne meshkinanu miam neta apitu tshetutakant meshkinanu. Ne ushkat kananitussenimakanit netshenit aueshishat mitshishut, kushimesheut kie nutshineueshutekuta neta peikutau assit iat tshika nanitussenitakanu. Assiu mashineikan nitapishtatan tshetshi uitshikuiat ne nentussenitamant assi, nete tshetutakant meshkinanu. Nte pisse kanantussenitakant assi tshika tikunua shipua, kie shakeikina nte miam tshetutakant meshkinanu.

Kauashtetshesht apitshiakinipan nentussenitakant assi nta Upau Pishum nishunu etshishtauakanitshi pishumua 2003 mishte itshitashun. Ne kauauashtetshesht tipatakushipan kie metinu pamipanipan nenitussenitakau assinu. Nenu mishtukua pessish katshimishutshent shakeikant eukunua minu nantussenitamupant assinu. Kassinu meshkakant tshekuan mishinatekeikanu nte assiu mashineikant.



Kutunu ashu nisht mishkakinipan kushimesheu kie nutshineueshu uisht. Nasht apu mishkakanitshi uisht nte utshit. Neshuaush nenua uishta kamishkakanitshi iapishtashipanit tshenit aueshishat. Patetat uisht apu apishtanikue kie nisht umenu shash tshisheniumakanishipani kie apu apitanitshi. Pisse nenua uishta nakituatikanishin nete pessish tekunitshi nipit kie shakeikanit. Ne meshkanu kaishinikatet outfitter (A13 section) nuash nete kau Nutapineuant shipit.

Neshuaush nenua uisht apu shuk pessish (800 m) takuntshi nete meshkanat kaishinikatet outfitter(A13 section). Nenua nish uisht tshekat pessish (200 m) takunua meshkanat outfitters (A13 section) kaishinikatet. Eku nasht apu takuaki uisht neta mishta pessish (50 m) meshkanat outfitters (A13 section) kaishinikatet.



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1.0 INTRODUCTION

The Department of Works, Services and Transportation (WST) is proposing to construct a two-lane, all-season gravel surface highway from Cartwright Junction to Happy Valley-Goose Bay. This highway is Phase III of the Trans Labrador Highway (TLH) and will link the existing TLH highway sections to the east (Phase II) and west (Phase I). The TLH - Phase III project is currently undergoing an environmental assessment under both the Newfoundland and Labrador *Environmental Protection Act* and *Canadian Environmental Assessment Act* (CEAA). As part of the environmental assessment, detailed study (a component study) was required on raptors in the vicinity of the proposed route for the highway.

1.1 Raptor Component Study

A component study on raptors for the TLH - Phase III project was prepared and submitted, along with the Environmental Impact Statement (EIS)/Comprehensive Study and other related documents to the Department of Environment in January 2003. The EIS and related documentation were examined to determine whether it fulfilled the requirements of the guidelines. On April 24, 2003, the Minister of Environment issued a statement regarding the EIS/Comprehensive Study and related documentation prepared for the TLH - Phase III environmental assessment. Before a final decision could be reached on the project, additional information and study were required on various aspects of the project.

The Raptor Component Study, which presented survey data for the preferred route, was accepted as satisfactory. However, WST was advised that any alternative route determined to be viable upon review of the alternative methods for carrying out the project (as outlined in the EIS/Comprehensive Study) must have a raptor component study completed for that alternative route.

The only alternative route that was determined to be a viable alternative to the preferred route for the TLH - Phase III was the alternative route that had been identified by the Newfoundland and Labrador Outfitters Association (Figure 1.1). This addendum to the Raptor Component Study provides details on the field survey carried out along a portion of the outfitter route, specifically the section identified as A13 in the EIS/Comprehensive Study, and the results of that survey. The remaining portions of the outfitter route encompass the western and eastern segments of the preferred route, which were surveyed during the 2002 field program. One raptor-specific aerial survey was conducted along the outfitter (A13) route and raptor observations were also noted during the waterfowl surveys. This fieldwork provided the same level of survey coverage as that previously carried out for the preferred route.





Figure 1.1
Cartwright Junction to
Happy Valley-Goose Bay
Trans Labrador Highway
Proposed Routes

1.2 Raptor Study on Outfitter (A13 Section) Route

1.2.1 Study Objective

The proposed alignment for the TLH - Phase III will intersect areas expected to be used by breeding osprey, bald eagle and other raptors, potentially resulting in habitat alteration or disturbance. The Government of Newfoundland and Labrador has guidelines recommending no construction within 800 m of an active osprey or bald eagle nest during the nesting period. Outside of the nesting period, a 200 m vegetation buffer is to be maintained around the nest.

The objective of this study was to conduct original research to describe raptor and raptor habitat along section A13 (outfitter route). The results of this study will be used to predict the local and regional effects of the proposed routing on raptors and to determine appropriate mitigative measures.

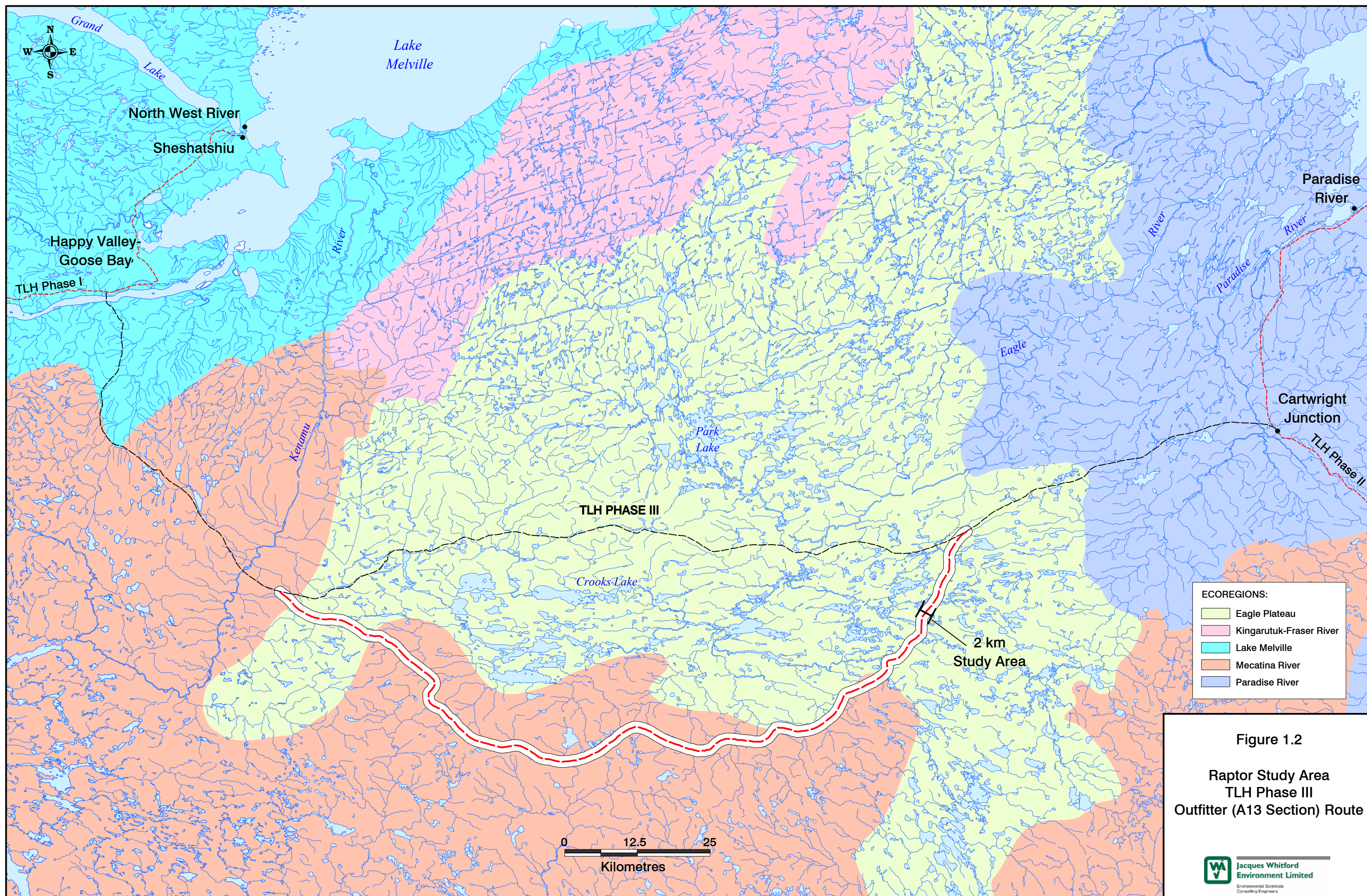
1.2.2 Study Team

Mr. Perry Trimper of Jacques Whitford was the project manager and was involved in the design and conduct of field surveys and report review. Ms. Kathy Knox of Jacques Whitford was responsible for data compilation and report preparation. Mr. Dave Kearsey of Jacques Whitford compiled the MapINFO files for all data collected. Technicians from Minaskuat Limited Partnership participated in the aerial survey.

1.2.3 Study Area

The outfitter (A13 section) route lies primarily within the boundaries of the Mecatina River ecoregion in central Labrador. The route also crosses small sections of the Eagle Plateau ecoregion along its western and eastern ends before connecting with the preferred route (Figure 1.2). The Mecatina River ecoregion, to the southeast, is dominated by fairly open black spruce forest, with ribbed fens and string bogs covering extensive areas. The climate is typically subarctic and continental, with warm summers and cold winters (Meades 1990). While only a small portion of the outfitter (A13 section) route lies within the Eagle Plateau ecoregion, much of the preferred highway route lies within this ecoregion. The ecoregion is characterized by a flat to rolling upland plateau where extensive string bogs dominate the landscape. Lichen woodland occurs on eskers and areas of coarse till. The climate is subarctic, with cool summers and cold winters (Meades 1990).





Ecoregions common to both the preferred and outfitter (A13 section) routes are the Lake Melville ecoregion, at the western end of the proposed highway route, and the Paradise River ecoregion at the eastern end of the highway route. The Lake Melville ecoregion has low-lying (i.e., essentially at or near sea level) undulating upland topography, with flat river terraces and generally experiences warmer summers and shorter winters than surrounding regions. A relatively productive closed-crown black spruce forest is the dominant vegetation (Meades 1990). The Paradise River ecoregion, at the eastern portion of the study area, has a boreal climate, with cool summers and short cold winters. It is characterized by undulating topography that supports closed-crown forest and domed bogs (Meades 1990).

2.0 FIELD METHODOLOGY

The study area consisted of a 2-km wide corridor centered on the outfitter (A13 section) route (Figure 1.2). Original survey data for this assessment were collected either directly during specific surveys designed for raptors or incidentally during waterfowl surveys within the same area. Specific raptor surveys followed a predetermined route outlined on 1:50,000 topographic map sheets, that covered approximately 500 m on each side of the outfitter (A13 section) route. The survey route varied (was widened) in some locations of greater potential habitat, such as river valleys and lake/pond networks, within the 2-km-wide survey corridor.

The specific aerial survey for raptors was conducted on June 20, 2003, following methods developed previously by the study team (JW 1999; 2000) and previously used during the raptor survey conducted for the preferred route (JW and LMSS 2003). The 206L Bell helicopter was maintained at a height of 50 to 100 m above ground level (agl). Flights were conducted at a speed of approximately 100 km/h. Consistent with Wetmore and Gillespie (1976) and professional experience, attention was placed on higher points of land within the coverage area and on trees adjacent to smaller tributary streams, searching for large (1 to 2 m diameter) stick nests. All observations were recorded directly onto 1:50,000 topographic maps and locations confirmed using the aircraft global positioning system (GPS). Observations of all other wildlife were also recorded.

Spatial survey data (survey lines, species sightings and habitat features) were transferred from the 1:50,000 scale NTS map sheets and digitized on 1:250,000 scale NTS map sheets using MapInfo (version 6.0). Data management, analysis and representation was also completed using MapInfo.



3.0 LITERATURE REVIEW

The Ungava Peninsula supports a wide variety of raptor species near the northern extent of their range (e.g., bald eagle, osprey), southern extent of their range (e.g., gyrfalcon, snowy owl), or typical of northern boreal forest (e.g., rough-legged hawk, great-horned owl) (Godfrey 1986). These species can be divided into two groups according to the type of nesting habitat they use: cliff-nesting or tree-nesting. Both groups tend to be sensitive to disturbance, but the latter are, of course, more susceptible to habitat loss or alteration from linear developments. These species tend to range over large areas centred around a nest site, making them susceptible to activities in the vicinity of the nest site (Trimper et al. 1998). Common and scientific names of raptors discussed in this report are provided in Appendix A.

Wetmore and Gillespie (1976) conducted aerial surveys for osprey and bald eagles in a 46,600 km² study area in east-central Labrador from 1969 to 1973. This survey area encompassed the area of the proposed TLH - Phase III between Cartwright Junction and Happy Valley-Goose Bay including the preferred and outfitter routes.

The Department of National Defence (DND) has conducted an annual monitoring program for cliff-nesting and woodland raptors within the low-level training area (LLTA) in Labrador since 1991 and a control area to the east since 1997. The LLTA and the control area also encompass the outfitter (A13 section) route. As an example of the research completed through these annual surveys, 543 osprey nest sites had been identified in the LLTA and control area by 1998 (JW 1999).

General life history characteristics of species that may occur in the study area are detailed in Table 3.1.

Table 3.1 Life History and Habitat Preferences of Raptors in the Study Area

Species	Nesting and Brood Rearing	Diet and Foraging	Preferred Habitat
Osprey	Nest: nest bowl on top of standing, dominant spruce or larch trees, sometimes rocks, usually not far from water; nests re-used year after year Clutch Initiation: late May to early June Clutch Size: usually 3 Incubation: 32-43 days Fledge: 48-59 days	Diet: primarily fish, occasionally small mammals Foraging: scans water from 10-30 m high, dives and grasps	mosiac of black spruce forest and open water



Species	Nesting and Brood Rearing	Diet and Foraging	Preferred Habitat
Bald Eagle	Nest: large and bulky, in large trees (sometimes in the crotch of a dying tree) or on rocks or the ground on islands; nests re-used year after year Clutch Initiation: mid to late May Clutch Size: usually 2, sometimes 3 Incubation: 34-36 days Fledge: 70-98 days	Diet: largely fish, self-caught or stolen from ospreys; opportunistic hunter who will feed on mammals, birds and carrion Foraging: scans from perch or sky	areas of open water with suitable nest sites available nearby
Northern Goshawk	Nest: bulky, usually on horizontal branch next to trunk; usually in aspen or birch tree, less often in spruce or fir Clutch Initiation: mid to late May Clutch Size: 2-4 Incubation: 36-38 days Fledge: 35-42 days	Diet: primarily birds, lesser quantities of small mammals Foraging: often an ambush hunter, drops from trees	mixed mature stands of hardwood and conifer
Red-tailed Hawk	Nest: large and bulky, usually in crotch of branch at trunk, 1 to 3 m from the top, in a dominant tree; in open areas may nest on cliff ledge Clutch Initiation: late May Clutch Size: 1-3 Incubation: 30-35 days Fledge: 45-46 days	Diet: primarily small mammals, occasionally reptiles, amphibians, birds Foraging: scans from perch, soaring or hovering	open areas interspersed with forest
Northern Harrier	Nest: ground nest near low shrubs or in tall weeds, usually near on or near a swamp, bog or meadow Clutch Initiation: late May Clutch Size: 4-6, commonly 5 Incubation: 31-32 days Fledge: 30-35	Diet: small mammals, reptiles, amphibians, birds Foraging: hovering low over the ground - 3-10 m, drops quickly	open areas - marshes, bogs
Merlin	Nest: often uses old nests of crows or hawks, also may use natural hollows of trees or woodpecker holes, sometimes cliff ledges Clutch Initiation: late May Incubation: 28-32 days Clutch Size: 4-6 Fledge: 30-35 days	Diet: almost exclusively birds, sometimes small mammals and insects Foraging: watches for prey from perch, overtakes birds in flight	coniferous forest, shrubby barrens, bogs; hunts in forest openings and along edges of waterbodies
American Kestrel	Nest: old cavity nests of other birds, woodpecker holes Clutch Initiation: late May Clutch Size: 3-5 Incubation: 29-31 days Fledge: 30-31 days Young: Precocial	Diet: mostly insects and small mammals Foraging: watches for prey from perch, flies/hovers over open country, swoops to ground for prey	forest, forest edges, open areas
Great Horned Owl	Nest: Usually nests of other birds such as red-tailed hawk, osprey or crow Clutch Initiation: early-mid April Clutch Size: 1-4 Incubation: 26-35 days Fledge: 35 days	Diet: mostly small mammals (including hares), sometimes birds, reptiles, amphibians Foraging: mainly nocturnal, flies silently and swoops down on prey	forest, marshes and bogs



Species	Nesting and Brood Rearing	Diet and Foraging	Preferred Habitat
Short-eared Owl	Nest: ground nest usually in a slight depression in open field or marsh, often at base of shrub Clutch Initiation: early June Clutch Size: 4-9 Incubation: 26-28 days Fledge: 31-36 days	Diet: mostly small mammals, may eat insects Foraging: circles and glides close to ground	grassland, tundra, marshes
Boreal Owl	Nest: tree cavity, old woodpecker hole Clutch Initiation: March Clutch Size: 3-10, usually 4-6 Incubation: 27-28 days Fledge: 28-33 days	Diet: mostly small mammals and insects, occasionally birds Foraging: watches for prey from perch, swoops down	coniferous forest
Note: Incubation - time from egg-laying to hatching. Fledge - time from hatching to fledging. Sources: Ehrlich et al. 1988; Terres 1991; Chubbs and Trimper 1998; Trimper et al. 1998.			

Refer to the Raptor Component Study (JW and LMSS 2003) for detailed discussion on raptor population trends. Population trends for various raptor species in the region are summarized in Table 3.2.

Table 3.2 BBS Raptor Trends for Canada (1966-1994 and 1991-2000) and for the Boreal Softwood Shield Ecozone (1966-1994)

Species	Mean Annual Percent Change in Populations ¹			General Trend
	Canada-Wide		Boreal Shield	
	1966-1994	1991-2000	1966-1994	
Osprey	2.0*	6.8	2.88	Increasing
Bald Eagle	6.88*	1.7	n/a	Increasing
Northern Harrier	-0.4	-2.9	-1.46	Decreasing
Sharp-shinned Hawk	0.69**	-2	0.89*	Decreasing
Northern Goshawk	0.13	n/a	n/a	Unknown
Red-tailed Hawk	2.65****	1.5	1.26*	Increasing
American Kestrel	1.12*	0.6	2.27***	Increasing
Merlin	1.08**	3.1	2.09*	Increasing
Great-horned Owl	-0.21	4.8	-1.76**	Decreasing
Short-eared Owl	-2.57****	n/a	n/a	Decreasing
Rough-legged Hawk	n/a	n/a	n/a	Unknown
Boreal Owl	n/a	n/a	n/a	Unknown
¹ Statistical significance: no asterisk = not significant, * 0.05<math>p<0.1</math>, ** <math>p<0.05< ****<math>p<0.001<="" ***<math>p<0.01<="" math>,="" math><br=""></math>p<0.05<> ² Trends not available. Sources: CWS 2002; 2003; Kirk and Hyslop 1998.				



4.0 RESULTS AND DISCUSSION

4.1 Survey Results

The structures and status of nests found within the 2-km-wide study area are summarized in Table 4.1. Several nest were identified (as a result of other surveys or known by the study team from work for DND) outside the 2-km-wide study area. The general locations of the nests within the study area are graphically indicated in Figure 4.1, which also indicates nests in the surrounding region that have been identified from the DND databases or through waterfowl surveys conducted from May to August 2003.

Table 4.1 Raptor Nest Structures and Status Within the 2-km-Wide Study Area - June 20, 2003

Nest Type	# Nest Structures	# Active	# Empty	# Status Unknown
Osprey	13	8	5 ¹	0
Bald Eagle	0	-	-	-
Cliff Nest	0	-	-	-

¹ Three empty nests were considered “old”, meaning that they had deteriorated to the point of being unavailable for nesting.

Where osprey nests were observed, there tended to more than one in the general area, usually associated with a complex of rivers and waterbodies that had suitable nesting trees along the shoreline. One area of obvious concentration is in complexes of wetlands and waterbodies associated with the western portion of the outfitter (A13 section) route as it turns north back toward the Eagle River area (Figure 4.1).

The following species were observed during waterfowl surveys conducted along the outfitter (A13 section) route from May through August, 2003:

- red-tailed hawk (six) - flying;
- adult bald eagle (seven) - flying;
- immature bald eagle (two) - flying;
- osprey (38) - flying (note: these are in addition to individuals that would have been associated with the active nests indicated above);
- rough-legged hawk (five) - flying;
- great-horned owl (one) - perched; and
- short-eared owl (one) - flying.



Twenty-three of the thirty-two osprey observed were seen during the last waterfowl survey on September 4 to 5, 2003. It is likely that a number of these individuals were newly-fledged young of the year.

Two bald eagle nests were identified during a waterfowl survey in July (Figure 4.1). One nest was empty, the other active with one chick.

4.2 Species of Special Concern

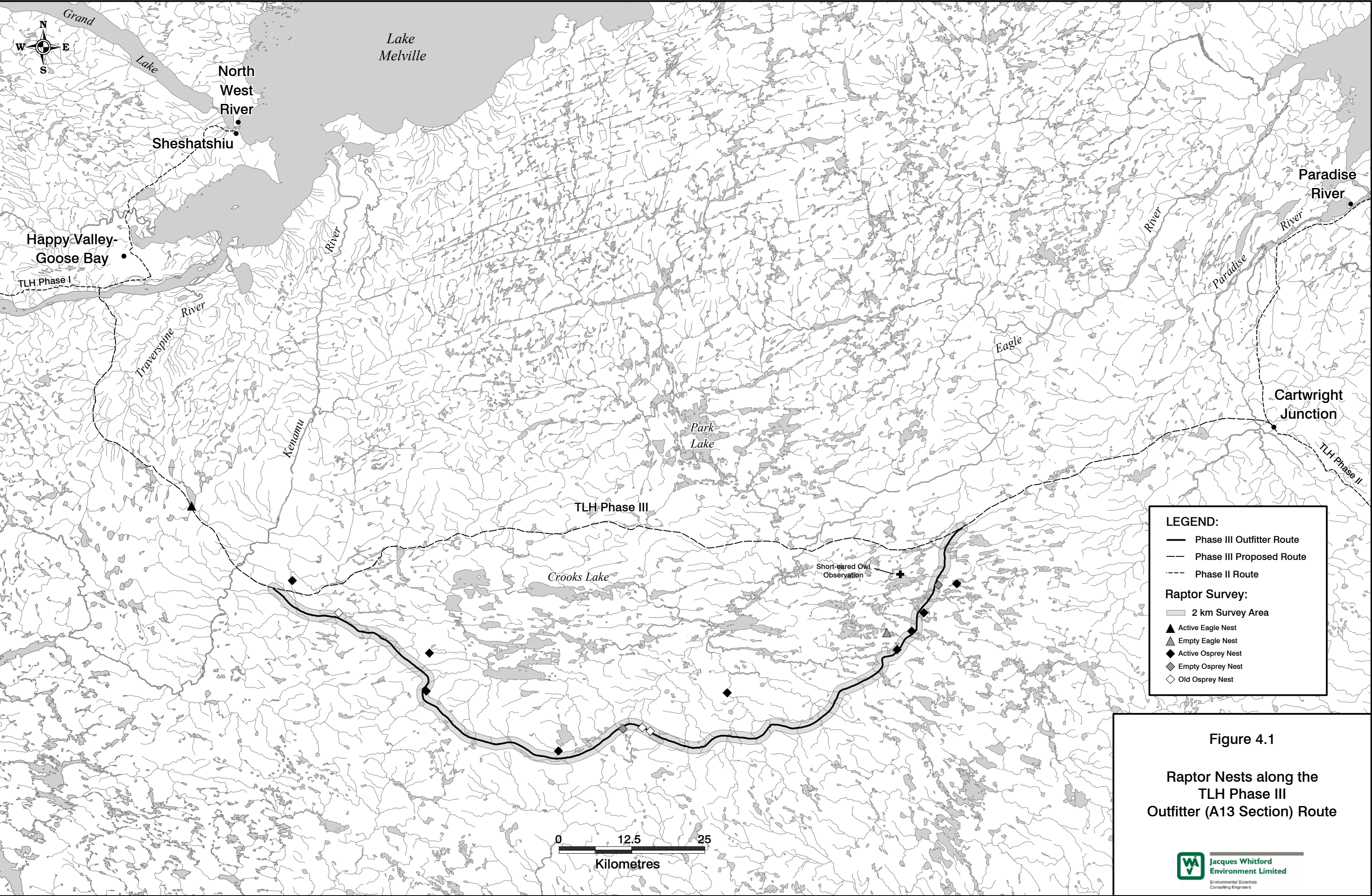
Short-eared owls were listed as a species of special concern by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) in 1994 and are considered vulnerable under the provincial *Endangered Species Act*. As noted (Table 3.2), the species has significantly declined in Canada since the 1960s. However, it appears that much of the decline is related to habitat loss in western Canada and it is for this reason that the species was designated as being of special concern. The Atlantic Canada population is considered stable (Environment Canada 2002). The short-eared owl inhabits open grassland, marshes, bogs and tundra, where it hunts small mammals and nests on the ground. One short-eared owl was observed during the July 2003 waterfowl survey, flying over an open bog area approximately 6 km northwest of the outfitter (A13 section) route (Figure 4.1).

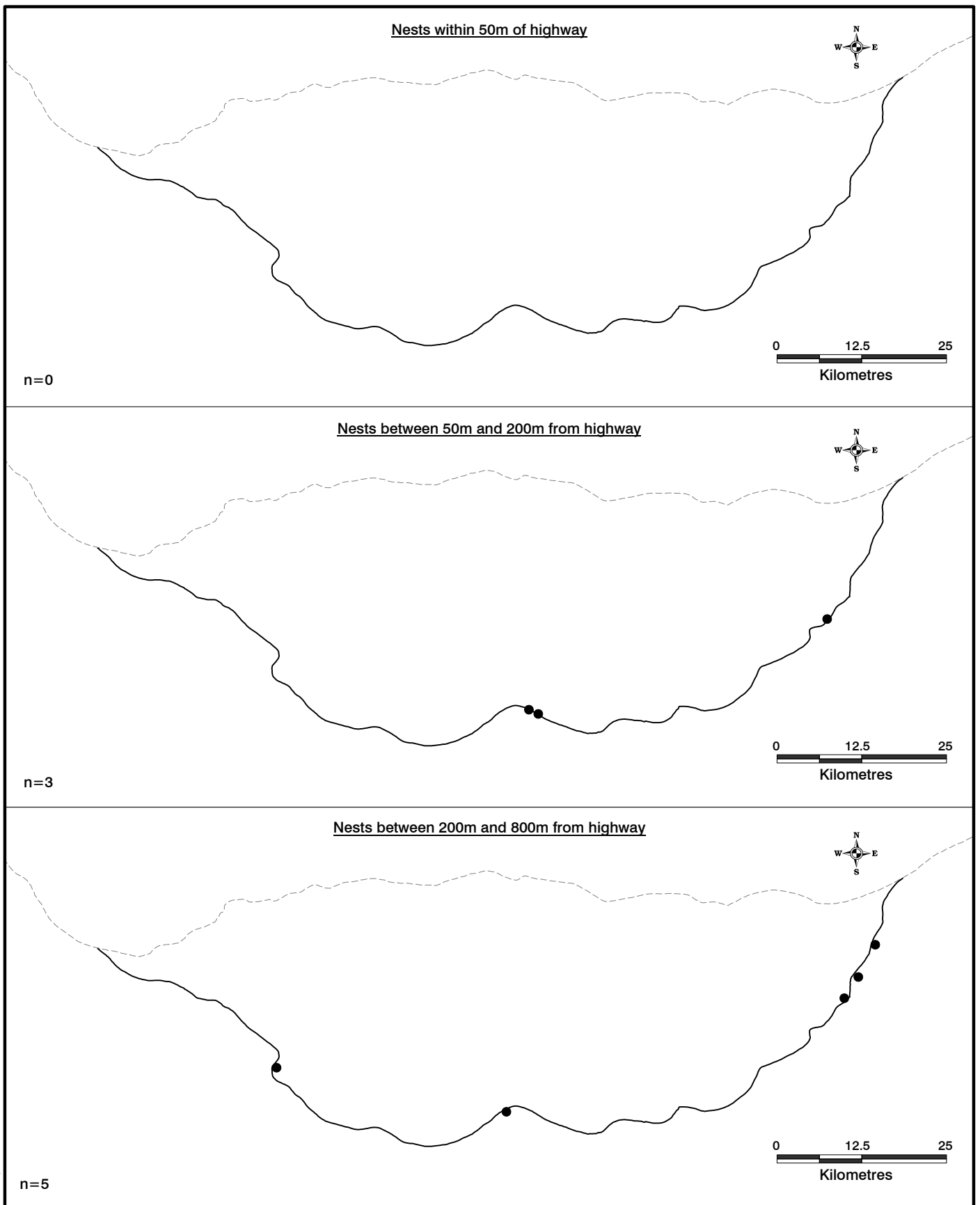
The *anatum* population of peregrine falcons are listed as threatened by COSEWIC and the *tundra* population are considered vulnerable (COSEWIC 2002). Under the provincial *Endangered Species Act*, both *anatum* and *tundra* populations are considered threatened due to the difficulty of distinguishing the two groups, the possibility the two may inter-breed and the fact that their ranges may overlap (DTCR 2002). Peregrine falcons are known to breed along the Labrador coast and inland along river valleys in northern Labrador. No breeding peregrine falcons have been recorded in south-central Labrador; however, some birds may move through the study area during spring and fall migration.

4.3 Important Areas

As noted earlier, the Government of Newfoundland and Labrador has guidelines recommending no construction within 800 m of an active osprey or bald eagle nest during the nesting period. Outside of the nesting period, a 200 m vegetation buffer is to be maintained around the nest. Eight osprey nests fall within 800 m of the centre line of the outfitter (A13 section) route. Of these eight, two are within 200 m of the centre line of the route. No nests are located within 50 m of the route centre line (Figure 4.2).







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Figure 4.2

**Raptor Nests Within 800m of the
Highway Centre Line - Outfitter (A13 Section) Route**

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APPENDIX A

Common Names and Scientific Names of Raptors

Appendix A Common and Scientific Name of Raptors

Common Name	Scientific Name
Northern Harrier	<i>Circus cyaneus</i>
Osprey	<i>Pandion haliaetus</i>
Bald Eagle	<i>Haliaetus leucocephalus</i>
Northern Goshawk	<i>Accipiter gentilis</i>
Red-tailed Hawk	<i>Buteo jamaicensis</i>
Merlin	<i>Falco columbarius</i>
Sharp-shinned Hawk	<i>Accipiter striatus</i>
Rough-legged Hawk	<i>Buteo lagopus</i>
American Kestrel	<i>Falco sparverius</i>
Peregrine Falcon	<i>Falco peregrinus</i>
Gyr Falcon	<i>Falco rusticolus</i>
Boreal Owl	<i>Aegolius funereus</i>
Great Horned Owl	<i>Bubo virginianus</i>
Short-eared Owl	<i>Asio flammeus</i>
Snowy Owl	<i>Nyctea scandiaca</i>
Northern Hawk Owl	<i>Surnia ulula</i>