

DIVERSIFIED ENVIRONMENTAL SERVICES

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SCIENCE COMMUNITY ENVIRONMENTAL KNOWLEDGE FUND BOREAL CARIBOU TELEMETRY PROGRAM

FIXED-WING TELEMETRY MONITORING FLIGHT – November 10-14, 2013

Date: November 15, 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 November 10-14, 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 November 10-14, 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 caribou 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

One hundred forty-two caribou collar frequencies were scanned during the November 10-14, 2013 monitoring flight, including 131 SCEK collars (27 ATS Iridium, 14 Vectronic Vertex, and 90 VHF), 2 Alberta SRM collars, and 9 previously-deployed MFLNRO collars (1 ATS Iridium and 8 VHF). In addition, the frequencies of 14 Lotek Iridium and 6 Lotek VHF wolf collars were scanned.

Results of the November 10-14 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 3,223 km. Of 142 caribou collar frequencies scanned, 138 normal VHF signals were detected.

The 4 caribou collars not detected during the monitoring flight included 1 SCEK ATS Iridium collar suspected to have failed (SCEK042; Milligan), 1 SCEK ATS Iridium collar whose satellite function was active as of November 09 but whose VHF beacon is heard intermittently (SCEK017; Clarke), 1 SCEK Vectronic Vertex whose VHF signal had turned off as per its daily duty cycle but whose satellite data indicated normal movement (SCEK055; Milligan), and 1 previously-deployed MFLNRO VHF collar suspected to have exceeded its battery life (BC1000; Parker). No mortality signals indicating dead caribou were detected.

A MFLNRO VHF collar deployed in the Fortune Core in 2011 was incidentally detected during the November flight. This collar (BC1031) had not been previously identified as active and was not being scanned during monthly monitoring flights. It has now been added to the monthly scan list.

Twenty wolf collar frequencies were scanned during the November 10-14, 2013 monitoring flight, including 14 Iridium collars and 6 VHF collars. Of the 14 Iridium wolf collars, 9 had normal VHF beacon function and 1 was transmitting a VHF mortality signal (BW013; West Clarke Pack). VHF signals from the remaining 4 were not detected. Three of the 4 undetected Iridium wolf collars also appear to have Iridium data function problems, indicating possible collar failure. The remaining undetected Iridium wolf collar (BW010; Snake Pack) has current satellite transmission function but has dispersed north of the search area, approximately 60 km into the Northwest Territories. Of the 6 VHF wolf collars scanned, 5 had normal VHF signals and 1 could not be located (BW007; Snake Pack).

Discussion

All VHF caribou collars not suspected to have failed were located during the November 10-14, 2013 monitoring flight. Calendar VHF collar SCEK113, which had remained missing since deployment in February, was located within the Calendar Range on November 14 after it was discovered that a transcription error had resulted in scanning of an incorrect frequency. Kiwigana ATS Iridium collar SCEK005, whose Iridium function failed in March but whose VHF signal is heard intermittently, was located in the Fortune Core during the November flight.

The wolf VHF mortality signal could not be confirmed through satellite data due to the failure of this collar's Iridium function in June, however, the animal was assumed to be dead. The collar will be recovered during the next helicopter flight in the area.

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 November 10-14, 2013 SCEK fixed-wing telemetry monitoring flight.

ID	Species	Range	Core	Collar Type	Status	Date	East	North	Comments
SCEK114	Caribou	Calendar	Calendar	ATS-Irid	50 ppm; double 6th	14-Nov-13	631659	6650816	normal
SCEK136	Caribou	Calendar	Calendar	ATS-Irid	50 ppm; double 6th	14-Nov-13	631242	6619623	normal
SCEK135	Caribou	Calendar	Calendar	Vectr-Vertex	50 ppm	14-Nov-13	630816	6627917	normal
SCEK119	Caribou	Calendar	Calendar	Vectr-Vertex	50 ppm	14-Nov-13	612492	6645823	normal
SCEK113	Caribou	Calendar	Calendar	Lotek-VHF	60 ppm	14-Nov-13	653793	6646726	normal
SCEK123	Caribou	Calendar	Calendar	Lotek-VHF	60 ppm	14-Nov-13	609991	6637656	normal
SCEK122	Caribou	Calendar	Calendar	Lotek-VHF	60 ppm	14-Nov-13	628274	6676518	normal
SCEK138	Caribou	Calendar	Calendar	Lotek-VHF	60 ppm	14-Nov-13	628481	6620398	normal
SCEK137	Caribou	Calendar	Calendar	Lotek-VHF	60 ppm	14-Nov-13	638226	6648675	normal
SCEK120	Caribou	Calendar	Calendar	Lotek-VHF	60 ppm	14-Nov-13	634016	6635672	normal
SCEK116	Caribou	Calendar	Calendar	Lotek-VHF	60 ppm	14-Nov-13	661239	6650145	normal
SCEK134	Caribou	Calendar	Calendar	Lotek-VHF	60 ppm	14-Nov-13	639569	6642797	normal
SCEK112	Caribou	Calendar	Calendar	Lotek-VHF	60 ppm	14-Nov-13	629033	6580223	normal
SCEK125	Caribou	Calendar	Calendar	Lotek-VHF	60 ppm	14-Nov-13	666100	6672094	normal
SCEK126	Caribou	Calendar	RRA-C	ATS-Irid	50 ppm; double 6th	14-Nov-13	607956	6636155	normal
SCEK146	Caribou	Calendar	RRA-D	ATS-Irid	50 ppm; double 6th	14-Nov-13	618094	6642050	normal
SCEK147	Caribou	Calendar	RRA-D	Vectr-Vertex	50 ppm	14-Nov-13	635060	6651044	normal
SCEK108	Caribou	Calendar	RRA-D	Lotek-VHF	60 ppm	14-Nov-13	638841	6641933	normal
SCEK107	Caribou	Calendar	RRA-D	Lotek-VHF	60 ppm	14-Nov-13	632709	6638968	normal
SCEK036	Caribou	Chinchaga	Milligan	ATS-Irid	50 ppm; double 6th	10-Nov-13	622900	6336714	normal
SCEK038	Caribou	Chinchaga	Milligan	ATS-Irid	50 ppm; double 6th	14-Nov-13	660335	6293975	normal
SCEK026	Caribou	Chinchaga	Milligan	ATS-Irid	50 ppm; double 6th	14-Nov-13	660126	6293200	normal
SCEK033	Caribou	Chinchaga	Milligan	ATS-Irid	50 ppm; double 6th	10-Nov-13	637203	6346688	normal
SCEK042	Caribou	Chinchaga	Milligan	ATS-Irid					not heard; suspected malfunction
AB149.391	Caribou	Chinchaga	Milligan	unknown	60 ppm	14-Nov-13	661222	6325040	normal
SCEK040	Caribou	Chinchaga	Milligan	Vectr-Vertex	50 ppm	14-Nov-13	649826	6404008	normal
SCEK034	Caribou	Chinchaga	Milligan	Vectr-Vertex	50 ppm	14-Nov-13	661448	6333579	normal
SCEK055	Caribou	Chinchaga	Milligan	Vectr-Vertex		14-Nov-13	662389	6334719	no VHF; after 1600hrs
SCEK037	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	14-Nov-13	661300	6297234	normal
AB150.470	Caribou	Chinchaga	Milligan	unknown	60 ppm	14-Nov-13	664587	6325098	normal
SCEK035	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	10-Nov-13	636004	6344157	normal
SCEK041	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	14-Nov-13	659498	6328355	normal
SCEK027	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	14-Nov-13	660486	6296634	normal
SCEK032	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	14-Nov-13	674072	6354304	normal
SCEK029	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	14-Nov-13	663518	6333384	normal
SCEK052	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	14-Nov-13	662193	6329367	normal
SCEK053	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	10-Nov-13	633869	6338165	normal
SCEK030	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	14-Nov-13	673936	6351172	normal
SCEK056	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	14-Nov-13	665103	6334618	normal
SCEK058	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	10-Nov-13	610553	6448310	normal
SCEK054	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	14-Nov-13	670506	6343452	normal
SCEK057	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	10-Nov-13	627739	6343809	normal
SCEK059	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	14-Nov-13	660768	6321597	normal
SCEK061	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	14-Nov-13	662829	6333071	normal
SCEK060	Caribou	Chinchaga	Milligan	Lotek-VHF	60 ppm	10-Nov-13	615187	6348160	normal
SCEK142	Caribou	Chinchaga	RRA-A	Vectr-Vertex	50 ppm	10-Nov-13	615293	6446183	normal
SCEK139	Caribou	Chinchaga	RRA-A	Vectr-Vertex	50 ppm	10-Nov-13	620055	6448176	normal

Table 1. VHF signal status and location of boreal caribou and wolf collars detected during the November 10-14, 2013 SCEK fixed-wing telemetry monitoring flight cont.

ID	Species	Range	Core	Collar Type	Status	Date	East	North	Comments
SCEK046	Caribou	Chinchaga	RRA-A	ATS-Irid	50 ppm; double 6th	10-Nov-13	611564	6437307	normal
SCEK047	Caribou	Chinchaga	RRA-A	ATS-Irid	50 ppm; no double 6th	10-Nov-13	615367	6439558	normal
SCEK048	Caribou	Chinchaga	RRA-A	Lotek-VHF	60 ppm	10-Nov-13	618810	6449934	normal
SCEK141	Caribou	Chinchaga	RRA-A	Lotek-VHF	60 ppm	10-Nov-13	620055	6452089	normal
SCEK009	Caribou	Fort Nelson	Fort Nelson	ATS-Irid	50 ppm; double 6th	10-Nov-13	518241	6546737	normal
BC1014	Caribou	Maxhamish	Capot-Blanc	Lotek-VHF	60 ppm	10-Nov-13	472755	6580789	normal
BC1015	Caribou	Maxhamish	Capot-Blanc	Lotek-VHF	60 ppm	10-Nov-13	467878	6580151	normal
SCEK002	Caribou	Maxhamish	Capot-Blanc	ATS-Irid	50 ppm; no double 6th	10-Nov-13	477020	6578520	normal
SCEK007	Caribou	Maxhamish	Capot-Blanc	ATS-Irid	50 ppm; no double 6th	10-Nov-13	473438	6579146	normal
SCEK001	Caribou	Maxhamish	Capot-Blanc	Lotek-VHF	60 ppm	10-Nov-13	467878	6580151	normal
SCEK076	Caribou	Maxhamish	Capot-Blanc	Lotek-VHF	60 ppm	10-Nov-13	471276	6584360	normal
SCEK066	Caribou	Maxhamish	Capot-Blanc	Lotek-VHF	60 ppm	10-Nov-13	469223	6582723	normal
SCEK067	Caribou	Maxhamish	Capot-Blanc	Lotek-VHF	60 ppm	10-Nov-13	447775	6565604	normal
BC1031	Caribou	Maxhamish	Fortune	Lotek-VHF	60 ppm	11-Nov-13	534081	6632283	normal; newly found old collar
BC1033	Caribou	Maxhamish	Fortune	Lotek-VHF	60 ppm	11-Nov-13	530757	6634996	normal
BC1024	Caribou	Maxhamish	Fortune	Lotek-VHF	60 ppm	11-Nov-13	532185	6633738	normal
SCEK085	Caribou	Maxhamish	Fortune	Vectr-Vertex	50 ppm	11-Nov-13	531122	6629543	normal
SCEK163	Caribou	Maxhamish	Fortune	Vectr-Vertex	50 ppm	10-Nov-13	464443	6622474	normal
SCEK130	Caribou	Maxhamish	Fortune	Lotek-VHF	60 ppm	11-Nov-13	545615	6624418	normal
SCEK164	Caribou	Maxhamish	Fortune	Lotek-VHF	60 ppm	11-Nov-13	532573	6634102	normal
SCEK078	Caribou	Maxhamish	Fortune	Lotek-VHF	60 ppm	10-Nov-13	466308	6617151	normal
SCEK128	Caribou	Maxhamish	Fortune	Lotek-VHF	60 ppm	11-Nov-13	525935	6632561	normal
SCEK086	Caribou	Maxhamish	Fortune	Lotek-VHF	60 ppm	11-Nov-13	526005	6635361	normal
SCEK129	Caribou	Maxhamish	Fortune	Lotek-VHF	60 ppm	11-Nov-13	526306	6628216	normal
SCEK087	Caribou	Maxhamish	Fortune	Lotek-VHF	60 ppm	11-Nov-13	543092	6624389	normal
SCEK003	Caribou	Maxhamish	Kiwigana	ATS-Irid	50 ppm; double 6th	10-Nov-13	532765	6572422	normal
BC1066	Caribou	Maxhamish	Kiwigana	ATS-Irid	50 ppm; double 6th	10-Nov-13	538080	6562447	normal; MFLNRO 2012 deployment
SCEK063	Caribou	Maxhamish	Kiwigana	Lotek-VHF	60 ppm	10-Nov-13	539300	6564945	normal
SCEK064	Caribou	Maxhamish	Kiwigana	Lotek-VHF	60 ppm	10-Nov-13	538707	6565943	normal
SCEK004	Caribou	Maxhamish	Kiwigana	Lotek-VHF	60 ppm	10-Nov-13	483530	6625158	normal
BC1009	Caribou	Maxhamish	Kiwigana	Lotek-VHF	60 ppm	10-Nov-13	527525	6570700	normal; old wolf collar
SCEK005	Caribou	Maxhamish	Kiwigana-OS	ATS-Irid	50 ppm; no double 6th	11-Nov-13	533755	6628319	VHF normal; Iridium failed
SCEK062	Caribou	Maxhamish	Kiwigana-OS	Lotek-VHF	60 ppm	10-Nov-13	527914	6570500	normal
SCEK006	Caribou	Maxhamish	Kiwigana-OS	Lotek-VHF	60 ppm	10-Nov-13	509135	6594436	normal
SCEK016	Caribou	Parker	Parker	ATS-Irid	50 ppm; double 6th	10-Nov-13	476325	6511183	normal
SCEK014	Caribou	Parker	Parker	ATS-Irid	50 ppm; double 6th	10-Nov-13	480395	6516686	normal
SCEK013	Caribou	Parker	Parker	Lotek-VHF	60 ppm	10-Nov-13	496302	6519552	normal
SCEK010	Caribou	Parker	Parker	Lotek-VHF	60 ppm	10-Nov-13	480619	6516854	normal
SCEK012	Caribou	Parker	Parker	Lotek-VHF	60 ppm	10-Nov-13	500394	6516893	normal
SCEK015	Caribou	Parker	Parker	Lotek-VHF	60 ppm	10-Nov-13	498441	6518191	normal
BC1000	Caribou	Parker	Parker	Lotek-VHF					old VHF; not detected
BC1001	Caribou	Parker	Parker	Lotek-VHF	60 ppm	10-Nov-13	484005	6517504	normal
SCEK161	Caribou	Prophet	Prophet-OS	ATS-Irid	50 ppm; no double 6th	10-Nov-13	571405	6448504	normal
SCEK050	Caribou	Prophet	Prophet-OS	ATS-Irid	50 ppm; double 6th	10-Nov-13	573203	6448473	normal
SCEK051	Caribou	Prophet	Prophet-OS	Lotek-VHF	60 ppm	10-Nov-13	560335	6448498	normal
SCEK049	Caribou	Prophet	Prophet-OS	Lotek-VHF	60 ppm	10-Nov-13	565798	6444477	normal
SCEK045	Caribou	Prophet	Prophet-OS	Lotek-VHF	60 ppm	10-Nov-13	564856	6446630	normal

Table 1. VHF signal status and location of boreal caribou and wolf collars detected during the November 10-14, 2013 SCEK fixed-wing telemetry monitoring flight cont.

ID	Species	Range	Core	Collar Type	Status	Date	East	North	Comments
SCEK044	Caribou	Prophet	RRA-B	ATS-Irid	50 ppm; double 6th	10-Nov-13	571217	6448396	normal
SCEK143	Caribou	Prophet	RRA-B	Vectr-Vertex	50 ppm	10-Nov-13	531025	6480351	normal
SCEK144	Caribou	Prophet	RRA-B	Lotek-VHF	60 ppm	10-Nov-13	571125	6446677	normal
SCEK043	Caribou	Prophet	RRA-B	Lotek-VHF	60 ppm	10-Nov-13	562066	6446657	normal
SCEK020	Caribou	Snake-Sahtaneh	Clarke	ATS-Irid	50 ppm; double 6th	10-Nov-13	572132	6494458	normal
SCEK017	Caribou	Snake-Sahtaneh	Clarke	ATS-Irid	no VHF	10-Nov-13	555620	6503900	no VHF; still moving
SCEK068	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	10-Nov-13	572727	6498175	normal
SCEK150	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	10-Nov-13	616890	6485609	normal
SCEK148	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	10-Nov-13	608741	6480675	normal
SCEK153	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	10-Nov-13	533989	6501519	normal
SCEK151	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	10-Nov-13	571203	6496030	normal
SCEK152	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	10-Nov-13	568782	6506110	normal
SCEK019	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	10-Nov-13	573735	6506730	normal
SCEK021	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	10-Nov-13	559674	6508939	normal
SCEK025	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	10-Nov-13	581853	6508291	normal
SCEK024	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	10-Nov-13	568628	6515799	normal
SCEK018	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	10-Nov-13	533989	6501519	normal
SCEK154	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	10-Nov-13	559125	6506272	normal
SCEK149	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	10-Nov-13	573994	6499641	normal
SCEK156	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	10-Nov-13	558008	6496466	normal
SCEK157	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	10-Nov-13	558793	6498367	normal
SCEK070	Caribou	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	10-Nov-13	573908	6501947	normal
SCEK145	Caribou	Snake-Sahtaneh	Clarke-OS	Lotek-VHF	60 ppm	14-Nov-13	588705	6555755	normal
SCEK100	Caribou	Snake-Sahtaneh	East Kotcho	ATS-Irid	60 ppm	14-Nov-13	622219	6565692	normal
SCEK104	Caribou	Snake-Sahtaneh	East Kotcho	Vectr-Vertex	50 ppm	14-Nov-13	599210	6571273	normal
SCEK103	Caribou	Snake-Sahtaneh	East Kotcho	Lotek-VHF	60 ppm	14-Nov-13	632441	6552969	normal
SCEK102	Caribou	Snake-Sahtaneh	East Kotcho	Lotek-VHF	60 ppm	14-Nov-13	632441	6552969	normal
SCEK105	Caribou	Snake-Sahtaneh	East Kotcho	Lotek-VHF	60 ppm	14-Nov-13	626152	6549471	normal
SCEK111	Caribou	Snake-Sahtaneh	North Kotcho	Vectr-Vertex	50 ppm	14-Nov-13	593557	6576920	normal
SCEK074	Caribou	Snake-Sahtaneh	North Kotcho	Lotek-VHF	60 ppm	14-Nov-13	607385	6568208	normal
SCEK089	Caribou	Snake-Sahtaneh	North Kotcho	Lotek-VHF	60 ppm	14-Nov-13	606592	6565134	normal
SCEK088	Caribou	Snake-Sahtaneh	North Kotcho	Lotek-VHF	60 ppm	14-Nov-13	632151	6553606	normal
SCEK090	Caribou	Snake-Sahtaneh	North Kotcho	Lotek-VHF	60 ppm	14-Nov-13	607161	6571429	normal
SCEK092	Caribou	Snake-Sahtaneh	North Kotcho	Lotek-VHF	60 ppm	14-Nov-13	603908	6584911	normal
BC1037	Caribou	Snake-Sahtaneh	North Kotcho-OS	Lotek-VHF	60 ppm	14-Nov-13	586720	6555574	normal
SCEK110	Caribou	Snake-Sahtaneh	North Kotcho-OS	ATS-Irid	50 ppm; double 6th	14-Nov-13	629201	6564537	normal
SCEK096	Caribou	Snake-Sahtaneh	Paradise	Lotek-VHF	60 ppm	10-Nov-13	573902	6496915	normal
SCEK079	Caribou	Snake-Sahtaneh	Tsea	ATS-Irid	50 ppm; double 6th	11-Nov-13	556193	6599311	normal
SCEK131	Caribou	Snake-Sahtaneh	Tsea	Lotek-VHF	60 ppm	11-Nov-13	560776	6599471	normal
SCEK081	Caribou	Snake-Sahtaneh	Tsea	Lotek-VHF	60 ppm	11-Nov-13	557716	6590286	normal
SCEK083	Caribou	Snake-Sahtaneh	Tsea	Lotek-VHF	60 ppm	11-Nov-13	565872	6608942	normal
SCEK132	Caribou	Snake-Sahtaneh	Tsea	Lotek-VHF	60 ppm	11-Nov-13	554177	6593985	normal
SCEK082	Caribou	Snake-Sahtaneh	Tsea	Lotek-VHF	60 ppm	11-Nov-13	554103	6595962	normal
SCEK127	Caribou	Snake-Sahtaneh	Tsea	Lotek-VHF	60 ppm	11-Nov-13	562772	6602932	normal
SCEK071	Caribou	Snake-Sahtaneh	West Kotcho	Vectr-Vertex	50 ppm	14-Nov-13	591229	6553239	normal
SCEK097	Caribou	Snake-Sahtaneh	West Kotcho	ATS-Irid	50 ppm; double 6th	14-Nov-13	618382	6579351	normal
SCEK091	Caribou	Snake-Sahtaneh	West Kotcho	Lotek-VHF	60 ppm	14-Nov-13	608208	6578798	normal

Table 1. VHF signal status and location of boreal caribou and wolf collars detected during the November 10-14, 2013 SCEK fixed-wing telemetry monitoring flight cont.

ID	Species	Range	Core	Collar Type	Status	Date	East	North	Comments
SCEK073	Caribou	Snake-Sahtaneh	West Kotcho	Lotek-VHF	60 ppm	14-Nov-13	591288	6555621	normal
SCEK094	Caribou	Snake-Sahtaneh	West Kotcho-OS	Lotek-VHF	60 ppm	14-Nov-13	596103	6557180	normal
BW002	Wolf	Chinchaga	Big Arrow	Lotek-VHF	60 ppm	10-Nov-13	627315	6329939	normal
BW011	Wolf	Chinchaga	Big Arrow	Lotek-Irid	50 ppm	10-Nov-13	627315	6329939	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	10-Nov-13	512226	6538592	normal
BW001	Wolf	Fort Nelson	Tsimeh	Lotek-VHF	60 ppm	10-Nov-13	512226	6538592	normal
BW009	Wolf	Fort Nelson	Tsimeh	Lotek-Irid	50 ppm	10-Nov-13	512226	6538592	normal
BW014	Wolf	Fort Nelson	Tsimeh	Lotek-Irid	50 ppm	10-Nov-13	512226	6538592	normal
BW020	Wolf	Parker	Parker	Lotek-VHF	60 ppm	10-Nov-13	497110	6540985	normal
BW019	Wolf	Parker	Parker	Lotek-Irid	50 ppm	10-Nov-13	497110	6540985	normal
BW021	Wolf	Snake-Sahtaneh	Clarke	Lotek-Irid	50 ppm	10-Nov-13	544756	6505557	normal
BW022	Wolf	Snake-Sahtaneh	Clarke	Lotek-VHF	60 ppm	10-Nov-13	544756	6505557	normal
BW018	Wolf	Snake-Sahtaneh	Elleh	Lotek-Irid	50 ppm	10-Nov-13	564947	6482700	normal
BW017	Wolf	Snake-Sahtaneh	Elleh	Lotek-Irid	50 ppm	10-Nov-13	564947	6482700	normal
BW023	Wolf	Snake-Sahtaneh	Snake	Lotek-VHF	60 ppm	14-Nov-13	541986	6527769	normal
BW015	Wolf	Snake-Sahtaneh	Snake	Lotek-Irid	50 ppm	11-Nov-13	530291	6551156	normal
BW007	Wolf	Snake-Sahtaneh	Snake	Lotek-VHF					not detected; missing
BW016	Wolf	Snake-Sahtaneh	Snake	Lotek-Irid					not heard; no data since Aug 15
BW010	Wolf	Snake-Sahtaneh	Snake	Lotek-Irid					dispersal to NWT; Irid data current
BW013	Wolf	Snake-Sahtaneh	West Clarke	Lotek-Irid	MORT	10-Nov-13	511749	6502236	80 ppm
BW003	Wolf	Snake-Sahtaneh	West Clarke	Lotek-Irid					not heard; suspected malfunction

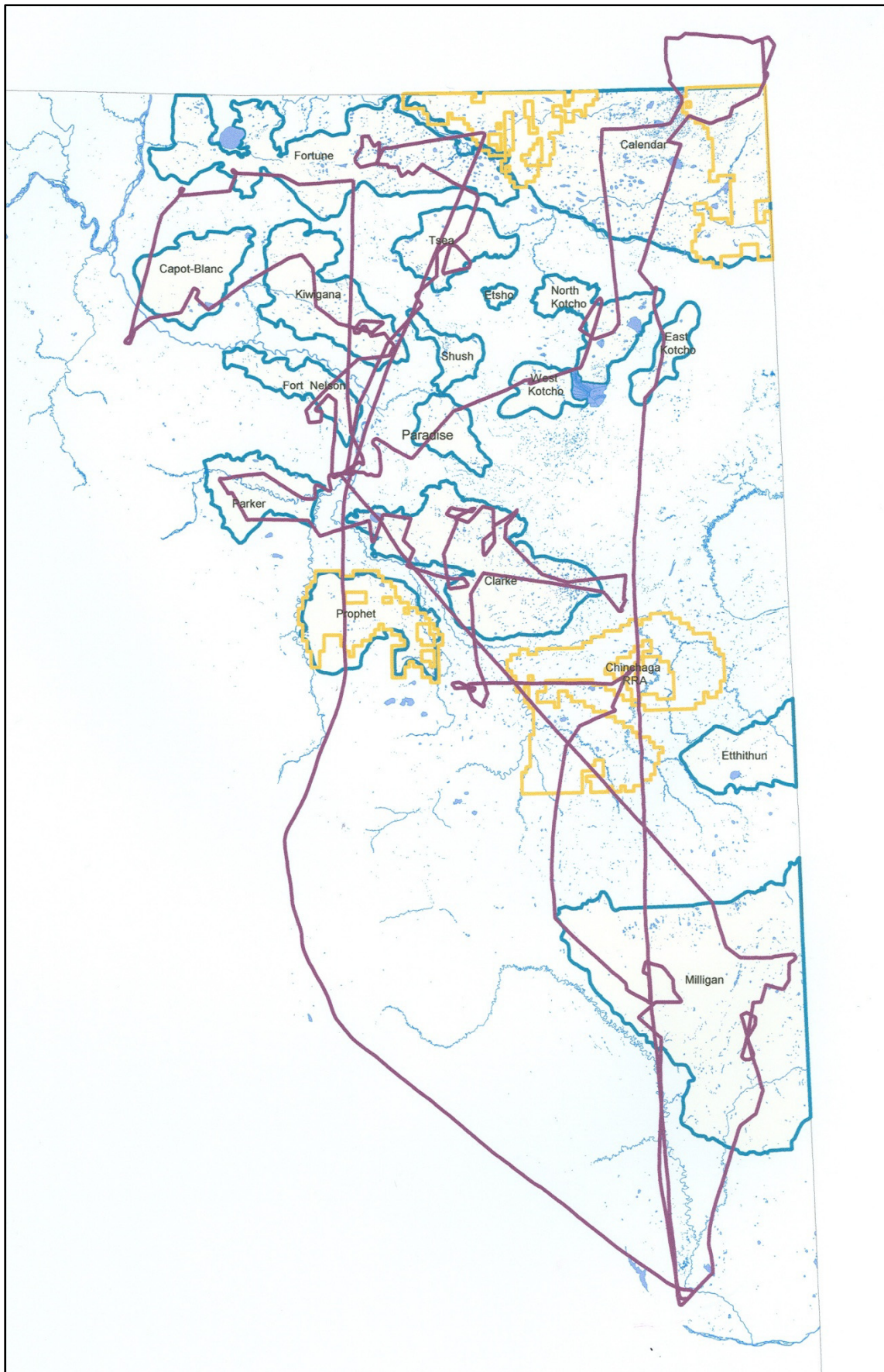


Figure 1. Flight paths flown during the November 10-14, 2013 SCEK fixed-wing boreal caribou and wolf telemetry monitoring flight.