

DIVERSIFIED ENVIRONMENTAL SERVICES

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SCIENCE AND COMMUNITY ENVIRONMENTAL KNOWLEDGE FUND BOREAL CARIBOU TELEMETRY PROGRAM

FIXED-WING TELEMETRY MONITORING FLIGHT – July 14-15, 2014

Date: July 18, 2014

Attention: Brian Thomson
Science and Community Environmental Knowledge Fund
Victoria, BC

Executive Summary

One hundred fifty-four boreal caribou collar frequencies and 22 wolf collar frequencies were scanned during a monthly fixed-wing telemetry monitoring flight conducted on July 14-15, 2014. One hundred fifty caribou collars were transmitting normal VHF signals, 2 were transmitting mortality signals (SCEK006, SCEK141), and 2 were not detected. Two wolf collar mortality signals were also detected (BW022, BW029).

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 July 14-15, 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.

Objectives

The objective of the July 2014 monitoring flight was to determine the approximate location and VHF beacon status of all boreal caribou and wolf collars believed to be active in the survey area. These included caribou collars deployed on behalf of SCEK, caribou and wolf collars deployed on behalf of the Ministry of Forests, Lands, and Natural Resource Operations (MFLNRO), and pre-existing collars known to have entered BC's boreal caribou ranges from adjacent jurisdictions.

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, with

corrections for estimated bearing and distance, unless the VHF beacon status indicated a collar malfunction or mortality, in which case, more precise locations were obtained.

Results

One hundred fifty-four caribou collar frequencies were scanned during the July 14-15, 2014 monitoring flight, including 148 SCEK collars (27 ATS Iridium, 31 Vectronic Vertex, 11 Lotek LifeCycle, and 79 Lotek VHF), 2 Alberta VHF collars, and 4 previously-deployed MFLNRO VHF collars. In addition, 22 wolf collar frequencies were scanned during the July 2014 flight (15 Lotek Iridium, 1 Vectronic Vertex, and 6 Lotek VHF).

Results of the July 14-15, 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 2,955 km. Of 154 caribou collar frequencies scanned, 150 normal VHF signals and 2 mortality signals were detected.

July 2014 caribou mortality indications included SCEK006 (Kiwigana, Lotek VHF) and SCEK141 (Chinchaga RRA, Lotek VHF). SCEK029 (Milligan, VHF) is presumed active, but was not detected during the July 2014 flight. The remaining caribou collar (SCEK042, Milligan, Iridium) was not detected and is believed to have experienced a failure of both Iridium and VHF functions in May 2013, shortly after deployment.

At the time of the July 2014 monitoring flight, 4 Calendar caribou were located up to 40 km north of the BC/NT border (SCEK122, SCEK125, SCEK126, and SCEK180).

Twenty-two wolf collar frequencies were scanned during the July 14-15, 2014 monitoring flight, including 15 Lotek Iridium, 1 Vectronic Vertex, and 6 Lotek VHF. One GPS wolf collar (BW018, Elleh Pack) was heard in low battery mode during the June 2014 flight but was shot by a hunter prior to the July 2014 flight; the collar was turned in to the Fort Nelson Conservation Officer Service. One additional GPS collar (BW003, West Clarke Pack), which failed 15 days after deployment in April 2013 and was not being scanned, was also killed by a hunter in June 2014. This collar was also turned in to the Conservation Officer Service.

Of the 16 GPS/satellite wolf collars scanned, 8 had normal VHF beacon function and an additional 2 had current Iridium data function but had moved north into the Northwest Territories, beyond VHF reception range (BW010 and BW028; Snake Pack). Of the 6 remaining GPS/satellite wolf collars, 1 is suspected to have failed in 2013 (BW012; Big Arrow Pack), 4 were not detected and ceased Iridium data transmission prior to the July flight, and one was located in VHF mortality mode (BW029; Clarke Pack).

Of the 6 VHF wolf collars scanned, 3 had normal VHF signals, 1 was transmitting in mortality mode (BW022; Clarke Pack), 1 presumably active collar was not detected, and 1 collar assumed to have failed or dispersed soon after deployment in 2013 was not detected (BW007; Snake Pack).

At the time of the July 2014 flight, 2 GPS-collared wolves from the Snake Pack had separately dispersed well into the Northwest Territories (BW010, BW02). A third Snake Pack wolf (BW027), which also made a long distance movement well into the Northwest Territories in spring 2014 and then moved back into BC, more recently made a second movement 95 km into the NT before suddenly returning to its original pack territory near Fort Nelson in 4 days, a distance of 220 km.

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

Cordially,

A handwritten signature in black ink, appearing to read "Brad Culling". The signature is fluid and cursive, with a period at the end.

Brad Culling, R.P.Bio
Diversified Environmental Services
Fort St. John, BC

Table 1. VHF signal status and location of boreal caribou and wolf collars detected during the July 14-15, 2014 SCEK fixed-wing telemetry monitoring flight.

ID	Species	Range	Core	Collar Type	Status	Date	Zone	East	North	Comments
SCEK114	Caribou	Calendar	Calendar	ATS-Irid	50 ppm; double 6th	15-Jul-14	10	626312	6645571	normal
SCEK184	Caribou	Calendar	Calendar	ATS-Irid	50 ppm; double 6th	15-Jul-14	10	592243	6614182	normal
SCEK185	Caribou	Calendar	Calendar	Lotek-Lifecycle	50 ppm	15-Jul-14	10	581383	6639241	normal
SCEK183	Caribou	Calendar	Calendar	Vectr-Vertex TD	42 ppm	15-Jul-14	10	591619	6619399	normal
SCEK180	Caribou	Calendar	Calendar	Vectr-Vertex TD	42 ppm	15-Jul-14	10	606869	6671341	normal
SCEK136	Caribou	Calendar	Calendar	ATS-Irid	50 ppm; double 6th	15-Jul-14	10	612445	6607115	normal
SCEK181	Caribou	Calendar	Calendar	ATS-Irid	50 ppm; double 6th	15-Jul-14	10	613692	6607840	normal
SCEK135	Caribou	Calendar	Calendar	Vectr-Vertex	50 ppm	15-Jul-14	10	642649	6650302	normal
SCEK119	Caribou	Calendar	Calendar	Vectr-Vertex	50 ppm	15-Jul-14	10	613358	6640923	normal
SCEK123	Caribou	Calendar	Calendar	Lotek-VHF	60 ppm	15-Jul-14	10	603950	6627141	normal
SCEK122	Caribou	Calendar	Calendar	Lotek-VHF	61 ppm	15-Jul-14	10	625583	6680158	normal
SCEK138	Caribou	Calendar	Calendar	Lotek-VHF	60 ppm	15-Jul-14	10	631158	6627023	normal
SCEK137	Caribou	Calendar	Calendar	Lotek-VHF	60 ppm	15-Jul-14	10	634077	6632050	normal
SCEK120	Caribou	Calendar	Calendar	Lotek-VHF	60 ppm	15-Jul-14	10	605922	6635505	normal
SCEK134	Caribou	Calendar	Calendar	Lotek-VHF	60 ppm	15-Jul-14	10	638648	6645488	normal
SCEK112	Caribou	Calendar	Calendar	Lotek-VHF	60 ppm	15-Jul-14	10	639561	6640635	normal
SCEK113	Caribou	Calendar	Calendar	Lotek-VHF	60 ppm	15-Jul-14	10	615281	6608671	normal
SCEK125	Caribou	Calendar	Calendar	Lotek-VHF	60 ppm	15-Jul-14	10	651420	6694079	normal
SCEK126	Caribou	Calendar	RRA-C	ATS-Irid	50 ppm; double 6th	15-Jul-14	10	603515	6665722	normal
SCEK146	Caribou	Calendar	RRA-D	ATS-Irid	50 ppm; no double 6th	15-Jul-14	10	610015	6639110	normal VHF; no sat comm
SCEK147	Caribou	Calendar	RRA-D	Vectr-Vertex	50 ppm	15-Jul-14	10	633347	6648374	normal
SCEK108	Caribou	Calendar	RRA-D	Lotek-VHF	60 ppm	15-Jul-14	10	631125	6634553	normal
SCEK107	Caribou	Calendar	RRA-D	Lotek-VHF	60 ppm	15-Jul-14	10	613199	6640430	normal
SCEK195	Caribou	Chinchaga	Etthithun	Vectr-Vertex TD	42 ppm	14-Jul-14	10	645331	6408290	normal
SCEK036	Caribou	Chinchaga	Milligan	ATS-Irid	50 ppm; double 6th	14-Jul-14	10	614755	6365193	normal
SCEK038	Caribou	Chinchaga	Milligan	ATS-Irid	50 ppm; double 6th	14-Jul-14	10	684454	6303445	normal
SCEK026	Caribou	Chinchaga	Milligan	ATS-Irid	50 ppm; double 6th	14-Jul-14	10	672319	6292235	normal
SCEK033	Caribou	Chinchaga	Milligan	ATS-Irid	50 ppm; double 6th	14-Jul-14	10	627721	6346109	normal
SCEK199	Caribou	Chinchaga	Milligan	Vectr-Vertex TD	42 ppm	14-Jul-14	10	668634	6325417	normal
SCEK198	Caribou	Chinchaga	Milligan	Vectr-Vertex TD	42 ppm	14-Jul-14	10	639343	6305437	normal
SCEK196	Caribou	Chinchaga	Milligan	Vectr-Vertex TD	42 ppm	14-Jul-14	10	631181	6361862	normal
SCEK042	Caribou	Chinchaga	Milligan	ATS-Irid	not heard	n/a	n/a	n/a	n/a	Failed Iridium and VHF functions
SCEK201	Caribou	Chinchaga	Milligan	Vectr-Vertex TD	42 ppm	14-Jul-14	10	663505	6295591	normal
SCEK197	Caribou	Chinchaga	Milligan	Lotek-Lifecycle	50 ppm	14-Jul-14	10	639516	6357330	normal
AB149.391	Caribou	Chinchaga	Milligan	unknown	60 ppm	14-Jul-14	10	669245	6361548	normal
SCEK040	Caribou	Chinchaga	Milligan	Vectr-Vertex	50 ppm	14-Jul-14	10	642829	6406710	normal
SCEK034	Caribou	Chinchaga	Milligan	Vectr-Vertex	50 ppm	14-Jul-14	10	633308	6368418	normal
SCEK055	Caribou	Chinchaga	Milligan	Vectr-Vertex	50 ppm	14-Jul-14	10	647838	6346402	normal
AB150.470	Caribou	Chinchaga	Milligan	unknown	60 ppm	14-Jul-14	10	658684	6372279	normal
SCEK035	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	14-Jul-14	10	634242	6359241	normal
SCEK041	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	14-Jul-14	10	632034	6351157	normal
SCEK027	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	14-Jul-14	10	677108	6292961	normal
SCEK032	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	14-Jul-14	10	662245	6366548	normal
SCEK029	Caribou	Chinchaga	Milligan	Lotek-VHF	not heard	14-Jul-14	n/a	n/a	n/a	VHF not detected
SCEK052	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	14-Jul-14	10	651389	6301177	normal
SCEK053	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	14-Jul-14	10	619445	6348823	normal
SCEK030	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	14-Jul-14	10	669186	6338081	normal
SCEK058	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	14-Jul-14	10	662163	6364295	normal
SCEK054	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	14-Jul-14	10	638137	6361244	normal
SCEK057	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	14-Jul-14	10	634720	6331174	normal
SCEK059	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	14-Jul-14	10	618928	6345187	normal
SCEK061	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	14-Jul-14	10	663084	6341692	normal
SCEK060	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	14-Jul-14	10	577427	6366531	normal

Table 1 cont. VHF signal status and location of boreal caribou and wolf collars detected during the July 14-15, 2014 SCEK fixed-wing telemetry monitoring flight.

ID	Species	Range	Core	Collar Type	Status	Date	Zone	East	North	Comments
SCEK171	Caribou	Chinchaga	RRA-A	Vectr-VertexTD	42 ppm	14-Jul-14	10	600327	6412949	normal
SCEK142	Caribou	Chinchaga	RRA-A	Vectr-Vertex	50 ppm	14-Jul-14	10	614424	6448453	normal
SCEK189	Caribou	Chinchaga	RRA-A	Vectr-VertexTD	42 ppm	14-Jul-14	10	608895	6452107	normal
SCEK170	Caribou	Chinchaga	RRA-A	ATS-Irid	50 ppm; double 6th	14-Jul-14	10	648539	6442338	normal
SCEK048	Caribou	Chinchaga	RRA-A	Lotek-VHF	60 ppm	14-Jul-14	10	602147	6406256	normal
SCEK172	Caribou	Chinchaga	RRA-A	Lotek-Lifecycle	50 ppm	14-Jul-14	10	589979	6437487	normal
SCEK141	Caribou	Chinchaga	RRA-A	Lotek-VHF	120 ppm	14-Jul-14	10	610705	6446906	MORTALITY
SCEK009	Caribou	Fort Nelson	Fort Nelson	ATS-Irid	50 ppm; double 6th	15-Jul-14	10	519701	6552987	normal
SCEK166	Caribou	Fort Nelson	Fort Nelson	Vectr-VertexTD	42 ppm	15-Jul-14	10	517661	6546388	normal
SCEK167	Caribou	Fort Nelson	Fort Nelson	Lotek-Lifecycle	50 ppm	14-Jul-14	10	521096	6548699	normal
BC1014	Caribou	Maxhamish	Capot-Blanc	Lotek-VHF	60 ppm	15-Jul-14	10	442807	6562513	normal
SCEK002	Caribou	Maxhamish	Capot-Blanc	ATS-Irid	50 ppm; no double 6th	15-Jul-14	10	467254	6586730	normal
SCEK007	Caribou	Maxhamish	Capot-Blanc	ATS-Irid	50 ppm; no double 6th	15-Jul-14	10	443006	6566867	normal
SCEK001	Caribou	Maxhamish	Capot-Blanc	Lotek-VHF	60 ppm	15-Jul-14	10	462304	6570044	normal
SCEK076	Caribou	Maxhamish	Capot-Blanc	Lotek-VHF	60 ppm	15-Jul-14	10	464686	6574270	normal
SCEK066	Caribou	Maxhamish	Capot-Blanc	Lotek-VHF	60 ppm	15-Jul-14	10	441836	6573429	normal
BC1033	Caribou	Maxhamish	Fortune	Lotek-VHF	60 ppm	15-Jul-14	10	508545	6619836	normal
SCEK178	Caribou	Maxhamish	Fortune	Vectr-VertexTD	42 ppm	15-Jul-14	10	548291	6621322	normal
SCEK085	Caribou	Maxhamish	Fortune	Vectr-Vertex	50 ppm	15-Jul-14	10	532769	6624989	normal
SCEK005b	Caribou	Maxhamish	Fortune	Vectr-VertexTD	42 ppm	15-Jul-14	10	483313	6610311	normal
SCEK177	Caribou	Maxhamish	Fortune	Vectr-VertexTD	42 ppm	15-Jul-14	10	531923	6634608	normal
SCEK175	Caribou	Maxhamish	Fortune	Lotek-Lifecycle	50 ppm	15-Jul-14	10	497932	6631453	normal
SCEK179	Caribou	Maxhamish	Fortune	Lotek-Lifecycle	50 ppm	15-Jul-14	10	527144	6635113	normal
SCEK176	Caribou	Maxhamish	Fortune	Lotek-Lifecycle	50 ppm	15-Jul-14	10	485011	6627609	normal
SCEK164	Caribou	Maxhamish	Fortune	Lotek-VHF	60 ppm	15-Jul-14	10	534003	6621204	normal
SCEK078	Caribou	Maxhamish	Fortune	Lotek-VHF	60 ppm	15-Jul-14	10	462090	6620663	normal
SCEK128	Caribou	Maxhamish	Fortune	Lotek-VHF	60 ppm	15-Jul-14	10	539009	6631734	normal
SCEK086	Caribou	Maxhamish	Fortune	Lotek-VHF	60 ppm	15-Jul-14	10	529072	6631035	normal
SCEK129	Caribou	Maxhamish	Fortune	Lotek-VHF	60 ppm	15-Jul-14	10	546456	6629338	normal
SCEK087	Caribou	Maxhamish	Fortune	Lotek-VHF	60 ppm	15-Jul-14	10	547586	6621900	normal
SCEK168	Caribou	Maxhamish	Kiwigana	Vectr-VertexTD	42 ppm	15-Jul-14	10	547900	6562198	normal
SCEK003	Caribou	Maxhamish	Kiwigana	ATS-Irid	50 ppm; double 6th	15-Jul-14	10	530205	6566200	normal
SCEK169	Caribou	Maxhamish	Kiwigana	ATS-Irid	50 ppm; double 6th	15-Jul-14	10	497224	6590412	normal
SCEK064	Caribou	Maxhamish	Kiwigana	Lotek-VHF	60 ppm	15-Jul-14	10	502261	6578614	normal
SCEK062	Caribou	Maxhamish	Kiwigana	Lotek-VHF	60 ppm	15-Jul-14	10	523518	6572604	normal
SCEK006	Caribou	Maxhamish	Kiwigana	Lotek-VHF	120 ppm	15-Jul-14	10	508242	6593446	MORTALITY
SCEK004	Caribou	Maxhamish	Kiwigana	Lotek-VHF	60 ppm	15-Jul-14	10	506159	6607516	normal
BC1009	Caribou	Maxhamish	Kiwigana	Lotek-VHF	60 ppm	15-Jul-14	10	519256	6569742	normal; old wolf collar
SCEK016	Caribou	Parker	Parker	ATS-Irid	50 ppm; double 6th	14-Jul-14	10	479932	6515879	normal
SCEK014	Caribou	Parker	Parker	ATS-Irid	50 ppm; double 6th	14-Jul-14	10	482792	6508482	normal
SCEK194	Caribou	Parker	Parker	Vectr-VertexTD	42 ppm	14-Jul-14	10	485840	6520746	normal
SCEK013	Caribou	Parker	Parker	Lotek-VHF	60 ppm	14-Jul-14	10	487324	6512156	normal
SCEK010	Caribou	Parker	Parker	Lotek-VHF	60 ppm	14-Jul-14	10	485368	6500370	normal
SCEK012	Caribou	Parker	Parker	Lotek-VHF	60 ppm	14-Jul-14	10	489270	6508795	normal
SCEK015	Caribou	Parker	Parker	Lotek-VHF	60 ppm	14-Jul-14	10	487840	6520746	normal
BC1001	Caribou	Parker	Parker	Lotek-VHF	60 ppm	14-Jul-14	10	486398	6507459	normal
SCEK044	Caribou	Prophet	Prophet	ATS-Irid	50 ppm; no double 6th	14-Jul-14	10	558540	6458813	normal
SCEK161	Caribou	Prophet	Prophet	ATS-Irid	50 ppm; double 6th	14-Jul-14	10	561657	6455557	normal
SCEK143	Caribou	Prophet	Prophet	Vectr-Vertex	50 ppm	14-Jul-14	10	548743	6455466	normal
SCEK144	Caribou	Prophet	Prophet	Lotek-VHF	60 ppm	14-Jul-14	10	568436	6451641	normal
SCEK051	Caribou	Prophet	Prophet	Lotek-VHF	60 ppm	14-Jul-14	10	540549	6484172	normal
SCEK049	Caribou	Prophet	Prophet	Lotek-VHF	60 ppm	14-Jul-14	10	549800	6448352	normal
SCEK045	Caribou	Prophet	Prophet	Lotek-VHF	60 ppm	14-Jul-14	10	541450	6457814	normal

Table 1 cont. VHF signal status and location of boreal caribou and wolf collars detected during the July 14-15, 2014 SCEK fixed-wing telemetry monitoring flight.

ID	Species	Range	Core	Collar Type	Status	Date	Zone	East	North	Comments
SCEK020	Caribou	Snake-Sahtaneh	Clarke	ATS-Irid	50 ppm; double 6th	14-Jul-14	10	569394	6465710	normal
SCEK193	Caribou	Snake-Sahtaneh	Clarke	Vectr-VertexTD	42 ppm	14-Jul-14	10	557152	6504640	normal
SCEK192	Caribou	Snake-Sahtaneh	Clarke	Lotek-Lifecycle	50 ppm	14-Jul-14	10	606928	6484367	normal
SCEK191	Caribou	Snake-Sahtaneh	Clarke	Lotek-Lifecycle	50 ppm	14-Jul-14	10	599490	6486788	normal
SCEK145	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	14-Jul-14	10	588415	6547821	normal
SCEK068	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	14-Jul-14	10	570528	6527966	normal
SCEK150	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	14-Jul-14	10	612803	6484198	normal
SCEK148	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	14-Jul-14	10	611030	6489058	normal
SCEK153	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	14-Jul-14	10	566239	6482788	normal
SCEK152	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	14-Jul-14	10	557048	6500632	normal
SCEK019	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	14-Jul-14	10	573169	6507674	normal
SCEK021	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	14-Jul-14	10	556090	6501942	normal
SCEK025	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	14-Jul-14	10	561098	6499799	normal
SCEK024	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	14-Jul-14	10	571630	6502379	normal
SCEK149	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	14-Jul-14	10	573514	6502371	normal
SCEK156	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	14-Jul-14	10	539723	6502088	normal
SCEK157	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	14-Jul-14	10	564207	6499523	normal
SCEK070	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	14-Jul-14	10	570180	6500584	normal
SCEK100	Caribou	Snake-Sahtaneh	East Kotcho	ATS-Irid	50 ppm; no double 6th	15-Jul-14	10	625081	6558533	normal
SCEK103	Caribou	Snake-Sahtaneh	East Kotcho	Lotek-VHF	60 ppm	15-Jul-14	10	634423	6563785	normal
SCEK102	Caribou	Snake-Sahtaneh	East Kotcho	Lotek-VHF	60 ppm	15-Jul-14	10	622524	6553321	normal
SCEK105	Caribou	Snake-Sahtaneh	East Kotcho	Lotek-VHF	60 ppm	15-Jul-14	10	638962	6573812	normal
SCEK182	Caribou	Snake-Sahtaneh	North Kotcho	Vectr-VertexTD	42 ppm	15-Jul-14	10	597996	6587623	normal
SCEK188	Caribou	Snake-Sahtaneh	North Kotcho	Vectr-VertexTD	42 ppm	15-Jul-14	10	603872	6573864	normal
SCEK186	Caribou	Snake-Sahtaneh	North Kotcho	Vectr-VertexTD	42 ppm	15-Jul-14	10	596750	6570563	normal
SCEK110	Caribou	Snake-Sahtaneh	North Kotcho	ATS-Irid	50 ppm; double 6th	15-Jul-14	10	606426	6566939	normal
SCEK204	Caribou	Snake-Sahtaneh	North Kotcho	Lotek-Lifecycle	50 ppm	15-Jul-14	10	613787	6567253	normal
SCEK187	Caribou	Snake-Sahtaneh	North Kotcho	Lotek-Lifecycle	50 ppm	15-Jul-14	10	611175	6558931	normal
SCEK111	Caribou	Snake-Sahtaneh	North Kotcho	Vectr-Vertex	50 ppm	15-Jul-14	10	604313	6583530	normal
SCEK074	Caribou	Snake-Sahtaneh	North Kotcho	Lotek-VHF	60 ppm	15-Jul-14	10	611438	6574505	normal
SCEK089	Caribou	Snake-Sahtaneh	North Kotcho	Lotek-VHF	60 ppm	15-Jul-14	10	599944	6566695	normal
SCEK088	Caribou	Snake-Sahtaneh	North Kotcho	Lotek-VHF	60 ppm	15-Jul-14	10	631551	6558790	normal
SCEK090	Caribou	Snake-Sahtaneh	North Kotcho	Lotek-VHF	60 ppm	15-Jul-14	10	598047	6588818	normal
SCEK092	Caribou	Snake-Sahtaneh	North Kotcho	Lotek-VHF	60 ppm	15-Jul-14	10	606654	6596174	normal
SCEK096	Caribou	Snake-Sahtaneh	Paradise	Lotek-VHF	60 ppm	15-Jul-14	10	606154	6567939	normal
SCEK203	Caribou	Snake-Sahtaneh	Tsea	Vectr-VertexTD	42 ppm	15-Jul-14	10	560146	6605708	normal
SCEK079	Caribou	Snake-Sahtaneh	Tsea	ATS-Irid	50 ppm; no double 6th	15-Jul-14	10	529810	6599616	normal
SCEK131	Caribou	Snake-Sahtaneh	Tsea	Lotek-VHF	60 ppm	15-Jul-14	10	554479	6594533	normal
SCEK081	Caribou	Snake-Sahtaneh	Tsea	Lotek-VHF	60 ppm	15-Jul-14	10	555590	6604396	normal
SCEK132	Caribou	Snake-Sahtaneh	Tsea	Lotek-VHF	60 ppm	15-Jul-14	10	549663	6596805	normal
SCEK082	Caribou	Snake-Sahtaneh	Tsea	Lotek-VHF	60 ppm	15-Jul-14	10	551251	6600203	normal
SCEK127	Caribou	Snake-Sahtaneh	Tsea	Lotek-VHF	60 ppm	15-Jul-14	10	561369	6604213	normal
SCEK173	Caribou	Snake-Sahtaneh	West Kotcho	ATS-Irid	50 ppm; no double 6th	15-Jul-14	10	583298	6520549	normal
SCEK071	Caribou	Snake-Sahtaneh	West Kotcho	Vectr-Vertex	50 ppm	15-Jul-14	10	584919	6549615	normal
SCEK097	Caribou	Snake-Sahtaneh	West Kotcho	ATS-Irid	50 ppm; double 6th	15-Jul-14	10	623924	6578904	normal
SCEK091	Caribou	Snake-Sahtaneh	West Kotcho	Lotek-VHF	60 ppm	15-Jul-14	10	616355	6567600	normal
SCEK094	Caribou	Snake-Sahtaneh	West Kotcho	Lotek-VHF	60 ppm	15-Jul-14	10	580335	6532945	normal
SCEK073	Caribou	Snake-Sahtaneh	West Kotcho	Lotek-VHF	60 ppm	14-Jul-14	10	591449	6546552	normal

Table 1 cont. VHF signal status and location of boreal caribou and wolf collars detected during the July 14-15, 2014 SCEK fixed-wing telemetry monitoring flight.

ID	Species	Range	Core	Collar Type	Status	Date	Zone	East	North	Comments
BW002	Wolf	Chinchaga	Big Arrow	Lotek-VHF	60 ppm	14-Jul-14	11	630497	6321056	normal
BW011	Wolf	Chinchaga	Big Arrow	Lotek-Irid	40 ppm	14-Jul-14	12	630532	6319990	normal
BW012	Wolf	Chinchaga	Big Arrow	Lotek-Irid	not heard	14-Jul-14	n/a	n/a	n/a	VHF failed; no data since Jun 30, 13
BW008	Wolf	Fort Nelson	Tsimeh	Lotek-Irid	50 ppm	14-Jul-14	10	502877	6543979	normal
BW001	Wolf	Fort Nelson	Tsimeh	Lotek-VHF	60 ppm	14-Jul-14	10	502877	6543979	normal
BW009	Wolf	Fort Nelson	Tsimeh	Lotek-Irid	50 ppm	14-Jul-14	10	502877	6543979	normal
BW014	Wolf	Fort Nelson	Tsimeh	Lotek-Irid	not heard	14-Jul-14	n/a	n/a	n/a	VHF not detected; last data Jun 30, 14.
BW019	Wolf	Parker	Parker	Lotek-Irid	not heard	14-Jul-14	n/a	n/a	n/a	VHF not detected; last data Jun 25, 14.
BW022	Wolf	Snake-Sahtaneh	Clarke	Lotek-VHF	120 ppm	14-Jul-14	10	537583	6513441	MORTALITY
BW021	Wolf	Snake-Sahtaneh	Clarke	Lotek-Irid	not heard	14-Jul-14	10	n/a	n/a	VHF not detected; last data Jun 30, 14.
BW029	Wolf	Snake-Sahtaneh	Clarke	Lotek-Irid	120 ppm	14-Jul-14	10	548452	6512886	MORTALITY
BW031	Wolf	Snake-Sahtaneh	Clarke	Lotek-Irid	50 ppm	14-Jul-14	10	574978	6508164	normal
BW030	Wolf	Snake-Sahtaneh	Clarke	Lotek-Irid	50 ppm	14-Jul-14	10	541916	6504168	normal
BW017	Wolf	Snake-Sahtaneh	Elleh	Lotek-Irid	not heard	n/a	10	n/a	n/a	VHF not detected; last data Oct 17, 13.
BW024	Wolf	Snake-Sahtaneh	Kwokullie	Lotek-Irid	50 ppm	15-Jul-14	10	614882	6597117	normal
BW025	Wolf	Snake-Sahtaneh	Kwokullie	Vectronic	50 ppm	16-Jul-14	10	619363	6572015	normal
BW026	Wolf	Snake-Sahtaneh	Kwokullie	Lotek-VHF	not heard	n/a	n/a	n/a	n/a	VHF not detected
BW007	Wolf	Snake-Sahtaneh	Snake	Lotek-VHF	not heard	n/a	n/a	n/a	n/a	not detected; missing since deployment
BW010	Wolf	Snake-Sahtaneh	Snake	Lotek-Irid	not heard	n/a	n/a	n/a	n/a	dispersal to NWT; Irid data current
BW027	Wolf	Snake-Sahtaneh	Snake	Lotek-Irid	50 ppm	15-Jul-14	10	553049	6524390	normal
BW028	Wolf	Snake-Sahtaneh	Snake	Lotek-Irid	not heard	n/a	n/a	n/a	n/a	dispersal to NWT; Irid data current
BW016	Wolf	Snake-Sahtaneh	Snake	Lotek-VHF	60 ppm	14-Jul-14	n/a	544106	6529749	normal

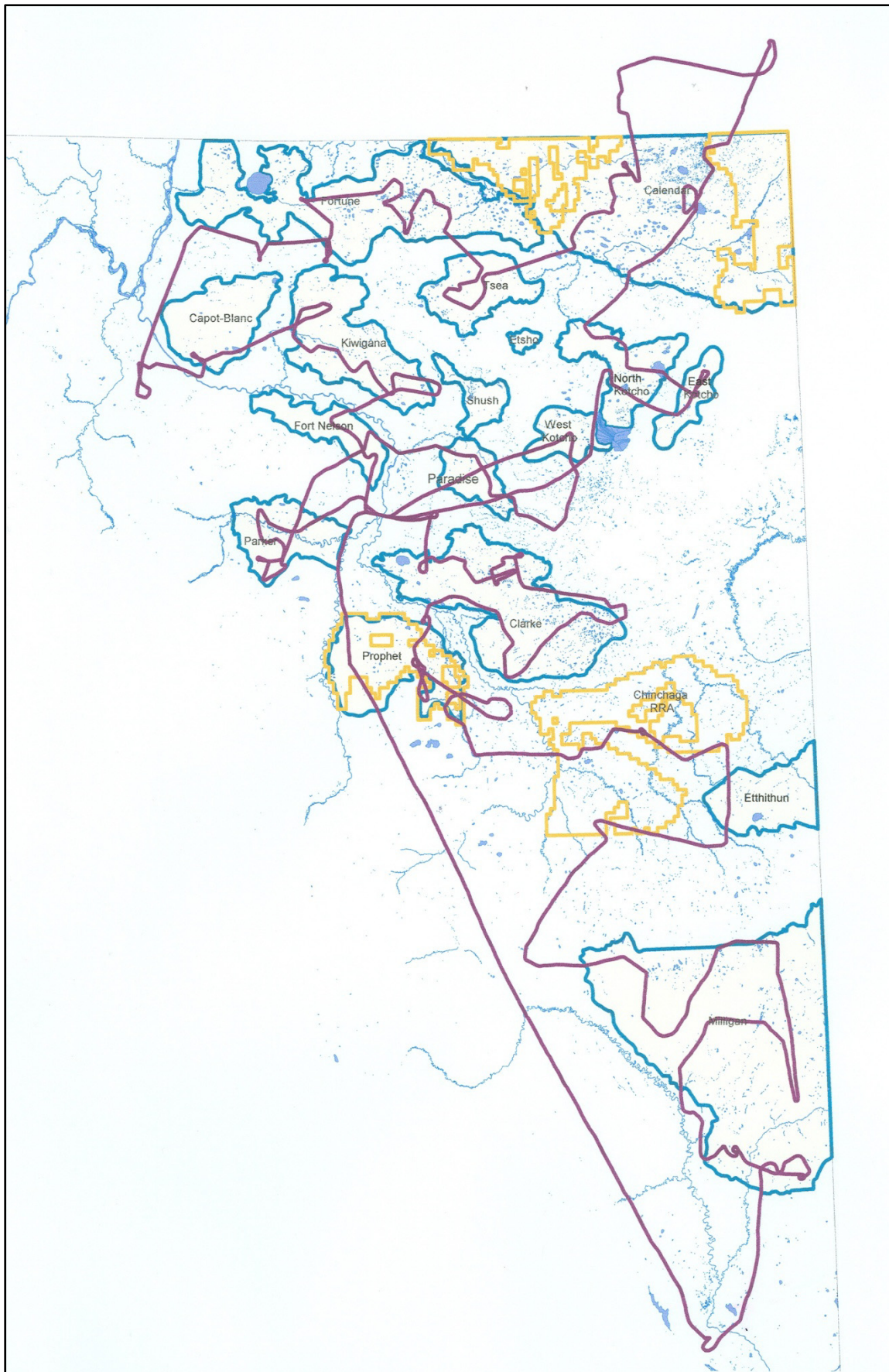


Figure 1. Flight paths flown during the July 14-15, 2014 SCEK fixed-wing boreal caribou and wolf telemetry monitoring flight.