

# DIVERSIFIED ENVIRONMENTAL SERVICES

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## SCIENCE AND COMMUNITY ENVIRONMENTAL KNOWLEDGE FUND BOREAL CARIBOU TELEMETRY PROGRAM

### FIXED-WING TELEMETRY MONITORING FLIGHT – April 02, 2014

**Date:** April 06, 2014

**Attention:** Megan Watters  
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#### *Executive Summary*

Monitoring of SCEK radio-collared caribou VHF signal status was conducted through the majority of boreal ranges in early April 2014 in conjunction with helicopter wolf-capture and collaring operations. As result, a dedicated fixed-wing telemetry monitoring flight was only required in the Chinchaga Range during April 2014. Thirty-two boreal caribou collar frequencies were scanned during the fixed-wing flight conducted on April 02, 2014. Thirty caribou collars were transmitting normal VHF signals, 1 was transmitting a mortality signal (SCEK037), and 1 was not detected due to VHF and satellite function failure.

#### *Background*

During the winters of 2012-13 and 2013-14, 204 adult boreal caribou were radio-collared in British Columbia's boreal caribou ranges as part of the *British Columbia Boreal Caribou Implementation Plan* (BCIP). On April 02, 2014, Diversified Environmental Services (DES) conducted a fixed-wing monitoring flight under contract to the Science and Community Environmental Knowledge Fund (SCEK), on behalf of the Research and Effectiveness Monitoring Board (REMB). Fixed-wing monitoring flights are conducted at monthly intervals throughout the year in order to identify mortality events to be followed up by ground-based mortality investigations and collar recoveries and to track potential long distance seasonal movements of VHF-collared caribou.

VHF collar frequencies in the Calendar, Snake-Sahtaneh, Maxhamish, and Parker ranges were incidentally scanned during helicopter wolf-capture operations on March 31 and April 01, 2014. Outliers, including SCEK VHF collars in the Northwest Territories and the western extent of the Fortune Core, were not searched out, and no attempt was made to determine the location of individual animals when normal VHF signals were detected. Two collared caribou mortalities were detected and investigated in conjunction with wolf capture operations on March 31 (SCEK174 and SCEK063; see Mortality Investigation Report #9) and 2 additional collared caribou mortalities were detected and investigated on April 01 (SCEK018 and SCEK154; see Mortality Investigation Report #10). During the same period, updated GPS/satellite data was examined for evidence of mortality events; no additional mortalities were detected. Given the apparent high mortality rate in the Snake-Sahtaneh and Maxhamish ranges during this period, a fixed-wing monitoring flight was conducted on April 02, 2014 encompassing only the Milligan Core, where no recent project activity had been conducted.

#### *Objectives*

The objective of the April 02, 2014 fixed-wing monitoring flight was to determine the approximate location and VHF beacon status of collared boreal caribou believed to be active in the Milligan Core.

These included caribou collars deployed on behalf of SCEK, as well as radio-collared caribou known to have entered BC's boreal caribou ranges from Alberta.

#### *Methods*

The monitoring flight was conducted using a Cessna 180 fixed-wing aircraft equipped with 1 outward-facing directional antenna affixed to each wing strut. Collar frequencies were scanned using Lotek™ STR 1000 and Lotek BioTracker telemetry receivers. The flight was conducted at 700-1,000 m above ground level at an average speed of 160 km/hr. The VHF beacon status of all detected collars was recorded on hard copy forms. In the case of VHF collars (Lotek LMRT4), status was recorded as either normal (60 pulses per minute (ppm)) or mortality mode (120 ppm) and a location (+/- 1 km) was recorded using a hand-held GPS unit. In the case of GPS/satellite collars (ATS Iridium, Vectronic Vertex, and Lotek LifeCycle), additional diagnostic VHF beacon patterns were recorded where applicable. As GPS/satellite collars are programmed to log multiple daily locations with high precision, additional effort to obtain collar locations after VHF signal detection is not necessary. Therefore, waypoints for GPS/satellite collars were typically recorded at the location from which the collar was heard, unless the VHF beacon status indicated a collar malfunction or mortality, in which case, more precise locations were obtained.

#### *Results*

Thirty-two caribou collar frequencies were scanned in the Chinchaga Range during the April 02, 2014 fixed-wing monitoring flight, including 30 SCEK collars (5 ATS Iridium, 9 Vectronic Vertex, 1 Lotek LifeCycle, and 15 Lotek VHF), and 2 Alberta VHF collars.

Results of the April 02, 2014 monitoring flight are presented in Table 1. Flight paths searched within and adjacent to each core habitat area are shown in Figure 1. Total flight line distance was 417 km. Of 32 caribou collar frequencies scanned, 30 normal VHF signals and 1 mortality signal were detected (SCEK037, Lotek VHF). The remaining collar (SCEK042, ATS Iridium) was not heard and is believed to have experienced a failure of both Iridium and VHF functions in May 2013, shortly after deployment.

There were no opportunities for First Nations field assistance on this monitoring flight.

Cordially,



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Table 1. VHF signal status and location of boreal caribou and wolf collars detected during the April 02, 2014 SCEK fixed-wing telemetry monitoring flight.

ID	Species	Range	Core	Collar Type	Status	Date	Zone	East	North	Comments
AB149.391	Caribou	Chinchaga	Milligan	unknown	60 ppm	2-Apr-14	10	669590	6335645	normal
AB150.470	Caribou	Chinchaga	Milligan	unknown	60 ppm	2-Apr-14	10	671191	6359672	normal
SCEK026	Caribou	Chinchaga	Milligan	ATS-Irid	50 ppm; double 6th	2-Apr-14	10	655387	6287139	normal
SCEK027	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	2-Apr-14	10	669144	6292136	normal
SCEK029	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	2-Apr-14	10	672971	6344188	normal
SCEK030	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	2-Apr-14	10	631502	6363053	normal
SCEK032	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	2-Apr-14	10	637732	6352553	normal
SCEK033	Caribou	Chinchaga	Milligan	ATS-Irid	50 ppm; no double 6th	2-Apr-14	10	633383	6347995	normal
SCEK034	Caribou	Chinchaga	Milligan	Vectr-Vertex	50 ppm	2-Apr-14	10	627905	6350419	normal
SCEK035	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	2-Apr-14	10	624027	6368037	normal
SCEK036	Caribou	Chinchaga	Milligan	ATS-Irid	50 ppm; double 6th	2-Apr-14	10	632746	6339311	normal
SCEK037	Caribou	Chinchaga	Milligan	Lotek-VHF	120 ppm	2-Apr-14	10	665395	6290731	MORTALITY SIGNAL
SCEK038	Caribou	Chinchaga	Milligan	ATS-Irid	50 ppm; double 6th	2-Apr-14	10	657706	6296520	normal
SCEK040	Caribou	Chinchaga	Milligan	Vectr-Vertex	50 ppm	2-Apr-14	10	649496	6406455	normal
SCEK041	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	2-Apr-14	10	628655	6361451	normal
SCEK042	Caribou	Chinchaga	Milligan	ATS-Irid	not heard	2-Apr-14	n/a	n/a	n/a	Failed Iridium and VHF functions
SCEK052	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	2-Apr-14	10	656597	6310016	normal
SCEK053	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	2-Apr-14	10	621180	6347569	normal
SCEK054	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	2-Apr-14	10	627587	6347925	normal
SCEK055	Caribou	Chinchaga	Milligan	Vectr-Vertex	50 ppm	2-Apr-14	10	631781	6357730	normal
SCEK056	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	2-Apr-14	10	662292	6332797	normal
SCEK057	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	2-Apr-14	10	622604	6345967	normal
SCEK059	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	2-Apr-14	10	622070	6351485	normal
SCEK060	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	2-Apr-14	10	618688	6352909	normal
SCEK061	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	2-Apr-14	10	667632	6348637	normal
SCEK195	Caribou	Chinchaga	Etthithun	Vectr-VertexTD	42 ppm	2-Apr-14	10	650157	6408806	normal
SCEK196	Caribou	Chinchaga	Milligan	Vectr-VertexTD	42 ppm	2-Apr-14	10	631952	6358017	normal
SCEK197	Caribou	Chinchaga	Milligan	Lotek-Lifecycle	50 ppm	2-Apr-14	10	647580	6305284	normal
SCEK198	Caribou	Chinchaga	Milligan	Vectr-VertexTD	42 ppm	2-Apr-14	10	630652	6343465	normal
SCEK199	Caribou	Chinchaga	Milligan	Vectr-VertexTD	42 ppm	2-Apr-14	10	649140	6313213	normal
SCEK200	Caribou	Chinchaga	Milligan	Vectr-VertexTD	42 ppm	2-Apr-14	10	656773	6320807	normal
SCEK201	Caribou	Chinchaga	Milligan	Vectr-VertexTD	42 ppm	2-Apr-14	10	668734	6291199	normal

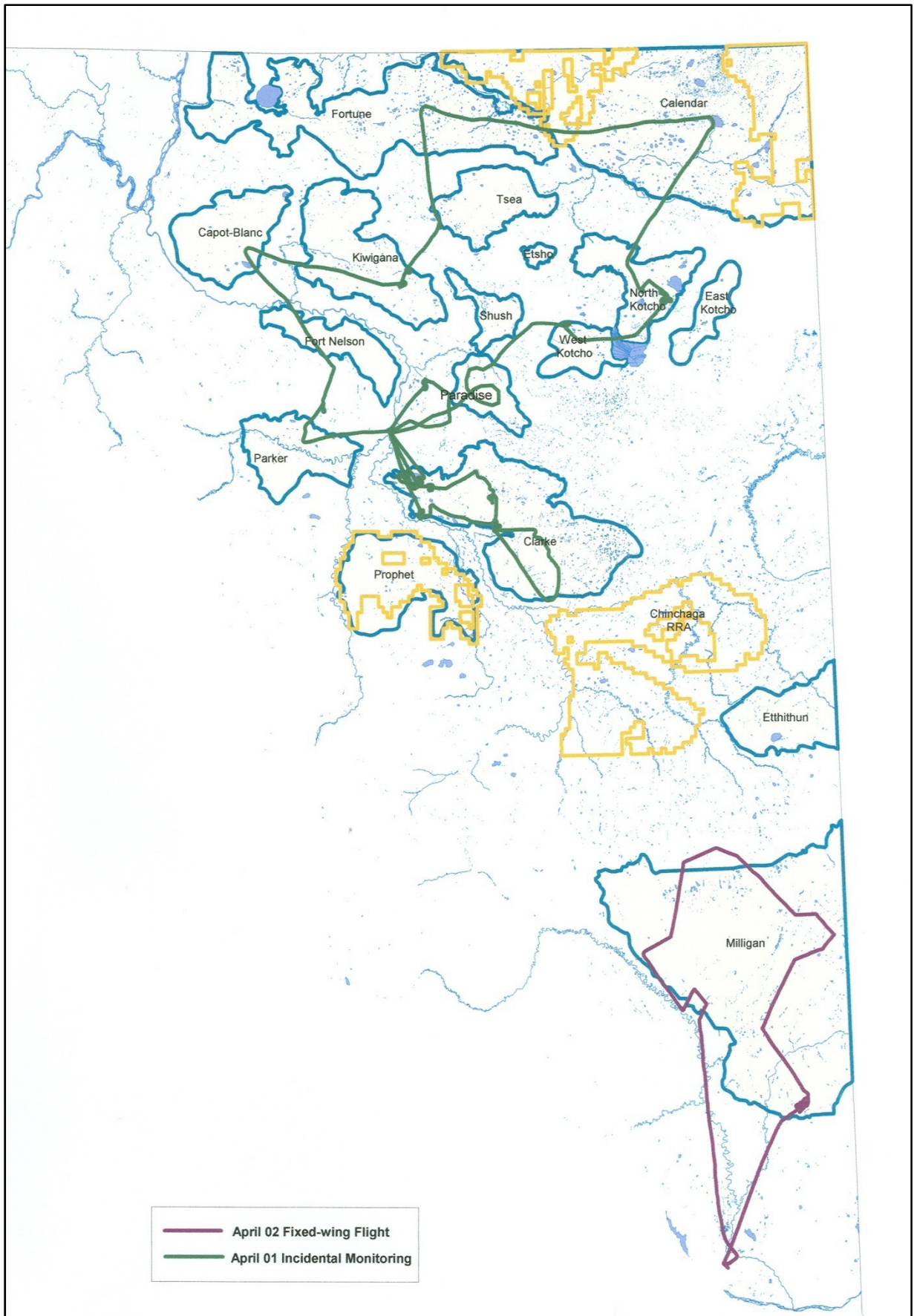


Figure 1. Flight path flown during the April 02, 2014 SCEK fixed-wing boreal caribou telemetry monitoring flight.