

**2013**

**BC Boreal Caribou Implementation Plan:**

**Mortality Investigation Summary Report No. 4:  
July 28, 2013**

## **BACKGROUND**

During the winter of 2012-13, 164 adult female boreal caribou were radio-collared in British Columbia's boreal caribou ranges as part of the *British Columbia Boreal Caribou Implementation Plan* (BCIP). Caribou collaring activities were administered and funded through the Science Community Environmental Knowledge Fund (SCEK).

The VHF signal status of each active collar is monitored monthly during regular fixed-wing telemetry monitoring flights and incidental associated surveys. In addition to the SCEK collars, active caribou and wolf collars from other programs, known to be present within each caribou range, 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.

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 and to recover the collar for redeployment during the upcoming winter capture season. Adult mortality information is used in conjunction with juvenile recruitment data to estimate population trend.

This summary report pertains to mortality signals detected during the July 24-25, 2013 fixed-wing telemetry monitoring flights, with mortality investigations conducted on July 28, 2013.

## **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, and other evidence relevant to suspected cause of death. Where available, and when the stage of decomposition allows, biological samples are collected (e.g., leg bones (femur or humerus), lower jaw, tissue samples, and internal organs). Mortality investigation numbers are assigned based on the date of detection, not the date of the ground investigation.

## **RESULTS**

Eight boreal caribou mortalities were detected during the July 24-25, 2013 telemetry monitoring flight, with mortality site investigations conducted on July 28, 2013. Caribou mortalities included 2 SCEK Iridium collars, 5 SCEK VHF collars, and 1 Alberta SRM collar. SCEK 022 was originally collared by MFLNRO (BC1058).

Four SCEK-collared caribou mortalities were located in the Snake-Sahtaneh Range and 3 in the Calendar Range (Table 1). SCEK106 was collared in the Calendar resource review area RRA-D

Table 1. Summary of SCEK boreal caribou mortality investigations conducted on July 28, 2013, by range, core and collar type, northeastern British Columbia ( $n=7$ ).

Range	Core	Collar Type			Total
		Iridium	Vertex	VHF	
Calendar	Calendar	1	0	1	2
	South of Calendar Range (south of RRA-D)	1	0	0	1
Snake-Sahtaneh	Paradise	0	0	2	2
	North Kotcho - Outside	0	0	1	1
	East Kotcho	0	0	1	1
		2	0	5	7

but died outside the RRA, in the central portion of the range. The Alberta SRM-collared caribou mortality was located in the Chinchaga Range (approximate UTM 10.644475.6351916); no mortality site investigation was conducted.

One of the 7 caribou mortalities occurring during the monitoring period was confirmed as wolf predation based on the state of the remains, including crushed and scattered bones and skull, the hide consumed, and no odour on the collar (Table 2). Cause of death for the remaining 6 animals was undetermined, however predation was suspected in the case of SCEK098. Poor body condition appears to have been a contributing factor in a number of cases (Appendix I).

One VHF collar (SCEK098) was destroyed by a rodent chewing the housing. The 2 Iridium collars and remaining 4 SCEK VHF collars retrieved were all in good condition and suitable for redeployment during the winter 2013-2014 capture season.

One wolf mortality was detected on the July 25, 2013 monitoring flight. Snake Pack wolf BW006 had been fitted with Iridium collar 148.700 on February 23, 2013, immediately following retrieval of the collar from wolf mortality BW005.

#### *First Nation Contractors*

There was no First Nations participation on the July 28 mortality site investigation.

Table 2. Summary of SCEK radio-collared boreal caribou mortality investigations conducted on July 28, 2013, northeastern British Columbia, ( $n=7$ ).

Mort Invest #	Caribou ID	Range <sup>1</sup>	Collar Type	Freq	Date Collared	Core <sup>2</sup> Collared	Core Died	Date of Death	Date Last Known Alive	Date Investigated	Cause of Death	Comments
035	SCEK075	SNS	VHF		3-Feb-2013	NRK	ESK	Unknown	02-Jul-13	28-Jul-13	UND <sup>3</sup>	Death not from predation, condition very poor; carcass intact with no marks except eyes scavenged; estimated dead < 1 week
036	SCEK133	CAL	Iridium		28-Feb-2013	CAL	CAL - OS	15-Jul-13	15-Jul-13	28-Jul-13	UND	Appears to have died then been scavenged; died south of Calendar Range (south of RRA-D)
037	SCEK106	CAL	Iridium 1		24-Feb-2013	CAL RRA-D	CAL	12-Jul-13	12-Jul-13	28-Jul-13	UND	Appears to have died then been scavenged, carcass in advanced stage of decomposition/dessication, with abundant maggots; carcass intact with exception of missing head and front right leg/shoulder (suspect lynx)
038	SCEK117	CAL	VHF		25-Feb-2013	CAL	CAL	Unknown	03-Jul-13	28-Jul-13	UND	Undetermined whether predation or died/scavenged; both wolf scat (containing bone shards) and bear scat found at site
039	SCEK098	SNS	VHF		23-Feb-2013	WSK	NRK - OS	Unknown	03-Jul-13	28-Jul-13	UND	Suspect predation - no decomposition odour on collar and collar not with carcass
040	SCEK022/BC1058	SNS	VHF		8-Jan-2013	PRD	PRD	Unknown	02-Jul-13	28-Jul-13	Wolf Kill	Bones and skull crushed and scattered, hide consumed, no odour on collar; wolf scat beside remains
041	SCEK099	SNS	VHF		23-Feb-2013	WSK	PRD	Unknown	02-Jul-13	28-Jul-13	UND	Suspect died then scavenged by wolves (putrid odour on collar); only hair, scattered bones, and eartag remain

<sup>1</sup> SNS - Snake-Sahtaneh      CAL - Calendar

<sup>2</sup> NRK - North Kotcho      ESK - East Kotcho      WSK - West Kotcho      PRD - Paradise      CAL - Calendar      CAL RRA-D - Calendar RRA-D      OS - Outside Core

<sup>3</sup> UND - undetermined

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

Mortality Investigation #035, SCEK075, July 28, 2013, report and photos.

Mortality Investigation #	035
Caribou ID	SCEK075
Range	Snake-Sahtaneh
Date Detected	24-Jul-13
Date Investigated	28-Jul-13
Collar Type	VHF
Frequency	
Date Collared	03-Feb-13
Core Collared	North Kotcho
Capture Site UTM	10.605692.6555156
Core Died	East Kotcho
Date of Death	Unknown
Date Last Known Alive	02-Jul-13
Mortality Site UTM	10.628200.6554221
Cause of Death	Undetermined (very poor condition)
Samples	Heart, lungs, liver, lower jaw, femur
Collar Condition	Good - no bite marks
Photos	2530-2543
Investigators	Brad Culling, Diane Culling
Site Investigation Comments	Death not from predation, carcass intact with no marks except eyes scavenged; estimated dead < 1 week (muscle tissue still firm); condition very poor - emaciated with hips and spine very prominent and no body fat, lungs appear clear, esophagus and thoracic cavity full of fluid but no fluid in lungs, trachea or nostrils; died with mouthful of unmasticated lichen at base of small (5 cm dbh) black spruce; appears to have peddled legs - cleared vegetation in front of body; caribou not lactating at time of death (approx. 6 cm new antler growth)



Plate 1. Mortality Site Investigation #035: SCEK075 (VHF 151.840), Snake-Sahtaneh Range, East Kotcho Core (UTM 10.628200.6554221), July 28, 2013. (1/4)



Plate 2. Mortality Site Investigation #035: SCEK075 (VHF 151.840), Snake-Sahtaneh Range, East Kotcho Core (UTM 10.628200.6554221), July 28, 2013. (2/4)





Plate 3. Mortality Site Investigation #035: SCEK075 (VHF 151.840), Snake-Sahtaneh Range, East Kotcho Core (UTM 10.628200.6554221), July 28, 2013. (3/4)



Plate 4. Mortality Site Investigation #035: SCEK075 (VHF 151.840), Snake-Sahtaneh Range, East Kotcho Core (UTM 10.628200.6554221), July 28, 2013. (4/4)



Mortality Investigation #036, SCEK133, July 28, 2013, report and photos.

Mortality Investigation #	036
Caribou ID	SCEK133
Range	Calendar
Date Detected	n/a
Date Investigated	28-Jul-13
Collar Type	Iridium
Frequency	
Date Collared	28-Feb-13
Core Collared	Calendar
Capture Site UTM	10.648148.6612876
Core Died	South of Calendar Range (south of RRA-D)
Date of Death	15-Jul-13
Date Last Known Alive	15-Jul-13
Mortality Site UTM	10.656040.6585538
Cause of Death	Undetermined
Samples	Femur
Collar Condition	Good - no bite marks
Photos	2547-2555
Investigators	Brad Culling, Diane Culling
Site Investigation Comments	Died south of Calendar RRA-D; appears to have died then been scavenged; skeleton including spine and rib cage partially intact with some hide left, some bones scattered, no tissue remains except decomposed chunk of internal organs; collar ~ 10 m from remains; no bear or wolf scat found in vicinity of carcass or collar; 6 cm dbh tamarack beside remains had lower branches broken to ~ 2 m (lynx or bear?); black spruce bog-fen habitat



Plate 5. Mortality Site Investigation #036: SCEK133 (Iridium 149.404), Outside Calendar Range, south of RRA-D (UTM 10.656040.6585538), July 28, 2013. (1/2)



Plate 6. Mortality Site Investigation #036: SCEK133 (Iridium 149.404), Outside Calendar Range, south of RRA-D (UTM 10.656040.6585538), July 28, 2013. (2/2)

Mortality Investigation #037, SCEK106, July 28, 2013, report and photos.

Mortality Investigation #	037
Caribou ID	SCEK106
Range	Calendar
Date Detected	n/a
Date Investigated	28-Jul-13
Collar Type	Iridium
Frequency	
Date Collared	24-Feb-13
Core Collared	Calendar RRA-D
Capture Site UTM	10.646086.6608681
Core Died	Calendar
Date of Death	12-Jul-13
Date Last Known Alive	12-Jul-13
Mortality Site UTM	10.615213.6606217
Cause of Death	Undetermined (very poor condition)
Samples	Femur
Collar Condition	Good - no bite marks
Photos	2556-2569
Investigators	Brad Culling, Diane Culling
Site Investigation Comments	Appears to have died then been scavenged; carcass in advanced stage of decomposition/dessication, with abundant maggots - intact with exception of missing head and front right leg/shoulder (lynx?); no scat found within 20 m radius; habitat is patch of black spruce forest within a bog/fen complex (drier site - Sb, willow, alder, grasses)





Plate 7. Mortality Site Investigation #037: SCEK106 (Iridium 148.683), Calendar Range, (UTM 10.615213.6606217), July 28, 2013. (1/2)



Plate 8. Mortality Site Investigation #037: SCEK106 (Iridium 148.683), Calendar Range, (UTM 10.615213.6606217), July 28, 2013. (1/2)

Mortality Investigation #038, SCEK117, July 28, 2013, report and photos.

Mortality Investigation #	038
Caribou ID	SCEK117
Range	Calendar
Date Detected	24-Jul-13
Date Investigated	28-Jul-13
Collar Type	VHF
Frequency	
Date Collared	25-Feb-13
Core Collared	Calendar
Capture Site UTM	10.604256.6625243
Core Died	Calendar
Date of Death	Unknown
Date Last Known Alive	03-Jul-13
Mortality Site UTM	10.595099.6614646
Cause of Death	Undetermined
Samples	Jaw, wolf scat (x2), bear scat (X1)
Collar Condition	Good - no bite marks
Photos	2570-2578
Investigators	Brad Culling, Diane Culling
Site Investigation Comments	Undetermined whether predation or died/scavenged; skeleton in 3 pieces (1 shoulder/rib cage, 1 shoulder/leg, and pelvis separate); both wolf scat (containing bone shards) and bear scat found at site; habitat black spruce bog





Plate 9. Mortality Site Investigation #038: SCEK117 (VHF 150.289), Calendar Range, (UTM 10.595099.6614646), July 28, 2013. (1/2)



Plate 10. Mortality Site Investigation #038: SCEK117 (VHF 150.289), Calendar Range, (UTM 10.595099.6614646), July 28, 2013. (2/2)

Mortality Investigation #039, SCEK098, July 28, 2013, report and photos.

Mortality Investigation #	039
Caribou ID	SCEK098
Range	Snake-Sahtaneh
Date Detected	24-Jul-13
Date Investigated	28-Jul-13
Collar Type	VHF
Frequency	
Date Collared	23-Feb-13
Core Collared	West Kotcho
Capture Site UTM	10.586790.6548890
Core Died	North Kotcho-OS
Date of Death	Unknown
Date Last Known Alive	03-Jul-13
Mortality Site UTM	10.602218.6596698
Cause of Death	Undetermined (suspect predation)
Samples	None
Collar Condition	Destroyed; housing chewed by rodent
Photos	2579-2586, 2588
Investigators	Brad Culling, Diane Culling
Site Investigation Comments	Suspected predation (no decomposition odour on collar); carcass not found - collar had been moved/was off mortality mode; collar housing chewed by rodent (including fibreglass resin and metal of battery); collar found in black spruce forest





Plate 11. Mortality Site Investigation #039: SCEK098 (VHF 151.610), Snake-Sahtaneh Range, north of North Kotcho Core (UTM 10.602218.6596698), July 28, 2013. (1/2)



Plate 12. Mortality Site Investigation #039: SCEK098 (VHF 151.610), Snake-Sahtaneh Range, north of North Kotcho Core (UTM 10.602218.6596698), rodent damage to collar; July 28, 2013. (2/2)

Mortality Investigation #040, SCEK022/BC1058, July 28, 2013, report and photos.

Mortality Investigation #	040
Caribou ID	SCEK022/ BC1058
Range	Snake-Sahtaneh
Date Detected	24-Jul-13
Date Investigated	28-Jul-13
Collar Type	VHF
Frequency	
Date Collared	08-Jan-13
Core Collared	Paradise
Capture Site UTM	10.556757.6536996
Core Died	Paradise
Date of Death	Unknown
Date Last Known Alive	02-Jul-13
Mortality Site UTM	10.551769.6535702
Cause of Death	Wolf Kill
Samples	Jaw (no incisors), wolf scat (x1)
Collar Condition	Good - no odour
Photos	2589-2595
Investigators	Brad Culling, Diane Culling
Site Investigation Comments	Bones and skull crushed/scattered, hide consumed/scattered, no odour on collar - supports predation as cause of death; wolf scat beside remains; in small patch of mature aspen within black spruce/lodgepole pine forest





Plate 13. Mortality Site Investigation #040: SCEK022/BC1058 (VHF 151.089), Snake-Sahtaneh Range, Paradise Core (UTM 10.551769.6535702), July 28, 2013. (1/2)



Plate 14. Mortality Site Investigation #040: SCEK022/BC1058 (VHF 151.089), Snake-Sahtaneh Range, Paradise Core (UTM 10.551769.6535702), aerial view of habitat, July 28, 2013. (2/2)



Mortality Investigation #041, SCEK099, July 28, 2013, report and photos.

Mortality Investigation #	041
Caribou ID	SCEK099
Range	Snake-Sahtaneh
Date Detected	24-Jul-13
Date Investigated	28-Jul-13
Collar Type	VHF
Frequency	
Date Collared	23-Feb-13
Core Collared	West Kotcho
Capture Site UTM	10.589871.6551009
Core Died	Paradise
Date of Death	Unknown
Date Last Known Alive	02-Jul-13
Mortality Site UTM	10.560201.6537704
Cause of Death	Undetermined
Samples	None
Collar Condition	Putrid odour
Photos	2596-2605
Investigators	Brad Culling, Diane Culling
Site Investigation Comments	Suspect died then scavenged by wolves (putrid odour on collar); only hair, scattered bones, and eartag remain; black spruce forest



Plate 15. Mortality Site Investigation #041: SCEK099 (VHF 151.059), Snake-Sahtaneh Range, Paradise Core (UTM 10.560201.6537704), July 28, 2013. (1/2)



Plate 16. Mortality Site Investigation #041: SCEK099 (VHF 151.059), Snake-Sahtaneh Range, Paradise Core (UTM 10.560201.6537704), aerial view of habitat, July 28, 2013. (1/2)