

DIVERSIFIED ENVIRONMENTAL SERVICES

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SCIENCE COMMUNITY ENVIRONMENTAL KNOWLEDGE FUND BOREAL CARIBOU TELEMTRY PROGRAM

FIXED-WING TELEMTRY MONITORING FLIGHT – September 05-06, 2013

Date: September 06, 2013

Attention: Megan Watters
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Fort St. John, BC

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 September 05-06, 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 September 05-06, 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 flight was planned for late August 2013 but was deferred several days due to persistent late morning fog. 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-nine caribou collar frequencies were scanned during the September 05-06, 2013 monitoring flight, including 136 SCEK collars (28 ATS Iridium, 14 Vectronic Vertex, and 94 VHF), 4

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 September 05-06 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 3,545 km. Of 149 caribou collar frequencies scanned, 134 normal VHF signals and 1 false mortality signal (Vertex SCEK119) were detected. Seven mortality signals were detected, indicating dead animals. All 7 mortality signals appeared to be associated with animals killed subsequent to the July 24-25, 2013 monitoring flight and included 1 SCEK Iridium collar, 4 SCEK VHF collars, and 2 previously-deployed Alberta SRM collars. Three of the caribou mortalities were located in the Chinchaga Range and 1 was located in each of the Snake-Sahtaneh, Calendar, and Parker ranges.

The remaining 7 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-collared caribou whose satellite function failed in March but whose VHF beacon is heard intermittently (SCEK005; Kiwigana), 1 previously-deployed MFLNRO VHF collar suspected to have exceeded its battery life (BC1000; Parker), and 1 previously-deployed MFLNRO VHF collar from the North Kotcho Core, last detected in the Paradise Core on July 02, 2013. The remaining 3 undetected caribou collars are newly-deployed SCEK VHF collars from the Milligan and Calendar cores.

Twenty wolf collar frequencies were scanned during the September 05-06, 2013 monitoring flight, including 14 Iridium collars and 6 VHF collars. An additional VHF-collared wolf was discovered dead by a member of the public prior to the September 05-06 flight; the collar was turned in to the Fort Nelson Conservation Officer Service (BW004; West Clarke).

Of the 14 Iridium wolf collars, 8 appeared to have normal VHF beacon function, 1 was transmitting a double pulse pattern, which may signify low battery voltage, and VHF signals from the remaining 5 were not detected. The majority of the undetected Iridium wolf collars have faulty Iridium data function. One of the 5 undetected Iridium collars (BW010) is assumed to have full VHF and satellite function but has dispersed approximately 60 km into the Northwest Territories. Of the 6 VHF wolf collars scanned, 4 had normal VHF signals and 2 could not be located, including 1 wolf in each of the Snake and Clarke packs.

Discussion

Three of 4 SCEK VHF collars previously missing from the Calendar Range were detected on September 06 during an extended search into Alberta and the Northwest Territories. These collars were located between 21 and 26 km north of the BC/NWT border. The 4th missing Calendar VHF collar (SCEK113) could not be detected and may have ventured further north. VHF collars SCEK056 and SCEK060 remain missing from the Milligan Core.

Some Vectronic Vertex satellite collars continue to transmit occasional false mortality alerts, while incoming GPS data indicates normal movement.

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 September 05-06, 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	6-Sep-13	619956	6642990	normal
SCEK121	Caribou	Calendar	Calendar		ATS-Irid	30 ppm double	6-Sep-13			ON MORTALITY
SCEK136	Caribou	Calendar	Calendar		ATS-Irid	50 ppm; double 6th	6-Sep-13	603033	6613016	normal
SCEK135	Caribou	Calendar	Calendar		Vectr-Vertex	50 ppm	6-Sep-13	639178	6613762	normal
SCEK119	Caribou	Calendar	Calendar		Vectr-Vertex	100 ppm	6-Sep-13	616677	6639355	temporary false mortality
SCEK113	Caribou	Calendar	Calendar		Lotek-VHF	unknown				not detected
SCEK123	Caribou	Calendar	Calendar		Lotek-VHF	60 ppm	6-Sep-13	601308	6623140	normal
SCEK122	Caribou	Calendar	Calendar		Lotek-VHF	60 ppm	6-Sep-13	626530	6679159	normal
SCEK138	Caribou	Calendar	Calendar		Lotek-VHF	60 ppm	6-Sep-13	632230	6622465	normal
SCEK137	Caribou	Calendar	Calendar		Lotek-VHF	60 ppm	6-Sep-13	642942	6639920	normal
SCEK120	Caribou	Calendar	Calendar		Lotek-VHF	60 ppm	6-Sep-13	600194	6642996	normal
SCEK116	Caribou	Calendar	Calendar		Lotek-VHF	60 ppm	6-Sep-13	632125	6679937	normal
SCEK134	Caribou	Calendar	Calendar		Lotek-VHF	60 ppm	6-Sep-13	642087	6639077	normal
SCEK112	Caribou	Calendar	Calendar		Lotek-VHF	60 ppm	6-Sep-13	640204	6641035	normal
SCEK124	Caribou	Calendar	Calendar		Lotek-VHF	120 ppm	6-Sep-13	633985	6614114	ON MORTALITY
SCEK125	Caribou	Calendar	Calendar		Lotek-VHF	60 ppm	6-Sep-13	658413	6675842	normal
SCEK126	Caribou	Calendar	RRA-C		ATS-Irid	50 ppm; no double 6th	6-Sep-13	618281	6646299	normal
SCEK146	Caribou	Calendar	RRA-D		ATS-Irid	50 ppm; no double 6th	6-Sep-13	605975	6637986	normal
SCEK147	Caribou	Calendar	RRA-D		Vectr-Vertex	50 ppm	6-Sep-13	626051	6649525	normal
SCEK108	Caribou	Calendar	RRA-D		Lotek-VHF	60 ppm	6-Sep-13	632381	6635266	normal
SCEK107	Caribou	Calendar	RRA-D		Lotek-VHF	60 ppm	6-Sep-13	613001	6637448	normal
AB148.079	Caribou	Chinchaga	Milligan		unknown	120 ppm				ON MORTALITY
SCEK036	Caribou	Chinchaga	Milligan		ATS-Irid	50 ppm; double 6th	6-Sep-13	617385	6354778	normal
SCEK038	Caribou	Chinchaga	Milligan		ATS-Irid	off	6-Sep-13	682815	6306139	normal
SCEK026	Caribou	Chinchaga	Milligan		ATS-Irid	off	6-Sep-13	673561	6301920	normal
SCEK033	Caribou	Chinchaga	Milligan		ATS-Irid	50 ppm; double 6th	6-Sep-13	625547	6328590	normal
SCEK042	Caribou	Chinchaga	Milligan		ATS-Irid	failed				malfunctioned
AB149.391	Caribou	Chinchaga	Milligan		unknown	60 ppm	6-Sep-13	667294	6342310	normal
SCEK040	Caribou	Chinchaga	Milligan		Vectr-Vertex	50 ppm	6-Sep-13	644089	6403819	normal
SCEK034	Caribou	Chinchaga	Milligan		Vectr-Vertex	50 ppm	6-Sep-13	641634	6366543	normal
SCEK055	Caribou	Chinchaga	Milligan		Vectr-Vertex	50 ppm	6-Sep-13	642919	6354926	normal
AB150.079	Caribou	Chinchaga	Milligan		unknown	120 ppm				ON MORTALITY
SCEK037	Caribou	Chinchaga	Milligan		Lotek-VHF	60 ppm	6-Sep-13	678375	6302200	normal
AB150.470	Caribou	Chinchaga	Milligan		unknown	60 ppm	6-Sep-13	658775	6366057	normal
SCEK035	Caribou	Chinchaga	Milligan		Lotek-VHF	60 ppm	6-Sep-13	631657	6351605	normal
SCEK041	Caribou	Chinchaga	Milligan		Lotek-VHF	60 ppm	6-Sep-13	642661	6349661	normal
SCEK027	Caribou	Chinchaga	Milligan		Lotek-VHF	60 ppm	6-Sep-13	673175	6310469	normal
SCEK032	Caribou	Chinchaga	Milligan		Lotek-VHF	60 ppm	6-Sep-13	661929	6360947	normal
SCEK029	Caribou	Chinchaga	Milligan		Lotek-VHF	60 ppm	6-Sep-13	653065	6333911	normal
SCEK052	Caribou	Chinchaga	Milligan		Lotek-VHF	60 ppm	6-Sep-13	654566	6312487	normal
SCEK053	Caribou	Chinchaga	Milligan		Lotek-VHF	60 ppm	6-Sep-13	635810	6330473	normal
SCEK030	Caribou	Chinchaga	Milligan		Lotek-VHF	60 ppm	6-Sep-13	663061	6341916	normal
SCEK056	Caribou	Chinchaga	Milligan		Lotek-VHF	unknown				not detected
SCEK058	Caribou	Chinchaga	Milligan		Lotek-VHF	60 ppm	6-Sep-13	592400	6451697	normal
SCEK054	Caribou	Chinchaga	Milligan		Lotek-VHF	60 ppm	6-Sep-13	638875	6353312	normal
SCEK057	Caribou	Chinchaga	Milligan		Lotek-VHF	60 ppm	6-Sep-13	638132	6328619	normal
SCEK059	Caribou	Chinchaga	Milligan		Lotek-VHF	60 ppm	6-Sep-13	617504	6340283	normal
SCEK061	Caribou	Chinchaga	Milligan		Lotek-VHF	60 ppm	6-Sep-13	662566	6339697	normal
SCEK060	Caribou	Chinchaga	Milligan		Lotek-VHF	unknown				not detected
SCEK159	Caribou	Chinchaga	Milligan		Lotek-VHF	120 ppm	6-Sep-13	657160	6374814	ON MORTALITY
SCEK142	Caribou	Chinchaga	RRA-A		Vectr-Vertex	50 ppm	6-Sep-13	601467	6446147	normal

Table 1. VHF signal status and location of boreal caribou and wolf collars detected during the September 05-06, 2013 SCEK fixed-wing telemetry monitoring flight cont.

ID	Species	Range	Core	Freq	Collar Type	Status	Date	East	North	Comments
SCEK139	Caribou	Chinchaga	RRA-A		Vectr-Vertex	50 ppm	6-Sep-13	643635	6451344	normal
SCEK046	Caribou	Chinchaga	RRA-A		ATS-Irid	50 ppm; double 6th	6-Sep-13	618868	6448772	normal
SCEK047	Caribou	Chinchaga	RRA-A		ATS-Irid	50 ppm; no double 6th	6-Sep-13	587581	6454508	normal
SCEK048	Caribou	Chinchaga	RRA-A		Lotek-VHF	60 ppm	5-Sep-13	600498	6404452	normal
SCEK141	Caribou	Chinchaga	RRA-A		Lotek-VHF	60 ppm	6-Sep-13	599218	6444249	normal
SCEK009	Caribou	Fort Nelson	Fort Nelson		ATS-Irid	50 ppm; double 6th	5-Sep-13	519316	6550416	normal
BC1014	Caribou	Maxhamish	Capot-Blanc		Lotek-VHF	60 ppm	5-Sep-13	471206	6578721	normal
BC1015	Caribou	Maxhamish	Capot-Blanc		Lotek-VHF	60 ppm	5-Sep-13	465233	6582867	normal
SCEK002	Caribou	Maxhamish	Capot-Blanc		ATS-Irid	50 ppm; double 6th	5-Sep-13	477812	6584071	normal
SCEK007	Caribou	Maxhamish	Capot-Blanc		ATS-Irid	50 ppm; no double 6th	5-Sep-13	457121	6580677	normal
SCEK001	Caribou	Maxhamish	Capot-Blanc		Lotek-VHF	60 ppm	5-Sep-13	472090	6580743	normal
SCEK076	Caribou	Maxhamish	Capot-Blanc		Lotek-VHF	60 ppm	5-Sep-13	457878	6580271	normal
SCEK066	Caribou	Maxhamish	Capot-Blanc		Lotek-VHF	60 ppm	5-Sep-13	447268	6568590	normal
SCEK067	Caribou	Maxhamish	Capot-Blanc		Lotek-VHF	60 ppm	5-Sep-13	450436	6564792	normal
BC1033	Caribou	Maxhamish	Fortune		Lotek-VHF	60 ppm	5-Sep-13	504766	6620300	normal
BC1024	Caribou	Maxhamish	Fortune		Lotek-VHF	60 ppm	5-Sep-13	536849	6635414	normal
SCEK085	Caribou	Maxhamish	Fortune		Vectr-Vertex	50 ppm	5-Sep-13	537643	6620897	normal
SCEK163	Caribou	Maxhamish	Fortune		Vectr-Vertex	50 ppm	5-Sep-13	470343	6647655	normal
SCEK130	Caribou	Maxhamish	Fortune		Lotek-VHF	60 ppm	5-Sep-13	531909	6632990	normal
SCEK084	Caribou	Maxhamish	Fortune		Lotek-VHF	60 ppm	5-Sep-13	545072	6621923	normal
SCEK078	Caribou	Maxhamish	Fortune		Lotek-VHF	60 ppm	5-Sep-13	463762	6625563	normal
SCEK128	Caribou	Maxhamish	Fortune		Lotek-VHF	60 ppm	5-Sep-13	522600	6634859	normal
SCEK086	Caribou	Maxhamish	Fortune		Lotek-VHF	60 ppm	5-Sep-13	521409	6627799	normal
SCEK129	Caribou	Maxhamish	Fortune		Lotek-VHF	60 ppm	5-Sep-13	545524	6629555	normal
SCEK087	Caribou	Maxhamish	Fortune		Lotek-VHF	60 ppm	5-Sep-13	543129	6619406	normal
SCEK003	Caribou	Maxhamish	Kiwigana		ATS-Irid	50 ppm; double 6th	5-Sep-13	534853	6566457	normal
BC1066	Caribou	Maxhamish	Kiwigana		ATS-Irid	50 ppm; no double 6th	5-Sep-13	541467	6557395	normal; MFLNRO 2012 deployment
SCEK063	Caribou	Maxhamish	Kiwigana		Lotek-VHF	60 ppm	5-Sep-13	537199	6561484	normal
SCEK064	Caribou	Maxhamish	Kiwigana		Lotek-VHF	60 ppm	5-Sep-13	512757	6572362	normal
SCEK004	Caribou	Maxhamish	Kiwigana		Lotek-VHF	60 ppm	5-Sep-13	503326	6609210	normal
BC1009	Caribou	Maxhamish	Kiwigana		Lotek-VHF	60 ppm	5-Sep-13	519796	6571856	normal; old wolf collar
SCEK005	Caribou	Maxhamish	Kiwigana-OS		ATS-Irid	malfunction				not heard; last data Mar 24
SCEK062	Caribou	Maxhamish	Kiwigana-OS		Lotek-VHF	60 ppm	5-Sep-13	525168	6571539	normal
SCEK006	Caribou	Maxhamish	Kiwigana-OS		Lotek-VHF	60 ppm	5-Sep-13	506431	6597244	normal
SCEK016	Caribou	Parker	Parker		ATS-Irid	50 ppm; no double 6th	5-Sep-13	486539	6514535	normal
SCEK014	Caribou	Parker	Parker		ATS-Irid	50 ppm; no double 6th	5-Sep-13	509077	6506951	normal
SCEK013	Caribou	Parker	Parker		Lotek-VHF	60 ppm	5-Sep-13	491358	6520829	normal
SCEK010	Caribou	Parker	Parker		Lotek-VHF	60 ppm	5-Sep-13	489001	6499642	normal
SCEK011	Caribou	Parker	Parker		Lotek-VHF	120 ppm	5-Sep-13	478325	6516102	ON MORTALITY
SCEK012	Caribou	Parker	Parker		Lotek-VHF	60 ppm	5-Sep-13	489058	6505975	normal
SCEK015	Caribou	Parker	Parker		Lotek-VHF	60 ppm	5-Sep-13	487055	6522917	normal
BC1000	Caribou	Parker	Parker		Lotek-VHF	Missing				old VHF; not detected
BC1001	Caribou	Parker	Parker		Lotek-VHF	60 ppm	5-Sep-13	486539	6512535	normal
SCEK161	Caribou	Prophet	Prophet-OS		ATS-Irid	50 ppm; no double 6th	5-Sep-13	568645	6451314	normal
SCEK050	Caribou	Prophet	Prophet-OS		ATS-Irid	50 ppm; no double 6th	5-Sep-13	567444	6445497	normal
SCEK051	Caribou	Prophet	Prophet-OS		Lotek-VHF	60 ppm	5-Sep-13	543265	6482243	normal
SCEK049	Caribou	Prophet	Prophet-OS		Lotek-VHF	60 ppm	5-Sep-13	553040	6445337	normal
SCEK045	Caribou	Prophet	Prophet-OS		Lotek-VHF	60 ppm	5-Sep-13	549065	6459273	normal
SCEK044	Caribou	Prophet	RRA-B		ATS-Irid	50 ppm; double 6th	5-Sep-13	569565	6447730	normal
SCEK143	Caribou	Prophet	RRA-B		Vectr-Vertex	50 ppm	5-Sep-13	541151	6481159	normal
SCEK144	Caribou	Prophet	RRA-B		Lotek-VHF	60 ppm	5-Sep-13	570979	6452399	normal

Table 1. VHF signal status and location of boreal caribou and wolf collars detected during the September 05-06, 2013 SCEK fixed-wing telemetry monitoring flight cont.

ID	Species	Range	Core	Freq	Collar Type	Status	Date	East	North	Comments
SCEK043	Caribou	Prophet	RRA-B		Lotek-VHF	60 ppm	5-Sep-13	555186	6456085	normal
SCEK020	Caribou	Snake-Sahtaneh	Clarke		ATS-Irid	50 ppm; no double 6th	6-Sep-13	567637	6468896	normal
SCEK017	Caribou	Snake-Sahtaneh	Clarke		ATS-Irid	50 ppm; no double 6th	5-Sep-13	543184	6507568	normal
SCEK068	Caribou	Snake-Sahtaneh	Clarke		Lotek-VHF	60 ppm	5-Sep-13	557233	6539289	normal
SCEK150	Caribou	Snake-Sahtaneh	Clarke		Lotek-VHF	60 ppm	5-Sep-13	600784	6487232	normal
SCEK148	Caribou	Snake-Sahtaneh	Clarke		Lotek-VHF	60 ppm	5-Sep-13	603907	6487453	normal
SCEK153	Caribou	Snake-Sahtaneh	Clarke		Lotek-VHF	60 ppm	5-Sep-13	537486	6503057	normal
SCEK151	Caribou	Snake-Sahtaneh	Clarke		Lotek-VHF	60 ppm	6-Sep-13	557719	6513805	normal
SCEK152	Caribou	Snake-Sahtaneh	Clarke		Lotek-VHF	60 ppm	5-Sep-13	556886	6496816	normal
SCEK019	Caribou	Snake-Sahtaneh	Clarke		Lotek-VHF	60 ppm	5-Sep-13	571880	6505207	normal
SCEK021	Caribou	Snake-Sahtaneh	Clarke		Lotek-VHF	60 ppm	5-Sep-13	559028	6498300	normal
SCEK025	Caribou	Snake-Sahtaneh	Clarke		Lotek-VHF	60 ppm	5-Sep-13	558998	6482081	normal
SCEK024	Caribou	Snake-Sahtaneh	Clarke		Lotek-VHF	60 ppm	5-Sep-13	555320	6536964	normal
SCEK018	Caribou	Snake-Sahtaneh	Clarke		Lotek-VHF	60 ppm	5-Sep-13	541214	6501384	normal
SCEK154	Caribou	Snake-Sahtaneh	Clarke		Lotek-VHF	60 ppm	5-Sep-13	562426	6500327	normal
SCEK149	Caribou	Snake-Sahtaneh	Clarke		Lotek-VHF	60 ppm	5-Sep-13	577520	6500067	normal
SCEK156	Caribou	Snake-Sahtaneh	Clarke		Lotek-VHF	60 ppm	5-Sep-13	547768	6493112	normal
SCEK157	Caribou	Snake-Sahtaneh	Clarke		Lotek-VHF	60 ppm	5-Sep-13	564673	6500302	normal
SCEK070	Caribou	Snake-Sahtaneh	Clarke		Lotek-VHF	60 ppm	5-Sep-13	571106	6496034	normal
SCEK145	Caribou	Snake-Sahtaneh	Clarke-OS		Lotek-VHF	60 ppm	6-Sep-13	588432	6544786	normal
SCEK100	Caribou	Snake-Sahtaneh	East Kotcho		ATS-Irid	50 ppm; double 6th	6-Sep-13	634177	6570994	normal
SCEK104	Caribou	Snake-Sahtaneh	East Kotcho		Vectr-Vertex	50 ppm	6-Sep-13	607692	6573193	normal
SCEK103	Caribou	Snake-Sahtaneh	East Kotcho		Lotek-VHF	60 ppm	6-Sep-13	632373	6554590	normal
SCEK102	Caribou	Snake-Sahtaneh	East Kotcho		Lotek-VHF	60 ppm	6-Sep-13	628668	6551485	normal
SCEK105	Caribou	Snake-Sahtaneh	East Kotcho		Lotek-VHF	60 ppm	6-Sep-13	635881	6578439	normal
SCEK111	Caribou	Snake-Sahtaneh	North Kotcho		Vectr-Vertex	50 ppm	6-Sep-13	603404	6580762	normal
SCEK074	Caribou	Snake-Sahtaneh	North Kotcho		Lotek-VHF	60 ppm	6-Sep-13	614865	6557237	normal
SCEK089	Caribou	Snake-Sahtaneh	North Kotcho		Lotek-VHF	60 ppm	6-Sep-13	603625	6570120	normal
SCEK088	Caribou	Snake-Sahtaneh	North Kotcho		Lotek-VHF	60 ppm	6-Sep-13	633905	6557978	normal
SCEK090	Caribou	Snake-Sahtaneh	North Kotcho		Lotek-VHF	60 ppm	6-Sep-13	599481	6584216	normal
SCEK092	Caribou	Snake-Sahtaneh	North Kotcho		Lotek-VHF	60 ppm	6-Sep-13	609149	6577775	normal
BC1037	Caribou	Snake-Sahtaneh	North Kotcho-OS		Lotek-VHF	unknown				not detected
SCEK110	Caribou	Snake-Sahtaneh	North Kotcho-OS		ATS-Irid	50 ppm; double 6th	6-Sep-13	604706	6567951	normal
SCEK096	Caribou	Snake-Sahtaneh	Paradise		Lotek-VHF	60 ppm	5-Sep-13	563751	6532079	normal
SCEK079	Caribou	Snake-Sahtaneh	Tsea		ATS-Irid	50 ppm; double 6th	5-Sep-13	531174	6594335	normal
SCEK131	Caribou	Snake-Sahtaneh	Tsea		Lotek-VHF	60 ppm	5-Sep-13	554527	6594389	normal
SCEK081	Caribou	Snake-Sahtaneh	Tsea		Lotek-VHF	60 ppm	5-Sep-13	554148	6599406	normal
SCEK083	Caribou	Snake-Sahtaneh	Tsea		Lotek-VHF	60 ppm	5-Sep-13	561367	6603830	normal
SCEK132	Caribou	Snake-Sahtaneh	Tsea		Lotek-VHF	60 ppm	5-Sep-13	552698	6592050	normal
SCEK082	Caribou	Snake-Sahtaneh	Tsea		Lotek-VHF	60 ppm	5-Sep-13	557382	6598079	normal
SCEK127	Caribou	Snake-Sahtaneh	Tsea		Lotek-VHF	60 ppm	5-Sep-13	560376	6605242	normal
SCEK071	Caribou	Snake-Sahtaneh	West Kotcho		Vectr-Vertex	50 ppm	6-Sep-13	591140	6547445	normal
SCEK097	Caribou	Snake-Sahtaneh	West Kotcho		ATS-Irid	50 ppm; no double 6th	6-Sep-13	606544	6575868	normal
SCEK072	Caribou	Snake-Sahtaneh	West Kotcho		Lotek-VHF	120 ppm	6-Sep-13	617684	6555135	ON MORTALITY
SCEK091	Caribou	Snake-Sahtaneh	West Kotcho		Lotek-VHF	60 ppm	6-Sep-13	607504	6575454	normal
SCEK073	Caribou	Snake-Sahtaneh	West Kotcho		Lotek-VHF	60 ppm	6-Sep-13	593482	6546108	normal
SCEK094	Caribou	Snake-Sahtaneh	West Kotcho-OS		Lotek-VHF	60 ppm	6-Sep-13	581291	6534476	normal
BW002	Wolf	Chinchaga	Big Arrow		Lotek-VHF	60 ppm	6-Sep-13	629531	6317991	normal
BW011	Wolf	Chinchaga	Big Arrow		Lotek-Irid	50 ppm	6-Sep-13	629531	6317991	normal VHF; no Iridium data function
BW012	Wolf	Chinchaga	Big Arrow		Lotek-Irid	no VHF signal				last Iridium data Jun 30
BW008	Wolf	Fort Nelson	Tsimeh		Lotek-Irid	50 ppm	5-Sep-13	509178	6553214	normal

Table 1. VHF signal status and location of boreal caribou and wolf collars detected during the September 05-06, 2013 SCEK fixed-wing telemetry monitoring flight cont.

ID	Species	Range	Core	Freq	Collar Type	Status	Date	East	North	Comments
SCEK043	Caribou	Prophet	RRA-B		Lotek-VHF	60 ppm	5-Sep-13	555186	6456085	normal
BW001	Wolf	Fort Nelson	Tsimeh		Lotek-VHF	60 ppm	5-Sep-13	509178	6553214	normal
BW009	Wolf	Fort Nelson	Tsimeh		Lotek-Irid	unknown				not heard; last Iridium data Aug 27
BW014	Wolf	Fort Nelson	Tsimeh		Lotek-Irid	50 ppm	5-Sep-13	520504	6543627	normal
BW020	Wolf	Parker	Parker		Lotek-VHF	60 ppm	5-Sep-13	496514	6514169	normal
BW019	Wolf	Parker	Parker		Lotek-Irid	50 ppm	5-Sep-13	496514	6514169	normal
BW021	Wolf	Snake-Sahtaneh	Clarke		Lotek-Irid	unknown				not detected; Iridium ceased Jun 30
BW022	Wolf	Snake-Sahtaneh	Clarke		Lotek-VHF	unknown				not detected
BW018	Wolf	Snake-Sahtaneh	Elleh		Lotek-Irid	50 ppm	6-Sep-13	551985	6495723	VHF norm; no data since Aug 31
BW017	Wolf	Snake-Sahtaneh	Elleh		Lotek-Irid	50 ppm	6-Sep-13	551985	6495723	normal
BW023	Wolf	Snake-Sahtaneh	Snake		Lotek-VHF	60 ppm	6-Sep-13	549005	6523875	normal
BW015	Wolf	Snake-Sahtaneh	Snake		Lotek-Irid	50 ppm	6-Sep-13	549005	6523875	VHF norm; no data since Aug 30
BW007	Wolf	Snake-Sahtaneh	Snake		Lotek-VHF	unknown				not detected
BW016	Wolf	Snake-Sahtaneh	Snake		Lotek-Irid	40 ppm double	6-Sep-13	549005	6523875	double pulse; no data since Aug 15
BW010	Wolf	Snake-Sahtaneh	Snake		Lotek-Irid	unknown				dispersal to NWT; Irid data current
BW013	Wolf	Snake-Sahtaneh	West Clarke		Lotek-Irid	50 ppm	5-Sep-13	513262	6506789	VHF norm; no data since Aug 30
BW004	Wolf	Snake-Sahtaneh	West Clarke		Lotek-VHF	120 ppm	-	528662	6491866	Remains reported by public; collar turned in
BW003	Wolf	Snake-Sahtaneh	West Clarke		Lotek-Irid	failed				not detected; last data Feb 09, 2013

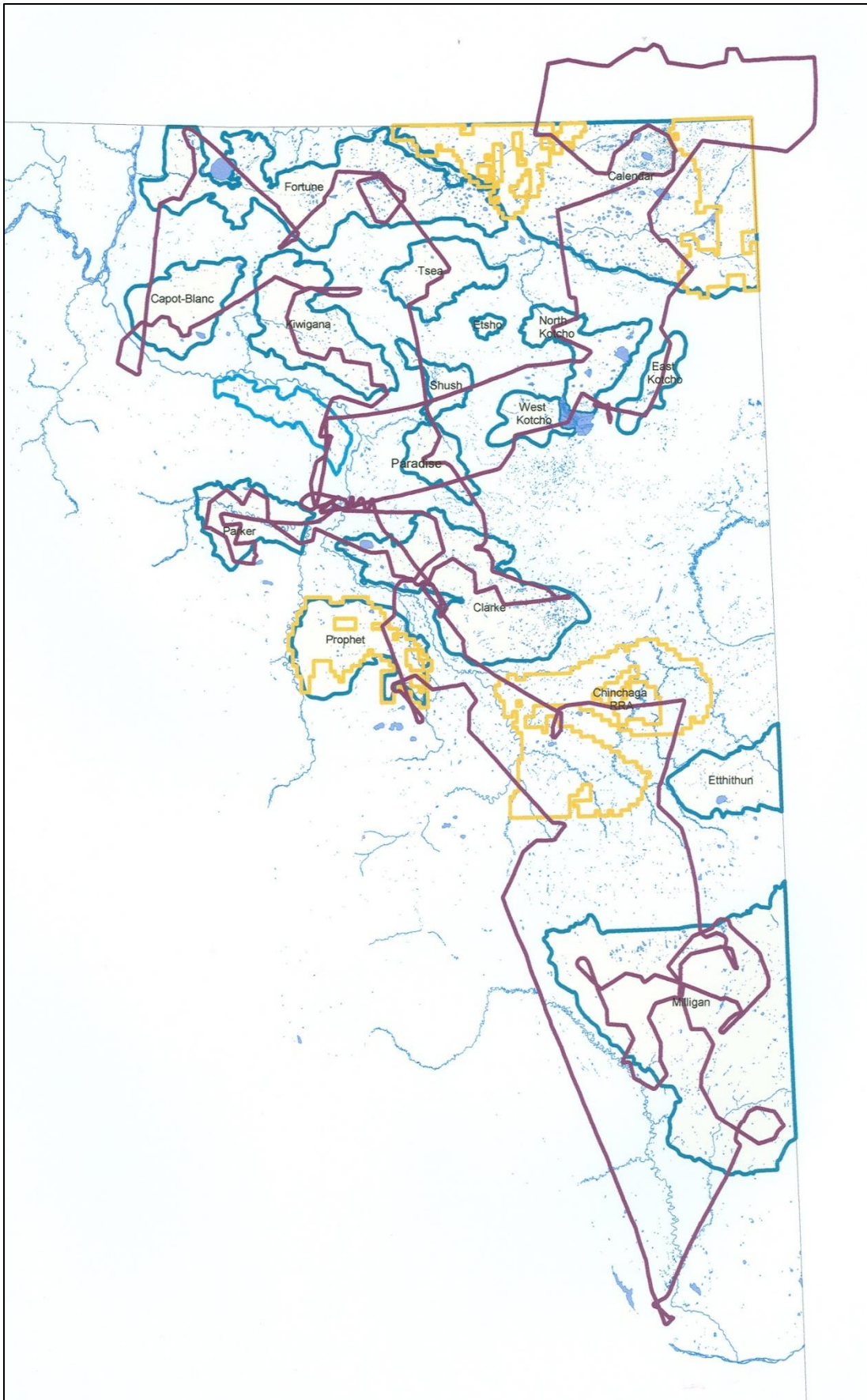


Figure 1. Flight paths flown during the September 05-06, 2013 SCEK fixed-wing boreal caribou and wolf telemetry monitoring flight.