

DIVERSIFIED ENVIRONMENTAL SERVICES

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

FIXED-WING TELEMETRY MONITORING FLIGHT – May 22-23, 2015

Date: May 31, 2015

Attention: Brian Thomson
BC Oil and Gas Research and Innovation Society
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Executive Summary

One hundred fifty-five boreal caribou collar frequencies and 27 wolf collar frequencies were scanned during a monthly fixed-wing telemetry monitoring flight conducted on May 22-23, 2015. One hundred forty-six caribou collars were heard transmitting normal VHF signals and 1 was transmitting a mortality signal indicating a dead animal (SCEK110B). The remaining 8 caribou collars were not detected. These included 1 believed to have failed and 2 whose GPS data subsequently indicated they had moved outside 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 May 22-23, 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 May 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-five caribou collar frequencies were scanned during the May 2015 monitoring flight, including 150 SCEK collars (5 ATS Iridium, 61 Vectronic Vertex, 12 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 May 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 May 22-23, 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 3,412 km. Of 155 caribou collar frequencies scanned, 146 normal VHF signals and 1 mortality signal were detected (North Kotcho Lotek GPS SCEK110B). The VHF signals of the remaining 8 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 well outside the study area at the time of the flight (SCEK014B, SCEK179), one SCEK GPS collar whose transmitted GPS data indicated normal activity within the search area (SCEK216), and 4 VHF collars (BC1009, SCEK030, SCEK060, SCEK145).

Twenty-seven wolf collar frequencies were scanned during the May 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, 8 normal VHF signals were heard, 9 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, 4 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 2 are assumed operational but were not detected (BW002, Big Arrow Pack; BW026, Kwokullie Pack).

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 May 22-23, 2015 SCEK fixed-wing telemetry monitoring flight.

ID	Species	Range	Core	Collar Type	Status	Date	Zone	East	North	Comments
SOEK112	Caribou	Calendar	Calendar	Lotek VHF	60 ppm	5/23/2015	10	644113	6642621	normal
SOEK113	Caribou	Calendar	Calendar	Lotek VHF	60 ppm	5/23/2015	10	616203	6608398	normal
SOEK119	Caribou	Calendar	Calendar	Vectr-Vertex	50 ppm	5/23/2015	10	618770	6641404	normal
SOEK120	Caribou	Calendar	Calendar	Lotek VHF	60 ppm	5/23/2015	10	606832	6638611	normal
SOEK122	Caribou	Calendar	Calendar	Lotek VHF	60 ppm	5/23/2015	10	623757	6676274	normal
SOEK123	Caribou	Calendar	Calendar	Lotek VHF	60 ppm	5/23/2015	10	603222	6628660	normal
SOEK125	Caribou	Calendar	Calendar	Lotek VHF	60 ppm	5/23/2015	10	653466	6680294	normal
SOEK134	Caribou	Calendar	Calendar	Lotek VHF	60 ppm	5/23/2015	10	611713	6626732	normal
SOEK135	Caribou	Calendar	Calendar	Vectr-Vertex	100 ppm	5/23/2015	10	648777	6644932	normal
SOEK136b	Caribou	Calendar	Calendar	Vectr-VertexTD	42 ppm	5/23/2015	10	617095	6610095	normal
SOEK137	Caribou	Calendar	Calendar	Lotek VHF	60 ppm	5/23/2015	10	642378	6641223	normal
SOEK146b	Caribou	Calendar	Calendar	Vectr-VertexTD	42 ppm	5/23/2015	10	609693	6639102	normal
SOEK180	Caribou	Calendar	Calendar	Vectr-VertexTD	42 ppm	5/23/2015	10	606665	6666903	normal
SOEK181	Caribou	Calendar	Calendar	ATS-Irid	50 ppm, no double 6th	5/23/2015	10	612740	6611607	normal
SOEK183	Caribou	Calendar	Calendar	Vectr-VertexTD	42 ppm	5/23/2015	10	597817	6623773	normal
SOEK184	Caribou	Calendar	Calendar	ATS-Irid	not heard	5/23/2015	10	n/a	n/a	failed; last data Sep 23 14
SOEK185	Caribou	Calendar	Calendar	Lotek-Lifecycle	50 ppm	5/23/2015	10	584550	6636153	normal
SOEK126b	Caribou	Calendar	FR-A-C	Vectr-VertexTD	42 ppm	5/23/2015	10	594672	6659266	normal
SOEK107	Caribou	Calendar	FR-A-D	Lotek VHF	60 ppm	5/23/2015	10	609992	6640173	normal
SOEK108	Caribou	Calendar	FR-A-D	Lotek VHF	60 ppm	5/23/2015	10	647516	6667639	normal
SOEK195	Caribou	Chinchaga	Ethithun	Vectr-VertexTD	42 ppm	5/22/2015	10	644713	6409225	normal
SOEK224	Caribou	Chinchaga	Ethithun	Vectr-VertexTD	42 ppm	5/22/2015	10	635523	6428013	normal
AB149.391	Caribou	Chinchaga	Milligan	unknown	60 ppm	5/22/2015	10	670176	6371597	normal
AB150.470	Caribou	Chinchaga	Milligan	unknown	60 ppm	5/22/2015	10	664275	6367818	normal
SOEK026b	Caribou	Chinchaga	Milligan	Vectr-VertexTD	42 ppm	5/22/2015	10	671432	6297573	normal
SOEK027	Caribou	Chinchaga	Milligan	Lotek VHF	60 ppm	5/22/2015	10	667980	6295907	normal
SOEK029	Caribou	Chinchaga	Milligan	Lotek VHF	61 ppm	5/22/2015	10	640196	6339682	normal
SOEK030	Caribou	Chinchaga	Milligan	Lotek VHF	not heard	5/22/2015	n/a	n/a	n/a	VHF signal not detected
SOEK032	Caribou	Chinchaga	Milligan	Lotek VHF	60 ppm	5/22/2015	10	659293	6366300	normal
SOEK033b	Caribou	Chinchaga	Milligan	Vectr-VertexTD	42 ppm	5/22/2015	10	661138	6339735	normal
SOEK034	Caribou	Chinchaga	Milligan	Vectr-Vertex	50 ppm	5/22/2015	10	634611	667524	normal
SOEK035	Caribou	Chinchaga	Milligan	Lotek VHF	60 ppm	5/22/2015	10	625540	6386625	normal
SOEK036b	Caribou	Chinchaga	Milligan	Vectr-VertexTD	42 ppm	5/22/2015	10	603584	6373871	normal
SOEK040	Caribou	Chinchaga	Milligan	Vectr-Vertex	50 ppm	5/22/2015	10	632014	6426574	normal
SOEK041	Caribou	Chinchaga	Milligan	Lotek VHF	60 ppm	5/22/2015	10	618636	6345497	normal
SOEK053	Caribou	Chinchaga	Milligan	Lotek VHF	60 ppm	5/22/2015	10	611616	6349828	normal
SOEK054	Caribou	Chinchaga	Milligan	Lotek VHF	60 ppm	5/22/2015	10	634221	6348220	normal
SOEK055	Caribou	Chinchaga	Milligan	Vectr-Vertex	50 ppm	5/22/2015	10	649643	6340148	normal
SOEK057	Caribou	Chinchaga	Milligan	Lotek VHF	60 ppm	5/22/2015	10	625568	6341954	normal
SOEK058	Caribou	Chinchaga	Milligan	Lotek VHF	60 ppm	5/22/2015	10	602683	6447427	normal
SOEK059	Caribou	Chinchaga	Milligan	Lotek VHF	60 ppm	5/22/2015	10	621343	6343304	normal
SOEK060	Caribou	Chinchaga	Milligan	Lotek VHF	not heard	5/22/2015	n/a	n/a	n/a	VHF signal not detected
SOEK061	Caribou	Chinchaga	Milligan	Lotek VHF	60 ppm	5/22/2015	10	657600	6334534	normal
SOEK196	Caribou	Chinchaga	Milligan	Vectr-VertexTD	42 ppm	5/22/2015	10	638884	6359565	normal
SOEK197	Caribou	Chinchaga	Milligan	Lotek-Lifecycle	50 ppm	5/22/2015	10	661870	6366781	normal
SOEK198	Caribou	Chinchaga	Milligan	Vectr-VertexTD	42 ppm	5/22/2015	10	654800	6307246	normal
SOEK201	Caribou	Chinchaga	Milligan	Vectr-VertexTD	42 ppm	5/22/2015	10	660342	6295608	normal
SOEK222	Caribou	Chinchaga	Milligan	Vectr-VertexTD	42 ppm	5/22/2015	10	615335	6348414	normal
SOEK223	Caribou	Chinchaga	Milligan	Vectr-VertexTD	42 ppm	5/22/2015	10	633148	6347508	normal

Table 1 cont. VHF signal status and location of boreal caribou and wolf collars detected during the May 22-23, 2015 SCEK fixed-wing telemetry monitoring flight.

ID	Species	Range	Core	Collar Type	Status	Date	Zone	East	North	Comments
SCEK048	Caribou	Chinchaga	RRA-A	Lotek VHF	60 ppm	5/22/2015	10	608739	6414987	normal
SCEK142	Caribou	Chinchaga	RRA-A	Vectr-Vertex	50 ppm	5/22/2015	10	612154	6452521	normal
SCEK170	Caribou	Chinchaga	RRA-A	ATS-Irid	50 ppm; no double 6th	5/22/2015	10	643622	6441358	normal
SCEK171	Caribou	Chinchaga	RRA-A	Vectr-VertexTD	42 ppm	5/22/2015	10	596880	6416411	normal
SCEK172	Caribou	Chinchaga	RRA-A	Lotek-Lifecycle	50 ppm	5/22/2015	10	590987	6438846	normal
SCEK189	Caribou	Chinchaga	RRA-A	Vectr-VertexTD	42 ppm	5/22/2015	10	611468	6444714	normal
SCEK213	Caribou	Chinchaga	RRA-A	Vectr-VertexTD	42 ppm	5/22/2015	10	602432	6443778	normal
SCEK214	Caribou	Chinchaga	RRA-A	Vectr-VertexTD	42 ppm	5/22/2015	10	608693	6429293	normal
SCEK215	Caribou	Chinchaga	RRA-A	Vectr-VertexTD	42 ppm	5/22/2015	10	644879	6442844	normal
SCEK216	Caribou	Chinchaga	RRA-A	Vectr-VertexTD	not heard	5/22/2015	10	615051	6445128	VHF not heard; GPS activity normal
SCEK009b	Caribou	Fort Nelson	Fort Nelson	Vectr-VertexTD	42 ppm	5/23/2015	10	501748	6555371	normal
SCEK166	Caribou	Fort Nelson	Fort Nelson	Vectr-VertexTD	42 ppm	5/23/2015	10	517669	6545108	normal
SCEK167	Caribou	Fort Nelson	Fort Nelson	Lotek-Lifecycle	50 ppm	5/22/2015	10	513437	6548865	normal
BC1014	Caribou	Maxhamish	Capot-Blanc	Lotek VHF	60 ppm	5/23/2015	10	470355	6587969	normal
SCEK001	Caribou	Maxhamish	Capot-Blanc	Lotek VHF	60 ppm	5/23/2015	10	468280	6573483	normal
SCEK007b	Caribou	Maxhamish	Capot-Blanc	Vectr-VertexTD	42 ppm	5/23/2015	10	434271	6550493	normal
SCEK066	Caribou	Maxhamish	Capot-Blanc	Lotek VHF	60 ppm	5/23/2015	10	443219	6568128	normal
SCEK076	Caribou	Maxhamish	Capot-Blanc	Lotek VHF	60 ppm	5/23/2015	10	453711	6578441	normal
BC1033	Caribou	Maxhamish	Fortune	Lotek VHF	60 ppm	5/23/2015	10	508194	6616959	normal
SCEK005b	Caribou	Maxhamish	Fortune	Vectr-VertexTD	42 ppm	5/23/2015	10	482783	6612985	normal
SCEK078	Caribou	Maxhamish	Fortune	Lotek VHF	60 ppm	5/23/2015	10	462124	6624052	normal
SCEK085	Caribou	Maxhamish	Fortune	Vectr-Vertex	50 ppm	5/23/2015	10	534782	6625358	normal
SCEK086	Caribou	Maxhamish	Fortune	Lotek VHF	60 ppm	5/23/2015	10	529043	6634090	normal
SCEK087	Caribou	Maxhamish	Fortune	Lotek VHF	60 ppm	5/23/2015	10	546180	6624631	normal
SCEK128	Caribou	Maxhamish	Fortune	Lotek VHF	60 ppm	5/23/2015	10	526602	6629308	normal
SCEK129	Caribou	Maxhamish	Fortune	Lotek VHF	60 ppm	5/23/2015	10	537541	6636137	normal
SCEK164	Caribou	Maxhamish	Fortune	Lotek VHF	60 ppm	5/23/2015	10	535837	6624932	normal
SCEK175	Caribou	Maxhamish	Fortune	Lotek-Lifecycle	50 ppm	5/23/2015	10	500135	6631488	normal
SCEK176	Caribou	Maxhamish	Fortune	Lotek-Lifecycle	50 ppm	5/23/2015	10	478063	6630878	normal
SCEK177	Caribou	Maxhamish	Fortune	Vectr-VertexTD	42 ppm	5/23/2015	10	512840	6613219	normal
SCEK178	Caribou	Maxhamish	Fortune	Vectr-VertexTD	42 ppm	5/23/2015	10	543233	6621957	normal
SCEK179	Caribou	Maxhamish	Fortune	Lotek-Lifecycle	not heard	5/23/2015	10	523360	6738783	VHF out of range; GPS normal 90 km into NWT
SCEK205	Caribou	Maxhamish	Fortune	Vectr-VertexTD	42 ppm	5/23/2015	10	537519	6630663	normal
SCEK206	Caribou	Maxhamish	Fortune	Vectr-VertexTD	42 ppm	5/23/2015	10	534272	6629254	normal
SCEK208	Caribou	Maxhamish	Fortune	Vectr-VertexTD	42 ppm	5/23/2015	10	483204	6625289	normal
SCEK221	Caribou	Maxhamish	Fortune	Vectr-VertexTD	42 ppm	5/23/2015	10	540179	6623012	normal
BC1009	Caribou	Maxhamish	Kiwigana	Lotek VHF	not heard	5/23/2015	n/a	n/a	n/a	VHF signal not detected
SCEK004	Caribou	Maxhamish	Kiwigana	Lotek VHF	60 ppm	5/23/2015	10	468828	6622917	normal
SCEK062	Caribou	Maxhamish	Kiwigana	Lotek VHF	60 ppm	5/23/2015	10	518901	6571754	normal
SCEK064	Caribou	Maxhamish	Kiwigana	Lotek VHF	60 ppm	5/23/2015	10	508991	6579654	normal
SCEK168	Caribou	Maxhamish	Kiwigana	Vectr-VertexTD	42 ppm	5/23/2015	10	551623	6562633	normal
SCEK169	Caribou	Maxhamish	Kiwigana	ATS-Irid	50 ppm; double 6th	5/23/2015	10	505328	6589104	normal
SCEK210	Caribou	Maxhamish	Kiwigana	Vectr-VertexTD	42 ppm	5/23/2015	10	525323	6572897	normal
SCEK211	Caribou	Maxhamish	Kiwigana	Vectr-VertexTD	42 ppm	5/23/2015	10	531200	6569993	normal
SCEK010	Caribou	Parker	Parker	Lotek VHF	60 ppm	5/22/2015	10	484723	6496372	normal
SCEK012	Caribou	Parker	Parker	Lotek VHF	60 ppm	5/22/2015	10	497172	6512036	normal
SCEK014b	Caribou	Parker	Parker	Vectr-VertexTD	not heard	5/22/2015	10	460490	6475815	VHF out of range; GPS normal 40 km SW
SCEK015	Caribou	Parker	Parker	Lotek VHF	60 ppm	5/22/2015	10	488538	6526730	normal
SCEK016b	Caribou	Parker	Parker	Vectr-VertexTD	42 ppm	5/22/2015	10	476597	6515916	normal

Table 1 cont. VHF signal status and location of boreal caribou and wolf collars detected during the May 22-23, 2015 SCEK fixed-wing telemetry monitoring flight.

ID	Species	Range	Core	Collar Type	Status	Date	Zone	East	North	Comments
SCEK194	Caribou	Parker	Parker	Vectr-VertexTD	42 ppm	5/22/2015	10	477132	6520234	normal
SCEK045	Caribou	Prophet	Prophet	Lotek VHF	60 ppm	5/22/2015	10	566328	6455269	normal
SCEK049	Caribou	Prophet	Prophet	Lotek VHF	60 ppm	5/22/2015	10	553108	6441798	normal
SCEK051	Caribou	Prophet	Prophet	Lotek VHF	60 ppm	5/22/2015	10	528446	6485710	normal
SCEK144	Caribou	Prophet	Prophet	Lotek VHF	60 ppm	5/22/2015	10	569062	6452640	normal
SCEK161b	Caribou	Prophet	Prophet	Vectr-VertexTD	42 ppm	5/22/2015	10	559348	6459452	normal
SCEK217	Caribou	Prophet	Prophet	Vectr-VertexTD	42 ppm	5/22/2015	10	558736	6424185	normal
SCEK019	Caribou	Snake-Sahtaneh	Clarke	Lotek VHF	60 ppm	5/22/2015	10	573949	6502998	normal
SCEK020b	Caribou	Snake-Sahtaneh	Clarke	Vectr-VertexTD	42 ppm	5/22/2015	10	569140	6470591	normal
SCEK021	Caribou	Snake-Sahtaneh	Clarke	Lotek VHF	60 ppm	5/22/2015	10	555427	6504888	normal
SCEK024	Caribou	Snake-Sahtaneh	Clarke	Lotek VHF	60 ppm	5/22/2015	10	569387	6502950	normal
SCEK025	Caribou	Snake-Sahtaneh	Clarke	Lotek VHF	60 ppm	5/22/2015	10	545327	6492462	normal
SCEK068	Caribou	Snake-Sahtaneh	Clarke	Lotek VHF	60 ppm	5/22/2015	10	556201	6544958	normal
SCEK070	Caribou	Snake-Sahtaneh	Clarke	Lotek VHF	60 ppm	5/22/2015	10	564676	6496317	normal
SCEK145	Caribou	Snake-Sahtaneh	Clarke	Lotek VHF	not heard	5/22/2015	n/a	n/a	n/a	VHF signal not detected
SCEK148	Caribou	Snake-Sahtaneh	Clarke	Lotek VHF	60 ppm	5/22/2015	10	590735	6463900	normal
SCEK149	Caribou	Snake-Sahtaneh	Clarke	Lotek VHF	60 ppm	5/22/2015	10	575295	6501627	normal
SCEK150	Caribou	Snake-Sahtaneh	Clarke	Lotek VHF	60 ppm	5/22/2015	10	605096	6489633	normal
SCEK152	Caribou	Snake-Sahtaneh	Clarke	Lotek VHF	60 ppm	5/22/2015	10	571901	6498202	normal
SCEK153	Caribou	Snake-Sahtaneh	Clarke	Lotek VHF	60 ppm	5/22/2015	10	537285	6494404	normal
SCEK156	Caribou	Snake-Sahtaneh	Clarke	Lotek VHF	60 ppm	5/22/2015	10	546375	6504031	normal
SCEK157	Caribou	Snake-Sahtaneh	Clarke	Lotek VHF	60 ppm	5/22/2015	10	551560	6491195	normal
SCEK191	Caribou	Snake-Sahtaneh	Clarke	Lotek-Lifecycle	50 ppm	5/22/2015	10	600871	6487594	normal
SCEK192	Caribou	Snake-Sahtaneh	Clarke	Lotek-Lifecycle	50 ppm	5/22/2015	10	603311	6484848	normal
SCEK193	Caribou	Snake-Sahtaneh	Clarke	Vectr-VertexTD	42 ppm	5/22/2015	10	543832	6492090	normal
SCEK212	Caribou	Snake-Sahtaneh	Clarke	Vectr-VertexTD	42 ppm	5/22/2015	10	556023	6501238	normal
SCEK218	Caribou	Snake-Sahtaneh	Clarke	Vectr-VertexTD	42 ppm	5/22/2015	10	555183	6544481	normal
SCEK220	Caribou	Snake-Sahtaneh	Clarke	Vectr-VertexTD	42 ppm	5/22/2015	10	607403	6480985	normal
SCEK102	Caribou	Snake-Sahtaneh	East Kotcho	Lotek VHF	60 ppm	5/23/2015	10	625592	6554871	normal
SCEK103	Caribou	Snake-Sahtaneh	East Kotcho	Lotek VHF	60 ppm	5/23/2015	10	632900	6566065	normal
SCEK105	Caribou	Snake-Sahtaneh	East Kotcho	Lotek VHF	60 ppm	5/23/2015	10	633416	6562569	normal
SCEK110b	Caribou	Snake-Sahtaneh	East Kotcho	Lotek-Lifecycle	100 ppm	5/23/2015	10	605012	6567647	MORTALITY
SCEK088	Caribou	Snake-Sahtaneh	North Kotcho	Lotek VHF	60 ppm	5/23/2015	10	630031	6555952	normal
SCEK089	Caribou	Snake-Sahtaneh	North Kotcho	Lotek VHF	60 ppm	5/23/2015	10	604247	6556155	normal
SCEK090	Caribou	Snake-Sahtaneh	North Kotcho	Lotek VHF	60 ppm	5/23/2015	10	601704	6570414	normal
SCEK092	Caribou	Snake-Sahtaneh	North Kotcho	Lotek VHF	60 ppm	5/23/2015	10	616390	6572987	normal
SCEK097b	Caribou	Snake-Sahtaneh	North Kotcho	Vectr-VertexTD	42 ppm	5/23/2015	10	622894	6579661	normal
SCEK100b	Caribou	Snake-Sahtaneh	North Kotcho	Vectr-VertexTD	42 ppm	5/23/2015	10	622167	6561507	normal
SCEK111	Caribou	Snake-Sahtaneh	North Kotcho	Vectr-Vertex	50 ppm	5/23/2015	10	604810	6587261	normal
SCEK182	Caribou	Snake-Sahtaneh	North Kotcho	Vectr-VertexTD	42 ppm	5/23/2015	10	598245	6585314	normal
SCEK186	Caribou	Snake-Sahtaneh	North Kotcho	Vectr-VertexTD	42 ppm	5/23/2015	10	605468	6576484	normal
SCEK187	Caribou	Snake-Sahtaneh	North Kotcho	Lotek-Lifecycle	50 ppm	5/23/2015	10	606721	6554347	normal
SCEK204	Caribou	Snake-Sahtaneh	North Kotcho	Lotek-Lifecycle	50 ppm	5/23/2015	10	635656	6567948	normal
SCEK096	Caribou	Snake-Sahtaneh	Paradise	Lotek VHF	60 ppm	5/22/2015	10	562951	6503393	normal
SCEK079b	Caribou	Snake-Sahtaneh	Tsea	Vectr-VertexTD	42 ppm	5/23/2015	10	528377	6599534	normal
SCEK081	Caribou	Snake-Sahtaneh	Tsea	Lotek VHF	60 ppm	5/23/2015	10	548995	6592420	normal
SCEK082	Caribou	Snake-Sahtaneh	Tsea	Lotek VHF	60 ppm	5/23/2015	10	550976	6593575	normal
SCEK127	Caribou	Snake-Sahtaneh	Tsea	Lotek VHF	60 ppm	5/23/2015	10	552192	6605932	normal
SCEK131	Caribou	Snake-Sahtaneh	Tsea	Lotek VHF	60 ppm	5/23/2015	10	553258	6592279	normal

Table 1 cont. VHF signal status and location of boreal caribou and wolf collars detected during the May 22-23, 2015 SCEK fixed-wing telemetry monitoring flight.

ID	Species	Range	Core	Collar Type	Status	Date	Zone	East	North	Comments
SCEK194	Caribou	Parker	Parker	Vectr-VertexTD	42 ppm	5/22/2015	10	477132	6520234	normal
SCEK132	Caribou	Snake-Sahtaneh	Tsea	Lotek VHF	60 ppm	5/23/2015	10	550724	6594423	normal
SCEK203	Caribou	Snake-Sahtaneh	Tsea	Vectr-VertexTD	42 ppm	5/23/2015	10	554194	6605416	normal
SCEK071	Caribou	Snake-Sahtaneh	West Katcho	Vectr-Vertex	50 ppm	5/23/2015	10	585320	6547961	normal
SCEK073	Caribou	Snake-Sahtaneh	West Katcho	Lotek VHF	60 ppm	5/23/2015	10	594173	6552091	normal
SCEK091	Caribou	Snake-Sahtaneh	West Katcho	Lotek VHF	60 ppm	5/23/2015	10	608631	6580605	normal
SCEK173	Caribou	Snake-Sahtaneh	West Katcho	ATS-Irid	50 ppm	5/23/2015	10	583547.2	6518962.492	normal
SCEK209	Caribou	Snake-Sahtaneh	West Katcho	Vectr-VertexTD	42 ppm	5/23/2015	10	515335	6673410	normal
SCEK219	Caribou	Snake-Sahtaneh	West Katcho	Vectr-VertexTD	42 ppm	5/23/2015	10	551765.2	6613203.651	normal
BW002	Wolf	Chinchaga	Big Arrow	Lotek VHF	not heard	5/22/2015	n/a	n/a	n/a	VHF not detected
BW030	Wolf	Snake-Sahtaneh	Clarke	Lotek Iridium	not heard	5/22/2015	n/a	n/a	n/a	VHF not detected; last data Dec 28 14.
BW038	Wolf	Clarke	Elleh	Vectronic	50 ppm	5/22/2015	10	575190	6492222	normal
BW039	Wolf	Clarke	Elleh	Lotek Iridium	50 ppm	5/22/2015	10	558278	6498873	normal
BW040	Wolf	Clarke	Elleh	Lotek Iridium	50 ppm	5/22/2015	10	558278	6498873	normal
BW035	Wolf	Maxhamish	Fortune	Lotek Iridium	50 ppm	5/23/2015	10	525160	6626270	normal
BW036	Wolf	Maxhamish	Fortune	Lotek Iridium	not heard	5/23/2015	n/a	n/a	n/a	VHF not detected; GPS activity normal
BW037	Wolf	Maxhamish	Fortune	Lotek VHF	60 ppm	5/23/2015	10	537711	6616545	normal
BW041	Wolf	Maxhamish	Fortune	Lotek Iridium	not heard	5/23/2015	n/a	n/a	n/a	VHF not detected; GPS activity normal
BW034	Wolf	Calendar	July	Lotek VHF	60 ppm	5/23/2015	10	622327	6598097	normal
BW042	Wolf	Calendar	July	Lotek Iridium	not heard	5/23/2015	n/a	n/a	n/a	VHF not detected; GPS activity normal
BW043	Wolf	Calendar	July	Lotek Iridium	not heard	5/23/2015	n/a	n/a	n/a	VHF not detected; GPS activity normal
BW044	Wolf	Calendar	July	Lotek Iridium	not heard	5/23/2015	n/a	n/a	n/a	VHF not detected; GPS activity normal
BW045	Wolf	Calendar	July	Lotek Iridium	not heard	5/23/2015	n/a	n/a	n/a	VHF not detected; GPS activity normal
BW046	Wolf	Calendar	July	Lotek Iridium	not heard	5/23/2015	n/a	n/a	n/a	VHF not detected; GPS activity normal
BW024	Wolf	Snake-Sahtaneh	Kwakullie	Lotek Iridium	not heard	5/23/2015	n/a	n/a	n/a	VHF not detected; last data Feb 28 15
BW026	Wolf	Snake-Sahtaneh	Kwakullie	Lotek VHF	not heard	5/23/2015	n/a	n/a	n/a	VHF not detected
BW032	Wolf	Fortune/Tsea	Petitot	Lotek VHF	not heard	5/23/2015	10	561995	6612188	normal
BW033	Wolf	Fortune/Tsea	Petitot	Lotek Iridium	not heard	5/23/2015	n/a	n/a	n/a	VHF not detected; GPS activity normal
BW047	Wolf	Fortune/Tsea	Petitot	Lotek Iridium	50 ppm	5/23/2015	10	564267	6608763	normal
BW049	Wolf	Fortune/Tsea	Petitot	Lotek Iridium	50 ppm	5/23/2015	10	564267	6608763	normal
BW050	Wolf	Fortune/Tsea	Petitot	Lotek Iridium	not heard	5/23/2015	n/a	n/a	n/a	VHF not detected; GPS activity normal
BW007	Wolf	Snake-Sahtaneh	Snake	Lotek VHF	not heard	5/23/2015	n/a	n/a	n/a	not detected; missing since deployment
BW027	Wolf	Snake-Sahtaneh	Snake	Lotek Iridium	not heard	5/23/2015	n/a	n/a	n/a	VHF not detected; last data Jan 09, 14
BW014	Wolf	Fort Nelson	Tsimih	Lotek Iridium	50 ppm	5/22/2015	10	511426	6544056	normal
BW048	Wolf	Fort Nelson	Tsimih	Lotek VHF	60 ppm	5/23/2015	10	521478	6545271	normal
BW051	Wolf	Fort Nelson	Tsimih	Lotek Iridium	50 ppm	5/23/2015	10	511133	6544522	normal

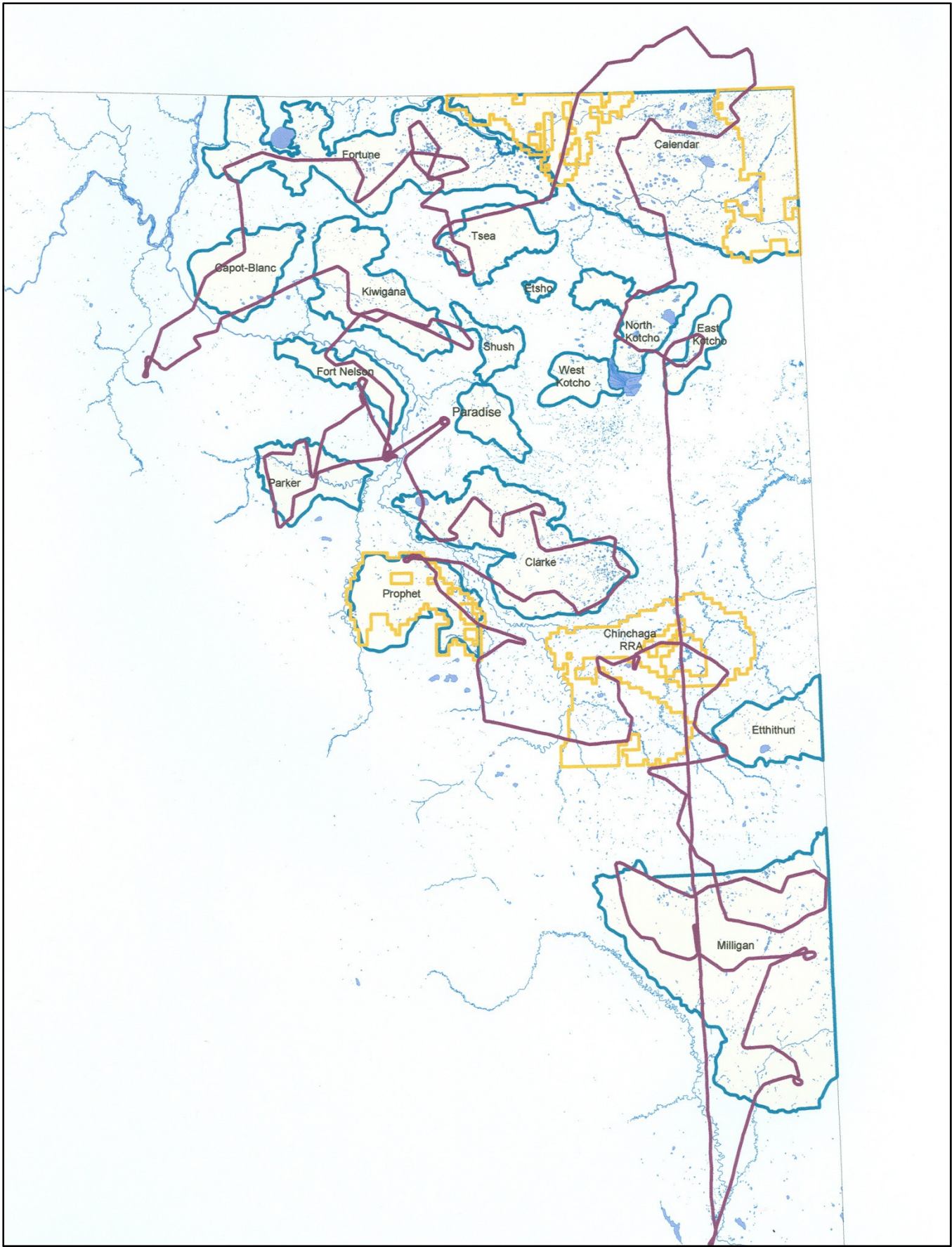


Figure 1. Flight paths flown during the May 22-23, 2015 OGRIS boreal caribou and wolf telemetry monitoring flight.