

DIVERSIFIED ENVIRONMENTAL SERVICES

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BC OIL AND GAS RESEARCH AND INNOVATION SOCIETY BOREAL CARIBOU TELEMETRY PROGRAM

FIXED-WING TELEMETRY MONITORING FLIGHT – OCTOBER 20-21, 2015

Date: October 31, 2015

Attention: Brian Thomson
BC Oil and Gas Research and Innovation Society
Victoria, BC

Executive Summary

One hundred forty-five boreal caribou collar frequencies and 27 wolf collar frequencies were scanned during a monthly fixed-wing telemetry monitoring flight conducted on October 20-21, 2015. One hundred forty caribou collars were heard transmitting normal VHF signals; no mortality signals were detected. The remaining 5 caribou collars were not detected. These included: 1 SCEK ATS Iridium collar that has ceased Iridium data transmission and is believed to have failed (Calendar SCEK184), 1 VHF collar deployed by the Ministry of Forests, Lands, and Natural Resource Operations (MFLNRO) whose battery is assumed to have expired after 7 years of activity (Kiwigana BC1009), 1 SCEK GPS collar whose GPS data transmissions indicated normal activity in the Tuchodi River drainage to the west of boreal caribou range (Parker SCEK014B), 1 SCEK VHF collar assumed active but believed to be north of the search area in the Northwest Territories (Calendar SCEK125), and 1 SCEK Vectronic GPS collar whose VHF beacon appears to be non-functional but whose GPS data transmissions indicated normal activity within the search area (Chinchaga RRA SCEK216). No wolf mortality signals were detected.

One caribou mortality indication was received via satellite data following completion of the monitoring flight (Tsea LifeCycle SCEK203).

Background

Between December 17, 2012 and April 01, 2015, 224 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 October 20-21, 2015, Diversified Environmental Services (DES) conducted a fixed-wing monitoring flight under contract to the BC Oil and Gas Research and Innovation Society (OGRIS; formerly 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, as well as to track potential long distance seasonal movements of VHF-collared caribou.

Objectives

The objective of the October 2015 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 and wolf collars deployed on behalf of SCEK, caribou collars deployed on behalf of MFLNRO, wolf collars deployed for a research program funded by Nexen Inc., 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 700-1,200 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 forty-five caribou collar frequencies were scanned during the October 20-21, 2015 monitoring flight, including 141 SCEK collars (5 ATS Iridium, 59 Vectronic Vertex, 10 Lotek LifeCycle, and 67 Lotek VHF), 3 previously-deployed MFLNRO VHF collars, and 1 Alberta VHF collar. In addition, 27 wolf collar frequencies were scanned during the October flight, including 20 SCEK wolf collars (12 Lotek Iridium, 1 Vectronic Vertex, and 7 Lotek VHF) and 7 University of Alberta/Nexen collars (Lotek Iridium). Several SCEK Iridium wolf collars assumed to have exceeded their battery lives were not scanned.

Results of the October 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 2,181 km. Of 145 caribou collar frequencies scanned, 140 normal VHF signals were heard; no mortality signals were detected. The VHF beacons of the remaining 5 caribou collars were not detected. These included 1 SCEK ATS Iridium collar that has ceased Iridium data transmission and is believed to have failed (Calendar SCEK184), 1 MFLNRO VHF collar whose battery is assumed to have expired after 7 years of activity (Kiwigana BC1009), 1 SCEK GPS collar whose GPS data transmissions indicated normal activity in the Tuchodi River drainage to the west of boreal caribou range (Parker SCEK014B), 1 SCEK VHF collar assumed active but believed to be north of the search area in the Northwest Territories (Calendar SCEK125), and 1 SCEK Vectronic GPS collars whose VHF beacon appears to be non-functional but whose GPS data transmissions indicated normal activity within the search area (Chinchaga RRA SCEK216).

One caribou mortality indication was received via satellite data shortly after completion of the October monitoring flight (Tsea LifeCycle SCEK203). Due to weather, the mortality investigation could not be conducted until early November.

Twenty-seven wolf collar frequencies were scanned during the October 2015 monitoring flight, including 20 Lotek and Vectronic GPS/satellite collars and 7 Lotek VHF collars. No mortalities were detected. Of the 20 GPS/satellite wolf collars scanned, 11 normal VHF signals were heard, 4 were not detected but were transmitting GPS data indicating normal activity, and 5 were not detected and had not transmitted recent GPS data.

Of the 7 VHF wolf collars scanned, 4 had normal VHF signals, 1 is assumed to have failed or the wolf dispersed soon after deployment in 2013 (BW007, Snake Pack), and the remaining 2 collars are assumed functional but were not detected.

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 October 20-21, 2015 OGRIS fixed-wing telemetry monitoring flight.

ID	Species	Range	Core	Collar Type	Status	Freq	Date	Zone	East	North	Comments
SCEK112	Caribou	Calendar	Calendar	Lotek VHF	60 ppm	151.010	10/21/2015	10	639548	6643253	normal
SCEK113	Caribou	Calendar	Calendar	Lotek VHF	60 ppm	151.030	10/21/2015	10	629613	6617615	normal
SCEK119	Caribou	Calendar	Calendar	Vectr-Vertex	42 ppm	149.850	10/21/2015	10	608040	6639836	normal
SCEK120	Caribou	Calendar	Calendar	Lotek VHF	60 ppm	150.569	10/21/2015	10	614869	6641464	normal
SCEK122	Caribou	Calendar	Calendar	Lotek VHF	60 ppm	150.069	10/21/2015	10	632436	6648035	normal
SCEK123	Caribou	Calendar	Calendar	Lotek VHF	60 ppm	150.059	10/21/2015	10	615587	6634922	normal
SCEK125	Caribou	Calendar	Calendar	Lotek VHF	not heard	151.790	10/21/2015	n/a	n/a	n/a	VHF signal not detected
SCEK134	Caribou	Calendar	Calendar	Lotek VHF	60 ppm	150.880	10/21/2015	10	632657	6645012	normal
SCEK135	Caribou	Calendar	Calendar	Vectr-Vertex	42 ppm	149.600	10/21/2015	10	640897	6644396	normal
SCEK136b	Caribou	Calendar	Calendar	Vectr-VertexTD	42 ppm	153.320	10/21/2015	10	624926	6620259	normal
SCEK137	Caribou	Calendar	Calendar	Lotek VHF	60 ppm	150.369	10/21/2015	10	639676	6636688	normal
SCEK146b	Caribou	Calendar	Calendar	Vectr-VertexTD	42 ppm	149.970	10/21/2015	10	612732	6636528	normal
SCEK180	Caribou	Calendar	Calendar	Vectr-VertexTD	42 ppm	148.970	10/21/2015	10	630696	6621923	normal
SCEK181	Caribou	Calendar	Calendar	ATS-Irid	50 ppm; double 6th	149.565	10/21/2015	10	630094	6621154	normal
SCEK183	Caribou	Calendar	Calendar	Vectr-VertexTD	42 ppm	148.640	10/21/2015	10	612710	6636509	normal
SCEK184	Caribou	Calendar	Calendar	ATS-Irid	not heard	148.394	10/21/2015	n/a	n/a	n/a	failed; last data Sep 23 14
SCEK185	Caribou	Calendar	Calendar	Lotek-Lifecycle	50 ppm	148.440	10/21/2015	10	607836	6643404	normal
SCEK126b	Caribou	Calendar	RRA-C	Vectr-VertexTD	42 ppm	153.740	10/21/2015	10	608218	6639183	normal
SCEK107	Caribou	Calendar	RRA-D	Lotek VHF	60 ppm	150.090	10/21/2015	10	633548	6642587	normal
SCEK108	Caribou	Calendar	RRA-D	Lotek VHF	60 ppm	150.020	10/21/2015	10	636467	6643935	normal
SCEK195	Caribou	Chinchaga	Etthithun	Vectr-VertexTD	42 ppm	148.740	10/20/2015	10	652367	6408695	normal
SCEK224	Caribou	Chinchaga	Etthithun	Vectr-VertexTD	42 ppm	148.760	10/20/2015	10	655414	6419930	normal
AB149.391	Caribou	Chinchaga	Milligan	unknown	60 ppm	149.391	10/20/2015	10	658784	6337729	normal
SCEK026b	Caribou	Chinchaga	Milligan	Vectr-VertexTD	42 ppm	153.200	10/20/2015	10	637972	6317853	normal
SCEK027	Caribou	Chinchaga	Milligan	Lotek VHF	60 ppm	151.039	10/20/2015	10	660904	6296051	normal
SCEK029	Caribou	Chinchaga	Milligan	Lotek VHF	60 ppm	151.130	10/20/2015	10	673727	6334289	normal
SCEK032	Caribou	Chinchaga	Milligan	Lotek VHF	60 ppm	151.119	10/20/2015	10	666205	6332486	normal
SCEK033b	Caribou	Chinchaga	Milligan	Vectr-VertexTD	42 ppm	149.870	10/20/2015	10	635475	6322150	normal
SCEK034	Caribou	Chinchaga	Milligan	Vectr-Vertex	42 ppm	149.800	10/20/2015	10	661778	6325841	normal
SCEK035	Caribou	Chinchaga	Milligan	Lotek VHF	60 ppm	150.970	10/20/2015	10	638054	6346631	normal
SCEK036b	Caribou	Chinchaga	Milligan	Vectr-VertexTD	42 ppm	153.920	10/20/2015	10	613913	6342302	normal
SCEK040	Caribou	Chinchaga	Milligan	Vectr-Vertex	42 ppm	149.640	10/20/2015	10	657484	6418684	normal
SCEK041	Caribou	Chinchaga	Milligan	Lotek VHF	60 ppm	151.000	10/20/2015	10	657990	6337298	normal
SCEK053	Caribou	Chinchaga	Milligan	Lotek VHF	60 ppm	152.010	10/20/2015	10	628685	6337805	normal
SCEK054	Caribou	Chinchaga	Milligan	Lotek VHF	60 ppm	152.049	10/20/2015	10	659885	6337485	normal
SCEK055	Caribou	Chinchaga	Milligan	Vectr-Vertex	42 ppm	149.900	10/20/2015	10	662497	6316678	normal
SCEK057	Caribou	Chinchaga	Milligan	Lotek VHF	60 ppm	152.059	10/20/2015	10	637131	6323505	normal
SCEK059	Caribou	Chinchaga	Milligan	Lotek VHF	60 ppm	152.070	10/20/2015	10	623343	6333713	normal
SCEK060	Caribou	Chinchaga	Milligan	Lotek VHF	60 ppm	152.100	10/20/2015	10	614960	6365457	normal
SCEK061	Caribou	Chinchaga	Milligan	Lotek VHF	60 ppm	152.080	10/20/2015	10	665690	6326785	normal
SCEK196	Caribou	Chinchaga	Milligan	Vectr-VertexTD	42 ppm	149.005	10/20/2015	10	633804	6348144	normal
SCEK197	Caribou	Chinchaga	Milligan	Lotek-Lifecycle	50 ppm	149.310	10/20/2015	10	636682	6358030	normal
SCEK198	Caribou	Chinchaga	Milligan	Vectr-VertexTD	42 ppm	148.910	10/20/2015	10	652534	6308830	normal
SCEK201	Caribou	Chinchaga	Milligan	Vectr-VertexTD	42 ppm	149.300	10/20/2015	10	659357	6291140	normal
SCEK222	Caribou	Chinchaga	Milligan	Vectr-VertexTD	42 ppm	153.440	10/20/2015	10	659060	6376177	normal
SCEK223	Caribou	Chinchaga	Milligan	Vectr-VertexTD	42 ppm	153.800	10/20/2015	10	639777	6323832	normal
SCEK048	Caribou	Chinchaga	RRA-A	Lotek VHF	60 ppm	151.079	10/20/2015	10	597804	6433682	normal
SCEK142	Caribou	Chinchaga	RRA-A	Vectr-Vertex	42 ppm	148.705	10/20/2015	10	611538	6452804	normal
SCEK170	Caribou	Chinchaga	RRA-A	ATS-Irid	50 ppm; double 6th	149.404	10/20/2015	10	641655	6460540	normal

Table 1 cont. VHF signal status and location of boreal caribou and wolf collars detected during the October 20-21, 2015 OGRIS fixed-wing telemetry monitoring flight.

ID	Species	Range	Core	Collar Type	Status	Freq	Date	Zone	East	North	Comments
SCEK172	Caribou	Chinchaga	RRA-A	Lotek-Lifecycle	50 ppm	151.260	10/20/2015	10	598019	6443503	normal
SCEK189	Caribou	Chinchaga	RRA-A	Vectr-VertexTD	42 ppm	148.750	10/20/2015	10	607575	6454569	normal
SCEK213	Caribou	Chinchaga	RRA-A	Vectr-VertexTD	42 ppm	149.830	10/20/2015	10	605416	6450436	normal
SCEK214	Caribou	Chinchaga	RRA-A	Vectr-VertexTD	42 ppm	151.280	10/20/2015	10	619139	6438696	normal
SCEK215	Caribou	Chinchaga	RRA-A	Vectr-VertexTD	42 ppm	149.880	10/20/2015	10	614373	6448729	normal
SCEK216	Caribou	Chinchaga	RRA-A	Vectr-VertexTD	not heard	151.140	10/20/2015	10	619225	6439772	VHF not heard since Apr 2015; GPS activity normal
SCEK009b	Caribou	Fort Nelson	Fort Nelson	Vectr-VertexTD	42 ppm	153.620	10/20/2015	10	519184	6544864	normal
SCEK166	Caribou	Fort Nelson	Fort Nelson	Vectr-VertexTD	42 ppm	148.860	10/20/2015	10	517427	6543317	normal
SCEK167	Caribou	Fort Nelson	Fort Nelson	Lotek-Lifecycle	50 ppm	149.688	10/20/2015	10	518594	6545592	normal
BC1014	Caribou	Maxhamish	Capot-Blanc	Lotek VHF	60 ppm	148.040	10/20/2015	10	471862	6583249	normal
SCEK007b	Caribou	Maxhamish	Capot-Blanc	Vectr-VertexTD	42 ppm	152.990	10/20/2015	10	458483	6579035	normal
SCEK066	Caribou	Maxhamish	Capot-Blanc	Lotek VHF	60 ppm	151.470	10/20/2015	10	470757	6581706	normal
SCEK076	Caribou	Maxhamish	Capot-Blanc	Lotek VHF	60 ppm	151.409	10/20/2015	10	459126	6578844	normal
BC1033	Caribou	Maxhamish	Fortune	Lotek VHF	60 ppm	148.249	10/20/2015	10	534833	6626278	normal
SCEK005b	Caribou	Maxhamish	Fortune	Vectr-VertexTD	42 ppm	148.830	10/20/2015	10	485995	6612608	normal
SCEK078	Caribou	Maxhamish	Fortune	Lotek VHF	60 ppm	151.649	10/20/2015	10	469482	6644026	normal
SCEK085	Caribou	Maxhamish	Fortune	Vectr-Vertex	84 ppm	148.800	10/20/2015	10	527106	6628212	normal
SCEK086	Caribou	Maxhamish	Fortune	Lotek VHF	60 ppm	151.740	10/20/2015	10	527272	6629450	normal
SCEK087	Caribou	Maxhamish	Fortune	Lotek VHF	60 ppm	151.979	10/20/2015	10	545764	6626773	normal
SCEK128	Caribou	Maxhamish	Fortune	Lotek VHF	60 ppm	151.720	10/20/2015	10	526235	6629188	normal
SCEK129	Caribou	Maxhamish	Fortune	Lotek VHF	60 ppm	151.930	10/20/2015	10	546875	6625049	normal
SCEK164	Caribou	Maxhamish	Fortune	Lotek VHF	60 ppm	151.490	10/20/2015	10	537814	6623292	normal
SCEK175	Caribou	Maxhamish	Fortune	Lotek-Lifecycle	50 ppm	149.380	10/20/2015	10	525353	6628963	normal
SCEK176	Caribou	Maxhamish	Fortune	Lotek-Lifecycle	50 ppm	151.180	10/20/2015	10	472349	6637618	normal
SCEK177	Caribou	Maxhamish	Fortune	Vectr-VertexTD	42 ppm	148.920	10/20/2015	10	529002	6630900	normal
SCEK178	Caribou	Maxhamish	Fortune	Vectr-VertexTD	42 ppm	148.630	10/20/2015	10	542903	6627446	normal
SCEK205	Caribou	Maxhamish	Fortune	Vectr-VertexTD	42 ppm	149.820	10/20/2015	10	542134	6629898	normal
SCEK206	Caribou	Maxhamish	Fortune	Vectr-VertexTD	42 ppm	151.910	10/20/2015	10	539976	6624493	normal
SCEK208	Caribou	Maxhamish	Fortune	Vectr-VertexTD	42 ppm	148.930	10/20/2015	10	473226	6637740	normal
SCEK221	Caribou	Maxhamish	Fortune	Vectr-VertexTD	42 ppm	153.020	10/20/2015	10	542074	6629114	normal
BC1009	Caribou	Maxhamish	Kiwigana	Lotek VHF	not heard	151.701	10/20/2015	n/a	n/a	n/a	VHF signal not detected
SCEK004	Caribou	Maxhamish	Kiwigana	Lotek VHF	60 ppm	151.339	10/20/2015	10	474119	6637833	normal
SCEK062	Caribou	Maxhamish	Kiwigana	Lotek VHF	60 ppm	150.549	10/20/2015	10	524323	6568550	normal
SCEK064	Caribou	Maxhamish	Kiwigana	Lotek VHF	60 ppm	150.439	10/20/2015	10	551962	6592056	normal
SCEK168	Caribou	Maxhamish	Kiwigana	Vectr-VertexTD	42 ppm	148.160	10/20/2015	10	535646	6561962	normal
SCEK169	Caribou	Maxhamish	Kiwigana	ATS-Irid	50 ppm; no double 6th	149.223	10/20/2015	10	500292	6587250	normal
SCEK211	Caribou	Maxhamish	Kiwigana	Vectr-VertexTD	42 ppm	149.840	10/20/2015	10	530372	6568100	normal
SCEK010	Caribou	Parker	Parker	Lotek VHF	60 ppm	151.190	10/20/2015	10	486470	6519064	normal
SCEK012	Caribou	Parker	Parker	Lotek VHF	60 ppm	151.239	10/20/2015	10	495346	6518699	normal
SCEK014b	Caribou	Parker	Parker	Vectr-VertexTD	not heard	153.980	10/20/2015	10	460707	6464982	VHF out of range (Tuchodi River); GPS normal
SCEK015	Caribou	Parker	Parker	Lotek VHF	60 ppm	151.359	10/20/2015	10	489992	6520574	normal
SCEK016b	Caribou	Parker	Parker	Vectr-VertexTD	42 ppm	153.260	10/20/2015	10	479015	6518016	normal
SCEK194	Caribou	Parker	Parker	Vectr-VertexTD	42 ppm	148.790	10/20/2015	10	465258	6528527	normal
SCEK045	Caribou	Prophet	Prophet	Lotek VHF	60 ppm	151.730	10/20/2015	10	557274	6452523	normal
SCEK049	Caribou	Prophet	Prophet	Lotek VHF	60 ppm	151.570	10/20/2015	10	552153	6448031	normal
SCEK051	Caribou	Prophet	Prophet	Lotek VHF	60 ppm	151.529	10/20/2015	10	536172	6477330	normal
SCEK161b	Caribou	Prophet	Prophet	Vectr-VertexTD	42 ppm	153.140	10/20/2015	10	575470	6444507	normal
SCEK217	Caribou	Prophet	Prophet	Vectr-VertexTD	42 ppm	150.500	10/20/2015	10	555804	6451430	normal
SCEK019	Caribou	Snake-Sahtaneh	Clarke	Lotek VHF	60 ppm	151.049	10/20/2015	10	567729	6502803	normal

Table 1 cont. VHF signal status and location of boreal caribou and wolf collars detected during the October 20-21, 2015 OGRIS fixed-wing telemetry monitoring flight.

ID	Species	Range	Core	Collar Type	Status	Freq	Date	Zone	East	North	Comments
SCEK020b	Caribou	Snake-Sahtaneh	Clarke	Vectr-VertexTD	42 ppm	153.860	10/20/2015	10	593777	6485768	normal
SCEK021	Caribou	Snake-Sahtaneh	Clarke	Lotek VHF	60 ppm	151.099	10/20/2015	10	567454	6499259	normal
SCEK024	Caribou	Snake-Sahtaneh	Clarke	Lotek VHF	60 ppm	151.250	10/20/2015	10	562731	6497361	normal
SCEK025	Caribou	Snake-Sahtaneh	Clarke	Lotek VHF	60 ppm	151.200	10/20/2015	10	553121	6494519	normal
SCEK068	Caribou	Snake-Sahtaneh	Clarke	Lotek VHF	60 ppm	150.170	10/21/2015	10	560533	6539372	normal
SCEK070	Caribou	Snake-Sahtaneh	Clarke	Lotek VHF	60 ppm	151.920	10/20/2015	10	566539	6501823	normal
SCEK145	Caribou	Snake-Sahtaneh	Clarke	Lotek VHF	60 ppm	150.129	10/21/2015	10	585515	6551318	normal
SCEK148	Caribou	Snake-Sahtaneh	Clarke	Lotek VHF	60 ppm	150.279	10/20/2015	10	605597	6485368	normal
SCEK149	Caribou	Snake-Sahtaneh	Clarke	Lotek VHF	60 ppm	151.499	10/20/2015	10	574514	690895	normal
SCEK150	Caribou	Snake-Sahtaneh	Clarke	Lotek VHF	60 ppm	150.189	10/20/2015	10	607234	6484784	normal
SCEK152	Caribou	Snake-Sahtaneh	Clarke	Lotek VHF	60 ppm	150.669	10/20/2015	10	564485	6498952	normal
SCEK153	Caribou	Snake-Sahtaneh	Clarke	Lotek VHF	60 ppm	150.599	10/20/2015	10	540796	6500205	normal
SCEK156	Caribou	Snake-Sahtaneh	Clarke	Lotek VHF	60 ppm	151.670	10/20/2015	10	531760	6501517	normal
SCEK157	Caribou	Snake-Sahtaneh	Clarke	Lotek VHF	60 ppm	151.890	10/20/2015	10	560666	6493868	normal
SCEK191	Caribou	Snake-Sahtaneh	Clarke	Lotek-Lifecycle	50 ppm	149.790	10/20/2015	10	595770	6485106	normal
SCEK192	Caribou	Snake-Sahtaneh	Clarke	Lotek-Lifecycle	50 ppm	149.430	10/20/2015	10	603214	6484559	normal
SCEK193	Caribou	Snake-Sahtaneh	Clarke	Vectr-VertexTD	42 ppm	148.780	10/20/2015	10	531026	6507584	normal
SCEK212	Caribou	Snake-Sahtaneh	Clarke	Vectr-VertexTD	42 ppm	149.310	10/20/2015	10	551469	6498310	normal
SCEK218	Caribou	Snake-Sahtaneh	Clarke	Vectr-VertexTD	42 ppm	153.560	10/20/2015	10	564895	6528344	normal
SCEK220	Caribou	Snake-Sahtaneh	Clarke	Vectr-VertexTD	42 ppm	153.500	10/20/2015	10	603734	6486611	normal
SCEK102	Caribou	Snake-Sahtaneh	East Kotcho	Lotek VHF	60 ppm	151.660	10/21/2015	10	630015	6553790	normal
SCEK103	Caribou	Snake-Sahtaneh	East Kotcho	Lotek VHF	60 ppm	151.599	10/21/2015	10	634818	6557775	normal
SCEK105	Caribou	Snake-Sahtaneh	East Kotcho	Lotek VHF	60 ppm	151.760	10/21/2015	10	636604	6565844	normal
SCEK088	Caribou	Snake-Sahtaneh	North Kotcho	Lotek VHF	60 ppm	151.619	10/21/2015	10	631738	6556260	normal
SCEK089	Caribou	Snake-Sahtaneh	North Kotcho	Lotek VHF	60 ppm	151.559	10/21/2015	10	621097	6569607	normal
SCEK090	Caribou	Snake-Sahtaneh	North Kotcho	Lotek VHF	60 ppm	151.861	10/21/2015	10	599479	6589707	normal
SCEK092	Caribou	Snake-Sahtaneh	North Kotcho	Lotek VHF	60 ppm	151.970	10/21/2015	10	618230	6573604	normal
SCEK097b	Caribou	Snake-Sahtaneh	North Kotcho	Vectr-VertexTD	42 ppm	149.530	10/21/2015	10	606587	6579250	normal
SCEK100b	Caribou	Snake-Sahtaneh	North Kotcho	Vectr-VertexTD	42 ppm	149.890	10/21/2015	10	623527	6565233	normal
SCEK111	Caribou	Snake-Sahtaneh	North Kotcho	Vectr-Vertex	42 ppm	149.750	10/21/2015	10	609426	6579870	normal
SCEK182	Caribou	Snake-Sahtaneh	North Kotcho	Vectr-VertexTD	42 ppm	148.820	10/21/2015	10	601984	6584231	normal
SCEK186	Caribou	Snake-Sahtaneh	North Kotcho	Vectr-VertexTD	42 ppm	148.900	10/21/2015	10	620994	6577361	normal
SCEK187	Caribou	Snake-Sahtaneh	North Kotcho	Lotek-Lifecycle	50 ppm	149.575	10/21/2015	10	611534	6568265	normal
SCEK204	Caribou	Snake-Sahtaneh	North Kotcho	Lotek-Lifecycle	50 ppm	149.492	10/21/2015	10	624105	6566285	normal
SCEK096	Caribou	Snake-Sahtaneh	Paradise	Lotek VHF	60 ppm	150.910	10/20/2015	10	566889	6524959	normal
SCEK079b	Caribou	Snake-Sahtaneh	Tsea	Vectr-VertexTD	42 ppm	153.680	10/20/2015	10	552361	6599022	normal
SCEK081	Caribou	Snake-Sahtaneh	Tsea	Lotek VHF	60 ppm	150.850	10/20/2015	10	557862	6603325	normal
SCEK082	Caribou	Snake-Sahtaneh	Tsea	Lotek VHF	60 ppm	151.800	10/20/2015	10	563568	6600664	normal
SCEK127	Caribou	Snake-Sahtaneh	Tsea	Lotek VHF	60 ppm	151.811	10/20/2015	10	557459	6602808	normal
SCEK131	Caribou	Snake-Sahtaneh	Tsea	Lotek VHF	60 ppm	150.240	10/20/2015	10	556260	6598296	normal
SCEK132	Caribou	Snake-Sahtaneh	Tsea	Lotek VHF	60 ppm	151.630	10/20/2015	10	557201	6600284	normal
SCEK203	Caribou	Snake-Sahtaneh	Tsea	Vectr-VertexTD	42 ppm	148.880	10/20/2015	10	566146	6612814	normal
SCEK071	Caribou	Snake-Sahtaneh	West Kotcho	Vectr-Vertex	42 ppm	148.850	10/21/2015	10	598484	6547832	normal
SCEK091	Caribou	Snake-Sahtaneh	West Kotcho	Lotek VHF	60 ppm	151.439	10/21/2015	10	604739	6578259	normal
SCEK173	Caribou	Snake-Sahtaneh	West Kotcho	ATS-Irid	50 ppm; no double 6th	148.683	10/21/2015	10	619268	6577006	normal
SCEK209	Caribou	Snake-Sahtaneh	West Kotcho	Vectr-VertexTD	42 ppm	149.910	10/20/2015	10	528903	6569102	normal
SCEK219	Caribou	Snake-Sahtaneh	West Kotcho	Vectr-VertexTD	42 ppm	153.380	10/21/2015	10	557768	6609357	normal

Table 1 cont. VHF signal status and location of boreal caribou and wolf collars detected during the October 20-21, 2015 OGRIS fixed-wing telemetry monitoring flight.

ID	Species	Range	Core	Collar Type	Status	Freq	Date	Zone	East	North	Comments
BW034	Wolf	Calendar	July	Lotek VHF	60 ppm	151.420	10/21/2015	10	631079	6626764	normal
BW042	Wolf	Calendar	July	Lotek Iridium	50 ppm	152.400	10/21/2015	10	628593	6648362	VHF normal; GPS data normal
BW043	Wolf	Calendar	July	Lotek Iridium	50 ppm	152.450	10/21/2015	10	631079	6626764	VHF normal; GPS data normal
BW044	Wolf	Calendar	July	Lotek Iridium	50 ppm	148.330	10/21/2015	10	628593	6648362	VHF normal; GPS data normal
BW045	Wolf	Calendar	July	Lotek Iridium	50 ppm	148.340	10/21/2015	10	628593	6648362	VHF normal; GPS data normal
BW046	Wolf	Calendar	July	Lotek Iridium	50 ppm	148.310	10/21/2015	10	628593	6648362	VHF normal; GPS data normal
BW002	Wolf	Chinchaga	Big Arrow	Lotek VHF	not heard	148.405	10/20/2015	n/a	n/a	n/a	VHF not detected
BW038	Wolf	Clarke	Elleh	Vectronic	42 ppm	149.340	10/20/2015	10	560666	6493868	VHF normal; GPS data normal
BW039	Wolf	Clarke	Elleh	Lotek Iridium	50 ppm	152.750	10/20/2015	10	563205	6480878	VHF normal; GPS data normal
BW040	Wolf	Clarke	Elleh	Lotek Iridium	50 ppm	152.350	10/20/2015	10	568199	6487700	VHF normal; GPS data normal
BW014	Wolf	Fort Nelson	Tsimeh	Lotek Iridium	not heard	148.710	10/20/2015	n/a	n/a	n/a	VHF not detected; last data Sep 17, 15
BW048	Wolf	Fort Nelson	Tsimeh	Lotek VHF	60 ppm	151.880	10/20/2015	10	527014	6541951	normal
BW051	Wolf	Fort Nelson	Tsimeh	Lotek Iridium	not heard	149.290	10/20/2015	n/a	n/a	n/a	VHF not detected; last data Oct 14, 15
BW032	Wolf	Fortune/Tsea	Petitot	Lotek VHF	60 ppm	150.240	10/20/2015	10	566370	6606448	normal
BW033	Wolf	Fortune/Tsea	Petitot	Lotek Iridium	50 ppm	151.420	10/20/2015	10	566370	6606448	VHF normal; GPS data normal
BW047	Wolf	Fortune/Tsea	Petitot	Lotek Iridium	50 ppm	148.230	10/20/2015	10	543778	6624311	VHF normal; GPS data normal
BW049	Wolf	Fortune/Tsea	Petitot	Lotek Iridium	50 ppm	148.320	10/20/2015	10	566370	6606448	VHF normal; GPS data normal
BW050	Wolf	Fortune/Tsea	Petitot	Lotek Iridium	not heard	151.710	10/20/2015	n/a	n/a	n/a	VHF not detected; GPS activity normal
BW035	Wolf	Maxhamish	Fortune	Lotek Iridium	not heard	148.700	10/20/2015	n/a	n/a	n/a	VHF not detected; GPS activity normal
BW036	Wolf	Maxhamish	Fortune	Lotek Iridium	not heard	148.430	10/20/2015	n/a	n/a	n/a	VHF not detected; GPS activity normal
BW037	Wolf	Maxhamish	Fortune	Lotek VHF	not heard	149.760	10/20/2015	n/a	n/a	n/a	VHF not detected
BW041	Wolf	Maxhamish	Fortune	Lotek Iridium	not heard	152.600	10/20/2015	n/a	n/a	n/a	VHF not detected; GPS activity normal
BW030	Wolf	Snake-Sahtaneh	Clarke	Lotek Iridium	not heard	151.950	10/20/2016	n/a	n/a	n/a	VHF not detected; last data Dec 28 14.
BW024	Wolf	Snake-Sahtaneh	Kwokullie	Lotek Iridium	not heard	149.280	10/21/2015	n/a	n/a	n/a	VHF not detected; last data Feb 28 15
BW026	Wolf	Snake-Sahtaneh	Kwokullie	Lotek VHF	60 ppm	150.901	10/21/2015	10	627326	6607642	normal
BW007	Wolf	Snake-Sahtaneh	Snake	Lotek VHF	not heard	148.435	10/20/2016	n/a	n/a	n/a	not detected; missing since deployment
BW027	Wolf	Snake-Sahtaneh	Snake	Lotek Iridium	not heard	149.300	10/20/2016	n/a	n/a	n/a	VHF not detected; last data Jan 09, 14

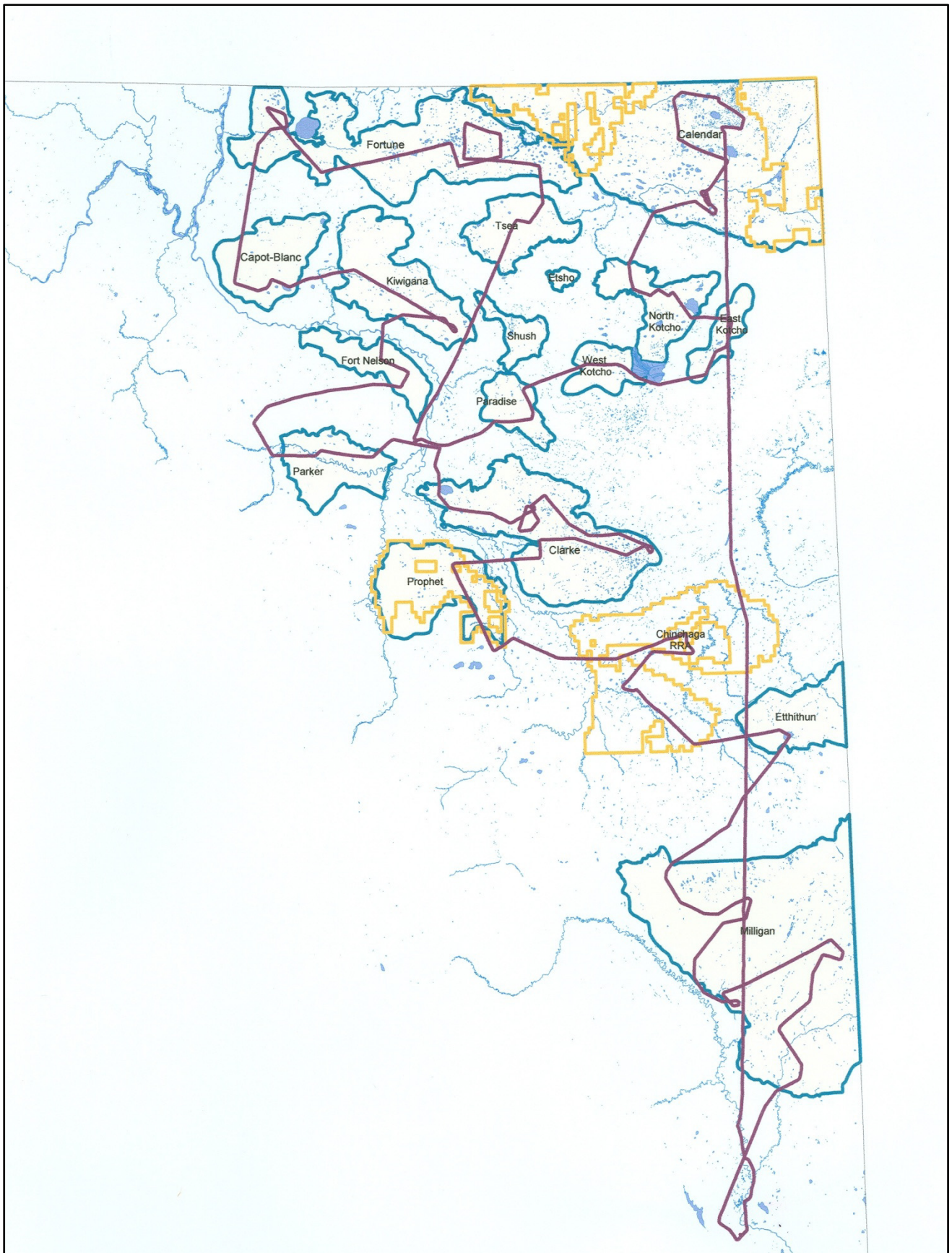


Figure 1. Flight paths flown during the October 20-21, 2015 OGRIS boreal caribou and wolf telemetry monitoring flight.