

2013

BC Boreal Caribou Implementation Plan:

**Mortality Investigation Summary Report No. 2:
May 16 to June 01, 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 May 15-16, 2013 fixed-wing telemetry monitoring flight, with mortality investigations conducted between May 16 and June 01, 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., femur, jaw, and internal organs). Mortality investigation numbers were assigned based on the date of detection, not the date of the ground investigation.

RESULTS

Ten boreal caribou mortalities were investigated between May 16 and June 01, 2013, including 9 SCEK mortality signals first detected during the May 15-16 telemetry monitoring flight. An additional caribou (MFLNRO collar BC1006; Mortality Investigation #008¹) was first confirmed dead on March 31, 2013, during the Maxhamish Range late winter recruitment survey. The VHF beacon of this collar failed to go into mortality mode and was only detected by the absence of a live animal during an

¹ The mortality investigation report for BC1006 (#008) also appears in *Mortality Investigation Summary Report #1: Dec 18, 2012 to April 06, 2013*.

intensive helicopter search. An attempt to retrieve the collar on March 31 was not successful as the collar, which was no longer with the remains, was under more than 1 m of hard crusted snow, with no tracks or disturbance (i.e., long dead). A return visit was made to the site on May 25, 2013, when the cause of death was confirmed as wolf predation based on the state of the collar, which had been damaged beyond repair (i.e., chewed up).

Of the 10 mortalities investigated, 9 involved VHF collars and 1 involved a Vetric GPS/satellite collar (Table 1). Six of 10 caribou mortalities were confirmed or strongly-suspected wolf kills and 4 appeared to have died of natural causes unrelated to predation (Table 2). Two of these 4 mortalities appeared to have been scavenged by black bears after death and 2 were intact; death was suspected to have been related to poor body condition for 3 of the 4 (Appendix I).

Table 1. Summary of SCEK boreal caribou mortality investigations conducted between May 16 and June 01, 2013, by range, core and collar type, northeastern British Columbia ($n=10$).

Range	Core	Collar Type			Total ¹
		Iridium	Vertex	VHF ¹	
Chinchaga	Milligan	0	0	2	2
	Etthithun	0	0	1	1
Chinchaga RRA-A	Chinchaga RRA-A	0	0	1	1
Snake-Sahtaneh	Clarke	0	0	1	1
	Paradise	0	0	2	2
	Paradise - outside core	0	1	0	1
	Tsea	0	0	1	1
Maxhamish	Kiwigana	0	0	1	1
Total			1	9	10

¹ Includes MFLNRO collar BC1006 (VHF 151.821; Mortality Investigation #008).

Two of the 8 SCEK VHF collars retrieved between May 16 and June 01 were destroyed by wolves; the remaining 6 are suitable for redeployment. The webbing of the Vetric Vertex collar (SCEK069) was damaged and will require refurbishment prior to redeployment.

First Nation Contractors

Kathy Needlay, of Fort Nelson First Nation, participated in the March 31, May 25, and May 26 site investigations.

Table 2. Summary of SCEK radio-collared boreal caribou mortality investigations conducted between May 16 and June 01, 2013, northeastern British Columbia, (n=10).

Mort Invest #	Caribou ID	Range ¹	Collar Type	Freq	Date Collared	Core ² Collared	Core Died	Date of Death	Date Last Known Alive	Date Investigated	Cause of Death	Comments
008	BC1006	MAX	VHF		NRO data	KWG	KWG	Unknown	NRO data	31-Mar-13 and 25-May-13 ³	Wolf kill	Death sometime prior to March 2013 late winter recruitment survey
019	SCEK140	CHIN	VHF			Chin RRA-A	Chin RRA-A	Unknown	30-Mar-13	24-May-13	Wolf kill	
020	SCEK155	SNS	VHF			CLK	CLK	Unknown	30-Mar-13	24-May-13	Wolf kill	
021	SCEK069	SNS				PRD	PRD-OS	21-Apr-13	21-Apr-13	24-May-13	UND ⁴	Intact carcass scavenged by black bear after death
022	SCEK023	SNS	VHF			PRD	PRD	Unknown	30-Mar-13	25-May-13	Wolf kill	
023	SCEK095	SNS	VHF			PRD	PRD	Unknown	30-Mar-13	26-May-13	UND	Scavenged by black bear
024	SCEK158	CHIN	VHF		04-Mar-13	ETT	ETT	Unknown	25-Mar-13	01-Jun-13	Wolf kill	
025	SCEK160	CHIN	VHF		04-Mar-13	MLL	MLL	Unknown	25-Mar-13	01-Jun-13	Wolf kill	
026	SCEK080	SNS	VHF			TSE	TSE	Unknown	31-Mar-13	25-May-13	UND	Carcass intact and undisturbed in black spruce bog habitat
027	SCEK039	CHIN	VHF			MLL	MLL	Unknown	25-Mar-13	16-May-13	UND	Collar retrieved by MFLNRO staff following notification by member of public

¹ CHIN – Chinchaga SNS – Snake-Sahtaneh MAX - Maxhamish

² MLL – Milligan ETT – Etthithun Chin RRA-A – Chinchaga RRA-A CLK – Clarke PRD – Paradise TSE – Tsea KWG – Kiwigana OS – Outside Core

³ Mortality investigation information for #008 also appears in *Mortality Investigation Summary Report #1: Dec 18, 2012 to April 06, 2013*.

⁴ UND - undetermined

Appendix I: Mortality Investigation Reports

Mortality Investigation #008, BC1006, March 31/May 25, 2013, report.

Mortality Investigation #	008 (also presented in Dec 18, 2012 to April 06, 2013 summary)
Caribou ID	BC1006
Range	Maxhamish
Date Detected	31-Mar-13
Date Investigated	31-Mar-13 and 25-May-13
Collar Type	VHF
Frequency	
Date Collared	NRO data
Core Collared	Kiwigana
Capture Site UTM	NRO data
Core Died	Kiwigana
Date of Death	Unknown; prior to March 2013 recruitment survey
Date Last Known Alive	Unknown
Mortality Site UTM	10.527628.6571495
Cause of Death	Wolf kill
Samples	Devoured; no samples available
Collar Condition	Destroyed
Photos	None
Investigators	Brad Culling, Diane Culling, Kathy Needlay (FNFN) (March 31) and Brad Culling, Craig DeMars, Kathy Needlay (May 25)
Site Investigation Comments	Old Lotek VHF wolf collar deployed on caribou BC1006 by Thiessen; mortality detected/first attempt to retrieve collar on March 31 LW recruitment survey, collar on ground under > 1 m deep, crusted snow with no tracks or disturbance (i.e., long dead), collar not transmitting on mortality mode therefore not able to locate under snow; returned to site on May 25 2013, retrieved remnants of collar (destroyed by wolves)

Mortality Investigation #019, SCEK140, May 24, 2013, report and photos.

Mortality Investigation #	019
Caribou ID	SCEK140
Range	Chinchaga
Date Detected	15-May-13
Date Investigated	24-May-13
Collar Type	VHF
Frequency	
Date Collared	1-Mar-2013
Core Collared	Chinchaga RRA-A
Capture Site UTM	10.596559.6447668
Core Died	Chinchaga RRA-A
Date of Death	Unknown
Date Last Known Alive	30-Mar-13
Mortality Site UTM	10.605039.6449585
Cause of Death	Suspected wolf kill
Samples	None
Collar Condition	Destroyed
Photo	2267
Investigators	Brad Culling, Craig Demars
Site Investigation Comments	Killed prior to snowmelt; scattered bone/shards and hair remaining; collar found 50 m from kill site/destroyed by wolves



Plate 1. Mortality Site Investigation #019: SCEK140 (VHF 152.120), Chinchaga Range, Chinchaga RRA-A (UTM 10.596559.6447668), May 24, 2013. (1/1)

Mortality Investigation #020, SCEK155, May 24, 2013, report and photos.

Mortality Investigation #	020
Caribou ID	SCEK155
Range	Snake-Sahtaneh
Date Detected	15-May-13
Date Investigated	24-May-13
Collar Type	VHF
Frequency	
Date Collared	3-Mar-2013
Core Collared	Clarke
Capture Site UTM	10.558696.6504240
Core Died	Clarke
Date of Death	Unknown
Date Last Known Alive	30-Mar-13
Mortality Site UTM	10.558948.6504497
Cause of Death	Wolf kill
Samples	None
Collar Condition	Good
Photos	2272-2274
Investigators	Brad Culling, Craig Demars
Site Investigation Comments	Killed and consumed prior to snowmelt; only a few scattered bones and small amounts of hair remaining; collar undamaged/unmarked, lying ~ 30 m from remains; site inundated by beaver impounded drainage corridor (sedge/willow)



Plate 2. Mortality Site Investigation #020: SCEK155 (VHF 150.030), Snake-Sahtaneh Range, Clarke Core (UTM 10.558696.6504240), May 24, 2013. (1/2)



Plate 3. Mortality Site Investigation #020: SCEK155 (VHF 150.030), Snake-Sahtaneh Range, Clarke Core (UTM 10.558696.6504240), May 24, 2013. (2/2)

Mortality Investigation #021, SCEK069, May 24, 2013, report and photos.

Mortality Investigation #	021
Caribou ID	SCEK069
Range	Snake-Sahtaneh
Date Detected	15-May-13
Date Investigated	24-May-13
Collar Type	Vertex
Frequency	
Date Collared	3-Feb-2013
Core Collared	Paradise
Capture Site UTM	10.557008.6537869
Core Died	Paradise-OS
Date of Death	21-Apr-13
Date Last Known Alive	21-Apr-13
Mortality Site UTM	10.573063.6527490
Cause of Death	Undetermined (black bear scavenged)
Samples	Jaw; leg bone
Collar Condition	Collar webbing chewed through approx. 50% of width ; wires exposed
Photos	2275-2279
Investigators	Brad Culling, Craig Demars
Site Investigation Comments	Intact carcass found and scavenged by large black bear after death; tracks and scat observed and carcass skinned with rib cage intact; in patch of mature spruce upland



Plate 4. Mortality Site Investigation #021: SCEK069 (VHF 148.725), Snake-Sahtaneh Range, Paradise Core (UTM 10.573063.6527490), May 24, 2013. (1/4)



Plate 5. Mortality Site Investigation #021: SCEK069 (VHF 148.725), Snake-Sahtaneh Range, Paradise Core (UTM 10.573063.6527490), May 24, 2013. (2/4)



Plate 6. Mortality Site Investigation #021: SCEK069 (VHF 148.725), Snake-Sahtaneh Range, Paradise Core (UTM 10.573063.6527490), May 24, 2013. (3/4)



Plate 7. Mortality Site Investigation #021: SCEK069 (VHF 148.725), Snake-Sahtaneh Range, Paradise Core (UTM 10.573063.6527490), May 24, 2013. (4/4)

Mortality Investigation #022, SCEK023, May 25, 2013, report.

Mortality Investigation #	022
Caribou ID	SCEK023
Range	Snake-Sahtaneh
Date Detected	15-May-13
Date Investigated	25-May-13
Collar Type	VHF
Frequency	
Date Collared	8-Jan-2013
Core Collared	Paradise
Capture Site UTM	10.556749.6537967
Core Died	Paradise
Date of Death	Unknown
Date Last Known Alive	30-Mar-13
Mortality Site UTM	10.559871.6536647
Cause of Death	Wolf kill
Samples	None
Collar Condition	Destroyed
Photos	None
Investigators	Brad Culling, Craig DeMars, Kathy Needlay
Site Investigation Comments	Collar not near remains; only scattered hair found; collar destroyed by wolves; mortality site inundated spruce/birch upland; compare mort site with wolf telemetry data

Mortality Investigation #023, SCEK095, May 26, 2013, report and photos.

Mortality Investigation #	023
Caribou ID	SCEK095
Range	Snake-Sahtaneh
Date Detected	15-May-13
Date Investigated	26-May-13
Collar Type	VHF
Frequency	
Date Collared	23-Feb-2013
Core Collared	Paradise
Capture Site UTM	10.560606.6541044
Core Died	Paradise
Date of Death	Unknown
Date Last Known Alive	30-Mar-13
Mortality Site UTM	10.567988.6529072
Cause of Death	Undetermined (black bear scavenged)
Samples	None
Collar Condition	Good
Photos	2290-2291
Investigators	Brad Culling, Craig DeMars, Kathy Needlay
Site Investigation Comments	Caribou appeared to have died whiled bedded at base of spruce tree then was later scavenged by a black bear; in small patch of upland spruce on edge of wet alder thicket



Plate 8. Mortality Site Investigation #023: SCEK095 (VHF 151.579), Snake-Sahtaneh Range, Paradise Core (UTM 10.567988.6529072), May 26, 2013. (1/2)



Plate 9. Mortality Site Investigation #023: SCEK095 (VHF 151.579), Snake-Sahtaneh Range, Paradise Core (UTM 10.567988.6529072), May 26, 2013. (2/2)

Mortality Investigation #024, SCEK158, June 01, 2013, report and photos.

Mortality Investigation #	024
Caribou ID	SCEK158
Range	Chinchaga
Date Detected	15-May-13
Date Investigated	01-Jun-13
Collar Type	VHF
Frequency	
Date Collared	04-Mar-13
Core Collared	Etthithun
Capture Site UTM	10.659843.6428805
Core Died	Etthithun
Date of Death	Unknown
Date Last Known Alive	25-Mar-13
Mortality Site UTM	10.658376.6428035
Cause of Death	Wolf kill
Samples	Devoured; no samples available
Collar Condition	Good
Photos	2306-2315, 2324-2325
Investigators	Brad Culling, Diane Culling
Site Investigation Comments	Only hair remaining; black spruce forest



Plate 10. Mortality Site Investigation #024: SCEK158 (VHF 152.089), Chinchaga Range, Etthithun Core (UTM 10.658376.6428035), June 01, 2013. (1/2)



Plate 11. Mortality Site Investigation #024: SCEK158 (VHF 152.089), Chinchaga Range, Etthithun Core (UTM 10.658376.6428035), June 01, 2013. (2/2)

Mortality Investigation #025, SCEK160, June 01, 2013, report and photos.

Mortality Investigation #	025
Caribou ID	SCEK160
Range	Chinchaga
Date Detected	15-May-13
Date Investigated	01-Jun-13
Collar Type	VHF
Frequency	
Date Collared	04-Mar-13
Core Collared	Milligan
Capture Site UTM	10.647737.6351799
Core Died	Milligan
Date of Death	Unknown
Date Last Known Alive	25-Mar-13
Mortality Site UTM	10.654665.6353545
Cause of Death	Wolf kill
Samples	Devoured; no samples available
Collar Condition	Good
Photos	2332-2342
Investigators	Brad Culling, Diane Culling
Site Investigation Comments	Killed in creek bottom approximately 500 m from Ladyfern road; wolf tracks observed, remains include hair, 1 rib and scattered bone shards; adjacent slope is lodgepole pine forest with abundant terrestrial lichen



Plate 12. Mortality Site Investigation #025: SCEK160 (VHF 151.109), Chinchaga Range, Milligan Core (UTM 10.654665.6353545), June 01, 2013. (1/4)



Plate 13. Mortality Site Investigation #025: SCEK160 (VHF 151.109), Chinchaga Range, Milligan Core (UTM 10.654665.6353545), June 01, 2013. (2/4)



Plate 14. Mortality Site Investigation #025: SCEK160 (VHF 151.109), Chinchaga Range, Milligan Core (UTM 10.654665.6353545), understory in lodgepole pine stand on slope adjacent to mortality site at stream, June 01, 2013. (3/4)



Plate 15. Mortality Site Investigation #025: SCEK160 (VHF 151.109), Chinchaga Range, Milligan Core (UTM 10.654665.6353545), aerial view of mortality site at stream and lodgepole pine stand on adjacent slope, June 01, 2013. (4/4)

Mortality Investigation #026, SCEK080, May 25, 2013, report and photos.

Mortality Investigation #	026
Caribou ID	SCEK080
Range	Snake-Sahtaneh
Date Detected	16-May-13
Date Investigated	25-May-13
Collar Type	VHF
Frequency	
Date Collared	5-Feb-2013
Core Collared	Tsea
Capture Site UTM	10.555210.6584684
Core Died	Tsea
Date of Death	Unknown
Date Last Known Alive	31-Mar-13
Mortality Site UTM	10.553954.6585837
Cause of Death	Undetermined
Samples	None - advanced decomposition
Collar Condition	Good
Photos	2288-2289
Investigators	Brad Culling, Craig DeMars, Kathy Needlay
Site Investigation Comments	Carcass intact and undisturbed in black spruce bog habitat; no samples taken due to advanced decomposition



Plate 16. Mortality Site Investigation #026: SCEK080 (VHF 150.749), Snake-Sahtaneh Range, Tsea Core (UTM 10.553954.6585837), May 25, 2013. (1/2)



Plate 17. Mortality Site Investigation #026: SCEK080 (VHF 150.749), Snake-Sahtaneh Range, Tsea Core (UTM 10.553954.6585837), May 25, 2013. (2/2)

Mortality Investigation #027, SCEK039, May 16, 2013, report and photos.

Mortality Investigation #	027
Caribou ID	SCEK039
Range	Chinchaga
Date Detected	16-May-13
Date Investigated	16-May-13
Collar Type	VHF
Frequency	
Date Collared	21-Jan-2013
Core Collared	Milligan
Capture Site UTM	10.657709.6298810
Core Died	Milligan
Date of Death	Unknown
Date Last Known Alive	25-Mar-13
Mortality Site UTM	10.650127.6296464
Cause of Death	Undetermined; possible vehicle collision
Samples	Leg bone
Collar Condition	Good
Photos	1886-1896
Investigators	Megan Watters, Julie Kline
Site Investigation Comments	Collar retrieved by MFLNRO staff May 16, 2013 following notification by member of public on 16 May 2013; on Row adjacent to lease road



Plate 18. Mortality Site Investigation #027: SCEK039 (VHF 151.829), Chinchaga Range, Milligan Core (UTM 10.650127.6296464), May 16, 2013. (1/2)



Plate 19. Mortality Site Investigation #027: SCEK039 (VHF 151.829), Chinchaga Range, Milligan Core (UTM 10.650127.6296464), May 16, 2013. (2/2)