

**Population Status of Caribou Herds
in the Central Mountain Designatable Unit
within British Columbia, 2013**



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Executive Summary

This report provides an update of the population numbers and trend for caribou herds in the B.C. portion of the Central Mountain Designatable Unit for caribou in Canada. The latest population estimates are:

Moberly	16
Scott	20 - 44
Burnt-Pine	extirpated
Kennedy Siding	41
Quintette	114 - 129
Bearhole-Redwillow	24
Narraway	50
Total	265 - 304

The greatest uncertainty regarding these numbers is for the Bearhole-Redwillow and Narraway herds which winter in forested areas and are more difficult to count. Census data and population parameters indicate that most or all herds are continuing to decline.

Introduction

The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) has adopted a new system for evaluating the status and designation of caribou populations in Canada (COSEWIC 2011). Caribou herds living on the east side of the Rocky Mountains, south of the Peace River in B.C. and extending south into Alberta to Banff National Park constitute the Central Mountain Designatable Unit (DU8), (Figure 1). Caribou within this area are evaluated and designated separately from other caribou populations in Canada.

Several caribou herds occur exclusively within the B.C. portion of the Central Mountain DU (Figure 2) including:

- i) Moberly
- ii) Scott
- iii) Burnt-Pine
- iv) Kennedy Siding
- v) Quintette
- vi) Bearhole-Redwillow portion of the Narraway herd

The remainder of the Narraway herd is shared by B.C. and Alberta. Calf recruitment surveys, minimum population counts and population growth rate () for the Narraway herd were provided by the Alberta Department of Environment and Sustainable Resource Development and

are presented in this report. Additional information on population status of the Narraway herd can be obtained in the Alberta Woodland Caribou Status Report (Alberta Sustainable Resource Development and Alberta Conservation Association 2010). The Alberta status report also provides information on the four other caribou herds in the Central Mountain DU that live primarily in Alberta.

This report updates the 2012 status report entitled “Population Status of Caribou Herds in the Central Mountain Designatable Unit within British Columbia, 2012” (Seip and Jones 2012).

Updated information includes a 2013 population census for the Scott and Quintette herds as well as 2013 calf recruitment and adult survival rates for the Moberly, Burnt-Pine, Kennedy Siding, Quintette and Bearhole-Redwillow caribou. We have also calculated population estimates for herds that have not been censused (Bearhole-Redwillow and Narraway) using a model that predicts probable number of groups in a population based on the distribution of collars in groups during calf recruitment surveys.

Calf recruitment surveys were conducted on an annual basis beginning in March 2003 for the Moberly, Burnt-Pine, Kennedy Siding, and Quintette herds, March 2006 for the Narraway herd, and March 2007 for the Bearhole-Redwillow herd. The first calf recruitment survey for the Scott herd was conducted in March 2013. Calf recruitment surveys consisted of locating radio-collared individuals from a helicopter and counting the number of adults and calves in each group. Additional incidental sightings of caribou groups were also included.

Adult mortality was determined annually (01 April to 31 March) for radio-collared caribou in the Moberly, Burnt Pine, Kennedy Siding, Quintette and Bearhole-Redwillow herds during these same years. Adult mortality was calculated by dividing the number of caribou that died by the number of caribou that were monitored for the entire year (± 30 days to accommodate irregularities in capture and drop-off schedules). We attempted to determine the cause of death for caribou when the collars were recovered, but because telemetry flights occurred only monthly for much of the study period, evidence of cause of death at mortality sites was often minimal and inconclusive.

A population census was conducted for the Scott and Quintette herds in March 2013. Each population census was conducted by aerially searching (from a Bell 206 helicopter) for caribou tracks and caribou in the subalpine and alpine zones within the typical winter range of each herd. When a group of caribou was located, we counted the number of adults and calves, and then used radio-telemetry to determine if any collared caribou were present within the group. After the survey was completed, we used telemetry to locate and count collared caribou that were missed during the survey to provide a minimum population count.

Moberly

The most recent population estimate for the Moberly herd (census conducted in 2012) was 25 animals (Seip & Jones 2012). During intensive search efforts to locate and collar caribou on three separate occasions in winter 2012/2013, no more than 16 caribou (6 bulls, 9 cows, 1 calf)

were ever sighted within the Moberly range. Given the population estimate of 25 animals in 2012, and the declining population status (Seip and Jones 2012), it is likely that 16 animals is a reliable population estimate for the Moberly herd.

On average (2003 to 2013), calves comprised 14.0% of the Moberly population (Table 1). Over the past 11 years, 12 collared caribou have died during 46 caribou years of monitoring, for an annual adult mortality rate of 26.1%. The high mortality rate, in combination with the calf recruitment rate, is indicative of a caribou population that is declining (Bergerud 1988, Seip & Cichowski 1996).

Previous population estimates support the predicted decline of the Moberly herd. In 1997, 191 caribou were counted in the Moberly area (TERA 1997). In 2009, there were a minimum of 48 caribou in the herd (Table 1). By 2012, the population estimate had decreased to 25 animals. The population estimate for 2013 is 16 caribou.

Scott

The population census for the Scott herd was conducted on 04 and 05 March 2013. The census area encompassed alpine and subalpine areas within the typical winter range of the Scott herd (Figure 3). Surveying conditions were perfect, with high visibility.

We visually located ten caribou during the census flight without the use of telemetry. One other group of ten caribou was located using telemetry and contained the only radio-collared caribou in the Scott herd (Table 2). Using a modified version of the Lincoln-Peterson model (Lancia *et al.* 1996) the population estimate for the Scott herd was calculated to be 22 ± 22 (95% CIs) caribou. Since 20 caribou were sighted, however, the minimum population size is actually 20 caribou, bringing the population estimate for the Scott herd to between 20 - 44 animals. This estimate is similar to the 22 caribou counted by Wildlife Infometrics in 2007 (Giguere & McNay, 2007).

The 20 caribou counted in the 2013 census included five calves for a calf recruitment rate of 25%. Although based on only one survey, this recruitment rate supports a stable population status as indicated by the 2007 and 2013 population censuses.

Burnt-Pine

The most recent population census for the Burnt-Pine herd was conducted in 2012. There was one radio-collared caribou in the census area at the time of the census. The caribou was by itself with no calf, and located without using telemetry. The population estimate for the Burnt-Pine herd was one animal.

In early October 2012, this last collared caribou emigrated to an area used by the Moberly and Scott herds and has remained in the Moberly and Scott range to date (Figure 4).

During a caribou capture flight in March 2013 a lone cow (uncollared) was sighted in the Burnt Pine area. It is uncertain, however, whether this can be considered a Burnt Pine caribou as Kennedy Siding caribou occasionally use the Burnt Pine range during this time period. We have no evidence that there are any remaining caribou that use the Burnt-Pine range over the entire year.

Previous calf recruitment and adult mortality rates for the Burnt-Pine herd are presented in Table 3. Calf recruitment surveys indicate that there was no calf recruitment into this population in the four years previous to local extirpation (Table 3).

Kennedy Siding

The most recent population estimate for the Kennedy Siding herd (census conducted in 2012) was 41 animals.

The calf recruitment survey for the Kennedy Siding herd was conducted on March 06, 2013 (Figure 5). All collared caribou ($n = 6$) in the Kennedy Siding herd were located by radio-telemetry. In addition, 1 uncollared group of caribou was observed during the calf recruitment survey (Table 4). The 2013 calf recruitment rate was 15%.

On average (2003 to 2013), calves comprised 13.1% of the Kennedy Siding population (Table 5). Over the past eleven years, 15 collared caribou have died during 99 caribou years of monitoring, for an annual adult mortality rate of 15.2%. The mortality rate, in combination with the calf recruitment rate, is indicative of a caribou population that is declining (Bergerud 1988, Seip & Cichowski 1996).

Previous population estimates support the predicted decline of the Kennedy Siding Herd. In 2002, the population estimate was 99 - 119 caribou (Seip, 2002). There were at least 120 caribou in the population in 2007 (Table 5). By 2012, the population estimate had decreased to 41 animals (Seip & Jones, 2012).

Quintette

A population census and calf recruitment survey was conducted for the Quintette herd on 25 and 26 March 2013 (Figure 6). Conditions were suitable for a census as alpine areas were largely snow covered, and weather was clear and sunny with relatively low winds. There were 17 functioning collars in the population, but four were outside of the census area (two in the boreal forest and two in alpine terrain).

Within the census area we counted 83 caribou without using telemetry (Table 6). These caribou included 11 out of the 13 radio-collared caribou in the census area (85%). Thus, assuming we saw 85% of the population, the population estimate becomes 98 ± 21 (95% CIs, Lancia *et al.* 1996) caribou. Using telemetry to find the remaining two collars we counted an

additional 17 caribou for a minimum count of 100 caribou within the census area. This brings the population estimate within the census area to 100 - 119 caribou.

During the census, four of the 17 radio-collared Quintette caribou (24%) were outside of the census area, two in other alpine areas and two in low-elevation forest. Therefore, the estimate for the entire population when we correct for the 24% of the population that may have been outside the census area is 129 caribou (98 caribou/0.76). We counted an additional 14 caribou associated with 2 of the collars outside of the census area which provides a minimum count of 114 caribou for the total population.

A comparison among the 2013 population estimate and censuses from previous years (2002 and 2008) indicates that the Quintette caribou herd is declining. During the 2002 population census for the Quintette area, a total of 154 caribou were counted. This was likely a major underestimate as the census was conducted prior to knowledge of the typical winter range of the Quintette herd and many key areas were not surveyed. A total of 173 caribou were counted in alpine/subalpine areas during the population census conducted in 2008 (Seip and Jones 2008). This census was more intensive and the population estimate is considerably more reliable. Comparison between the population estimate in 2008 and 2013 shows a notable decrease in the minimum count and population estimate for the Quintette herd.

A calf recruitment survey was conducted for the Quintette herd in 2013 by locating 15 radio-collared caribou and counting the caribou associated with them. Additionally, nine groups of uncollared caribou were sighted and included in the calf recruitment count. A total of 114 caribou (105 adults, 9 calves) were counted within the range of the Quintette herd during the calf recruitment survey (Table 6). On average (2003 to 2013), calves comprised 14.0% of the Quintette population (Table 7).

Over the past 11 years, eight collared caribou died during 94 caribou years of monitoring, for an average annual adult mortality rate of 8.5% (Table 7). Although the average calf recruitment rate is higher than the average adult mortality rate (indicative of a stable or increasing population), calf recruitment rates in the past two years are below the average mortality rate. These lower calf recruitment rates may reflect the observed population decline between 2008 and 2013.

Numerous collars (15%, $n = 8$) have gone missing from the Quintette herd over the years and have not been observed during subsequent surveys or capture programs. Those individuals were removed from the mortality calculation. It is likely that those missing animals were somewhat more likely to represent mortalities, and consequently our calculation may underestimate the true adult mortality rate. In the most extreme case, if all eight of those missing collars represent mortalities, the actual annual adult mortality rate would be 17% which would be sufficient to account for the observed population decline.

Bearhole-Redwillow

A calf recruitment survey was conducted for the Bearhole-Redwillow herd in April 2013 by locating five radio-collared caribou and associated caribou by telemetry (Figure 7). A total of 24 caribou, including one calf were counted (Table 8) for a calf recruitment rate of 4.1%. Over the past seven years, the calf recruitment rate has averaged 8.8% (Table 9).

Over the past seven years, six collared caribou died during 31 caribou-years of monitoring for an annual adult mortality rate of 19.4% (Table 9). The high adult mortality rate in combination with the relatively low calf recruitment rate for Bearhole-Redwillow caribou indicate that this herd is declining (Table 9).

Bearhole-Redwillow caribou live in forested habitat during the winter making them very difficult to locate during aerial surveys. Consequently, the population counts for this herd are limited to counting caribou associated with radio-collared caribou in the area. The largest minimum population count was 49 caribou recorded in 2008 (Table 9).

An assessment of population size and trend was conducted using a model that predicts the most likely number of groups in a population based on the observed distribution of collars among groups (Table 10). Number of groups and collar distribution within each group were collected during calf recruitment surveys. Average group size \pm 95% CIs was calculated based on the number of caribou in each group. Because CIs often underestimated what the minimum mathematically possible group size was, we calculated the minimum possible group size using the highest possible number of groups predicted by the model, number of groups actually observed, and number of caribou observed. When the minimum possible groups size was higher than the average group size (- 95% CIs) we used minimum possible group size to derive the lower population estimate.

Population estimates using this method generally supports the predicted decline of Bearhole-Redwillow herd (Table 10) indicated by the calf recruitment and adult mortality rates.

Narraway

Calf recruitment surveys were conducted for the Narraway herd in March 2006 to 2013 (Table 11). Over the past eight years, the calf recruitment rate has averaged 10.0%. The estimates for rate of population growth indicate that the Narraway herd is likely declining ($<$ 1.0 in 6 out of 7 years) (Table 11).

A population census has not been conducted for the Narraway herd. The largest minimum population count was 102 caribou recorded in 2008 (Table 11). An assessment of population size and trend was conducted using a model that predicts the most likely number of groups in a population based on the observed distribution of collars among groups (Table 12). Number of groups and collar distribution within each group were collected during calf recruitment surveys. Average group size \pm 95% CIs was calculated based on the number of caribou in each group. Because CIs often underestimated what the minimum mathematically possible group size was,

we calculated the minimum possible group size using the highest possible number of groups predicted by the model, number of groups actually observed, and number of caribou observed. When the minimum possible groups size was higher than the average group size (- 95% CIs) we used minimum possible group size to derive the lower population estimate.

Population estimates using this method generally support the predicted decline of Narraway herd (Table 12) indicated by the rate of population growth (Table 11).

Summary

A summary of population estimates and minimum herd counts over the past decade indicate that most herds are continuing to decline (Table 13). Data on calf recruitment and adult mortality rates supports the declining status of these herds (Table 14). The most current population estimates for caribou herds that inhabit the B.C. portion of the Central Mountain DU are summarized in Table 14. The total number of caribou is about 266 -305. Minimum population counts for the different herds within the past 20 years indicate that there were at least 672 caribou in the recent past, and probably at least 1000.

Wolf predation is the suspected cause for 40% of the 43 adult mortalities (Table 15). The actual rate of wolf predation is likely higher as some portion of the unknown predator and unknown cause categories are also due to wolf predation. Wolves and caribou co-existed for thousands of years in the south Peace area. The recent declines in caribou due to excessive wolf predation have corresponded to a period of extensive industrial activities including forest harvesting, road building, gas exploration and development, and mining within caribou ranges. It is suspected that those habitat changes have altered the predator-prey balance leading to unnaturally high levels of wolf predation on caribou.

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Table 1. Calf recruitment and adult mortality for Moberly caribou, March 2003 to March 2013. Caribou were only included in adult mortality calculations if monitored for an entire year (± 30 days to accommodate irregularities in capture and drop-off schedules).

Year	Calf Recruitment				Adult Mortality		
	No. Calves	No. Adults	Total	Percent Calves	No. Collared Caribou	No. Mortalities	Percent Mortality
2003	4	25	29	14	2	0	0
2004	3	16	19	16	6	0	0
2005	10	31	41	24	6	0	0
2006	1	4	5	20	4	1	25
2007	1	8	9	11	4	1	25
2008	8	34	42	19	5	3	60
2009	6	42	48	13	3	2	67
2010	2	21	23	9	5	1	20
2011	2	33	35	6	3	1	33
2012	3	22	25	12	5	2	40
2013	1	15	16	6	3	1	33
Total	41	251	292		46	12	
Average				14.0			26.1

Table 2. Scott population census and calf recruitment survey, March 2013. Location type was defined as “visual” if caribou were located without using telemetry, and “telemetry” if caribou were located using telemetry.

Location Number (Figure 3)	Number of Collared Caribou in Group	Location Type	Number of Adults	Number of Calves	Total Number of Caribou
1	0	Visual	2	0	2
2	0	Visual	2	0	2
3	0	Visual	5	1	6
4	1	Telemetry	6	4	10
Total			15	5	20

Table 3. Calf recruitment and adult mortality for Burnt-Pine caribou, March 2003 to March 2012. Caribou were only included in adult mortality calculations if monitored for an entire year (± 30 days to accommodate irregularities in capture and drop-off schedules).

Year	Calf Recruitment				Adult Mortality		
	No. Calves	No. Adults	Total	Percent Calves	No. Collared Caribou	No. Mortalities	Percent Mortality
2003	2	14	16	13	0		
2004	2	12	14	14	2	1	50
2005	1	8	9	11	2	0	0
2006	2	15	17	12	2	0	0
2007	-	-	-	-	1	0	0
2008	2	11	13	15	1	0	0
2009	0	11	11	0	1	0	0
2010	0	19	19	0	3	0	0
2011	0	5	5	0	1	1	100
2012	0	1	1	0	1	0	0
Total	9	96	105		14	2	
Average				8.6			14.3

Table 4. Kennedy Siding calf recruitment survey, March 2013.

Location Number (Figure 5)	Number of Collared Caribou in Group	Number of Adults	Number of Calves	Total Number of Caribou
1	1	5	1	6
2	0	1	1	2
3	1	3	0	3
4	1	6	0	6
5	2	2	1	3
6	1	5	1	6
Total	5	22	4	26

Table 5. Calf recruitment and adult mortality for Kennedy Siding caribou, March 2003 to March 2013. Caribou were only included in adult mortality calculations if monitored for an entire year (± 30 days to accommodate irregularities in capture and drop-off schedules).

Year	Calf Recruitment				Adult Mortality		
	No. Calves	No. Adults	Total	Percent Calves	No. Collared Caribou	No. Mortalities	Percent Mortality
2003	9	34	43	21	2	0	0
2004	9	51	60	15	5	1	20
2005	4	48	52	8	9	2	22
2006	16	75	91	18	6	0	0
2007	17	103	120	14	12	1	8
2008	-	-	-	-	9	2	22
2009	4	56	60	7	17	2	12
2010	3	25	28	11	15	2	13
2011	2	42	44	5	14	4	29
2012	6	35	41	15	3	0	0
2013	4	22	26	15	7	1	14
Total	74	491	565		99	15	
Average				13.1			15.2

Table 6. Quintette population census and calf recruitment survey, March 2013. Location type was defined as “visual” if caribou were located without using telemetry, and “telemetry” if caribou were located using telemetry.

Location Number (Figure 6)	Number of Collared Caribou in Group	Location Type	Number of Adults	Number of Calves	Total Number of Caribou
1	1	Visual	9	0	9
2	0	Visual	4	1	5
3	0	Visual	3	1	4
4	1	Visual	1	0	1
5	1	Visual	3	0	3
6	1	Visual	2	0	2
7	0	Visual	4	0	4
8	2	Visual	6	0	6
9	1	Telemetry	5	1	6*
10	0	Visual	2	0	2
11	0	Visual	2	0	2
12	0	Visual	2	0	2
13	3	Visual	7	1	8
14	1	Visual	5	0	5
15	0	Visual	7	2	9
16	0	Visual	2	0	2
17	0	Visual	8	0	8
18	1	Visual	10	1	11
19	1	Telemetry	8	0	8
20	1	Telemetry	8	1	9
21	1	Telemetry	7	1	8*
Total	15		105	9	114

* caribou located outside of survey area

Table 7. Calf recruitment and adult mortality for Quintette caribou, March 2003 to March 2013. Caribou were only included in adult mortality calculations if monitored for an entire year (± 30 days to accommodate irregularities in capture and drop-off schedules).

Year	Calf Recruitment			Adult Mortality			
	No. Calves	No. Adults	Total	Percent Calves	No. Collared Caribou	No. Mortalities	Percent Mortality
2003	13	45	58	22	2	1	50
2004	16	81	97	16	3	0	0
2005	8	55	63	13	8	0	0
2006	13	83	96	14	9	0	0
2007	13	92	105	12	8	0	0
2008	26	147	173	15	17	2	12
2009	9	66	75	12	8	2	25
2010	17	63	80	21	10	1	10
2011	17	88	105	16	10	1	10
2012	6	77	83	7	11	1	9
2013	9	105	114	8	8	0	0
Total	147	902	1049		94	8	
Average				14.0			8.5

Table 8. Bearhole-Redwillow calf recruitment survey, April 2013.

Location Number (Figure 7)	Number of Collared Caribou in Group	Number of Adults	Number of Calves	Total Number of Caribou
1	2	6	1	7
2	1	2	0	2
3	1	4	0	4
4	1	11	0	11
Total	5	23	1	24

Table 9. Calf recruitment and adult mortality for Bearhole-Redwillow caribou, March 2007 to March 2013. Caribou were only included in adult mortality calculations if monitored for an entire year (± 30 days to accommodate irregularities in capture and drop-off schedules).

Year	Calf Recruitment				Adult Mortality		
	No. Calves	No. Adults	Total	Percent Calves	No. Collared Caribou	No. Mortalities	Percent Mortality
2007	1	12	13	8	0		
2008	3	46	49	6	5	2	40
2009					6	1	17
2010	1	33	34	3	3	2	67
2011	6	22	28	21	6	0	0
2012	3	19	22	14	7	1	14
2013	1	23	24	4	4	0	0
Total	15	155	170		31	6	
Average				8.8			19.4

Table 10. Population estimate for the Bearhole-Redwillow herd using model predictions based on the observed distribution of collared caribou among groups during calf recruitment surveys. The total count (minimum population) of caribou observed during the calf recruitment surveys is also reported.

Year	Mean Group Size \pm 95% CIs	Minimum Mean Group Size Possible	Most Probable No. Groups in Herd (Model Prediction)	Population Estimate	Population Estimate Range (95% CIs)	Minimum Count
2007	4 \pm 6		100 ¹			13
2008	10 \pm 5	5	7 - 10	80	35 - 150	49
2010	7 \pm 4		100 ¹			34
2011	7 \pm 6	4	8 - 9	56	32 - 117	28
2012	7 \pm 9	7	3	21	21 - 48	22
2013	6 \pm 6	3	8 - 9	48	24 - 108	24

¹ Due to distribution of collars (all groups had only 1 collared caribou) model predictions for the most probable number of groups increased exponentially with number of groups. 100 was the highest number of groups tested as it was highly unlikely that the Narraway herd contained more than 100 groups.

Table 11. Calf recruitment and population growth rate () estimates for Narraway caribou, 2006 to 2013. Data provided by the Alberta Department of Environment and Sustainable Resource Development.

Year	No. Calves	No. Adults	Total	Percent Calves	Population Growth Rate ()
2006	4	36	40	10	0.94
2007	10	77	87	11	1.04
2008	2	100	102	2	0.96
2009	11	75	86	13	0.92
2010	15	76	91	16	0.98
2011	10	87	97	10	0.90
2012	4	51	55	7	0.81
2013	5	45	50	10	
Total	61	547	608		
Average				10.0	

Table 12. Population estimate for the Narraway herd using model predictions based on the observed distribution of collared caribou among groups during calf recruitment surveys. The total count (minimum population) of caribou observed during the calf recruitment surveys is also reported.

Year	Mean Group Size \pm 95% CIs	Minimum Mean Group Size Possible	Most Probable No. Groups in Herd (Model Prediction)	Population Estimate	Population Estimate Range (95% CIs)	Minimum Population
2006	7 \pm 2		100 ¹			40
2007	7 \pm 4	5	15 - 18	116	78 - 207	87
2008	6 \pm 1	4	27 - 29	179	139 - 221	102
2009	4 \pm 1	2	44 - 51	176	103 - 262	86
2010	5 \pm 1		100 ¹			91
2011	6 \pm 2		14 - 100 ²	106	51 - 849	97
2012	3 \pm 1	2	23 - 28	79	53 - 112	55
2013	5 \pm 3	4	10 - 12	50	53 - 95	50

¹ Due to distribution of collars (most groups had only 1 collared caribou) model predictions for the most probable number of groups increased exponentially with number of groups. 100 was the highest number of groups tested as it was highly unlikely that the Narraway herd contained more than 100 groups.

² Based on unusual collar distribution (1 group contained 9 collared caribou) there was no difference in probabilities for number of groups from 14 to 100. 100 was the highest number of groups tested as it was highly unlikely that the Narraway herd contained more than 100 groups.

Table 13. Summary of population estimates for caribou herds inhabiting the Central Mountain Designatable Unit within British Columbia.

Herd	Year	Population Estimate/ Minimum Count	Estimate Method
Moberly	1997	191	Aerial Survey
	2009	48	Minimum Count
	2011	35	Mark-Resight
	2012	25	Mark-Resight
	2013	16	Total Count
Scott	2007	22	Aerial Survey
	2013	20 - 44	Mark-Resight
Burnt-Pine	2003	16	Minimum Count
	2006	17	Minimum Count
	2008	13	Mark-Resight
	2010	6	Minimum Count
	2011	5	Aerial Survey
	2012	1	Mark-Resight
Kennedy Siding	2002	99 - 119	Aerial Survey
	2007	120	Minimum Count
	2011	44 - 57	Mark-Resight
	2012	41	Mark-Resight
Quintette (Alpine)	2008	173 - 218	Mark-Resight
	2013	100 - 119	Mark-Resight
Bearhole-Redwillow	2008	49	Minimum Count
	2010	34	Minimum Count
	2011	28	Minimum Count
	2012	22	Minimum Count
	2013	24	Minimum Count
Narraway	2008	102	Minimum Count
	2011	97	Minimum Count
	2012	55	Minimum Count
	2013	50	Minimum Count

Table 14. Summary of population parameters for caribou herds inhabiting the Central Mountain Designatable Unit within British Columbia.

Herd	Average Percent Calves	Average Adult Mortality Rate	Current Population Estimate (Year)	Population Estimate Method	Trend
Moberly	14	26	16 (2013)	Total Count	Declining
Scott	-	-	20 - 44 (2013)	Mark-Resight	Unknown
Burnt-Pine	9	14	Extirpated (2013)	Minimum Count	Extirpated
Kennedy Siding	13	15	41 (2012)	Mark-Resight	Declining
Quintette	15	9	114 - 129 (2013)	Mark-Resight	Declining
Bearhole-Redwillow	9	19	24 (2013)	Minimum Count	Declining
Narraway	9	-	50 (2013)	Minimum Count	Declining

Table 15. Causes of adult mortality for caribou herds inhabiting the Central Mountain Designatable Unit within British Columbia, 2002 to 2013.

Herd	Accident	Wolf	Bear	Wolverine	Unknown Predator	Unknown	Total
Moberly	1	4	0	0	3	4	12
Burnt-Pine	0	1	0	0	0	1	2
Kennedy Siding	1	7	1	1	3	2	15
Quintette	0	2	1	1	2	2	8
Bearhole-Redwillow	0	3	0	0	0	3	6
Total	2	17	2	2	8	12	43

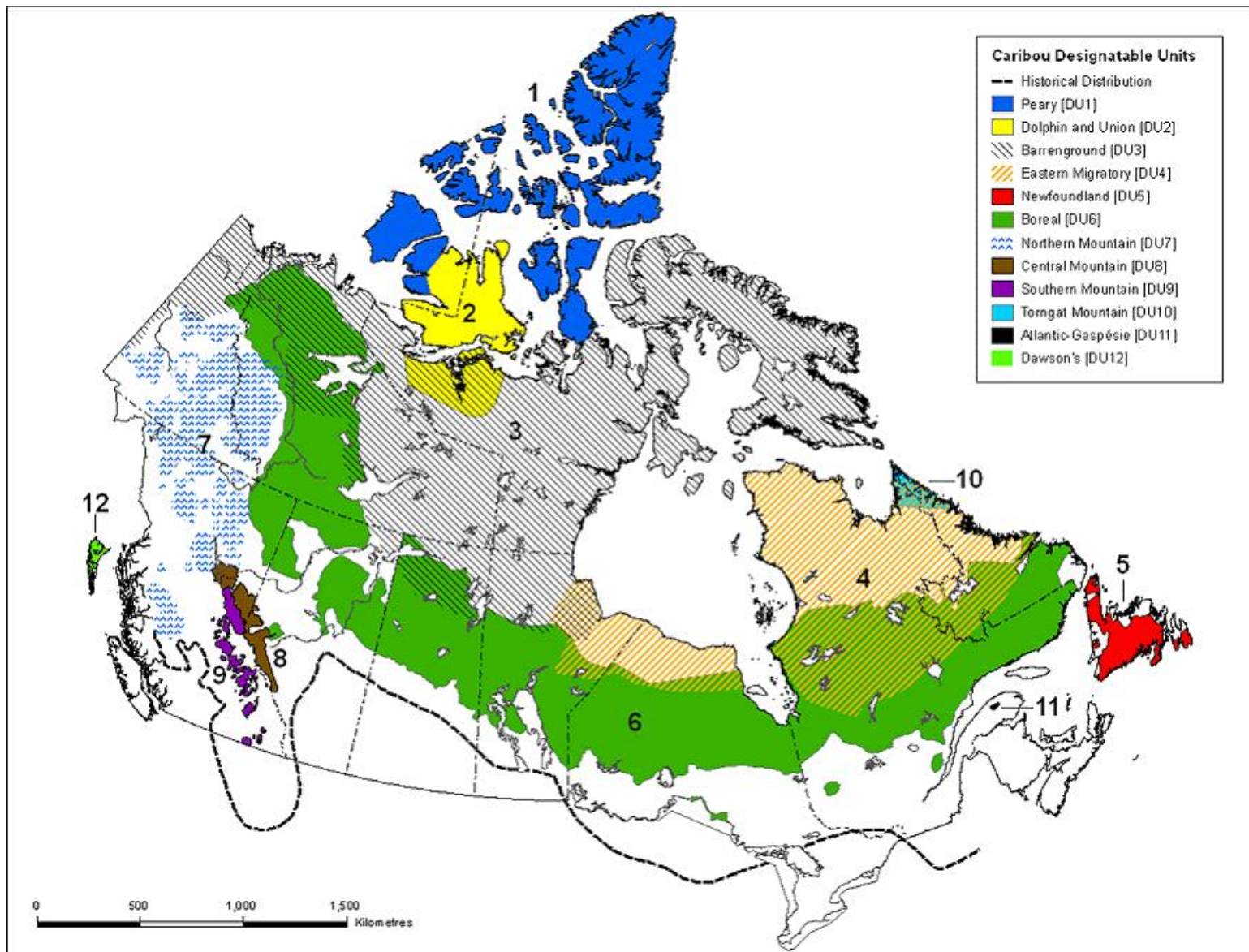


Figure 1. Caribou Designatable Units (DUs) in Canada.

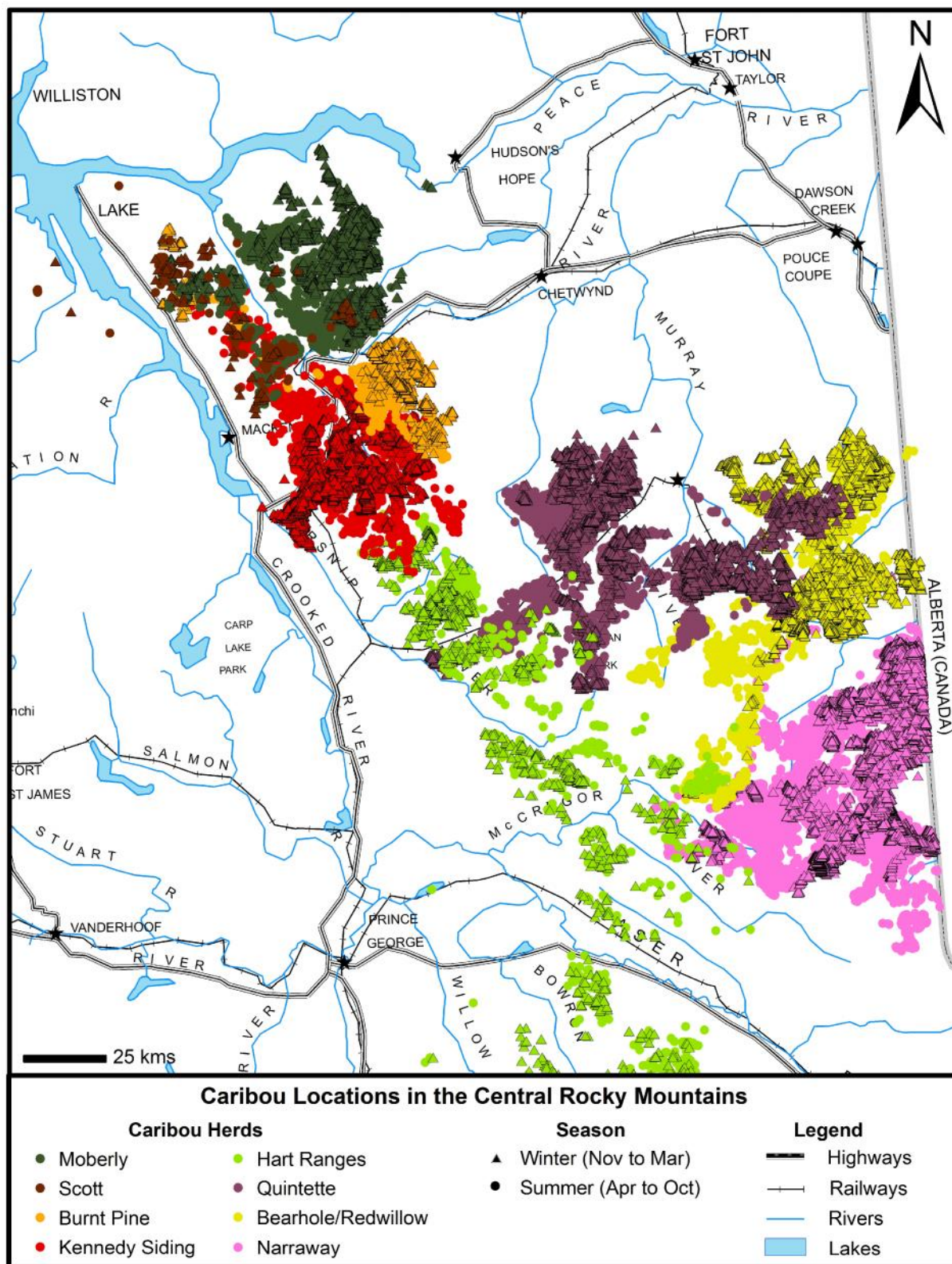


Figure 2. Radio-telemetry and GPS-collar locations of caribou herds in the Central Rockies Ecoregion of British Columbia, May 2002 to February 2013. Hart Ranges caribou are in a different unit (DU9) and population demographics are not included for this herd in this report.

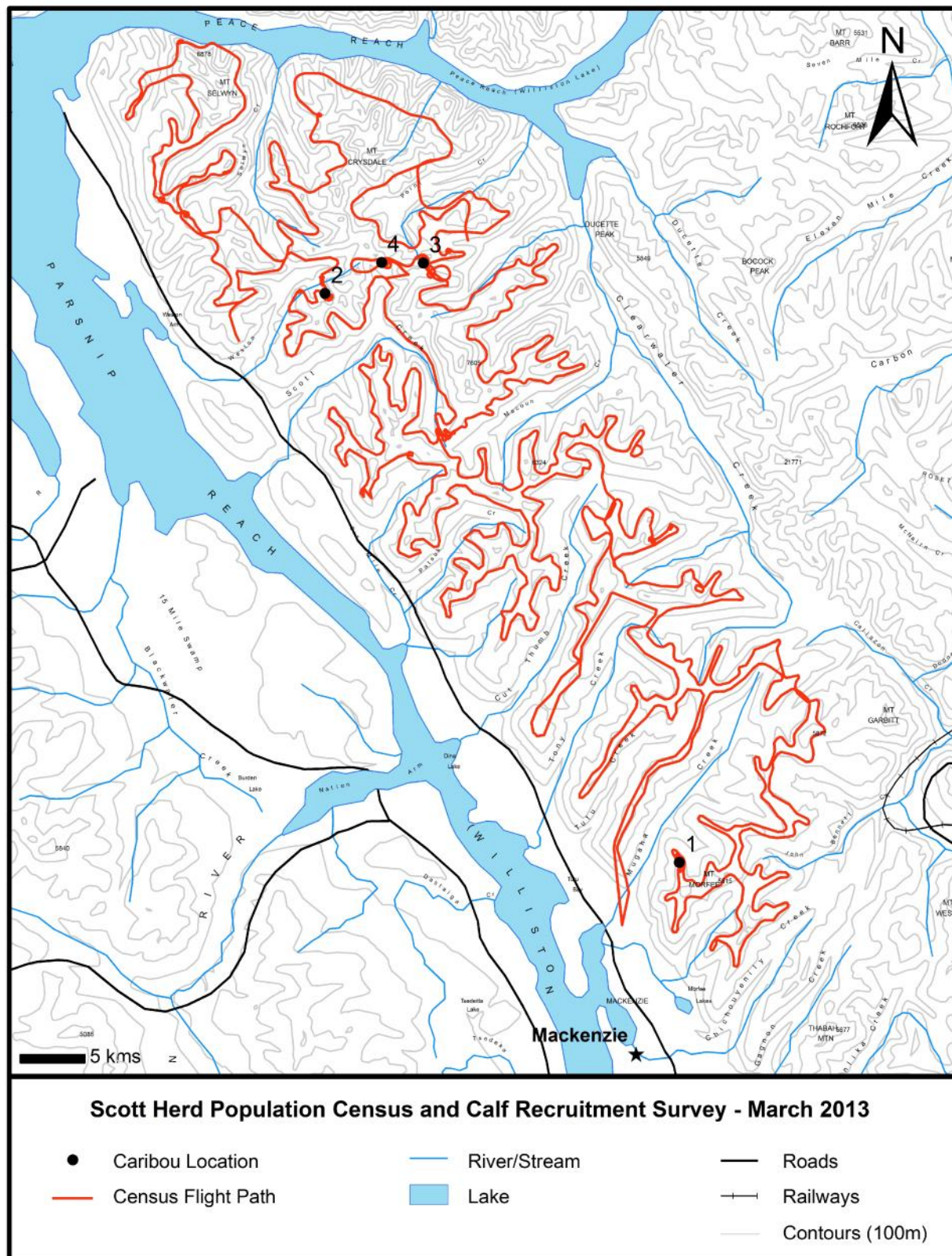


Figure 3. Scott population census and calf recruitment survey, March 2013. Details for each numbered caribou location are in Table 2.

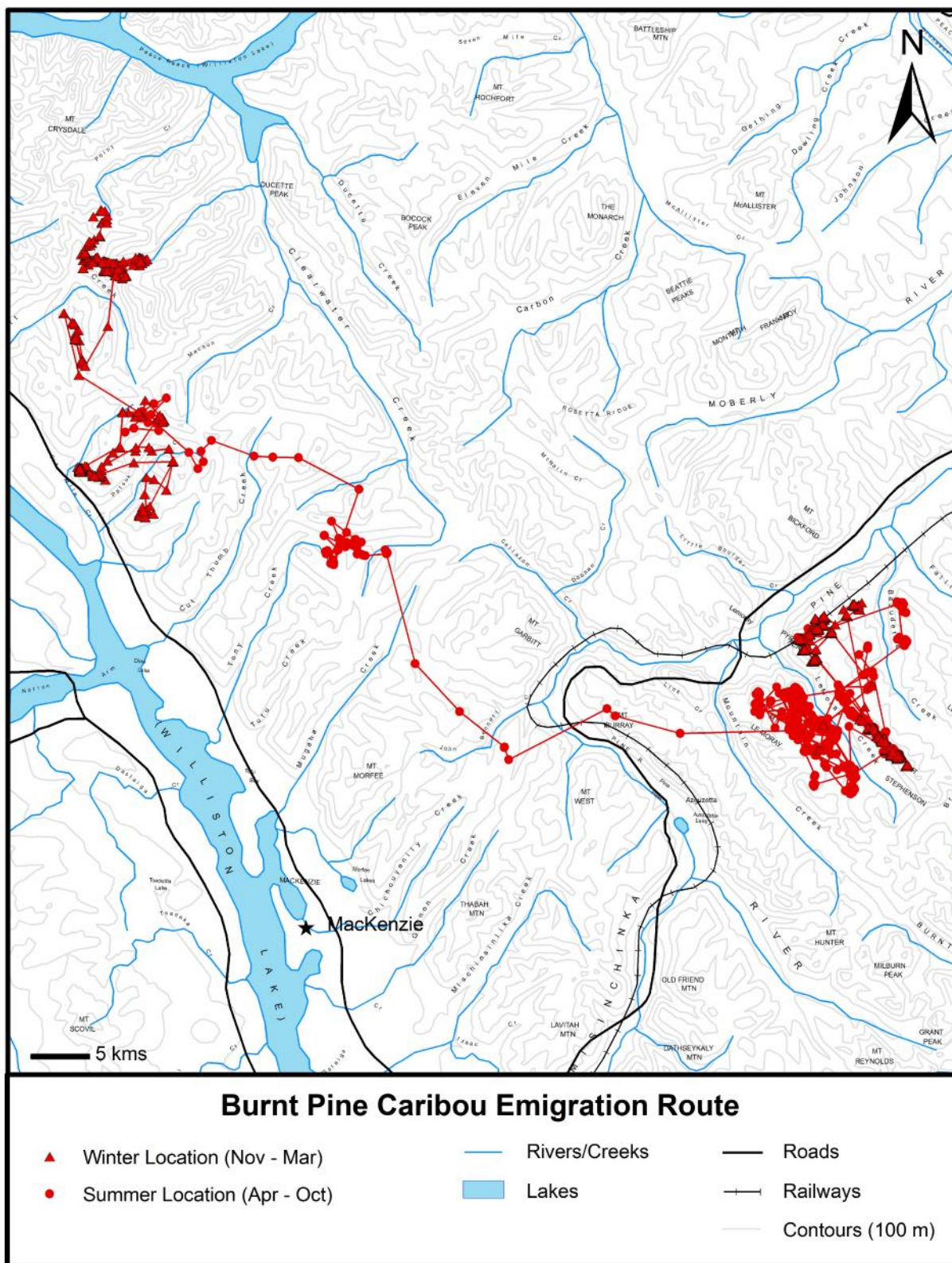


Figure 4. Emigration route from Burnt-Pine winter range to Moberly/Scott winter range for the last collared Burnt-Pine caribou cow.

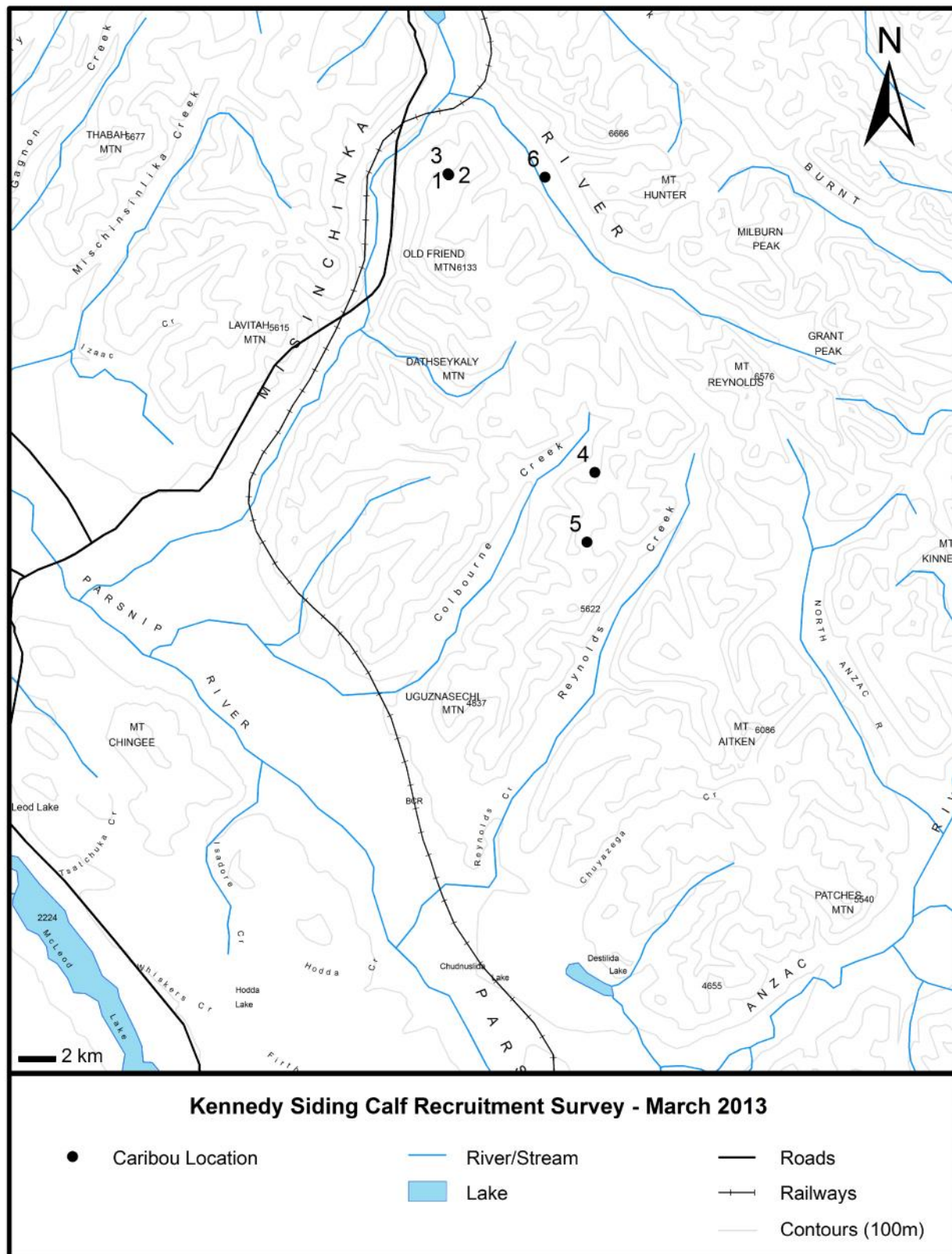


Figure 5. Kennedy Siding calf recruitment survey, March 2013. Details for each numbered caribou location are in Table 4.

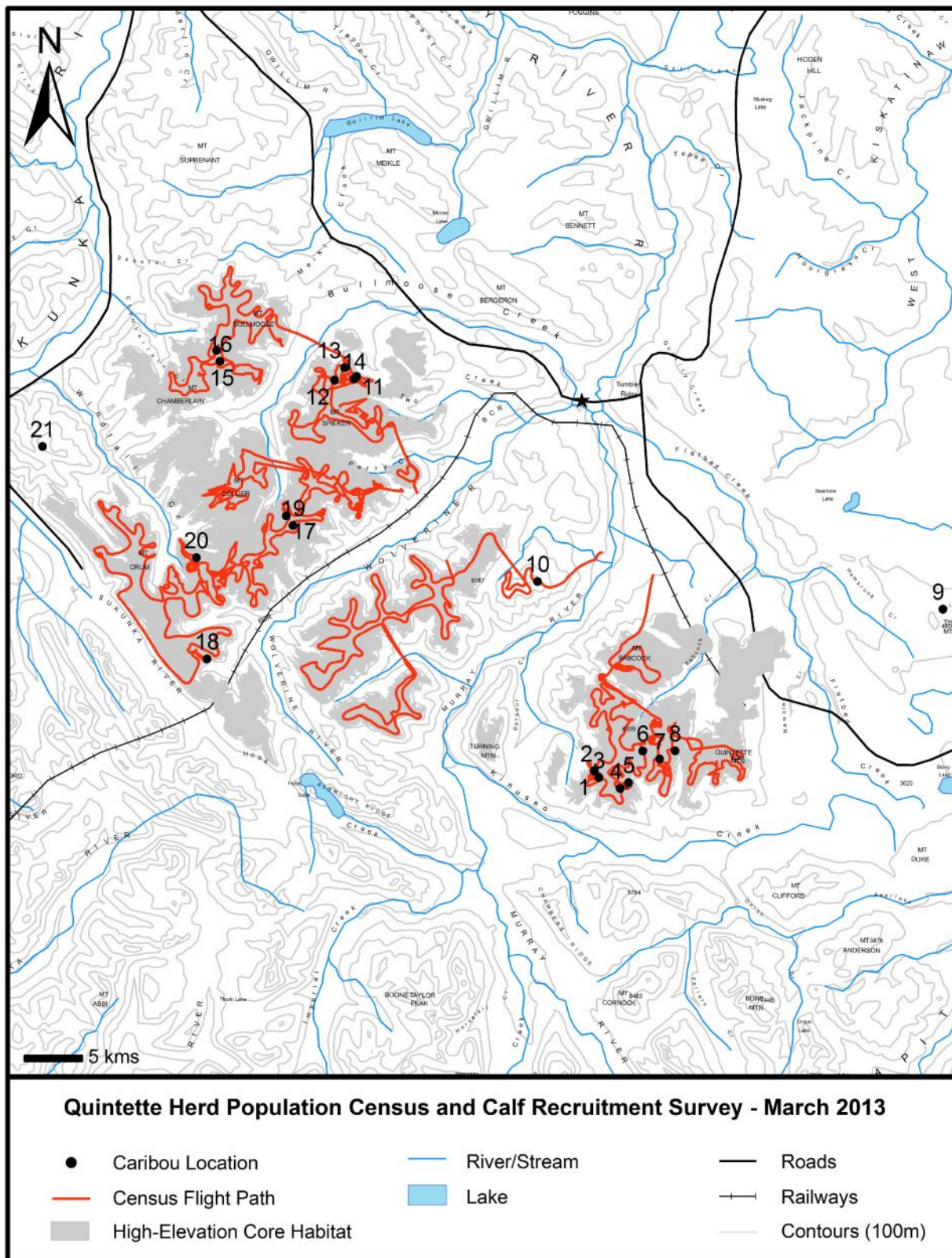


Figure 6. Quintette population census and calf recruitment survey, March 2013. Details for each numbered caribou location are in Table 6.

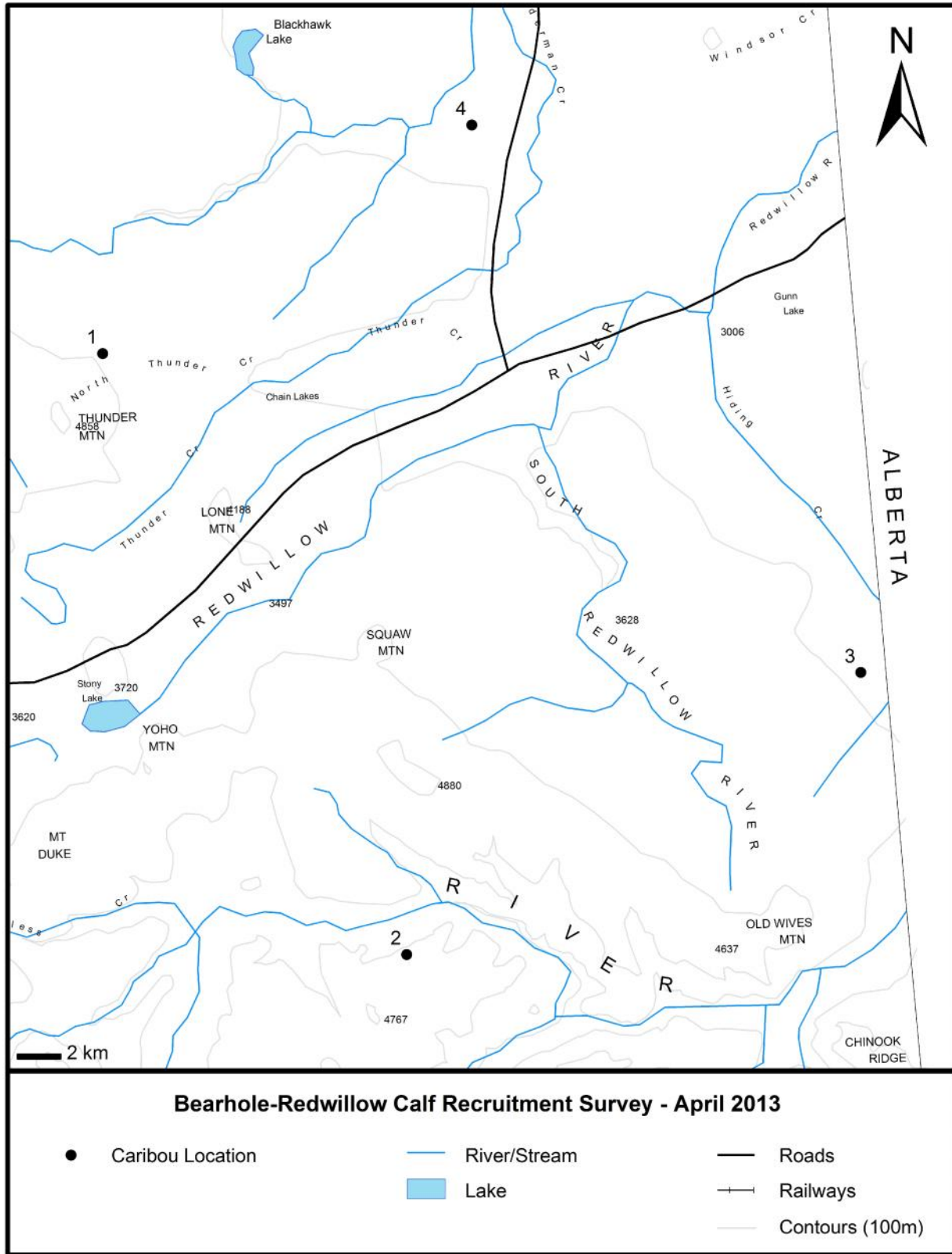


Figure 7. Bearhole-Redwillow calf recruitment survey, April 2013. Details for each numbered caribou location are in Table 8.