

DIVERSIFIED ENVIRONMENTAL SERVICES

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SCIENCE AND COMMUNITY ENVIRONMENTAL KNOWLEDGE FUND BOREAL CARIBOU TELEMETRY PROGRAM

FIXED-WING TELEMETRY MONITORING FLIGHT – Jan 19-21, 2015

Date: Jan 23, 2015

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

Executive Summary

One hundred fifty-seven boreal caribou collar frequencies and 17 wolf collar frequencies were scanned during a monthly fixed-wing telemetry monitoring flight conducted on January 19-21, 2015. One hundred forty-five caribou collars were heard transmitting normal VHF signals, 1 was transmitting a false mortality signal and 8 caribou collars were transmitting VHF signal patterns indicating their release mechanisms had attempted to activate on low voltage conditions. No caribou mortality indications were detected. The remaining 3 caribou collars are believed to have failed and were not detected. No wolf mortality signals were detected, although most GPS wolf collars are presumed to have reached the end of their battery lives.

Background

Between December 17, 2012 and December 12, 2014, 217 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 January 19-21, 2015, 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 January 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-seven caribou collar frequencies were scanned during the January 2015 monitoring flight, including 152 SCEK collars (20 ATS Iridium, 46 Vectronic Vertex, 12 Lotek LifeCycle, and 74 Lotek VHF), 2 Alberta VHF collars, and 3 previously-deployed MFLNRO VHF collars. In addition, 17 wolf collar frequencies were scanned during the January flight (13 Lotek Iridium and 4 Lotek VHF).

Results of the January 19-21, 2015 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 2,592 km. Of 157 caribou collar frequencies scanned, 145 normal VHF signals and one false mortality signal were detected (Prophet Vectronic SCEK143; GPS data indicated the animal was still moving normally). In addition, 8 ATS Iridium collars nearing the end of their battery lives were transmitting VHF signal patterns indicating their release mechanisms had attempted to activate on low voltage conditions. Diagnostic VHF signal patterns suggested that the releases had activated successfully on 7 of the 8 collars but that only one had actually detached from the animal (Milligan ATS Iridium SCEK038). The 8th collar release appeared to have attempted to activate but failed.

The remaining 3 caribou collars were not detected during the January 2015 flight. All 3 are ATS Iridium collars that are believed to have failed and are no longer trackable (Milligan ATS Iridium SCEK042 - failed in May 2013; Calendar ATS Iridium SCEK184 - no data received since September 2014; and Calendar ATS Iridium SCEK114 - no data received since November 2014). No caribou mortality indications were detected during the flight.

Seventeen wolf collar frequencies were scanned during the January 2015 monitoring flight, including 13 Lotek Iridium and 4 Lotek VHF. Of the 13 GPS/satellite wolf collars scanned, 3 had normal VHF beacon function and the remaining 10 were not detected. Of these 10, two had previously dispersed to the Northwest Territories beyond VHF range (Snake Pack BW010 and BW028) and the remaining 8 have ceased GPS data transmission and are assumed to have exceeded their battery life.

Of the 4 VHF wolf collars scanned, 2 had normal VHF signals, a third is assumed to have failed or the wolf dispersed soon after deployment in 2013 (BW007; Snake Pack), and the fourth is assumed operational but could not be detected (BW001; Tsimih Pack).

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

Cordially,



Brad Culling, R.P.Bio
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Table 1. VHF signal status and location of boreal caribou and wolf collars detected during the Jan 19-21, 2015 SCEK fixed-wing telemetry monitoring flight.

ID	Species	Range	Core	Collar Type	Status	Date	Zone	East	North	Comments
SCEK114	Caribou	Calendar	Calendar	ATS-Irid	not heard	21-Jan-15	n/a	n/a	n/a	No VHF; last data Nov 27 14
SCEK184	Caribou	Calendar	Calendar	ATS-Irid	not heard	21-Jan-15	n/a	n/a	n/a	No VHF; last data Sep 23 14
SCEK185	Caribou	Calendar	Calendar	Lotek-Lifecycle	50 ppm	20-Jan-15	10	587408	6638355	normal
SCEK183	Caribou	Calendar	Calendar	Vectr-VertexTD	42 ppm	21-Jan-15	10	640083	6610129	normal
SCEK180	Caribou	Calendar	Calendar	Vectr-VertexTD	42 ppm	21-Jan-15	10	641318	6610504	normal
SCEK136	Caribou	Calendar	Calendar	ATS-Irid	50 ppm; double 6th	21-Jan-15	10	623306	6615958	normal
SCEK181	Caribou	Calendar	Calendar	ATS-Irid	50 ppm; double 6th	21-Jan-15	10	616091	6610221	normal
SCEK135	Caribou	Calendar	Calendar	Vectr-Vertex	50 ppm	21-Jan-15	10	625090	6577705	normal
SCEK119	Caribou	Calendar	Calendar	Vectr-Vertex	50 ppm	21-Jan-15	10	612670	6636690	normal
SCEK146b	Caribou	Calendar	Calendar	Vectr-VertexTD	42 ppm	21-Jan-15	10	654757	6608533	normal
SCEK123	Caribou	Calendar	Calendar	Lotek-VHF	60 ppm	21-Jan-15	10	639465	6614952	normal
SCEK122	Caribou	Calendar	Calendar	Lotek-VHF	60 ppm	20-Jan-15	10	635501	6656278	normal
SCEK138	Caribou	Calendar	Calendar	Lotek-VHF	60 ppm	21-Jan-15	10	639400	6618963	normal
SCEK137	Caribou	Calendar	Calendar	Lotek-VHF	60 ppm	21-Jan-15	10	633164	6622945	normal
SCEK120	Caribou	Calendar	Calendar	Lotek-VHF	60 ppm	21-Jan-15	10	627316	6618655	normal
SCEK134	Caribou	Calendar	Calendar	Lotek-VHF	60 ppm	21-Jan-15	10	644696	6624508	normal
SCEK112	Caribou	Calendar	Calendar	Lotek-VHF	60 ppm	21-Jan-15	10	642699	6608603	normal
SCEK113	Caribou	Calendar	Calendar	Lotek-VHF	60 ppm	21-Jan-15	10	615369	6609585	normal
SCEK125	Caribou	Calendar	Calendar	Lotek-VHF	60 ppm	20-Jan-15	10	653421	6687871	normal
SCEK126	Caribou	Calendar	RRA-C	ATS-Irid	30 ppm; double 3rd	20-Jan-15	10	588488	6636866	release activated but collar moving
SCEK108	Caribou	Calendar	RRA-D	Lotek-VHF	60 ppm	21-Jan-15	10	625549	6610146	normal
SCEK107	Caribou	Calendar	RRA-D	Lotek-VHF	60 ppm	20-Jan-15	10	633446	6655015	normal
SCEK195	Caribou	Chinchaga	Etthithun	Vectr-VertexTD	42 ppm	19-Jan-15	10	651386	6403911	normal
SCEK036	Caribou	Chinchaga	Milligan	ATS-Irid	50 ppm; double 6th	21-Jan-15	10	618790	6357411	normal
SCEK038	Caribou	Chinchaga	Milligan	ATS-Irid	30 ppm	19-Jan-15	10	661007	6299352	release activated and collar detached
SCEK026	Caribou	Chinchaga	Milligan	ATS-Irid	30 ppm; double 3rd	19-Jan-15	10	656705	6289490	release activated but collar moving
SCEK033	Caribou	Chinchaga	Milligan	ATS-Irid	50 ppm; double 6th	19-Jan-15	10	655701	6307191	normal
SCEK199	Caribou	Chinchaga	Milligan	Vectr-VertexTD	42 ppm	21-Jan-15	10	620928	6343453	normal
SCEK198	Caribou	Chinchaga	Milligan	Vectr-VertexTD	42 ppm	19-Jan-15	10	638444	6356054	normal
SCEK196	Caribou	Chinchaga	Milligan	Vectr-VertexTD	42 ppm	19-Jan-15	10	638232	6351484	normal
SCEK042	Caribou	Chinchaga	Milligan	ATS-Irid	missing; not heard	19-Jan-15	n/a	n/a	n/a	failed Iridium and VHF functions
SCEK201	Caribou	Chinchaga	Milligan	Vectr-VertexTD	42 ppm	19-Jan-15	10	657949	6286016	normal
SCEK197	Caribou	Chinchaga	Milligan	Lotek-Lifecycle	50 ppm	19-Jan-15	10	648475	6330585	normal
AB149.391	Caribou	Chinchaga	Milligan	unknown	60 ppm	19-Jan-15	10	676105	6356343	normal
SCEK040	Caribou	Chinchaga	Milligan	Vectr-Vertex	50 ppm	19-Jan-15	10	654938	6400671	normal
SCEK034	Caribou	Chinchaga	Milligan	Vectr-Vertex	50 ppm	19-Jan-15	10	644738	6334015	normal
SCEK055	Caribou	Chinchaga	Milligan	Vectr-Vertex	50 ppm	19-Jan-15	10	645995	6336343	normal
AB150.470	Caribou	Chinchaga	Milligan	unknown	60 ppm	19-Jan-15	10	651791	6321594	normal
SCEK035	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	19-Jan-15	10	626097	6353125	normal
SCEK041	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	19-Jan-15	10	648399	6333841	normal
SCEK027	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	19-Jan-15	10	655839	6289893	normal
SCEK032	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	19-Jan-15	10	653156	6352127	normal
SCEK029	Caribou	Chinchaga	Milligan	Lotek-VHF	61 ppm	19-Jan-15	10	649073	6326787	normal
SCEK052	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	19-Jan-15	10	653457	6310823	normal
SCEK053	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	19-Jan-15	10	642294	6354912	normal
SCEK030	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	19-Jan-15	10	635575	6352429	normal
SCEK058	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	19-Jan-15	10	650792	6357363	normal
SCEK054	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	19-Jan-15	10	650907	6321542	normal
SCEK057	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	19-Jan-15	10	653536	6321129	normal
SCEK059	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	19-Jan-15	10	639711	6351641	normal

Table 1 cont. VHF signal status and location of boreal caribou and wolf collars detected during the Jan 19-21, 2015 SCEK fixed-wing telemetry monitoring flight.

ID	Species	Range	Core	Collar Type	Status	Date	Zone	East	North	Comments
SCEK061	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	19-Jan-15	10	649596	6331373	normal
SCEK060	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	21-Jan-15	10	619294	6359617	normal
SCEK171	Caribou	Chinchaga	RRA-A	Vectr-VertexTD	42 ppm	20-Jan-15	10	637251	6439845	normal
SCEK142	Caribou	Chinchaga	RRA-A	Vectr-Vertex	50 ppm	20-Jan-15	10	619322	6460715	normal
SCEK189	Caribou	Chinchaga	RRA-A	Vectr-VertexTD	42 ppm	20-Jan-15	10	617915	6461124	normal
SCEK170	Caribou	Chinchaga	RRA-A	ATS-Irid	50 ppm; double 6th	20-Jan-15	10	616607	6460282	normal
SCEK213	Caribou	Chinchaga	RRA-A	Vectr-VertexTD	42 ppm	20-Jan-15	10	636584	6435233	normal
SCEK215	Caribou	Chinchaga	RRA-A	Vectr-VertexTD	42 ppm	20-Jan-15	10	594325	6450165	normal
SCEK048	Caribou	Chinchaga	RRA-A	Lotek-VHF	60 ppm	20-Jan-15	10	593375	6450352	normal
SCEK216	Caribou	Chinchaga	RRA-A	Vectr-VertexTD	42 ppm	20-Jan-15	10	639237	6436600	normal
SCEK172	Caribou	Chinchaga	RRA-A	Lotek-Lifecycle	50 ppm	20-Jan-15	10	632405	6430902	normal
SCEK214	Caribou	Chinchaga	RRA-A	Vectr-VertexTD	42 ppm	20-Jan-15	10	635877	6436980	normal
SCEK009	Caribou	Fort Nelson	Fort Nelson	ATS-Irid	30 ppm; double 3rd	20-Jan-15	10	502184	6550141	release activated but collar moving
SCEK166	Caribou	Fort Nelson	Fort Nelson	Vectr-VertexTD	42 ppm	20-Jan-15	10	515004	6550000	normal
SCEK167	Caribou	Fort Nelson	Fort Nelson	Lotek-Lifecycle	50 ppm	20-Jan-15	10	514504	6549999	normal
BC1014	Caribou	Maxhamish	Capot-Blanc	Lotek-VHF	60 ppm	20-Jan-15	10	471863	6578867	normal
SCEK007	Caribou	Maxhamish	Capot-Blanc	ATS-Irid	30 ppm; double 3rd	20-Jan-15	10	472019	6577019	release activated but collar moving
SCEK001	Caribou	Maxhamish	Capot-Blanc	Lotek-VHF	60 ppm	20-Jan-15	10	480875	6583944	normal
SCEK076	Caribou	Maxhamish	Capot-Blanc	Lotek-VHF	60 ppm	20-Jan-15	10	475597	6576739	normal
SCEK066	Caribou	Maxhamish	Capot-Blanc	Lotek-VHF	60 ppm	20-Jan-15	10	477351	6576749	normal
BC1033	Caribou	Maxhamish	Fortune	Lotek-VHF	60 ppm	20-Jan-15	10	534446	6623169	normal
SCEK178	Caribou	Maxhamish	Fortune	Vectr-VertexTD	42 ppm	20-Jan-15	10	550379	6609230	normal
SCEK085	Caribou	Maxhamish	Fortune	Vectr-Vertex	50 ppm	20-Jan-15	10	547927	6609461	normal
SCEK005b	Caribou	Maxhamish	Fortune	Vectr-VertexTD	42 ppm	20-Jan-15	10	538412	6617990	normal
SCEK177	Caribou	Maxhamish	Fortune	Vectr-VertexTD	42 ppm	20-Jan-15	10	530649	6632360	normal
SCEK208	Caribou	Maxhamish	Fortune	Vectr-VertexTD	42 ppm	20-Jan-15	10	483675	6626576	normal
SCEK175	Caribou	Maxhamish	Fortune	Lotek-Lifecycle	50 ppm	20-Jan-15	10	550536	6608388	normal
SCEK205	Caribou	Maxhamish	Fortune	Vectr-VertexTD	42 ppm	20-Jan-15	10	536914	6620391	normal
SCEK207	Caribou	Maxhamish	Fortune	Vectr-VertexTD	42 ppm	20-Jan-15	10	537524	6622131	normal
SCEK179	Caribou	Maxhamish	Fortune	Lotek-Lifecycle	50 ppm	20-Jan-15	10	563010	6602323	normal
SCEK176	Caribou	Maxhamish	Fortune	Lotek-Lifecycle	50 ppm	20-Jan-15	10	483030	6626315	normal
SCEK164	Caribou	Maxhamish	Fortune	Lotek-VHF	60 ppm	20-Jan-15	10	532969	6630558	normal
SCEK078	Caribou	Maxhamish	Fortune	Lotek-VHF	60 ppm	20-Jan-15	10	474627	6628028	normal
SCEK128	Caribou	Maxhamish	Fortune	Lotek-VHF	60 ppm	20-Jan-15	10	525502	6634140	normal
SCEK086	Caribou	Maxhamish	Fortune	Lotek-VHF	60 ppm	20-Jan-15	10	561546	6612316	normal
SCEK206	Caribou	Maxhamish	Fortune	Vectr-VertexTD	42 ppm	20-Jan-15	10	536684	6621397	normal
SCEK129	Caribou	Maxhamish	Fortune	Lotek-VHF	60 ppm	20-Jan-15	10	542797	6627159	normal
SCEK087	Caribou	Maxhamish	Fortune	Lotek-VHF	60 ppm	20-Jan-15	10	537710	6616754	normal
SCEK168	Caribou	Maxhamish	Kiwigana	Vectr-VertexTD	42 ppm	20-Jan-15	10	540987	6567587	normal
SCEK169	Caribou	Maxhamish	Kiwigana	ATS-Irid	50 ppm; double 6th	20-Jan-15	10	511526	6572745	normal
SCEK211	Caribou	Maxhamish	Kiwigana	Vectr-VertexTD	42 ppm	20-Jan-15	10	529765	6573740	normal
SCEK064	Caribou	Maxhamish	Kiwigana	Lotek-VHF	60 ppm	20-Jan-15	10	518791	6565588	normal
SCEK062	Caribou	Maxhamish	Kiwigana	Lotek-VHF	60 ppm	20-Jan-15	10	522643	6566489	normal
SCEK210	Caribou	Maxhamish	Kiwigana	Vectr-VertexTD	42 ppm	20-Jan-15	10	525674	6568608	normal
SCEK004	Caribou	Maxhamish	Kiwigana	Lotek-VHF	60 ppm	20-Jan-15	10	474552	6626220	normal
BC1009	Caribou	Maxhamish	Kiwigana	Lotek-VHF	60 ppm	20-Jan-15	n/a	526890	6567664	normal
SCEK016	Caribou	Parker	Parker	ATS-Irid	27 ppm; double 3rd	20-Jan-15	10	498775	6518703	release activated but collar moving
SCEK014	Caribou	Parker	Parker	ATS-Irid	27 ppm; double	20-Jan-15	10	493653	6524273	release activated but failed
SCEK194	Caribou	Parker	Parker	Vectr-VertexTD	42 ppm	20-Jan-15	10	492293	6520357	normal
SCEK010	Caribou	Parker	Parker	Lotek-VHF	60 ppm	20-Jan-15	10	494401	6522395	normal

Table 1 cont. VHF signal status and location of boreal caribou and wolf collars detected during the Jan 19-21, 2015 SCEK fixed-wing telemetry monitoring flight.

ID	Species	Range	Core	Collar Type	Status	Date	Zone	East	North	Comments
SCEK012	Caribou	Parker	Parker	Lotek-VHF	60 ppm	20-Jan-15	10	497395	6520317	normal
SCEK015	Caribou	Parker	Parker	Lotek-VHF	60 ppm	20-Jan-15	10	494829	6521231	normal
SCEK161	Caribou	Prophet	Prophet	ATS-Irid	50 ppm; no double 6th	20-Jan-15	10	553110	6459738	normal
SCEK143	Caribou	Prophet	Prophet	Vectr-Vertex	100 ppm	20-Jan-15	10	570302	6422213	false mortality
SCEK144	Caribou	Prophet	Prophet	Lotek-VHF	60 ppm	20-Jan-15	10	557040	6462127	normal
SCEK217	Caribou	Prophet	Prophet	Vectr-VertexTD	42 ppm	20-Jan-15	10	559370	6464461	normal
SCEK051	Caribou	Prophet	Prophet	Lotek-VHF	60 ppm	20-Jan-15	10	558879	6465852	normal
SCEK049	Caribou	Prophet	Prophet	Lotek-VHF	60 ppm	20-Jan-15	10	566472	6443528	normal
SCEK045	Caribou	Prophet	Prophet	Lotek-VHF	60 ppm	20-Jan-15	10	560953	6449572	normal
SCEK020	Caribou	Snake-Sahtaneh	Clarke	ATS-Irid	50 ppm; no double 6th	20-Jan-15	10	601220	6475052	normal
SCEK193	Caribou	Snake-Sahtaneh	Clarke	Vectr-VertexTD	42 ppm	20-Jan-15	10	552915	6492625	normal
SCEK212	Caribou	Snake-Sahtaneh	Clarke	Vectr-VertexTD	42 ppm	20-Jan-15	10	557719	6501658	normal
SCEK192	Caribou	Snake-Sahtaneh	Clarke	Lotek-Lifecycle	50 ppm	20-Jan-15	10	604026	6486303	normal
SCEK191	Caribou	Snake-Sahtaneh	Clarke	Lotek-Lifecycle	50 ppm	20-Jan-15	10	598388	6480102	normal
SCEK145	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	20-Jan-15	10	554612	6505588	normal
SCEK068	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	20-Jan-15	10	549416	6498325	normal
SCEK150	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	20-Jan-15	10	602558	6481235	normal
SCEK148	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	20-Jan-15	10	603068	6485693	normal
SCEK153	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	20-Jan-15	10	551999	6501723	normal
SCEK152	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	20-Jan-15	10	585487	6489189	normal
SCEK019	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	20-Jan-15	10	568951	6498021	normal
SCEK021	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	20-Jan-15	10	555273	6504081	normal
SCEK025	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	20-Jan-15	10	554818	6491881	normal
SCEK024	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	20-Jan-15	10	558743	6502464	normal
SCEK149	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	20-Jan-15	10	577067	6502228	normal
SCEK156	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	20-Jan-15	10	560132	6502497	normal
SCEK157	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	20-Jan-15	10	553808	6493782	normal
SCEK070	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	20-Jan-15	10	575890	6500913	normal
SCEK110b	Caribou	Snake-Sahtaneh	East Kotcho	Lotek-Lifecycle	50 ppm	21-Jan-15	10	631109	6558343	normal
SCEK103	Caribou	Snake-Sahtaneh	East Kotcho	Lotek-VHF	60 ppm	21-Jan-15	10	630078	6554647	normal
SCEK102	Caribou	Snake-Sahtaneh	East Kotcho	Lotek-VHF	60 ppm	21-Jan-15	10	630792	6557207	normal
SCEK105	Caribou	Snake-Sahtaneh	East Kotcho	Lotek-VHF	60 ppm	21-Jan-15	10	632403	6565925	normal
SCEK182	Caribou	Snake-Sahtaneh	North Kotcho	Vectr-VertexTD	42 ppm	21-Jan-15	10	628809	6581227	normal
SCEK188	Caribou	Snake-Sahtaneh	North Kotcho	Vectr-VertexTD	42 ppm	21-Jan-15	10	606164	6567580	normal
SCEK186	Caribou	Snake-Sahtaneh	North Kotcho	Vectr-VertexTD	42 ppm	21-Jan-15	10	603573	6578342	normal
SCEK204	Caribou	Snake-Sahtaneh	North Kotcho	Lotek-Lifecycle	50 ppm	21-Jan-15	10	630923	6562984	normal
SCEK097b	Caribou	Snake-Sahtaneh	North Kotcho	Vectr-VertexTD	42 ppm	21-Jan-15	10	610953	6559576	normal
SCEK187	Caribou	Snake-Sahtaneh	North Kotcho	Lotek-Lifecycle	50 ppm	21-Jan-15	10	631569	6561167	normal
SCEK111	Caribou	Snake-Sahtaneh	North Kotcho	Vectr-Vertex	50 ppm	21-Jan-15	10	609907	6555777	normal
SCEK100b	Caribou	Snake-Sahtaneh	North Kotcho	Vectr-VertexTD	42 ppm	21-Jan-15	10	611445	6556453	normal
SCEK089	Caribou	Snake-Sahtaneh	North Kotcho	Lotek-VHF	60 ppm	21-Jan-15	10	632327	6559967	normal
SCEK088	Caribou	Snake-Sahtaneh	North Kotcho	Lotek-VHF	60 ppm	21-Jan-15	10	631549	6568379	normal
SCEK090	Caribou	Snake-Sahtaneh	North Kotcho	Lotek-VHF	60 ppm	21-Jan-15	10	616798	6560386	normal
SCEK092	Caribou	Snake-Sahtaneh	North Kotcho	Lotek-VHF	60 ppm	21-Jan-15	10	628590	6582155	normal
SCEK096	Caribou	Snake-Sahtaneh	Paradise	Lotek-VHF	60 ppm	21-Jan-15	10	628007	6553251	normal
SCEK203	Caribou	Snake-Sahtaneh	Tsea	Vectr-VertexTD	42 ppm	20-Jan-15	10	560463	6606813	normal
SCEK079	Caribou	Snake-Sahtaneh	Tsea	ATS-Irid	27 ppm; double 3rd	20-Jan-15	10	548791	6609103	release activated but collar moving
SCEK131	Caribou	Snake-Sahtaneh	Tsea	Lotek-VHF	60 ppm	20-Jan-15	10	552544	6606010	normal
SCEK081	Caribou	Snake-Sahtaneh	Tsea	Lotek-VHF	60 ppm	20-Jan-15	10	553598	6604336	normal
SCEK132	Caribou	Snake-Sahtaneh	Tsea	Lotek-VHF	60 ppm	20-Jan-15	10	554163	6598913	normal

Table 1 cont. VHF signal status and location of boreal caribou and wolf collars detected during the Jan 19-21, 2015 SCEK fixed-wing telemetry monitoring flight.

ID	Species	Range	Core	Collar Type	Status	Date	Zone	East	North	Comments
SCEK082	Caribou	Snake-Sahtaneh	Tsea	Lotek-VHF	60 ppm	20-Jan-15	10	563134	6606028	normal
SCEK127	Caribou	Snake-Sahtaneh	Tsea	Lotek-VHF	60 ppm	20-Jan-15	10	561584	6606600	normal
SCEK173	Caribou	Snake-Sahtaneh	West Kotcho	ATS-Irid	50 ppm; no double 6th	21-Jan-15	10	633112	6573224	normal
SCEK071	Caribou	Snake-Sahtaneh	West Kotcho	Vectr-Vertex	50 ppm	21-Jan-15	10	609138	6555870	normal
SCEK209	Caribou	Snake-Sahtaneh	West Kotcho	Vectr-VertexTD	42 ppm	21-Jan-15	10	589267	6550442	normal
SCEK091	Caribou	Snake-Sahtaneh	West Kotcho	Lotek-VHF	60 ppm	21-Jan-15	10	624305	6573771	normal
SCEK073	Caribou	Snake-Sahtaneh	West Kotcho	Lotek-VHF	60 ppm	21-Jan-15	10	592210	6550359	normal
BW002	Wolf	Chinchaga	Big Arrow	Lotek-VHF	not heard	19-Jan-15	n/a	627529	6324304	normal
BW011	Wolf	Chinchaga	Big Arrow	Lotek-Irid	not heard	19-Jan-15	n/a	n/a	n/a	VHF not detected; no data since deployment
BW012	Wolf	Chinchaga	Big Arrow	Lotek-Irid	not heard	19-Jan-15	n/a	n/a	n/a	VHF failed; last data Nov 21, 14
BW008	Wolf	Fort Nelson	Tsimeh	Lotek-Irid	not heard	20-Jan-15	n/a	n/a	n/a	VHF not detected; last data Aug 07 14
BW001	Wolf	Fort Nelson	Tsimeh	Lotek-VHF	not heard	20-Jan-15	n/a	n/a	n/a	VHF not detected
BW009	Wolf	Fort Nelson	Tsimeh	Lotek-Irid	not heard	20-Jan-15	n/a	n/a	n/a	VHF not detected; last data Sep 27 14
BW014	Wolf	Fort Nelson	Tsimeh	Lotek-Irid	50 ppm	20-Jan-15	10	525740	6548445	normal
BW019	Wolf	Parker	Parker	Lotek-Irid	not heard	20-Jan-15	n/a	n/a	n/a	VHF not detected; last data Jun 25 14.
BW021	Wolf	Snake-Sahtaneh	Clarke	Lotek-Irid	not heard	20-Jan-15	n/a	n/a	n/a	VHF not detected; last data Jun 30 14.
BW030	Wolf	Snake-Sahtaneh	Clarke	Lotek-Irid	50 ppm	20-Jan-15	10	510886	6526827	normal
BW017	Wolf	Snake-Sahtaneh	Elleh	Lotek-Irid	not heard	20-Jan-15	n/a	n/a	n/a	VHF not detected; last data Oct 17, 13.
BW024	Wolf	Snake-Sahtaneh	Kwokullie	Lotek-Irid	50 ppm	21-Jan-15	10	627889	6580031	normal
BW026	Wolf	Snake-Sahtaneh	Kwokullie	Lotek-VHF	60 ppm	21-Jan-15	10	627889	6580031	normal
BW007	Wolf	Snake-Sahtaneh	Snake	Lotek-VHF	not heard	20-Jan-15	n/a	n/a	n/a	not detected; missing since deployment
BW010	Wolf	Snake-Sahtaneh	Snake	Lotek-Irid	not heard	20-Jan-15	n/a	n/a	n/a	dispersal to NWT; last data Aug 15 14
BW027	Wolf	Snake-Sahtaneh	Snake	Lotek-Irid	not heard	20-Jan-15	n/a	n/a	n/a	VHF not detected; last data Jan 09, 14
BW028	Wolf	Snake-Sahtaneh	Snake	Lotek-Irid	not heard	20-Jan-15	n/a	n/a	n/a	dispersal to NT; no movement since Sep 06 14

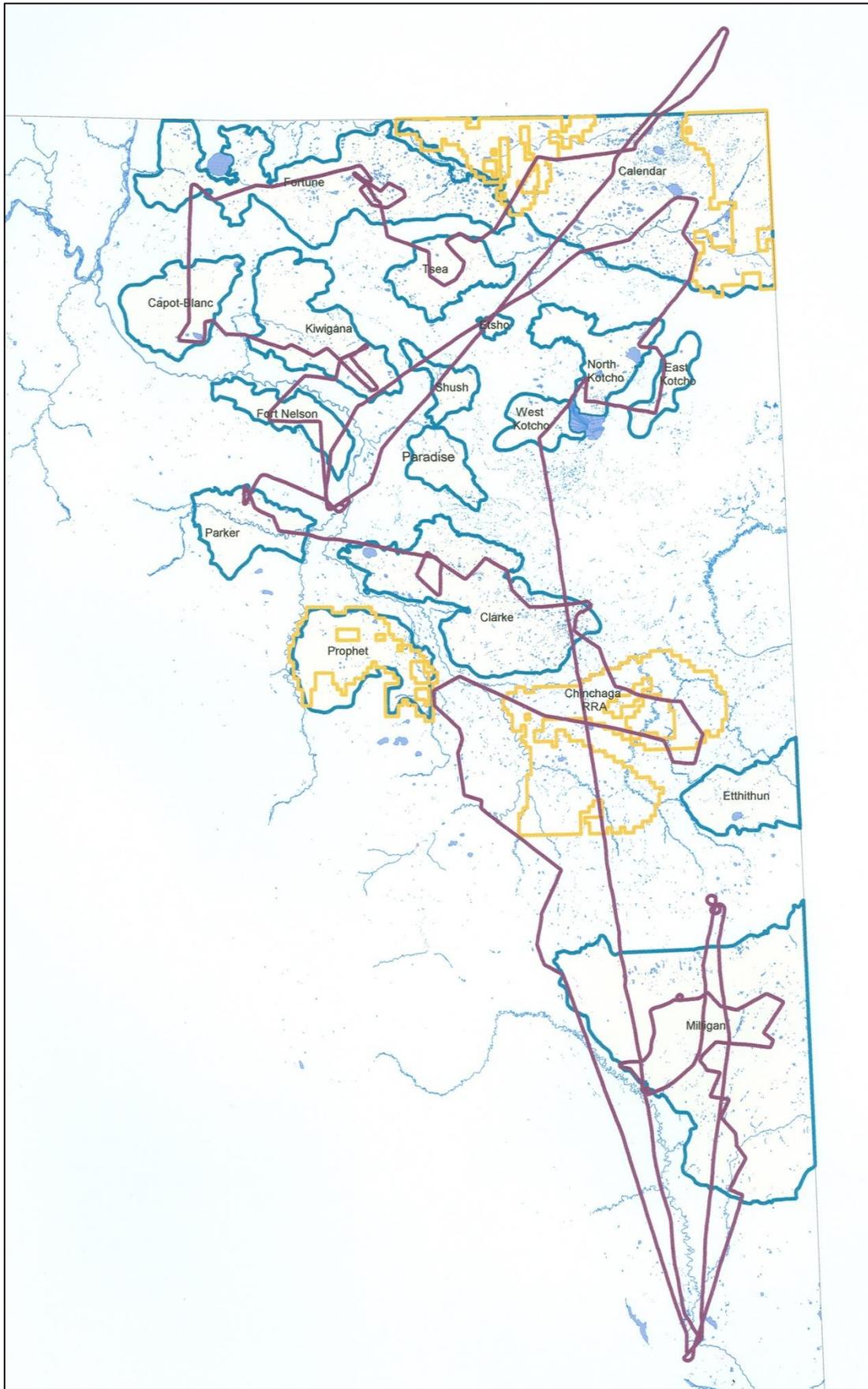


Figure 1. Flight paths flown during the Jan 19-21, 2015 SCEK boreal caribou and wolf telemetry monitoring flight.