

**2016**

**BC Boreal Caribou Implementation Plan:  
Mortality Investigation Summary Report No. 28:  
April 2016**

**Diversified Environmental Services  
Fort St. John, BC**

## **EXECUTIVE SUMMARY**

As a component of the *British Columbia Boreal Caribou Implementation Plan* (BCIP), 240 individual boreal caribou (hereafter, *SCEK* caribou) were radio-collared in British Columbia's boreal caribou ranges between December 2012 and March 2016. The fate of these animals, as well as boreal caribou previously collared by the Ministry of Forests, Lands, and Natural Resource Operations (MFLNRO), is monitored monthly to track adult survival and collect information on causes of caribou mortality. This summary report (#28) provides details of mortality events detected and investigated during the April 2016 monitoring period.

Four caribou mortalities were detected in April 2016. Three animals died as a result of wolf predation, including SCEK005B (Fortune, Vertex GPS); SCEK153 (Clarke, VHF), and SCEK102 (Clarke, VHF). The fourth (SCEK087, VHF) was shot in the Fortune Core of the Maxhamish Range.

Ninety-five radio-collared boreal caribou (88 SCEK, 7 MFLNRO) died between the commencement of BCIP monitoring in December 2012 and the end of April 2016. Sixty-four caribou mortalities were confirmed wolf kills, with an additional 7 cases of suspected wolf predation, 3 cases of wolverine predation, 4 non-predation deaths related to condition, and 1 accidental death. Two caribou were shot in the Fortune Core in separate events in September 2015 and April 2016. In both cases, the animals were crossing the Cole's Lake Road and the radio-collars were cut off and left at the site prior to the carcasses being removed whole. The cause of death for the remaining 14 animals could not be determined.

Twenty-three wolf collar frequencies were scanned during the April 16-17, 2016 fixed-wing telemetry monitoring flight, with 1 wolf mortality detected (BW037; Fortune Pack; Lotek VHF).

## **BACKGROUND**

Between December 2012 and March 2013, 164 adult female caribou were radio-collared in British Columbia's boreal caribou ranges as part of the BCIP. To maintain a consistent sample size over the course of the multi-year project, additional collars were deployed during the winters

of 2013-2014, 2014-2015, and 2015-2016. A total of 240 individual caribou (239F, 1M<sup>1</sup>) were collared between December 2012 and March 2016. Caribou collaring and monitoring activities were administered and funded through the BC Oil and Gas Research and Innovation Society (OGRIS; formerly the Science and Community Environmental Knowledge Fund (SCEK)).

The fate of all SCEK caribou, as well as boreal caribou previously collared by MFLNRO, was monitored using a combination of mortality notifications from transmitted GPS/satellite data and monthly fixed-wing telemetry flights. Upon notification or detection of a suspected mortality event, a ground-based mortality investigation was conducted to determine the cause of death, collect biological samples, and recover the collar.

In addition, active caribou and wolf collars from other programs, known to be present within BC boreal caribou ranges, were also monitored for approximate location and mortality status during the monthly telemetry flights. These included caribou and wolf collars deployed by MFLNRO and associated research projects, as well as radio-collared caribou that entered BC's boreal caribou ranges from adjacent jurisdictions.

Information on adult female caribou mortality and survival was used in conjunction with annual calf recruitment surveys to assess population trend. Biological samples collected from mortality investigation sites support associated research on boreal caribou health in British Columbia.

## **METHODS**

Mortality sites were accessed by helicopter from the Fort St. John airport for the Milligan and Etthithun cores of the Chinchaga Range and from the Fort Nelson airport for the Chinchaga RRA and all other ranges and cores.

Information recorded during mortality site investigations included: animal ID, collar frequency, collar condition, GPS coordinates, photodocumentation, condition of remains, confirmed or suspected cause of death, habitat type and extent of habitat disturbance in the vicinity. Where available, biological samples were collected, including caribou remains (tissue, bone, hair,

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<sup>1</sup> Male caribou BC1037 was collared by MFLNRO in March 2010, then recaptured and fitted with a GPS collar (ID: SCEK173) in March 2014.

rumen, etc.) and parasites, as well as predator and scavenger fecal samples. Mortality investigation numbers were assigned sequentially, based on the date of detection.

## **RESULTS**

One hundred fifty-four boreal caribou collar frequencies were scanned during the April 16-17, 2016 telemetry monitoring flight, including 1 ATS Iridium GPS, 76 Vectronic Vertex GPS, 10 Lotek LifeCycle GPS, and 67 Lotek VHF. Four caribou mortalities were detected; 3 animals (SCEK005B, SCEK153, SCEK102) died as a result of wolf predation and the fourth (SCEK087) was shot.

SCEK005B (Vectronic Vertex GPS) was killed by wolves in fragmented black spruce forest in the Fortune Core of the Maxhamish Range. SCEK087 (Lotek VHF) was shot as it was crossing the Cole's Lake Road, in black spruce peatland habitat, in the Fortune Core of the Maxhamish Range. The entire carcass was removed intact, however, the radio-collar was cut off and left at the site. SCEK153 (Lotek VHF) was killed by wolves in black spruce forest in the Clarke Core of the Snake-Sahtaneh Range; the kill site was within 50 m of a cutline and 230 m of a road. SCEK102 (Lotek VHF), which was collared in the East Kotcho Core in February 2013, was also killed by wolves in the Clarke Core. The kill site was on the edge of a cutline through black spruce peatland habitat, within 30 m of 2 intersecting cutlines.

Table 1 summarizes total caribou mortalities by collar type from the commencement of the project to the end of April 2016 (Year IV). Details of radio-collared boreal caribou mortality investigations conducted during the April 2016 monitoring period are presented in Table 2 and Appendix I.

Twenty-three wolf collar frequencies were scanned during the April 16-17, 2016 monitoring flight, including 28 Lotek Iridium GPS, 1 Vectronic Vertex GPS, and 7 Lotek VHF. One wolf mortality (BW037; Fortune Pack; Lotek VHF) was detected. Due to difficulty accessing the site, the collar retrieval and mortality investigation was deferred to a later date.

Table 1. Summary of SCEK and MFLNRO radio-collared boreal caribou mortalities between December 18, 2012 and April 30, 2016, northeastern British Columbia.

Cause of Death	MFLNRO	SCEK	Total
Wolf kill	4	60	64
Suspected wolf kill	0	7	7
Wolverine kill	1	2	3
Poor Condition/Disease	1	3	4
Accidental Death	0	1 <sup>a</sup>	1
Shot	0	2 <sup>b</sup>	2
Undetermined	1	13	14
Total	7	88	95

<sup>a</sup> Strangulation

<sup>b</sup> Assumed Northwest Territories First Nations harvest

### *First Nation Sub-contractors*

Eva Needlay, Fort Nelson First Nations, participated in the April 2016 caribou and wolf mortality site investigations.

Table 2. Summary of SCEK and MFLNRO radio-collared boreal caribou mortality investigations conducted in April 2016, 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 Investigated	Cause of Death	Site Investigation Comments
101	SCEK005B	MAX	Vectronic Vertex GPS	2-Mar-14	FRT	FRT	10-Apr-16	19-Apr-16	Wolf Kill	Detected through GPS data transmission on April 11 and confirmed on April 16 telemetry flight; kill site on cutline through black spruce forest; cutline, lease, road and Liard Highway in vicinity.
102	SCEK087	MAX	Lotek VHF	5-Feb-13	FRT	FRT	Unk	19-Apr-16	Shot	Detected during April telemetry flight; kill site on Cole's Lake Road: carcass removed whole and collar left at site; black spruce peatland habitat.
103	SCEK153	SNS	Lotek VHF	3-Mar-13	CLK	CLK	Unk	19-Apr-16	Wolf Kill	Detected during April telemetry flight; collar not at kill site (kill site not found); black spruce forest habitat with cutline and road approx. 50 m and 230 m from collar, respectively; wolf tracks along road.
104	SCEK102	SNS	Lotek VHF	24-Feb-13	ESK	CLK	Unk	19-Apr-16	Wolf Kill	Detected during April telemetry flight; kill site approx. 3 m from cutline through black spruce peatland, with intersecting cutlines approx. 30 m away.

<sup>1</sup> MAX - Maxhamish SNS - Snake-Sahtaneh

<sup>2</sup> FRT - Fortune CLK - Clarke ESK - East Kotcho

**APPENDIX I**  
**Caribou Mortality Investigation Reports**  
**April 2016**

Mortality Investigation #101: SCEK005B, April 19, 2016, report and photos.

Mortality Investigation #	101
Caribou ID	SCEK005B
Range	Maxhamish
Date Detected	11-Apr-16
Date Investigated	19-Apr-16
Collar Type	Vectronic Vertex
Date Collared	02-Mar-14
Core Collared	Fortune
Capture Site UTM	10.530747.6632190
Core Died	Fortune
Date of Death	10-Apr-16
Mortality Site UTM	10.493567.6614585
Cause of Death	Wolf kill
Samples	Skull fragments and portion of jaw; mort site hair; wolf scat x 1
Collar Condition	Good
Photos	P1020475 (aerial only)
Investigators	Brad Culling, Mac Culling, Eva Needlay
Site Investigation Comments	Detected through GPS data transmission on April 11 and confirmed on April 16 fixed-wing telemetry flight; first collared in Kiwigana on Dec 18, 2012 (UTM 10.522114.6570403), recaptured to replace ATS Iridium 148.494 on March 2, 2014; kill site on cutline (carcass consumed, remains included large patch of hair, skull fragments, and wolf scat) - collar found 140 m away; kill site in black spruce forest; habitat disturbance included: cutline (0 m), gravel road (140 m), lease (240 m), and Liard Highway (800 m); snow depth 35 cm (melting/no crust).





Plate 1. Mortality Site Investigation #101: SCEK005B (Vectronic Vertex),  
Maxhamish Range (UTM 10.493567.6614585), April 19, 2016. (1/1)

Mortality Investigation #102: SCEK087, April 19, 2016, report and photos.

Mortality Investigation #	102
Caribou ID	SCEK087
Range	Maxhamish
Date Detected	16-Apr-16
Date Investigated	19-Apr-16
Collar Type	Lotek VHF
Date Collared	05-Feb-13
Core Collared	Fortune
Capture Site UTM	10.535201.6633661
Core Died	Fortune
Date of Death	Unknown
Mortality Site UTM	10.526855.6929427
Cause of Death	Shot
Samples	None available; carcass removed from site
Collar Condition	Damaged: webbing cut with knife
Photos	P1020477-P1020482
Investigators	Brad Culling, Mac Culling, Eva Needlay
Site Investigation Comments	Detected during April fixed-wing telemetry flight; caribou shot (assumed FN harvest); kill site on Cole's Lake Road - collar cut off with knife and left on side of road, caribou removed whole (no remains available); habitat: black spruce peatland; residual patchy snow.





Plate 2. Mortality Site Investigation #102: SCEK087 (Lotek VHF),  
Maxhamish Range (UTM 10.526855.6929427), April 19, 2016. (1/2)



Plate 3. Mortality Site Investigation #102: SCEK087 (Lotek VHF),  
Maxhamish Range (UTM 10.526855.6929427), April 19, 2016. (2/2)

Mortality Investigation #103: SCEK153, April 19, 2016, report and photos.

Mortality Investigation #	103
Caribou ID	SCEK153
Range	Snake-Sahtaneh
Date Detected	16-Apr-16
Date Investigated	19-Apr-16
Collar Type	Lotek VHF
Date Collared	03-Mar-13
Core Collared	Clarke
Capture Site UTM	10.534012.6501871
Core Died	Clarke
Date of Death	Unknown
Mortality Site UTM	10.522268.6507345
Cause of Death	Wolf kill
Samples	None available; kill site not found
Collar Condition	Good - a few bite marks
Photos	P1020489-P1020493
Investigators	Brad Culling, Mac Culling, Eva Needlay
Site Investigation Comments	Detected during April fixed-wing telemetry flight; collar not at kill site (kill site not found); black spruce forest habitat; cutline and road approx. 50 m and 230 m from collar, respectively; wolf tracks along road; no snow remaining.





Plate 4. Mortality Site Investigation #103: SCEK153 (Lotek VHF), Snake-Sahtaneh Range (UTM 10.522268.6507345), April 19, 2016. (1/2)



Plate 5. Mortality Site Investigation #103: SCEK153 (Lotek VHF), Snake-Sahtaneh Range (UTM 10.522268.6507345), April 19, 2016. (2/2)

Mortality Investigation #104: SCEK102, April 19, 2016, report and photos.

Mortality Investigation #	104
Caribou ID	SCEK102
Range	Snake-Sahtaneh
Date Detected	16-Apr-16
Date Investigated	19-Apr-16
Collar Type	Lotek VHF
Date Collared	24-Feb-13
Core Collared	East Kotcho
Capture Site UTM	10.631989.6559052
Core Died	Clarke
Date of Death	Unknown
Mortality Site UTM	10.556889.6512450
Cause of Death	Wolf kill
Samples	Bone shards, wolf scat x 1
Collar Condition	Good
Photos	P1020483-P1020488
Investigators	Brad Culling, Mac Culling, Eva Needlay
Site Investigation Comments	Detected during April fixed-wing telemetry flight; kill site 3 m from cutline, collar found 40 m away; carcass consumed; black spruce peatland habitat; intersecting cutlines approx. 30 m away; residual snow patches.





Plate 6. Mortality Site Investigation #104: SCEK102 (Lotek VHF), Snake-Sahtaneh Range (UTM 10.556889.6512450), April 19, 2016. (1/2)



Plate 7. Mortality Site Investigation #104: SCEK102 (Lotek VHF), Snake-Sahtaneh Range (UTM 10.556889.6512450), April 19, 2016. (2/2)