

DIVERSIFIED ENVIRONMENTAL SERVICES

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SCIENCE COMMUNITY ENVIRONMENTAL KNOWLEDGE FUND BOREAL CARIBOU TELEMETRY PROGRAM

FIXED-WING TELEMETRY MONITORING FLIGHT – Jun 28-Jul 03, 2013

Date: July 03, 2013

Attention: Megan Watters
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Background

During the winter of 2012-13, 164 female boreal caribou were radio-collared in British Columbia's boreal caribou ranges as part of the *British Columbia Boreal Caribou Implementation Plan* (BCIP). Between June 28 and July 03, 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 June 28-July 03, 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 700-1000 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 ppm) or mortality (120 ppm) and a location (+/- 1 km) was recorded with 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 sixty-five caribou collar frequencies were scanned during the June 28-July 03, 2013 monitoring flight, including 149 SCEK collars (104 VHF, 31 ATS Iridium, and 14 Vectronic Vertex), 5 Alberta SRM collars, and 11 previously-deployed MFLNRO collars (10 VHF and 1 ATS Iridium). In addition, the frequencies of 15 Lotek Iridium and 7 Lotek VHF wolf collars were scanned.

Results of the June 28-July 03 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 3,207 km. Of 165 caribou collar frequencies scanned, 146 normal VHF signals and 1 false mortality signal (Vectronic SCEK143) were detected, indicating live animals. Seven mortality signals were detected, indicating dead animals. All 7 mortality signals appeared to be associated with animals killed subsequent to the May 15-16 monitoring flight and included 5 SCEK VHF collars, 1 SCEK Iridium collar, and 1 previously-deployed MFLNRO VHF collar (BC1021). Three of the mortalities were located in the Calendar Range, 2 in the Snake-Sahtaneh Range, and 1 each in the Chinchaga and Maxhamish ranges.

The remaining 11 animals were not detected during the monitoring flight. These included 1 ATS Iridium collar suspected to have failed (SCEK042; Milligan), 1 previously-deployed VHF collar suspected to have exceeded its battery life (BC1000; Parker), and 2 Alberta VHF collars last found in the Milligan Core. The remaining 7 undetected caribou collars were newly-deployed SCEK VHF collars from the Chinchaga and Calendar ranges.

Twenty-two wolf collar frequencies were scanned during the June 28-July 03, 2013 monitoring flight, including 15 Iridium collars and 7 VHF collars. Of the 7 VHF wolf collars, 4 had normal VHF signals and 3 could not be located, including 1 wolf in each of the Snake, Clarke, and West Clarke packs. Of the 15 Iridium collars, 8 appeared to have normal VHF and Iridium function. Of the remaining 7 Iridium wolf collars, BW012 was transmitting Iridium data but appeared to have no VHF signal. BW011 had a normal VHF signal but has never transmitted Iridium data. BW003 stopped transmitting data on Feb 09 and appeared to have no VHF signal. BW006 ceased Iridium data transmission on March 13 but had a normal VHF signal. VHF signals from BW013 and BW021 could not be detected despite scanning directly over recent Iridium fix locations. BW010 was transmitting Iridium data from approximately 60 km north of the Northwest Territories border.

Discussion

The number of undetected VHF collars from the Calendar Range increased from 2 to 4 since the May 15-16 monitoring flight. VHF collars have a low incidence of failure, suggesting caribou movement significantly beyond the Alberta and/or Northwest Territories borders. A search pattern up to 14 km into the NWT during the July 03 flight failed to detect any of the missing collars. The search area will be extended to the Bistcho Lake region of Alberta during the next monitoring flight.

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 June 28-July 03, 2013 SCEK fixed-wing telemetry monitoring flight.

ID	Species	Range	Core	Freq	Collar Type	Status	Date	East	North	Comments
SCEK114	Caribou	Calendar	Calendar		ATS-Irid	50 ppm; double 6th	3-Jul-13	625884	6644085	normal
SCEK121	Caribou	Calendar	Calendar		ATS-Irid	50 ppm; double 6th	3-Jul-13	606439	6640244	normal
SCEK106	Caribou	Calendar	Calendar		ATS-Irid	50 ppm; double 6th	3-Jul-13	614434	6608244	normal
SCEK136	Caribou	Calendar	Calendar		ATS-Irid	50 ppm; double 6th	3-Jul-13	607118	6607504	normal
SCEK133	Caribou	Calendar	Calendar		ATS-Irid	50 ppm; double 6th	3-Jul-13	655473	6585786	normal
SCEK135	Caribou	Calendar	Calendar		Vectr-Vertex	50 ppm	3-Jul-13	615062	6637900	normal
SCEK119	Caribou	Calendar	Calendar		Vectr-Vertex	50 ppm	3-Jul-13	617545	6639506	normal
SCEK113	Caribou	Calendar	Calendar		Lotek-VHF	unknown				not detected
SCEK123	Caribou	Calendar	Calendar		Lotek-VHF	60 ppm	3-Jul-13	608196	6625795	normal
SCEK122	Caribou	Calendar	Calendar		Lotek-VHF	unknown				not detected
SCEK117	Caribou	Calendar	Calendar		Lotek-VHF	60 ppm	3-Jul-13	594649	6616261	normal
SCEK138	Caribou	Calendar	Calendar		Lotek-VHF	60 ppm	3-Jul-13	635419	6624262	normal
SCEK137	Caribou	Calendar	Calendar		Lotek-VHF	60 ppm	41458	598606	6622023	normal
SCEK120	Caribou	Calendar	Calendar		Lotek-VHF	60 ppm	3-Jul-13	622291	6639355	normal
SCEK118	Caribou	Calendar	Calendar		Lotek-VHF	120 ppm	3-Jul-13	596606	6622023	ON MORTALITY
SCEK115	Caribou	Calendar	Calendar		Lotek-VHF	120 ppm	3-Jul-13	647701	6635817	ON MORTALITY
SCEK116	Caribou	Calendar	Calendar		Lotek-VHF	unknown				not detected
SCEK134	Caribou	Calendar	Calendar		Lotek-VHF	60 ppm	3-Jul-13	616210	6638408	normal
SCEK112	Caribou	Calendar	Calendar		Lotek-VHF	60 ppm	3-Jul-13	638093	6643851	normal
SCEK124	Caribou	Calendar	Calendar		Lotek-VHF	60 ppm	3-Jul-13	622224	6620780	normal
SCEK125	Caribou	Calendar	Calendar		Lotek-VHF	unknown				not detected
SCEK126	Caribou	Calendar	RRA-C		ATS-Irid	50 ppm; double 6th	3-Jul-13	593279	6654908	normal
SCEK146	Caribou	Calendar	RRA-D		ATS-Irid	50 ppm; double 6th	3-Jul-13	615062	6635900	normal
SCEK147	Caribou	Calendar	RRA-D		Vectr-Vertex	50 ppm	3-Jul-13	625954	6648940	normal
SCEK108	Caribou	Calendar	RRA-D		Lotek-VHF	60 ppm	3-Jul-13	628104	6634742	normal
SCEK107	Caribou	Calendar	RRA-D		Lotek-VHF	60 ppm	3-Jul-13	622124	6644435	normal
SCEK109	Caribou	Calendar	RRA-D		Lotek-VHF	120 ppm	3-Jul-13	647428	6627084	ON MORTALITY
AB148.079	Caribou	Chinchaga	Milligan		unknown	unknown				not detected
SCEK036	Caribou	Chinchaga	Milligan		ATS-Irid	50 ppm; double 6th	28-Jun-13	613537	6365176	normal; visual w/calf
SCEK038	Caribou	Chinchaga	Milligan		ATS-Irid	50 ppm; double 6th	28-Jun-13	317411	6305464	normal
SCEK026	Caribou	Chinchaga	Milligan		ATS-Irid	50 ppm; double 6th	28-Jun-13	659758	6290680	normal
SCEK033	Caribou	Chinchaga	Milligan		ATS-Irid	50 ppm; double 6th	28-Jun-13	626192	6343715	normal; visual no calf
SCEK031	Caribou	Chinchaga	Milligan		ATS-Irid	30 ppm	28-Jun-13	628264	6349500	ON MORTALITY
SCEK042	Caribou	Chinchaga	Milligan		ATS-Irid	missing				malfunctioned
AB149.391	Caribou	Chinchaga	Milligan		unknown	60 ppm	2-Jul-13	678107	6366399	normal
SCEK040	Caribou	Chinchaga	Milligan		Vectr-Vertex	50 ppm	2-Jul-13	635343	6414915	normal
SCEK034	Caribou	Chinchaga	Milligan		Vectr-Vertex	50 ppm	28-Jun-13	650130	6369630	normal; visual w/calf
SCEK055	Caribou	Chinchaga	Milligan		Vectr-Vertex	50 ppm	28-Jun-13	649262	6348475	normal; visual no calf
AB150.079	Caribou	Chinchaga	Milligan		unknown	60 ppm	28-Jun-13	616628	6360793	normal
SCEK037	Caribou	Chinchaga	Milligan		Lotek-VHF	60 ppm	28-Jun-13	668133	6293141	normal
AB150.419	Caribou	Chinchaga	Milligan		unknown	60 ppm	28-Jun-13	648151	6351510	normal
AB150.470	Caribou	Chinchaga	Milligan		unknown	unknown				not detected
SCEK035	Caribou	Chinchaga	Milligan		Lotek-VHF	60 ppm	28-Jun-13	630406	6366596	normal
SCEK041	Caribou	Chinchaga	Milligan		Lotek-VHF	60 ppm	28-Jun-13	635578	6366557	normal
SCEK027	Caribou	Chinchaga	Milligan		Lotek-VHF	60 ppm	28-Jun-13	671774	6292925	normal
SCEK032	Caribou	Chinchaga	Milligan		Lotek-VHF	60 ppm	2-Jul-13	661479	6365587	normal
SCEK029	Caribou	Chinchaga	Milligan		Lotek-VHF	60 ppm	28-Jun-13	654883	6340985	normal
SCEK052	Caribou	Chinchaga	Milligan		Lotek-VHF	60 ppm	2-Jul-13	652901	6302267	normal
SCEK053	Caribou	Chinchaga	Milligan		Lotek-VHF	60 ppm	28-Jun-13	622088	6353578	normal
SCEK030	Caribou	Chinchaga	Milligan		Lotek-VHF	60 ppm	28-Jun-13	663413	6331548	normal
SCEK056	Caribou	Chinchaga	Milligan		Lotek-VHF	unknown				not detected

Table 1. VHF signal status and location of boreal caribou and wolf collars detected during the June 28-July 03, 2013 SCEK fixed-wing telemetry monitoring flight cont.

ID	Species	Range	Core	Freq	Collar Type	Status	Date	East	North	Comments
SCEK058	Caribou	Chinchaga	Milligan		Lotek-VHF	60 ppm	2-Jul-13	599768	6443614	normal
SCEK054	Caribou	Chinchaga	Milligan		Lotek-VHF	60 ppm	28-Jun-13	648886	6349045	normal
SCEK057	Caribou	Chinchaga	Milligan		Lotek-VHF	60 ppm	28-Jun-13	632558	6333099	normal
SCEK059	Caribou	Chinchaga	Milligan		Lotek-VHF	60 ppm	28-Jun-13	622532	6350451	normal
SCEK061	Caribou	Chinchaga	Milligan		Lotek-VHF	60 ppm	28-Jun-13	660223	6333707	normal
SCEK060	Caribou	Chinchaga	Milligan		Lotek-VHF	unknown				not detected
SCEK159	Caribou	Chinchaga	Milligan		Lotek-VHF	60 ppm	2-Jul-13	664517	6365845	normal
SCEK142	Caribou	Chinchaga	RRA-A		Vectr-Vertex	50 ppm	2-Jul-13	609991	6449613	normal
SCEK139	Caribou	Chinchaga	RRA-A		Vectr-Vertex	50 ppm	2-Jul-13	641790	6434709	normal
SCEK046	Caribou	Chinchaga	RRA-A		ATS-Irid	50 ppm; double 6th	2-Jul-13	608315	6451206	normal
SCEK047	Caribou	Chinchaga	RRA-A		ATS-Irid	50 ppm; double 6th	2-Jul-13	588970	6449146	normal
SCEK048	Caribou	Chinchaga	RRA-A		Lotek-VHF	unknown				not detected
SCEK141	Caribou	Chinchaga	RRA-A		Lotek-VHF	60 ppm	2-Jul-13	608896	6446388	normal
SCEK009	Caribou	Fort Nelson	Fort Nelson		ATS-Irid	50 ppm; double 6th	3-Jul-13	519696	6553131	normal
BC1014	Caribou	Maxhamish	Capot-Blanc		Lotek-VHF	60 ppm	3-Jul-13	470291	6577732	normal
BC1015	Caribou	Maxhamish	Capot-Blanc		Lotek-VHF	60 ppm	3-Jul-13	454645	6579903	normal
SCEK002	Caribou	Maxhamish	Capot-Blanc		ATS-Irid	50 ppm; double 6th	3-Jul-13	469073	6585856	normal
SCEK007	Caribou	Maxhamish	Capot-Blanc		ATS-Irid	50 ppm; double 6th	3-Jul-13	454625	6581456	normal
SCEK001	Caribou	Maxhamish	Capot-Blanc		Lotek-VHF	60 ppm	3-Jul-13	460771	6572707	normal
SCEK076	Caribou	Maxhamish	Capot-Blanc		Lotek-VHF	60 ppm	3-Jul-13	454714	6582335	normal
SCEK066	Caribou	Maxhamish	Capot-Blanc		Lotek-VHF	60 ppm	3-Jul-13	443952	6570829	normal
SCEK067	Caribou	Maxhamish	Capot-Blanc		Lotek-VHF	60 ppm	3-Jul-13	443952	6570829	normal
BC1033	Caribou	Maxhamish	Fortune		Lotek-VHF	60 ppm	3-Jul-13	504274	6622929	normal
BC1024	Caribou	Maxhamish	Fortune		Lotek-VHF	60 ppm	3-Jul-13	537690	6634181	normal
BC1021	Caribou	Maxhamish	Fortune		Lotek-VHF	120 ppm	3-Jul-13	529772	6569183	ON MORTALITY
SCEK085	Caribou	Maxhamish	Fortune		Vectr-Vertex	50 ppm	3-Jul-13	533044	6621891	normal
SCEK163	Caribou	Maxhamish	Fortune		Vectr-Vertex	50 ppm	3-Jul-13	465273	6616328	normal
SCEK130	Caribou	Maxhamish	Fortune		Lotek-VHF	60 ppm	3-Jul-13	535672	6623412	normal
SCEK084	Caribou	Maxhamish	Fortune		Lotek-VHF	60 ppm	3-Jul-13	541158	6623837	normal
SCEK078	Caribou	Maxhamish	Fortune		Lotek-VHF	60 ppm	3-Jul-13	463968	6623374	normal
SCEK128	Caribou	Maxhamish	Fortune		Lotek-VHF	60 ppm	3-Jul-13	520312	6629519	normal
SCEK086	Caribou	Maxhamish	Fortune		Lotek-VHF	60 ppm	3-Jul-13	533579	6630072	normal
SCEK129	Caribou	Maxhamish	Fortune		Lotek-VHF	60 ppm	3-Jul-13	545433	6624303	normal
SCEK087	Caribou	Maxhamish	Fortune		Lotek-VHF	60 ppm	3-Jul-13	544158	6622046	normal
SCEK003	Caribou	Maxhamish	Kiwigana		ATS-Irid	50 ppm; no double 6th	3-Jul-13	515450	6572220	normal
BC1066	Caribou	Maxhamish	Kiwigana		ATS-Irid	50 ppm; double 6th	3-Jul-13	549209	6560279	normal; MFLNRO 2012 deployment
SCEK063	Caribou	Maxhamish	Kiwigana		Lotek-VHF	60 ppm	3-Jul-13	540474	6560073	normal
SCEK064	Caribou	Maxhamish	Kiwigana		Lotek-VHF	60 ppm	3-Jul-13	521484	6571933	normal
SCEK004	Caribou	Maxhamish	Kiwigana		Lotek-VHF	60 ppm	3-Jul-13	501655	6612734	normal
BC1009	Caribou	Maxhamish	Kiwigana		Lotek-VHF	60 ppm	3-Jul-13	521295	6570279	normal; old wolf collar
SCEK005	Caribou	Maxhamish	Kiwigana-OS		ATS-Irid	50 ppm; no double 6th	3-Jul-13	505116	6590699	malfunction; last Iridium data Mar 24
SCEK062	Caribou	Maxhamish	Kiwigana-OS		Lotek-VHF	60 ppm	3-Jul-13	521484	6571933	normal
SCEK006	Caribou	Maxhamish	Kiwigana-OS		Lotek-VHF	60 ppm	3-Jul-13	502867	6593390	normal
SCEK016	Caribou	Parker	Parker		ATS-Irid	50 ppm; no double 6th	2-Jul-13	481583	6513988	normal
SCEK014	Caribou	Parker	Parker		ATS-Irid	50 ppm; double 6th	2-Jul-13	458887	6471121	normal
SCEK013	Caribou	Parker	Parker		Lotek-VHF	60 ppm	2-Jul-13	493981	6522228	normal
SCEK010	Caribou	Parker	Parker		Lotek-VHF	60 ppm	2-Jul-13	488779	6497133	normal
SCEK011	Caribou	Parker	Parker		Lotek-VHF	60 ppm	2-Jul-13	482074	6516056	normal
SCEK012	Caribou	Parker	Parker		Lotek-VHF	60 ppm	2-Jul-13	487523	6508794	normal
SCEK015	Caribou	Parker	Parker		Lotek-VHF	60 ppm	2-Jul-13	485530	6523175	normal
BC1000	Caribou	Parker	Parker		Lotek-VHF	Missing				old VHF; not detected

Table 1. VHF signal status and location of boreal caribou and wolf collars detected during the June 28-July 03, 2013 SCEK fixed-wing telemetry monitoring flight cont.

ID	Species	Range	Core	Freq	Collar Type	Status	Date	East	North	Comments
BC1001	Caribou	Parker	Parker		Lotek-VHF	60 ppm	2-Jul-13	489448	6508694	normal
BC1003	Caribou	Parker	Parker		Lotek-VHF	60 ppm	2-Jul-13	495567	6520210	normal
SCEK161	Caribou	Prophet	Prophet-OS		ATS-Irid	50 ppm; double 6th	2-Jul-13	555608	6454403	normal
SCEK050	Caribou	Prophet	Prophet-OS		ATS-Irid	50 ppm; double 6th	2-Jul-13	556997	6451832	normal
SCEK051	Caribou	Prophet	Prophet-OS		Lotek-VHF	60 ppm	2-Jul-13	540911	6483644	normal
SCEK049	Caribou	Prophet	Prophet-OS		Lotek-VHF	60 ppm	2-Jul-13	553864	6452073	normal
SCEK045	Caribou	Prophet	Prophet-OS		Lotek-VHF	60 ppm	2-Jul-13	559467	6449962	normal
SCEK044	Caribou	Prophet	RRA-B		ATS-Irid	50 ppm; double 6th	2-Jul-13	553845	6459272	normal
SCEK143	Caribou	Prophet	RRA-B		Vectr-Vertex	100 ppm	2-Jul-13	533263	6479621	false mortality signal
SCEK144	Caribou	Prophet	RRA-B		Lotek-VHF	60 ppm	2-Jul-13	570456	6454559	normal
SCEK043	Caribou	Prophet	RRA-B		Lotek-VHF	60 ppm	2-Jul-13	533041	6483337	normal
SCEK020	Caribou	Snake-Sahtaneh	Clarke		ATS-Irid	50 ppm; double 6th	2-Jul-13	569434	6473757	normal
SCEK017	Caribou	Snake-Sahtaneh	Clarke		ATS-Irid	50 ppm; double 6th	2-Jul-13	546943	6507523	normal
SCEK068	Caribou	Snake-Sahtaneh	Clarke		Lotek-VHF	60 ppm	2-Jul-13	562386	6516242	normal
SCEK150	Caribou	Snake-Sahtaneh	Clarke		Lotek-VHF	60 ppm	2-Jul-13	603705	6488098	normal
SCEK148	Caribou	Snake-Sahtaneh	Clarke		Lotek-VHF	60 ppm	2-Jul-13	602947	6487077	normal
SCEK153	Caribou	Snake-Sahtaneh	Clarke		Lotek-VHF	60 ppm	2-Jul-13	541125	6491762	normal
SCEK151	Caribou	Snake-Sahtaneh	Clarke		Lotek-VHF	60 ppm	2-Jul-13	557834	6515932	normal
SCEK152	Caribou	Snake-Sahtaneh	Clarke		Lotek-VHF	60 ppm	2-Jul-13	553754	6498501	normal
SCEK019	Caribou	Snake-Sahtaneh	Clarke		Lotek-VHF	60 ppm	2-Jul-13	570872	6506372	normal
SCEK021	Caribou	Snake-Sahtaneh	Clarke		Lotek-VHF	60 ppm	2-Jul-13	553767	6503350	normal
SCEK025	Caribou	Snake-Sahtaneh	Clarke		Lotek-VHF	60 ppm	2-Jul-13	588505	6484569	normal
SCEK024	Caribou	Snake-Sahtaneh	Clarke		Lotek-VHF	60 ppm	2-Jul-13	558254	6536272	normal
SCEK018	Caribou	Snake-Sahtaneh	Clarke		Lotek-VHF	60 ppm	2-Jul-13	532064	6498178	normal
SCEK154	Caribou	Snake-Sahtaneh	Clarke		Lotek-VHF	60 ppm	2-Jul-13	560537	6508455	normal
SCEK149	Caribou	Snake-Sahtaneh	Clarke		Lotek-VHF	60 ppm	2-Jul-13	562846	6503988	normal
SCEK156	Caribou	Snake-Sahtaneh	Clarke		Lotek-VHF	60 ppm	2-Jul-13	543372	6500200	normal
SCEK157	Caribou	Snake-Sahtaneh	Clarke		Lotek-VHF	60 ppm	2-Jul-13	563149	6495214	normal
SCEK070	Caribou	Snake-Sahtaneh	Clarke		Lotek-VHF	60 ppm	2-Jul-13	568559	6500726	normal
SCEK145	Caribou	Snake-Sahtaneh	Clarke-OS		Lotek-VHF	60 ppm	2-Jul-13	592785	6547379	normal
SCEK100	Caribou	Snake-Sahtaneh	East Kotcho		ATS-Irid	50 ppm; double 6th	2-Jul-13	638188	6560661	normal
SCEK104	Caribou	Snake-Sahtaneh	East Kotcho		Vectr-Vertex	50 ppm	3-Jul-13	605453	6573968	normal
SCEK101	Caribou	Snake-Sahtaneh	East Kotcho		Lotek-VHF	120 ppm	2-Jul-13	641686	6575233	ON MORTALITY
SCEK103	Caribou	Snake-Sahtaneh	East Kotcho		Lotek-VHF	60 ppm	2-Jul-13	632965	6559617	normal
SCEK102	Caribou	Snake-Sahtaneh	East Kotcho		Lotek-VHF	60 ppm	2-Jul-13	625322	6548380	normal
SCEK105	Caribou	Snake-Sahtaneh	East Kotcho		Lotek-VHF	60 ppm	2-Jul-13	639591	6576828	normal
SCEK111	Caribou	Snake-Sahtaneh	North Kotcho		Vectr-Vertex	50 ppm	3-Jul-13	601450	6584103	normal
SCEK074	Caribou	Snake-Sahtaneh	North Kotcho		Lotek-VHF	60 ppm	2-Jul-13	613020	6563139	normal
SCEK089	Caribou	Snake-Sahtaneh	North Kotcho		Lotek-VHF	60 ppm	3-Jul-13	604560	6574313	normal
SCEK088	Caribou	Snake-Sahtaneh	North Kotcho		Lotek-VHF	60 ppm	2-Jul-13	631326	6556953	normal
SCEK075	Caribou	Snake-Sahtaneh	North Kotcho		Lotek-VHF	60 ppm	2-Jul-13	627427	6551320	normal
SCEK090	Caribou	Snake-Sahtaneh	North Kotcho		Lotek-VHF	60 ppm	3-Jul-13	615515	6564929	normal
SCEK092	Caribou	Snake-Sahtaneh	North Kotcho		Lotek-VHF	60 ppm	3-Jul-13	607652	6593314	normal
BC1037	Caribou	Snake-Sahtaneh	North Kotcho-OS		Lotek-VHF	60 ppm	2-Jul-13	563845	6540763	normal
SCEK110	Caribou	Snake-Sahtaneh	North Kotcho-OS		ATS-Irid	50 ppm; double 6th	3-Jul-13	584634	6559532	normal
SCEK096	Caribou	Snake-Sahtaneh	Paradise		Lotek-VHF	60 ppm	2-Jul-13	559517	6536766	normal
SCEK022	Caribou	Snake-Sahtaneh	Paradise-OS		Lotek-VHF	60 ppm	2-Jul-13	549765	6532695	normal
SCEK079	Caribou	Snake-Sahtaneh	Tsea		ATS-Irid	50 ppm; double 6th	3-Jul-13	529243	6600142	normal
SCEK131	Caribou	Snake-Sahtaneh	Tsea		Lotek-VHF	60 ppm	3-Jul-13	555568	6597987	normal
SCEK081	Caribou	Snake-Sahtaneh	Tsea		Lotek-VHF	60 ppm	3-Jul-13	550311	6600783	normal
SCEK083	Caribou	Snake-Sahtaneh	Tsea		Lotek-VHF	60 ppm	3-Jul-13	561972	6602700	normal

Table 1. VHF signal status and location of boreal caribou and wolf collars detected during the June 28-July 03, 2013 SCEK fixed-wing telemetry monitoring flight cont.

ID	Species	Range	Core	Freq	Collar Type	Status	Date	East	North	Comments
SCEK132	Caribou	Snake-Sahtaneh	Tsea		Lotek-VHF	60 ppm	3-Jul-13	553316	6594930	normal
SCEK082	Caribou	Snake-Sahtaneh	Tsea		Lotek-VHF	60 ppm	3-Jul-13	551699	6597301	normal
SCEK127	Caribou	Snake-Sahtaneh	Tsea		Lotek-VHF	60 ppm	3-Jul-13	558812	6605138	normal
SCEK071	Caribou	Snake-Sahtaneh	West Kotcho		Vectr-Vertex	50 ppm	3-Jul-13	586487	6546008	normal
SCEK097	Caribou	Snake-Sahtaneh	West Kotcho		ATS-Irid	50 ppm; double 6th	3-Jul-13	595365	6566868	normal
SCEK099	Caribou	Snake-Sahtaneh	West Kotcho		Lotek-VHF	60 ppm	2-Jul-13	561634	6537594	normal
SCEK072	Caribou	Snake-Sahtaneh	West Kotcho		Lotek-VHF	60 ppm	3-Jul-13	615169	6556920	normal
SCEK091	Caribou	Snake-Sahtaneh	West Kotcho		Lotek-VHF	60 ppm	3-Jul-13	603305	6580770	normal
SCEK098	Caribou	Snake-Sahtaneh	West Kotcho		Lotek-VHF	60 ppm	3-Jul-13	606622	6591808	normal
SCEK073	Caribou	Snake-Sahtaneh	West Kotcho		Lotek-VHF	60 ppm	2-Jul-13	591583	6548376	normal
SCEK093	Caribou	Snake-Sahtaneh	West Kotcho-OS		Lotek-VHF	120 ppm	2-Jul-13	546194	6550594	ON MORTALITY
SCEK094	Caribou	Snake-Sahtaneh	West Kotcho-OS		Lotek-VHF	60 ppm	3-Jul-13	584947	6534358	normal
BW002	Wolf	Chinchaga	Big Arrow		Lotek-VHF	60 ppm	28-Jun-13	619417	6327304	normal
BW011	Wolf	Chinchaga	Big Arrow		Lotek-Irid	50 ppm	28-Jun-13	619417	6327304	normal VHF; no Iridium data function
BW012	Wolf	Chinchaga	Big Arrow		Lotek-Irid	no VHF signal				Iridium data function normal
BW008	Wolf	Fort Nelson	Tsimeh		Lotek-Irid	50 ppm	3-Jul-13	512666	6543656	normal
BW001	Wolf	Fort Nelson	Tsimeh		Lotek-VHF	60 ppm	3-Jul-13	512666	6543656	normal
BW009	Wolf	Fort Nelson	Tsimeh		Lotek-Irid	50 ppm	3-Jul-13	512666	6543656	normal
BW014	Wolf	Fort Nelson	Tsimeh		Lotek-Irid	50 ppm	3-Jul-13	512666	6543656	normal
BW020	Wolf	Parker	Parker		Lotek-VHF	60 ppm	2-Jul-13	502134	6513684	normal
BW019	Wolf	Parker	Parker		Lotek-Irid	50 ppm	2-Jul-13	502134	6513684	normal
BW021	Wolf	Snake-Sahtaneh	Clarke		Lotek-Irid	unknown				not detected
BW022	Wolf	Snake-Sahtaneh	Clarke		Lotek-VHF	unknown				not detected
BW018	Wolf	Snake-Sahtaneh	Elleh		Lotek-Irid	50 ppm	2-Jul-13	570621	6498777	normal
BW017	Wolf	Snake-Sahtaneh	Elleh		Lotek-Irid	50 ppm	2-Jul-13	570621	6498777	normal
BW023	Wolf	Snake-Sahtaneh	Snake		Lotek-VHF	60 ppm	2-Jul-13	543418	6531658	normal
BW015	Wolf	Snake-Sahtaneh	Snake		Lotek-Irid	50 ppm	3-Jul-13	506253	6589493	normal
BW007	Wolf	Snake-Sahtaneh	Snake		Lotek-VHF	unknown				not detected
BW016	Wolf	Snake-Sahtaneh	Snake		Lotek-Irid	50 ppm	3-Jul-13	555699	6529217	normal
BW006	Wolf	Snake-Sahtaneh	Snake		Lotek-Irid	50 ppm	2-Jul-13	553115	6532128	normal VHF; last Iridium data Mar 13
BW010	Wolf	Snake-Sahtaneh	Snake		Lotek-Irid	unknown				dispersal to NWT; last data Jun 29
BW013	Wolf	Snake-Sahtaneh	West Clarke		Lotek-Irid	unknown				not detected
BW004	Wolf	Snake-Sahtaneh	West Clarke		Lotek-VHF	unknown				not detected
BW003	Wolf	Snake-Sahtaneh	West Clarke		Lotek-Irid	failed				not detected; last data Feb 09, 2013

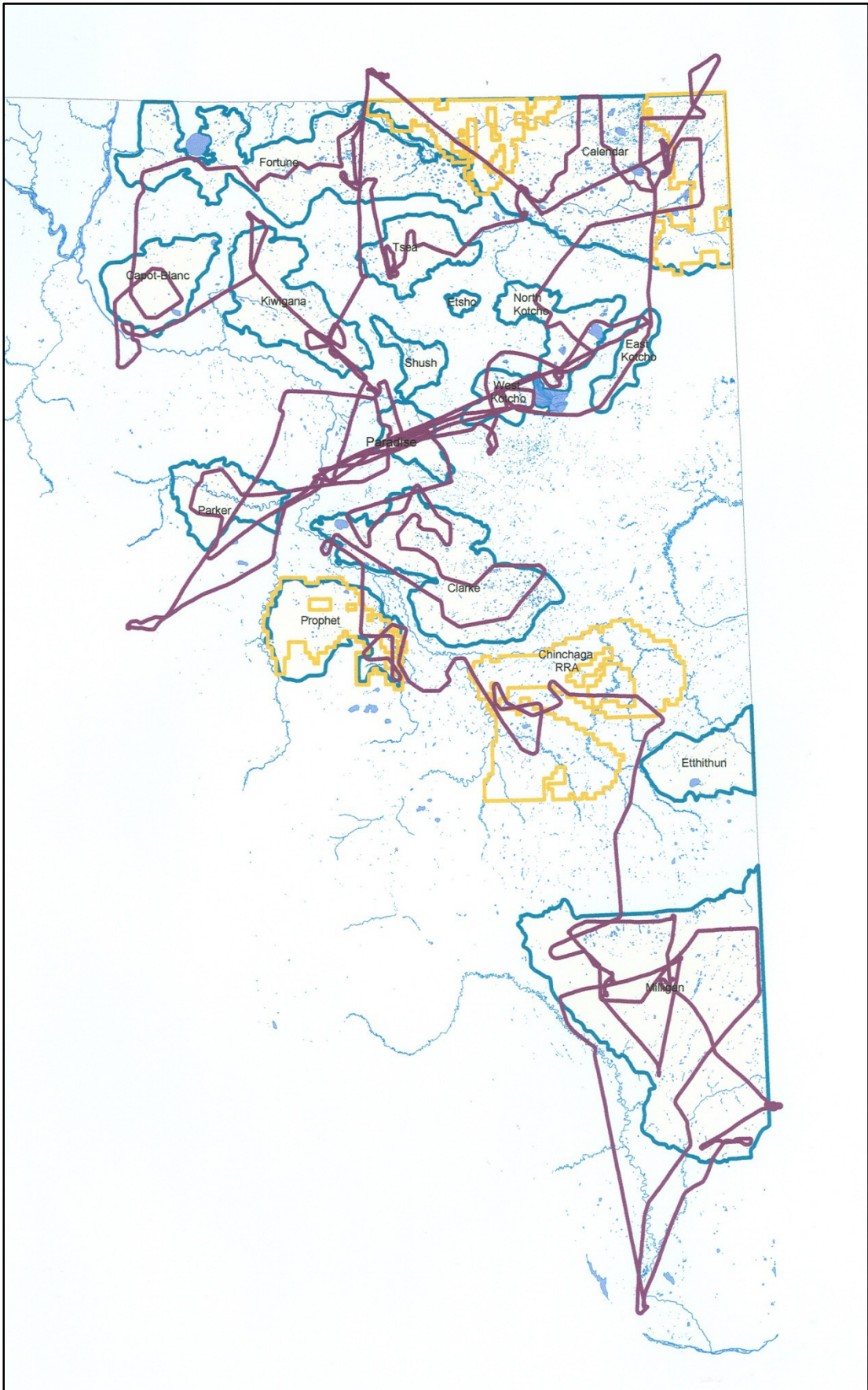


Figure 1. Flight paths flown during the June 28-July 03, 2013 SCEK fixed-wing boreal caribou and wolf telemetry monitoring flight.