# MARCH 2024 LATE-WINTER COMPOSITION SURVEYS OF BLUENOSE-EAST AND BEVERLY BARREN-GROUND CARIBOU HERDS

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# ABSTRACT

This report describes the results of late-winter composition surveys of the Bluenose-East and Beverly barren-ground caribou herds conducted in March 2024. The main purpose of these surveys was to estimate the proportion of females in each herd that were still accompanied by a calf, which is an index of calf survival through the first nine to ten months of life. It was not possible to derive a Bathurst-specific calf: cow ratio due to extensive mixing of Bathurst collared caribou with collared caribou from the two much larger herds.

Survey flying was carried out on March 6, 7, 8, 12 and 19, 2023 with a total of 26.6 hours flown (18.8 hours on survey and 7.7 hours ferry flying). Wekweètì was the main base of operations. Poor weather (low ceilings and ice fog, high winds) prevented flying March 9-11 and 14-18. Temperatures varied between -15˚ and -36˚C. Snow cover at field sites below treeline was about one to two feet deep and appeared relatively soft in most areas.

The survey was focused on flying to locations of female and male collared Bathurst, Bluenose-East and Beverly caribou, and classifying caribou (cows, calves, young bulls and prime bulls) nearby or between collars. Antler-less bulls were classified as prime and antlered bulls as young. Caribou were classified using motion-stabilized binoculars from the helicopter.

For the Bluenose-East herd, flying on March 6, 7 and 8 included 38 of 44 (86.4%) female Bluenose-East collared caribou in surveyed areas. There were 12 Bathurst collared cows mixed with the 38 Bluenose-East collared cows in these survey areas; we estimated 87.6% Bluenose-East caribou and 12.4% Bathurst caribou in sampled areas, based on collar representation and relative herd sizes. Overall, the survey appeared strongly representative of the Bluenose-East herd. A ratio of 47.5 calves: 100 cows (95% CI 45.5, 49.7) based on 4,526 caribou classified was derived for the Bluenose-East herd for March 2024, slightly lower than the 51.4 calves: 100 cows estimated for this herd in October 2023. This March ratio was similar to those from previous March surveys for this herd 2020-2023 averaging 44.1 calves: 100 cows and suggested continuing healthy calf recruitment over this period.

For the Beverly herd, flying on March 12 and 19 included 14 of 36 (38.9%) of the collared Beverly cows. A significant portion of the Beverly collared caribou was out of range of fuel caches and flying bases. The results should be used with some caution as 61% of the collared female Beverly caribou were not in surveyed areas. Collared caribou from the Bathurst herd (five females), Bluenose-East herd (one female) and Ahiak herd (three females; Government of Nunavut collars) were mixed with the Beverly collared cows in surveyed areas. We estimated 84.7% of the caribou included in surveyed areas were Beverly, based on collar representation and relative herd sizes. A ratio of 48.7 calves: 100 cows (45.1, 52.1) was estimated in the areas surveyed March 12 and 19. This calf: cow ratio suggested strong recruitment of Beverly calves born in 2023 and continued similar healthy ratios estimated in March for the herd 2020-2023 averaging 48.2 calves: 100 cows.

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# INTRODUCTION

The Bluenose-East caribou herd has a calving ground west of Kugluktuk and the Bathurst caribou herd has a calving ground west of Bathurst Inlet, both in Nunavut (NU), with portions of their summer ranges in NU and the remainder of the ranges in the Northwest Territories (NWT) (Figure 1). The Beverly[1] herd has a calving ground in the Queen Maud Gulf lowlands in NU and also has much of its range in NU and the NWT. Historically the Bathurst and Beverly herds have ranged as far south as northern Saskatchewan.

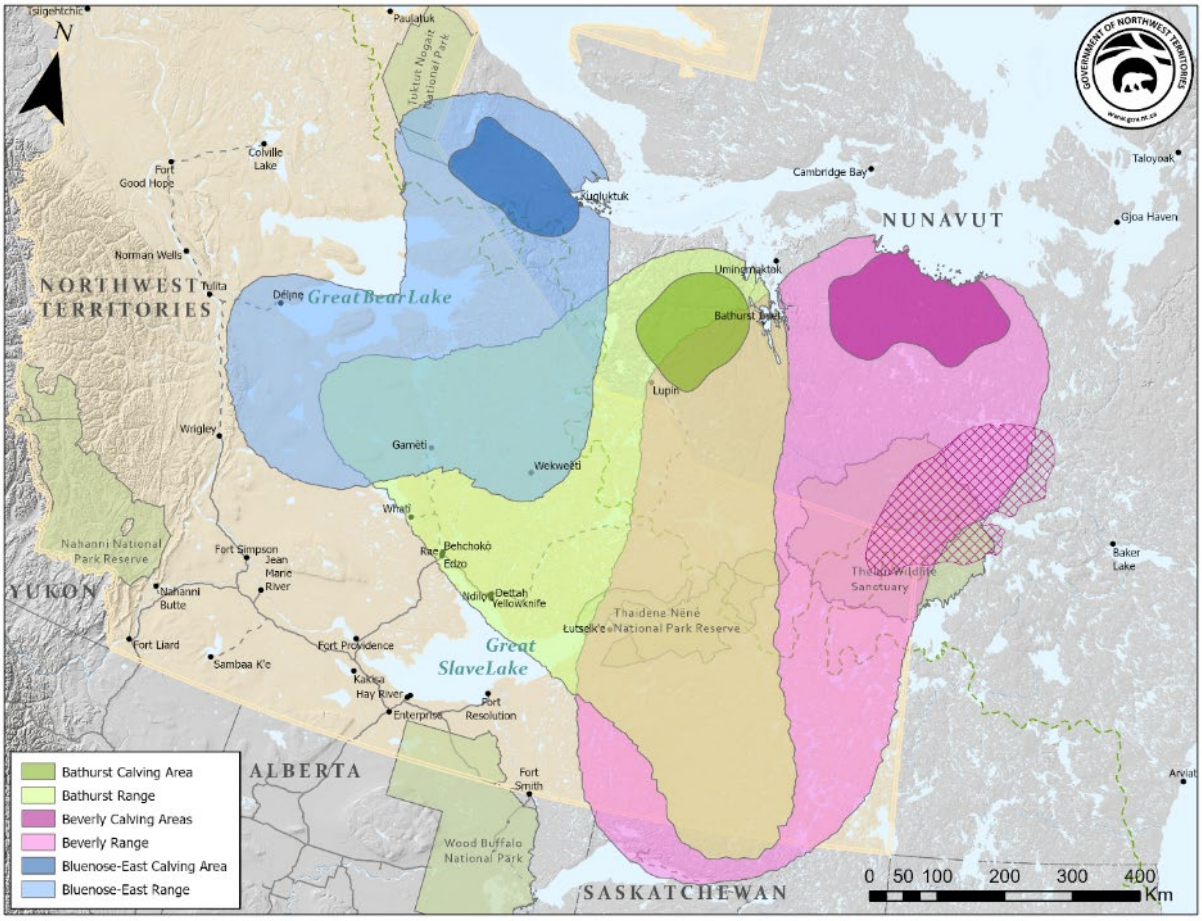


**Figure 1**. Annual ranges and calving grounds of the Bluenose-East, Bathurst and Beverly herds, based on accumulated radio collar locations of cows (Nagy et al. 2011). The calving ground used up to about 2009 by the inland-calving Beverly herd is shown as a cross-hatched area.

The Bluenose-East herd stabilized between 2018 and 2021 (Boulanger et al. 2022) after a steep decline 2010-2018 and showed a substantial increase to an estimated 39,500 adults in 2023

[1] The Beverly herd described in this report is the herd defined by the Government of Nunavut (GN) as calving in the central and western Queen Maud Gulf (Campbell et al. 2019). This herd may not correspond exactly to the Beverly herd defined prior to 2009 with an inland calving ground south of Garry Lakes (Adamczewski et al. 2015).

(Boulanger et al. 2024). The herd's demographic indicators improved in 2018 and have continued at healthy levels to 2023 (Boulanger et al. 2024). In 2022, the Bathurst caribou herd was estimated at about 6,800 caribou (Adamczewski et al. 2023a), similar to the 2021 estimate of 6,200 (Adamczewski et al. 2022), after a decline of nearly 99% from its peak numbers estimated at 470,000 in 1986. Its rate of decline slowed between 2018 and 2021 to about 8%/year and the herd showed some improvement in demographic indicators (Adamczewski et al. 2022). The Beverly herd was estimated at about 103,000 in 2018 (Campbell et al. 2019) with a slow declining trend of about 5%/year from the 2011 estimate. March calf: cow ratios for this herd in recent years have been very good (Adamczewski et al. 2023b, 2024a and b).

March estimates of calf: cow ratios have been monitored as an index of calf survival through the first nine to ten months of life in all three herds, although these ratios are also influenced by pregnancy rate or initial productivity of young in June. Calves of the year generally survive at much lower rates than caribou at least one year old; after the first year their survival rates are usually higher and similar to those of older caribou (Bergerud 2000, Bergerud et al. 2008).

Monitoring of the Bathurst and Bluenose-East herds has been more intensive since 2019 because of the extensive declines in both herds to 2018 (WRRB 2019a and b); this has included annual late-winter composition surveys to estimate the calf: cow ratio at about nine and a half months of age. Monitoring of the Beverly herd has been somewhat less intensive due to its much larger size and lower rate of decline (as of 2018); late-winter composition surveys have been flown annually for this herd in recent years to monitor calf recruitment.

Mixing of these three caribou herds on the winter range has created challenges for composition surveys as it has sometimes been difficult to ascribe calf: cow ratios to an individual herd in mixed areas. Estimating Bathurst calf: cow ratios in late winter has been particularly challenging in recent winters due to extensive overlap with the much larger Beverly herd which outnumbers the Bathurst herd about 15:1, and with the Bluenose-East herd which outnumbers the Bathurst herd about 6:1, based on the most recent herd size estimates. Mixing of the Bathurst, Bluenose-East and Beverly herds was extensive through winter 2023-2024. The main objective of the surveys in March 2024 was to estimate the late-winter calf: cow ratios in the Bluenose-East, Beverly and Bathurst herds as part of on-going monitoring of demographic health in these populations.

# METHODS

The survey began in Yellowknife on March 6, 2024 with an A-Star helicopter owned by Great Slave Helicopters Inc., call sign C-GIUX, piloted by S. Headland and with Department of Environment and Climate Change (ECC) staff J. Williams and J. Adamczewski on board (Figure 2). Wekweètì was the main base of operations. Fuel was used mainly at Wekweètì, but was also used from caches at Lockhart Lake, Little Crapeau Lake, Lac de Gras and Gahcho Kue diamond mine.

**Figure 2.** A-Star helicopter C-GIUX (Great Slave Helicopters) that flew March 2024 caribou composition surveys with pilot Sean Headland (left) and survey observers/recorders J. Williams (center) and J. Adamczewski (right).

The survey flying was focused on routes that included the most recent locations of Bluenose-East, Bathurst and Beverly female collared caribou. Caribou groups near collared caribou were classified along with other groups found nearby or between collared caribou. There was extensive mixing of collared caribou from all three herds. Locations of collared male caribou were not used to any extent in survey planning; flying that did occur near collared bull locations generally showed that these areas included a high percentage of bulls, which would contribute little to estimating calf: cow ratios.

Caribou were classified from the front seat of the helicopter using motion-stabilized Canon 10x42 binoculars. Caribou were classified as calves (based on smaller size and short face), cows (based on presence of a vulva patch), young bulls (based on absence of a vulva patch and presence of hard antlers), and prime bulls (based on absence of a vulva patch and no antlers). Identification of prime bulls as lacking antlers assumes that mature males shed their antlers soon after the fall breeding season while younger bulls retain them longer into winter (Bergerud 1976, Nagy et al. 2021).

Yearling caribou (about 21 months old) were not distinguished and were included with cows and young bulls. In smaller groups (<20) it was usually possible to classify all or nearly all the caribou. In larger groups the focus was on recording an unbiased cross-section of the caribou.

Group sizes recorded were the numbers of caribou classified, not the actual groups seen, thus for larger groups the groups under-represent actual groups of caribou seen, particularly in areas where hundreds or thousands of caribou were present.

Trimble Yuma 2 tablet computers were used to record observations with a GPS waypoint taken for each observation. Garmin GPS model 276CX units were used to plan flights and record flight lines. In addition to caribou, we also recorded observations of other large mammals, including moose, muskoxen and wolves.

# RESULTS

## Daily Flying and Survey Conditions

Survey flying began March 6 and continued March 7 and 8 (Table 1). Poor weather March 9-11 (low ceilings and poor visibility, and occasionally high winds) prevented flying on those days with the survey crew based in Wekweètì. Flying continued on March 12, then on March 13 the helicopter and crew relocated to Yellowknife. No flying occurred March 14-18 due to poor weather (low ceilings, ice fog and poor visibility). March 19 was the last day of survey flying with a flight from Yellowknife to the Lac de Gras and Gahcho Kue mine areas and returning to Yellowknife.

**Table 1.** Flying hours and main tasks during March 2024 North Slave barren-ground caribou composition surveys.

| Date | Flying Hours | Tasks and Notes |
|---|---|---|
| March 6 | 4.8 | Ferry Yellowknife to Wekweètì 0.9 hours; survey 3.9 hours near Wekweètì, mostly Bluenose-East caribou. |
| March 7 | 3.8 | Survey 2.9 hours in Little Crapeau Lake area, mostly Bluenose-East caribou; ferry 0.9 hours. |
| March 8 | 5.9 | Survey 4.2 hours east-southeast of Port Radium, mostly Bluenose-East caribou; 1.7 hours ferry. |
| March 12 | 4.3 | Survey 3.7 hours east-southeast of Wekweètì, mostly Beverly caribou; 0.6 hours ferry. |
| March 13 | 1.2 | Ferry 1.2 hours Wekweètì to Yellowknife. |
| March 19 | 6.6 | Ferry Yellowknife to Lockhart Lake 1.0 hours; survey 4.2 hours south of Lac de Gras area and near Gahcho Kue mine, mostly Beverly caribou; ferry 1.4 hours to Yellowknife. |
| Totals | 26.6 | Bluenose-East survey hours 10.9, Beverly survey hours 7.9; survey hours total 18.8; ferry hours 7.7 total. |

Temperatures varied over a wide range between -15˚ and -36˚C, with high winds gusting to 35 knots/hour on some days. In areas below or near treeline, snow appeared relatively soft and one to two feet deep (Figure 3). Snow on the tundra was relatively hard-packed and one to two feet deep in most areas.

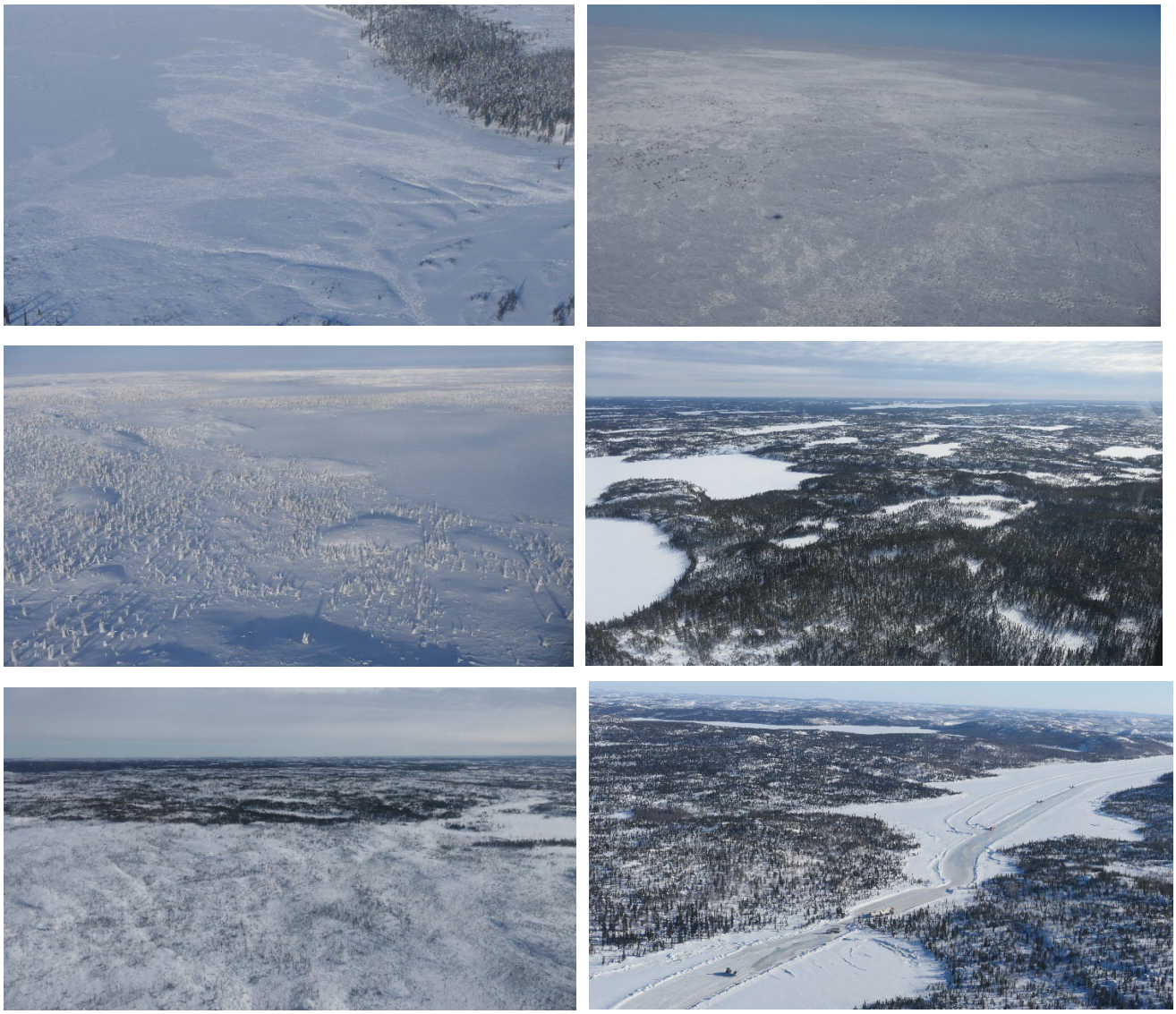

**Figure 3.** Field conditions during March 2024 composition surveys of Bluenose-East and Beverly caribou herds in the North Slave region above and below treeline. Bright white areas in top two photos are from extensive caribou feeding and travel sign. Bottom right photo is a view of the winter road to the diamond mines.

The largest groups of caribou, sometimes numbering thousands, were seen in the eastern portion of the survey area north of treeline (Figures 4 and 5).

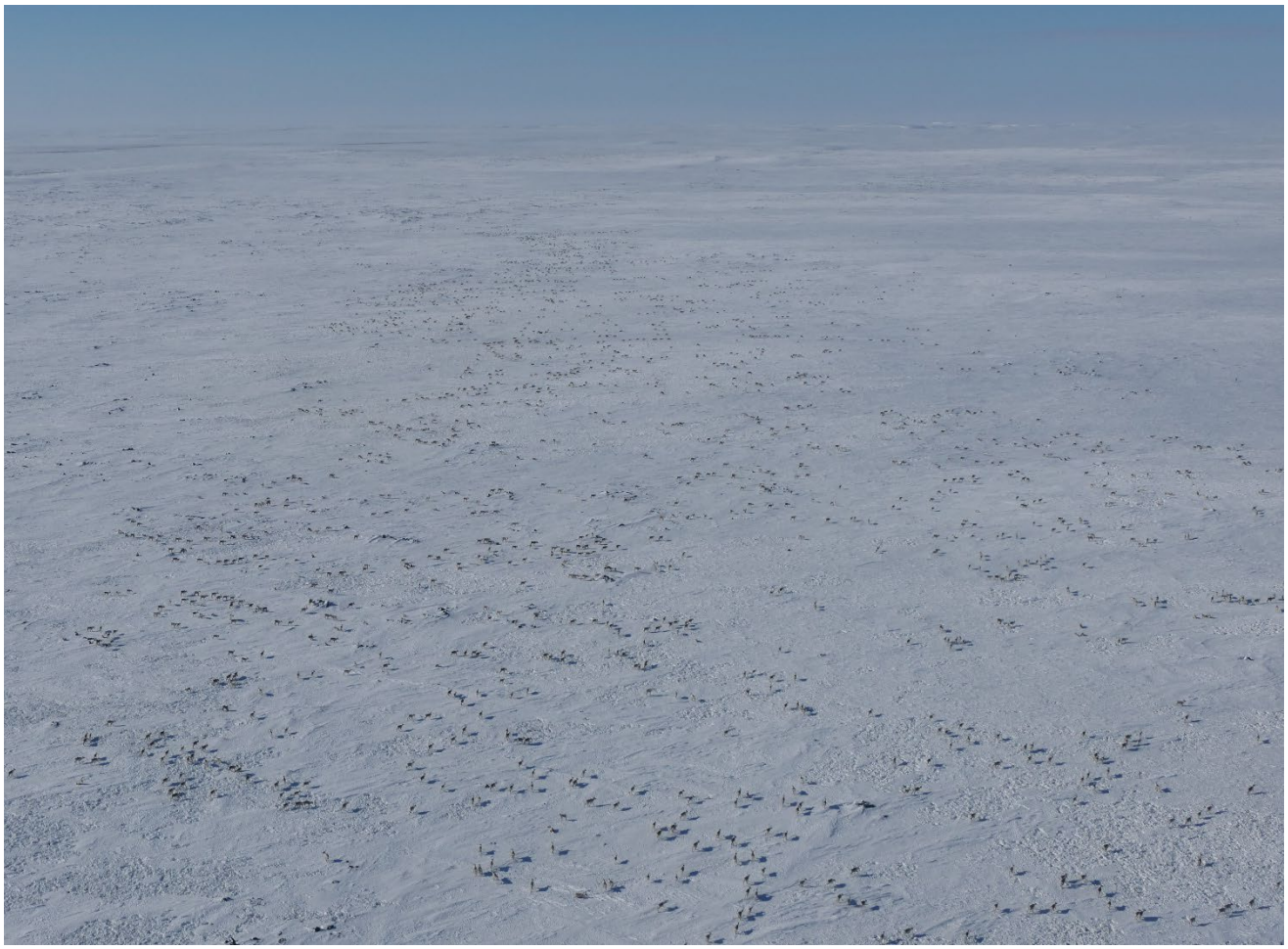

**Figure 4.** A few thousand caribou in the Lac de Gras area during March 2024 composition surveys. These were likely mostly Beverly caribou. Groups were a mix of cows, calves and bulls.

**Figure 5.** A group of caribou east of Lockhart Lake area during March 2024 composition surveys. This group was about 99% bulls and mostly Beverly caribou.

## Collared Caribou and Survey Flight Lines

Locations of collared Bathurst, Bluenose-East and Beverly caribou males and females on March 12, 2024, about midway through the survey period, are shown in Figure 6. Bluenose-East collars were generally distributed near Wekweètì and northwest towards Great Bear Lake. Beverly collars were distributed over a large area with MacKay Lake at its western end and extending well into NU. Bathurst collars were widely distributed and mixed with Bluenose-East collars and Beverly collars. Many of the bull collars were found at the southern end of the distribution and many of the Beverly bull collars were in an area just north of the East Arm of Great Slave Lake. This area also had several Bathurst bull collars and a Bluenose-East bull collar. As noted earlier, we did not survey caribou in areas having predominantly bull collars as our interest was in estimating a calf: cow ratio.

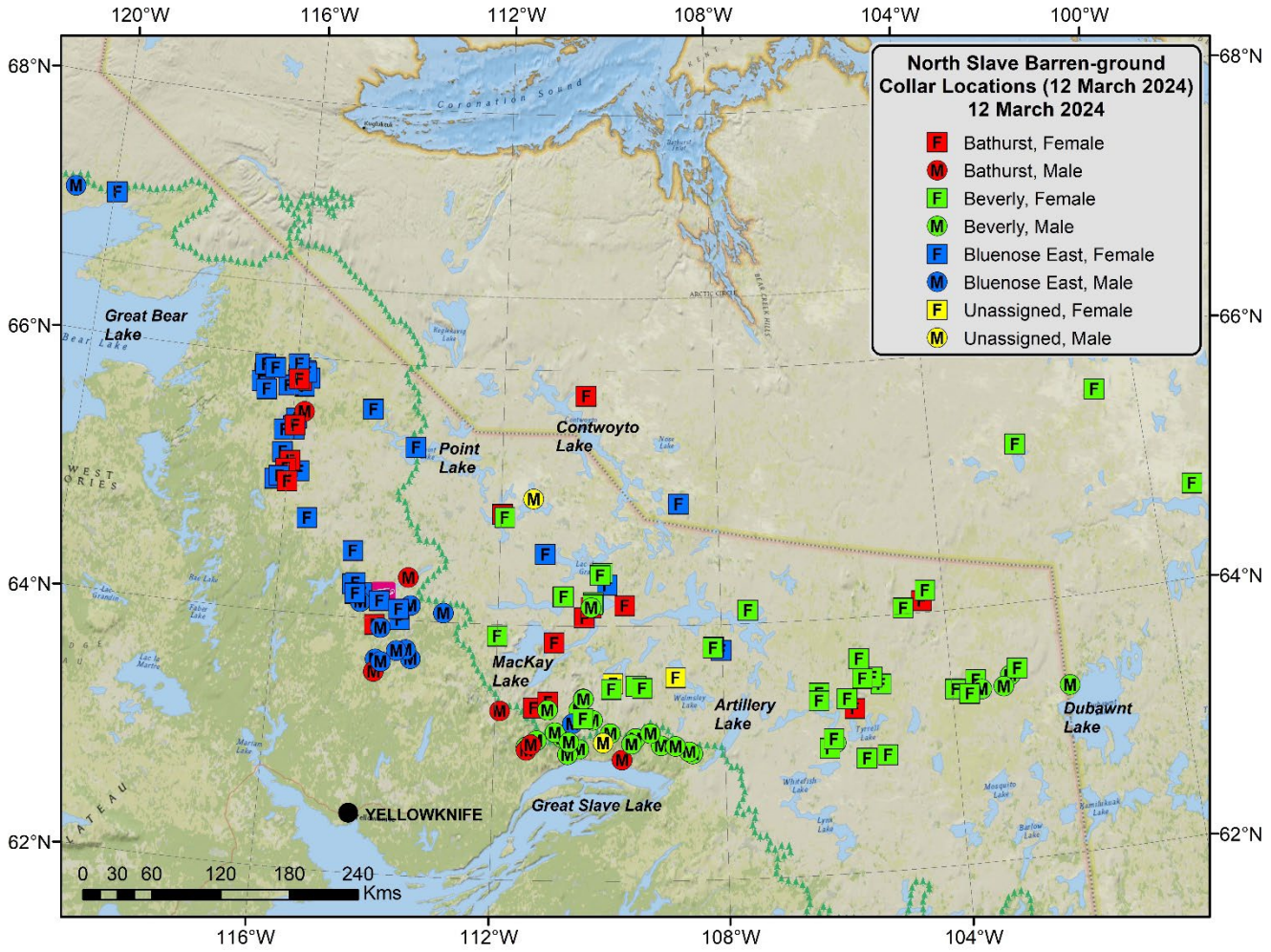


**Figure 6.** Locations of collared Bathurst, Bluenose-East and Beverly females and males on March 12, 2024, about midway through the composition surveys.

Bluenose-East caribou were classified on March 6 near Wekweètì (Figure 7), on March 7 further north near Little Crapeau Lake (Figure 8), and on March 8 in the northern-most areas having Bluenose-East collars east of Great Bear Lake (Figure 9). Beverly caribou were classified on March 12 southeast of Wekweètì in the Lockhart Lake area (Figure 10) and on March 19 between Lac de Gras and Gahcho Kue mine (Figure 11).

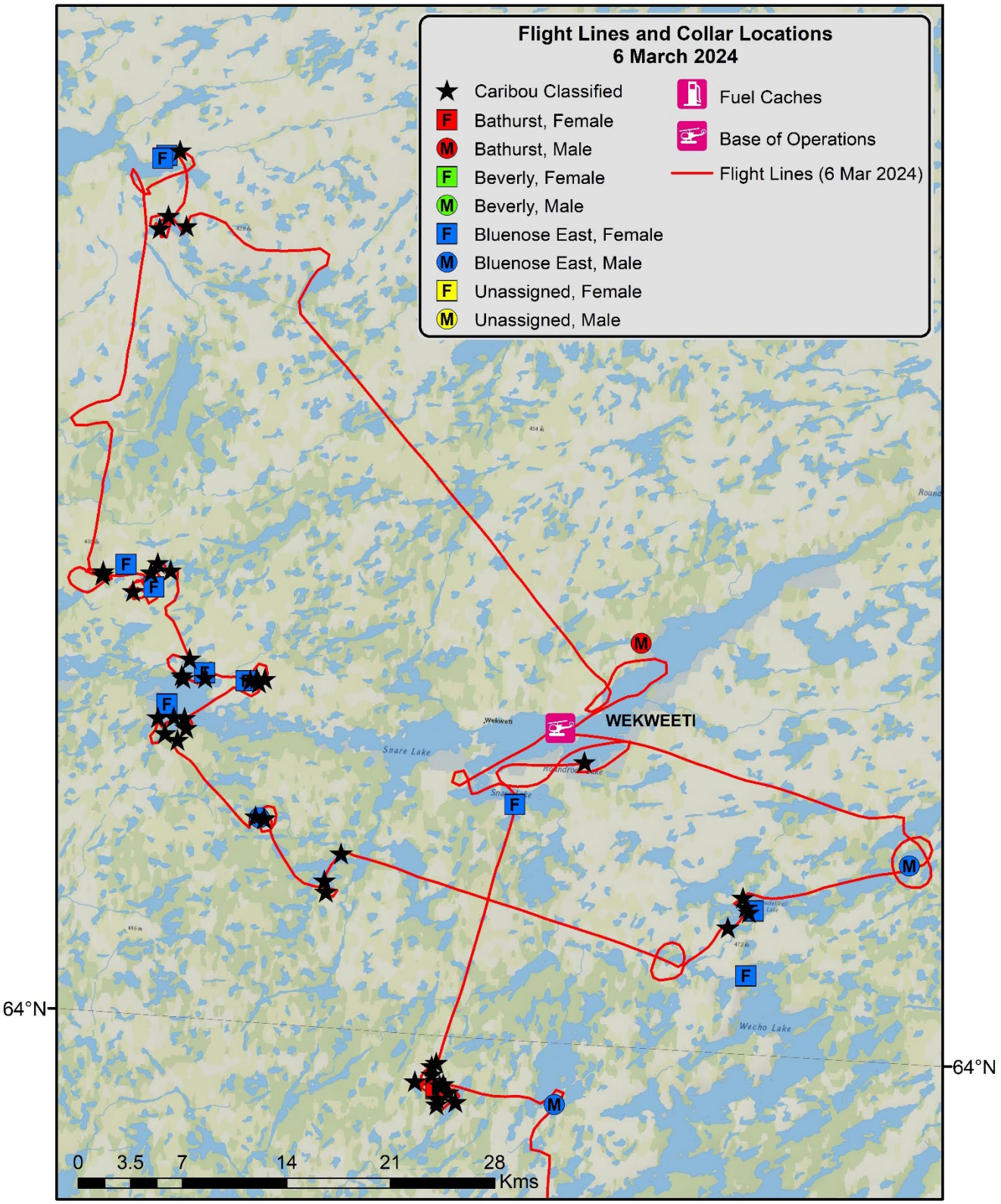


**Figure 7.** Flight lines, collared caribou locations and locations of caribou classified on March 6, 2024 during caribou composition surveys near Wekweètì.

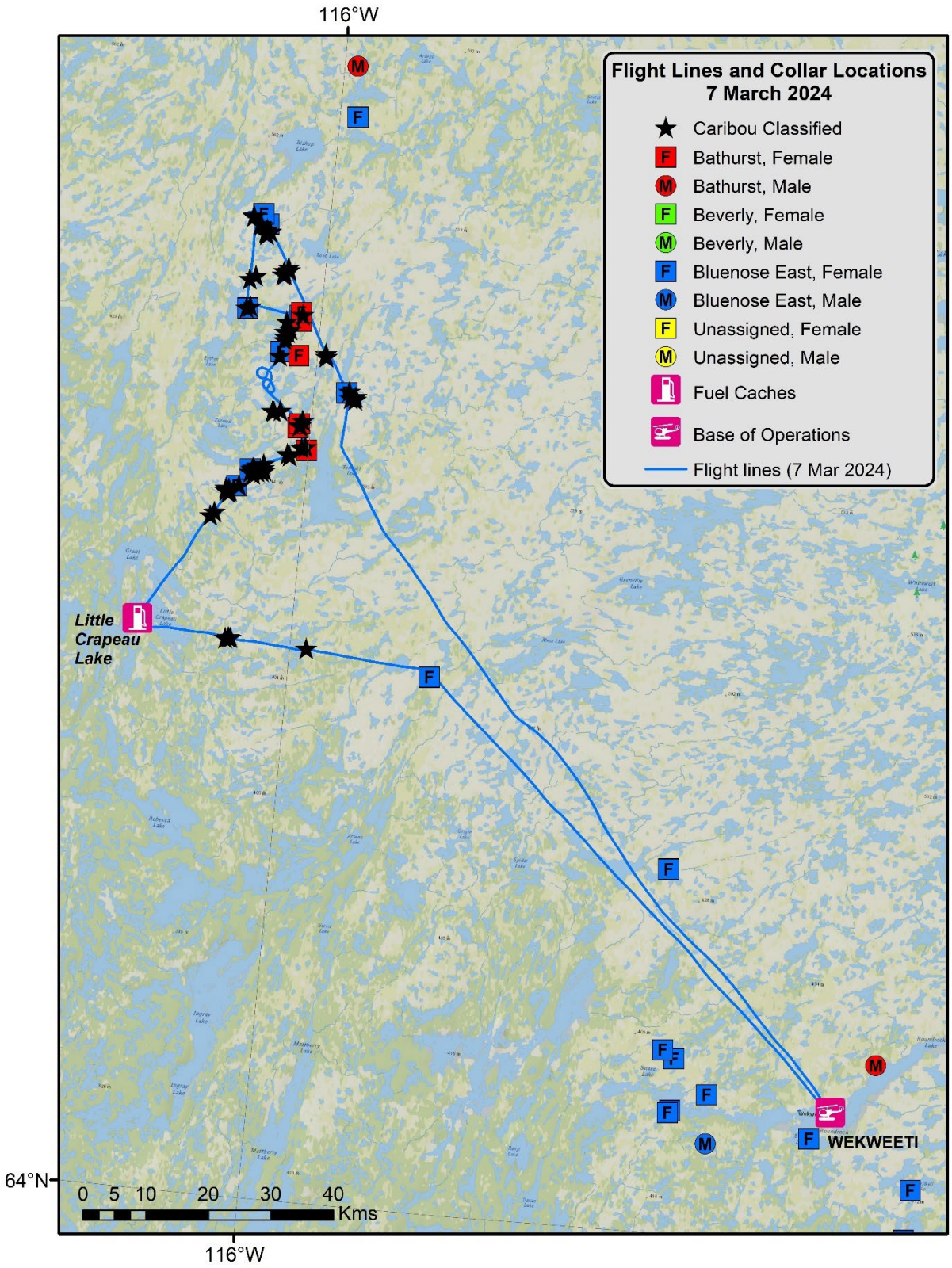


**Figure 8.** Flight lines, collared caribou locations and locations of caribou classified on March 7, 2024 during caribou composition surveys northeast of Little Crapeau Lake.

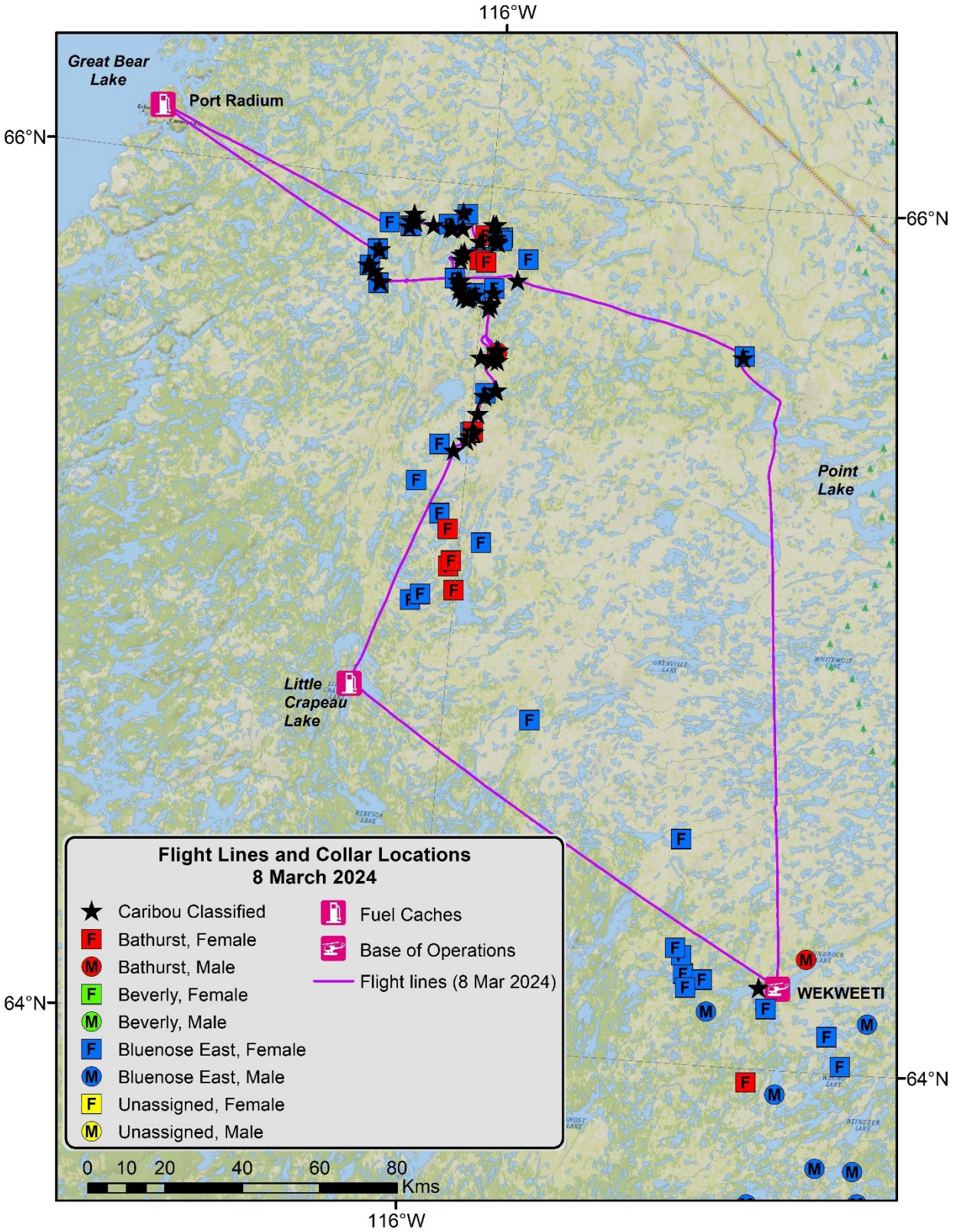


**Figure 9.** Flight lines, collared caribou locations and locations of caribou classified on March 8, 2024 during caribou composition surveys east of Great Bear Lake.

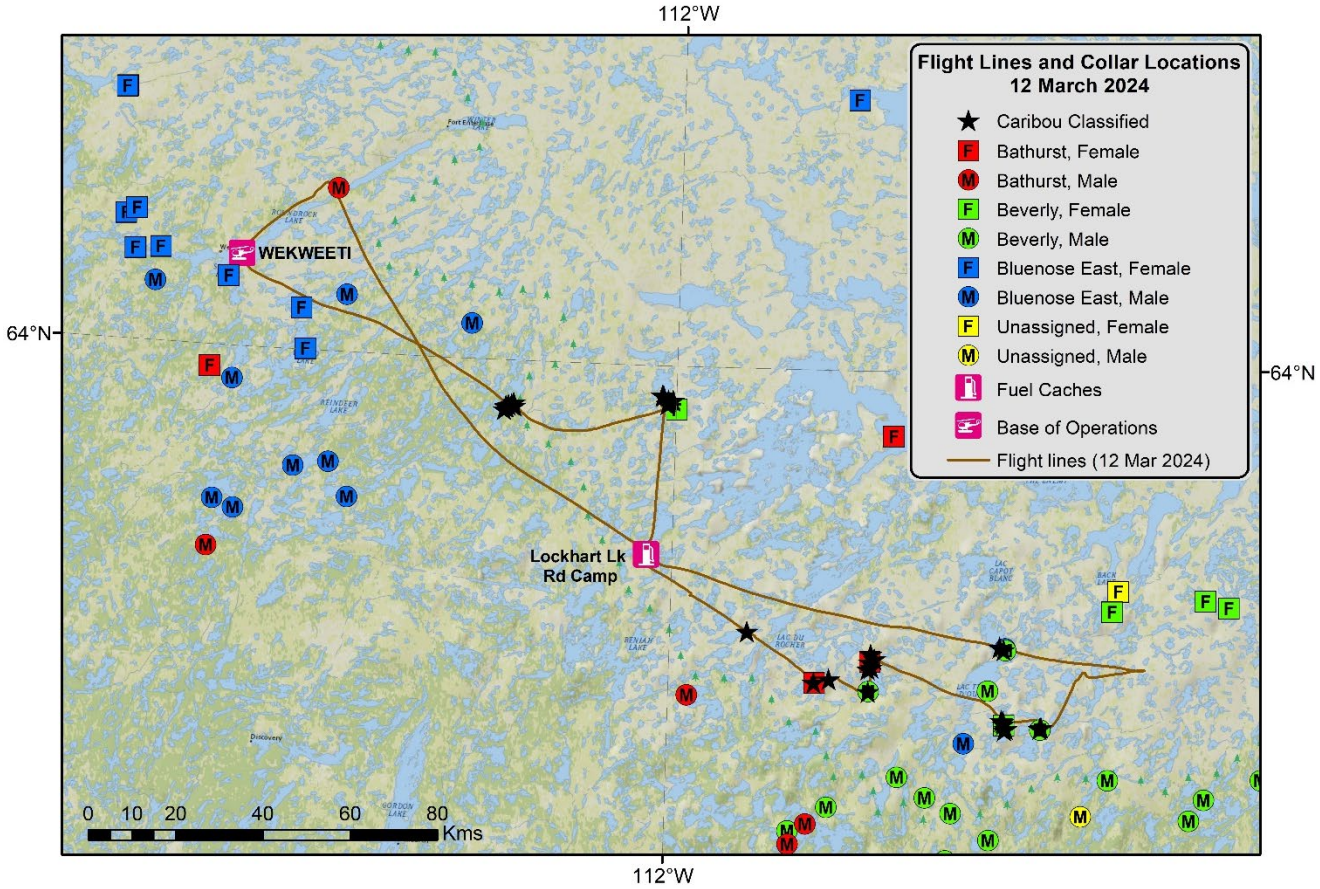


**Figure 10.** Flight lines, collared caribou locations and locations of caribou classified on March 12, 2024 during caribou composition surveys in the Lockhart Lake area.

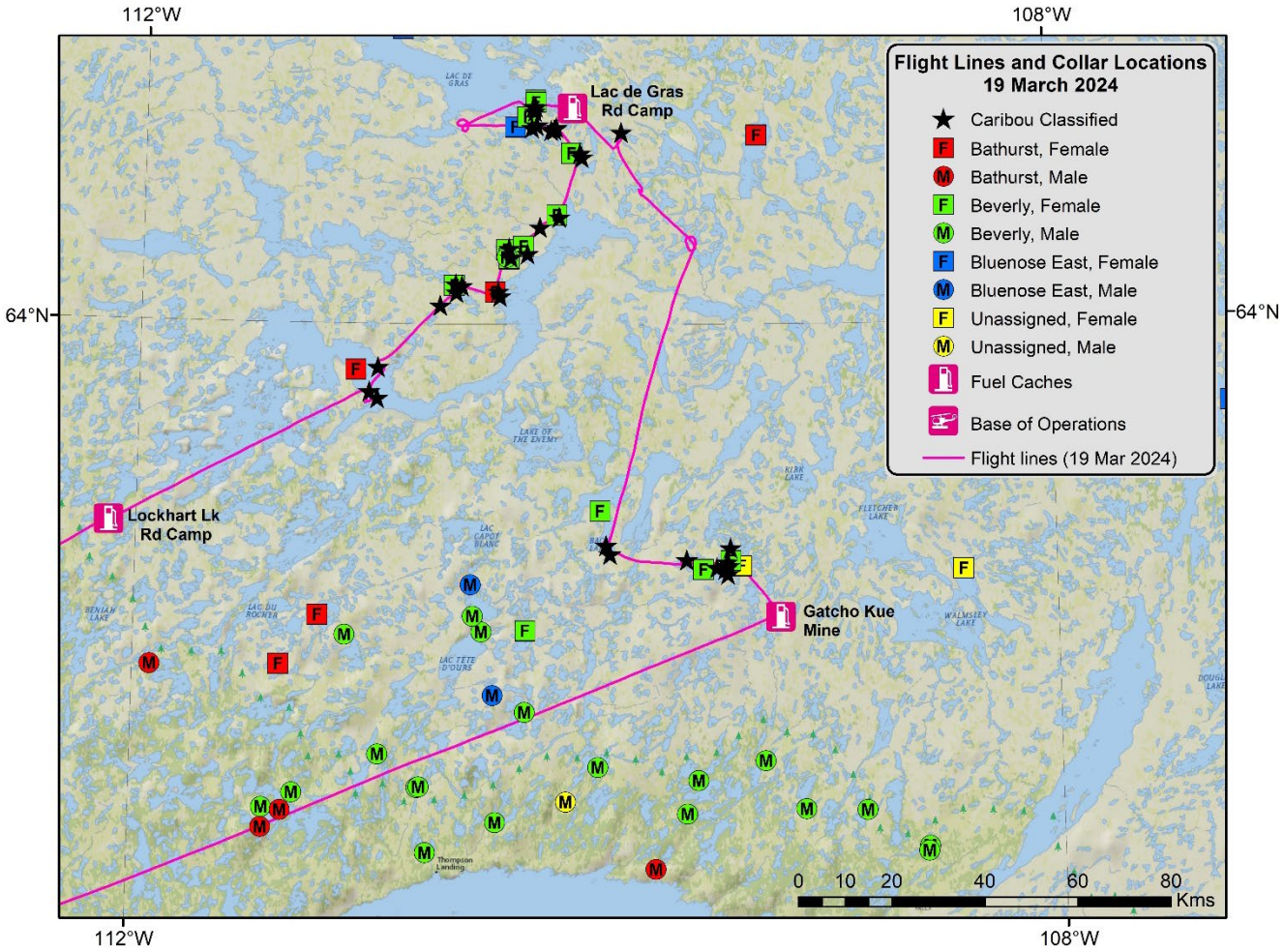


**Figure 11.** Flight lines, collared caribou locations and locations of caribou classified on March 19, 2024 during caribou composition surveys in the Lac de Gras and Gahcho Kue mine areas.

One additional map of collar locations (Figure 12) includes Bathurst, Bluenose-East and Beverly collared caribou (collars maintained by Government of the NWT) as well as locations of female collared caribou from the Ahiak, Wager Bay and Lorillard herds (collars maintained by the GN and provided courtesy of M. Campbell, GN). Of these three eastern herds collectively referred to as Northeast Mainland, a number of Ahiak collared caribou were within eastern NWT, and no Wager Bay or Lorillard collars were within NWT. Three of the Ahiak collars were found within areas surveyed as part of the Beverly survey, and none were within the areas surveyed as Bluenose-East caribou.

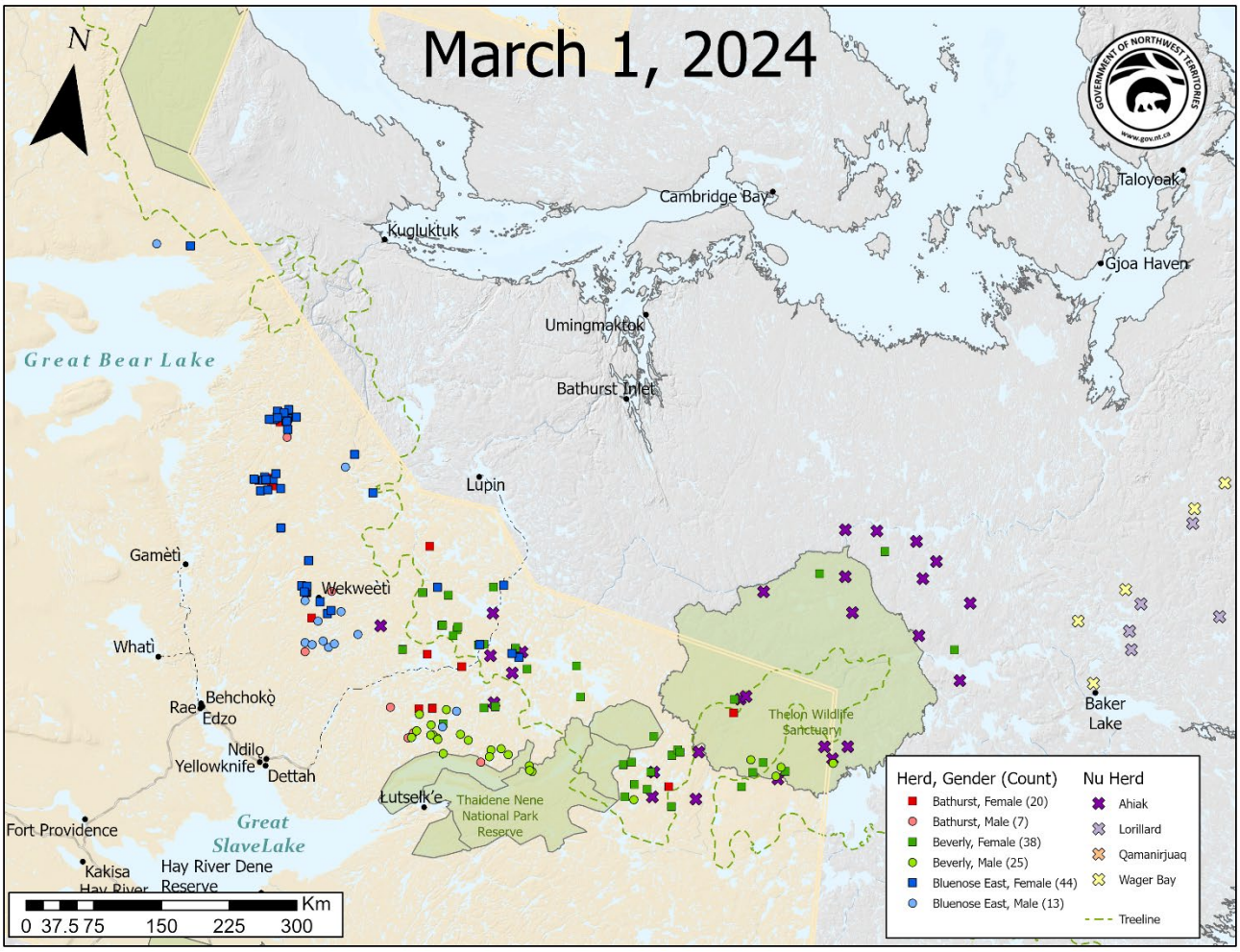


**Figure 12.** Caribou satellite collar locations on March 1, 2024 for Bathurst, Bluenose-East and Beverly herds (GNWT collars) and Ahiak, Lorillard and Wager Bay herds (GN collars) in eastern NWT and adjacent portions of NU. GN collar data are courtesy of M. Campbell, GN.

There were no areas that could confidently be identified as Bathurst-only for survey purposes; areas having Bathurst collars also had Bluenose-East or Beverly collars nearby. No calf: cow ratio was estimated for the Bathurst herd in March 2024.

## Survey Results for Bluenose-East Herd

Numbers of collared caribou from the Bluenose-East herd in the surveyed areas included 38 of the available 44 Bluenose-East collared cows (86.4%; Table 2). There were also 12 Bathurst female collared cows in the surveyed areas. Based on representation of female collared caribou and relative herd sizes[2], we estimate that the caribou surveyed on these three days were about 89.3% Bluenose-

[2] 38/44 available Bluenose-East collared females in surveyed areas x 2023 herd estimate of 39,525=34,135 Bluenose-East caribou; 12/20 available Bathurst collared females x 2022 herd estimate of 6,851=4,110 Bathurst caribou; 34,135/38,245 = 89.3% Bluenose-East caribou in area and 10.7% Bathurst caribou. Key assumption is that each collared caribou represents an equal proportion of the herd.

East caribou and 10.7% Bathurst caribou. We focused on female collared caribou in this estimation as the survey was focused on female caribou to estimate calf: cow ratios; in addition, GN collars on Ahiak caribou only included females. These results suggested that the survey was strongly representative of the Bluenose-East herd.

**Table 2.** Numbers of collared females and males flown on March 6, 7 and 8, 2024 from the Bluenose-East herd and other herds.

| | **Female Bluenose-East** | **Male Bluenose-East** | **Total Bluenose-East** | **Other Collars in Surveyed Area** |
|---|---|---|---|---|
| Collars on Herd | 44 | 12 | 56 | |
| Collars in Area Flown March 6 | 10 | 5 | 15 | 3 Bathurst (1F, 2M) |
| Collars in Area flown March 7 | 9 | 0 | 9 | 6 Bathurst (6F) |
| Collars in Area flown March 8 | 19 | 0 | 19 | 6 Bathurst (5F, 1M) |
| Total Collars in Areas Flown | 38 | 5 | 44 | 12 Bathurst F, 3M |

Numbers of caribou in each class surveyed on March 6, 7 and 8 as part of the Bluenose-East survey are shown in Table 3 along with calf: cow ratios and bull: cow ratios. In total 4,526 caribou were classified on these three days.

**Table 3.** March 2024 composition survey results for Bluenose-East herd. Individual results for each day's flying (March 6, 7 and 8) are given along with the combined results. SE = Standard Error; CIL = 95% Confidence Interval Lower; CIU = 95% Confidence Interval Upper.

| Measurement | March 6 Wekweètì Area | March 7 Little Crapeau Lake Area | March 8 East of Great Bear Lake | March 6, 7, 8 Combined |
|---|---|---|---|---|
| # Caribou | 1,363 | 1,184 | 1,979 | 4,526 |
| # Cows | 567 | 685 | 1,150 | 2,405 |
| # Calves | 276 | 327 | 540 | 1,143 |
| # Young Bulls | 254 | 123 | 227 | 604 |
| # Prime Bulls | 266 | 49 | 59 | 374 |
| All Bulls | 520 | 172 | 286 | 978 |
| # Groups | 67 | 55 | 71 | 193 |
| Mean Group Size | 16.2 | 15.6 | 20.3 | 17.5 |
| Median Group Size | 10.0 | 9.0 | 13.0 | 12.0 |
| Calves: 100 Cows | 48.7 | 47.7 | 46.8 | 47.5 |
| SE Calves: 100 Cows | 1.7 | 2.5 | 1.4 | 1.1 |
| CIL & CIU Calf:Cow | 45.3, 51.82 | 43.4, 53.2 | 44.3, 49.6 | 45.5, 49.7 |
| Bulls: 100 Cows | 91.8 | 25.1 | 24.6 | 40.5 |
| SE Bulls: 100 Cows | 14.9 | 5.0 | 3.0 | 4.0 |
| CIL & CIU Bull:Cow | 68.2, 127.0 | 17.9, 37.5 | 19.8, 31.3 | 33.3, 48.8 |

An overall ratio of 47.5 calves: 100 cows (95%CI 45.5-49.7) was derived for the Bluenose-East herd and there was little variation from the three regional portions of the survey; the ratios were 48.7 on March 6, 47.7 on March 7 and 46.8 on March 8.

Bull: cow ratios were estimated for the survey overall and for each of the three regional portions, although these ratios should not be considered representative of the herd given substantial segregation of males and females in winter; we did not attempt to survey in areas having predominantly bulls. The bull: cow ratio in the southern-most survey portion near Wekweètì was much higher (91.8 bulls: 100 cows) than in the central (25.1) and northern (24.6) portions of the survey area. The proportion of prime bulls in the southern portion was just over half (51.1%, 266 prime and 254 young), while prime bulls were much less common in the central (28.5%, 49 prime and 123 young) and northern (20.6%, 59 prime and 227 young) portions of the survey area. In part this reflected a concentration of collared bulls at the southern end of the herd's winter distribution (see Figure 6).

### Survey Results for Beverly Herd

The areas surveyed on March 12 and 19 were focused on Beverly collared female caribou and the surveyed areas included 14 of 36 available Beverly female collars (38.9%; Table 4). The remainder of the Beverly female collars were further east in areas beyond our fuel caches and flying bases, thus 61% of the Beverly collared females were not surveyed and some caution should be used when

interpreting the Beverly survey results for March 2024. In addition, five Bathurst, one Bluenose-East and three Ahiak collared female caribou were also found within the areas surveyed on March 12 and 19. Based on collar representation and relative herd sizes, we estimated that 84.7% of the caribou surveyed on these two days were from the Beverly herd and the remaining 15.3% were from the other three herds[3].

**Table 4.** Numbers of Beverly collared females and males in the March 2024 fall survey areas and overall numbers of collared caribou in the herd. BNE = Bluenose-East.

| | **Female Beverly** | **Male Beverly** | **Total Beverly** | **Other Collars in Surveyed Area** |
|---|---|---|---|---|
| Collars on Herd | 36 | 25 | 61 | |
| Collars in Area Flown March 12 | 2 | 4 | 6 | 3 Bathurst (2F, 1M)<br>1 BNE M |
| Collars in Area flown March 19 | 12 | 3 | 15 | 5 Bathurst (3F, 2M)<br>1 BNE F<br>1 Unassigned F<br>3 Ahiak F |
| Total Collars in Areas Flown | 14 | 7 | 21 | |

Numbers of caribou in each class surveyed on March 12 and 19 as part of the Beverly survey are shown in Table 5 along with calf: cow ratios and bull: cow ratios. In total 3,450 caribou were classified on these two days.

An overall ratio of 48.4 calves: 100 cows (95%CI 45.1-52.1) was derived for the Beverly herd and the ratios of 51.9 on March 12 and 47.7 on March 19 were relatively consistent.

As with the Bluenose-East survey, bull: cow ratios estimated in the March 2024 Beverly survey are included in Table 5 but should not be considered as representing the herd due to strong segregation of bulls and cows. This can be seen in Figure 6 with most of the Beverly collared bulls distributed at the southern end of the distribution of collared cows. Bulls outnumbered cows classified on March 12 with a ratio of 363.3 bulls: 100 cows and outnumbered cows on March 19 with a ratio of 111.5 bulls: 100 cows. The proportion of prime bulls on March 12 was about twice that of young bulls (64.4%, 618 prime and 341 young), while prime bulls were outnumbered by young bulls about 3:1 on March 19 (24.0%, 227 prime and 711 young). The area surveyed on March 12 was mostly near the southern end of the Beverly collar distribution where collared bulls were concentrated while

[3] 14/36 available Beverly collared females in surveyed areas x 2018 herd estimate of 103,372=40,200 Beverly caribou; 5/20 available Bathurst collared females x 2022 herd estimate of 6,851=1,713 Bathurst caribou; 3/27 Ahiak available collared females x 39,131=4,348 Ahiak caribou; 40,200/47,159 = 85.2% Beverly caribou in area and 14.8% Bathurst, Bluenose-East and Ahiak caribou. Key assumption is that each collared caribou represents an equal proportion of the herd. The unassigned collar was not used in calculations.

the area surveyed on March 19 included areas further to the north with larger proportions of cows and calves.

**Table 5.** March 2024 composition survey results for Beverly herd. Individual results for each day's flying (March 12 and 19) are given along with the combined results. SE = Standard Error; CIL = 95% Confidence Interval Lower; CIU = 95% Confidence Interval Upper.

| Measurement | March 12 Lockhart Lake Area | March 19 Lac de Gras & Gahcho Kue Area | March 12 & 19 Combined |
|---|---|---|---|
| # Caribou | 1,360 | 2,180 | 3,540 |
| # Cows | 264 | 841 | 1,105 |
| # Calves | 137 | 401 | 538 |
| # Young Bulls | 341 | 711 | 1,052 |
| # Prime Bulls | 618 | 227 | 845 |
| All Bulls | 959 | 938 | 1,897 |
| # Groups | 31 | 31 | 62 |
| Mean Group Size | 39.5 | 57.4 | 48.4 |
| Median Group Size | 19.0 | 51.0 | 39.0 |
| Calves: 100 Cows | 51.9 | 47.7 | 48.7 |
| SE Calves: 100 Cows | 4.5 | 2.0 | 1.8 |
| CIL & CIU Calf:Cow | 43.3, 60.3 | 43.3, 60.3 | 45.1, 52.1 |
| Bulls: 100 Cows | 363.3 | 111.5 | 171.7 |
| SE Bulls: 100 Cows | 86.9 | 13.1 | 22.5 |
| CIL & CIU Bull:Cow | 236.9, 591.7 | 85.8, 138.3 | 131.1, 218.9 |

## Incidental Sightings of Other Large Mammals

Incidental sightings of moose, muskoxen and wolves recorded during March 2024 composition surveys of the Bathurst, Bluenose-East and Beverly herds are shown in Table 6 and Figure 13. Locations of these sightings are shown in Figure 12. One pack of nine wolves was seen in the Lac de Gras area on March 19. Three caribou kill sites were seen, two on March 6 and one on March 8.

**Table 6.** Numbers of moose, wolves and muskoxen observed during March 2024 composition surveys of the Bluenose-East, Bathurst and Beverly caribou herds. For moose, 1+1 denotes a cow with a calf.

| | Survey Day | | | | | |
|---|---|---|---|---|---|---|
| Species | 6 March | 7 March | 8 March | 12 March | 19 March | Total |
| Moose | 1+1, 1+1 | 1 | 1 | 1 | | 5+2 |
| Wolf | | | | | 9 | 9 |
| Muskox | | | | | 4, 13 | 17 |

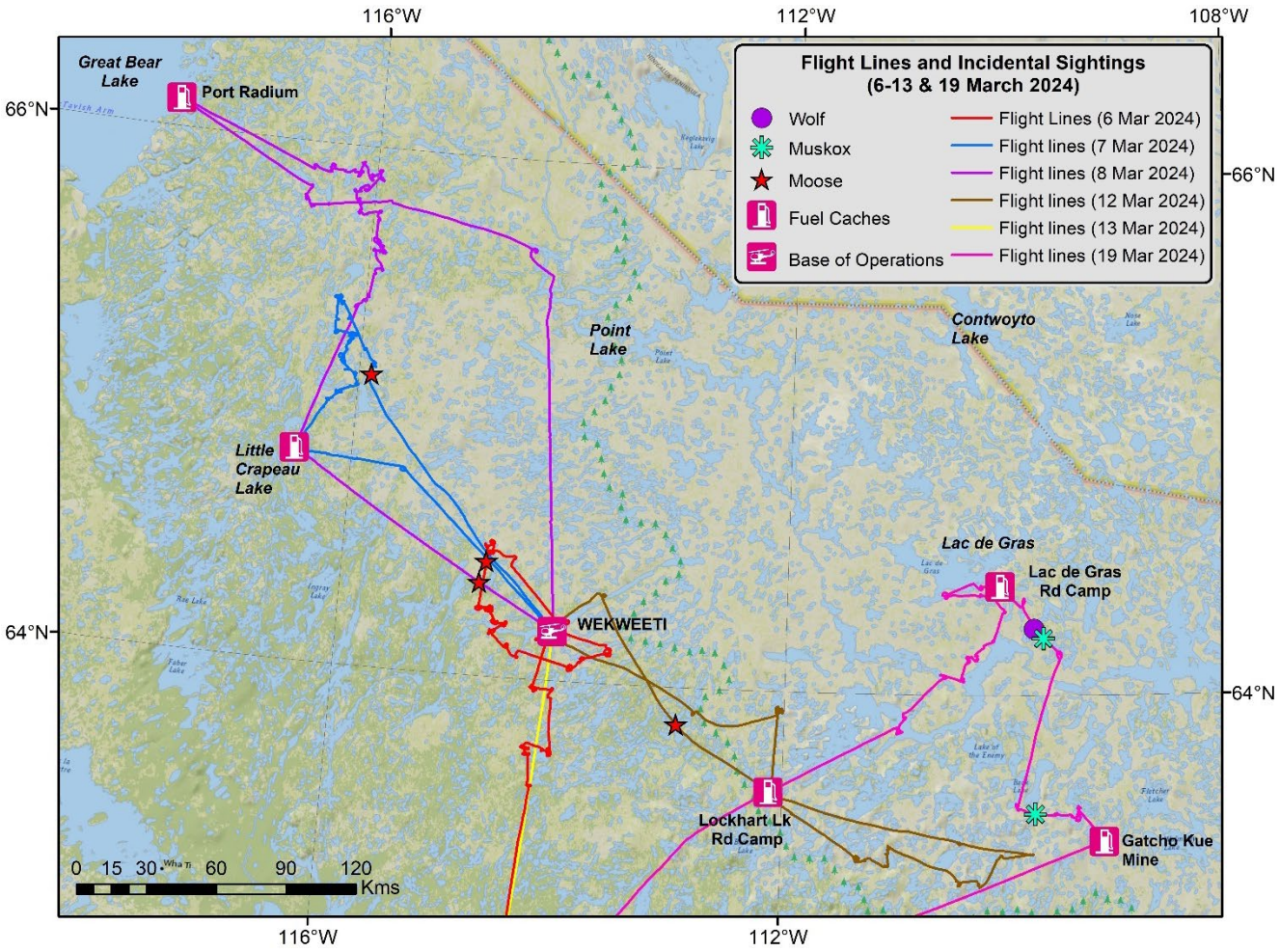


**Figure 13.** Flight lines and locations of incidental observations of other large mammals (wolves, muskoxen and moose) recorded during caribou composition surveys March 6-19, 2024. Ferry flight lines to and from Yellowknife are partially shown.

# DISCUSSION

## Bluenose-East Late Winter Calf: Cow Ratios

A calving ground photo survey of the Bluenose-East herd in June 2023 resulted in an estimate of 39,525 caribou at least two years old and indicated a large increase from the estimates in 2021 (23,202) and 2018 (19,294; Boulanger et al. 2024). Demographic indicators in the herd (fall calf: cow ratios and bull: cow ratios, collar-based cow survival, and late-winter calf: cow ratios) have shown consistently healthy values since about 2018, although these indicators and an Integrated Population Model suggested a more modest increase in the herd to 2023 (Boulanger et al. 2024). The March 2024 Bluenose-East calf: cow ratio is consistent with similar ratios 2020-2023, all over 40 calves: 100 cows, and suggests that healthy recruitment in the herd has continued into 2024 (Figure 14).

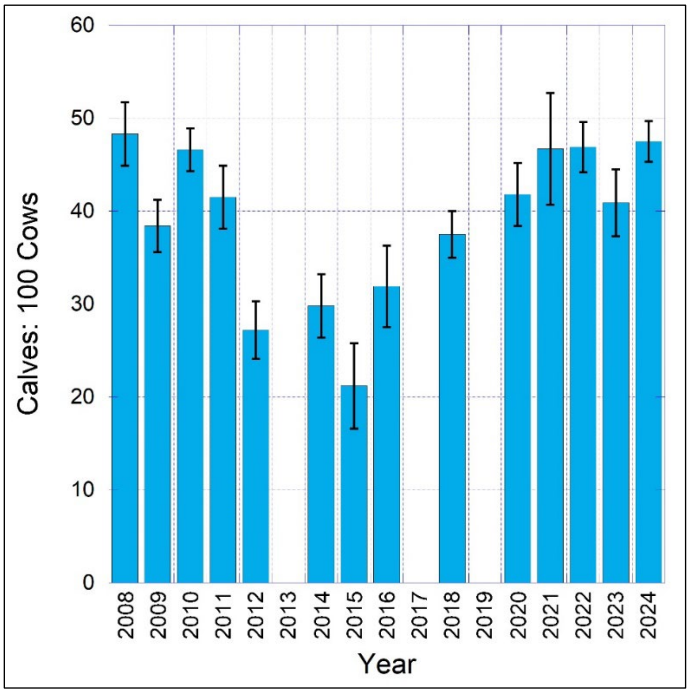


**Figure 14.** Late-winter calf: cow ratios (with 95% CIU) in the Bluenose-East caribou herd 2008-2024.

As noted in Boulanger et al. (2024), ground-based observations from two Indigenous groups of the Bluenose-East herd since 2018 further support a healthy herd: "Observations from Kugluktuk HTO members of Bluenose-East caribou and from the summer-fall observations of the Tłı̨chǫ Government Ekwǫ̀ Nàxoèdee K'è observers have shown that calves have been large and in good condition, adult males and females have been in good to excellent condition, and there have been high proportions of calves, yearlings and young bulls and cows in the herd. There have been ground-based observations of cows with twins in several years in the summer since 2019 (A. Niptanatiak,

Kugluktuk, pers. comm. 2024) and occasionally on October and March aerial composition surveys, although the numeric extent of twinning has been difficult to document."

### Beverly Herd Late Winter Calf: Cow Ratios

The late winter ratio of 48.4 calves: 100 cows estimated for the Beverly herd in March 2024 continued a recent trend of healthy ratios 2020-2023, which averaged 48.2 calves: 100 cows and have all been over 40:100 (Figure 15). At the time of the 2018 calving ground population survey of the Beverly herd (Campbell et al. 2019), the herd was estimated to be declining at a rate of about 5%/year from the previous estimate from 2011. A further calving ground population survey flown in June 2023 by the GN had not been finalized at the time of writing the current report.

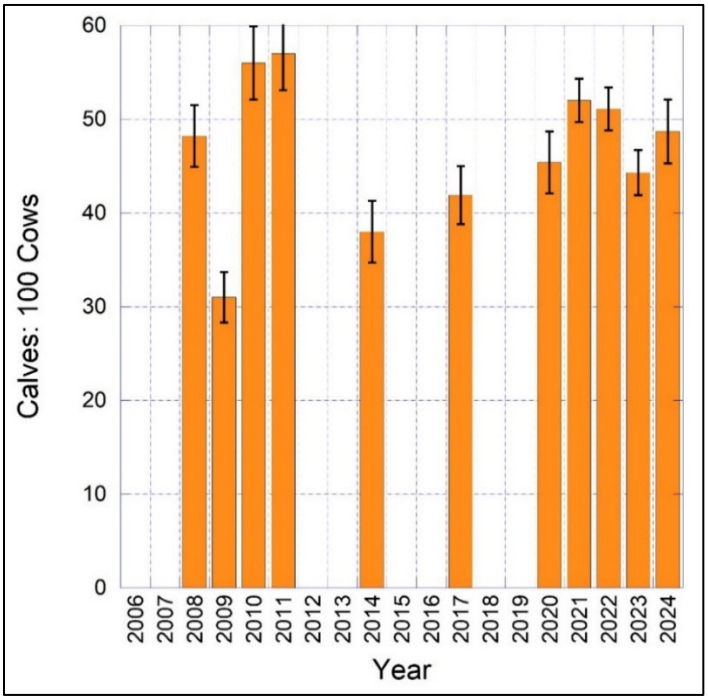


**Figure 15.** Late-winter calf: cow ratios (with 95%CIU) for the Beverly herd 2008-2024. Missing years of late-winter composition surveys mostly reflect the herd's remote and scattered winter distribution in those years.

As noted earlier, the March 2024 Beverly composition included just 14 of 36 available Beverly cow collars (38.9%) and it is possible that inclusion of the other 61.1% of the herd's collared cows, many of them further east and north of the surveyed areas, could have resulted in a higher or lower calf: cow ratio. Also, a proportion of Bathurst, Bluenose-East and Ahiak collars (estimated 15.3% of caribou surveyed) were in the region sampled which may affect ratios. Finally, defining of the sampling areas is based on assignment of herd membership of collared bulls and cows. Cows are assigned to herd based on locations in the previous year calving ground and bulls are assigned based on July post calving locations. It is also important to remember that a calf: cow ratio is a ratio and ratios can vary based on changes in the denominator as well as the numerator; higher than expected

cow mortality rates, potentially resulting from substantial hunter harvest, could inflate calf: cow ratios observed during March surveys.

### Seggregation of Bulls at Southern End of Winter Distribution

A strong seggregation of bull caribou at the southern end of the distribution of the Bluenose-East and Beverly herds was particularly noticeable in March 2024 (Figure 6). This has been noted previously in surveys of these herds, for example in March 2023 (Adamczewski et al. 2024b). The clustering of bull collars north of the East Arm of Great Slave Lake included collared bulls from all three of the herds we attempted to survey in March 2024, thus the trend transcended herd boundaries. Some of the groups we found on the tundra, for example southeast of Lockhart Lake (Figure 10) numbered thousands and included a very high percentage (99%+) of bulls. Occasionally these bull groups did contain small numbers of cows and calves. We also noted a preponderance of prime bulls (no antlers) at the south end of the distribution and few young bulls (with antlers), while the proportions of young bulls further north, where cows and calves were more widespread, were much higher than the proportions of prime bulls. Very similar patterns in bull distribution were seen in March 2023 (Adamczewski et al. 2024b).

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# PERSONAL COMMUNICATION

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# APPENDIX 1.

Observations of caribou groups on composition surveys of Bluenose-East and Beverly caribou in March 2024. Wpt = Waypoint Number. Observations on March 6, 7 and 8 were part of the Bluenose-East survey; observations on March 12 and 19 were part of the Beverly survey.

| Date time | Lat deg | Long deg | Wpt | Cows | Calves | Young Bulls | Prime Bulls | Bulls Total | All Total | Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| 06/03/2024 1:11:59 PM | 64.478861 | -114.646068 | 13 | 0 | 0 | 0 | 5 | 5 | 5 | |
| 06/03/2024 1:17:04 PM | 64.476353 | -114.683310 | 14 | 37 | 20 | 23 | 5 | 28 | 85 | |
| 06/03/2024 1:17:50 PM | 64.484281 | -114.672272 | 15 | 7 | 3 | 1 | 0 | 1 | 11 | |
| 06/03/2024 1:23:50 PM | 64.524260 | -114.662582 | 16 | 35 | 17 | 6 | 0 | 6 | 58 | |
| 06/03/2024 1:43:18 PM | 64.266534 | -114.726281 | 18 | 10 | 3 | 4 | 7 | 11 | 24 | |
| 06/03/2024 1:50:58 PM | 64.264417 | -114.727242 | 19 | 1 | 0 | 2 | 7 | 9 | 10 | |
| 06/03/2024 1:55:37 PM | 64.255900 | -114.682981 | 20 | 22 | 14 | 7 | 6 | 13 | 49 | |
| 06/03/2024 1:57:46 PM | 64.268087 | -114.659747 | 21 | 0 | 0 | 1 | 11 | 12 | 12 | |
| 06/03/2024 1:59:29 PM | 64.273928 | -114.651401 | 22 | 13 | 8 | 0 | 5 | 5 | 26 | |
| 06/03/2024 1:59:57 PM | 64.270105 | -114.632664 | 23 | 1 | 0 | 0 | 1 | 1 | 2 | |
| 06/03/2024 11:00:07 AM | 63.971047 | -114.205983 | 2 | 1 | 1 | 0 | 0 | 0 | 2 | |
| 06/03/2024 11:03:09 AM | 63.970169 | -114.210758 | 3 | 18 | 9 | 5 | 3 | 8 | 35 | collar cow; no calf BGCA22116 |
| 06/03/2024 11:04:25 AM | 63.966311 | -114.198465 | 4 | 6 | 3 | 7 | 4 | 11 | 20 | |
| 06/03/2024 11:04:56 AM | 63.962069 | -114.213492 | 5 | 6 | 2 | 2 | 0 | 2 | 10 | |
| 06/03/2024 11:05:57 AM | 63.958583 | -114.213567 | 6 | 8 | 3 | 1 | 3 | 4 | 15 | |
| 06/03/2024 11:06:58 AM | 63.960746 | -114.187824 | 7 | 0 | 0 | 0 | 2 | 2 | 2 | |
| 06/03/2024 11:09:49 AM | 63.976435 | -114.223139 | 8 | 12 | 5 | 1 | 0 | 1 | 18 | |
| 06/03/2024 11:10:11 AM | 63.983664 | -114.217423 | 9 | 8 | 1 | 6 | 1 | 7 | 16 | |
| 06/03/2024 11:10:58 AM | 63.981549 | -114.223567 | 10 | 2 | 2 | 0 | 0 | 0 | 4 | |
| 06/03/2024 11:24:14 AM | 64.171325 | -114.040120 | 12 | 0 | 0 | 0 | 7 | 7 | 7 | |
| 06/03/2024 2:06:06 PM | 64.217602 | -114.597295 | 24 | 24 | 11 | 5 | 7 | 12 | 47 | Collar seen |
| 06/03/2024 2:07:04 PM | 64.206763 | -114.574049 | 25 | 15 | 7 | 5 | 0 | 5 | 27 | |
| 06/03/2024 2:08:01 PM | 64.205597 | -114.604279 | 26 | 3 | 1 | 1 | 0 | 1 | 5 | |
| 06/03/2024 2:09:12 PM | 64.207241 | -114.606683 | 27 | 11 | 8 | 6 | 1 | 7 | 26 | |
| 06/03/2024 2:12:44 PM | 64.208420 | -114.501974 | 28 | 0 | 0 | 0 | 7 | 7 | 7 | |
| 06/03/2024 2:13:57 PM | 64.207187 | -114.511039 | 29 | 15 | 8 | 0 | 3 | 3 | 26 | |
| 06/03/2024 2:16:27 PM | 64.208678 | -114.490937 | 30 | 0 | 0 | 2 | 14 | 16 | 16 | |
| 06/03/2024 2:16:45 PM | 64.206152 | -114.499003 | 31 | 0 | 0 | 1 | 5 | 6 | 6 | |
| 06/03/2024 2:20:25 PM | 64.175577 | -114.595275 | 32 | 2 | 0 | 11 | 6 | 17 | 19 | |
| 06/03/2024 2:21:31 PM | 64.181512 | -114.598565 | 33 | 8 | 1 | 1 | 0 | 1 | 10 | |
| 06/03/2024 2:25:09 PM | 64.181701 | -114.613333 | 34 | 33 | 14 | 32 | 6 | 37 | 84 | |
| 06/03/2024 2:25:11 PM | 64.171482 | -114.624168 | 35 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 06/03/2024 2:25:11 PM | 64.171482 | -114.624168 | 35 | 0 | 0 | 0 | 0 | 0 | 0 | |

| Date time | Lat deg | Long deg | Wpt | Cows | Calves | Young Bulls | Prime Bulls | Bulls Total | All Total | Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| 06/03/2024 2:27:07 PM | 64.180766 | -114.635416 | 36 | 3 | 2 | 2 | 0 | 2 | 7 | |
| 06/03/2024 2:28:54 PM | 64.167867 | -114.606128 | 37 | 0 | 0 | 6 | 9 | 13 | 13 | |
| 06/03/2024 2:36:29 PM | 64.125166 | -114.490262 | 38 | 0 | 0 | 2 | 13 | 15 | 15 | Collar bull w antlers BGCA23205 |
| 06/03/2024 2:39:40 PM | 64.124519 | -114.478505 | 39 | 0 | 0 | 7 | 12 | 19 | 19 | |
| 06/03/2024 2:39:41 PM | 64.124099 | -114.477924 | 40 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 06/03/2024 2:45:23 PM | 64.082516 | -114.386025 | 41 | 12 | 5 | 2 | 5 | 7 | 24 | |
| 06/03/2024 2:46:33 PM | 64.089223 | -114.388863 | 42 | 7 | 4 | 0 | 0 | 0 | 11 | |
| 06/03/2024 2:47:55 PM | 64.106327 | -114.368489 | 43 | 4 | 2 | 0 | 0 | 0 | 6 | |
| 06/03/2024 3:02:20 PM | 64.076766 | -113.827544 | 44 | 1 | 1 | 0 | 0 | 0 | 2 | |
| 06/03/2024 3:05:12 PM | 64.086598 | -113.799655 | 45 | 43 | 23 | 9 | 2 | 11 | 77 | Collar cow, no calf BGCA23223 |
| 06/03/2024 3:06:17 PM | 64.089544 | -113.804192 | 46 | 4 | 2 | 0 | 0 | 0 | 6 | |
| 06/03/2024 3:07:24 PM | 64.095241 | -113.808979 | 47 | 4 | 2 | 0 | 0 | 0 | 6 | |
| 07/03/2024 1:17:19 PM | 65.126721 | -115.884646 | 48 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 07/03/2024 1:20:07 PM | 65.171344 | -115.878906 | 49 | 33 | 9 | 3 | 3 | 6 | 48 | |
| 07/03/2024 1:22:18 PM | 65.161910 | -115.872974 | 50 | 8 | 2 | 1 | 0 | 1 | 11 | |
| 07/03/2024 1:23:45 PM | 65.160518 | -115.856971 | 51 | 43 | 19 | 4 | 1 | 5 | 67 | |
| 07/03/2024 1:24:46 PM | 65.164689 | -115.856274 | 52 | 7 | 3 | 0 | 0 | 0 | 10 | |
| 07/03/2024 1:29:49 PM | 65.218343 | -115.968981 | 53 | 28 | 17 | 3 | 0 | 3 | 48 | |
| 07/03/2024 1:30:23 PM | 65.222423 | -115.971771 | 54 | 4 | 3 | 0 | 0 | 0 | 7 | |
| 07/03/2024 1:36:52 PM | 65.335219 | -116.140847 | 55 | 45 | 16 | 7 | 1 | 8 | 69 | |
| 07/03/2024 1:37:38 PM | 65.330291 | -116.143886 | 56 | 7 | 6 | 2 | 0 | 2 | 15 | |
| 07/03/2024 1:39:19 PM | 65.330925 | -116.138958 | 57 | 50 | 22 | 2 | 0 | 2 | 74 | |
| 07/03/2024 1:39:41 PM | 65.337096 | -116.124255 | 58 | 0 | 0 | 1 | 1 | 2 | 2 | |
| 07/03/2024 1:40:04 PM | 65.341050 | -116.127327 | 59 | 2 | 3 | 0 | 0 | 0 | 5 | |
| 07/03/2024 1:44:14 PM | 65.389740 | -116.202493 | 60 | 44 | 15 | 7 | 1 | 8 | 67 | |
| 07/03/2024 1:45:43 PM | 65.392688 | -116.213727 | 61 | 24 | 13 | 6 | 0 | 6 | 43 | |
| 07/03/2024 1:46:29 PM | 65.387858 | -116.217384 | 62 | 7 | 1 | 1 | 0 | 1 | 9 | |
| 07/03/2024 1:47:03 PM | 65.385388 | -116.213592 | 63 | 4 | 1 | 1 | 0 | 1 | 6 | |
| 07/03/2024 1:48:52 PM | 65.398652 | -116.235136 | 64 | 14 | 7 | 3 | 0 | 3 | 24 | |
| 07/03/2024 1:49:47 PM | 65.399764 | -116.238794 | 65 | 21 | 7 | 1 | 0 | 1 | 29 | |
| 07/03/2024 1:54:01 PM | 65.411079 | -116.263493 | 66 | 17 | 9 | 0 | 0 | 0 | 26 | |
| 07/03/2024 1:55:02 PM | 65.409660 | -116.264039 | 67 | 8 | 7 | 3 | 0 | 3 | 18 | |
| 07/03/2024 2:01:19 PM | 65.324683 | -116.236950 | 68 | 2 | 1 | 3 | 0 | 3 | 6 | |
| 07/03/2024 2:02:42 PM | 65.319405 | -116.257193 | 69 | 6 | 3 | 3 | 5 | 8 | 17 | |
| 07/03/2024 2:05:55 PM | 65.279990 | -116.246030 | 70 | 31 | 17 | 3 | 3 | 6 | 54 | |
| 07/03/2024 2:06:19 PM | 65.277921 | -116.258179 | 71 | 3 | 2 | 0 | 0 | 0 | 5 | |
| 07/03/2024 2:12:32 PM | 65.275116 | -116.063177 | 72 | 2 | 2 | 6 | 10 | 16 | 20 | |
| 07/03/2024 2:19:05 PM | 65.252288 | -116.101255 | 73 | 12 | 4 | 0 | 0 | 0 | 16 | |

| Date time | Lat deg | Long deg | Wpt | Cows | Calves | Young Bulls | Prime Bulls | Bulls Total | All Total | Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| 07/03/2024 2:22:12 PM | 65.263503 | -116.116083 | 74 | 9 | 2 | 0 | 0 | 0 | 11 | |
| 07/03/2024 2:24:13 PM | 65.241021 | -116.114664 | 75 | 7 | 5 | 2 | 0 | 2 | 14 | |
| 07/03/2024 2:25:27 PM | 65.236578 | -116.117468 | 76 | 19 | 9 | 6 | 3 | 9 | 37 | |
| 07/03/2024 2:27:00 PM | 65.248740 | -116.119049 | 77 | 3 | 1 | 0 | 6 | 6 | 10 | |
| 07/03/2024 2:27:15 PM | 65.248534 | -116.116467 | 78 | 1 | 2 | 0 | 0 | 0 | 3 | |
| 07/03/2024 2:27:52 PM | 65.247990 | -116.109221 | 79 | 7 | 1 | 4 | 1 | 5 | 13 | |
| 07/03/2024 2:30:08 PM | 65.213652 | -116.128693 | 80 | 6 | 3 | 0 | 0 | 0 | 9 | |
| 07/03/2024 2:41:25 PM | 65.134938 | -116.107989 | 81 | 13 | 7 | 3 | 1 | 4 | 24 | |
| 07/03/2024 2:42:04 PM | 65.133068 | -116.130735 | 82 | 2 | 1 | 3 | 0 | 3 | 6 | |
| 07/03/2024 2:42:31 PM | 65.133250 | -116.134957 | 83 | 5 | 4 | 0 | 0 | 0 | 9 | |
| 07/03/2024 2:44:49 PM | 65.116344 | -116.035630 | 84 | 3 | 3 | 0 | 0 | 0 | 6 | |
| 07/03/2024 2:45:24 PM | 65.123319 | -116.028419 | 85 | 4 | 3 | 0 | 0 | 0 | 7 | |
| 07/03/2024 2:48:46 PM | 65.123473 | -116.029482 | 86 | 8 | 6 | 0 | 0 | 0 | 14 | |
| 07/03/2024 2:50:02 PM | 65.116724 | -116.038014 | 87 | 1 | 1 | 2 | 0 | 2 | 4 | |
| 07/03/2024 2:50:16 PM | 65.115658 | -116.038193 | 88 | 3 | 3 | 0 | 0 | 0 | 6 | |
| 07/03/2024 2:53:30 PM | 65.084540 | -116.024591 | 89 | 3 | 0 | 3 | 5 | 8 | 11 | |
| 07/03/2024 2:54:47 PM | 65.086117 | -116.010956 | 90 | 13 | 5 | 2 | 1 | 3 | 21 | |
| 07/03/2024 2:58:29 PM | 65.071292 | -116.062146 | 91 | 9 | 1 | 5 | 5 | 10 | 20 | |
| 07/03/2024 2:58:36 PM | 65.073621 | -116.070042 | 92 | 0 | 0 | 1 | 3 | 4 | 4 | |
| 07/03/2024 3:01:07 PM | 65.056132 | -116.147087 | 93 | 5 | 3 | 0 | 0 | 0 | 8 | |
| 07/03/2024 3:02:20 PM | 65.049261 | -116.179724 | 94 | 5 | 4 | 0 | 0 | 0 | 9 | |
| 07/03/2024 3:02:38 PM | 65.048213 | -116.183232 | 95 | 5 | 3 | 0 | 0 | 0 | 8 | |
| 07/03/2024 3:02:49 PM | 65.047328 | -116.184291 | 96 | 6 | 4 | 0 | 0 | 0 | 10 | |
| 07/03/2024 3:02:59 PM | 65.045869 | -116.183586 | 97 | 2 | 0 | 0 | 0 | 0 | 2 | |
| 07/03/2024 3:03:47 PM | 65.042881 | -116.190770 | 98 | 6 | 2 | 0 | 1 | 1 | 9 | |
| 07/03/2024 3:06:21 PM | 65.043869 | -116.165889 | 99 | 21 | 8 | 5 | 0 | 5 | 34 | |
| 07/03/2024 3:07:44 PM | 65.044698 | -116.151866 | 100 | 11 | 5 | 11 | 5 | 16 | 32 | |
| 07/03/2024 3:08:17 PM | 65.046543 | -116.143458 | 101 | 2 | 2 | 7 | 0 | 7 | 11 | |
| 07/03/2024 3:09:10 PM | 65.050082 | -116.147632 | 102 | 0 | 0 | 3 | 7 | 10 | 10 | |
| 07/03/2024 3:12:36 PM | 65.040164 | -116.179874 | 103 | 17 | 10 | 7 | 1 | 8 | 35 | Collar no calf not sure # |
| 07/03/2024 3:14:46 PM | 65.022006 | -116.224462 | 104 | 32 | 21 | 7 | 0 | 7 | 60 | |
| 07/03/2024 3:15:13 PM | 65.016451 | -116.257637 | 105 | 5 | 4 | 0 | 0 | 0 | 9 | |
| 07/03/2024 3:15:42 PM | 65.016611 | -116.267297 | 106 | 2 | 1 | 1 | 0 | 1 | 4 | |
| 07/03/2024 3:16:36 PM | 65.012865 | -116.266089 | 107 | 5 | 5 | 0 | 0 | 0 | 10 | |
| 07/03/2024 3:17:57 PM | 65.010331 | -116.258004 | 108 | 21 | 12 | 3 | 0 | 3 | 36 | |
| 07/03/2024 3:18:34 PM | 65.012289 | -116.252708 | 109 | 9 | 3 | 2 | 0 | 2 | 14 | |
| 07/03/2024 3:21:07 PM | 64.981022 | -116.298793 | 110 | 11 | 8 | 2 | 0 | 2 | 21 | |
| 07/03/2024 3:21:53 PM | 64.975228 | -116.311404 | 111 | 5 | 2 | 1 | 0 | 1 | 8 | |
| 07/03/2024 4:02:36 PM | 64.801649 | -116.220377 | 112 | 25 | 11 | 2 | 0 | 2 | 38 | |

| Date time | Lat deg | Long deg | Wpt | Cows | Calves | Young Bulls | Prime Bulls | Bulls Total | All Total | Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| 07/03/2024 4:03:00 PM | 64.803277 | -116.209729 | 113 | 4 | 3 | 0 | 0 | 0 | 7 | |
| 07/03/2024 4:03:37 PM | 64.802851 | -116.202506 | 114 | 4 | 1 | 0 | 0 | 0 | 5 | |
| 07/03/2024 4:08:24 PM | 64.797382 | -115.944264 | 115 | 8 | 3 | 0 | 0 | 0 | 11 | |
| 08/03/2024 1:00:01 PM | 65.753959 | -116.131946 | 36 | 39 | 18 | 5 | 2 | 7 | 64 | |
| 08/03/2024 1:02:18 PM | 65.776000 | -116.145000 | 37 | 13 | 6 | 1 | 0 | 1 | 20 | |
| 08/03/2024 1:03:08 PM | 65.765000 | -116.129000 | 38 | 10 | 6 | 2 | 0 | 2 | 18 | |
| 08/03/2024 1:05:20 PM | 65.776046 | -116.129168 | 39 | 17 | 7 | 3 | 3 | 6 | 30 | |
| 08/03/2024 1:11:16 PM | 65.824632 | -116.140968 | 40 | 7 | 5 | 0 | 0 | 0 | 12 | |
| 08/03/2024 1:14:40 PM | 65.837410 | -116.139488 | 41 | 39 | 16 | 4 | 0 | 4 | 59 | Collar cow no calf - don't know which collar |
| 08/03/2024 1:16:45 PM | 65.842859 | -116.123220 | 42 | 40 | 17 | 4 | 2 | 6 | 63 | |
| 08/03/2024 1:24:48 PM | 65.877031 | -115.942438 | 43 | 43 | 19 | 8 | 1 | 9 | 71 | |
| 08/03/2024 1:26:10 PM | 65.871960 | -115.937176 | 44 | 31 | 12 | 3 | 0 | 3 | 46 | |
| 08/03/2024 1:27:49 PM | 65.873782 | -115.946748 | 45 | 36 | 16 | 3 | 0 | 3 | 55 | |
| 08/03/2024 1:29:05 PM | 65.882167 | -115.960379 | 46 | 40 | 14 | 2 | 0 | 2 | 56 | |
| 08/03/2024 1:31:24 PM | 65.912806 | -115.972223 | 47 | 13 | 4 | 2 | 0 | 2 | 19 | |
| 08/03/2024 1:31:56 PM | 65.912911 | -115.956980 | 48 | 2 | 1 | 0 | 0 | 0 | 3 | |
| 08/03/2024 1:34:35 PM | 11.039376 | -114.330994 | 49 | 9 | 5 | 2 | 1 | 3 | 17 | |
| 08/03/2024 1:39:01 PM | 65.870967 | -116.040474 | 50 | 35 | 18 | 1 | 0 | 1 | 54 | |
| 08/03/2024 1:44:40 PM | 65.934460 | -116.149349 | 51 | 57 | 28 | 5 | 0 | 5 | 90 | |
| 08/03/2024 1:50:18 PM | 65.898115 | -116.145166 | 52 | 12 | 7 | 4 | 0 | 4 | 23 | |
| 08/03/2024 1:52:27 PM | 65.895806 | -116.200927 | 53 | 12 | 4 | 1 | 0 | 1 | 17 | |
| 08/03/2024 1:52:44 PM | 65.896049 | -116.213255 | 54 | 1 | 1 | 0 | 0 | 0 | 2 | |
| 08/03/2024 1:55:11 PM | 65.896946 | -116.217119 | 55 | 58 | 30 | 5 | 0 | 5 | 93 | |
| 08/03/2024 1:58:26 PM | 65.898729 | -116.312707 | 56 | 33 | 16 | 4 | 0 | 4 | 53 | |
| 08/03/2024 10:31:25 AM | 64.361331 | -114.756894 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 08/03/2024 11:52:46 AM | 65.381343 | -116.076240 | 10 | 46 | 24 | 13 | 0 | 13 | 83 | |
| 08/03/2024 11:59:39 AM | 65.407123 | -116.008997 | 11 | 27 | 12 | 6 | 0 | 6 | 45 | |
| 08/03/2024 12:01:37 PM | 65.417600 | -115.993000 | 12 | 10 | 8 | 0 | 2 | 2 | 20 | |
| 08/03/2024 12:03:01 PM | 65.430685 | -115.979991 | 13 | 13 | 8 | 3 | 6 | 9 | 30 | |
| 08/03/2024 12:06:31 PM | 65.426946 | -115.973944 | 14 | 16 | 8 | 7 | 1 | 8 | 32 | 2 collared cows; 1 w/calf |
| 08/03/2024 12:10:17 PM | 65.471000 | -115.961000 | 15 | 1 | 1 | 0 | 0 | 0 | 2 | |
| 08/03/2024 12:11:19 PM | 65.514050 | -115.934543 | 16 | 10 | 4 | 2 | 0 | 2 | 16 | |
| 08/03/2024 12:11:33 PM | 65.514245 | -115.930800 | 17 | 3 | 1 | 0 | 0 | 0 | 4 | |
| 08/03/2024 12:15:06 PM | 65.528941 | -115.875098 | 18 | 9 | 2 | 9 | 0 | 9 | 20 | |
| 08/03/2024 12:16:34 PM | 65.529610 | -115.869354 | 19 | 16 | 5 | 8 | 0 | 8 | 29 | |
| 08/03/2024 12:21:48 PM | 65.602634 | -115.974293 | 20 | 7 | 4 | 3 | 0 | 3 | 14 | |
| 08/03/2024 12:23:26 PM | 65.598000 | -115.879500 | 21 | 9 | 6 | 3 | 0 | 3 | 18 | |
| 08/03/2024 12:26:02 PM | 65.606000 | -115.912000 | 22 | 16 | 9 | 4 | 0 | 4 | 29 | |

| Date time | Lat deg | Long deg | Wpt | Cows | Calves | Young Bulls | Prime Bulls | Bulls Total | All Total | Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| 08/03/2024 12:26:57 PM | 65.598000 | -115.912000 | 23 | 2 | 1 | 5 | 0 | 5 | 8 | |
| 08/03/2024 12:34:34 PM | 65.618570 | -115.886598 | 24 | 26 | 12 | 6 | 1 | 7 | 45 | |
| 08/03/2024 12:34:59 PM | 65.622217 | -115.878987 | 25 | 2 | 1 | 1 | 0 | 1 | 4 | |
| 08/03/2024 12:35:37 PM | 65.622718 | -115.890150 | 26 | 4 | 2 | 0 | 0 | 0 | 6 | |
| 08/03/2024 12:40:51 PM | 65.718184 | -115.956289 | 27 | 24 | 10 | 2 | 0 | 2 | 36 | |
| 08/03/2024 12:42:54 PM | 65.726205 | -115.943583 | 28 | 31 | 18 | 4 | 0 | 4 | 53 | |
| 08/03/2024 12:45:03 PM | 65.729846 | -115.953344 | 29 | 27 | 8 | 12 | 0 | 12 | 47 | |
| 08/03/2024 12:49:23 PM | 65.754963 | -115.936368 | 30 | 34 | 12 | 6 | 0 | 6 | 52 | |
| 08/03/2024 12:52:30 PM | 65.746054 | -116.036771 | 31 | 7 | 4 | 7 | 0 | 7 | 18 | |
| 08/03/2024 12:53:04 PM | 65.741000 | -116.064000 | 32 | 1 | 2 | 0 | 0 | 0 | 3 | |
| 08/03/2024 12:54:07 PM | 65.736946 | -116.071925 | 33 | 0 | 0 | 3 | 3 | 6 | 6 | |
| 08/03/2024 12:54:51 PM | 65.735877 | -116.082967 | 34 | 2 | 2 | 0 | 0 | 0 | 4 | |
| 08/03/2024 12:57:41 PM | 65.738957 | -116.108182 | 35 | 4 | 2 | 2 | 0 | 2 | 8 | |
| 08/03/2024 2:01:16 PM | 65.902000 | -116.416000 | 57 | 4 | 2 | 0 | 0 | 0 | 6 | |
| 08/03/2024 2:01:59 PM | 65.920623 | -116.426937 | 58 | 2 | 1 | 0 | 0 | 0 | 3 | |
| 08/03/2024 2:03:44 PM | 65.904484 | -116.445378 | 59 | 19 | 7 | 2 | 0 | 2 | 28 | |
| 08/03/2024 2:09:59 PM | 65.890000 | -116.449000 | 60 | 52 | 20 | 5 | 0 | 5 | 77 | |
| 08/03/2024 3:29:18 PM | 65.830000 | -116.606000 | 61 | 3 | 2 | 0 | 0 | 0 | 5 | |
| 08/03/2024 3:30:21 PM | 65.828612 | -116.603398 | 62 | 7 | 4 | 0 | 0 | 0 | 11 | |
| 08/03/2024 3:33:35 PM | 65.792000 | -116.660000 | 63 | 5 | 0 | 2 | 3 | 5 | 10 | |
| 08/03/2024 3:36:19 PM | 65.778639 | -116.627321 | 64 | 37 | 22 | 6 | 1 | 7 | 66 | |
| 08/03/2024 3:38:29 PM | 65.791558 | -116.650071 | 65 | 13 | 5 | 0 | 1 | 1 | 19 | |
| 08/03/2024 3:41:44 PM | 31.605835 | -18.494019 | 66 | 25 | 9 | 2 | 0 | 2 | 36 | |
| 08/03/2024 3:44:29 PM | 0.000039 | -0.000135 | 67 | 28 | 12 | 13 | 4 | 17 | 57 | |
| 08/03/2024 3:45:28 PM | 65.754961 | -116.577557 | 68 | 5 | 3 | 3 | 3 | 6 | 14 | |
| 08/03/2024 3:46:08 PM | 65.756163 | -116.587289 | 69 | 1 | 1 | 0 | 0 | 0 | 2 | |
| 08/03/2024 3:49:54 PM | 65.789000 | -115.807000 | 70 | 1 | 1 | 3 | 4 | 7 | 9 | |
| 08/03/2024 4:24:27 PM | 65.651979 | -114.498659 | 71 | 27 | 14 | 6 | 2 | 8 | 49 | |
| 08/03/2024 8:15:44 PM | 64.191194 | -114.179089 | 3 | 4 | 3 | 2 | 3 | 5 | 12 | |
| 08/03/2024 8:15:49 PM | 64.191195 | -114.179089 | 4 | 2 | 1 | 4 | 2 | 5 | 8 | |
| 08/03/2024 8:15:54 PM | 64.191194 | -114.179095 | 5 | 2 | 1 | 1 | 1 | 2 | 5 | |
| 08/03/2024 8:15:59 PM | 64.191191 | -114.179094 | 6 | 2 | 2 | 3 | 3 | 6 | 10 | |
| 08/03/2024 8:32:16 PM | 64.191178 | -114.179095 | 7 | 6 | 5 | 2 | 4 | 5 | 16 | |
| 08/03/2024 8:33:13 PM | 64.191181 | -114.179075 | 8 | 6 | 4 | 3 | 2 | 5 | 15 | |
| 08/03/2024 8:33:21 PM | 64.191180 | -114.179081 | 9 | 5 | 0 | 2 | 1 | 3 | 8 | |
| 08/03/2024 8:36:11 PM | 64.191179 | -114.179067 | 10 | 4 | 5 | 2 | 3 | 5 | 14 | |
| 12/03/2024 1:02:00 PM | 63.457647 | -111.642724 | 25 | 0 | 0 | 0 | 5 | 5 | 5 | |
| 12/03/2024 1:04:22 PM | 63.355718 | -111.331039 | 26 | 24 | 10 | 8 | 9 | 17 | 51 | |
| 12/03/2024 1:08:26 PM | 63.362934 | -111.262824 | 27 | 0 | 0 | 7 | 78 | 85 | 85 | |
| 12/03/2024 1:13:57 PM | 63.338847 | -111.081195 | 28 | 0 | 0 | 8 | 42 | 50 | 50 | |

| Date time | Lat deg | Long deg | Wpt | Cows | Calves | Young Bulls | Prime Bulls | Bulls Total | All Total | Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| 12/03/2024 1:21:47 PM | 63.385444 | -111.083340 | 29 | 6 | 4 | 13 | 47 | 60 | 70 | |
| 12/03/2024 1:21:52 PM | 63.389075 | -111.066752 | 30 | 0 | 0 | 0 | 4 | 4 | 4 | |
| 12/03/2024 1:25:45 PM | 63.399658 | -111.075235 | 31 | 18 | 9 | 26 | 24 | 50 | 77 | |
| 12/03/2024 1:26:20 PM | 63.406425 | -111.053283 | 32 | 3 | 2 | 6 | 10 | 16 | 21 | |
| 12/03/2024 1:28:18 PM | 63.415745 | -111.070892 | 33 | 12 | 8 | 9 | 11 | 20 | 40 | |
| 12/03/2024 1:42:51 PM | 63.282224 | -110.468031 | 34 | 15 | 6 | 0 | 0 | 0 | 21 | |
| 12/03/2024 1:42:58 PM | 63.280503 | -110.460047 | 35 | 1 | 1 | 0 | 0 | 0 | 2 | |
| 12/03/2024 1:43:36 PM | 63.275687 | -110.458364 | 36 | 3 | 3 | 2 | 3 | 5 | 11 | |
| 12/03/2024 1:45:22 PM | 63.262945 | -110.454303 | 37 | 1 | 1 | 12 | 37 | 49 | 51 | |
| 12/03/2024 1:46:37 PM | 63.265693 | -110.446546 | 38 | 3 | 2 | 9 | 41 | 50 | 55 | |
| 12/03/2024 1:51:03 PM | 63.265941 | -110.292488 | 39 | 0 | 0 | 0 | 4 | 4 | 4 | |
| 12/03/2024 1:54:33 PM | 63.268486 | -110.285800 | 40 | 8 | 4 | 13 | 21 | 34 | 46 | |
| 12/03/2024 11:12:54 AM | 63.898621 | -112.806220 | 12 | 2 | 1 | 0 | 0 | 0 | 3 | not close to collar |
| 12/03/2024 11:14:10 AM | 63.904358 | -112.799000 | 13 | 4 | 2 | 3 | 6 | 9 | 15 | |
| 12/03/2024 11:14:39 AM | 63.905158 | -112.795336 | 14 | 2 | 2 | 2 | 0 | 2 | 6 | |
| 12/03/2024 11:15:27 AM | 63.908236 | -112.786725 | 15 | 1 | 0 | 3 | 2 | 5 | 6 | |
| 12/03/2024 11:16:12 AM | 63.909743 | -112.771291 | 16 | 0 | 0 | 0 | 1 | 1 | 1 | |
| 12/03/2024 11:16:48 AM | 63.912823 | -112.762475 | 17 | 5 | 3 | 3 | 9 | 12 | 20 | |
| 12/03/2024 11:17:56 AM | 63.906466 | -112.757799 | 18 | 6 | 4 | 2 | 5 | 7 | 17 | |
| 12/03/2024 11:40:19 AM | 63.938862 | -112.065676 | 19 | 45 | 14 | 53 | 90 | 143 | 202 | 1000s here |
| 12/03/2024 11:41:29 AM | 63.921077 | -112.042159 | 20 | 6 | 2 | 12 | 7 | 19 | 27 | |
| 12/03/2024 11:44:07 AM | 63.929364 | -112.016012 | 21 | 0 | 0 | 2 | 0 | 2 | 2 | |
| 12/03/2024 11:46:27 AM | 63.929378 | -112.038036 | 22 | 32 | 19 | 12 | 9 | 21 | 72 | |
| 12/03/2024 11:47:54 AM | 63.923659 | -112.039954 | 23 | 8 | 4 | 12 | 6 | 18 | 30 | |
| 12/03/2024 11:57:00 AM | 63.939148 | -112.061192 | 24 | 57 | 34 | 101 | 92 | 193 | 284 | |
| 12/03/2024 2:18:30 PM | 63.428437 | -110.459051 | 41 | 2 | 2 | 23 | 51 | 74 | 78 | |
| 12/03/2024 2:19:10 PM | 63.433327 | -110.477785 | 42 | 0 | 0 | 0 | 4 | 4 | 4 | |
| 12/03/2024 3:19:31 PM | 63.858325 | -112.945534 | 43 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 19/03/2024 1:03:13 PM | 64.381034 | -110.176820 | 61 | 36 | 13 | 22 | 2 | 24 | 73 | |
| 19/03/2024 1:06:03 PM | 64.377016 | -110.185243 | 62 | 21 | 3 | 16 | 2 | 18 | 42 | |
| 19/03/2024 1:08:03 PM | 64.375746 | -110.198845 | 63 | 20 | 11 | 7 | 1 | 8 | 39 | |
| 19/03/2024 1:12:37 PM | 64.384828 | -110.263430 | 64 | 42 | 19 | 24 | 16 | 40 | 101 | |
| 19/03/2024 1:16:52 PM | 64.380726 | -110.284456 | 65 | 17 | 11 | 11 | 4 | 15 | 43 | |
| 19/03/2024 1:36:12 PM | 64.412526 | -110.272636 | 66 | 49 | 20 | 60 | 1 | 61 | 130 | |
| 19/03/2024 1:37:00 PM | 64.421728 | -110.278338 | 67 | 4 | 2 | 0 | 0 | 0 | 6 | |
| 19/03/2024 1:37:28 PM | 64.420387 | -110.268674 | 68 | 4 | 3 | 1 | 0 | 1 | 8 | |
| 19/03/2024 11:22:59 AM | 63.868741 | -110.994199 | 44 | 10 | 4 | 1 | 0 | 1 | 15 | |
| 19/03/2024 11:30:29 AM | 63.856537 | -110.959365 | 45 | 54 | 26 | 28 | 17 | 45 | 125 | Group close to BGCA22107 |
| 19/03/2024 11:40:11 AM | 63.916382 | -110.956713 | 46 | 87 | 38 | 34 | 0 | 34 | 159 | |

| Date time | Lat deg | Long deg | Wpt | Cows | Calves | Young Bulls | Prime Bulls | Bulls Total | All Total | Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| 19/03/2024 11:46:42 AM | 64.036300 | -110.685980 | 47 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 19/03/2024 11:53:24 AM | 64.061733 | -110.615191 | 48 | 55 | 32 | 32 | 27 | 59 | 146 | BGCA23212 (Beverly F) |
| 19/03/2024 11:56:29 AM | 64.074690 | -110.591149 | 49 | 25 | 12 | 12 | 2 | 14 | 51 | |
| 19/03/2024 11:57:59 AM | 64.077439 | -110.618665 | 50 | 12 | 5 | 3 | 0 | 3 | 20 | Collar cow BGCA23212 |
| 19/03/2024 12:07:06 PM | 64.054479 | -110.422734 | 52 | 48 | 22 | 31 | 10 | 41 | 111 | BGCA22111 (Bathurst F) |
| 19/03/2024 12:09:54 PM | 64.064198 | -110.431111 | 53 | 12 | 3 | 17 | 9 | 26 | 41 | |
| 19/03/2024 12:19:05 PM | 64.129874 | -110.375226 | 54 | 38 | 23 | 54 | 43 | 97 | 158 | 1000s here |
| 19/03/2024 12:25:25 PM | 64.147213 | -110.383628 | 55 | 22 | 14 | 33 | 13 | 46 | 82 | |
| 19/03/2024 12:35:25 PM | 64.137061 | -110.302606 | 56 | 62 | 34 | 94 | 9 | 103 | 199 | Group close to BGCA22145 (Bathurst F) |
| 19/03/2024 12:40:25 PM | 64.188232 | -110.247869 | 57 | 11 | 6 | 1 | 0 | 1 | 18 | |
| 19/03/2024 12:46:32 PM | 64.207855 | -110.161965 | 58 | 37 | 13 | 45 | 28 | 73 | 123 | Grp close to BGCA23170 (Bev F) |
| 19/03/2024 12:56:00 PM | 64.323473 | -110.062351 | 59 | 37 | 20 | 21 | 4 | 25 | 82 | Grp close to BGCA23191 (Bev F) |
| 19/03/2024 12:57:22 PM | 64.331037 | -110.071877 | 60 | 15 | 11 | 4 | 0 | 4 | 30 | |
| 19/03/2024 2:30:45 PM | 64.371937 | -109.887801 | 69 | 18 | 10 | 0 | 0 | 0 | 28 | |
| 19/03/2024 2:35:07 PM | 64.255703 | -109.801872 | 70 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 19/03/2024 2:37:46 PM | 64.220237 | -109.718826 | 71 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 19/03/2024 3:07:46 PM | 63.573796 | -109.955781 | 72 | 45 | 21 | 40 | 5 | 45 | 111 | |
| 19/03/2024 3:11:15 PM | 63.557232 | -109.938754 | 73 | 26 | 11 | 17 | 2 | 19 | 56 | |
| 19/03/2024 3:13:48 PM | 63.542622 | -109.795745 | 74 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 19/03/2024 3:21:14 PM | 63.545647 | -109.605602 | 75 | 22 | 12 | 31 | 19 | 50 | 84 | |
| 19/03/2024 3:25:24 PM | 63.530426 | -109.475363 | 76 | 17 | 9 | 17 | 0 | 16 | 42 | |
| 19/03/2024 3:28:51 PM | 63.526889 | -109.439921 | 77 | 42 | 14 | 9 | 1 | 10 | 66 | |
| 19/03/2024 3:31:49 PM | 63.533692 | -109.421983 | 78 | 10 | 3 | 21 | 12 | 33 | 46 | |
| 19/03/2024 3:34:23 PM | 63.540892 | -109.430418 | 79 | 34 | 19 | 17 | 0 | 17 | 70 | |
| 19/03/2024 3:42:23 PM | 63.517812 | -109.427994 | 80 | 25 | 11 | 21 | 6 | 27 | 63 | |
| 19/03/2024 3:45:55 PM | 63.568151 | -109.415612 | 81 | 35 | 14 | 50 | 11 | 61 | 110 | |