

DIVERSIFIED ENVIRONMENTAL SERVICES

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SCIENCE COMMUNITY ENVIRONMENTAL KNOWLEDGE FUND BOREAL CARIBOU TELEMETRY PROGRAM

FIXED-WING TELEMETRY MONITORING FLIGHT – December 18, 19, & 31, 2013

Date: December 31, 2013

Attention: Megan Watters
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Background

During the winter of 2012-13, 164 adult female boreal caribou were radio-collared in British Columbia's boreal caribou ranges as part of the *British Columbia Boreal Caribou Implementation Plan* (BCIP). On December 18, 19, & 31, 2013, Diversified Environmental Services (DES) conducted a fixed-wing monitoring flight under contract to the Science 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/collar recoveries and to track potential long distance seasonal movements of VHF-collared caribou.

Objectives

The objective of the December 2013 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 at the time of the flight. These included caribou collars deployed on behalf of SCEK, caribou and wolf collars deployed on behalf of MFLNRO, and pre-existing collars known to have entered BC's boreal caribou ranges from adjacent jurisdictions.

Methods

The monitoring flight was conducted using a Cessna 180 fixed-wing aircraft equipped with 1 outward-facing directional antenna affixed to each wing strut. Collar frequencies were scanned using a Lotek™ STR 1000 telemetry receiver. 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 (120 ppm) and a location (+/- 1 km) was recorded using a hand-held GPS unit. In the case of GPS/satellite collars (ATS Iridium and Vectronic Vertex), additional diagnostic VHF beacon patterns were recorded where applicable. As GPS/satellite collars are programmed to log multiple daily locations with high precision, efforts to obtain collar locations during fixed-wing flights are not necessary. Therefore, waypoints for GPS/satellite collars were typically recorded at the location from which the collar was heard, unless the VHF beacon status indicated a collar malfunction or mortality, in which case more precise locations were obtained.

Results

All cores other than Milligan were completed on December 18 and 19, 2013. Poor weather and lack of aircraft availability delayed the completion of the Milligan flight until December 31. A total of 143 caribou collar frequencies were scanned during the December 18-19 and 31 monitoring flights, including 131 SCEK collars (27 ATS Iridium, 14 Vectronic Vertex, and 90 VHF), 2 Alberta SRM collars, and 10

previously-deployed MFLNRO collars (1 ATS Iridium and 9 VHF). In addition, the frequencies of 14 Lotek Iridium and 6 Lotek VHF wolf collars were scanned.

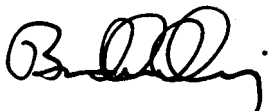
Results of the December 18, 19, & 31 monitoring flight are presented in Table 1. Flight paths searched within and adjacent to each core habitat area are shown in Figure 1. Total flight line distance was 2,412 km. Of 143 caribou collar frequencies scanned, 137 normal VHF signals were detected. One mortality signal (BC1024) was detected, indicating a dead animal.

The remaining 5 animals were not detected during the monitoring flight. These included 1 SCEK ATS Iridium collar suspected to have failed (SCEK042; Milligan), 1 SCEK ATS Iridium collar whose satellite function ceased in November and whose VHF beacon is intermittent (SCEK017; Clarke), 1 SCEK ATS Iridium collar which has not transmitted satellite data recently (SCEK050; Prophet), 1 previously-deployed VHF collar suspected to have exceeded its battery life (BC1000; Parker), and 1 previously-deployed MFLNRO VHF collar which is not consistently located due to a weak VHF signal (BC1037; North Kotcho).

Nineteen wolf collar frequencies were scanned during the December 18, 19, & 31, 2013 monitoring flight, including 13 Iridium collars and 6 VHF collars. Of the 13 Iridium wolf collars, 7 had normal VHF beacon function, 1 was transmitting a VHF low battery signal (BW016; Snake pack), and 1 was transmitting a VHF mortality signal (BW015; Snake pack). VHF signals from the remaining 4 Iridium wolf collars were not detected. Two of the 4 undetected Iridium wolf collars were previously suspected to have failed, including BW03 (West Clarke pack) and BW12 (Big Arrow pack). Of the remaining 2 undetected Iridium wolf collars, 1 has not transmitted recent satellite data (BW17; Elleh pack) and the other has current satellite transmission function but has dispersed north of the search area, approximately 60 km into the Northwest Territories (BW10; Snake pack). Of the 6 VHF wolf collars scanned, 5 had normal VHF signals and 1 could not be located (BW007; Snake Pack). The undetected VHF wolf collar has not been located since soon after deployment in February 2013 and is assumed to have failed or the animal dispersed.

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 December 18, 19, and 31, 2013 SCEK fixed-wing telemetry monitoring flight.

ID	Species	Range	Core	Collar Type	Status	Date	Zone	East	North	Comments
SCEK114	Caribou	Calendar	Calendar	ATS-Irid	50 ppm: double 6th	19-Dec-13	10	626504	6639584	normal
SCEK136	Caribou	Calendar	Calendar	ATS-Irid	50 ppm: double 6th	19-Dec-13	10	625251	6631088	normal
SCEK135	Caribou	Calendar	Calendar	Vectr-Vertex	50 ppm	19-Dec-13	10	611600	6645168	normal
SCEK119	Caribou	Calendar	Calendar	Vectr-Vertex	50 ppm	19-Dec-13	10	604270	6638279	normal
SCEK113	Caribou	Calendar	Calendar	Lotek-VHF	60 ppm	19-Dec-13	10	663410	6649231	normal
SCEK123	Caribou	Calendar	Calendar	Lotek-VHF	60 ppm	19-Dec-13	10	607083	6632207	normal
SCEK122	Caribou	Calendar	Calendar	Lotek-VHF	60 ppm	19-Dec-13	10	642117	6648130	normal
SCEK138	Caribou	Calendar	Calendar	Lotek-VHF	60 ppm	19-Dec-13	10	649166	6622157	normal
SCEK137	Caribou	Calendar	Calendar	Lotek-VHF	60 ppm	19-Dec-13	10	622560	6644545	normal
SCEK120	Caribou	Calendar	Calendar	Lotek-VHF	60 ppm	19-Dec-13	10	596617	6633388	normal
SCEK116	Caribou	Calendar	Calendar	Lotek-VHF	60 ppm	19-Dec-13	10	638401	6642341	normal
SCEK134	Caribou	Calendar	Calendar	Lotek-VHF	60 ppm	19-Dec-13	10	608824	6631208	normal
SCEK112	Caribou	Calendar	Calendar	Lotek-VHF	60 ppm	19-Dec-13	10	640108	6645813	normal
SCEK125	Caribou	Calendar	Calendar	Lotek-VHF	60 ppm	19-Dec-13	10	651780	6687922	normal
SCEK126	Caribou	Calendar	RRA-C	ATS-Irid	50 ppm: double 6th	19-Dec-13	10	602669	6636470	normal
SCEK146	Caribou	Calendar	RRA-D	ATS-Irid	50 ppm: double 6th	19-Dec-13	10	610999	6642988	normal
SCEK147	Caribou	Calendar	RRA-D	Vectr-Vertex	50 ppm	19-Dec-13	10	634751	6646523	normal
SCEK108	Caribou	Calendar	RRA-D	Lotek-VHF	60 ppm	19-Dec-13	10	626101	6631297	normal
SCEK107	Caribou	Calendar	RRA-D	Lotek-VHF	60 ppm	19-Dec-13	10	647752	6666742	normal
SCEK036	Caribou	Chinchaga	Milligan	ATS-Irid	50 ppm; no double 6th	31-Dec-13	10	616884	6364497	normal
SCEK038	Caribou	Chinchaga	Milligan	ATS-Irid	50 ppm: double 6th	31-Dec-13	10	657607	6298343	normal
SCEK026	Caribou	Chinchaga	Milligan	ATS-Irid	50 ppm; no double 6th	31-Dec-13	10	659425	6297753	normal
SCEK033	Caribou	Chinchaga	Milligan	ATS-Irid	50 ppm: double 6th	31-Dec-13	10	617146	6352913	normal
SCEK042	Caribou	Chinchaga	Milligan	ATS-Irid		31-Dec-13				not heard; suspected malfunction
AB149.391	Caribou	Chinchaga	Milligan	unknown	60 ppm	31-Dec-13	10	676684	6350290	normal
SCEK040	Caribou	Chinchaga	Milligan	Vectr-Vertex	50 ppm	31-Dec-13	10	652054	6407041	normal
SCEK034	Caribou	Chinchaga	Milligan	Vectr-Vertex	50 ppm	31-Dec-13	10	645686	6333368	normal
SCEK055	Caribou	Chinchaga	Milligan	Vectr-Vertex	50 ppm	31-Dec-13	10	636346	6360589	normal
SCEK037	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	31-Dec-13	10	660894	6304850	normal
AB150.470	Caribou	Chinchaga	Milligan	unknown	60 ppm	31-Dec-13	11	327570	6339569	normal
SCEK035	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	31-Dec-13	10	636608	6364164	normal
SCEK041	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	31-Dec-13	10	649283	6323055	normal
SCEK027	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	31-Dec-13	10	657607	6296343	normal
SCEK032	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	31-Dec-13	10	646738	6334253	normal
SCEK029	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	31-Dec-13	11	328329	6359527	normal
SCEK052	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	31-Dec-13	10	657675	6333464	normal
SCEK053	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	31-Dec-13	10	638933	6359172	normal
SCEK030	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	31-Dec-13	11	321652	6350888	normal
SCEK056	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	31-Dec-13	10	680760	6337957	normal
SCEK058	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	19-Dec-13	10	618350	6460538	normal
SCEK054	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	31-Dec-13	10	636532	6350146	normal
SCEK057	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	31-Dec-13	10	656101	6328756	normal
SCEK059	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	31-Dec-13	10	653172	6352400	normal
SCEK061	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	31-Dec-13	11	319583	6350477	normal
SCEK060	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	31-Dec-13	10	617290	6370538	normal
SCEK142	Caribou	Chinchaga	RRA-A	Vectr-Vertex	50 ppm	19-Dec-13	10	616435	6449216	normal
SCEK139	Caribou	Chinchaga	RRA-A	Vectr-Vertex	50 ppm	19-Dec-13	10	642955	6453992	normal

Table 1. VHF signal status and location of boreal caribou and wolf collars detected during the December 18, 19 and 31, 2013 SCEK fixed-wing telemetry monitoring flight cont.

ID	Species	Range	Core	Collar Type	Status	Date	Zone	East	North	Comments
SCEK046	Caribou	Chinchaga	RRA-A	ATS-Irid	50 ppm: double 6th	19-Dec-13	10	612999	6431289	normal
SCEK047	Caribou	Chinchaga	RRA-A	ATS-Irid	50 ppm; no double 6th	19-Dec-13	10	618248	6454645	normal
SCEK048	Caribou	Chinchaga	RRA-A	Lotek-VHF	60 ppm	19-Dec-13	10	597560	6448547	normal
SCEK141	Caribou	Chinchaga	RRA-A	Lotek-VHF	60 ppm	19-Dec-13	10	620608	6459075	normal
SCEK009	Caribou	Fort Nelson	Fort Nelson	ATS-Irid	50 ppm: double 6th	18-Dec-13	10	499522	6556433	normal
BC1014	Caribou	Maxhamish	Capot-Blanc	Lotek-VHF	60 ppm	18-Dec-13	10	472841	6574574	normal
BC1015	Caribou	Maxhamish	Capot-Blanc	Lotek-VHF	60 ppm	18-Dec-13	10	473623	6576154	normal
SCEK002	Caribou	Maxhamish	Capot-Blanc	ATS-Irid	50 ppm: double 6th	18-Dec-13	10	486067	6575361	normal
SCEK007	Caribou	Maxhamish	Capot-Blanc	ATS-Irid	50 ppm: double 6th	18-Dec-13	10	468467	6583959	normal
SCEK001	Caribou	Maxhamish	Capot-Blanc	Lotek-VHF	60 ppm	18-Dec-13	10	474072	6573983	normal
SCEK076	Caribou	Maxhamish	Capot-Blanc	Lotek-VHF	60 ppm	18-Dec-13	10	470553	6581424	normal
SCEK066	Caribou	Maxhamish	Capot-Blanc	Lotek-VHF	60 ppm	18-Dec-13	10	474872	6574712	normal
SCEK067	Caribou	Maxhamish	Capot-Blanc	Lotek-VHF	60 ppm	18-Dec-13	10	472255	6574912	normal
BC1031	Caribou	Maxhamish	Fortune	Lotek-VHF	60 ppm	18-Dec-13	10	529740	6629400	normal
BC1033	Caribou	Maxhamish	Fortune	Lotek-VHF	60 ppm	18-Dec-13	10	532164	6631036	normal
BC1024	Caribou	Maxhamish	Fortune	Lotek-VHF	120 ppm	18-Dec-13	10	536086	6633616	MORT
SCEK085	Caribou	Maxhamish	Fortune	Vectr-Vertex	50 ppm	18-Dec-13	10	546251	6625425	normal
SCEK163	Caribou	Maxhamish	Fortune	Vectr-Vertex	50 ppm	18-Dec-13	10	463490	6625419	normal
SCEK130	Caribou	Maxhamish	Fortune	Lotek-VHF	60 ppm	18-Dec-13	10	546490	6628521	normal
SCEK164	Caribou	Maxhamish	Fortune	Lotek-VHF	60 ppm	18-Dec-13	10	542987	6630376	normal
SCEK078	Caribou	Maxhamish	Fortune	Lotek-VHF	60 ppm	18-Dec-13	10	464141	6623618	normal
SCEK128	Caribou	Maxhamish	Fortune	Lotek-VHF	60 ppm	18-Dec-13	10	531955	6632153	normal
SCEK086	Caribou	Maxhamish	Fortune	Lotek-VHF	60 ppm	18-Dec-13	10	546076	6628413	normal
SCEK129	Caribou	Maxhamish	Fortune	Lotek-VHF	60 ppm	18-Dec-13	10	543993	6631012	normal
SCEK087	Caribou	Maxhamish	Fortune	Lotek-VHF	60 ppm	18-Dec-13	10	546251	6627425	normal
SCEK003	Caribou	Maxhamish	Kiwigana	ATS-Irid	50 ppm: double 6th	18-Dec-13	10	534658	6568724	normal
BC1066	Caribou	Maxhamish	Kiwigana	ATS-Irid	50 ppm: double 6th	18-Dec-13	10	534481	6561699	normal; MFLNRO 2012 deployment
SCEK063	Caribou	Maxhamish	Kiwigana	Lotek-VHF	60 ppm	18-Dec-13	10	532876	6566949	normal
SCEK064	Caribou	Maxhamish	Kiwigana	Lotek-VHF	60 ppm	18-Dec-13	10	530612	6569721	normal
SCEK004	Caribou	Maxhamish	Kiwigana	Lotek-VHF	60 ppm	18-Dec-13	10	477273	6629799	normal
BC1009	Caribou	Maxhamish	Kiwigana	Lotek-VHF	60 ppm	18-Dec-13	10	521105	6571782	normal; old wolf collar
SCEK005	Caribou	Maxhamish	Kiwigana-OS	ATS-Irid	50 ppm; no double 6th	18-Dec-13	10	537775	6634147	VHF normal; Iridium failed
SCEK062	Caribou	Maxhamish	Kiwigana-OS	Lotek-VHF	60 ppm	18-Dec-13	10	531424	6569974	normal
SCEK006	Caribou	Maxhamish	Kiwigana-OS	Lotek-VHF	60 ppm	18-Dec-13	10	525750	6568844	normal
SCEK016	Caribou	Parker	Parker	ATS-Irid	50 ppm; no double 6th	18-Dec-13	10	489588	6521291	normal
SCEK014	Caribou	Parker	Parker	ATS-Irid	50 ppm; no double 6th	18-Dec-13	10	507320	6517266	normal
SCEK013	Caribou	Parker	Parker	Lotek-VHF	60 ppm	18-Dec-13	10	489198	6522412	normal
SCEK010	Caribou	Parker	Parker	Lotek-VHF	60 ppm	18-Dec-13	10	495750	6522579	normal
SCEK012	Caribou	Parker	Parker	Lotek-VHF	60 ppm	18-Dec-13	10	497429	6520640	normal
SCEK015	Caribou	Parker	Parker	Lotek-VHF	60 ppm	18-Dec-13	10	491484	6523754	normal
BC1000	Caribou	Parker	Parker	Lotek-VHF						old VHF; not detected
BC1001	Caribou	Parker	Parker	Lotek-VHF	60 ppm	18-Dec-13	10	494199	6524879	normal
SCEK161	Caribou	Prophet	Prophet-OS	ATS-Irid	50 ppm; no double 6th	18-Dec-13	10	547280	6463123	normal
SCEK050	Caribou	Prophet	Prophet-OS	ATS-Irid		18-Dec-13				VHF not detected; no recent GPS data
SCEK051	Caribou	Prophet	Prophet-OS	Lotek-VHF	60 ppm	18-Dec-13	10	527379	6482019	normal
SCEK049	Caribou	Prophet	Prophet-OS	Lotek-VHF	60 ppm	18-Dec-13	10	561445	6455485	normal
SCEK045	Caribou	Prophet	Prophet-OS	Lotek-VHF	60 ppm	18-Dec-13	10	545014	6460909	normal

Table 1. VHF signal status and location of boreal caribou and wolf collars detected during the December 18, 19 and 31, 2013 SCEK fixed-wing telemetry monitoring flight cont.

ID	Species	Range	Core	Collar Type	Status	Date	Zone	East	North	Comments
SCEK044	Caribou	Prophet	RRA-B	ATS-Irid	50 ppm: double 6th	18-Dec-13	10	548176	6462380	normal
SCEK143	Caribou	Prophet	RRA-B	Vectr-Vertex	50 ppm	18-Dec-13	10	567591	6424455	normal
SCEK144	Caribou	Prophet	RRA-B	Lotek-VHF	60 ppm	18-Dec-13	10	560678	6425413	normal
SCEK043	Caribou	Prophet	RRA-B	Lotek-VHF	60 ppm	18-Dec-13	10	529579	6480206	normal
SCEK020	Caribou	Snake-Sahtaneh	Clarke	ATS-Irid	50 ppm: double 6th	19-Dec-13	10	567428	6498629	normal
SCEK017	Caribou	Snake-Sahtaneh	Clarke	ATS-Irid		19-Dec-13				VHF not detected; no recent GPS data
SCEK068	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	19-Dec-13	10	540697	6499331	normal
SCEK150	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	19-Dec-13	10	581484	6484507	normal
SCEK148	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	19-Dec-13	10	607123	6476511	normal
SCEK153	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	19-Dec-13	10	546254	6495142	normal
SCEK151	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	19-Dec-13	10	561708	6503848	normal
SCEK152	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	19-Dec-13	10	559828	6496373	normal
SCEK019	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	19-Dec-13	10	565702	6532397	normal
SCEK021	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	19-Dec-13	10	582584	6486571	normal
SCEK025	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	19-Dec-13	10	555938	6493861	normal
SCEK024	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	19-Dec-13	10	559085	6506256	normal
SCEK018	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	19-Dec-13	10	535734	6503101	normal
SCEK154	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	19-Dec-13	10	562853	6505859	normal
SCEK149	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	19-Dec-13	10	577066	6484242	normal
SCEK156	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	19-Dec-13	10	553765	6496131	normal
SCEK157	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	19-Dec-13	10	550264	6496312	normal
SCEK070	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	19-Dec-13	10	561045	6500090	normal
SCEK145	Caribou	Snake-Sahtaneh	Clarke-OS	Lotek-VHF	60 ppm	19-Dec-13	10	589455	6572050	normal
SCEK100	Caribou	Snake-Sahtaneh	East Kotcho	ATS-Irid	50 ppm: double 6th	19-Dec-13	10	635639	6560337	normal
SCEK104	Caribou	Snake-Sahtaneh	East Kotcho	Vectr-Vertex	50 ppm	19-Dec-13	10	594298	6577347	normal
SCEK103	Caribou	Snake-Sahtaneh	East Kotcho	Lotek-VHF	60 ppm	19-Dec-13	10	637195	6558418	normal
SCEK102	Caribou	Snake-Sahtaneh	East Kotcho	Lotek-VHF	60 ppm	19-Dec-13	10	605285	6557463	normal
SCEK105	Caribou	Snake-Sahtaneh	East Kotcho	Lotek-VHF	60 ppm	19-Dec-13	10	631196	6547422	normal
SCEK111	Caribou	Snake-Sahtaneh	North Kotcho	Vectr-Vertex	50 ppm	19-Dec-13	10	602788	6566987	normal
SCEK074	Caribou	Snake-Sahtaneh	North Kotcho	Lotek-VHF	60 ppm	19-Dec-13	10	609743	6560895	normal
SCEK089	Caribou	Snake-Sahtaneh	North Kotcho	Lotek-VHF	60 ppm	19-Dec-13	10	613004	6567465	normal
SCEK088	Caribou	Snake-Sahtaneh	North Kotcho	Lotek-VHF	60 ppm	19-Dec-13	10	612923	6564587	normal
SCEK090	Caribou	Snake-Sahtaneh	North Kotcho	Lotek-VHF	60 ppm	19-Dec-13	10	596467	6593000	normal
SCEK092	Caribou	Snake-Sahtaneh	North Kotcho	Lotek-VHF	60 ppm	19-Dec-13	10	598688	6585273	normal
BC1037	Caribou	Snake-Sahtaneh	North Kotcho-OS	Lotek-VHF						not detected
SCEK110	Caribou	Snake-Sahtaneh	North Kotcho-OS	ATS-Irid	50 ppm; no double 6th	19-Dec-13	10	611405	6562530	normal
SCEK096	Caribou	Snake-Sahtaneh	Paradise	Lotek-VHF	60 ppm	19-Dec-13	10	552264	6496312	normal
SCEK079	Caribou	Snake-Sahtaneh	Tsea	ATS-Irid	50 ppm: double 6th	18-Dec-13	10	556271	6601848	normal
SCEK131	Caribou	Snake-Sahtaneh	Tsea	Lotek-VHF	60 ppm	18-Dec-13	10	560941	6588651	normal
SCEK081	Caribou	Snake-Sahtaneh	Tsea	Lotek-VHF	60 ppm	18-Dec-13	10	565025	6590667	normal
SCEK083	Caribou	Snake-Sahtaneh	Tsea	Lotek-VHF	60 ppm	18-Dec-13	10	567834	6599435	normal
SCEK132	Caribou	Snake-Sahtaneh	Tsea	Lotek-VHF	60 ppm	18-Dec-13	10	560123	6591358	normal
SCEK082	Caribou	Snake-Sahtaneh	Tsea	Lotek-VHF	60 ppm	18-Dec-13	10	569659	6598791	normal
SCEK127	Caribou	Snake-Sahtaneh	Tsea	Lotek-VHF	60 ppm	18-Dec-13	10	562805	6598551	normal
SCEK071	Caribou	Snake-Sahtaneh	West Kotcho	Vectr-Vertex	50 ppm	19-Dec-13	10	589493	6547251	normal
SCEK097	Caribou	Snake-Sahtaneh	West Kotcho	ATS-Irid	50 ppm	19-Dec-13	10	604490	6572806	normal
SCEK091	Caribou	Snake-Sahtaneh	West Kotcho	Lotek-VHF	60 ppm	19-Dec-13	10	596010	6577492	normal

Table 1. VHF signal status and location of boreal caribou and wolf collars detected during the December 18, 19 and 31, 2013 SCEK fixed-wing telemetry monitoring flight cont.

ID	Species	Range	Core	Collar Type	Status	Date	Zone	East	North	Comments
SCEK073	Caribou	Snake-Sahtaneh	West Kotcho	Lotek-VHF	60 ppm	19-Dec-13	10	590947	6572091	normal
SCEK094	Caribou	Snake-Sahtaneh	West Kotcho-OS	Lotek-VHF	60 ppm	19-Dec-13	10	589204	6539990	normal
BW002	Wolf	Chinchaga	Big Arrow	Lotek-VHF	60 ppm	19-Dec-13	10	629542	6322157	normal
BW011	Wolf	Chinchaga	Big Arrow	Lotek-Irid	50 ppm	19-Dec-13	10	629542	6322157	normal VHF; no Iridium data function
BW012	Wolf	Chinchaga	Big Arrow	Lotek-Irid						no VHF; no data since Jun 30
BW008	Wolf	Fort Nelson	Tsimeh	Lotek-Irid	50 ppm	18-Dec-13	10	514185	6535283	normal
BW001	Wolf	Fort Nelson	Tsimeh	Lotek-VHF	60 ppm	18-Dec-13	10	514185	6535283	normal
BW009	Wolf	Fort Nelson	Tsimeh	Lotek-Irid	50 ppm	18-Dec-13	10	514185	6535283	normal
BW014	Wolf	Fort Nelson	Tsimeh	Lotek-Irid	50 ppm	18-Dec-13	10	514185	6535283	normal
BW020	Wolf	Parker	Parker	Lotek-VHF	60 ppm	18-Dec-13	10	499031	6520155	normal
BW019	Wolf	Parker	Parker	Lotek-Irid	50 ppm	18-Dec-13	10	482633	6510751	normal
BW021	Wolf	Snake-Sahtaneh	Clarke	Lotek-Irid	50 ppm	18-Dec-13	10	543767	6510446	normal
BW022	Wolf	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	18-Dec-13	10	543767	6510446	normal
BW018	Wolf	Snake-Sahtaneh	Elleh	Lotek-Irid	50 ppm	18-Dec-13	10	576907	6489912	normal
BW017	Wolf	Snake-Sahtaneh	Elleh	Lotek-Irid						VHF not detected
BW023	Wolf	Snake-Sahtaneh	Snake	Lotek-VHF	60 ppm	19-Dec-13	10	543372	6524454	normal
BW015	Wolf	Snake-Sahtaneh	Snake	Lotek-Irid	MORT	19-Dec-13		525841	6545515	80 ppm
BW007	Wolf	Snake-Sahtaneh	Snake	Lotek-VHF						not detected; missing
BW016	Wolf	Snake-Sahtaneh	Snake	Lotek-Irid	50 ppm double	19-Dec-13	10	543372	6524454	low battery mode; no data since Aug 15
BW010	Wolf	Snake-Sahtaneh	Snake	Lotek-Irid						dispersal to NWT; Irid data current
BW003	Wolf	Snake-Sahtaneh	West Clarke	Lotek-Irid						not heard; suspected malfunction

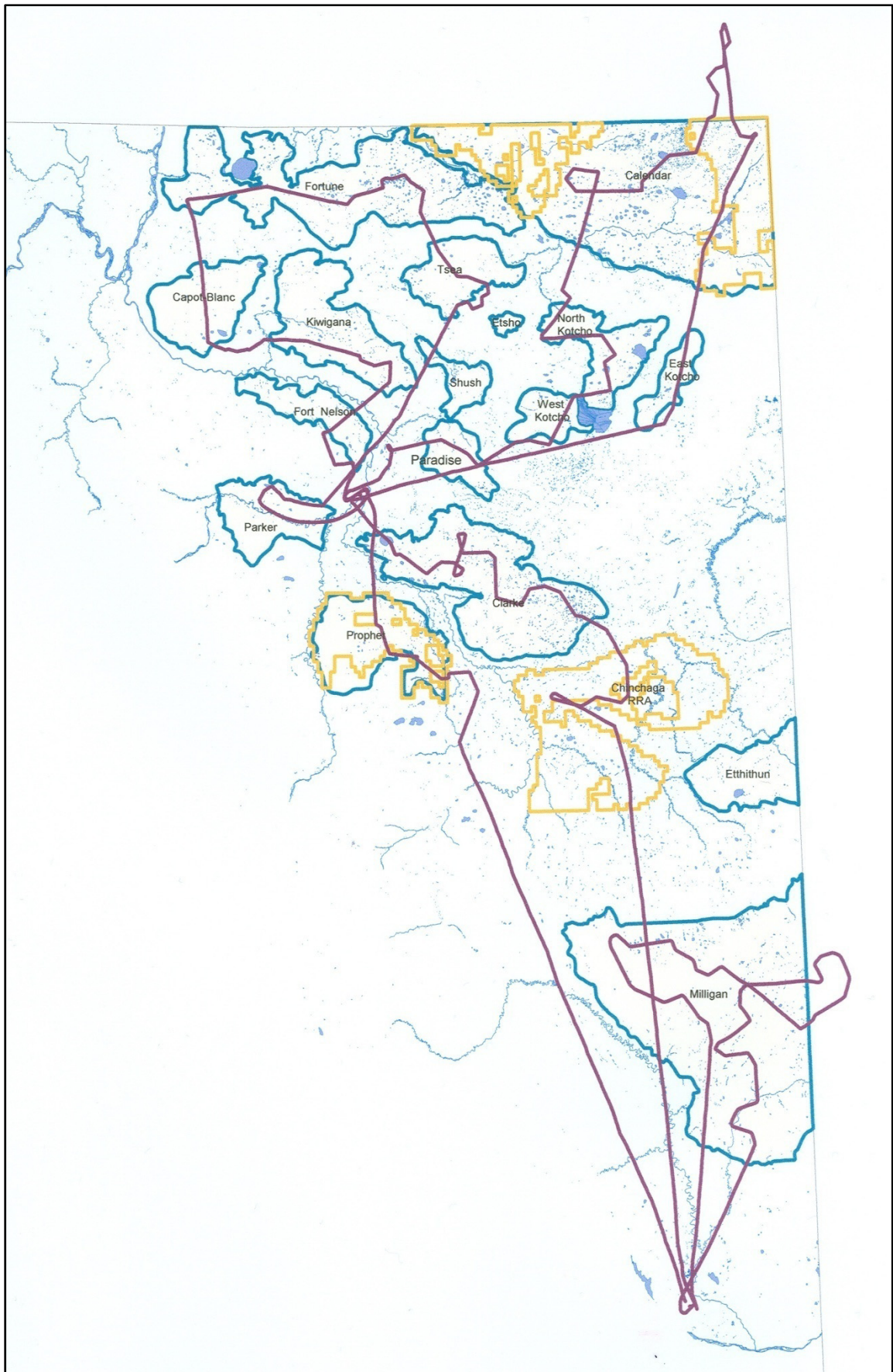


Figure 1. Flight paths flown during the December 18, 19 and 31, 2013 SCEK fixed-wing boreal caribou and wolf telemetry monitoring flight.