

DIVERSIFIED ENVIRONMENTAL SERVICES

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

FIXED-WING TELEMETRY MONITORING FLIGHT – June 16-18, 2015

Date: Jun 30, 2015

Attention: Brian Thomson
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Executive Summary

One hundred fifty-four boreal caribou collar frequencies and 27 wolf collar frequencies were scanned during a monthly fixed-wing telemetry monitoring flight conducted on June 16-18, 2015. One hundred forty-two caribou collars were heard transmitting normal VHF signals and 3 were transmitting mortality signals indicating dead animals (SCEK144, SCEK210, and AB150.470). The remaining 9 caribou collars were not detected. These include 2 believed to have failed, 2 whose GPS data indicated they are alive but have moved well outside the study area, and one whose GPS beacon may have failed but whose GPS data indicates normal activity within the study area. No wolf mortality signals were detected.

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 June 16-18, 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 June 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 the Ministry of Forests, Lands, and Natural Resource Operations (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 700-1,000 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 June 2015 monitoring flight, including 149 SCEK collars (5 ATS Iridium, 61 Vectronic Vertex, 11 Lotek LifeCycle, and 72 Lotek VHF), 3 previously-deployed MFLNRO VHF collars, and 2 Alberta VHF collars. In addition, 27 wolf collar frequencies were scanned during the June flight, including 20 SCEK wolf collars (12 Lotek Iridium, 1 Vectronic Vertex, and 7 Lotek VHF), and 7 Nexen collars (Lotek Iridium). Several SCEK Iridium wolf collars assumed to have exceeded their battery lives were not scanned.

Results of the June 16-18, 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 3,445 km. Of 154 caribou collar frequencies scanned, 142 normal VHF signals and 3 mortality signal were detected (Prophet VHF SCEK144, Kiwigana Vectronic GPS SCEK210, and Alberta VHF AB150.470). The VHF beacons of the remaining 9 caribou collars were not detected. These include 1 SCEK ATS Iridium collar that has ceased Iridium data transmission and is believed to have failed (SCEK184), 2 SCEK GPS collars whose GPS data transmissions indicated they were alive but well outside the study area at the time of the flight (SCEK014B, SCEK179), 1 SCEK GPS collar whose VHF beacon may have failed but whose GPS data transmissions indicate normal activity within the search area (SCEK216), 1 MFLNRO collar whose battery may have expired after 7 years of activity (BC1009), 1 Alberta VHF collar that may have failed or the caribou returned to Alberta, and 3 SCEK VHF collars that are assumed active but were not detected during the June flight (SCEK030, SCEK096, SCEK105).

Twenty-seven wolf collar frequencies were scanned during the June 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, 13 normal VHF signals were heard, 4 were not detected but were transmitting GPS data indicating normal activity, and 3 are believed to have failed.

Of the 7 VHF wolf collars scanned, 5 had normal VHF signals, a fifth is assumed to have failed or the wolf dispersed soon after deployment in 2013 (BW007, Snake Pack), and the remaining collar is assumed operational but was not detected (BW026, Kwokullie 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 June 16-18, 2015 OGRIS fixed-wing telemetry monitoring flight.

ID	Species	Range	Core	Collar Type	Status	Date	Zone	East	North	Comments
SOEK184	Caribou	Calendar	Calendar	ATS-Irid	not heard	6/18/2015	n/a	n/a	n/a	failed, last data Sep 23 14
SOEK185	Caribou	Calendar	Calendar	Lotek-Lifecycle	50 ppm	6/18/2015	10	586040	6631958	normal
SOEK183	Caribou	Calendar	Calendar	Vectr-VertexTD	42 ppm	6/18/2015	10	596612	6625696	normal
SOEK180	Caribou	Calendar	Calendar	Vectr-VertexTD	42 ppm	6/18/2015	10	607354	6665665	normal
SOEK181	Caribou	Calendar	Calendar	ATS-Irid	50 ppm, double 6th	6/18/2015	10	612754	6609005	normal
SOEK135	Caribou	Calendar	Calendar	Vectr-Vertex	42 ppm	6/18/2015	10	646625	6646852	normal
SOEK119	Caribou	Calendar	Calendar	Vectr-Vertex	42 ppm	6/18/2015	10	612574	6643581	normal
SOEK146b	Caribou	Calendar	Calendar	Vectr-VertexTD	42 ppm	6/18/2015	10	608089	6637216	normal
SOEK123	Caribou	Calendar	Calendar	Lotek V-F	60 ppm	6/18/2015	10	602609	6628978	normal
SOEK122	Caribou	Calendar	Calendar	Lotek V-F	60 ppm	6/18/2015	10	627756	6677461	normal
SOEK137	Caribou	Calendar	Calendar	Lotek V-F	60 ppm	6/18/2015	10	632694	6636680	normal
SOEK120	Caribou	Calendar	Calendar	Lotek V-F	60 ppm	6/18/2015	10	602449	6636626	normal
SOEK134	Caribou	Calendar	Calendar	Lotek V-F	60 ppm	6/18/2015	10	624355	6662469	normal
SOEK112	Caribou	Calendar	Calendar	Lotek V-F	60 ppm	6/18/2015	10	635316	6640818	normal
SOEK113	Caribou	Calendar	Calendar	Lotek V-F	60 ppm	6/18/2015	10	613545	6611416	normal
SOEK125	Caribou	Calendar	Calendar	Lotek V-F	60 ppm	6/18/2015	10	659974	6691910	normal
SOEK136b	Caribou	Calendar	Calendar	Vectr-VertexTD	42 ppm	6/18/2015	10	610763	6607888	normal
SOEK126b	Caribou	Calendar	FRAC	Vectr-VertexTD	42 ppm	6/18/2015	10	594115	6654038	normal
SOEK108	Caribou	Calendar	FRAD	Lotek V-F	60 ppm	6/18/2015	10	624706	6632346	normal
SOEK107	Caribou	Calendar	FRAD	Lotek V-F	60 ppm	6/18/2015	10	610195	6644422	normal
SOEK195	Caribou	Chinchaga	Etthithun	Vectr-VertexTD	42 ppm	6/17/2015	10	644253	6406277	normal
SOEK224	Caribou	Chinchaga	Etthithun	Vectr-VertexTD	42 ppm	6/17/2015	10	637001	6433057	normal
SOEK198	Caribou	Chinchaga	Milligan	Vectr-VertexTD	42 ppm	6/16/2015	10	640457	6301414	normal
SOEK196	Caribou	Chinchaga	Milligan	Vectr-VertexTD	42 ppm	6/17/2015	10	627776	6364029	normal
SOEK201	Caribou	Chinchaga	Milligan	Vectr-VertexTD	42 ppm	6/16/2015	10	662508	6292954	normal
SOEK197	Caribou	Chinchaga	Milligan	Lotek-Lifecycle	50 ppm	6/17/2015	10	657517	6366950	V-F normal: no data since Mar 29 15
AB149.391	Caribou	Chinchaga	Milligan	unknown	not heard	6/16/2015	n/a	n/a	n/a	V-F not detected, battery assumed expired
SOEK040	Caribou	Chinchaga	Milligan	Vectr-Vertex	42 ppm	6/17/2015	10	644108	6405166	normal
SOEK034	Caribou	Chinchaga	Milligan	Vectr-Vertex	42 ppm	6/17/2015	10	627634	6361441	normal
SOEK033b	Caribou	Chinchaga	Milligan	Vectr-VertexTD	42 ppm	6/17/2015	10	627491	6343164	normal
SOEK055	Caribou	Chinchaga	Milligan	Vectr-Vertex	42 ppm	6/17/2015	10	655720	6329288	normal
AB150.470	Caribou	Chinchaga	Milligan	unknown	120 ppm	6/17/2015	10	659137	6372378	MORTALITY
SOEK035	Caribou	Chinchaga	Milligan	Lotek V-F	60 ppm	6/17/2015	10	631095	6366717	normal
SOEK041	Caribou	Chinchaga	Milligan	Lotek V-F	60 ppm	6/17/2015	10	639133	6340980	normal
SOEK027	Caribou	Chinchaga	Milligan	Lotek V-F	60 ppm	6/16/2015	10	663600	6298855	normal
SOEK032	Caribou	Chinchaga	Milligan	Lotek V-F	60 ppm	6/17/2015	10	656117	6362149	normal
SOEK029	Caribou	Chinchaga	Milligan	Lotek V-F	60 ppm	6/16/2015	10	622408	6340066	normal
SOEK053	Caribou	Chinchaga	Milligan	Lotek V-F	60 ppm	6/16/2015	10	620150	6340831	normal
SOEK030	Caribou	Chinchaga	Milligan	Lotek V-F	not heard	6/16/2015	n/a	n/a	n/a	V-F signal not detected
SOEK058	Caribou	Chinchaga	Milligan	Lotek V-F	60 ppm	6/17/2015	10	603642	6440377	normal
SOEK054	Caribou	Chinchaga	Milligan	Lotek V-F	60 ppm	6/17/2015	10	644255	6354943	normal
SOEK057	Caribou	Chinchaga	Milligan	Lotek V-F	60 ppm	6/16/2015	10	618718	6336531	normal
SOEK059	Caribou	Chinchaga	Milligan	Lotek V-F	60 ppm	6/16/2015	10	618505	6335036	normal
SOEK061	Caribou	Chinchaga	Milligan	Lotek V-F	60 ppm	6/16/2015	10	625138	6326802	normal
SOEK060	Caribou	Chinchaga	Milligan	Lotek V-F	60 ppm	6/18/2015	10	576331	6365940	normal
SOEK026b	Caribou	Chinchaga	Milligan	Vectr-VertexTD	42 ppm	6/16/2015	10	664701	6301936	normal
SOEK222	Caribou	Chinchaga	Milligan	Vectr-VertexTD	42 ppm	6/17/2015	10	656074	6370600	normal
SOEK223	Caribou	Chinchaga	Milligan	Vectr-VertexTD	42 ppm	6/17/2015	10	642940	6335125	normal
SOEK036b	Caribou	Chinchaga	Milligan	Vectr-VertexTD	42 ppm	6/17/2015	10	610623	6355103	normal
SOEK171	Caribou	Chinchaga	FRAA	Vectr-VertexTD	42 ppm	6/17/2015	10	603405	6403140	normal
SOEK142	Caribou	Chinchaga	FRAA	Vectr-Vertex	42 ppm	6/17/2015	10	616582	6449140	normal

Table 1 cont. VHF signal status and location of boreal caribou and wolf collars detected during the June 16-18, 2015 OGRIS fixed-wing telemetry monitoring flight.

ID	Species	Range	Core	Collar Type	Status	Date	Zone	East	North	Comments
SCEK189	Caribou	Chinchaga	FRRA-A	Vectr-VertexTD	42 ppm	6/17/2015	10	613565	6445219	normal
SCEK170	Caribou	Chinchaga	FRRA-A	ATS-Irid	50 ppm, double 6th	6/17/2015	10	645107	6444339	normal
SCEK213	Caribou	Chinchaga	FRRA-A	Vectr-VertexTD	42 ppm	6/17/2015	10	603348	6446332	normal
SCEK215	Caribou	Chinchaga	FRRA-A	Vectr-VertexTD	42 ppm	6/17/2015	10	641915	6440297	normal
SCEK048	Caribou	Chinchaga	FRRA-A	Lotek VHF	60 ppm	6/17/2015	10	611042	6416775	normal
SCEK216	Caribou	Chinchaga	FRRA-A	Vectr-VertexTD	not heard	6/17/2015	10	617679	6443345	VHF not heard since Apr 2015; GPS activity
SCEK172	Caribou	Chinchaga	FRRA-A	Lotek-Lifecycle	50 ppm	6/17/2015	10	560610	6415678	normal
SCEK214	Caribou	Chinchaga	FRRA-A	Vectr-VertexTD	42 ppm	6/17/2015	10	606746	6432508	normal
SCEK166	Caribou	Fort Nelson	Fort Nelson	Vectr-VertexTD	42 ppm	6/17/2015	10	514560	6548799	normal
SCEK167	Caribou	Fort Nelson	Fort Nelson	Lotek-Lifecycle	50 ppm	6/17/2015	10	509441	6552966	normal
SCEK009b	Caribou	Fort Nelson	Fort Nelson	Vectr-VertexTD	42 ppm	6/17/2015	10	500732	6560285	normal
BC1014	Caribou	Maxhamish	Capot-Blanc	Lotek VHF	60 ppm	6/17/2015	10	441767	6571243	normal
SCEK001	Caribou	Maxhamish	Capot-Blanc	Lotek VHF	60 ppm	6/17/2015	10	466171	6574404	normal
SCEK076	Caribou	Maxhamish	Capot-Blanc	Lotek VHF	60 ppm	6/17/2015	10	453987	6581449	normal
SCEK066	Caribou	Maxhamish	Capot-Blanc	Lotek VHF	60 ppm	6/17/2015	10	442457	6574194	normal
SCEK007b	Caribou	Maxhamish	Capot-Blanc	Vectr-VertexTD	42 ppm	6/17/2015	10	431526	6549383	normal
BC1033	Caribou	Maxhamish	Fortune	Lotek VHF	60 ppm	6/17/2015	10	510902	6625668	normal
SCEK178	Caribou	Maxhamish	Fortune	Vectr-VertexTD	42 ppm	6/17/2015	10	544375	6623298	normal
SCEK085	Caribou	Maxhamish	Fortune	Vectr-Vertex	42 ppm	6/17/2015	10	534571	6621536	normal
SCEK006b	Caribou	Maxhamish	Fortune	Vectr-VertexTD	42 ppm	6/17/2015	10	485501	6613564	normal
SCEK177	Caribou	Maxhamish	Fortune	Vectr-VertexTD	42 ppm	6/17/2015	10	513681	6612180	normal
SCEK208	Caribou	Maxhamish	Fortune	Vectr-VertexTD	42 ppm	6/17/2015	10	482435	6620125	normal
SCEK175	Caribou	Maxhamish	Fortune	Lotek-Lifecycle	50 ppm	6/17/2015	10	488922	6625798	normal
SCEK205	Caribou	Maxhamish	Fortune	Vectr-VertexTD	42 ppm	6/17/2015	10	538836	6628845	normal
SCEK179	Caribou	Maxhamish	Fortune	Lotek-Lifecycle	50 ppm	6/17/2015	10	526330	6635300	normal
SCEK176	Caribou	Maxhamish	Fortune	Lotek-Lifecycle	50 ppm	6/17/2015	10	484542	6627373	normal
SCEK164	Caribou	Maxhamish	Fortune	Lotek VHF	60 ppm	6/17/2015	10	529814	6624275	normal
SCEK078	Caribou	Maxhamish	Fortune	Lotek VHF	60 ppm	6/17/2015	10	462671	6622701	normal
SCEK128	Caribou	Maxhamish	Fortune	Lotek VHF	60 ppm	6/17/2015	10	522792	6631911	normal
SCEK086	Caribou	Maxhamish	Fortune	Lotek VHF	60 ppm	6/17/2015	10	528568	6630797	normal
SCEK206	Caribou	Maxhamish	Fortune	Vectr-VertexTD	42 ppm	6/17/2015	10	539029	6624353	normal
SCEK129	Caribou	Maxhamish	Fortune	Lotek VHF	60 ppm	6/17/2015	10	542398	6629299	normal
SCEK087	Caribou	Maxhamish	Fortune	Lotek VHF	60 ppm	6/17/2015	10	535277	6620612	normal
SCEK221	Caribou	Maxhamish	Fortune	Vectr-VertexTD	42 ppm	6/17/2015	10	544888	6623194	normal
SCEK168	Caribou	Maxhamish	Kiwigana	Vectr-VertexTD	42 ppm	6/17/2015	10	548529	6565683	normal
SCEK169	Caribou	Maxhamish	Kiwigana	ATS-Irid	50 ppm, double 6th	6/17/2015	10	502637	6589543	normal
SCEK211	Caribou	Maxhamish	Kiwigana	Vectr-VertexTD	42 ppm	6/17/2015	10	538869	6567009	normal
SCEK064	Caribou	Maxhamish	Kiwigana	Lotek VHF	60 ppm	6/17/2015	10	508169	6582247	normal
SCEK062	Caribou	Maxhamish	Kiwigana	Lotek VHF	60 ppm	6/17/2015	10	517088	6575866	normal
SCEK210	Caribou	Maxhamish	Kiwigana	Vectr-VertexTD	80 ppm	6/17/2015	10	526066	6572369	MORTALITY
SCEK004	Caribou	Maxhamish	Kiwigana	Lotek VHF	60 ppm	6/17/2015	10	464253	6619818	normal
BC1009	Caribou	Maxhamish	Kiwigana	Lotek VHF	not heard	6/17/2015	n/a	n/a	n/a	VHF signal not detected
SCEK194	Caribou	Parker	Parker	Vectr-VertexTD	42 ppm	6/17/2015	10	488480	6522398	normal
SCEK010	Caribou	Parker	Parker	Lotek VHF	60 ppm	6/17/2015	10	487486	6501022	normal
SCEK012	Caribou	Parker	Parker	Lotek VHF	60 ppm	6/17/2015	10	497852	6511717	normal
SCEK015	Caribou	Parker	Parker	Lotek VHF	60 ppm	6/17/2015	10	481591	6524139	normal
SCEK016b	Caribou	Parker	Parker	Vectr-VertexTD	42 ppm	6/17/2015	10	477011	6513915	normal
SCEK014b	Caribou	Parker	Parker	Vectr-VertexTD	not heard	6/17/2015	10	415446	6436755	VHF out of range (Tuchodi Lakes); GPS normal
SCEK144	Caribou	Prophet	Prophet	Lotek VHF	120 ppm	6/17/2015	10	576672	6460752	MORTALITY
SCEK217	Caribou	Prophet	Prophet	Vectr-VertexTD	42 ppm	6/17/2015	10	560183	6425556	normal
SCEK051	Caribou	Prophet	Prophet	Lotek VHF	60 ppm	6/17/2015	10	528156	6485085	normal

Table 1 cont. VHF signal status and location of boreal caribou and wolf collars detected during the June 16-18, 2015 OGRIS fixed-wing telemetry monitoring flight.

SOEK049	Caribou	Prophet	Prophet	Lotek VHF	60 ppm	6/17/2015	10	549644	6447361	normal
SOEK045	Caribou	Prophet	Prophet	Lotek VHF	60 ppm	6/17/2015	10	544887	6456887	normal
SOEK161b	Caribou	Prophet	Prophet	Vectr-VertexTD	42 ppm	6/17/2015	10	558296	6458810	normal
SOEK193	Caribou	Snake-Sahtaneh	Clarke	Vectr-VertexTD	42 ppm	6/17/2015	10	535326	6504016	normal
SOEK212	Caribou	Snake-Sahtaneh	Clarke	Vectr-VertexTD	42 ppm	6/17/2015	10	556996	6501397	normal
SOEK192	Caribou	Snake-Sahtaneh	Clarke	Lotek-Lifecycle	50 ppm	6/17/2015	10	605685	6484966	VHF normal: no data since May 25 15
SOEK191	Caribou	Snake-Sahtaneh	Clarke	Lotek-Lifecycle	50 ppm	6/17/2015	10	602779	6487105	normal
SOEK145	Caribou	Snake-Sahtaneh	Clarke	Lotek VHF	60 ppm	6/18/2015	10	597710	6537765	heard not located; position approximate
SOEK068	Caribou	Snake-Sahtaneh	Clarke	Lotek VHF	60 ppm	6/18/2015	10	564170	6540728	normal
SOEK150	Caribou	Snake-Sahtaneh	Clarke	Lotek VHF	60 ppm	6/17/2015	10	599205	6487045	normal
SOEK148	Caribou	Snake-Sahtaneh	Clarke	Lotek VHF	60 ppm	6/18/2015	10	605225	6453998	normal
SOEK153	Caribou	Snake-Sahtaneh	Clarke	Lotek VHF	60 ppm	6/17/2015	10	533855	6502661	normal
SOEK152	Caribou	Snake-Sahtaneh	Clarke	Lotek VHF	60 ppm	6/17/2015	10	563890	6499193	normal
SOEK019	Caribou	Snake-Sahtaneh	Clarke	Lotek VHF	60 ppm	6/17/2015	10	570892	6507963	normal
SOEK021	Caribou	Snake-Sahtaneh	Clarke	Lotek VHF	60 ppm	6/17/2015	10	555198	6504335	normal
SOEK025	Caribou	Snake-Sahtaneh	Clarke	Lotek VHF	60 ppm	6/17/2015	10	551657	6498937	normal
SOEK024	Caribou	Snake-Sahtaneh	Clarke	Lotek VHF	60 ppm	6/17/2015	10	569004	6499987	normal
SOEK149	Caribou	Snake-Sahtaneh	Clarke	Lotek VHF	60 ppm	6/17/2015	10	572974	6501758	normal
SOEK156	Caribou	Snake-Sahtaneh	Clarke	Lotek VHF	60 ppm	6/17/2015	10	540022	6502749	normal
SOEK157	Caribou	Snake-Sahtaneh	Clarke	Lotek VHF	60 ppm	6/17/2015	10	562139	6501295	normal
SOEK070	Caribou	Snake-Sahtaneh	Clarke	Lotek VHF	60 ppm	6/17/2015	10	569486	6497346	normal
SOEK220	Caribou	Snake-Sahtaneh	Clarke	Vectr-VertexTD	42 ppm	6/17/2015	10	606697	6483077	normal
SOEK218	Caribou	Snake-Sahtaneh	Clarke	Vectr-VertexTD	42 ppm	6/18/2015	10	555052	6539437	normal
SOEK020b	Caribou	Snake-Sahtaneh	Clarke	Vectr-VertexTD	42 ppm	6/17/2015	10	573563	6466985	normal
SOEK103	Caribou	Snake-Sahtaneh	East Kotcho	Lotek VHF	60 ppm	6/18/2015	10	630073	6559679	normal
SOEK102	Caribou	Snake-Sahtaneh	East Kotcho	Lotek VHF	60 ppm	6/18/2015	10	627038	6551855	normal
SOEK105	Caribou	Snake-Sahtaneh	East Kotcho	Lotek VHF	not heard	6/18/2015	n/a	n/a	n/a	VHF not detected
SOEK182	Caribou	Snake-Sahtaneh	North Kotcho	Vectr-VertexTD	42 ppm	6/18/2015	10	598429	6584795	normal
SOEK186	Caribou	Snake-Sahtaneh	North Kotcho	Vectr-VertexTD	42 ppm	6/18/2015	10	596939	6569890	normal
SOEK204	Caribou	Snake-Sahtaneh	North Kotcho	Lotek-Lifecycle	50 ppm	6/18/2015	10	613162	6562694	normal
SOEK097b	Caribou	Snake-Sahtaneh	North Kotcho	Vectr-VertexTD	42 ppm	6/18/2015	10	601133	6584495	normal
SOEK187	Caribou	Snake-Sahtaneh	North Kotcho	Lotek-Lifecycle	50 ppm	6/18/2015	10	606058	6567089	normal
SOEK111	Caribou	Snake-Sahtaneh	North Kotcho	Vectr-Vertex	42 ppm	6/18/2015	10	603683	6587100	normal
SOEK100b	Caribou	Snake-Sahtaneh	North Kotcho	Vectr-VertexTD	42 ppm	6/18/2015	10	608418	6565015	normal
SOEK089	Caribou	Snake-Sahtaneh	North Kotcho	Lotek VHF	60 ppm	6/18/2015	10	594900	6570665	normal
SOEK088	Caribou	Snake-Sahtaneh	North Kotcho	Lotek VHF	60 ppm	6/18/2015	10	634162	6557377	normal
SOEK090	Caribou	Snake-Sahtaneh	North Kotcho	Lotek VHF	60 ppm	6/18/2015	10	597732	6585690	normal
SOEK092	Caribou	Snake-Sahtaneh	North Kotcho	Lotek VHF	60 ppm	6/18/2015	10	604758	6591343	normal
SOEK096	Caribou	Snake-Sahtaneh	Paradise	Lotek VHF	not heard	6/17/2015	n/a	n/a	n/a	VHF not detected
SOEK203	Caribou	Snake-Sahtaneh	Tsea	Vectr-VertexTD	42 ppm	6/17/2015	10	554523.5	6608030.375	normal
SOEK131	Caribou	Snake-Sahtaneh	Tsea	Lotek VHF	60 ppm	6/17/2015	10	554024	6597037	normal
SOEK081	Caribou	Snake-Sahtaneh	Tsea	Lotek VHF	60 ppm	6/17/2015	10	553089	6605892	normal
SOEK132	Caribou	Snake-Sahtaneh	Tsea	Lotek VHF	60 ppm	6/17/2015	10	548126	6592418	normal
SOEK082	Caribou	Snake-Sahtaneh	Tsea	Lotek VHF	60 ppm	6/17/2015	10	553340	6599893	normal
SOEK127	Caribou	Snake-Sahtaneh	Tsea	Lotek VHF	60 ppm	6/18/2015	10	562437	6606359	normal
SOEK079b	Caribou	Snake-Sahtaneh	Tsea	Vectr-VertexTD	42 ppm	6/17/2015	10	526855	6599567.046	normal
SOEK173	Caribou	Snake-Sahtaneh	West Kotcho	ATS-Irid	50 ppm, double 6th	6/18/2015	10	579847	6521512	normal
SOEK071	Caribou	Snake-Sahtaneh	West Kotcho	Vectr-Vertex	42 ppm	6/18/2015	10	585502	6548590	normal
SOEK209	Caribou	Snake-Sahtaneh	West Kotcho	Vectr-VertexTD	42 ppm	6/17/2015	10	524755	6568546	normal
SOEK091	Caribou	Snake-Sahtaneh	West Kotcho	Lotek VHF	60 ppm	6/18/2015	10	609762	6582765	normal
SOEK073	Caribou	Snake-Sahtaneh	West Kotcho	Lotek VHF	60 ppm	6/18/2015	10	593205	6547254	normal
SOEK219	Caribou	Snake-Sahtaneh	West Kotcho	Vectr-VertexTD	42 ppm	6/17/2015	10	555209	6607862.205	normal

Table 1 cont. VHF signal status and location of boreal caribou and wolf collars detected during the June 16-18, 2015 OGRIS fixed-wing telemetry monitoring flight.

ID	Species	Range	Core	Collar Type	Status	Date	Zone	East	North	Comments
SCEK049	Caribou	Prophet	Prophet	Lotek V-F	60 ppm	6/17/2015	10	549644	6447361	normal
SCEK045	Caribou	Prophet	Prophet	Lotek V-F	60 ppm	6/17/2015	10	544887	6456887	normal
SCEK161b	Caribou	Prophet	Prophet	Vectr-VertexTD	42 ppm	6/17/2015	10	558296	6458810	normal
SCEK193	Caribou	Snake-Sahtaneh	Clarke	Vectr-VertexTD	42 ppm	6/17/2015	10	535326	6504016	normal
SCEK212	Caribou	Snake-Sahtaneh	Clarke	Vectr-VertexTD	42 ppm	6/17/2015	10	556996	6501397	normal
SCEK192	Caribou	Snake-Sahtaneh	Clarke	Lotek-Lifecycle	50 ppm	6/17/2015	10	605685	6484966	V-F normal: no data since May 25 15
SCEK191	Caribou	Snake-Sahtaneh	Clarke	Lotek-Lifecycle	50 ppm	6/17/2015	10	602779	6487105	normal
SCEK145	Caribou	Snake-Sahtaneh	Clarke	Lotek V-F	60 ppm	6/18/2015	10	597710	6537765	heard not located, position approximate
SCEK068	Caribou	Snake-Sahtaneh	Clarke	Lotek V-F	60 ppm	6/18/2015	10	564170	6540728	normal
SCEK150	Caribou	Snake-Sahtaneh	Clarke	Lotek V-F	60 ppm	6/17/2015	10	599205	6487045	normal
SCEK148	Caribou	Snake-Sahtaneh	Clarke	Lotek V-F	60 ppm	6/18/2015	10	605225	6453998	normal
SCEK153	Caribou	Snake-Sahtaneh	Clarke	Lotek V-F	60 ppm	6/17/2015	10	533855	6502661	normal
SCEK152	Caribou	Snake-Sahtaneh	Clarke	Lotek V-F	60 ppm	6/17/2015	10	563890	6499193	normal
SCEK019	Caribou	Snake-Sahtaneh	Clarke	Lotek V-F	60 ppm	6/17/2015	10	570892	6507963	normal
BW046	Wolf	Calendar	July	Lotek Iridium	50 ppm	6/18/2015	10	633101	6635588	normal
BW044	Wolf	Calendar	July	Lotek Iridium	50 ppm	6/18/2015	10	617633	6613070	normal
BW045	Wolf	Calendar	July	Lotek Iridium	50 ppm	6/18/2015	10	600627	6627807	normal
BW034	Wolf	Calendar	July	Lotek V-F	60 ppm	6/18/2015	10	600627	6627807	normal
BW042	Wolf	Calendar	July	Lotek Iridium	50 ppm	6/18/2015	10	617633	6613070	normal
BW043	Wolf	Calendar	July	Lotek Iridium	50 ppm	6/18/2015	10	633101	6635588	normal
BW002	Wolf	Chinchaga	Big Arrow	Lotek V-F	60 ppm	6/16/2015	10	626741	6325297	normal
BW038	Wolf	Clarke	Elleh	Vectronic	50 ppm	6/17/2015	10	569214	6486139	normal
BW040	Wolf	Clarke	Elleh	Lotek Iridium	50 ppm	6/17/2015	10	551269	6498203	normal
BW039	Wolf	Clarke	Elleh	Lotek Iridium	50 ppm	6/17/2015	10	551269	6498203	normal
BW014	Wolf	Fort Nelson	Tsimah	Lotek Iridium	50 ppm	6/17/2015	10	497272	6549501	normal
BW051	Wolf	Fort Nelson	Tsimah	Lotek Iridium	50 ppm	6/17/2015	10	497272	6549501	normal
BW048	Wolf	Fort Nelson	Tsimah	Lotek V-F	60 ppm	6/17/2015	10	497272	6549501	normal
BW047	Wolf	Fortune/Tsea	Petitot	Lotek Iridium	not heard	6/17/2015	10	592863	6605342	V-F not detected; GPS activity normal
BW049	Wolf	Fortune/Tsea	Petitot	Lotek Iridium	50 ppm	6/17/2015	10	569893	6600834	heard not located; GPS activity normal
BW032	Wolf	Fortune/Tsea	Petitot	Lotek V-F	60 ppm	6/17/2015	10	558494	6593530	normal
BW033	Wolf	Fortune/Tsea	Petitot	Lotek Iridium	50 ppm	6/17/2015	10	574591	6606382	heard not located; GPS activity normal
BW050	Wolf	Fortune/Tsea	Petitot	Lotek Iridium	50 ppm	6/17/2015	10	565861	6601763	heard not located; GPS activity normal
BW036	Wolf	Maxhamish	Fortune	Lotek Iridium	50 ppm	6/17/2015	10	536630	6617384	normal
BW035	Wolf	Maxhamish	Fortune	Lotek Iridium	50 ppm	6/17/2015	10	536630	6617384	normal
BW037	Wolf	Maxhamish	Fortune	Lotek V-F	60 ppm	6/17/2015	10	536630	6617384	normal
BW041	Wolf	Maxhamish	Fortune	Lotek Iridium	50 ppm	6/18/2015	10	588000	6631740	normal
BW030	Wolf	Snake-Sahtaneh	Clarke	Lotek Iridium	not heard	6/17/2015	n/a	n/a	n/a	V-F not detected; last data Dec 28 14.
BW024	Wolf	Snake-Sahtaneh	Kwckullie	Lotek Iridium	not heard	6/18/2015	n/a	n/a	n/a	V-F not detected; last data Feb 28 15
BW026	Wolf	Snake-Sahtaneh	Kwckullie	Lotek V-F	not heard	6/18/2015	n/a	n/a	n/a	V-F not detected
BW007	Wolf	Snake-Sahtaneh	Snake	Lotek V-F	not heard	6/17/2015	n/a	n/a	n/a	not detected; missing since deployment
BW027	Wolf	Snake-Sahtaneh	Snake	Lotek Iridium	not heard	6/17/2015	n/a	n/a	n/a	V-F not detected; last data Jan 09, 14

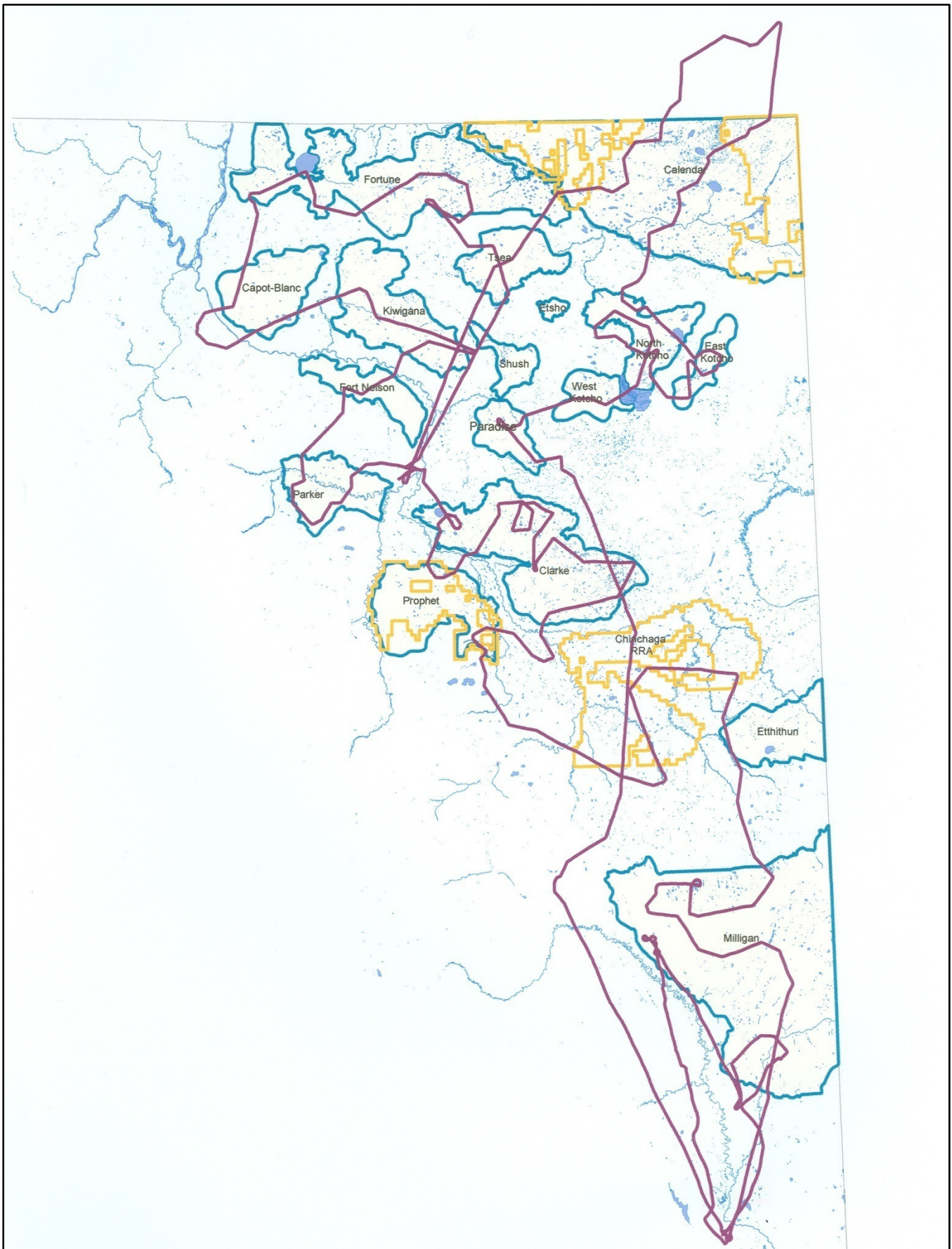


Figure 1. Flight paths flown during the June 16-18, 2015 OGRIS boreal caribou and wolf telemetry monitoring flight.