

2016

BC Boreal Caribou Implementation Plan:

**Mortality Investigation Summary Report No. 30:
July through October 2016**

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 through transmitted GPS/satellite data and periodic telemetry monitoring flights to track adult survival and collect information on causes of caribou mortality. As of May 2016, only mortality indications involving GPS/satellite collars are investigated at the time of detection. Recovery of all VHF collars heard in mortality mode is deferred to coincide with related fieldwork in the vicinity.

This summary report (#30) provides details of boreal caribou mortality events detected and investigated from July through October 2016, as well as radio-collared wolf mortalities detected during the monitoring period.

Only one confirmed GPS-collared caribou mortality (SCEK182; Vectronic Vertex; North Kotcho) occurred between July 1 and October 31, 2016. The mortality site inspection and collar retrieval was conducted on October 7; cause of death was confirmed as wolf predation.

The site of the potential mortality of a second GPS collar (SCEK175) was also investigated on October 7, but was found to be a case of GPS data transmission failure.

One hundred radio-collared boreal caribou (93 SCEK, 7 MFLNRO) died between the commencement of BCIP monitoring in December 2012 and October 31, 2016. Sixty-six caribou mortalities were confirmed wolf kills, with an additional 8 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 of the Maxhamish Range 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 14 animals could not be determined. Site investigations and collar recovery for VHF-collared caribou SCEK108 (Calendar) and SCEK027 (Milligan) are pending.

Twenty-two wolf collar frequencies were scanned during the September 6-7, 2016 fixed-wing telemetry monitoring flight. One mortality associated with a related study was detected (BW042).

BACKGROUND

Between December 2012 and March 2016, a total of 240 individual caribou (239F, 1M¹) were radio-collared in British Columbia's boreal caribou ranges. Caribou collaring and monitoring activities were administered and funded through the BC Oil and Gas Research and Innovation Society (OGRIS²).

The fate of all SCEK caribou, as well as boreal caribou previously collared by MFLNRO, is monitored using a combination of mortality notifications from transmitted GPS/satellite data and periodic fixed-wing telemetry flights. Upon notification or detection of a mortality signal for a GPS-collared caribou, a ground-based mortality investigation is conducted to determine the cause of death, collect biological samples, and recover the radio-collar. As of May 2016, mortality indications involving VHF collars are typically not investigated at the time of detection, but are recovered from the field opportunistically in conjunction with related fieldwork.

Wolf collars active within and adjacent to B.C.'s boreal caribou ranges are also monitored for approximate location and mortality status during fixed-wing telemetry flights. These include wolf collars deployed by associated research projects.

Information on adult female caribou mortality and survival is 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 in the Milligan and Etthithun cores of the Chinchaga Range are accessed by helicopter from the Fort St. John airport, with access for all other ranges and cores from the Fort Nelson airport.

Information collected during mortality site investigations includes: 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 are collected, including caribou remains (tissue, bone, hair, rumen, etc.) and parasites, as well as predator and scavenger fecal samples.

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

² The telemetry program was initially funded and administered through the Science and Community Environmental Knowledge Fund (SCEK). To provide consistency, animal identification numbers (IDs) followed the SCEK format for the duration of the project.

Mortality investigation numbers are assigned sequentially, based on the date of detection, however collar retrieval and site investigations for VHF-collared caribou are deferred until they can be conducted incidental to related fieldwork.

RESULTS

One hundred forty-six boreal caribou collar frequencies were scanned during a fixed-wing telemetry monitoring flight conducted on September 6-7, 2016, including 1 ATS Iridium GPS, 73 Vectronic Vertex GPS, 10 Lotek LifeCycle GPS, and 62 Lotek VHF; no caribou mortality signals were detected.

Only one confirmed GPS-collared caribou mortality occurred between July 1 and October 31, 2016. A mortality notification was initially received for SCEK182 (Vectronic Vertex; North Kotcho) on October 3 and confirmed on October 5. The mortality site inspection and collar retrieval was conducted on October 7; cause of death was confirmed wolf kill (Appendix I).

A second GPS collar (SCEK175; Fortune Lotek LifeCycle) transmitted data from the same coordinates 12 hours apart, on September 17 and 18, and then ceased satellite communication. An aerial (helicopter) and ground investigation was conducted during the October 7 fieldwork. While there was abundant terrestrial lichen and recent sign of pre-rut activity (fresh antler scrapes) at the site, there was no evidence of a caribou kill and the radio-collar was not found. It appears that the GPS and VHF functions of the collar coincidentally failed at a time when the caribou was displaying restricted movements.

As of October 31, 2016, there are 2 detected mortalities of VHF-collared caribou that are pending investigation. A mortality beacon was detected for SCEK108 (Calendar; Lotek VHF) on the June 1, 2016 telemetry flight. The site investigation and collar recovery was attempted on October 7, however the area was inundated and the closest landing site was 18 km distant. The collar recovery will be attempted again under frozen ground conditions. Chinchaga caribou SCEK027 (Milligan; Lotek VHF) was detected transmitting a mortality signal during the July 10, 2016 telemetry flight. The collar retrieval has been deferred pending a GPS mortality investigation in the Milligan Core.

Further details of radio-collared boreal caribou mortality investigations conducted during the July through October 2016 monitoring period are presented in Table 1 and Appendix I.

Twenty-two wolf collar frequencies were scanned during the September 6-7, 2016 monitoring period. One mortality signal associated with a University of Alberta/Nexen research project was detected (BW042).

First Nation Sub-contractors

Eva Needlay, Fort Nelson First Nation, participated in caribou mortality site investigations in October 2016.

Table 1. Summary of SCEK and MFLNRO radio-collared boreal caribou mortalities investigated or pending during the July through October 2016 monitoring period, 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
105	SCEK108	CAL	Lotek VHF	24-Feb-13	CAL	CAL	Unk	Pending	Pending	Mortality site investigation/collar recovery attempted on Oct 7, 2016 but no landing site available; deferred to frozen ground conditions.
108	SCEK182	SNS	Vectronic Vertex GPS	3-Mar-14	Kotcho-OS	NRK	29-Sep-16	07-Oct-16	Wolf Kill	Detected by GPS/satellite data transmission Oct 3; kill site in relatively undisturbed black spruce forest with abundant terrestrial lichens, approximately 200 m from cutline regenerating to black spruce/willow to 150 cm tall.
n/a	SCEK175	MAX	Lotek LifeCycle	2-Mar-14	FRT	n/a	n/a	07-Oct-16	Collar failed	Ceased transmitting GPS data on September 18, 2016. Aerial/ground investigation conducted October 7. Abundant terrestrial lichen and caribou sign in vicinity, but was no evidence of a kill site; GPS collar appears to have failed.
109	SCEK027	CHIN	Lotek VHF	17-Jan-13	MLL	MLL	Unk	Pending	Pending	Mortality detected on July 10, 2016 telemetry flight; site investigation and collar recovery pending

¹ CAL - Calendar SNS - Snake-Sahtaneh MAX - Maxhamish CHIN - Chinchaga

APPENDIX I
Caribou Mortality Investigation Report
July-October 2016

Mortality Investigation #108: SCEK182, October 7, 2016, report and photos.

Mortality Investigation #	108
Caribou ID	SCEK182
Range	Snake-Sahtaneh
Date Detected	03-Oct-16
Date Investigated	07-Oct-16
Collar Type	Vectronic Vertex
Date Collared	03-Mar-14
Core Collared	Kotcho - outside cores
Capture Site UTM	10.595133.6578325
Core Died	North Kotcho
Date of Death	29-Sep-16
Mortality Site UTM	10.600201.6583081
Cause of Death	Wolf Kill
Samples	Partial skull/antler; lower jaw; hide; long bones (with marrow); wolf scat
Collar Condition	Damaged (webbing chewed off)
Photos	4390-4404
Investigators	Brad Culling, Diane Culling, Eva Needlay
Site Investigation Comments	Potential mortality detected by GPS/satellite data transmission on October 3/confirmed October 5, 2016; carcass consumed but hide intact; evidence of massive bleeding prior to death; kill site in relatively undisturbed black spruce forest with abundant terrestrial lichens, approximately 200 m from cutline regenerating to black spruce/willow to 150 cm tall (incised game trail along edge of RoW).



Plate 1. Mortality Site Investigation #108: SCEK182 (Vectronic Vertex), Snake-Sahtaneh Range (UTM 10.600201.6583081), October 7, 2016. (1/2)



Plate 2. Mortality Site Investigation #108: SCEK182 (Vectronic Vertex), Snake-Sahtaneh Range (UTM 10.600201.6583081), October 7, 2016. (2/2)