

**2014**

**BC Boreal Caribou Implementation Plan:  
Mortality Investigation Summary Report No. 12:  
June 2014**

## **EXECUTIVE SUMMARY**

A total of 204 boreal caribou were radio-collared between December 2012 and March 2014 in British Columbia's boreal caribou ranges as part of the *British Columbia Boreal Caribou Implementation Plan* (BCIP). The fate of these animals, as well as all boreal caribou previously collared by the Ministry of Forests, Lands, and Natural Resource Operations (MFLNRO), was monitored to track adult survival and calf recruitment. A total of 62 boreal caribou (55 SCEK, 7 MFLNRO) died from natural causes between the commencement of BCIP monitoring in December 2012 and June 30, 2014. Predation accounted for the majority of cases, including 38 confirmed wolf kills, an additional 4 cases of suspected wolf kills, and 2 confirmed wolverine kills. Poor condition was a factor in the death of several caribou following a particularly severe winter in 2012-13. In contrast, no non-predation mortality of radio-collared caribou occurred during the more moderate winter of 2013-14. Eighteen of 20 radio-collared caribou mortalities investigated in late winter and spring 2014 (March through June) were confirmed wolf predation, with an additional 2 cases of suspected wolf predation.

Four SCEK-collared caribou deaths were investigated during the June 2014 monitoring period, including one each in the Prophet (SCEK043/BC1043; Lotek VHF), Tsea (SCEK083; Lotek VHF), Fortune (SCEK163; Vectronic Vertex GPS), and Milligan (SCEK200; Vectronic Vertex GPS) cores. Wolf predation was the confirmed cause of death for all 4 animals. SCEK100 (East Kotcho, ATS Iridium GPS) was also transmitting a VHF mortality signal during the June 08, 2014, fixed-wing monitoring flight, however, visual contact made during mortality investigations the following day confirmed a temporary false mortality signal. One wolf mortality (BW020) was also detected and investigated during the June monitoring period; cause of death was undetermined.

## **BACKGROUND**

During the winter of 2012-13, 164 adult female caribou were radio-collared in British Columbia's boreal caribou ranges as part of the *British Columbia Boreal Caribou Implementation Plan* (BCIP). An additional 41 caribou (40F, 1M<sup>1</sup>) were collared between February 28 and March 31, 2014. Caribou collaring activities were administered and funded through the Science and Community Environmental Knowledge Fund (SCEK). The fate of SCEK-collared caribou, as well as boreal caribou previously collared by MFLNRO, was monitored to track adult survival and calf recruitment.

The VHF signal status of each active radio-collar is monitored monthly during regular fixed-wing telemetry flights, as well as during associated incidental surveys and field activities. In addition to the SCEK collars, active caribou and wolf collars from other programs, known to be present within BC boreal caribou ranges, are also monitored for approximate location and mortality status. These include caribou and wolf collars deployed by MFLNRO, as well as collared caribou that have entered BC's boreal caribou ranges from adjacent jurisdictions.

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<sup>1</sup> SCEK173/BC1037 was collared as a yearling by MFLNRO in March 2010. It was recaptured and fitted with a larger SCEK collar in February 2014.

Upon detection of a suspected mortality event, through VHF signal status or transmitted GPS/satellite data, a ground-based mortality investigation is conducted to determine the cause and approximate date of death, collect biological samples, and recover the collar. Adult mortality information is used in conjunction with juvenile recruitment data to estimate population trend.

Fifty-one SCEK caribou and 7 MFLNRO caribou died from natural causes between the commencement of the study through May 31, 2014. This summary report pertains to mortality signals investigated during June 2014.

## **METHODS**

Mortality sites are typically accessed by helicopter from the Fort St. John airport, in the case of the Milligan and Etthithun cores of the Chinchaga Range, and from the Fort Nelson airport in the case of the Chinchaga RRA and all other ranges and cores.

Information recorded for each confirmed mortality site includes: animal ID, collar frequency, collar condition, GPS coordinates, photodocumentation, condition of remains, habitat, and other evidence relevant to suspected cause of death. Where available, and when the stage of decomposition allows, biological samples are collected (e.g., long bones, lower jaw, tissue samples, and internal organs). Samples of predator scat from the mortality site are collected when available. Mortality investigation numbers are assigned based on the date of detection, not the date of the ground investigation.

## **RESULTS**

Four SCEK-collared caribou deaths were investigated during the June 2014 monitoring period (Table 1). The 4 mortalities included 3 detected during the June 07-08 fixed-wing telemetry flight (SCEK043/BC1043, SCEK083, SCEK163) and 1 suspected mortality identified on June 05 through examination of transmitted GPS data and confirmed during the June 07 telemetry flight (SCEK200). The cause of death was confirmed to be wolf predation for all 4 caribou.

Three of the 4 collared caribou were killed by wolves in areas of relatively intact habitat, while SCEK083 (Tsea Core) was killed 220 m from a pipeline ROW, within approximately 50 m of a smaller cutline. SCEK163 was killed by wolves in an area of relatively intact black spruce forest in the northwestern portion of the Fortune Core of the Maxhamish Range. Abundant caribou trails were evident in the black spruce bog habitat throughout the general area. While there has been no previous use of this area by radio-collared caribou, these trails provide evidence of historic use. This animal made an uncharacteristic 34 km movement between May 18 and its death on May 19 (< 24 hrs).

A total of 62 radio-collared boreal caribou (55 SCEK, 7 MFLNRO) have died from natural causes between the commencement of BCIP monitoring in December 2012 and June 30, 2014. In contrast to the previous year, no non-predation natural deaths were detected for either collared or unmarked caribou during late winter through spring of 2014 (March through June).

Twenty-four wolf collar frequencies were scanned during the June 07-08, 2014 monitoring flight, including 16 Lotek Iridium GPS, 1 Vectronic Vertex GPS, and 7 Lotek VHF. One wolf mortality was detected on June 07 and investigated on June 09 (BW020; Parker Pack; Lotek VHF). The intact, decomposing carcass was located at an inactive wolf den along the Muskwa River; cause of death could not be determined.

*First Nation Sub-contractors*

Eva Needlay, of the Fort Nelson First Nation, assisted with caribou and wolf mortality site investigations on June 9 and 10, 2014. Sam Acko, of the Doig River First Nation, assisted with a caribou mortality site investigation in the Milligan Core of the Chinchaga Range on June 12, 2014.

Table 1. Summary of SCEK and MFLNRO radio-collared boreal caribou mortality investigations conducted in June 2014, northeastern British Columbia ( $n=4$ ).

Mort Invest #	Caribou ID	Range <sup>1</sup>	Collar Type	Date Collared	Core Collared <sup>2</sup>	Core Died <sup>2</sup>	Date of Death	Date Last Known Alive	Date Investigated	Cause of Death	Site Investigation Comments
068	SCEK043/ BC1043	PPH	Lotek VHF	25-Jan-13	PPH	PPH	Unknown	10-May-14	09-Jun-14	Wolf Kill	Detected during June 07 fixed-wing telemetry flight. First collared in Prophet on 25-Feb-2011 (BC1043; Iridium 149.231). Habitat notably intact/free of anthropogenic disturbance (one cutline running through area). Black spruce forest with small stream; abundant standing water throughout area.
069	SCEK083	SNS	Lotek VHF	05-Feb-13	TSE	TSE	Unknown	11-May-14	09-Jun-14	Wolf Kill	Detected during June 08 telemetry flight. Black bear on adjacent cutline but condition of collar and carcass consistent with wolf kill. Pipeline approx. 220 m from kill site; smaller cutline approx. 50 m from site. Black spruce bog, inundated with up to 1 m deep water.

<sup>1</sup> PPH - Prophet, SNS - Snake-Sahtaneh

<sup>2</sup> PPH - Prophet, TSE - Tsea

Table 1 cont. Summary of SCEK and MFLNRO radio-collared boreal caribou mortality investigations conducted in June 2014, northeastern British Columbia ( $n=4$ ).

Mort Invest #	Caribou ID	Range <sup>1</sup>	Collar Type	Date Collared	Core Collared <sup>2</sup>	Core Died <sup>2</sup>	Date of Death	Date Last Known Alive	Date Investigated	Cause of Death	Site Investigation Comments
070	SCEK163	MAX	Vectronic Vertex GPS	01-Apr-13	FRT	FRT	19-May-14	18-May-14	09-Jun-14 and 10-Jun-14	Wolf Kill	Mortality detected on 08 June telemetry flight. Caribou made a 34 km movement between May 18 and death on May 19 (< 24 hrs). Vertex collar stopped sending data on May 20. Attempted to retrieve collar at ~ 17:00 hrs. on June 09 but no VHF signal heard, returned next morning when collar was transmitting a normal VHF signal (i.e., collar had been moved by wolves so reverted to normal mode, which stops transmitting VHF beacon 16:00-08:00 hrs.).
071	SCEK200	CHIN	Vectronic Vertex GPS	06-Mar-14	MLL	MLL	14-May-14	14-May-14	12-Jun-14	Wolf Kill	Identified as a potential mortality based on GPS/satellite data on 05 June 2014, confirmed dead on 07 June telemetry flight. On north border of Milligan Core in intact mature mixedwood upland forest.

<sup>1</sup> MAX - Maxhamish, CHIN - Chinchaga,

<sup>2</sup> FRT - Fortune, MLL - Milligan

## **APPENDIX I: Caribou Mortality Investigation Reports**

Mortality Investigation #068: SCEK043/BC1043, June 09, 2014, report and photos.

Mortality Investigation #	068
Caribou ID	SCEK043/BC1043
Range	Prophet
Date Detected	07-Jun-14
Date Investigated	09-Jun-14
Collar Type	Lotek VHF
Date Collared	25-Jan-13
Core Collared	Prophet
Capture Site UTM	10.552621.6467374
Core Died	Prophet
Date of Death	Unknown
Date Last Known Alive	10-May-14
Mortality Site UTM	10.551210.6459114
Cause of Death	Wolf kill
Samples	Long bones (2), hoof, pelvis, lower jaw (2), bone shards, wolf scat
Collar Condition	Good
Photos	0303-0311
Investigators	Brad Culling, Diane Culling, Eva Needlay
Site Investigation Comments	Detected during June fixed-wing telemetry flight; first collared in Prophet on 25-Feb-2011 (BC1043; Iridium 149.231); carcass mostly consumed (remains included legs, hair patch, small patch of hide, jaws, pelvis); habitat notably intact/free of anthropogenic disturbance (one cutline running through area); habitat black spruce forest with small stream; abundant standing water throughout area; abundant terrestrial lichens





Plate 1. Mortality Site Investigation #068: SCEK043/BC1043 (Lotek VHF), Prophet Range, (UTM 10.551210.6459114), June 09, 2014. (1/2)

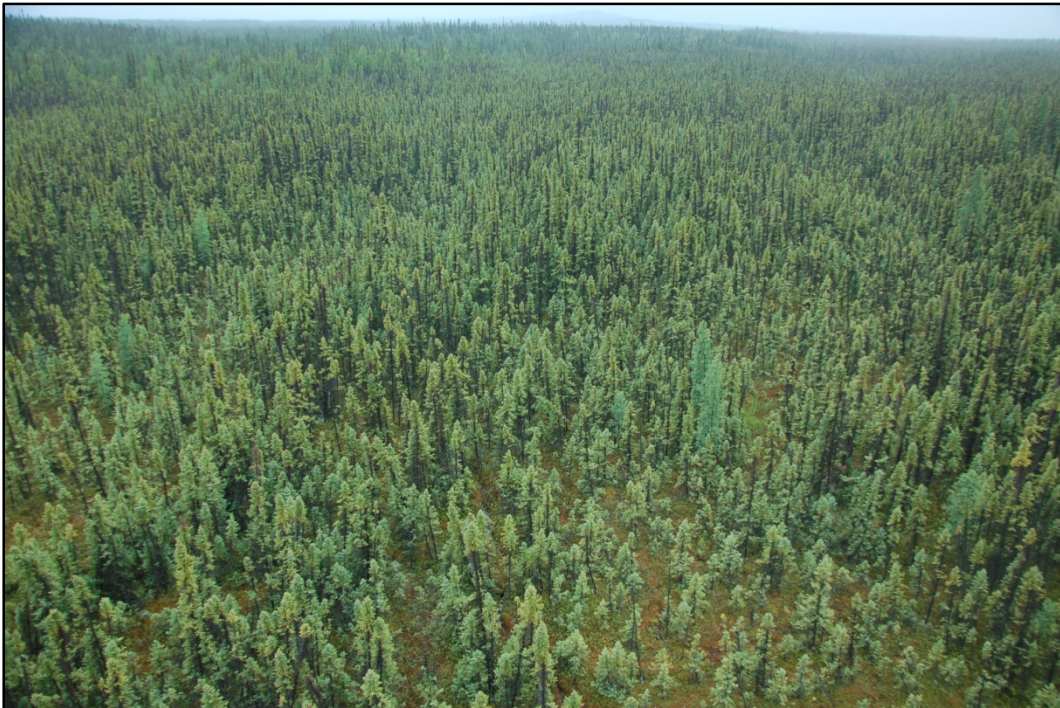


Plate 2. Mortality Site Investigation #068: SCEK043/BC1043 (Lotek VHF), Prophet Range, (UTM10.551210.6459114), June 09, 2014. (2/2)

Mortality Investigation #069: SCEK083, June 09, 2014, report and photos.

Mortality Investigation #	069
Caribou ID	SCEK083
Range	Snake-Sahtaneh
Date Detected	08-Jun-14
Date Investigated	09-Jun-14
Collar Type	Lotek VHF
Date Collared	05-Feb-13
Core Collared	Tsea
Capture Site UTM	10.559390.6601714
Core Died	Tsea
Date of Death	Unknown
Date Last Known Alive	11-May-14
Mortality Site UTM	10.564492.6604029
Cause of Death	Wolf kill
Samples	Bone shards
Collar Condition	Damaged - belting needs repair
Photos	0312-0319
Investigators	Brad Culling, Diane Culling, Eva Needlay
Site Investigation Comments	Detected during June fixed-wing telemetry flight; pipeline approx. 220 m from kill site plus smaller cutline approx. 50 m from site; black bear seen on adjacent cutline but condition of collar and carcass consistent with wolf kill; habitat black spruce bog, inundated with up to 1 m deep water.



Plate 3. Mortality Site Investigation #069: SCEK083 (Lotek VHF), Snake-Sahtaneh Range, (UTM 10.564492.6604029), June 09, 2014. (1/2)

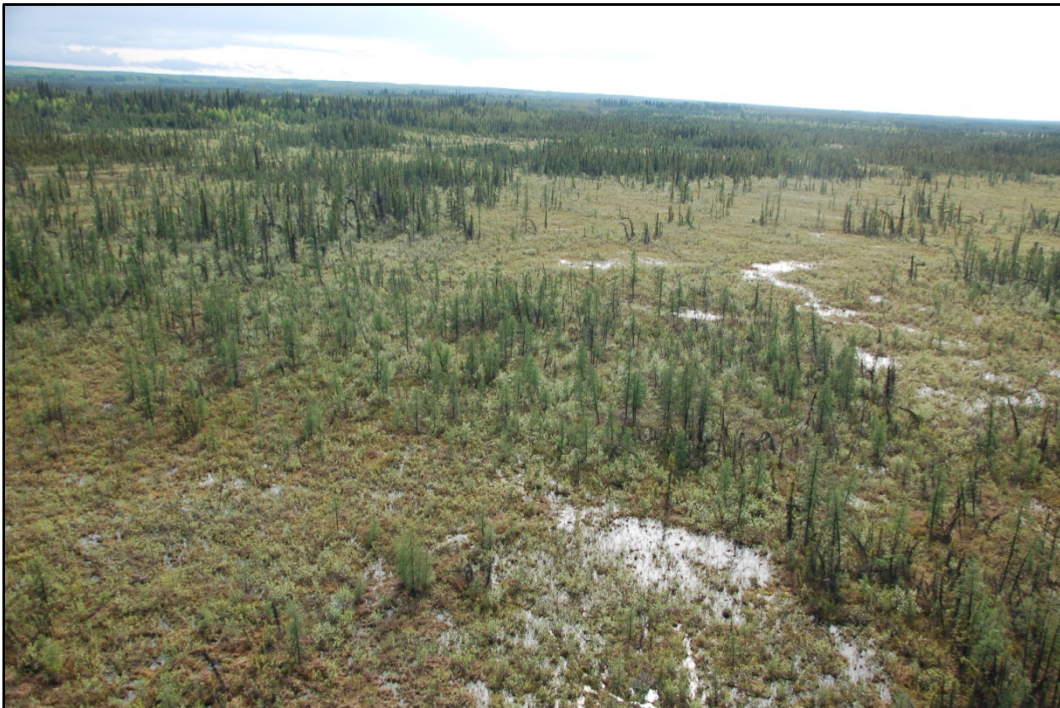


Plate 4. Mortality Site Investigation #069: SCEK083 (Lotek VHF), Snake-Sahtaneh Range, (UTM 10.564492.6604029), June 09, 2014. (2/2)

Mortality Investigation #070: SCEK163, June 09 and 10, 2014, report and photos.

Mortality Investigation #	070
Caribou ID	SCEK163
Range	Maxhamish
Date Detected	07-Jun-14
Date Investigated	09-Jun-14 and 10-Jun-14
Collar Type	Vectronic Vertex GPS
Date Collared	01-Apr-13
Core Collared	Fortune
Capture Site UTM	10.475849.6632394
Core Died	Fortune
Date of Death	19-May-14
Date Last Known Alive	18-May-14
Mortality Site UTM	10.466545.6646624
Cause of Death	Wolf kill
Samples	Lower jaw (2), skull, long bones, tissue, ribs, vertebrae, hide, rumen sample
Collar Condition	Destroyed (webbing chewed and housing cracked)
Photos	0320-0339
Investigators	Brad Culling, Diane Culling, Eva Needlay
Site Investigation Comments	<p>Mortality detected on 07 June 2014 telemetry flight; On May 18 at 22:00 hrs caribou was at its typical location then made a 34 km movement between that point and date of death on May 19 (&lt; 24 hrs), Vertex collar quit sending data on 20 May 2014; attempted to retrieve collar at approx. 17:00 hrs. on June 09 but no VHF signal heard. Returned next morning when collar was found to be transmitting a normal VHF signal (collar had been moved by wolves so reverted to normal mode, which stops transmitting VHF beacon after 16:00 hrs.); carcass partially consumed (eviscerated, but hind quarters, rib cage, etc. remained); wolf track in moss; Labrador tea leaves in rumen; habitat black spruce forest in northwestern portion of Fortune Core; abundant caribou trails throughout black spruce bog in general area provides evidence of caribou use over long term despite little current use (possibly at higher population levels).</p>



Plate 5. Mortality Site Investigation #070: SCEK163 (Vectronic Vertex GPS),  
Maxhamish Range, (UTM 10.466545.6646624), June 10, 2014. (1/2)



Plate 6. Mortality Site Investigation #070: SCEK163 (Vectronic Vertex GPS),  
Maxhamish Range, (UTM 10.466545.6646624), June 10, 2014. (2/2)

Mortality Investigation #071: SCEK200, June 12, 2014, report and photos.

Mortality Investigation #	071
Caribou ID	SCEK200
Range	Chinchaga
Date Detected	07-Jun-14
Date Investigated	12-Jun-14
Collar Type	Vectronic Vertex GPS
Date Collared	06-Mar-14
Core Collared	Milligan
Capture Site UTM	10.647641.6311794
Core Died	Milligan
Date of Death	14-May-14
Date Last Known Alive	14-May-14
Mortality Site UTM	10.660439.6376292
Cause of Death	Wolf kill
Samples	Caribou hair; bone shards, wolf scat (2)
Collar Condition	Damaged - belting needs repair
Photos	0359-0372
Investigators	Brad Culling, Diane Culling, Sam Acko
Site Investigation Comments	Identified as a potential mortality based on GPS/satellite data on 05 June 2014, confirmed dead on 07 June telemetry flight (died on May 14); carcass completely consumed with only hair patch and a few bone shards remaining; habitat mature mixedwood upland forest.



Plate 7. Mortality Site Investigation #071: SCEK200 (Vectronic Vertex GPS), Chinchaga Range, (UTM 10.660439.6376292), June 12, 2014. (1/2)



Plate 8. Mortality Site Investigation #071: SCEK200, Chinchaga Range, (UTM 10.660439.6376292), June 12, 2014. Doig River First Nation Elder Sam Acko holding Vectronic Vertex GPS collar damaged by wolves. (2/2)