

Parks Canada's Responses to Mar 20, 2017 Questions from Canadian Zinc on Parks Canada Technical Report

Canadian Zinc Question 1

For the 18 animals collared, where exactly were they collared (“in the vicinity of the mine site and proposed all season road” is imprecise), and how many animals were in each group at the time?

Parks Canada Response

Table 1: Coordinates of capture/collaring locations of 18 female caribou in 2015, with group size at time of capture.

Collar ID	Capture Date	Capture Area	Latitude	Longitude	Group size
PC15-01	February 20, 2015	Prairie Creek - North of mine	61.7122344	-124.900484	10
PC15-02	February 21, 2015	Prairie Creek - North of mine	61.7241163	-124.880089	10
PC15-03	February 22, 2015	North Nahanni	62.2748519	-125.188496	~25
PC15-04	February 23, 2015	Prairie Creek - North of mine	61.7078203	-124.853772	10
PC15-05	February 24, 2015	North Nahanni	62.2641311	-125.173929	12
PC15-06	February 24, 2015	North Nahanni	62.2613492	-125.131616	12
PC15-07	December 15, 2015	Sundog Lake	61.673085	-124.20713	8
PC15-08	December 15, 2015	Sundog Lake	61.694314	-124.235844	2
PC15-09	December 16, 2015	Prairie Creek - South of Mine	61.488209	-124.781946	6
PC15-10	December 17, 2015	Upper Ram River	61.720244	-124.643485	10
PC15-11	December 17, 2015	Upper Ram River	61.738555	-124.677407	5
PC15-12	December 17, 2015	Upper Ram River	61.783705	-124.626374	7
PC15-13	December 16, 2015	Fast Creek	61.690629	-124.790583	4
PC15-14	December 16, 2015	Prairie Creek - South of Mine	61.514123	-124.837476	8
PC15-15	December 17, 2015	Upper Prairie Creek	61.797489	-124.962294	~ 20
PC15-16	December 16, 2015	Fast Creek	61.672588	-124.792732	1
PC15-17	December 17, 2015	Upper Prairie Creek	61.767806	-124.957616	~ 20
PC15-18	December 16, 2015	Prairie Creek - South of Mine	61.484599	-124.790829	6

Canadian Zinc Question 2

Please provide further details regarding the statement “A smaller number of these caribou spent the entire year in close proximity to the project area”, such as how many and where exactly (“close proximity” is imprecise).

Parks Canada Response

To date, animals that have remained in closest proximity to the project area are PC15-01,

PC15-04, PC15-07 and PC15-08. These individuals have shown less or no migratory behaviour, and have had smaller home ranges for one or more years, relative to the other collared animals in the study. PC15-07 and PC15-08 were captured in the Sundog Creek area and have shown the most localized, sedentary ranges of all collared individuals, with all locations within ~ 20 km of the proposed all-season road alignment, and multiple crossing events. This is best illustrated by longer term data from PC15-08 (Figure PC15-08). PC15-01 remained in the Prairie Creek watershed for the first year of collaring (Figure PC15-01). Also among animals captured within the Prairie Creek watershed, PC15-04 had the second most localized range for the first year of collaring (Figure PC15-04). Proximity to the project area has been illustrated by movement patterns plus home range analysis (Figures PC15-01 to PC15-18), and seasonal habitat use in proximity to the project area has been illustrated by kernel density analysis (Figures Winter, Spring Migration, Summer Calving, Summer Post-Calving).

Canadian Zinc Question 3

Figure 1 provides kernel density over a large area. The southern “high” density zone includes an area known as ‘Caribou Flats’ some 6 km north of the road where a high number of caribou are known to congregate. Please provide the data upon which the southern zone is based so that we can discern trends proximal to the road.

Parks Canada Response

This analysis was done in ArcGIS, using the Kernel Density tool. For Figure 1 (Parks Canada Technical Report, Issue 2), the data input was all collared caribou locations between May 21 and June 5 in 2015 and 2016. The data used in the analysis can be made available to Canadian Zinc following the arrangement of a Data Sharing Agreement with Parks Canada. Additional seasonal kernel density analyses are provided in this response (Figures Winter, Spring Migration, Summer Calving, Summer Post-Calving).

Canadian Zinc Question 4

Regarding “a subset of these caribou”, how many animals is this? In connection with these animals, it is noted that “previous studies and incidental observations have repeatedly shown caribou in this area”. Please provide specifics.

Parks Canada Response

The “subset of these caribou...collared east of the mine site” includes 2 collared caribou, PC15-07 and PC15-08. Previous studies in this area have included caribou aerial survey observations, and observation of caribou sign (tracks and cratering) in winter, followed by the collection of caribou fecal pellets for genetic analysis. For example, pre-collaring aerial surveys on November 26, 2015 conducted by Nahanni National Park Reserve staff observed a group of approximately 15 caribou west of Sundog Lake (61.712800°N, -124.250660°W). Caribou pellets have been collected in the Sundog Lake area on a number of occasions (Table 2).

Table 2: Examples of caribou fecal pellet collection locations in the Sundog Lake area.

Date	Latitude	Longitude
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March 8, 2012	61.6975	-124.1826
February 23, 2015	61.69301	-124.17934
December 18, 2015	61.68778	-124.25376
December 12, 2016	61.715556	-124.210240

Canadian Zinc Question 5

Regarding Figure 2, please provide figures showing the home range and movements for all collared animals since I expect you will have produced these also.

Parks Canada Response

Please refer to the attached figures for each collared caribou (Figures PC15-01 to PC15-18). These figures are based on data from the time of capture in 2015 to December 2016, and illustrate travel path and direction, colour coded by season and year, home range area (convex hull calculation in ArcGIS), as well as distance travelled by season.