

DIVERSIFIED ENVIRONMENTAL SERVICES

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

FIXED-WING TELEMETRY MONITORING FLIGHT – August 21-22, 2015

Date: August 26, 2015

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

Executive Summary

One hundred forty-eight boreal caribou collar frequencies and 27 wolf collar frequencies were scanned during a monthly fixed-wing telemetry monitoring flight conducted on August 21-22, 2015. One hundred forty-two caribou collars were heard transmitting normal VHF signals, and 1 was transmitting a false mortality signal. The remaining 5 caribou collars were not detected. These included 2 believed to have failed (SCEK184; BC1009), 1 whose GPS data indicated normal activity well to the west of boreal caribou range (SCEK014B), 1 whose VHF beacon appears to have failed but whose GPS data transmissions indicate normal activity within the search area (SCEK216), and 1 assumed active but not detected within the normal search area (SCEK030). 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 August 21-22, 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 August 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 forty-eight caribou collar frequencies were scanned during the August 21-22, 2015 monitoring flight, including 144 SCEK collars (5 ATS Iridium, 59 Vectronic Vertex, 11 Lotek LifeCycle, and 69 Lotek VHF), 3 previously-deployed MFLNRO VHF collars, and 1 Alberta VHF collar. In addition, 27 wolf collar frequencies were scanned during the August 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 August 21-22, 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 2,535 km. Of 148 caribou collar frequencies scanned, 142 normal VHF signals and 1 false mortality signal (Fortune Vectronic GPS SCEK085) 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 SCEK GPS collar whose GPS data transmissions indicated normal activity to the west of boreal caribou range (Parker SCEK014B), 1 SCEK GPS collar whose VHF beacon appears to have failed but whose GPS data transmissions indicate normal activity within the search area (Chinchaga RRA SCEK216), 1 MFLNRO VHF collar whose battery may have expired after 7 years of activity (Kiwigana BC1009), and 1 SCEK VHF collar assumed active but not detected during the August flight (Milligan SCEK030).

Twenty-seven wolf collar frequencies were scanned during the August 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, 9 normal VHF signals were heard, 6 were not detected but were transmitting GPS data indicating normal activity, 2 were not detected and had recently ceased transmitting GPS data, and 3 are believed to have failed.

Of the 7 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 remaining 4 collars are assumed operational but were not detected.

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 August 21-22, 2015 OGRIS fixed-wing telemetry monitoring flight.

ID	Species	Range	Core	Collar Type	Status	Date	Zone	East	North	Comments
SCEK112	Caribou	Calendar	Calendar	Lotek VHF	60 ppm	8/22/2015	10	638378	6641623	normal
SCEK113	Caribou	Calendar	Calendar	Lotek VHF	60 ppm	8/22/2015	10	609614	6610568	normal
SCEK119	Caribou	Calendar	Calendar	Vectr-Vertex	42 ppm	8/22/2015	10	615623	6641832	normal
SCEK120	Caribou	Calendar	Calendar	Lotek VHF	60 ppm	8/22/2015	10	601246	6637869	normal
SCEK122	Caribou	Calendar	Calendar	Lotek VHF	60 ppm	8/22/2015	10	624726	6671654	normal
SCEK123	Caribou	Calendar	Calendar	Lotek VHF	60 ppm	8/22/2015	10	601516	6619925	normal
SCEK125	Caribou	Calendar	Calendar	Lotek VHF	60 ppm	8/22/2015	10	658708	6684044	normal
SCEK134	Caribou	Calendar	Calendar	Lotek VHF	60 ppm	8/22/2015	10	642538	6650303	normal
SCEK135	Caribou	Calendar	Calendar	Vectr-Vertex	42 ppm	8/22/2015	10	646177	6650106	normal
SCEK136b	Caribou	Calendar	Calendar	Vectr-VertexTD	42 ppm	8/22/2015	10	611819	6607503	normal
SCEK137	Caribou	Calendar	Calendar	Lotek VHF	60 ppm	8/22/2015	10	639105	6642128	normal
SCEK146b	Caribou	Calendar	Calendar	Vectr-VertexTD	42 ppm	8/22/2015	10	610205	6640115	normal
SCEK180	Caribou	Calendar	Calendar	Vectr-VertexTD	42 ppm	8/22/2015	10	612246	6667907	normal
SCEK181	Caribou	Calendar	Calendar	ATS-Irid	50 ppm; no double 6th	8/22/2015	10	611056	6605232	normal
SCEK183	Caribou	Calendar	Calendar	Vectr-VertexTD	42 ppm	8/22/2015	10	591747	6617903	normal
SCEK184	Caribou	Calendar	Calendar	ATS-Irid	not heard	8/22/2015	n/a	n/a	n/a	failed; last data Sep 23 14
SCEK185	Caribou	Calendar	Calendar	Lotek-Lifecycle	50 ppm	8/22/2015	10	585094	6636379	normal
SCEK126b	Caribou	Calendar	RRA-C	Vectr-VertexTD	42 ppm	8/22/2015	10	596576	6643824	normal
SCEK107	Caribou	Calendar	RRA-D	Lotek VHF	60 ppm	8/22/2015	10	611188	6639309	normal
SCEK108	Caribou	Calendar	RRA-D	Lotek VHF	60 ppm	8/22/2015	10	634549	6637311	normal
SCEK195	Caribou	Chinchaga	Etthithun	Vectr-VertexTD	42 ppm	8/21/2015	10	647206	6405288	normal
SCEK224	Caribou	Chinchaga	Etthithun	Vectr-VertexTD	42 ppm	8/21/2015	10	636187	6416748	normal
AB149.391	Caribou	Chinchaga	Milligan	unknown	60 ppm	8/21/2015	10	674475	6342072	normal
SCEK026b	Caribou	Chinchaga	Milligan	Vectr-VertexTD	42 ppm	8/21/2015	10	634306	6322939	normal
SCEK027	Caribou	Chinchaga	Milligan	Lotek VHF	60 ppm	8/21/2015	10	669490	6289789	normal
SCEK029	Caribou	Chinchaga	Milligan	Lotek VHF	60 ppm	8/21/2015	10	664652	6338134	normal
SCEK030	Caribou	Chinchaga	Milligan	Lotek VHF	not heard	8/21/2015	n/a	n/a	n/a	VHF signal not detected
SCEK032	Caribou	Chinchaga	Milligan	Lotek VHF	60 ppm	8/21/2015	10	660876	6365492	normal
SCEK033b	Caribou	Chinchaga	Milligan	Vectr-VertexTD	42 ppm	8/21/2015	10	634439	6334314	normal
SCEK034	Caribou	Chinchaga	Milligan	Vectr-Vertex	42 ppm	8/21/2015	10	634289	6362053	normal
SCEK035	Caribou	Chinchaga	Milligan	Lotek VHF	60 ppm	8/21/2015	10	632177	6344689	normal
SCEK036b	Caribou	Chinchaga	Milligan	Vectr-VertexTD	42 ppm	8/21/2015	10	613167	6364675	normal
SCEK040	Caribou	Chinchaga	Milligan	Vectr-Vertex	42 ppm	8/21/2015	10	643280	6402913	normal
SCEK041	Caribou	Chinchaga	Milligan	Lotek VHF	60 ppm	8/21/2015	10	646581	6363377	normal
SCEK053	Caribou	Chinchaga	Milligan	Lotek VHF	60 ppm	8/21/2015	10	637906	6332625	normal
SCEK054	Caribou	Chinchaga	Milligan	Lotek VHF	60 ppm	8/21/2015	10	634279	6337757	normal
SCEK055	Caribou	Chinchaga	Milligan	Vectr-Vertex	42 ppm	8/21/2015	10	646546	6340649	normal
SCEK057	Caribou	Chinchaga	Milligan	Lotek VHF	60 ppm	8/21/2015	10	640108	6329690	normal
SCEK059	Caribou	Chinchaga	Milligan	Lotek VHF	60 ppm	8/21/2015	10	622084	6340521	normal
SCEK060	Caribou	Chinchaga	Milligan	Lotek VHF	60 ppm	8/21/2015	10	575858	6364782	normal
SCEK061	Caribou	Chinchaga	Milligan	Lotek VHF	60 ppm	8/21/2015	10	660170	6336946	normal
SCEK196	Caribou	Chinchaga	Milligan	Vectr-VertexTD	42 ppm	8/21/2015	10	631412	6360935	normal
SCEK197	Caribou	Chinchaga	Milligan	Lotek-Lifecycle	50 ppm	8/21/2015	10	629243	6381225	normal
SCEK198	Caribou	Chinchaga	Milligan	Vectr-VertexTD	42 ppm	8/21/2015	10	645144	6304840	normal
SCEK201	Caribou	Chinchaga	Milligan	Vectr-VertexTD	42 ppm	8/21/2015	10	664593	6290070	normal
SCEK222	Caribou	Chinchaga	Milligan	Vectr-VertexTD	42 ppm	8/21/2015	10	662259	6369174	normal
SCEK223	Caribou	Chinchaga	Milligan	Vectr-VertexTD	42 ppm	8/21/2015	10	641609	6330322	normal
SCEK048	Caribou	Chinchaga	RRA-A	Lotek VHF	60 ppm	8/21/2015	10	601708	6409654	normal
SCEK142	Caribou	Chinchaga	RRA-A	Vectr-Vertex	42 ppm	8/21/2015	10	606305	6447132	normal
SCEK170	Caribou	Chinchaga	RRA-A	ATS-Irid	50 ppm; double 6th	8/21/2015	10	652519	6446001	normal

Table 1 cont. VHF signal status and location of boreal caribou and wolf collars detected during the August 21-22, 2015 OGRIS fixed-wing telemetry monitoring flight.

ID	Species	Range	Core	Collar Type	Status	Date	Zone	East	North	Comments
SCEK172	Caribou	Chinchaga	RRA-A	Lotek-Lifecycle	50 ppm	8/21/2015	10	593547	6433886	normal
SCEK189	Caribou	Chinchaga	RRA-A	Vectr-VertexTD	42 ppm	8/21/2015	10	605470	6450729	normal
SCEK213	Caribou	Chinchaga	RRA-A	Vectr-VertexTD	42 ppm	8/21/2015	10	601126	6443013	normal
SCEK214	Caribou	Chinchaga	RRA-A	Vectr-VertexTD	42 ppm	8/21/2015	10	606190	6419748	normal
SCEK215	Caribou	Chinchaga	RRA-A	Vectr-VertexTD	42 ppm	8/21/2015	10	635269	6436037	normal
SCEK216	Caribou	Chinchaga	RRA-A	Vectr-VertexTD	not heard	8/21/2015	10	620893	6449112	VHF not heard since Apr 2015; GPS activity
SCEK009b	Caribou	Fort Nelson	Fort Nelson	Vectr-VertexTD	42 ppm	8/21/2015	10	521686	6549217	normal
SCEK166	Caribou	Fort Nelson	Fort Nelson	Vectr-VertexTD	42 ppm	8/21/2015	10	518459	6544125	normal
SCEK167	Caribou	Fort Nelson	Fort Nelson	Lotek-Lifecycle	50 ppm	8/21/2015	10	519610	6545471	normal
BC1014	Caribou	Maxhamish	Capot-Blanc	Lotek VHF	60 ppm	8/21/2015	10	473181	6580476	normal
SCEK007b	Caribou	Maxhamish	Capot-Blanc	Vectr-VertexTD	42 ppm	8/21/2015	10	445784	6567200	normal
SCEK066	Caribou	Maxhamish	Capot-Blanc	Lotek VHF	60 ppm	8/21/2015	10	447058	6567242	normal
SCEK076	Caribou	Maxhamish	Capot-Blanc	Lotek VHF	60 ppm	8/21/2015	10	462651	6580556	normal
BC1033	Caribou	Maxhamish	Fortune	Lotek VHF	60 ppm	8/21/2015	10	504813	6622960	normal
SCEK005b	Caribou	Maxhamish	Fortune	Vectr-VertexTD	42 ppm	8/21/2015	10	485915	6614130	normal
SCEK078	Caribou	Maxhamish	Fortune	Lotek VHF	60 ppm	8/21/2015	10	467489	6628757	normal
SCEK085	Caribou	Maxhamish	Fortune	Vectr-Vertex	84 ppm	8/21/2015	10	527602	6629564	False Mortality
SCEK086	Caribou	Maxhamish	Fortune	Lotek VHF	60 ppm	8/21/2015	10	530916	6631499	normal
SCEK087	Caribou	Maxhamish	Fortune	Lotek VHF	60 ppm	8/21/2015	10	542362	6618078	normal
SCEK128	Caribou	Maxhamish	Fortune	Lotek VHF	60 ppm	8/21/2015	10	533096	6630815	normal
SCEK129	Caribou	Maxhamish	Fortune	Lotek VHF	60 ppm	8/21/2015	10	538264	6631146	normal
SCEK164	Caribou	Maxhamish	Fortune	Lotek VHF	60 ppm	8/21/2015	10	542115	6624099	normal
SCEK175	Caribou	Maxhamish	Fortune	Lotek-Lifecycle	50 ppm	8/21/2015	10	494132	6626838	normal
SCEK176	Caribou	Maxhamish	Fortune	Lotek-Lifecycle	50 ppm	8/21/2015	10	479371	6625794	normal
SCEK177	Caribou	Maxhamish	Fortune	Vectr-VertexTD	42 ppm	8/21/2015	10	531133	6630846	normal
SCEK178	Caribou	Maxhamish	Fortune	Vectr-VertexTD	42 ppm	8/21/2015	10	542308	6619399	normal
SCEK179	Caribou	Maxhamish	Fortune	Lotek-Lifecycle	50 ppm	8/21/2015	10	538029	6633140	normal
SCEK205	Caribou	Maxhamish	Fortune	Vectr-VertexTD	42 ppm	8/21/2015	10	541614	6631738	normal
SCEK206	Caribou	Maxhamish	Fortune	Vectr-VertexTD	42 ppm	8/21/2015	10	532305	6624712	normal
SCEK208	Caribou	Maxhamish	Fortune	Vectr-VertexTD	42 ppm	8/21/2015	10	483459	6626527	normal
SCEK221	Caribou	Maxhamish	Fortune	Vectr-VertexTD	42 ppm	8/21/2015	10	543075	6623383	normal
BC1009	Caribou	Maxhamish	Kiwigana	Lotek VHF	not heard	8/21/2015	n/a	n/a	n/a	VHF signal not detected
SCEK004	Caribou	Maxhamish	Kiwigana	Lotek VHF	60 ppm	8/21/2015	10	468190	6626041	normal
SCEK062	Caribou	Maxhamish	Kiwigana	Lotek VHF	60 ppm	8/21/2015	10	527908	6570458	normal
SCEK064	Caribou	Maxhamish	Kiwigana	Lotek VHF	60 ppm	8/21/2015	10	523694	6582228	normal
SCEK168	Caribou	Maxhamish	Kiwigana	Vectr-VertexTD	42 ppm	8/21/2015	10	551414	6564764	normal
SCEK169	Caribou	Maxhamish	Kiwigana	ATS-Irid	50 ppm; double 6th	8/21/2015	10	504553	6597366	normal
SCEK211	Caribou	Maxhamish	Kiwigana	Vectr-VertexTD	42 ppm	8/21/2015	10	532711	6567321	normal
SCEK010	Caribou	Parker	Parker	Lotek VHF	60 ppm	8/21/2015	10	489772	6499792	normal
SCEK012	Caribou	Parker	Parker	Lotek VHF	60 ppm	8/21/2015	10	490783	6507760	normal
SCEK014b	Caribou	Parker	Parker	Vectr-VertexTD	not heard	8/21/2015	10	459374	6473067	VHF out of range (Tuchodi R.); GPS normal
SCEK015	Caribou	Parker	Parker	Lotek VHF	60 ppm	8/21/2015	10	491535	6523420	normal
SCEK016b	Caribou	Parker	Parker	Vectr-VertexTD	42 ppm	8/21/2015	10	478427	6513601	normal
SCEK194	Caribou	Parker	Parker	Vectr-VertexTD	42 ppm	8/21/2015	10	486727	6522023	normal
SCEK045	Caribou	Prophet	Prophet	Lotek VHF	60 ppm	8/21/2015	10	546401	6454952	normal
SCEK049	Caribou	Prophet	Prophet	Lotek VHF	60 ppm	8/21/2015	10	555681	6449066	normal
SCEK051	Caribou	Prophet	Prophet	Lotek VHF	60 ppm	8/21/2015	10	531597	6481485	normal
SCEK161b	Caribou	Prophet	Prophet	Vectr-VertexTD	42 ppm	8/21/2015	10	550667	6462765	normal
SCEK217	Caribou	Prophet	Prophet	Vectr-VertexTD	42 ppm	8/21/2015	10	555536	6451024	normal
SCEK019	Caribou	Snake-Sahtaneh	Clarke	Lotek VHF	60 ppm	8/21/2015	10	572764	6507840	normal

Table 1 cont. VHF signal status and location of boreal caribou and wolf collars detected during the August 21-22, 2015 OGRIS fixed-wing telemetry monitoring flight.

ID	Species	Range	Core	Collar Type	Status	Date	Zone	East	North	Comments
SCEK020b	Caribou	Snake-Sahtaneh	Clarke	Vectr-VertexTD	42 ppm	8/21/2015	10	568681	6468297	normal
SCEK021	Caribou	Snake-Sahtaneh	Clarke	Lotek VHF	60 ppm	8/21/2015	10	558253	6503570	normal
SCEK024	Caribou	Snake-Sahtaneh	Clarke	Lotek VHF	60 ppm	8/21/2015	10	562096	6496227	normal
SCEK025	Caribou	Snake-Sahtaneh	Clarke	Lotek VHF	60 ppm	8/21/2015	10	556002	6493679	normal
SCEK068	Caribou	Snake-Sahtaneh	Clarke	Lotek VHF	60 ppm	8/22/2015	10	559949	6541720	normal
SCEK070	Caribou	Snake-Sahtaneh	Clarke	Lotek VHF	60 ppm	8/21/2015	10	572381	6493582	normal
SCEK145	Caribou	Snake-Sahtaneh	Clarke	Lotek VHF	60 ppm	8/22/2015	10	592885	6545171	normal
SCEK148	Caribou	Snake-Sahtaneh	Clarke	Lotek VHF	60 ppm	8/21/2015	10	604686	6483409	normal
SCEK149	Caribou	Snake-Sahtaneh	Clarke	Lotek VHF	60 ppm	8/21/2015	10	576884	6496200	normal
SCEK150	Caribou	Snake-Sahtaneh	Clarke	Lotek VHF	60 ppm	8/21/2015	10	607296	6484735	normal
SCEK152	Caribou	Snake-Sahtaneh	Clarke	Lotek VHF	60 ppm	8/21/2015	10	555483	6502042	normal
SCEK153	Caribou	Snake-Sahtaneh	Clarke	Lotek VHF	60 ppm	8/21/2015	10	536039	6493957	normal
SCEK156	Caribou	Snake-Sahtaneh	Clarke	Lotek VHF	60 ppm	8/21/2015	10	538590	6500313	normal
SCEK157	Caribou	Snake-Sahtaneh	Clarke	Lotek VHF	60 ppm	8/21/2015	10	558862	6495398	normal
SCEK191	Caribou	Snake-Sahtaneh	Clarke	Lotek-Lifecycle	50 ppm	8/21/2015	10	601062	6487226	normal
SCEK192	Caribou	Snake-Sahtaneh	Clarke	Lotek-Lifecycle	50 ppm	8/21/2015	10	611069	6487741	normal
SCEK193	Caribou	Snake-Sahtaneh	Clarke	Vectr-VertexTD	42 ppm	8/21/2015	10	534520	6504937	normal
SCEK212	Caribou	Snake-Sahtaneh	Clarke	Vectr-VertexTD	42 ppm	8/21/2015	10	553276	6501334	normal
SCEK218	Caribou	Snake-Sahtaneh	Clarke	Vectr-VertexTD	42 ppm	8/22/2015	10	556066	6539119	normal
SCEK220	Caribou	Snake-Sahtaneh	Clarke	Vectr-VertexTD	42 ppm	8/21/2015	10	607311	6480641	normal
SCEK102	Caribou	Snake-Sahtaneh	East Kotcho	Lotek VHF	60 ppm	8/22/2015	10	629219	6551885	normal
SCEK103	Caribou	Snake-Sahtaneh	East Kotcho	Lotek VHF	60 ppm	8/22/2015	10	635450	6560950	normal
SCEK105	Caribou	Snake-Sahtaneh	East Kotcho	Lotek VHF	60 ppm	8/22/2015	10	640014	6570692	normal
SCEK088	Caribou	Snake-Sahtaneh	North Kotcho	Lotek VHF	60 ppm	8/22/2015	10	627440	6550152	normal
SCEK089	Caribou	Snake-Sahtaneh	North Kotcho	Lotek VHF	60 ppm	8/22/2015	10	606298	6572963	normal
SCEK090	Caribou	Snake-Sahtaneh	North Kotcho	Lotek VHF	60 ppm	8/22/2015	10	597265	6585752	normal
SCEK092	Caribou	Snake-Sahtaneh	North Kotcho	Lotek VHF	60 ppm	8/22/2015	10	603632	6598617	normal
SCEK097b	Caribou	Snake-Sahtaneh	North Kotcho	Vectr-VertexTD	42 ppm	8/22/2015	10	600398	6583929	normal
SCEK100b	Caribou	Snake-Sahtaneh	North Kotcho	Vectr-VertexTD	42 ppm	8/22/2015	10	638370	6564263	normal
SCEK111	Caribou	Snake-Sahtaneh	North Kotcho	Vectr-Vertex	42 ppm	8/22/2015	10	607468	6584905	normal
SCEK182	Caribou	Snake-Sahtaneh	North Kotcho	Vectr-VertexTD	42 ppm	8/22/2015	10	597627	6587393	normal
SCEK186	Caribou	Snake-Sahtaneh	North Kotcho	Vectr-VertexTD	42 ppm	8/22/2015	10	603990	6566496	normal
SCEK187	Caribou	Snake-Sahtaneh	North Kotcho	Lotek-Lifecycle	50 ppm	8/22/2015	10	611710	6557638	normal
SCEK204	Caribou	Snake-Sahtaneh	North Kotcho	Lotek-Lifecycle	50 ppm	8/22/2015	10	637046	6568645	normal
SCEK096	Caribou	Snake-Sahtaneh	Paradise	Lotek VHF	60 ppm	8/22/2015	10	557613	6536229	normal
SCEK079b	Caribou	Snake-Sahtaneh	Tsea	Vectr-VertexTD	42 ppm	8/21/2015	10	527879	6602194	normal
SCEK081	Caribou	Snake-Sahtaneh	Tsea	Lotek VHF	60 ppm	8/21/2015	10	559116	6601988	normal
SCEK082	Caribou	Snake-Sahtaneh	Tsea	Lotek VHF	60 ppm	8/21/2015	10	552754	6599791	normal
SCEK127	Caribou	Snake-Sahtaneh	Tsea	Lotek VHF	60 ppm	8/21/2015	10	558147	6602425	normal
SCEK131	Caribou	Snake-Sahtaneh	Tsea	Lotek VHF	60 ppm	8/21/2015	10	550748	6594342	normal
SCEK132	Caribou	Snake-Sahtaneh	Tsea	Lotek VHF	60 ppm	8/21/2015	10	550617	6596916	normal
SCEK203	Caribou	Snake-Sahtaneh	Tsea	Vectr-VertexTD	42 ppm	8/21/2015	10	551437	6610085	normal
SCEK071	Caribou	Snake-Sahtaneh	West Kotcho	Vectr-Vertex	42 ppm	8/22/2015	10	587143	6547059	normal
SCEK073	Caribou	Snake-Sahtaneh	West Kotcho	Lotek VHF	60 ppm	8/22/2015	10	590492	6545649	normal
SCEK091	Caribou	Snake-Sahtaneh	West Kotcho	Lotek VHF	60 ppm	8/22/2015	10	605634	6580838	normal
SCEK173	Caribou	Snake-Sahtaneh	West Kotcho	ATS-Irid	50 ppm; no double 6th	8/21/2015	10	582235	6519235	normal
SCEK209	Caribou	Snake-Sahtaneh	West Kotcho	Vectr-VertexTD	42 ppm	8/21/2015	10	513144	6570522	normal
SCEK219	Caribou	Snake-Sahtaneh	West Kotcho	Vectr-VertexTD	42 ppm	8/21/2015	10	557638	6605902	normal

Table 1 cont. VHF signal status and location of boreal caribou and wolf collars detected during the August 21-22, 2015 OGRIS fixed-wing telemetry monitoring flight.

ID	Species	Range	Core	Collar Type	Status	Date	Zone	East	North	Comments
BW034	Wolf	Calendar	July	Lotek VHF	not heard	8/22/2015	n/a	n/a	n/a	VHF not detected
BW042	Wolf	Calendar	July	Lotek Iridium	50 ppm	8/22/2015	10	594238	6627438	normal
BW043	Wolf	Calendar	July	Lotek Iridium	50 ppm	8/22/2015	10	605372	6612840	normal
BW044	Wolf	Calendar	July	Lotek Iridium	50 ppm	8/22/2015	10	635323	6630447	normal
BW045	Wolf	Calendar	July	Lotek Iridium	not heard	8/22/2015	n/a	n/a	n/a	VHF not detected; data Aug 09, 15
BW046	Wolf	Calendar	July	Lotek Iridium	not heard	8/22/2015	n/a	n/a	n/a	VHF not detected; data Aug 04, 15
BW002	Wolf	Chinchaga	Big Arrow	Lotek VHF	60 ppm	8/21/2015	10	638973	6321296	normal
BW038	Wolf	Clarke	Elleh	Vectronic	50 ppm	8/21/2015	10	574884	6486945	normal
BW039	Wolf	Clarke	Elleh	Lotek Iridium	50 ppm	8/21/2015	n/a	n/a	n/a	VHF not detected; GPS activity normal
BW040	Wolf	Clarke	Elleh	Lotek Iridium	50 ppm	8/21/2015	10	576928	6485253	normal
BW014	Wolf	Fort Nelson	Tsimeh	Lotek Iridium	50 ppm	8/21/2015	10	510580	6539993	normal
BW048	Wolf	Fort Nelson	Tsimeh	Lotek VHF	not heard	8/21/2015	n/a	n/a	n/a	VHF not detected
BW051	Wolf	Fort Nelson	Tsimeh	Lotek Iridium	50 ppm	8/21/2015	10	504241	6532913	normal
BW032	Wolf	Fortune/Tsea	Petitot	Lotek VHF	not heard	8/21/2015	n/a	n/a	n/a	VHF not detected
BW033	Wolf	Fortune/Tsea	Petitot	Lotek Iridium	not heard	8/21/2015	n/a	n/a	n/a	VHF not detected; GPS activity normal
BW047	Wolf	Fortune/Tsea	Petitot	Lotek Iridium	50 ppm	8/21/2015	10	555125	6597640	normal
BW049	Wolf	Fortune/Tsea	Petitot	Lotek Iridium	not heard	8/21/2015	n/a	n/a	n/a	VHF not detected; GPS activity normal
BW050	Wolf	Fortune/Tsea	Petitot	Lotek Iridium	not heard	8/21/2015	n/a	n/a	n/a	VHF not detected; GPS activity normal
BW035	Wolf	Maxhamish	Fortune	Lotek Iridium	50 ppm	8/21/2015	10	525602	6629564	normal
BW036	Wolf	Maxhamish	Fortune	Lotek Iridium	not heard	8/21/2015	n/a	n/a	n/a	VHF not detected; GPS activity normal
BW037	Wolf	Maxhamish	Fortune	Lotek VHF	60 ppm	8/21/2015	10	542170	6622065	normal
BW041	Wolf	Maxhamish	Fortune	Lotek Iridium	not heard	8/21/2015	n/a	n/a	n/a	VHF not detected; GPS activity normal
BW030	Wolf	Snake-Sahtaneh	Clarke	Lotek Iridium	not heard	8/21/2015	n/a	n/a	n/a	VHF not detected; last data Dec 28 14.
BW024	Wolf	Snake-Sahtaneh	Kwokullie	Lotek Iridium	not heard	8/22/2015	n/a	n/a	n/a	VHF not detected; last data Feb 28 15
BW026	Wolf	Snake-Sahtaneh	Kwokullie	Lotek VHF	not heard	8/22/2015	n/a	n/a	n/a	VHF not detected
BW007	Wolf	Snake-Sahtaneh	Snake	Lotek VHF	not heard	8/21/2015	n/a	n/a	n/a	not detected; missing since deployment
BW027	Wolf	Snake-Sahtaneh	Snake	Lotek Iridium	not heard	8/21/2015	n/a	n/a	n/a	VHF not detected; last data Jan 09, 14

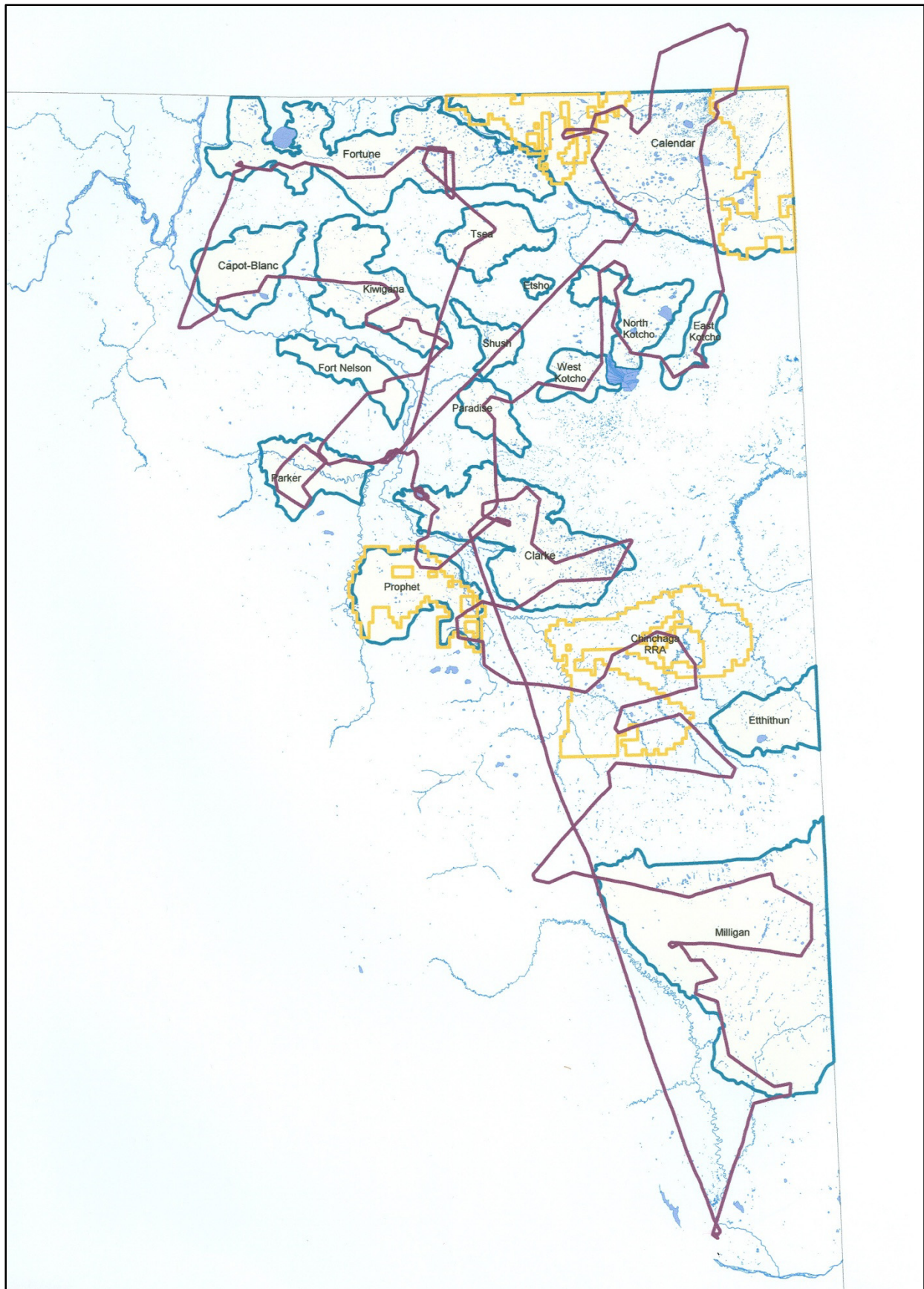


Figure 1. Flight paths flown during the August 21-22, 2015 OGRIS boreal caribou and wolf telemetry monitoring flight.