

# DIVERSIFIED ENVIRONMENTAL SERVICES

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

### FIXED-WING TELEMETRY MONITORING FLIGHT – June 7-8, 2014

**Date:** June 15, 2014

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

#### *Executive Summary*

One hundred fifty-eight boreal caribou collar frequencies and 24 wolf collar frequencies were scanned during a monthly fixed-wing telemetry monitoring flight conducted on June 7-8, 2014. One hundred fifty-two caribou collars were transmitting normal VHF signals, 4 were transmitting mortality signals (SCEK043, SCEK083, SCEK163 and SCEK200), 1 was transmitting a false mortality signal, and 1 was not detected. One wolf mortality was also detected (BW020).

#### *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 June 7-8, 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 June 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, unless the VHF beacon status indicated a collar malfunction or mortality, in which case, more precise locations were obtained.

### *Results*

One hundred fifty-eight caribou collar frequencies were scanned during the June 7-8, 2014 monitoring flight, including 152 SCEK collars (27 ATS Iridium, 33 Vectronic Vertex, 11 Lotek LifeCycle, and 81 VHF), 2 Alberta VHF collars, and 4 previously-deployed MFLNRO VHF collars. Two ATS Iridium collars (SCEK046 and SCEK047, Chinchaga RRA) not heard during the May 10-11 fixed-wing flight were subsequently detected on mortality and recovered prior to the June telemetry flight. In addition, 24 wolf collar frequencies were scanned during the June 2014 flight (16 Lotek Iridium, 1 Vectronic Vertex, and 7 Lotek VHF). One VHF wolf collar (BW023), not detected during the May 2014 flight, was subsequently recovered prior to the June fixed-wing flight.

Results of the June 7-8, 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 3,120 km. Of 158 caribou collar frequencies scanned, 152 normal VHF signals, 4 mortality signals, and 1 false mortality signal were detected.

June caribou mortality indications included SCEK043 (Prophet, Lotek VHF), SCEK083 (Tsea, Lotek VHF), SCEK163 (Fortune, Vectronic Vertex), and SCEK200 (Milligan, Vectronic Vertex). SCEK100 (East Kotcho, ATS Iridium) was also transmitting a VHF mortality signal on June 8, however, updated GPS data indicated the animal was moving normally on the day of the survey. The remaining caribou collar (SCEK042) 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 June monitoring flight, 3 Calendar caribou were up to 24 km north of the BC/NT border (SCEK122, SCEK125, and SCEK126).

Twenty-four wolf collar frequencies were scanned during the June 7-8, 2014 monitoring flight, including 16 Lotek Iridium, 1 Vectronic Vertex, and 7 Lotek VHF.

Of the 17 GPS/satellite wolf collars scanned, 12 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 3 remaining Iridium wolf collars, 1 is suspected to have failed in 2013 (BW012; Big Arrow Pack), 1 ceased Iridium data transmission in February 2014 and was located transmitting in low battery mode (BW018; Elleh Pack), and the third could not be located (BW011; Big Arrow).

Of the 7 VHF wolf collars scanned, 2 had normal VHF signals, 1 was transmitting in mortality mode (BW020; Parker Pack), and 4 were not detected, including 1 which has not been located since soon after deployment in February 2013 and is assumed to have failed or the animal dispersed (BW007; Snake Pack).

At the time of the June flight, 2 GPS-collared wolves from the Snake Pack had dispersed well into the Northwest Territories. BW010 moved to the Arrowhead River drainage in 2013, where it remained, and BW028 recently made a movement to the south bank of the Mackenzie River, downstream of Fort Providence. Snake wolf BW027 also made a long distance movement well into the Northwest Territories in spring 2014 but has since moved back into BC and was located southeast of Maxhamish Lake during the June monitoring flight.

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 June 7-8, 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	8-Jun-14	10	627417	6642729	normal
SCEK184	Caribou	Calendar	Calendar	ATS-Irid	50 ppm; double 6th	8-Jun-14	10	586732	6626029	normal
SCEK185	Caribou	Calendar	Calendar	Lotek-Lifecycle	50 ppm	8-Jun-14	10	583593	6639101	normal
SCEK183	Caribou	Calendar	Calendar	Vectr-VertexTD	42 ppm	8-Jun-14	10	597810	6623264	normal
SCEK180	Caribou	Calendar	Calendar	Vectr-VertexTD	42 ppm	8-Jun-14	10	627837	6632288	normal
SCEK136	Caribou	Calendar	Calendar	ATS-Irid	50 ppm; double 6th	8-Jun-14	10	612027	6614432	normal
SCEK181	Caribou	Calendar	Calendar	ATS-Irid	50 ppm; double 6th	8-Jun-14	10	614039	6611984	normal
SCEK135	Caribou	Calendar	Calendar	Vectr-Vertex	50 ppm	8-Jun-14	10	645724	6651911	normal
SCEK119	Caribou	Calendar	Calendar	Vectr-Vertex	50 ppm	8-Jun-14	10	617411	6642673	normal
SCEK123	Caribou	Calendar	Calendar	Lotek-VHF	60 ppm	8-Jun-14	10	603224	6626841	normal
SCEK122	Caribou	Calendar	Calendar	Lotek-VHF	61 ppm	8-Jun-14	10	625788	6677750	normal
SCEK138	Caribou	Calendar	Calendar	Lotek-VHF	60 ppm	8-Jun-14	10	638025	6622687	normal
SCEK137	Caribou	Calendar	Calendar	Lotek-VHF	60 ppm	8-Jun-14	10	634537	6635530	normal
SCEK120	Caribou	Calendar	Calendar	Lotek-VHF	60 ppm	8-Jun-14	10	607883	6638337	normal
SCEK134	Caribou	Calendar	Calendar	Lotek-VHF	60 ppm	8-Jun-14	10	627524	6650103	normal
SCEK112	Caribou	Calendar	Calendar	Lotek-VHF	60 ppm	8-Jun-14	10	638624	6642662	normal
SCEK113	Caribou	Calendar	Calendar	Lotek-VHF	60 ppm	8-Jun-14	10	615476	6609880	normal
SCEK125	Caribou	Calendar	Calendar	Lotek-VHF	60 ppm	8-Jun-14	10	657707	6672674	normal
SCEK126	Caribou	Calendar	RRA-C	ATS-Irid	50 ppm; no double 6th	8-Jun-14	10	595312	6659305	normal
SCEK146	Caribou	Calendar	RRA-D	ATS-Irid	50 ppm; double 6th	8-Jun-14	10	606539	6635282	normal VHF; no sat comm
SCEK147	Caribou	Calendar	RRA-D	Vectr-Vertex	50 ppm	8-Jun-14	10	628447	6648448	normal
SCEK108	Caribou	Calendar	RRA-D	Lotek-VHF	60 ppm	8-Jun-14	10	641440	6646652	normal
SCEK107	Caribou	Calendar	RRA-D	Lotek-VHF	60 ppm	8-Jun-14	10	612560	6642325	normal
SCEK195	Caribou	Chinchaga	Etthithun	Vectr-VertexTD	42 ppm	7-Jun-14	10	648143	6406996	normal
SCEK036	Caribou	Chinchaga	Milligan	ATS-Irid	50 ppm; double 6th	7-Jun-14	10	619807	6364791	normal
SCEK038	Caribou	Chinchaga	Milligan	ATS-Irid	50 ppm; double 6th	7-Jun-14	10	681486	6308290	normal
SCEK026	Caribou	Chinchaga	Milligan	ATS-Irid	50 ppm; double 6th	7-Jun-14	10	661470	6308834	normal
SCEK033	Caribou	Chinchaga	Milligan	ATS-Irid	50 ppm; double 6th	7-Jun-14	10	619110	6347977	normal
SCEK199	Caribou	Chinchaga	Milligan	Vectr-VertexTD	42 ppm	7-Jun-14	10	664362	6330203	normal
SCEK198	Caribou	Chinchaga	Milligan	Vectr-VertexTD	42 ppm	7-Jun-14	10	644795	6301718	normal
SCEK200	Caribou	Chinchaga	Milligan	Vectr-VertexTD	80 ppm	7-Jun-14	10	469941	6576379	MORTALITY SIGNAL
SCEK196	Caribou	Chinchaga	Milligan	Vectr-VertexTD	42 ppm	7-Jun-14	10	629201	6361935	normal
SCEK042	Caribou	Chinchaga	Milligan	ATS-Irid	not heard	7-Jun-14	n/a	n/a	n/a	Failed Iridium and VHF functions
SCEK201	Caribou	Chinchaga	Milligan	Vectr-VertexTD	42 ppm	7-Jun-14	10	663306	6291063	normal
SCEK197	Caribou	Chinchaga	Milligan	Lotek-Lifecycle	50 ppm	7-Jun-14	10	630285	6344607	normal
AB149.391	Caribou	Chinchaga	Milligan	unknown	60 ppm	7-Jun-14	10	664779	6362447	normal
SCEK040	Caribou	Chinchaga	Milligan	Vectr-Vertex	50 ppm	7-Jun-14	10	647317	6406104	normal
SCEK034	Caribou	Chinchaga	Milligan	Vectr-Vertex	50 ppm	7-Jun-14	10	629774	6375713	normal
SCEK055	Caribou	Chinchaga	Milligan	Vectr-Vertex	50 ppm	7-Jun-14	10	648774	6343039	normal
AB150.470	Caribou	Chinchaga	Milligan	unknown	60 ppm	7-Jun-14	10	658052	6371004	normal
SCEK035	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	7-Jun-14	10	631916	6347539	normal
SCEK041	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	7-Jun-14	10	628922	646405	normal
SCEK027	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	7-Jun-14	10	661257	6297234	normal
SCEK032	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	7-Jun-14	10	659321	6366784	normal
SCEK029	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	7-Jun-14	10	645286	6337591	normal
SCEK052	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	7-Jun-14	10	653707	6308337	normal
SCEK053	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	7-Jun-14	10	619116	6351828	normal
SCEK030	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	7-Jun-14	10	671462	6334396	normal
SCEK058	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	7-Jun-14	10	668949	6362856	normal
SCEK054	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	7-Jun-14	10	629864	6348391	normal
SCEK057	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	7-Jun-14	10	635600	6343732	normal
SCEK059	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	7-Jun-14	10	619840	6343521	normal
SCEK061	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	7-Jun-14	10	661585	6340739	normal
SCEK060	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	7-Jun-14	10	579707	6367785	normal

Table 1 cont. VHF signal status and location of boreal caribou and wolf collars detected during the June 7-8, 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	7-Jun-14	10	605023	6405708	normal
SCEK142	Caribou	Chinchaga	RRA-A	Vectr-Vertex	50 ppm	7-Jun-14	10	617214	6443741	normal
SCEK189	Caribou	Chinchaga	RRA-A	Vectr-VertexTD	42 ppm	7-Jun-14	10	614851	6445484	normal
SCEK048	Caribou	Chinchaga	RRA-A	Lotek-VHF	60 ppm	7-Jun-14	10	602023	6405708	normal
SCEK172	Caribou	Chinchaga	RRA-A	Lotek-Lifecycle	50 ppm	7-Jun-14	10	591604	6430138	normal
SCEK141	Caribou	Chinchaga	RRA-A	Lotek-VHF	60 ppm	7-Jun-14	10	616163	6441369	normal
SCEK009	Caribou	Fort Nelson	Fort Nelson	ATS-Irid	50 ppm; double 6th	8-Jun-14	10	515907	6553343	normal
SCEK166	Caribou	Fort Nelson	Fort Nelson	Vectr-VertexTD	42 ppm	8-Jun-14	10	514183	6549628	normal
SCEK167	Caribou	Fort Nelson	Fort Nelson	Lotek-Lifecycle	50 ppm	8-Jun-14	10	513616	6551303	normal
BC1014	Caribou	Maxhamish	Capot-Blanc	Lotek-VHF	60 ppm	7-Jun-14	10	441617	6566507	normal
SCEK002	Caribou	Maxhamish	Capot-Blanc	ATS-Irid	50 ppm; no double 6th	7-Jun-14	10	471973	6580354	normal
SCEK007	Caribou	Maxhamish	Capot-Blanc	ATS-Irid	50 ppm; no double 6th	7-Jun-14	10	442451	6565541	normal
SCEK001	Caribou	Maxhamish	Capot-Blanc	Lotek-VHF	60 ppm	7-Jun-14	10	472687	6576526	normal
SCEK076	Caribou	Maxhamish	Capot-Blanc	Lotek-VHF	60 ppm	7-Jun-14	10	457395	6579272	normal
SCEK066	Caribou	Maxhamish	Capot-Blanc	Lotek-VHF	60 ppm	7-Jun-14	10	441314	6574497	normal
BC1033	Caribou	Maxhamish	Fortune	Lotek-VHF	60 ppm	8-Jun-14	10	506848	6620567	normal
SCEK178	Caribou	Maxhamish	Fortune	Vectr-VertexTD	42 ppm	8-Jun-14	10	547793	6626712	normal
SCEK085	Caribou	Maxhamish	Fortune	Vectr-Vertex	50 ppm	8-Jun-14	10	540875	6624697	normal
SCEK005b	Caribou	Maxhamish	Fortune	Vectr-VertexTD	42 ppm	8-Jun-14	10	482985	6612884	normal
SCEK177	Caribou	Maxhamish	Fortune	Vectr-VertexTD	42 ppm	8-Jun-14	10	533926	6635551	normal
SCEK175	Caribou	Maxhamish	Fortune	Lotek-Lifecycle	50 ppm	8-Jun-14	10	491433	6632266	normal
SCEK163	Caribou	Maxhamish	Fortune	Vectr-Vertex		7-Jun-14	10	465876	6646517	MORTALITY SIGNAL
SCEK179	Caribou	Maxhamish	Fortune	Lotek-Lifecycle	50 ppm	8-Jun-14	10	537919	6636051	normal
SCEK176	Caribou	Maxhamish	Fortune	Lotek-Lifecycle	50 ppm	8-Jun-14	10	483951	6626388	normal
SCEK164	Caribou	Maxhamish	Fortune	Lotek-VHF	60 ppm	8-Jun-14	10	533026	6621954	normal
SCEK078	Caribou	Maxhamish	Fortune	Lotek-VHF	60 ppm	7-Jun-14	10	463205	6623988	normal
SCEK128	Caribou	Maxhamish	Fortune	Lotek-VHF	60 ppm	8-Jun-14	10	536217	6631417	normal
SCEK086	Caribou	Maxhamish	Fortune	Lotek-VHF	60 ppm	8-Jun-14	10	528577	6633829	normal
SCEK129	Caribou	Maxhamish	Fortune	Lotek-VHF	60 ppm	8-Jun-14	10	536590	6628327	normal
SCEK087	Caribou	Maxhamish	Fortune	Lotek-VHF	60 ppm	8-Jun-14	10	549888	6624961	normal
SCEK168	Caribou	Maxhamish	Kiwigana	Vectr-VertexTD	42 ppm	7-Jun-14	10	549073	6562611	normal
SCEK003	Caribou	Maxhamish	Kiwigana	ATS-Irid	50 ppm; double 6th	7-Jun-14	10	531931	6569892	normal
SCEK169	Caribou	Maxhamish	Kiwigana	ATS-Irid	50 ppm; no double 6th	7-Jun-14	10	503766	6587915	normal
SCEK064	Caribou	Maxhamish	Kiwigana	Lotek-VHF	60 ppm	7-Jun-14	10	507934	6583196	normal
SCEK062	Caribou	Maxhamish	Kiwigana	Lotek-VHF	60 ppm	7-Jun-14	10	524409	6569170	normal
SCEK006	Caribou	Maxhamish	Kiwigana	Lotek-VHF	60 ppm	7-Jun-14	10	505655	6596290	normal
SCEK004	Caribou	Maxhamish	Kiwigana	Lotek-VHF	60 ppm	8-Jun-14	10	503642	6616138	normal
BC1009	Caribou	Maxhamish	Kiwigana	Lotek-VHF	60 ppm	7-Jun-14	10	518379	6572528	normal; old wolf collar
SCEK170	Caribou	Maxhamish	RRA-A	ATS-Irid	50 ppm; double 6th	7-Jun-14	10	628562	6451070	normal
SCEK016	Caribou	Parker	Parker	ATS-Irid	50 ppm; double 6th	8-Jun-14	10	483303	6512486	normal
SCEK014	Caribou	Parker	Parker	ATS-Irid	50 ppm; no double 6th	8-Jun-14	10	482981	6505930	normal
SCEK194	Caribou	Parker	Parker	Vectr-VertexTD	42 ppm	8-Jun-14	10	478082	6516981	normal
SCEK013	Caribou	Parker	Parker	Lotek-VHF	60 ppm	8-Jun-14	10	490293	6514228	normal
SCEK010	Caribou	Parker	Parker	Lotek-VHF	60 ppm	8-Jun-14	10	488252	6499875	normal
SCEK012	Caribou	Parker	Parker	Lotek-VHF	60 ppm	8-Jun-14	10	488573	6511133	normal
SCEK015	Caribou	Parker	Parker	Lotek-VHF	60 ppm	8-Jun-14	10	479709	6516342	normal
BC1001	Caribou	Parker	Parker	Lotek-VHF	60 ppm	8-Jun-14	10	487955	6508796	normal
SCEK044	Caribou	Prophet	Prophet	ATS-Irid	50 ppm; double 6th	7-Jun-14	10	560308	6458552	normal
SCEK161	Caribou	Prophet	Prophet	ATS-Irid	50 ppm; double 6th	7-Jun-14	10	557318	6454046	normal
SCEK143	Caribou	Prophet	Prophet	Vectr-Vertex	50 ppm	7-Jun-14	10	564326	6436837	normal
SCEK144	Caribou	Prophet	Prophet	Lotek-VHF	60 ppm	7-Jun-14	10	563861	6452103	normal
SCEK051	Caribou	Prophet	Prophet	Lotek-VHF	60 ppm	7-Jun-14	10	533646	6479074	normal
SCEK049	Caribou	Prophet	Prophet	Lotek-VHF	60 ppm	7-Jun-14	10	555414	6444966	normal
SCEK043	Caribou	Prophet	Prophet	Lotek-VHF	120 ppm	7-Jun-14	10	554204	6460119	MORTALITY SIGNAL

Table 1 cont. VHF signal status and location of boreal caribou and wolf collars detected during the June 7-8, 2014 SCEK fixed-wing telemetry monitoring flight.

ID	Species	Range	Core	Collar Type	Status	Date	Zone	East	North	Comments
SCEK045	Caribou	Prophet	Prophet	Lotek-VHF	60 ppm	7-Jun-14	10	542046	6467673	normal
SCEK020	Caribou	Snake-Sahtaneh	Clarke	ATS-Irid	50 ppm; double 6th	7-Jun-14	10	569601	6468511	normal
SCEK193	Caribou	Snake-Sahtaneh	Clarke	Vectr-VertexTD	42 ppm	7-Jun-14	10	564471	6501583	normal
SCEK192	Caribou	Snake-Sahtaneh	Clarke	Lotek-Lifecycle	50 ppm	7-Jun-14	10	606246	6484179	normal
SCEK191	Caribou	Snake-Sahtaneh	Clarke	Lotek-Lifecycle	50 ppm	7-Jun-14	10	602160	6484942	normal
SCEK145	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	8-Jun-14	10	580410	6553982	normal
SCEK068	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	7-Jun-14	10	556577	6543154	normal
SCEK150	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	7-Jun-14	10	619372	6486857	normal
SCEK148	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	7-Jun-14	10	606770	6488670	normal
SCEK153	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	7-Jun-14	10	565903	6475036	normal
SCEK152	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	7-Jun-14	10	571340	6499281	normal
SCEK019	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	7-Jun-14	10	570528	6502721	normal
SCEK021	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	7-Jun-14	10	555494	6500868	normal
SCEK025	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	7-Jun-14	10	558870	6495893	normal
SCEK024	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	7-Jun-14	10	572852	6500572	normal
SCEK149	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	7-Jun-14	10	572343	6503776	normal
SCEK156	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	7-Jun-14	10	535399	6503154	normal
SCEK157	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	7-Jun-14	10	562957	6497036	normal
SCEK070	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	7-Jun-14	10	574322	6501705	normal
SCEK100	Caribou	Snake-Sahtaneh	East Kotcho	ATS-Irid	30 ppm; double 2nd	8-Jun-14	10	632748	6565972	False Mortality Signal
SCEK103	Caribou	Snake-Sahtaneh	East Kotcho	Lotek-VHF	60 ppm	8-Jun-14	10	634315	6566396	normal
SCEK102	Caribou	Snake-Sahtaneh	East Kotcho	Lotek-VHF	60 ppm	8-Jun-14	10	628521	6556062	normal
SCEK105	Caribou	Snake-Sahtaneh	East Kotcho	Lotek-VHF	60 ppm	8-Jun-14	10	636283	6568719	normal
SCEK182	Caribou	Snake-Sahtaneh	North Kotcho	Vectr-VertexTD	42 ppm	8-Jun-14	10	593547	6585980	normal
SCEK188	Caribou	Snake-Sahtaneh	North Kotcho	Vectr-VertexTD	42 ppm	8-Jun-14	10	575752	6583883	normal
SCEK186	Caribou	Snake-Sahtaneh	North Kotcho	Vectr-VertexTD	42 ppm	8-Jun-14	10	597230	6571685	normal
SCEK110	Caribou	Snake-Sahtaneh	North Kotcho	ATS-Irid	50 ppm; double 6th	8-Jun-14	10	610210	6569124	normal
SCEK204	Caribou	Snake-Sahtaneh	North Kotcho	Lotek-Lifecycle	50 ppm	8-Jun-14	10	612401	6564826	normal
SCEK187	Caribou	Snake-Sahtaneh	North Kotcho	Lotek-Lifecycle	50 ppm	8-Jun-14	10	603043	6562247	normal
SCEK111	Caribou	Snake-Sahtaneh	North Kotcho	Vectr-Vertex	50 ppm	8-Jun-14	10	604521	6584052	normal
SCEK074	Caribou	Snake-Sahtaneh	North Kotcho	Lotek-VHF	60 ppm	8-Jun-14	10	612416	6579345	normal
SCEK089	Caribou	Snake-Sahtaneh	North Kotcho	Lotek-VHF	60 ppm	8-Jun-14	10	606593	6565210	normal
SCEK088	Caribou	Snake-Sahtaneh	North Kotcho	Lotek-VHF	60 ppm	8-Jun-14	10	631996	6559171	normal
SCEK090	Caribou	Snake-Sahtaneh	North Kotcho	Lotek-VHF	60 ppm	8-Jun-14	10	597098	6588720	normal
SCEK092	Caribou	Snake-Sahtaneh	North Kotcho	Lotek-VHF	60 ppm	8-Jun-14	10	607987	6587669	normal
SCEK096	Caribou	Snake-Sahtaneh	Paradise	Lotek-VHF	60 ppm	7-Jun-14	10	558211	6537679	normal
SCEK203	Caribou	Snake-Sahtaneh	Tsea	Vectr-VertexTD	42 ppm	8-Jun-14	10	553351	6605019	normal
SCEK079	Caribou	Snake-Sahtaneh	Tsea	ATS-Irid	50 ppm; double 6th	8-Jun-14	10	537043	6584152	normal
SCEK131	Caribou	Snake-Sahtaneh	Tsea	Lotek-VHF	60 ppm	8-Jun-14	10	553432	6593077	normal
SCEK081	Caribou	Snake-Sahtaneh	Tsea	Lotek-VHF	60 ppm	8-Jun-14	10	554343	6601115	normal
SCEK083	Caribou	Snake-Sahtaneh	Tsea	Lotek-VHF	120 ppm	8-Jun-14	10	563349	6596615	MORTALITY SIGNAL
SCEK132	Caribou	Snake-Sahtaneh	Tsea	Lotek-VHF	60 ppm	8-Jun-14	10	544720	6589942	normal
SCEK082	Caribou	Snake-Sahtaneh	Tsea	Lotek-VHF	60 ppm	8-Jun-14	10	551057	6595661	normal
SCEK127	Caribou	Snake-Sahtaneh	Tsea	Lotek-VHF	60 ppm	8-Jun-14	10	559676	6605724	normal
SCEK173	Caribou	Snake-Sahtaneh	West Kotcho	ATS-Irid	50 ppm; no double 6th	7-Jun-14	10	572284	6519401	normal
SCEK071	Caribou	Snake-Sahtaneh	West Kotcho	Vectr-Vertex	50 ppm	8-Jun-14	10	581031	6548211	normal
SCEK097	Caribou	Snake-Sahtaneh	West Kotcho	ATS-Irid	50 ppm; double 6th	8-Jun-14	10	611403	6573139	normal
SCEK091	Caribou	Snake-Sahtaneh	West Kotcho	Lotek-VHF	60 ppm	8-Jun-14	10	613079	6570648	normal
SCEK094	Caribou	Snake-Sahtaneh	West Kotcho	Lotek-VHF	60 ppm	8-Jun-14	10	583431	6536830	normal
SCEK073	Caribou	Snake-Sahtaneh	West Kotcho	Lotek-VHF	60 ppm	8-Jun-14	10	586213	6557080	normal

Table 1 cont. VHF signal status and location of boreal caribou and wolf collars detected during the June 7-8, 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	not heard	7-Jun-14	n/a	n/a	n/a	pack not located
BW011	Wolf	Chinchaga	Big Arrow	Lotek-Irid	not heard	7-Jun-14	n/a	n/a	n/a	pack not located
BW012	Wolf	Chinchaga	Big Arrow	Lotek-Irid	not heard	7-Jun-14	n/a	n/a	n/a	VHF failed; no data since Jun 30, 13
BW008	Wolf	Fort Nelson	Tsimeh	Lotek-Irid	50 ppm	8-Jun-14	10	508345	6543673	normal
BW001	Wolf	Fort Nelson	Tsimeh	Lotek-VHF	60 ppm	8-Jun-14	10	508345	6543673	normal
BW009	Wolf	Fort Nelson	Tsimeh	Lotek-Irid	50 ppm	8-Jun-14	10	508345	6543673	normal
BW014	Wolf	Fort Nelson	Tsimeh	Lotek-Irid	50 ppm	8-Jun-14	10	508345	6543673	normal
BW020	Wolf	Parker	Parker	Lotek-VHF	120 ppm	8-Jun-14	10	492550	6515207	MORTALITY SIGNAL
BW019	Wolf	Parker	Parker	Lotek-Irid	50 ppm	8-Jun-14	10	465877	6500620	normal
BW022	Wolf	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	7-Jun-14	10	542767	6496009	normal
BW021	Wolf	Snake-Sahtaneh	Clarke	Lotek-Irid	50 ppm	7-Jun-14	10	537027	6499881	normal
BW029	Wolf	Snake-Sahtaneh	Clarke	Lotek-Irid	50 ppm	7-Jun-14	10	519420	6498345	normal
BW031	Wolf	Snake-Sahtaneh	Clarke	Lotek-Irid	50 ppm	7-Jun-14	10	533489	6500779	normal
BW030	Wolf	Snake-Sahtaneh	Clarke	Lotek-Irid	50 ppm	7-Jun-14	10	545354	6497212	normal
BW018	Wolf	Snake-Sahtaneh	Elleh	Lotek-Irid	50 ppm double	7-Jun-14	10	568837	6502903	low battery mode; last data Feb 07, 14.
BW017	Wolf	Snake-Sahtaneh	Elleh	Lotek-Irid	50 ppm	7-Jun-14	10	542767	6496009	normal VHF; last data Oct 17, 13.
BW024	Wolf	Snake-Sahtaneh	Kwokullie	Lotek-Irid	50 ppm	8-Jun-14	10	627537	6580405	normal
BW025	Wolf	Snake-Sahtaneh	Kwokullie	Vectronic	50 ppm	8-Jun-14	10	617255	6588385	normal
BW026	Wolf	Snake-Sahtaneh	Kwokullie	Lotek-VHF	not heard	8-Jun-14	n/a	n/a	n/a	VHF not detected
BW007	Wolf	Snake-Sahtaneh	Snake	Lotek-VHF	not heard	8-Jun-14	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	8-Jun-14	10	503642	6616138	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	not heard	8-Jun-14	n/a	n/a	n/a	VHF not detected

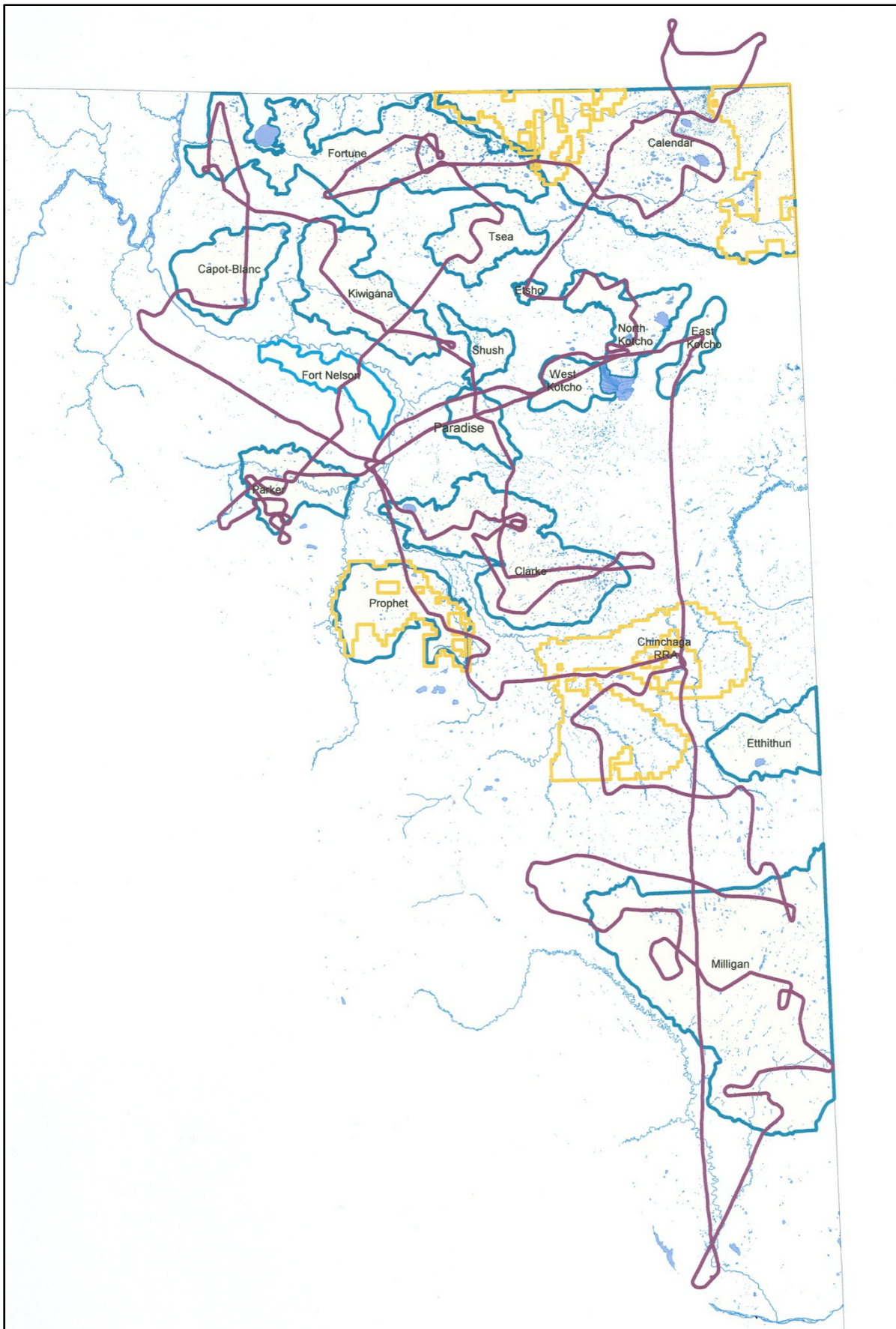


Figure 1. Flight paths flown during the June 7-8, 2014 SCEK fixed-wing boreal caribou and wolf telemetry monitoring flight.