2016

BC Boreal Caribou Implementation Plan:

Mortality Investigation Summary Report No. 29: May-June 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 (#29) provides details of mortality events detected and investigated during the May-June 2016 monitoring period.

As of May 1, 2016, only mortality indications involving GPS/satellite collars are investigated at the time of detection; VHF collars heard in mortality mode will be recovered from the field incidental to related fieldwork.

One SCEK VHF caribou mortality occurred in May 2016. A mortality beacon was detected for SCEK108 (Calendar; Lotek VHF) on the June 1, 2016 telemetry flight. Collar recovery is pending .

Two SCEK GPS caribou mortalities occurred in June 2016. The Vectronic Vertex collar of SCEK216 (Chinchaga RRA) had been removed from the kill site by wolves and no remains could be located; based on the condition of the collar, cause of death was suspected wolf predation. SCEK235 (Vectronic Vertex) was killed by wolves in the Chinchaga RRA on June 17, 2016.

Ninety-eight radio-collared boreal caribou (91 SCEK, 7 MFLNRO) died between the commencement of BCIP monitoring in December 2012 and the end of June 2016. Sixty-five 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 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. The recovery of SCEK108 (Calendar, VHF) is pending.

Twenty-two wolf collar frequencies were scanned during the May 31-June 1, 2016 fixed-wing telemetry monitoring flight, no mortalities were detected. .

BACKGROUND

Between December 2012 and March 2016, a total of 240 individual caribou (239F, 1M[1]) 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 (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, is monitored using a combination of mortality notifications from transmitted GPS/satellite data and monthly fixed-wing telemetry flights. Upon notification or detection of the mortality of a GPS-collared caribou, a ground-based mortality investigation is conducted to determine the cause of death, collect biological samples, and recover the collar. As of May 2016, mortality indications involving VHF collars are not investigated at the time of detection; VHF collars are later recovered from the field opportunistically in conjunction with related fieldwork.

Wolf collars active within and adjacent to BC boreal caribou ranges are also monitored for approximate location and mortality status during monthly 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 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 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

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

available, biological samples are collected, including caribou remains (tissue, bone, hair, rumen, etc.) and parasites, as well as predator and scavenger fecal samples.

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 fifty boreal caribou collar frequencies were scanned during the May 31-June 1, 2016 telemetry monitoring flight, including 1 ATS Iridium GPS, 75 Vectronic Vertex GPS, 10 Lotek LifeCycle GPS, and 64 Lotek VHF. One VHF-collared caribou mortality was detected during the flight (SCEK108, Calendar). As of May 1, 2016, only mortality indications involving GPS/satellite collars are investigated at the time of detection; therefore this collar will be recovered from the field incidental to future related fieldwork.

Two GPS-collared caribou mortalities were detected through satellite data transmission in June 2016, subsequent to the May 31-June 1 monitoring flight. SCEK216 (Vectronic Vertex) died in the Chinchaga RRA on June 6. The collar had been carried away from the kill site by wolves and no remains could be located. Wolf bite damage to the collar suggested wolf predation as the probable cause of death. SCEK235 (Vectronic Vertex) was killed by wolves in intact black spruce forest in the Chinchaga RRA approximately one week later. The mortality occurred during a GPS data gap between June 16 and 18.

Details of radio-collared boreal caribou mortality investigations conducted during the May-June 2016 monitoring period are presented in Table 1 and Appendix I.

Twenty-two wolf collar frequencies were scanned during the May-June 2016 monitoring period. No wolf mortalities was detected.

First Nation Sub-contractors

Riley Burke, Fort Nelson First Nation, participated in caribou mortality site investigations in June 2016.

Table 1. Summary of SCEK and MFLNRO radio-collared boreal caribou mortalities detected in May and June 2016, northeastern British Columbia (*n*=3).

Mort Invest #	Caribou ID	Range[1]	Collar Type	Date Collared	Core Collared[1]	Core Died[1]	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 pending; last confirmed alive April 17, 2016.
106	SCEK216	CHIN RRA	Vectronic Vertex GPS	11-Dec-14	CHIN RRA	CHIN RRA	5-Jun-16	16-Jun-16	Suspected Wolf Kill	Detected through GPS data transmission - flagged as a potential mortality on June 06 and confirmed on June 10, 2016; collar not at kill site (kill site not found); black spruce peatland habitat; seismic line and lease approx. 30 m and 500 m from collar, respectively.
107	SCEK235	CHIN RRA	Vectronic Vertex GPS	26-Feb-16	CHIN RRA	CHIN RRA	17-Jun-16	23-Jun-16	Wolf Kill	Potential mortality detected by GPS/satellite data transmission on June 19 and confirmed on June 21, 2016; kill site in undisturbed black spruce forest with small wetland clearings.

[1] CAL - Calendar CHIN RRA - Chinchaga RRA

APPENDIX I
Caribou Mortality Investigation Reports
May-June 2016

Mortality Investigation #106: SCEK216, June 16, 2016, report and photos.

Mortality Investigation #	106
Caribou ID	SCEK216
Range	Chinchaga RRA
Date Detected	10-Jun-16
Date Investigated	16-Jun-16
Collar Type	Vectronic Vertex
Date Collared	11-Dec-14
Core Collared	Chinchaga RRA
Capture Site UTM	10.594750.6455029
Core Died	Chinchaga RRA
Date of Death	05-Jun-16
Mortality Site UTM	10.615967.6441601
Cause of Death	Predation - Suspected Wolf Kill
Samples	None available
Collar Condition	Damaged (chewed)
Photos	P1020569 to P1020576
Investigators	Brad Culling, Mac Culling, Riley Burke
Site Investigation Comments	Mortality detected through GPS data transmission - flagged as a potential mortality on June 06 and confirmed on June 10, 2016; collar not at kill site (kill site not found); cause of death undetermined predation, but collar damage characteristic of wolf predation (chewed up); black spruce peatland habitat; seismic line and lease approx. 30 m and 500 m from collar, respectively.

Plate 1. Mortality Site Investigation #106: SCEK216 (Vectronic Vertex), Chinchaga RRA (UTM 10.615967.6441601), June 16, 2016. (1/2)

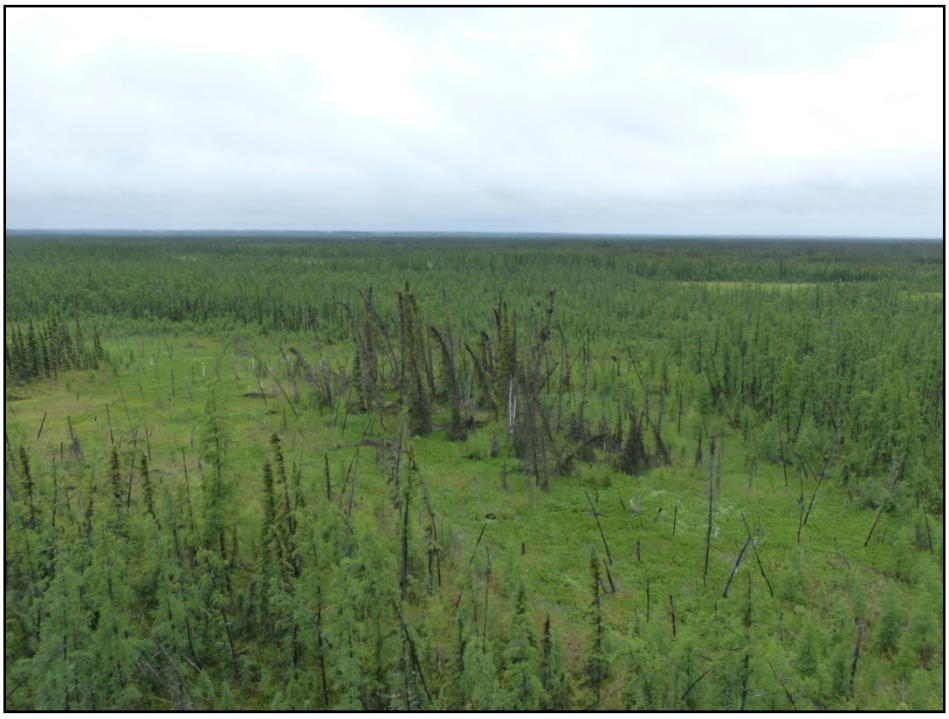

Plate 2. Mortality Site Investigation #106: SCEK216 (Vectronic Vertex), Chinchaga RRA (UTM 10.615967.6441601), June 16, 2016. (2/2)

Mortality Investigation #107: SCEK235, June 23, 2016, report and photos.

Mortality Investigation #	107
Caribou ID	SCEK235
Range	Chinchaga RRA
Date Detected	21-Jun-16
Date Investigated	23-Jun-16
Collar Type	Vectronic Vertex
Date Collared	26-Feb-16
Core Collared	Chinchaga RRA
Capture Site UTM	10.612123.6462873
Core Died	Chinchaga RRA
Date of Death	17-Jun-16
Mortality Site UTM	10.610341.6454096
Cause of Death	Wolf Kill
Samples	None available
Collar Condition	Damaged (chewed)
Photos	DSC_0004 to DSC_0023
Investigators	Brad Culling, Mac Culling
Site Investigation Comments	Potential mortality detected by GPS/satellite data transmission on June 19 and confirmed on June 21, 2016; carcass consumed - no samples available; collar damaged (chewed); kill site in undisturbed black spruce forest with small wetland clearings.

Plate 3. Mortality Site Investigation #107: SCEK235 (Vectronic Vertex), Chinchaga RRA (UTM 10.610341.6454096), June 23, 2016. (1/2)

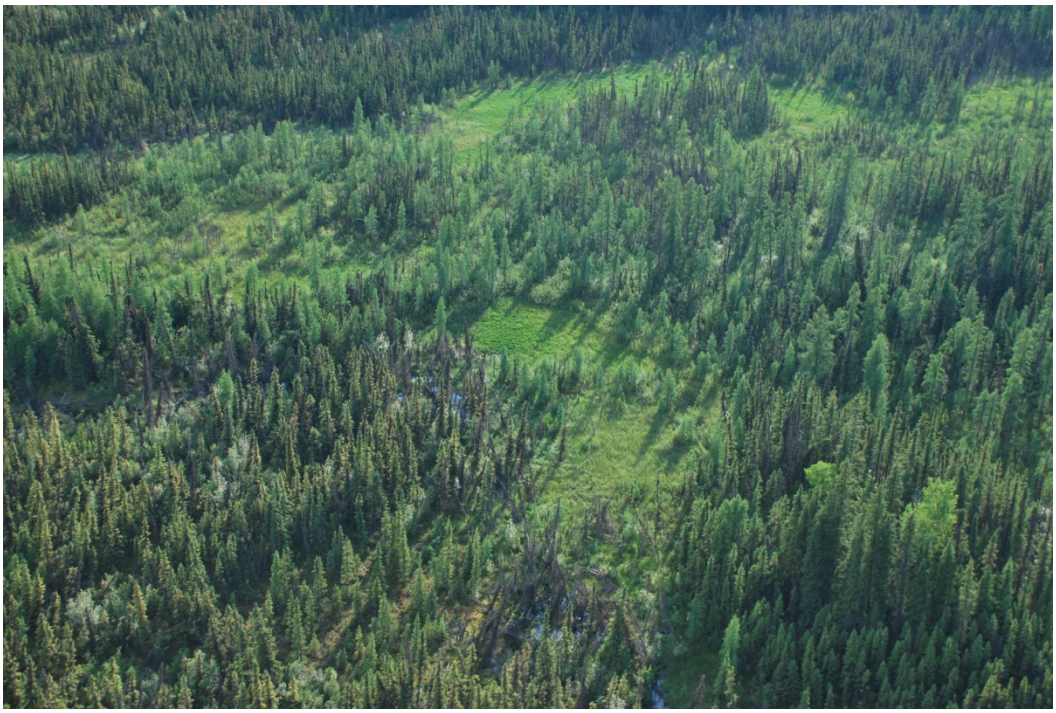

Plate 4. Mortality Site Investigation #107: SCEK235 (Vectronic Vertex), Chinchaga RRA (UTM 10.610341.6454096), June 23, 2016. (2/2)