

**2013**

**BC Boreal Caribou Implementation Plan:**

**Mortality Investigation Summary Report No. 3:  
June 28-July 07**

## **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 June 28 to July 03, 2013 fixed-wing telemetry monitoring flights, with mortality investigations conducted between June 28 and July 07, 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**

Seven boreal caribou mortalities were detected during the June 28 to July 03, 2013 telemetry monitoring flight, with mortality site investigations conducted between June 28 and July 07. The 7 mortalities investigated included 1 SCEK Iridium collar, 5 SCEK VHF collars, and 1 previously-deployed MFLNRO VHF collar (BC1021; Table 1).

Three of the mortalities were caribou collared in the Calendar Range, 2 in the Snake-Sahtaneh Range, and 1 each in the Chinchaga and Maxhamish ranges. SCEK093 was collared in the West

Table 1. Summary of SCEK boreal caribou mortality investigations conducted between June 28 and July 07, 2013, by range, core, and collar type, northeastern British Columbia ( $n=7$ ).

Range	Core	Collar Type			Total
		Iridium	Vertex	VHF	
Chinchaga	Milligan	1	0	0	1
Snake-Sahtaneh	East Kotcho	0	0	1	1
Between Snake-Sahtaneh & Maxhamish	n/a	0	0	1	1
Calendar	Calendar	0	0	3	3
Maxhamish	Kiwigana	0	0	1	1
		1	0	6	7

Kotcho Core but died between the Snake-Sahtaneh and Maxhamish ranges, between the Paradise and Kiwigana cores. SCEK109 was collared in the Calendar resource view area RRA-D but died outside the RRA, in the central portion of the range.

One of the 7 caribou mortalities occurring during the monitoring period was a confirmed case of wolf predation, with an addition 2 suspected wolf kills (Table 2). Cause of death for the remaining 5 animals was undetermined natural causes unrelated to predation. Poor body condition was strongly suspected in a number of cases. One carcass appeared to have been scavenged by a black bear after death, with scavenging by lynx suspected in another 2 cases (Appendix I).

The Iridium collar and 5 SCEK VHF collars retrieved were all in good condition and suitable for redeployment during the winter 2013-2014 capture season. The previously-deployed MFLNRO VHF collar was also undamaged.

#### *First Nation Contractors*

Kathy Needlay, of Fort Nelson First Nation, participated in the July 07 mortality site investigations.

Table 2. Summary of SCEK radio-collared boreal caribou mortality investigations conducted between June 28 and July 07, 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 <sup>3</sup>	Comments
028	SCEK031	CHIN	Iridium 2		0-Jan-2013	MLL	MLL	14-Jun-13	14-Jun-13	28-Jun-13	(Wolf Kill)	Suspected wolf kill
029	SCEK093	SNS					SNS & MAX	Unknown	15-May-13	07-Jul-13	UND <sup>4</sup>	Died between the Snake-Sahtaneh and Maxhamish ranges, between Paradise and Kiwigana cores; no sign of predation or scavenging, suspect poor condition
030	BC1021	MAX			NRO data	KWG	KWG	Unknown	01-Apr-13	07-Jul-13	Wolf kill	Not heard during May telemetry flight - located in Fortune during LW recruitment survey, moved to Kiwigana prior to death
031	SCEK118	CAL			26-Feb-13	CAL	CAL	Unknown	16-May-13	07-Jul-13	UND	Suspect caribou died and was subsequently scavenged by a black bear
032	SCEK115	CAL			25-Feb-13	CAL	CAL	Unknown	16-May-13	07-Jul-13	UND	Appears caribou died then investigated by a scavenger (possibly lynx); bite marks on nose and neck but body intact, neck not broken, no sign of blood (even in wounds)
033	SCEK109	CAL			24-Feb-13	CAL - RRA-D	CAL	Unknown	16-May-13	07-Jul-13	(Wolf Kill)	Suspected wolf kill; collar not at kill site (no hair or other sign found)
034	SCEK101	SNS			24-Feb-13	ESK	ESK	Unknown	16-May-13	07-Jul-13	UND	Carcass in advanced stage of decomposition with abundant maggots; patch of hair and left front leg/shoulder missing but eye intact - possible lynx scavenging

<sup>1</sup> CHIN - Chinchaga

SNS - Snake-Sahtaneh

CAL - Calendar

MAX - Maxhamish

<sup>2</sup> MLL - Milligan

CAL - Calendar

CAL RRA-D - Calendar RRA-D

WSK - West Kotcho

ESK - East Kotcho

KWG - Kiwigana

OS - Outside Core

<sup>3</sup> (Suspected)

<sup>4</sup> UND - undetermined

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

Mortality Investigation #028, SCEK031, June 28, 2013, report and photos.

Mortality Investigation #	028
Caribou ID	SCEK031
Range	Chinchaga
Date Detected	n/a
Date Investigated	28-Jun-13
Collar Type	Iridium
Frequency	
Date Collared	20-Jan-2013
Core Collared	Milligan
Capture Site UTM	10.645362.6323578
Core Died	Milligan
Date of Death	14-Jun-13
Date Last Known Alive	14-Jun-13
Mortality Site UTM	10.628259.6349474
Cause of Death	Suspected Wolf Kill
Samples	None
Collar Condition	Good
Photos	2494-2498
Investigators	Brad Culling, Craig DeMars
Site Investigation Comments	Rib cage and spine intact but stripped, only scattered crushed bones and fragments of hide remain; wolf scat and signs of struggle observed



Plate 1. Mortality Site Investigation #028: SCEK031 (VHF 149.223), Chinchaga Range, Milligan Core (UTM 10.628259.6349474), June 28, 2013. (1/2)



Plate 2. Mortality Site Investigation #028: SCEK031 (VHF 149.223), Chinchaga Range, Milligan Core (UTM 10.628259.6349474), June 28, 2013. (2/2)



Mortality Investigation #029, SCEK093, July 07, 2013, report and photos.

Mortality Investigation #	029
Caribou ID	SCEK093
Range	Snake-Sahtaneh
Date Detected	02-Jul-13
Date Investigated	07-Jul-13
Collar Type	VHF
Frequency	
Date Collared	6-Feb-2013
Core Collared	West Kotcho-OS (SE)
Capture Site UTM	10.601730.6532215
Core Died	Between Snake-Sahtaneh & Maxhamish
Date of Death	Unknown
Date Last Known Alive	15-May-13
Mortality Site UTM	10.545104.6552047
Cause of Death	Undetermined
Samples	None
Collar Condition	Good
Photos	615-619, 2499-2503
Investigators	Brad Culling, Diane Culling, Kathy Needlay
Site Investigation Comments	Died between the Snake-Sahtaneh and Maxhamish ranges, between Paradise and Kiwigana cores; no signs of predation or scavenging, suspect death due to poor condition; advanced stage of decomposition - no samples taken; open black spruce; one of 2 collared females in group of mature bulls found southeast of Kotcho Lake in February 2013





Plate 3. Mortality Site Investigation #029: SCEK093 (VHF 151.370), outside Snake-Sahtaneh Range, between Paradise and Kiwigana cores (UTM 10.545104.6552047), July 07, 2013. (1/2)



Plate 4. Mortality Site Investigation #029: SCEK093 (VHF 151.370), outside Snake-Sahtaneh Range, between Paradise and Kiwigana cores (UTM 10.545104.6552047), aerial view of habitat, July 07, 2013. (2/2)

Mortality Investigation #030, BC1021, July 07, 2013, report and photos.

Mortality Investigation #	030
Caribou ID	BC1021
Range	Maxhamish
Date Detected	03-Jul-13
Date Investigated	07-Jul-13
Collar Type	VHF
Frequency	
Date Collared	NRO data
Core Collared	Kiwigana
Capture Site UTM	NRO data
Core Died	Kiwigana
Date of Death	Unknown
Date Last Known Alive	01-Apr-13
Mortality Site UTM	10.529079.6569981
Cause of Death	Wolf predation
Samples	None
Collar Condition	Good
Photos	2504-2514
Investigators	Brad Culling, Diane Culling, Kathy Needlay
Site Investigation Comments	Only hair and small (< 5 cm) bone shards remaining, teeth marks on ear tag, collar does not smell putrid; not heard during May telemetry flight - located in Fortune during LW recruitment survey, moved to Kiwigana prior to death; in small patch of drier habitat within black spruce peatlands, habitat relatively intact/few cutlines





Plate 5. Mortality Site Investigation #030: BC1021 (VHF 148.289), Maxhamish Range, Milligan Core (UTM 10.529079.6569981), July 07, 2013. (1/2)



Plate 6. Mortality Site Investigation #030: BC1021 (VHF 148.289), Maxhamish Range, Milligan Core (UTM 10.529079.6569981), July 07, 2013. (2/2)

Mortality Investigation #031, SCEK118, July 07, 2013, report and photos.

Mortality Investigation #	031
Caribou ID	SCEK118
Range	Calendar
Date Detected	03-Jul-13
Date Investigated	07-Jul-13
Collar Type	VHF
Frequency	
Date Collared	26-Feb-13
Core Collared	Calendar
Capture Site UTM	10.609349.6637211
Core Died	Calendar
Date of Death	Unknown
Date Last Known Alive	16-May-13
Mortality Site UTM	10.596017.6622312
Cause of Death	Undetermined
Samples	Teeth
Collar Condition	Good
Photos	2518-2526
Investigators	Brad Culling, Diane Culling, Kathy Needlay
Site Investigation Comments	Suspect caribou died and was subsequently scavenged by a bear - hide left on hind quarter but skeleton disarticulated, no teeth marks on collar; cracked open long bone to assess marrow - none remained





Plate 7. Mortality Site Investigation #031: SCEK118 (VHF 150.809), Calendar Range, (UTM 10.596017.6622312), July 07, 2013. (1/2)



Plate 8. Mortality Site Investigation #031: SCEK118 (VHF 150.809), Calendar Range, (UTM 10.596017.6622312), July 07, 2013. (2/2)

Mortality Investigation #032, SCEK115, July 07, 2013, report and photos.

Mortality Investigation #	032
Caribou ID	SCEK115
Range	Calendar
Date Detected	03-Jul-13
Date Investigated	07-Jul-13
Collar Type	VHF
Frequency	
Date Collared	25-Feb-13
Core Collared	Calendar
Capture Site UTM	10.639678.6644968
Core Died	Calendar
Date of Death	Unknown
Date Last Known Alive	16-May-13
Mortality Site UTM	10.645384.6638636
Cause of Death	Undetermined
Samples	None
Collar Condition	Good - no bite marks
Photos	2527-2545
Investigators	Brad Culling, Diane Culling, Kathy Needlay
Site Investigation Comments	Recently dead but carcass putrid (+30 C previous week); suspect caribou died and then was investigated by a scavenger (lynx?); bite marks on nose and neck but body intact, neck not broken, no sign of blood (even in wounds); had had calf - evidence of nursing, antler regrowth < 5 cm; mortality site at transition between peatlands and upland pine/spruce; abundant lichen; several pipelines/ cutlines in vicinity, < 10 m to LIS avoidance line; wolf track along nearby pipeline RoW





Plate 9. Mortality Site Investigation #032: SCEK115 (VHF 150.830), Calendar Range, (UTM 10.645384.6638636), July 07, 2013. (1/4)



Plate 10. Mortality Site Investigation #032: SCEK115 (VHF 150.830), Calendar Range, (UTM 10.645384.6638636), July 07, 2013. (2/4)





Plate 11. Mortality Site Investigation #032: SCEK115 (VHF 150.830), Calendar Range, (UTM 10.645384.6638636), July 07, 2013. (3/4)



Plate 12. Mortality Site Investigation #032: SCEK115 (VHF 150.830), Calendar Range, (UTM 10.645384.6638636), view along cutline approximately 10 m from mortality site, July 07, 2013. (4/4)

Mortality Investigation #033, SCEK109, July 07, 2013, report and photos.

Mortality Investigation #	033
Caribou ID	SCEK109
Range	Calendar
Date Detected	03-Jul-13
Date Investigated	07-Jul-13
Collar Type	VHF
Frequency	
Date Collared	24-Feb-13
Core Collared	Calendar RRA-D
Capture Site UTM	10.653991.6637044
Core Died	Calendar
Date of Death	Unknown
Date Last Known Alive	16-May-13
Mortality Site UTM	10.646031.6627216
Cause of Death	Suspected wolf kill
Samples	None - collar not at kill site
Collar Condition	Good - few scratch marks
Photos	2547-2555
Investigators	Brad Culling, Diane Culling, Kathy Needlay
Site Investigation Comments	Suspected wolf kill; collar not at kill site (no hair or other sign found), collar in thick patch of lodgepole pine/white spruce on esker within black spruce peatland; consider possibility of den site on esker; abundant terrestrial lichen on esker





Plate 13. Mortality Site Investigation #033: SCEK109 (VHF 150.709), Calendar Range, (UTM 10.646031.6627216), July 07, 2013. (1/2)



Plate 14. Mortality Site Investigation #033: SCEK109 (VHF 150.709), Calendar Range, (UTM 10.646031.6627216), Kathy Needlay (FNFN) on fresh cutline < 100 m from collar location, July 07, 2013. (1/2)

Mortality Investigation #034, SCEK101, July 07, 2013, report and photos.

Mortality Investigation #	034
Caribou ID	SCEK101
Range	Snake-Sahtaneh
Date Detected	02-Jul-13
Date Investigated	07-Jul-13
Collar Type	VHF
Frequency	
Date Collared	24-Feb-13
Core Collared	East Kotcho
Capture Site UTM	10.633525.6558923
Core Died	East Kotcho
Date of Death	Unknown
Date Last Known Alive	16-May-13
Mortality Site UTM	10.641377.6575554
Cause of Death	Undetermined
Samples	None
Collar Condition	Good - no bite marks
Photos	2556-2564
Investigators	Brad Culling, Diane Culling, Kathy Needlay
Site Investigation Comments	Carcass in advanced stage of decomposition with abundant maggots; patch of hair and left front leg/shoulder missing but eye intact - possible lynx scavenging; caribou had calf but lost it prior to death, no new antler growth





Plate 15. Mortality Site Investigation #034: SCEK101 (VHF 150.249), Snake-Sahtaneh Range, East Kotcho Core (UTM 10.641377.6575554), July 07, 2013. (1/2)



Plate 16. Mortality Site Investigation #034: SCEK101 (VHF 150.249), Snake-Sahtaneh Range, East Kotcho Core (UTM 10.641377.6575554), July 07, 2013. (2/2)