

# Central Selkirk Caribou Maternity Pen Project

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## ***Executive Summary***

Aq'am, Rez Dawgs and the Central Selkirk Caribou Society initially partnered on the Caribou Maternity Pen Project to support the calving process of the caribou, protect them from predation and providing food security at the earliest, most vulnerable parts of life as well as to ensure there was a First Nation voice at the table involved in all aspects of conservation. We came across the FWCP in our search for funding support and quickly realized that this project was in perfect alignment with the *Species Population Enhancement* benefit requirement. The long term benefit is 1) the caribou are in better position for a growing herd this year compared to last year 2) the community knowledge surrounding caribou, caribou habitat and conservation has significantly increased over the last year.

Throughout this report, we will share how this project benefitted the Central Selkirk Caribou Herd (Species Population Enhancement), the Ktunaxa Nation through both the sharing of indigenous knowledge – and capacity building for Ktunaxa Citizens and supported to development of best practices among indigenous and non-indigenous project partners.

Our focus throughout this project was on the role of 'Caribou Shepherds' and how to best support the day to day requirements of the pen. In the table of contents you will see *Methods* and it is there that the responsibilities and requirements of the shepherds are outline in detail.

We are grateful to have had the support from FWCP and to see how these funds could support a number of interconnected goals. All cows and calves were released from the pen into their natural habitat at 5:00 am on July 21st 2023, after spending 114 days in the pen. GPS collar data showed the group was in the alpine by the afternoon. It is yet to be determined if the caribou captured in Lake Creek will travel back to that area or if they will stay south of Trout Lake. The Columbia South cow has been moving with other collared cows since release and seems to have acclimated to the Central Selkirk's and bonded with the local caribou well. Overall, habitat use since release has been consistent with their movement in years prior to being placed in the pen. The Central Selkirk Maternity Pen has now completed two operational seasons, and the project managers and supporters are hopeful for many successful years to come.

## ***Introduction***

The primary objectives of the Central Selkirk Caribou Maternity Pen project are to increase calf survival, alleviate environmental pressures on female caribou, and improve the health of adults and calves. The project also offers an opportunity to increase our knowledge of caribou and allows Indigenous community members, stakeholders, and interested local groups to become involved in species at risk recovery.

Project funding will allow Aq'am and ALCS to provide First Nation youth and young adults with multiple mentors and hands-on exposure to many stages of the maternity pen project, such as

project management/planning, monitoring/shepherding caribou, pen facility maintenance, and data collection/recording.

Aq'am is dedicated to caribou conservation and the involvement of Indigenous community members in species at risk recovery. This funding benefitted unemployed and/or underemployed Ktunaxa First Nation citizens living on the ʔaḡam Reserve. The Caribou Maternity Pen allowed Ktunaxa Citizens to work in their own traditional territory as Shepherds in a conservation type role while strengthening their land based skills and knowledge. This work considered non-traditional employment is a great fit for vulnerable youth and young adults who do not necessarily see themselves working in administrative, restaurant, retail or office type settings.

The funding to support this initiative has not only opened doors for employees and mentees to broaden and develop their own skill sets, but it has contributed to the protection and stewardship of Caribou in our Traditional territory.

### ***Goals and Objectives***

Our goals and objectives were to support the effort to increase the caribou population through while at the same time providing conservation mentorship and engagement opportunities to the community of Aqam. The declining ungulate population within Ktunaxa traditional territory has been a serious concern of Elders, leadership and community over the last decade. This project provided an opportunity to Ktunaxa involvement, decision making and capacity building all at the same time. The Caribou Shepherds were tasked with the daily care of animals right from capture until release. The Shepherds tracked, weighed and monitored all food input and waste output for each caribou to ensure they were gaining sufficient weight to best prepare them for waste. They monitored the behaviors of the animals, recorded all data to share with ALCS veterinary support. The shepherds provided 24 hour surveillance and security for the herd. Naturally, an enclosure of wild animals draws in predators. The Shepherds had to monitor, deter and provide communication regarding all bear/cougar sightings along the exterior of the pen.

### ***Method***

Shepherding is a critical component of a successful Caribou Maternity Pen. The shepherds role is to ensure the health and safety of caribou within the pen is met on a daily basis. The shepherds knowledge of the caribou's behavior, habits and health becomes instrumental at helping predict calving events and assessing changes in individuals health. The project veterinarian is directly linked , individual health assessments and communicating with team veterinarian. These positions are incredibly rewarding with multiple benefits to the individuals involved and the First Nation community supporting the project.

Expectations and routine of the shepherds were as follows:

The site was continually staffed by a minimum of 2 people, including 1 lead shepherd trained and experienced in wildlife husbandry. Shepherds will work in 8-hour shifts, staggered during the day to provide maximum coverage. Shepherds will be on call during off-hours.

The caribou and enclosure will be monitored 10-12 h/day during daylight hours. Tasks for monitoring include:

- Daily pen/fence assessment and maintenance/predator patrol:
  - a. shepherds patrol the perimeter of the enclosure, at least twice per day to assess for fence integrity and evidence of predators. Patrols may be reduced to once/day during calving or when animals may be sensitive to disturbance. Any fence issues must be fixed immediately, and each issue documented (what they were and what the fix was)
  - b. inspect and rake 'track traps' if used
  - c. check fence voltage twice daily to ensure it is greater than 5 Kv
  - d. if predators or sign are identified in the area, patrols will occur more frequently
  - e. maintain cameras and view photos/videos - every second day, replace data cards from all remote detection cameras with new blank cards. Using the project laptop computer, view data card files for predators, and save photos. Each morning review photos received on the project laptop that may have been transmitted overnight by the Buckeye remote wireless transmission camera system. If predators have been detected refer to Decision Tree for Response to Predators
  - f. record minimum and maximum air temperature in afternoon from wireless digital thermometer located in a shady spot inside the pen. A temperature data logger will be setup in a shaded location within the pen in order to be able to report out on site conditions,
  - g. update the Shepherd Daily Log and document
    - i. fence condition and repairs,
    - ii. electric fence voltage,
    - iii. predator sign,
    - iv. min/max temperatures and general weather conditions,
    - v. boot wash changes,
    - vi. feed amounts (kg) and discarded (kg), troughs cleaned
    - vii. water system inspection and cleaning
    - viii. scale taring and camera data card viewing
    - ix. visitors
    - x. other relevant information
- Animal observations
  - a. Each animal will be observed at least twice per day, to confirm identity, if they are feeding/drinking, what they are eating and that they are healthy and uninjured
  - b. for cows, at least 1 check must be visual to confirm they are healthy. Other checks may rely on radio-telemetry signals. For calves, both checks must be visual
  - c. a photo of each caribou will be taken and logged at least once every 2 weeks
  - d. any animal health issue will be immediately documented. Photographic records should be collected immediately either using the DSLR camera in video mode or by using a Pan-Tilt- Zoom (PTZ) camera system

- e. for the period two weeks before calving, and one week after the last calf is born, please refer to protocols detailed in Calving
- f. all observations, visual or telemetry-based, will be recorded in an Individual Daily Observation Record documenting:
  - i. when the animal was seen
  - ii. any unusual behavior
  - iii. body condition, and a head-to-toe check
  - iv. food and water intake
  - v. presence, condition, behavior of calf
- Feeding
  - a. Feed is stored in a secure dry location to prevent mold/spoilage and will be protected from rodent access
  - b. Troughs will be cleaned of left-over pellets and other material every 2 days or daily if it becomes wet. Leftover feed is weighed and recorded in the Shepherd Daily Log
  - c. lichen/pellets are provided by entering the pen and filling the troughs approximately every 8-12 hours. Refer to Food and Water in Captivity for transition from lichen to pellets and Quarantine/Hygiene and Visitation procedures. Enough feed is to be provided to ensure there is always feed available,
  - d. medium (i.e. small apple) size clean smooth river rocks are added to the troughs to slow pellet consumption and help prevent 'gulping'
  - e. clean water will always be available when snow is not available. The watering system is to be operational as soon as possible once freezing weather subsides and must be available prior to the last clean snow melting from within the pen
  - f. Water troughs need to be checked daily for function and need to be cleaned every 2 days or sooner if dirty. Muddy areas should be reported and mitigated as soon as possible
  - g. fecal samples will be collected when unusual feces are observed and analyzed by a veterinarian to check for parasite levels

### ***Study Area***

The majority of our work was completed in Nakusp, where the Caribou Pen is located, and Aqam Reserve where planning, preparation, engagement and lichen collection were completed.

### ***Results and Outcomes***

The results and outcomes for 2023 were successful. For both the Caribou and the Shepherds. The initial caribou capture number was 10 mature females, 4 yearlings and from those 10 mature females, 8 calves were born. In one year were able to nearly double the herd population.

During that time, our pen shepherds had the chance to be involved with and oversee integral daily care decisions of the caribou and calves. This gave Ktunaxa a voice regarding stewardship and engagement. We were able to include the Aqam school in things such as lichen collection (staple caribou food) and conservation teepee pole ceremonies. We were also able to include

the Ktunaxa Nation Land Sector Guardians in the program. They acted as support mentors for the duration of the program.

### ***Recommendations***

We found it challenging to post/hire for shepherd positions without the confirmation of funding. Though we were confident in our ability to secure funding, we know we lost several interested shepherds because they had to move on to guaranteed employment positions while we were still in the process of confirming grants. We know moving forward, it will be less of a challenge to secure funding because there will be successful results from past years as well as proven framework to base the proposals around. Another challenge, on our end with funding was having multiple people from the nation supporting this piece, and though well intentioned, it made it challenging in terms of follow-up and finalizing. So moving forward we would know to stick with one or two individuals.

As we moved forward we also spent time around the subject of bringing in mentees around the calving period. We had mixed input from vets and shepherds as to whether or not that would disturb the calves. In hindsight, we could have had more participants and more involvement during that time, however we now know that would not be an issue at all to bring junior mentees in during that period.

Temperature management and related heat stress were identified as potential issues that could arise during penning. Temperature in the pen was monitored daily for year-to-year comparison, to find correlations between temperature and animal behavior, and to compare to temperatures at weather stations in core caribou habitat. The pen experienced a greater frequency of high temperatures in 2023 compared to the 2022 pen season, but shepherds did not observe caribou displaying any signs of discomfort or heat stress. Cold fronts and periods of rain provided relief for the caribou as well.

Finally, and probably our most contentious issue, was how to support the predator management surrounding the maternity pen. There were a number of opinions on how the part should be handled, sometimes the opinions of those least involved carrying the most weight. Our recommendation moving forward is the pen shepherds have full authority of how to manage that piece as each situation arrives. With input and support from the pen manager, this would be the safest, for the employees involved, as well as the caribou.

### ***Acknowledgements***

We would like to thank The Fish and Wildlife Compensation Program for the financial contribution to the Caribou Maternity Pen. This contribution provided the means necessary to allow Ktunaxa citizens to have a meaningful, consequential part in the project. It created an opportunity to build capacity within the community, as well as provided space for community members, elders and leadership to contribute and get involved in the conservation of wildlife in our traditional territory.

### ***References***

Please see the ALCS report attached for more information.



## Central Selkirk Caribou Maternity Pen: 2023 Summary

### Background

The Central Selkirk Caribou Maternity Pen project was developed by the Arrow Lakes Caribou Society (ALCS) to support the recovery of the Central Selkirk herd of Southern Mountain Woodland Caribou. The pen is located in the Kuskanax Creek drainage near the Nakusp Hot Springs, approximately 10 km northeast of the Village of Nakusp, B.C. The pen site was selected based on its elevation (875 m), variable terrain, suitable old cedar-hemlock forest, and accessibility. Pen construction began in fall 2019 and was fully completed in winter 2022 with the help of many volunteers, in-kind contributions, grant funding, and support from the Provincial Caribou Recovery Program. The maternity penning program began operating in 2022. The ʔaq'am Community managed the shepherding duties at the pen for the first time in 2023.

### Capture

At the time of capture in March 2023 the Central Selkirk herd contained only nine adult females. Because of this low number, it was necessary to capture all the females in the herd in order to maximize calf recruitment.

Captures occurred on March 28, 2023 from 8 am to 2 pm. Two adult females and one wild-born female yearling were captured near Lake Creek on the northeast side of Trout Lake and placed in the pen for the first time. Seven adult females, three pen-born female yearlings, and one pen-born male yearling were captured on the south side of the Trout Lake-Lardeau River drainage. One female calf regurgitated during transport to the pen and died of acute pulmonary arrest. One adult female was captured from the South Columbia herd range near Revelstoke. She was the only caribou remaining in the South Columbia herd and was placed in the maternity pen as a soft-release site to allow her to join the Central Selkirk herd.

The captured animals' body condition varied; the caribou from the Lake Creek area had poor to fair body condition, the caribou from south of Trout Lake had fair to good body condition, and the South Columbia cow had poor body condition. Serology tests later showed that nine out of ten adult caribou were pregnant. As expected, the South Columbia cow was not pregnant given that there was a high likelihood she was geographically isolated during the rutting season. Three cows were fitted with new GPS/VHF radio collars and ear tags, while the rest of the adults kept their collars and ear tags from 2022. The wild-born yearling female was fitted with one ear tag. Calf collars were removed from the pen-born yearlings and they were not fitted with adult collars or ear tags, but they each had a single ear tag from being captured as calves in the pen in 2022.

### Pen Operations

The Kuskanax Forest Service Road (FSR) partially borders the maternity pen and is used by recreationalists throughout the year. ALCS and local recreational groups developed a Road Access Plan

to mitigate impacts of road use on the caribou during penning season. A gate was installed on the FSR, which could be locked during sensitive times at the pen (e.g., immediately after capture and during calving). Since 2022, signage was improved at the gate and along the FSR to reduce unwanted foot traffic on the FSR and around the pen. Documented traffic was much lower in 2023 compared to 2022, but the FSR was still regularly used by recreationalists when the gate was unlocked. No issues arose in 2023 from the use of the FSR.

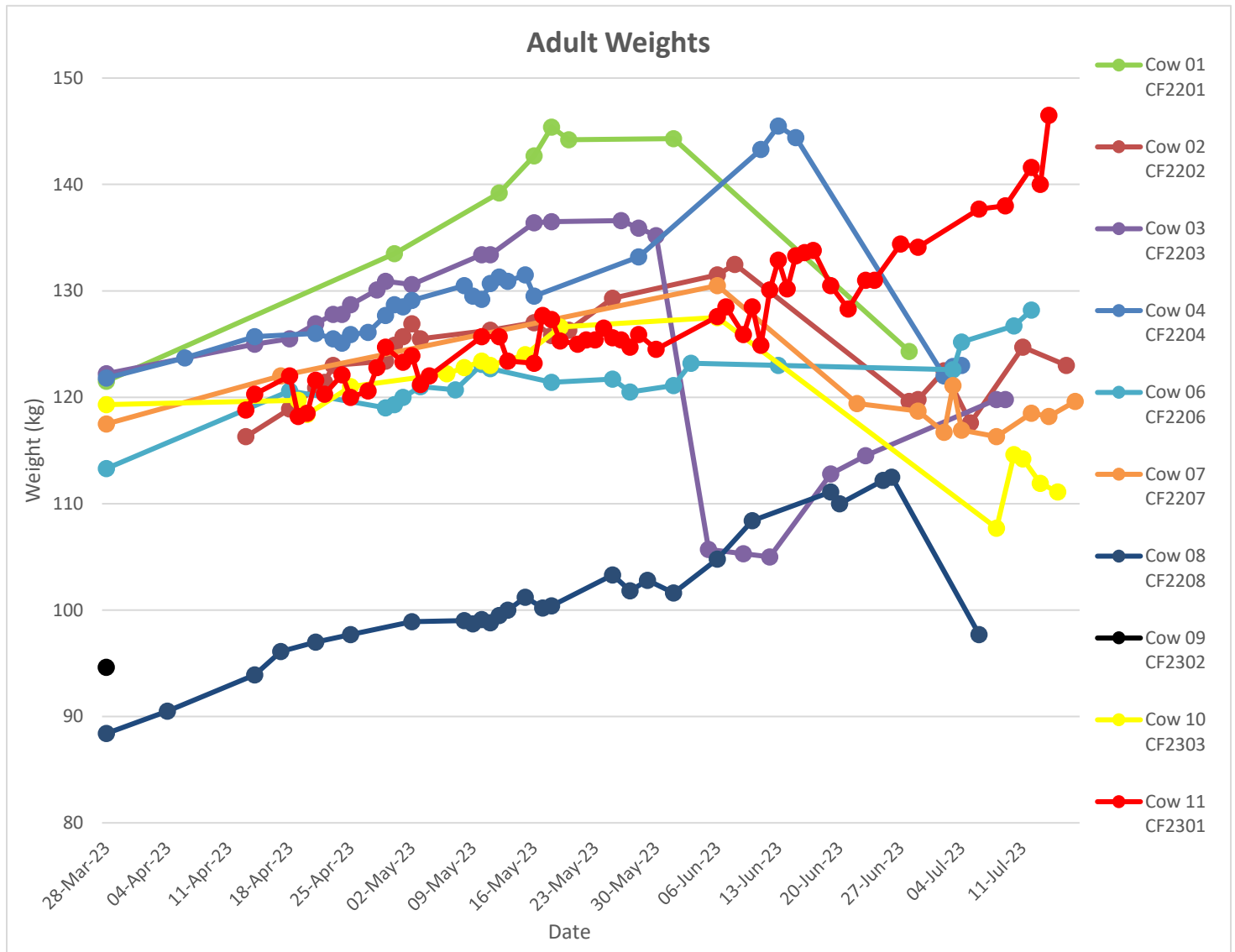
ALCS developed a digital pen data form using SNAP! software, which made data management easier and allowed for off-site access to data in real-time by veterinarians and researchers. Two shepherds performed the daily duties of monitoring the animals, feeding twice a day, cleaning the feeding area, patrolling the pen perimeter, and maintaining the pen. ALCS volunteers also supported the project by performing shepherding duties and helping with pen maintenance. A wildlife veterinarian and veterinary technician were on staff for three weeks during the calving period to perform neonatal examinations and provide any necessary veterinary intervention.

Both the pen fence construction and the remote camera surveillance system were very effective in safeguarding the animals. There were a few sightings of black bears and cougars near the pen. One black bear had to be euthanized. Caribou feed and other attractants were no longer left outside of the locked storage container for any period of time. Increased human presence and cougar hounds were used to haze the cougar that had been heard and seen near the pen. One grizzly bear was recorded on the surveillance camera at the FSR gate. Shepherds didn't observe any increased stress or agitation in the caribou by the presence of potential predators outside of the pen.

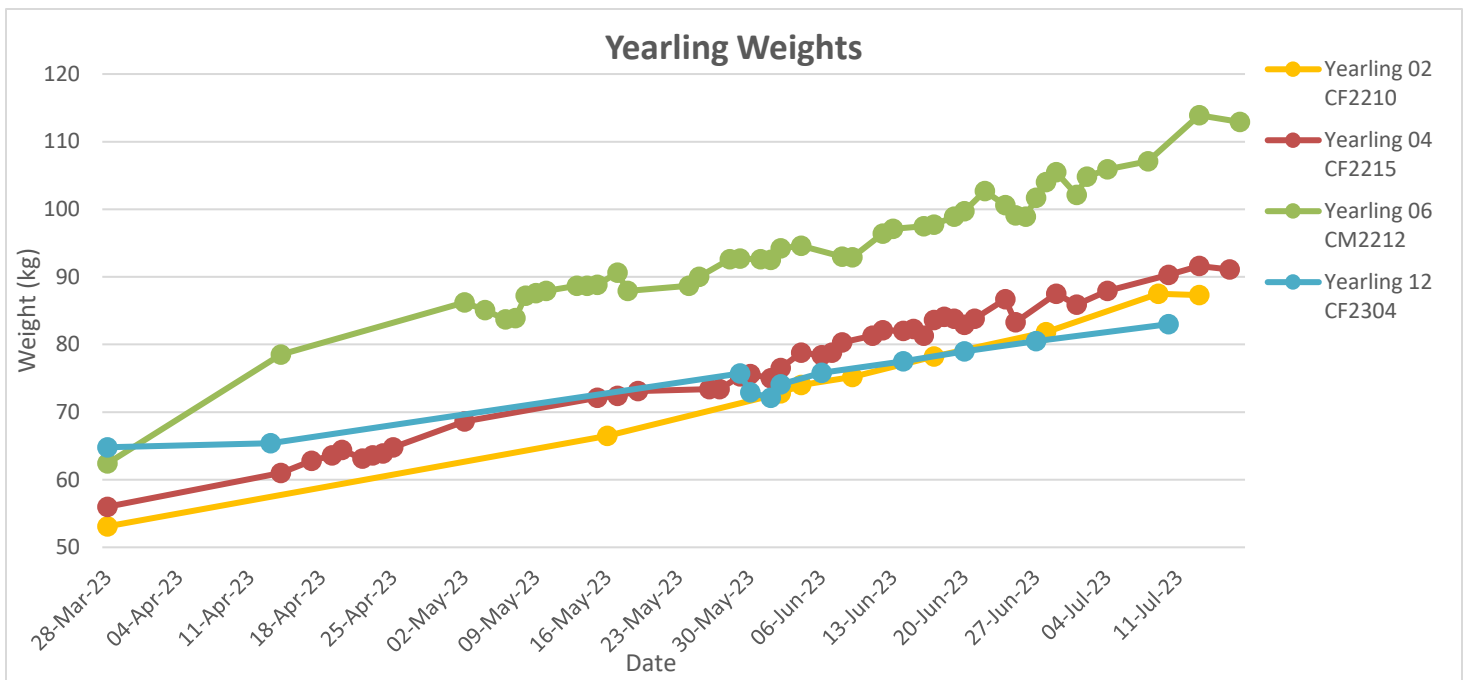
Temperature management and related heat stress were identified as potential issues that could arise during penning. Temperature in the pen was monitored daily for year-to-year comparison, to find correlations between temperature and animal behavior, and to compare to temperatures at weather stations in core caribou habitat. The pen experienced a greater frequency of high temperatures in 2023 compared to the 2022 pen season, but shepherds did not observe caribou displaying any signs of discomfort or heat stress. Cold fronts and periods of rain provided relief for the caribou as well.

One large snow pile and two misting stations were built in the pen to provide relief from summer heat. The snow pile was made larger than in 2022 after how popular it was with the penned animals. Covering the snow pile in bark mulch preserved it through the whole penning period. The caribou were observed bedding and standing near the misters, where the ambient temperature was lower than in the rest of the pen. The caribou were frequently seen lying on the snow and eating it once the snow in the rest of the pen had melted.

The platform scale system allowed shepherds and veterinarians to successfully track the weight of most caribou and provided valuable health information throughout the penning season. The caribou's weights were recorded only when they fully stepped onto the scale. The data shows steady weight increases for all animals, but the frequency of data points varies based on how often each individual stood on the scale platform (Figures 1-3).



**Figure 1:** Adult weights through the penning season. The first weight for most adults was recorded during capture processing on March 28<sup>th</sup> and the following weights were recorded by the platform scale system. Each animal gained weight while pregnant, dropped weight immediately after calving, and began to gain weight again afterwards.



## Calving

The calving season began approximately a week later than last year. Seven males and one female were born in the pen between June 2<sup>nd</sup> and July 1<sup>st</sup>. All but one animal underwent a neonatal examination at 24-36 hours of age during which they were examined, sexed and identified with a numbered ear tag. Calves were not equipped with radio collars. The female calf evaded capture, but appeared healthy. Six of the seven males were healthy and weighed 8.2-11.9 kg at the time of their examination. The healthy calves gained weight steadily. They were observed browsing, eating pellets and lichen, and drinking water from the stream and water trough. The dams of the oldest calves had started to wean their calves by the time of release.

The youngest male calf required intensive veterinary care. He was born to the only 2-year-old cow approximately 1 month after the oldest calf had been born. During the neonatal examination, he was bright but weak and weighed only 4.4 kg. A veterinarian was not present during the examination. During the next few days, the pair was seen a few times and the calf was occasionally seen nursing. On July 5<sup>th</sup>, the calf was found lying on the snow pile, moribund and cold to the touch. He was immediately taken to the local veterinary clinic where he was diagnosed with failure of passive transfer, severe dehydration, and hypothermia. Ungulates are not born with a fully developed immune system and must drink colostrum during the first days of life to build an immunity and survive. Either the dam did not produce sufficient colostrum, lost her colostrum to other calves or yearlings, or did not nurse her calf appropriately. Over the next few days, the calf was treated with plasma transfusions, fluid therapy, antibiotics and other supportive treatments. On July 9<sup>th</sup>, the calf was healthier and an ultimately unsuccessful attempt was made to reunite the calf with his dam. The calf could have stayed within the pen and be bottle fed, but he proved to be too weak to maintain his own body temperature. Maternity pen managers, veterinarians, and government wildlife biologists collectively established that his chances of survival in the wild were extremely low given the imminent release of the rest of the caribou and that it was best to take him to a wildlife rehabilitation centre in the short-term. The calf was transferred to the BC Wildlife Park in Kamloops on July 13<sup>th</sup> where he continues to do well.

## Release

All cows and calves were released from the pen into their natural habitat at 5:00 am on July 21<sup>st</sup> 2023, after spending 114 days in the pen. The caribou exited the pen shortly after the wall was opened and began travelling upslope. One female yearling was cautious of exiting the pen and didn't leave until two hours after the rest of the group, but travelled in the same direction upslope. GPS collar data showed the group was in the alpine by the afternoon.

The caribou travelled to the same location in the alpine above the pen as they did in 2022. The group spent a few weeks there together before some individuals started to separate and move to other areas within their preferred summer habitat. Some have travelled back to where they were known to frequent in years prior to the maternity pen and the collar data of other animals shows that they are also travelling towards their original range area. It is yet to be determined if the caribou captured in Lake Creek will travel back to that area or if they will stay south of Trout Lake. The Columbia South cow has

been moving with other collared cows since release and seems to have acclimated to the Central Selkirks and bonded with the local caribou well. Overall, habitat use since release has been consistent with their movement in years prior to being placed in the pen.

The Central Selkirk Maternity Pen has now completed two operational seasons, and the project managers and supporters are hopeful for many successful years to come.

