

## Document Front Sheet



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**Nalcor Energy Lower Churchill  
Project, Environmental Effects  
Monitoring Program – 2014  
Red Wine Mountains Caribou  
Herd**

2014 Aerial Survey and Collar  
Deployment



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**Interim Report**

September 22, 2014

**NALCOR ENERGY LOWER CHURCHILL PROJECT, ENVIRONMENTAL EFFECTS MONITORING  
PROGRAM – 2014 RED WINE MOUNTAINS CARIBOU HERD**

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**NALCOR ENERGY LOWER CHURCHILL PROJECT, ENVIRONMENTAL EFFECTS MONITORING PROGRAM – 2014 RED WINE MOUNTAINS CARIBOU HERD****Executive Summary**

The 2014 Red Wine Mountains Caribou Herd (RWMH) Environmental Effects Monitoring Program (EEMP) was completed as part of a larger EEMP developed based on the requirements and commitments in the Lower Churchill Generation Project Environmental Impact Statement (EIS) (Nalcor 2009a and 2009b). The primary objectives of the 2014 RWMH EEMP were to record locations of caribou from the herd and/or their tracks in the winter range, deploy additional telemetry collars on RWMH caribou, and to support ongoing Project mitigation.

An aerial strip transect survey was completed over a three-day period between February 18 and February 21, 2014, and collars were deployed on February 21. Weather conditions encountered during surveys were ideal for aerial observations and collar deployment. Only three caribou were observed during 50 transects flown in 2014. Two of the caribou observed during strip transect surveys were successfully captured and collared (one male and one female). Both captured/collared caribou were believed to be in good body condition, and showed no sign of *Besnoitia* sp. infection.

Aerial transect surveys are an effective means of assessing ungulate populations, and may be particularly important for species of conservation concern, such as Red Wine Mountains Caribou (*Rangifer tarandus*). Results from the 2014 field program provide preliminary information on numbers, age and sex characteristics, distribution, and habitat use of caribou from the RWMH. This information will be used in combination with results of future surveys and collaring initiatives, to assess the movement and distribution patterns of RWMH caribou in relation to Project activities.





## NALCOR ENERGY LOWER CHURCHILL PROJECT, ENVIRONMENTAL EFFECTS MONITORING PROGRAM – 2014 RED WINE MOUNTAINS CARIBOU HERD

2014 RED WINE CARIBOU HERD ENVIRONMENTAL EFFECTS MONITORING PROGRAM  
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### 1.0 2014 RED WINE CARIBOU HERD ENVIRONMENTAL EFFECTS MONITORING PROGRAM

The 2014 Red Wine Mountains Caribou Herd Environmental Effects Monitoring Program (EEMP) was completed by Stassinu Stantec Limited Partnership (Stassinu Stantec) and is part of the broader EEMP that Nalcor Energy is completing in conjunction with the Lower Churchill Generation Project (the Project). The work is based on the requirements and commitments in the Lower Churchill Generation Project Environmental Impact Statement (EIS) (Nalcor 2009a and 2009b),

The primary objective of the Red Wine Mountains Herd (RWMH) EEMP is to monitor the effects of the Project on RWMH caribou (*Rangifer tarandus*) in relation to the predictions made in the EIS (Nalcor 2009), in particular effects on the distribution and movement patterns of caribou through a combination of satellite telemetry data, habitat modeling, and ground and aerial surveys. Specific objectives of the 2014 program were:

- To record locations of caribou and/or their tracks in the winter range of the RWMH;
- To deploy additional telemetry collars on RWMH caribou; and
- To support ongoing Project mitigation.

The Red Wine Mountains Caribou Herd EEMP represents a collaboration of expertise from within Nalcor, Stassinu Stantec, and the Newfoundland and Labrador Wildlife Division (NLWD), Department of Environment and Conservation, as well as data sharing agreements with the Institute of Environmental Monitoring and Research (IEMR). This interim report describes the methods and preliminary results from the first year of a multi-year EEMP. It is anticipated that additional collaring will be conducted in winter 2014.

#### 1.1 Background

Caribou from the RWMH are recognized as threatened under provincial and federal legislation. The herd was considered stable in the 1980s but declined dramatically to approximately 151 animals in 1997 (Schaefer et al. 1999) with a further decrease to around 87 animals by 2003 (NLDEC 2010, internet site). The current range of the RWMH overlaps the footprint of the Project.

The RWMH was assessed as a Key Indicator in the Project EIS, in terms of Project related environmental effects on change in habitat, mortality and health of caribou. A Resource Selection Function (RSF) analysis and a Least-Cost Pathway (LCP) analysis were carried out using over 1,200 existing caribou satellite telemetry locations as part of the baseline program (Minaskuat Inc. 2009), and results indicated that habitat for the RWMH was not limited in the Project area. Findings suggested that the southern range of this herd may have increased in importance since the 1980s and 1990s: up to 50 percent of collared animals moved south across the river at least once during their annual movements between 1999 and 2003. Females also



## NALCOR ENERGY LOWER CHURCHILL PROJECT, ENVIRONMENTAL EFFECTS MONITORING PROGRAM – 2014 RED WINE MOUNTAINS CARIBOU HERD

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avoided certain zones of influence (ZOI), including the Trans Labrador Highway (TLH) corridor (during calving) and cutblocks (during winter, calving and post-calving).

The EIS predicted there would be adverse environmental effects on the RWMH, but these were considered not significant (i.e., the Project would not cause a population decline, such that the viability or recovery of the Herd is threatened). However, cumulative environmental effects on the RWMH were predicted to be significant, and the EIS concluded that ongoing pressures from predation and illegal hunting, and the combined effects of all existing, planned and reasonably foreseeable projects and activities in the region would contribute to a further decline.

In August 2011, the "Report of the Joint Review Panel – Lower Churchill Hydroelectric Generation Project" was released, highlighting the Panel's recommendations related to caribou and other species. This included the recommendation to monitor the response of RWMH caribou to Project activities, "including any population changes through the construction phase and in the early part of the operation phase".

Nalcor Energy committed to the continued participation in the Labrador Woodland Caribou Recovery Team and to support ongoing research initiatives such as telemetry studies and aerial surveys. In consultation and cooperation with the NLWD, a monitoring program was developed that will combine information compiled and summarized in support of the Project EIS with more recent datasets and analyses (e.g., Schmelzer 2012) to examine caribou response to Project activities.

### 1.2 Study Team

The study team for the field component of the Red Wine Mountains Caribou Herd EEMP included personnel from Stassinu Stantec, NLWD, and Universal Helicopters Newfoundland and Labrador Limited Partnership (UHNL) (Table 1.1).

**Table 1.1 2014 RWMH Study Team**

Name	Role	Organization
Diane Ingraham	Project Manger	Stassinu Stantec
Perry Trimper	Senior Technical Advisor	Stassinu Stantec
Tony Parr	Field Lead / Observer / Navigator; Data Summary & Reporting	Stassinu Stantec
Mike Crowell	Senior Review	Stassinu Stantec
Karen Rashleigh	Reporting	Stassinu Stantec
Mary Ann Aylward	Field Observer / Navigator	Stassinu Stantec
Richard Neville	Field Observer	NLWD
John Pisapio	Field Observer & Net Gunner	NLWD



## NALCOR ENERGY LOWER CHURCHILL PROJECT, ENVIRONMENTAL EFFECTS MONITORING PROGRAM – 2014 RED WINE MOUNTAINS CARIBOU HERD

### METHODS

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Name	Role	Organization
John Innis	Pilot	UHNH
Greg Baikie	Pilot	UHNH

Prior to the start of field activities, all personnel reviewed the Health, Safety, and Environment (HSEQ) Plan, and the Risk Management Strategy (RMS) 1 (Stassinu Stantec Limited Partnership 2014). A daily hazard assessment (RMS 2) was completed on the morning of each survey. The required scientific research permit (permit #: 2013/14-18, Appendix A) was acquired from the NLWD, prior to the initiation of the surveys.

## 2.0 METHODS

### 2.1 Study Area

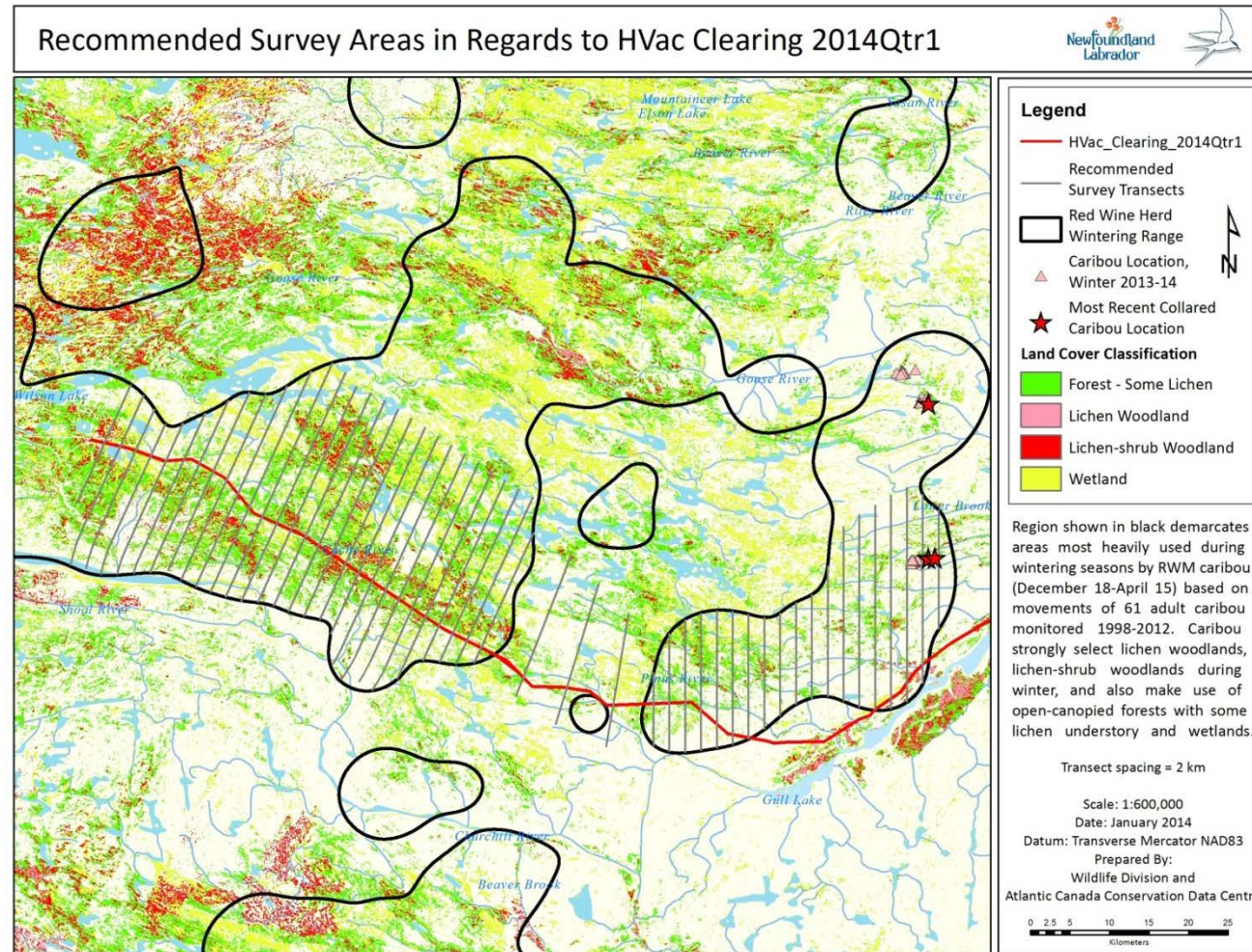
The Study Area for the Red Wine Mountains Caribou Herd EEMP covered a 20 km area of overlap between the Project footprint and important winter habitat/potential occupancy for RWMH caribou as identified by the NLWD (Figure 2-1). Aerial strip transect surveys were located within this area of overlap, and GPS collar locations recorded during transect surveys were then used to inform caribou collaring.



# NALCOR ENERGY LOWER CHURCHILL PROJECT, ENVIRONMENTAL EFFECTS MONITORING PROGRAM – 2014 RED WINE MOUNTAINS CARIBOU HERD

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## Notes:

1. Survey areas recommended by the NLWD and based on heavily used areas by collared caribou during winter (1998-2012)
2. HVac = High Voltage AC (alternating current) transmission line

**Figure 2-1 2014 RWMH Study Area**





**NALCOR ENERGY LOWER CHURCHILL PROJECT, ENVIRONMENTAL EFFECTS MONITORING PROGRAM – 2014 RED WINE MOUNTAINS CARIBOU HERD**

## METHODS

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**2.2 Strip Transect Surveys**

Three observers (field lead/navigator and rear seat observers) plus pilot participated in strip transect surveys, following along pre-established transects spaced at 2 km intervals. Each observer searched an area of approximately 200 m either side of the aircraft.

A Bell 206L Long Ranger helicopter equipped with 'bubble' rear windows (to enhance visibility) was used throughout the survey. The aircraft was flown at 100-120 km/hour and an altitude of approximately 100 m above ground level (agl). Survey routes were uploaded into a Garmin aeronautical GPS device which projects a line for easy navigation; the pilot followed these routes and maintained a constant air speed. Waypoints of caribou sightings and/or tracks were geo-referenced using GPS and additional comments were recorded on field data sheets. The results were forwarded to site supervisory staff for On-site Project Mitigation that involves a series of measures designed to reduce interaction with Project activity.

**2.3 Telemetry Collar Deployment**

Collars for the telemetry component of this EEMP were provided by NLWD. Locations where caribou had been observed during strip transect surveys were revisited to target animals for collar deployment. The area around the waypoint was searched to identify fresh tracks, and tracks were then followed to locate the animal.

Any preparations that could be done prior to leaving the heliport (e.g., security harness put on, capture nets packed in buckets) were completed so that the helicopter did not need to land unnecessarily after an animal was located. Prior to collaring an animal, steps were taken to secure the net gunner's harness to a safety point inside the helicopter, and the net gunner inserted the net bucket with net into the net gun, and loaded the barrels of net gun with weights of the net.

When an animal was located and the decision made to collar the animal, the side door of the helicopter was opened and the net gunner stepped onto the skids of the helicopter. An assistant would then hand a cartridge to the net gunner to load the rifle. Once loaded, the 'okay' was given to the pilot to pursue the animal and position the helicopter. When an animal was successfully captured (i.e., entangled by the net), the pilot landed nearby and the field team secured the animal with restraints while the collar was secured and the following measurements (or samples) taken:

- total body length
- girth circumference
- heart circumference
- neck circumference
- metatarsus length
- hind foot length
- tail length





## NALCOR ENERGY LOWER CHURCHILL PROJECT, ENVIRONMENTAL EFFECTS MONITORING PROGRAM – 2014 RED WINE MOUNTAINS CARIBOU HERD

### RESULTS

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- body weight
- blood, hair and fecal samples
- checked for signs of *besnoitia sp.* infection

## 3.0 RESULTS

Weather conditions encountered during surveys were ideal for aerial observations and collar deployment on February 18 and 19, when most transects were completed (Table 3.1). Weather was unsuitable on February 20 for surveying. Flights resumed on February 21, when several survey transects and collaring were completed.

**Table 3.1 Survey Effort and Conditions during the 2014 RWMH Caribou Survey.**

Date	Survey Type	Departure/Return Time	Survey Start Time	# Transects Flown	Total Flying Time (Hrs.)	# Caribou	Weather
February 18	Strip transect survey	0935h / 1715h	0957h	26	6.6	0	Approximately -20 degrees Celsius, moderate winds (16 km/h) from the west; skies clear with high broken cloud.
February 19	Strip transect survey	0910h / 1750h	0955h	23	7.0	3	Approximately -21 degrees Celsius and calm. Sunny for the first 2h, then became overcast.
February 21	Strip transect survey & collaring	1014h / 1435	1056h	1	3.6	3*	Approximately -10 degrees Celsius and winds 10 km/h from the NW. Low to no cloud cover (100% clear skies by mid-day).
*Relocation of previous caribou							

### 3.1 Strip Transect Surveys

A total of 50 transect lines were flown between February 18 and 21 (Table 3.1; Figure 3-1). Caribou were observed only on February 19, when three individuals were located approximately 10 km west of Cache River, south of the Trans-Labrador Highway depot (Figure 3-1; Appendix B). The group consisted of one antlerless stag and two antlered does. Other signs of caribou recorded during surveys consisted of tracks and cratering (n=2). Incidental observations included tracks of moose, otter and porcupine, and Osprey nests (Appendix B).





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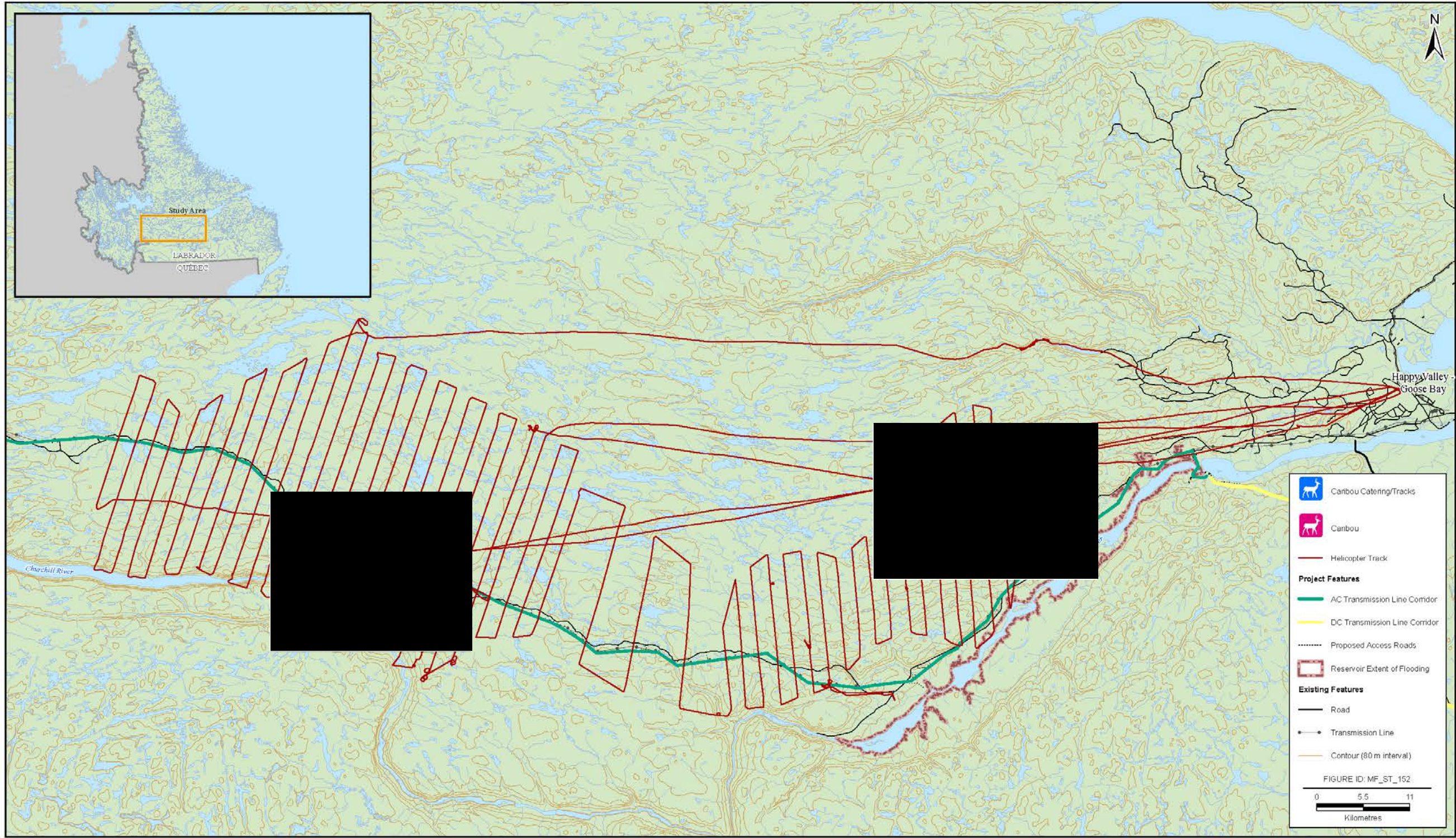


Figure 3-1 Survey Transect Locations and Caribou Observations, February 18-21, 2014





# NALCOR ENERGY LOWER CHURCHILL PROJECT, ENVIRONMENTAL EFFECTS MONITORING PROGRAM – 2014 RED WINE MOUNTAINS CARIBOU HERD

## RESULTS

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### 3.2 Telemetry Collar Deployment

Conditions were suitable for collar deployment on February 21 only (i.e., relatively warmer temperatures, low wind and low to no cloud cover; Table 3.1). The Study Team decided to capture the male and one of the females from the group of three caribou recorded previously on February 19. These animals were located shortly after departure (at 1056h), and were within 1.5 km of where they had been located two days prior. The male caribou and one female were successfully captured and collared (Table 3.2).

**Table 3.2 Caribou Collaring Results**

Parameter	Caribou ID RW2014001	Caribou ID RW2014002
Sex	M	F
Collar Reference #	31453	32422
Collar Frequency	149.420	149.750
Neck (cm)	95	49
Total Length (cm)	210	176
Tail (cm)	19	12
Heart (cm)	135	126
Hump (cm)	146	132
Hind Foot (cm)	62	60
Metatarsus (cm)	22	21
Weight (lbs)	298.8	201.8
Samples Collected	Blood, fecal, hair	Blood, fecal, hair
<i>Besnoitia</i> sp.	No	No
Body Condition Score	Shoulder 1, ribs 2, hips 2	Shoulder 2, ribs 2, hips 2
Antlers	Not antlered	Antlered
Group Size	3 (with two antlered females)	3 (with one antlered female and one male)
Latitude	53.16463	53.15389
Longitude	-62.32592	-62.33372
Total Herding Time (min.)	3	7
Total Chase Time (min.)	8	7
Total Handling Time (min.)	60	30

Total capture time (herding, chasing, and handling) was 71 minutes for RW2014001 (the male), and 44 minutes for RW2014001 (the female) (Table 3-2). All standard measurements were acquired and blood, fecal and hair samples collected on both animals. The final release time (after which no more animals were targeted for capture and collaring) was 1315h.



**NALCOR ENERGY LOWER CHURCHILL PROJECT, ENVIRONMENTAL EFFECTS MONITORING PROGRAM – 2014 RED WINE MOUNTAINS CARIBOU HERD****SUMMARY**

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**4.0 SUMMARY**

Aerial transect surveys are an effective means of assessing ungulate populations, and may be particularly important for species of conservation concern, such as Red Wine Mountains Caribou. Aerial transect surveys were completed over a three day period in February, 2014, with results used to support caribou telemetry collaring. Two caribou believed to be from the RWMH were successfully captured and collared through this initiative. Additional caribou collaring is planned for fall 2014, with efforts depended on snow and temperature conditions.

Results from the 2014 field program provide preliminary information on numbers, age and sex characteristics, distribution, and habitat use of caribou from the RWMH. This information will be used in combination with results of future surveys and collaring initiatives, to assess the movement and distribution patterns of RWMH caribou in relation to Project activities.



**NALCOR ENERGY LOWER CHURCHILL PROJECT, ENVIRONMENTAL EFFECTS MONITORING PROGRAM – 2014 RED WINE MOUNTAINS CARIBOU HERD**

## REFERENCES

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**5.0 REFERENCES**

- Minaskuat Inc. 2009. Environmental Baseline Report: Caribou (*Rangifer tarandus caribou*). The Lower Churchill Hydroelectric Generation Project Environmental Impact Statement. Report 2 of 2 in *Component Studies Terrestrial Environment, Species at Risk*. Prepared for Nalcor Energy.
- Nalcor Energy (Nalcor). 2009a. Lower Churchill Hydroelectric Generation Project Environmental Impact Statement. Volume IIA – Biophysical Assessment, St. John's, NL.
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- Schmelzer, I. 2012. Range Use, Life History and Trends in Abundance of Forest-dwelling Threatened Caribou Populations in Labrador: An Overview. Report prepared by the Newfoundland and Labrador Department of Environment and Conservation, Wildlife Division, Corner Brook, NL.





NALCOR ENERGY LOWER CHURCHILL PROJECT, ENVIRONMENTAL EFFECTS MONITORING  
PROGRAM – 2014 RED WINE MOUNTAINS CARIBOU HERD

# APPENDIX A

Research Permit





GOVERNMENT OF  
NEWFOUNDLAND AND LABRADOR

Department of  
Environment and Conservation  
Wildlife Division

**A PERMIT TO CONDUCT RESEARCH ON SPECIMENS OF A  
LISTED SPECIES UNDER THE *ENDANGERED SPECIES ACT* OF  
NEWFOUNDLAND AND LABRADOR**

**Date:** February 12, 2014

**Endangered Species Permit Number:** 2013/14-18

**Issued To:** Perry Trimper, Stantec Consulting Ltd., P.O. Box 482, Station C, Happy Valley-Goose Bay, NL A0P 1C0

**Permit To:** 1) Conduct nonintrusive ground and or aerial surveys and monitoring of Sedentary Woodland Caribou (*Rangifer tarandus*) within the geographic boundaries of the Lower Churchill River hydro project Sedentary Woodland Caribou study area as delineated in Schedules 1 and 2 of this authorization.  
2) Capture, restrain, take samples, and attach collars to individuals of the threatened Red Wine herd of Woodland Caribou in the presence of Wildlife Division staff as further described in condition #4.

**Expiry Date:** March 31, 2014

**CONDITIONS:**

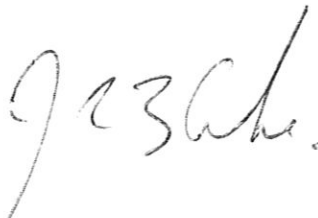
1. Aerial transect surveys shall be for the primary purpose of investigating for the presence of Sedentary Woodland Caribou within the project study area as delineated in Schedule 2. Aircraft shall not descend lower than 100 meters (above ground level) on located caribou and observation time shall be limited to the minimum amount of time required to count and classify observed caribou, and not to exceed 5 minutes.
2. Ground surveys shall be for the purpose of assessing caribou occurrence in relation to, and in proximity to project development activities such as roads, hydro lines, and reservoir water level management. Ground surveys may include use of motor vehicles, all-terrain vehicles, water craft and non-motorized

transportation. Snowmobiles may only be used on roads, forest roads and hydro line corridors.

3. Ground searches for caribou or signs of caribou shall be limited to the geographic study area as delineated in Schedule 1.
4. All capture, restraint, sampling and collaring of caribou will be conducted only by Wildlife Division staff. Wildlife Division protocols must be followed for the location of caribou and subsequent capture, restraint, sampling and collaring. No capture, restraint or handling of caribou can occur under any circumstances except in the presence of Wildlife Division staff.
5. The permit holder shall also submit all raw data collected during the survey to the Wildlife Division within one week of the completion of survey activities. Data provided shall include GPS locations of caribou observations, caribou tracks or observed caribou craters. The permit holder shall provide to Wildlife Division a final report detailing all activities carried out under this permit; including the specific methodologies used within two months of the expiry date of the permit. The permit holder is responsible to obtain any and all permissions which may be required to release this information to the Wildlife Division.
6. The permit holder shall provide the Wildlife Division with copies of all reports generated as a result of this research. The permit holder is responsible to obtain any and all permissions which may be required to release this information to the Wildlife Division.
7. The permit holder may designate other individuals to perform these actions on his behalf, with suitable supervision. The permit holder is responsible for the training of any designated individuals and must ensure that designated individuals follow all conditions of this permit.
8. Names and contact information for all individuals participating in research activities shall be provided to the Wildlife Division, Department of Environment and Conservation prior to commencement of field work. Additional names or deletion of names can be provided to Wildlife Division on an ongoing basis.
9. The permit holder shall maintain a list of all persons who have been provided access to GPS caribou collaring data. The list shall be provided to the Wildlife Division upon request.
10. All individuals listed in relation to conditions 8 and/or 9 must be advised that their information will be provided to the Wildlife Division and may be further disclosed as described in condition 13 or as otherwise permitted or required by law.
11. Caribou shall not be unduly harassed, injured, or killed as the result of activities performed under this permit. Any disturbance to caribou must be minimized to

the extent possible.

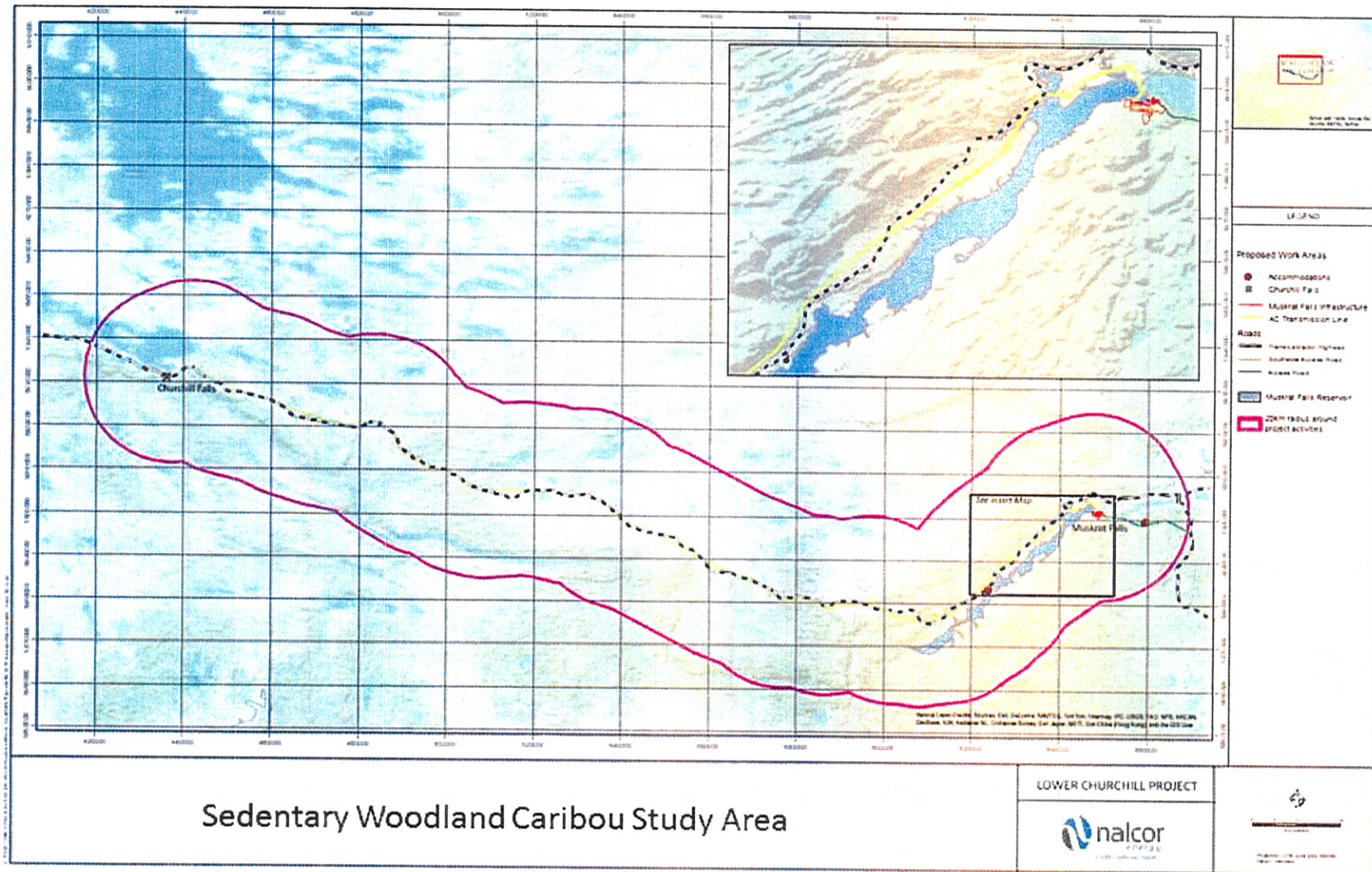
12. If an animal is injured or killed as a result of an activity performed under this research permit, the Wildlife Division shall be immediately notified. The Wildlife Division may require further activities authorized by this permit to cease until such time as the Wildlife Division has had an opportunity to review the circumstances.
13. This permit does not absolve or relieve the permit holder from any other laws, permits, regulations or orders.
14. This permit does not relieve the permit holder from the requirement to acquire permission to access private property.
15. A copy of this permit shall be retained in the field at all times by at least one person on the permit personnel list and is to be provided to an Inland Fish and Wildlife Enforcement Officer or other person of delegated authority upon request.
16. Under the discretion of the Director of Wildlife, this permit can be revoked without notice.



**JOHN BLAKE**  
Director



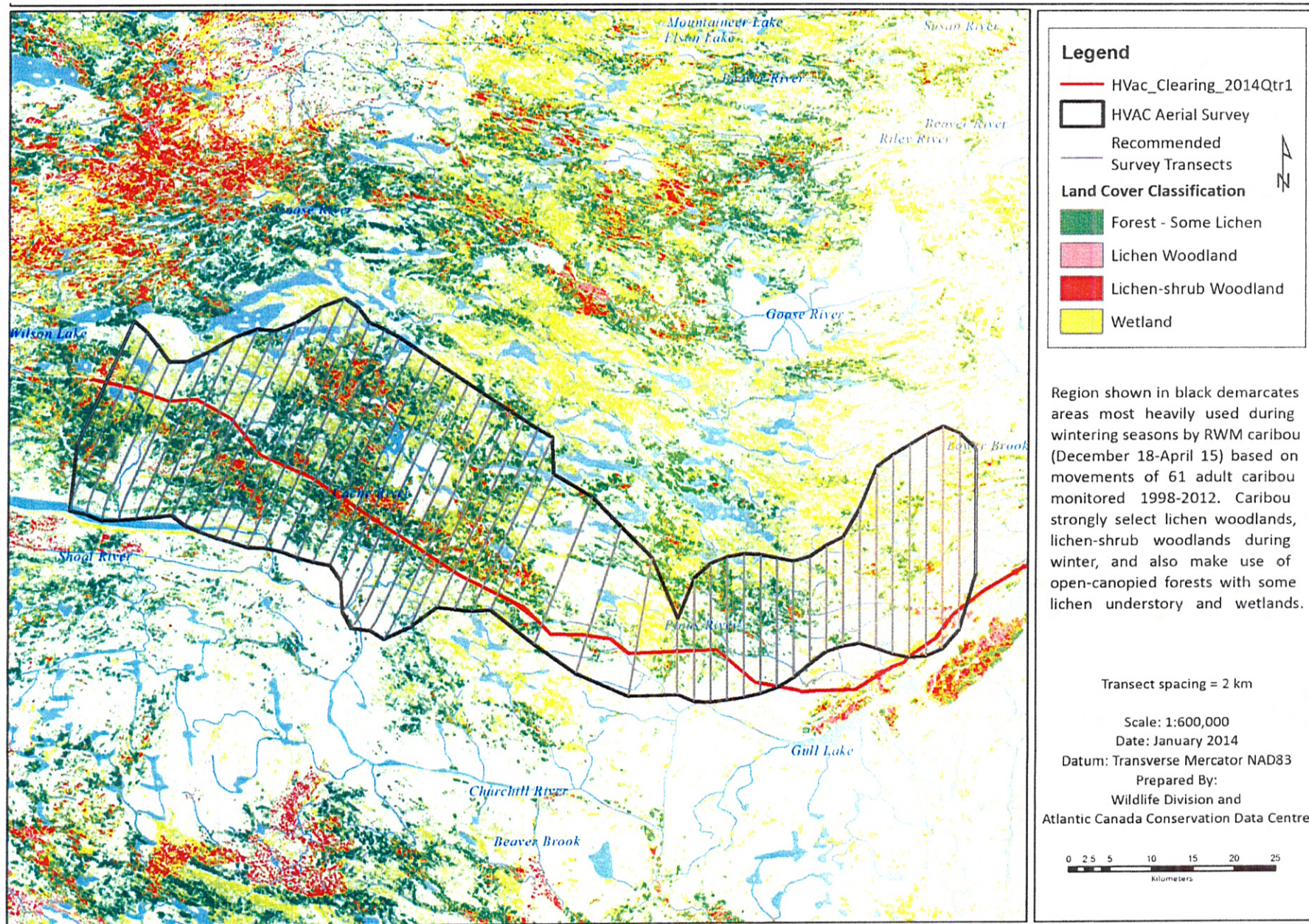
## Schedule 1- Study Area



\*Pink line delineates the geographic extent of potential collaring activities.



## Schedule 2 Aerial and Ground Survey Area



NALCOR ENERGY LOWER CHURCHILL PROJECT, ENVIRONMENTAL EFFECTS MONITORING  
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## APPENDIX B

### 2014 Strip Transect Survey Results





**NALCOR ENERGY LOWER CHURCHILL PROJECT, ENVIRONMENTAL EFFECTS MONITORING PROGRAM – 2014 RED WINE MOUNTAINS CARIBOU HERD**

**Table B.1 Observations from Strip Transect Surveys, February 18-21, 2014**

Transect #	Waypoint Recorded	Latitude (decimal degrees)	Longitude (decimal degrees)	Species / Tracks Recorded	Notes / Observations
1	33	53.xxx	-61.xxx	caribou	cratering observed
1	34	53.19295	-61.0992	osprey nest	
in transit	35	53.11276	-61.1146	moose	
2	36	53.12797	-61.1206	moose	
3	37	53.14727	-61.1549	osprey nest	
3	38	53.10881	-61.1499	moose	
3	39	53.09608	-61.1485	moose	
in transit	40	53.07508	-61.1533	moose	
4	41	53.08583	-61.1818	moose	
4	42	53.098	-61.1828	moose	
4	43	53.12897	-61.1854	moose	
4	44	53.16511	-61.1886	moose	
4	45	53.xxx	-61.xxx	caribou	tracks and cratering
5	46	53.08132	-61.2063	moose	
7	47	53.15019	-61.2747	otter	
11	48	53.15212	-61.394	otter	
11	49	53.06074	-61.3852	moose	
12	50	53.04422	-61.4104	moose	
12	51	53.09813	-61.417	otter	
12	52	53.14463	-61.4214	otter	
13	53	53.05482	-61.4427	moose	
13	54	53.04652	-61.4414	moose	
14	55	53.04355	-61.4715	moose	
14	56	53.06864	-61.4785	moose	Old tracks
14	57	53.0786	-61.474	moose	Fresh tracks
15	58	53.08478	-61.5066	moose	
16	59	53.13818	-61.5379	otter	
in transit	60	53.00501	-61.5661	moose	
19	61	53.0844	-61.6268	otter	
in transit	62	52.99788	-61.6324	moose	
in transit	63	52.99862	-61.6394	osprey nest	
20	64	53.00732	-61.7073	otter	
21	65	53.17096	-61.7508	otter	



**NALCOR ENERGY LOWER CHURCHILL PROJECT, ENVIRONMENTAL EFFECTS MONITORING  
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<b>Transect #</b>	<b>Waypoint Recorded</b>	<b>Latitude (decimal degrees)</b>	<b>Longitude (decimal degrees)</b>	<b>Species / Tracks Recorded</b>	<b>Notes / Observations</b>
26	66	53.24078	-61.972	osprey nest	
27	67	53.19081	-62.0282	otter	
27	68	53.16095	-62.0461	otter	
in transit	69	53.04531	-62.1537	moose	
28	70	53.31703	-61.9874	otter	
29	71	53.13979	-62.1237	moose	
29	72	53.xxx	-62.xxx	unknown ungulate	
in transit	73	53.05486	-62.1913	moose	multiple along both sides of Churchill River
30	74	53.06296	-62.2054	moose	multiple along both sides of Churchill River
30	75	53.10538	-62.1771	moose	old, in burn
30	76	53.xxx	-62.xxx	unknown ungulate	old track
30	77	53.16463	-62.1407	moose	
30	78	53.18565	-62.1286	otter	
30	79	53.21845	-62.1094	otter	
31	80	53.25229	-62.1213	otter	
31	81	53.13991	-62.1863	moose	
31	82	53.10974	-62.2052	moose	
31	83	53.09934	-62.2113	moose	
in transit	84	53.07974	-62.2275	moose	
32	85	53.09731	-62.2367	moose	
32	86	53.2167	-62.1737	otter	
32	87	53.34091	-62.1001	porcupine	
34	88	53.22388	-62.2358	otter	
35	89	53.37115	-62.1816	otter	
35	90	53.32792	-62.2045	otter	
35	91	53.xxx	-62.xxx	caribou	3 caribou 2 antlered does, 1 bald stag
in transit	92	53.13218	-62.3468	moose	
36	93	53.1623	-62.3337	otter	
in transit	94	53.3868	-62.2045	otter	
37	95	53.2652	-62.3038	otter	
37	96	53.14715	-62.3739	moose	
38	97	53.16607	-62.395	moose	

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<b>Transect #</b>	<b>Waypoint Recorded</b>	<b>Latitude (decimal degrees)</b>	<b>Longitude (decimal degrees)</b>	<b>Species / Tracks Recorded</b>	<b>Notes / Observations</b>
in transit	98	53.41178	-62.2664	otter	
40	99	53.14258	-62.4696	otter	
in transit	100	53.15906	-62.5497	moose	
43	101	53.16197	-62.5556	moose	
44	102	53.2345	-62.5447	otter	
in transit	103	53.15522	-62.604	moose	
45	104	53.16663	-62.6147	moose	
46	105	53.16243	-62.6452	moose	
46	106	53.155	-62.649	otter	
46	107	53.15139	-62.6534	moose	
47	108	53.15448	-62.6815	moose	
48	109	53.15834	-62.7097	moose	
49	110	53.23152	-62.7027	otter	
49	111	53.24429	-62.6957	otter	
49	112	53.25547	-62.6895	otter	2 sets of tracks
39	113	53.33615	-62.3258	otter	
in transit	114	53.42297	-62.2666	otter	3 sets of tracks
Note: Due to sensitivities associated with listed Caribou in Labrador, location data has been removed.					





NALCOR ENERGY LOWER CHURCHILL PROJECT, ENVIRONMENTAL EFFECTS MONITORING PROGRAM – 2014 RED WINE MOUNTAINS CARIBOU HERD

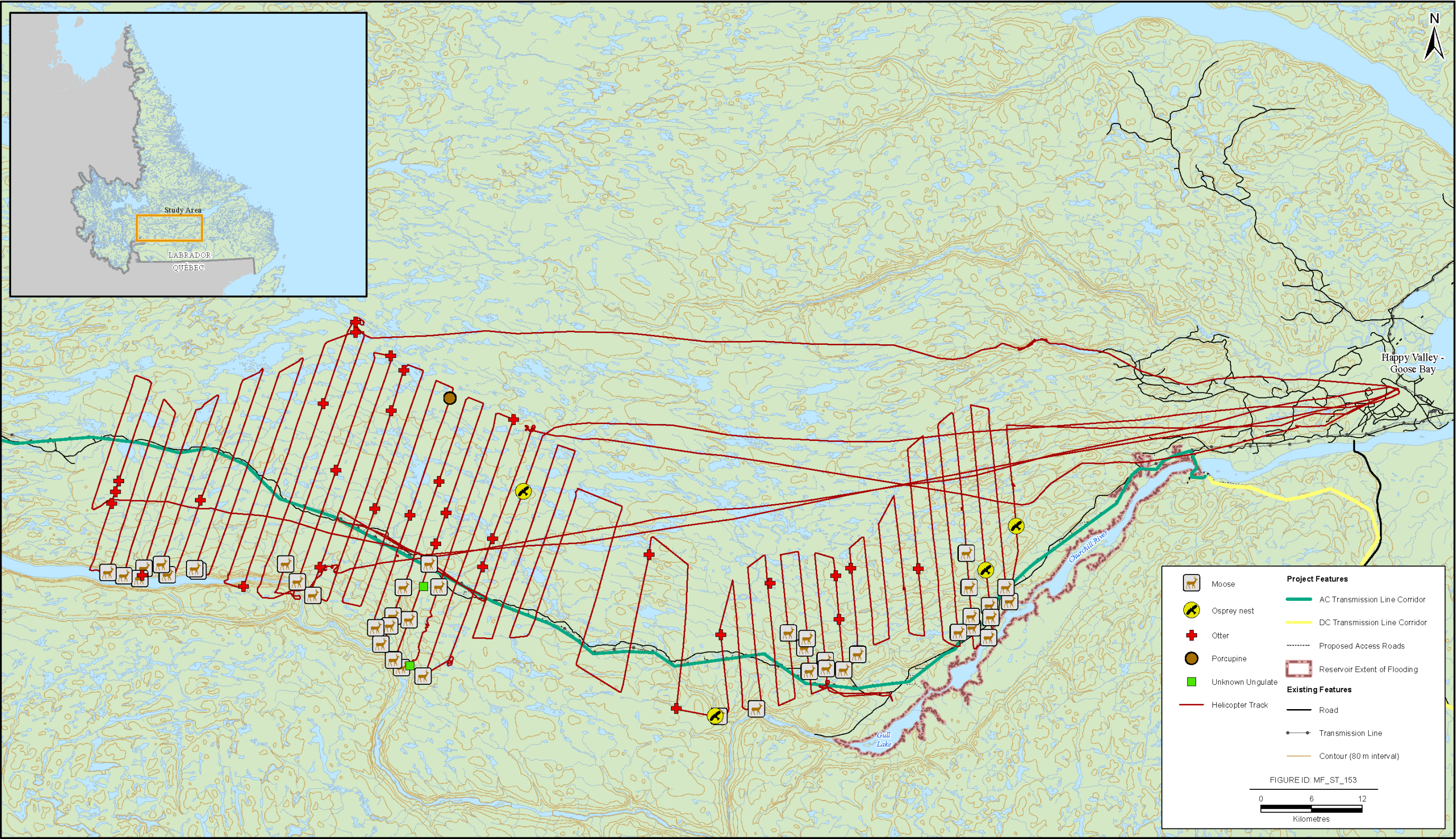


Figure B-1 Incidental Observations during Strip Transect Surveys, 18-21 February, 2014

