

2015

BC Boreal Caribou Implementation Plan:

**Mortality Investigation Summary Report No. 25:
October-November 2015**

EXECUTIVE SUMMARY

As a component of the *British Columbia Boreal Caribou Implementation Plan* (BCIP), 224 individual boreal caribou were radio-collared in British Columbia's boreal caribou ranges between December 2012 and April 2015. 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. This summary report (#25) includes 4 mortality events detected and investigated during the October and November 2015 monitoring periods.

No caribou mortalities were detected prior to or during the October 2015 fixed-wing monitoring flight; however, 1 mortality was identified through GPS/satellite data in late October, following the flight (SCEK203/NX04). This mortality was investigated on November 3 after a delay due to weather. Notification of a second late October mortality (SCEK212) was received via GPS/satellite data the day following the November 3 site investigation. An examination of GPS wolf collar data indicted SCEK212 had been killed by the Elleh Pack. As the cause of death was known, the field investigation was deferred until after the November monitoring flight.

During the November 2015 fixed-wing monitoring flight, a third mortality (SCEK021) was detected, by VHF signal, in close proximity to the deferred SCEK212 mortality site; both of these were investigated on November 20. Notification of a fourth caribou mortality was received via GPS/satellite data the day following the November 20 site investigations; this mortality was investigated on November 22.

All 4 caribou mortalities were the result of wolf predation. A review of GPS/satellite wolf data confirmed the presence of multiple radio-collared wolves at 3 of the 4 caribou kill sites. The fourth animal was killed by an unmarked wolf pack at the confluence of the Muskwa and Tuchodi rivers, while returning to the Parker Core from the mountains to the west.

Twenty-seven wolf collar frequencies were scanned during the November monitoring flight; no wolf mortalities were detected.

Eighty-nine radio-collared boreal caribou (82 SCEK, 7 MFLNRO) have died between the commencement of BCIP monitoring in December 2012 and the end of November 2015. Fifty-nine caribou mortalities were confirmed wolf kills (66%), with an additional 7 cases of suspected wolf predation, 3 cases of

wolverine predation, 4 non-predation deaths related to condition, and one accidental death. One caribou was harvested by a hunter. Cause of death for the remaining 14 animals could not be determined.

BACKGROUND

During the winter of 2012-2013, 164 adult female caribou were radio-collared in British Columbia's boreal caribou ranges as part of the BCIP. The sample size was augmented during the winters of 2013-2014 and 2014-2015, with a total of 224 individual boreal caribou collared by April 1, 2015. Caribou collaring and monitoring activities are 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-collared caribou, as well as boreal caribou previously collared by MFLNRO, is monitored to track adult survival.

The VHF signal status of each active radio-collar is monitored during scheduled monthly 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, which are 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 for associated research projects and radio-collared caribou that have entered BC's boreal caribou ranges from adjacent jurisdictions. 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. Information on adult female mortality is used in conjunction with annual recruitment surveys to assess population trend.

METHODS

For the Milligan and Etthithun cores of the Chinchaga Range, mortality sites are accessed by helicopter from the Fort St. John airport. Access is from the Fort Nelson airport for 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. Samples of predator scat from mortality sites are collected when available. Mortality investigation numbers are assigned based on the date of detection, not the date of the ground investigation.

RESULTS

Three collared caribou died during late October 2015, following the October fixed-wing monitoring flight, and a fourth collared caribou died in mid November (Table 1); all 4 were investigated and recovered during the November monitoring period.

The death of SCEK203/NX04 (Tsea, Vectronic Vertex) was identified through GPS/satellite data in late October, following the October fixed-wing monitoring flight. This mortality could not be investigated until November 3 due to poor weather. The cause of death was attributed to wolf predation; a review of wolf collar GPS/satellite data indicated that Petitot Pack wolves BW033 and BW047 had logged positions at the kill site on the date of death indicated by the caribou GPS data.

Notification of the death of SCEK212 (Clarke, Vectronic Vertex) was received via GPS/satellite data the day following the November 3 site investigation. An examination of GPS wolf collar data indicted the animal had been killed by members of the Elleh Pack. As the cause of death was already known, the site investigation was deferred until after the November 2015 monitoring flight. During the November flight, a VHF mortality signal from SCEK021 (Clarke, Lotek VHF) was detected in close proximity to the SCEK212 mortality site; both of these were investigated on November 20. SCEK212 and SCEK021 were both killed by wolves in the Clarke Core, within 210 m of each other. Elleh Pack wolves BW038, BW039, and BW040 arrived at the SCEK212 mortality site shortly before 0300 hrs on October 28 and logged positions at both kill sites over the next 3 days. This coincides with the date of death indicted by SCEK212's GPS/satellite data. As SCEK021 was fitted with a VHF collar, the date of death of is unknown, however, it appears to have died during the October 28 predation event.

Notification of the death of SCEK014B (Parker, Vectronic Vertex) was received via GPS/satellite data the day following the November 20 field investigations, this mortality was investigated on November 22. SCEK014B was killed by wolves to the west of boreal caribou range, at the confluence of the Muskwa and Tuchodi rivers. This caribou was first collared in the Parker Core in January 2013. It migrated to rugged mountains in the upper Gathto drainage in spring 2013, then returned to the Parker Core. It remained in Parker until spring 2015, when it made a second movement to rugged mountains at the

height-of-land between the upper Gathto and Tuchodi river drainages. It was killed by wolves while apparently returning to Parker.

Twenty-seven wolf collar frequencies were scanned during the November 18-19 monitoring flight. No wolf mortalities were detected.

First Nation Sub-contractors

Eva Needlay, Fort Nelson First Nations, participation in the November 2015 mortality site investigations.

Table 1. Summary of SCEK and MFLNRO radio-collared boreal caribou mortality investigations conducted in November 2015, northeastern British Columbia ($n=4$).

Mort Invest #	Caribou ID	Range ¹	Collar Type	Date Collared	Core Collared ²	Core Died ²	Date of Death	Date Investigated	Cause of Death	Site Investigation Comments
095	SCEK203/ NX04	SNS	Vectronic Vertex GPS	03-Mar-14	TSE	TSE	21-Oct-15	03-Nov-15	Wolf Kill	Previously collared (Feb 2008-Sept 2009; Nexen study); Petitot wolves BW033 and BW047 logged GPS/satellite positions in vicinity of kill site; site on south edge of seismic line in 3D program through black spruce forest, 550 m east of lease site.
096	SCEK212	SNS	Vectronic Vertex GPS	10-Dec-14	CLR	CLR	28-Oct-15	20-Nov-15	Wolf Kill	GPS/satellite data indicated Elleh Pack killed caribou - site investigation deferred until Nov telemetry flight; wolves BW038, BW039 and BW040 logged locations at kill site; collar found on 8 m seismic line through black spruce forest; 210 m from SCEK021 mortality site.
097	SCEK021	SNS	Lotek VHF	08-Jan-13	CLR	CLR	Unknown (28 Oct 2015 assumed)	20-Nov-15	Wolf Kill	Elleh Pack wolves BW038, BW039, and BW040 logged locations at kill site; habitat black spruce forest 210 m from seismic line where SCEK212 collar recovered.
098	SCEK014B	PRK	Vectronic Vertex GPS	24-Feb-15	PRK	N/A	17-Nov-15	22-Nov-15	Wolf Kill	Migrated to height-of-land between upper Gathto and Tuchodi drainages in spring 2015, killed by wolves at confluence of Muskwa and Tuchodi rivers on return trip.

¹ SNS - Snake-Sahtaneh PRK - Parker

² TSE - Tsea CLK - Clarke PRK - Parker

APPENDIX I:

OCTOBER-NOVEMBER 2015

CARIBOU MORTALITY INVESTIGATION REPORTS

Mortality Investigation #095: SCEK203/NX04, November 3, 2015, report and photos.

Mortality Investigation #	095
Caribou ID	SCEK203/NX04
Range	Snake-Sahtaneh
Date Detected	23-Oct-15 (GPS/satellite data)
Date Investigated	03-Nov-15
Collar Type	Vectronic Vertex
Date Collared	20-Mar-14
Core Collared	Tsea
Capture Site UTM	10.557835.6593829
Core Died	Tsea
Date of Death	21-Oct-15
Mortality Site UTM	10.565718.6611685
Cause of Death	Wolf kill; 2 radio-collared Petitot Pack wolves logged positions in immediate vicinity of kill site on date of death
Samples	Skull, spine, ribs
Collar Condition	Good - a few teeth marks
Photos	DSC_9264-9290
Investigators	Ted Euchner, Mac Culling
Site Investigation Comments	Mortality occurred immediately following October 2015 telemetry flight; caribou previously collared in Feb 2008 (UTM 10.599457.6620621, Calendar Range) - ATS G2000 collar released/recovered in Sept 2009; had original eartag (NX04) when collared as SCEK203 in March 2014; confirmed wolf kill - GPS/satellite data indicated Petitot wolves BW033 and BW047 logged positions in immediate vicinity of kill site on date of death; approx. 15 cm fresh snow obscured site (no tracks or predator scat found); kill site on south edge of seismic line in 3D program through black spruce forest, 550 m east of lease site.



Plate 1. Mortality Site Investigation #095; SCEK203/NX04 (Vectronic Vertex), Snake-Sahtaneh Range (UTM 10.565718.6611685), November 3, 2015. (1/2)



Plate 2. Mortality Site Investigation #095; SCEK203/NX04 (Vectronic Vertex), Snake-Sahtaneh Range (UTM 10.565718.6611685), November 3, 2015. (2/2)

Mortality Investigation #096: SCEK212, November 20, 2015, report and photos.

Mortality Investigation #	096
Caribou ID	SCEK212
Range	Snake-Sahtaneh
Date Detected	03 Nov 2012
Date Investigated	20-Nov-15
Collar Type	Vectronic Vertex
Date Collared	10-Dec-14
Core Collared	Clarke
Capture Site UTM	10.561195.6503304
Core Died	Clarke
Date of Death	28-Oct-15
Mortality Site UTM	10.558756.6503361
Cause of Death	Wolf kill; Elleh Pack
Samples	None available
Collar Condition	Damaged; collar deployed twice (retire)
Photos	1010793-1010802, 1010827-1010832 (aerial)
Investigators	Brad Culling, Diane Culling
Site Investigation Comments	<p>Mortality detected by GPS/satellite data, confirmed on November 18 telemetry flight; wolf kill, site obscured by 10-15 cm fresh snow but carcass appeared to be consumed; collar found on 8 m seismic line through black spruce forest, 210 m from SCEK021 mortality site; review of GPS/satellite data indicated Elleh Pack wolves BW038, BW039 and BW040 were 6 km from SCEK212/SCEK021 mortality site just after midnight on October 28, arriving at site by 0300hrs and remaining until October 30; all 3 collared wolves logged locations at both kill sites.</p>



Plate 3. Mortality Site Investigation #096; SCEK212 (Vectronic Vertex), Snake-Sahtaneh Range (UTM 10.558756.6503361), November 20, 2015. (1/2)



Plate 4. Mortality Site Investigation #096; SCEK212 (Vectronic Vertex), Snake-Sahtaneh Range (UTM 10.558756.6503361), November 20, 2015. (1/2)

Mortality Investigation #097: SCEK021, November 20, 2015, report and photos.

Mortality Investigation #	097
Caribou ID	SCEK021
Range	Snake-Sahtaneh
Date Detected	18 Nov 2015
Date Investigated	20-Nov-15
Collar Type	Lotek VHF
Date Collared	08-Jan-13
Core Collared	Clarke
Capture Site UTM	10.548390.6502905
Core Died	Clarke
Date of Death	Unknown (28 Oct 2015 assumed)
Mortality Site UTM	10.558639.6503543
Cause of Death	Wolf kill; Elleh Pack
Samples	None available
Collar Condition	Damaged - webbing ripped
Photos	1010807-1010824, 1010827-1010832 (aerial)
Investigators	Brad Culling, Diane Culling
Site Investigation Comments	Mortality detected during Nov 18 telemetry flight; site obscured by 10-15 cm fresh snow but carcass appeared to be consumed; kill site in black spruce forest 210 m from SCEK212 mortality site on 8 m seismic line; date of death assumed to be same as SCEK212; GPS/satellite data indicates Elleh Pack wolves BW038, BW039 and BW040 were 6 km from SCEK212/SCEK021 mortality site at midnight of October 28, arriving at site by 0300hrs and remaining until October 30; all 3 collared wolves logged locations at both kill sites.



Plate 5. Mortality Site Investigation #097; SCEK021 (Lotek VHF), Snake-Sahtaneh Range (UTM 10.558639.6503543), November 20, 2015. (1/3)



Plate 6. Mortality Site Investigation #097; SCEK021 (Lotek VHF), Snake-Sahtaneh Range (UTM 10.558639.6503543), November 20, 2015. (2/3)



Plate 7. Mortality Site Investigations #096 and #097; aerial view of SCEK212 (Vectronic Vertex) and SCEK021 (Lotek VHF) mortality sites, Clarke Core, Snake-Sahtaneh Range, November 20, 2015. (3/3)

Mortality Investigation #098: SCEK014B, November 22, 2015, report and photos.

Mortality Investigation #	098
Caribou ID	SCEK014B
Range	Parker (Outside)
Date Detected	20-Nov-15 (p.m.)
Date Investigated	22-Nov-15
Collar Type	Vectronic Vertex
Date Collared	24-Feb-15
Core Collared	Parker
Capture Site UTM	10.498296.6519242
Core Died	N/A - at confluence of Muskwa and Tuchodi rivers
Date of Death	17-Nov-15
Mortality Site UTM	10.460738.6465355
Cause of Death	Wolf kill
Samples	Lower jaw (x2), bone shards (including segment of long bone), rumen sample, mortality site hair, wolf scat x 3
Collar Condition	OK - webbing slightly chewed
Photos	1010837-1010867
Investigators	Brad Culling, Diane Culling, Eva Needlay
Site Investigation Comments	<p>Mortality detected by GPS/satellite data on evening of Nov 20, immediately following completion of SCEK212/SCEK021 site investigations; caribou first collared in Parker Core in Jan 2013 (ATS Iridium), re-captured/replaced collar in Parker in Feb 2015; migrated to rugged mountains in the upper Gathto drainage in spring 2013, then returned to the Parker Core, remained in Parker until spring 2015 when it made a second movement to rugged mountains at the height-of-land between the upper Gathto and Tuchodi river drainages, killed by wolves on return trip; carcass mainly consumed, remains included large piece of hide, lower jaws (x2), bone fragments, and rumen; abundant wolf scat and tracks as well as wolverine tracks at kill site; collar approx. 20 m from remains; kill site in black spruce-lodgepole pine forest at mouth of Tuchodi River; approx. 10 to 15 cm of snow accumulated.</p>



Plate 8. Mortality Site Investigation #098; SCEK014B (Vectronic Vertex),
confluence of Muskwa and Tuchodi rivers (UTM 10.460738.6465355), November 22, 2015. (1/2)

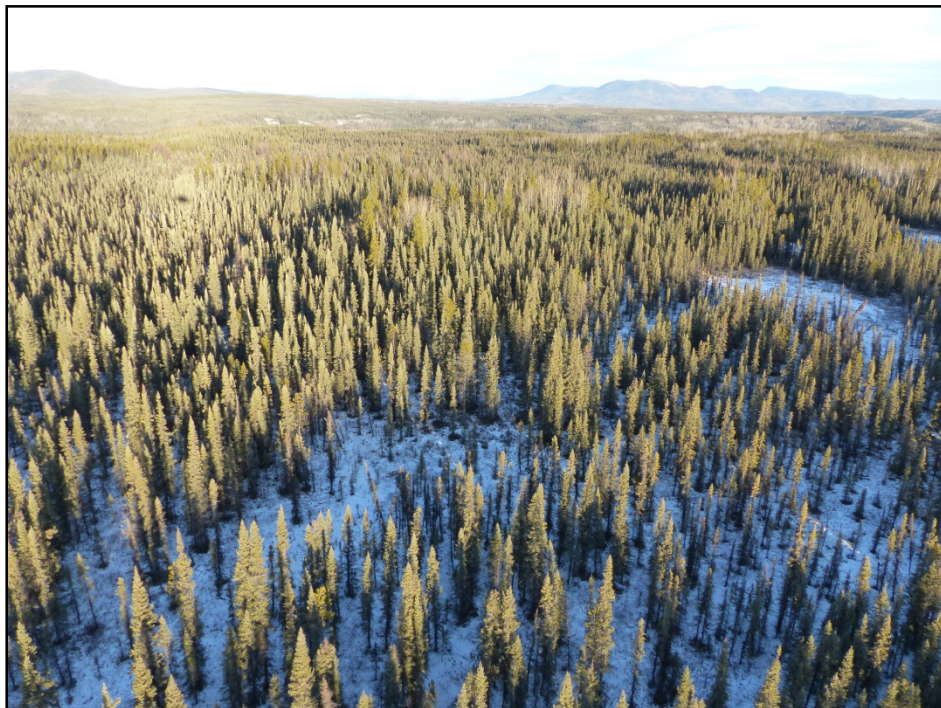


Plate 9. Mortality Site Investigation #098; SCEK014B (Vectronic Vertex),
confluence of Muskwa and Tuchodi rivers (UTM 10.460738.6465355), November 22, 2015. (2/2)