Predator Reduction to Support Caribou Recovery: 2023-2024 Summary

B.C. Ministry of Water, Land and Resource Stewardship

Caribou Recovery Program

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VISION: Conservation and recovery of British Columbia's caribou through excellence in resource stewardship.

Executive Summary

The reduction of predator population densities has been shown to be an effective short-term action for recovering threatened caribou herds when applied in an adaptive management framework. Predator reduction programs require scientific rigour, high standards for humaneness, and ongoing monitoring and assessment. Two new caribou herds were included as recipients of predator reduction treatments in 2024: the Barkerville herd and the Takla herd (delivered collaboratively in partnership with Takla Nation). Aerial-based wolf reduction was applied to 15 of the 60 identified woodland caribou populations in British Columbia. Of those 15 caribou populations, ground-based cougar reduction was applied in two of those herds as well. A total of 248 wolves were removed through aerial shooting and six cougars were removed through ground-based hunting, at a cost of approximately $1.59 million. Wolf reduction targets were achieved across most treatment herds and the efforts are expected to contribute to caribou population stabilization or growth. Targeted removal of cougars from caribou habitat is also anticipated to contribute to caribou recovery in those herds. Monitoring of the caribou population response to predator reductions will continue to occur throughout the year. It is imperative to recognize that in order to achieve long-term caribou population sustainability, habitat protection and restoration must continue to be prioritized and implemented.

Background

Woodland caribou (*Rangifer tarandus caribou*) populations have experienced significant declines in British Columbia (B.C.). The Boreal ecotype is designated federally as 'Threatened' and is 'Red-Listed' provincially, the Northern Mountain ecotype is designated federally as 'Special Concern' and is 'Blue-Listed' provincially, and the Southern Mountain ecotype was recently designated by COSEWIC as 'Endangered' (with at least eight local population units under imminent threat) and is 'Red-Listed' provincially. Unsustainable rates of predation on caribou by wolves (*Canis lupus*) due to apparent competition – defined as an indirect interaction between two or more prey species through a shared predator – is identified as the primary proximate cause of caribou population declines (Seip 1991). The ultimate cause of this interaction is landscape disturbance resulting in high proportions of early seral habitat that support primary prey (i.e., moose, elk, and deer) populations above historic levels, due primarily to forestry (Ehlers et al. 2016). Increased abundance and distribution of primary prey has elevated wolf population densities well beyond the levels that would have occurred in caribou ranges under pre-disturbance conditions. Wolf predation can be further amplified by linear features in caribou habitat that enable wolves to travel efficiently and encounter caribou at higher rates than would have occurred in an undisturbed landscape (Dickie et al. 2017). Throughout most of B.C., wolves are the primary predator responsible for high predation rates on caribou, however, at the southern extent of caribou range, cougar (*Puma concolor*) predation is often a larger contributor to caribou mortality (Kinley and Apps 2001, Wittmer et al. 2005).

The interaction between caribou, predators, and primary prey populations can be managed to benefit caribou in several ways: 1) managing the habitat composition in core and matrix caribou habitat to support less primary prey and predator abundance, 2) actively reducing primary prey populations so the landscape supports less predators, and 3) directly reducing predator populations (Serrouya et al. 2019).

Although landscape-level habitat management is the key to achieving and supporting self-sustaining caribou populations, it may be decades before the benefits of habitat management are attained. Direct management of primary prey populations has less lag time between application and realized benefits, and the direct management (i.e., reduction) of predators has the most rapid effect. The direct management of primary prey or predator populations is considered an interim action and will not address the ultimate cause of caribou population declines if habitat protection and restoration does not occur concurrently. If the management of predators and their primary prey is halted, and the habitat issues have not been addressed, threatened caribou populations are likely to revert into a declining trend towards extirpation.

In order to manage towards the successful recovery of certain at-risk caribou populations, intensive reduction of wolf populations may be required (Seip 1992, Serrouya et al. 2019, Lamb et al. 2024). A five-year pilot project in the South Peace region of B.C. demonstrated the effectiveness of intensive wolf reduction to reverse declines in threatened caribou populations (Bridger 2019). Ongoing research has shown that wolf reduction has been the only recovery measure that has consistently increased population growth when applied as a standalone action (Lamb et al. 2024). The positive effects of predator reduction can be further enhanced when combined with additional short-term recovery actions, such as maternal penning and supplemental feeding (Heard and Zimmerman 2021, McNay et al. 2022, Lamb et al. 2024).

In accordance with the provincial Caribou Recovery Program Interim Aerial Wolf Reduction Procedure (B.C. FLNRORD 2021), proactive wolf reduction continued during this most recent winter of 2023-2024 on a subset of provincial caribou herds (Figure 1). This year's predator reduction activities commenced in January of 2024. Wolves were dispatched by aerial shooting from a helicopter, as it is deemed the most humane and effective method of reducing wolf populations across large geographical areas while reducing

any risk of bycatch. All Ministry biologists and contractors followed the Province's Standard Operating Procedures for Aerial-Based Live Capture and Lethal Removal of Wolves (WLRS 2022). The extent and topography of the areas that must be covered to effectively reduce wolf populations in core and matrix caribou habitat necessitates the use of aircraft. The combination of GPS/VHF radio-tracking collars and aerial shooting to humanely kill wolves has been demonstrated to be an effective method of removing entire wolf packs and reducing the risk of predation to caribou populations (Bridger 2019). The federal and provincial target for wolf densities in caribou recovery areas is less than three wolves per 1000 km^2. To achieve that target, wolf reduction generally aims to remove 70–90% of wolves within a treatment area. Wolves are tracked and lethally removed during the winter months when snow depth concentrates wolves and their primary prey in valley bottoms, and their mobility is limited by snow. Reducing wolves during winter has an additional benefit of providing caribou a reprieve from high wolf predation rates during calving season in the spring (a vulnerable period for caribou cows and their calves). Intensive wolf reduction must occur on an annual basis to account for wolves' high reproductive capability and ability to recolonize rapidly from adjacent areas.

Due to their solitary and reclusive behaviour, cougars cannot be effectively removed using aerial-based methods. Rather, cougars are lethally removed in caribou core and matrix habitat by surveying caribou habitat for cougar sign and tracking those specific individuals using the services of experienced dog handlers.

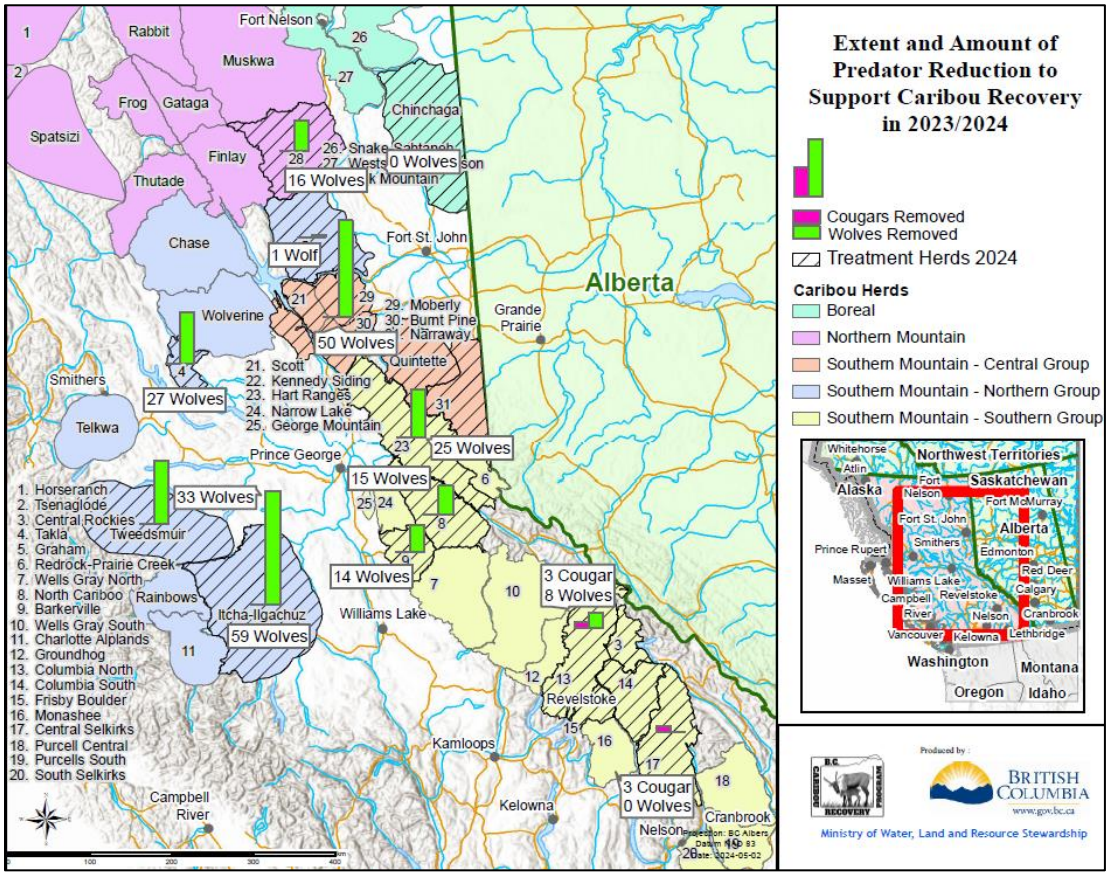

Figure 1. Distribution of predator reduction to support caribou recovery in 2023/2024.

Summary

Provincial

In total, 248 wolves were lethally removed via helicopter-based shooting, and six cougars were removed via ground-based hunting (Table 1). To achieve sufficient wolf reduction levels, aerial crews made multiple reduction attempts over the course of the winter across the treatment areas to reduce wolf densities below 3 wolves/1000 km^2. Preliminary estimates suggest that target wolf densities were achieved across most treatment areas. The total cost of this year's predator reduction activities was $1,591,900. The primary expense was the contracting of helicopter services to support the aerial removal of wolves, while secondary expenses included costs associated with radio collar purchases, fuel, fixed-wing aircraft support, field equipment, accommodations for crews, and the hiring of experienced dog handlers (only in the cougar reduction treatment areas). The activities undertaken were authorized by provincial *Wildlife Act* permits, Animal Care Applications, B.C. Parks Letters of Authorization, and federal Aviation Security Exemptions.

The caribou population response to the 2023-2024 predator reductions will be assessed over the following year into the winter of 2025. Predator reduction efforts continue to show strong indications of population growth through increased calf recruitment (i.e., the number of calves surviving through late-winter) and adult survival rates. Further treatment and monitoring will be ongoing to fully assess the population-level effects over time. As of 2023, a study by Lamb et al. (2024) estimates that Southern Mountain caribou have increased by 52% since 2020. Specific longer-term examples include the Kennedy Siding herd which has tripled in size since 2015 due to a combination of wolf reduction and supplemental feeding, and the Klinse-Za herd which has quadrupled in size since 2015 due to wolf reduction and maternal penning.

Although the rate at which wolves recolonize the treatment areas fluctuates annually, the wolf populations have shown to be resilient, recovering in the treatment areas at rates of 30–100% by the following winter. The ability for wolf populations to expand through reproduction and dispersal reduces any risk associated with broad population-level impacts to wolves in B.C. Wolf recovery and recolonization within and adjacent to the treatment areas will continue to be monitored annually.

Boreal

Chinchaga

The Chinchaga caribou herd is the only Boreal ecotype that currently receives wolf reduction treatments to support population recovery. The Chinchaga herd was selected as a recipient of wolf reduction treatments in response to sharp population declines over the past ten years, and the program was developed in collaboration with the Blueberry River First Nation. The program was initially approved for three years, and subsequently approved for an additional five years in fall of 2021. The winter of 2023-2024 was slated to be the 6th year of wolf reduction; however, due to unseasonable winter conditions, aerial wolf reduction did not proceed this year. Winter conditions were not conducive to tracking, locating, capturing, or removing wolves, with minimal snowfall and frequent melting events.

Table 1. Predator reduction summary and associated costs per caribou herd.

Ecotype and Herd		Wolves Removed	Cougars Removed	Cost[1]
Boreal				
	Chinchaga	0		$0
Northern Mountain				
	Pink Mountain	16		$169,200
Southern Mountain - Central Group				
	South Peace[2]	50		$157,800
Southern Mountain - Northern Group				
	Graham	1		$48,300
	Itcha-Ilgachuz	59		$179,000
	Tweedsmuir	33		$278,400
	Takla	27		$198,700
Southern Mountain - Southern Group				
	Central Selkirks	0	3	$100,000
	Columbia North[3]	8	3	$130,000
	Hart Ranges	25		$177,000
	North Cariboo	15		$60,000
	Barkerville	14		$52,500
Total	—	**248**	**6**	**$1,591,900**

[1] Costs may include helicopter services and fuel, fixed-wing aircraft services, radio-collar purchase, equipment, and accommodations.
[2]South Peace includes Klinse-Za, Kennedy Siding, Quintette, and Narraway caribou herds
[3] Includes portions of Columbia South and Frisby Boulder herds

Following last year's wolf reduction efforts, ongoing monitoring showed the Chinchaga herd had calf recruitment rates (34 calves per 100 cows; 21% calves in population) and adult female survival rates (86% annual survival, based on radio-collared cows) indicative of positive population growth. The Chinchaga caribou herd was declining at approximately 4.2% annually in the years leading up to the initiation of wolf reduction and has since been increasing at approximately 6.7% annually. The minimum count of caribou during calf recruitment surveys has increased in the Chinchaga herd nearly every year since wolf reduction was implemented in 2019 (from 103 to 241 caribou observed).

Northern Mountain

Pink Mountain

The Pink Mountain caribou population is the only Northern Mountain ecotype that currently receives wolf reduction treatments to support caribou recovery. The Pink Mountain herd was selected as a recipient of wolf reduction treatments in response to population declines over the past decades, and the program was developed in collaboration with the Blueberry River First Nation. The program was initially approved for three years, and subsequently approved for an additional five years in fall of 2021. The winter of 2023-2024 was the sixth year of wolf reduction. During the winter's reduction efforts, 16 wolves were removed

through helicopter-based, aerial shooting from a 9,600 km^2 treatment area. Winter weather conditions were unseasonably poor in January through March, making for extremely challenging conditions for tracking and removing wolves. Snow levels were well below average and there were several above-freezing temperature events which resulted in prolonged melting of snow and ice. Despite the conditions, the crew made their best effort at implementing an effective program. The efforts incurred a total cost of $169,200, primarily associated with helicopter services, helicopter fuel, radio collars, and crew accommodations.

Ten wolf packs were encountered, ranging in size from 2–6 wolves, and an average pack size of 3.8 individuals. Two lone wolves were also encountered, one of which was removed, and the other was radio-collared. Following the removal efforts, it was estimated that approximately 9–14 wolves remained within or immediately adjacent to the Pink Mountain treatment area, for a remaining wolf density of 0.9–1.5 wolves/1000 km^2 and a wolf reduction rate of 53–64%. Although the rate of reduction was lower than desired due to the very poor tracking conditions, the resulting wolf density should still contribute positively to caribou population stability or growth. Previous years' caribou monitoring data continues to suggest that this population is on an upward trend, but unfortunately no surveys of this herd were completed in the winter of 2023-2024 due to unfavourable survey conditions. Survival of radio-collared adult females in the population through the year was 87%, which is typical of population stability (assuming average calf recruitment).

Southern Mountain – Central Group

South Peace

The South Peace wolf reduction program includes the Klinse-Za, Kennedy Siding, Quintette, and South Narraway caribou herds. The South Peace herds were selected as recipients of wolf reduction treatments in response to rapid population declines over the past decades. The winter of 2023-2024 was the tenth year of aerial wolf reduction across the South Peace treatment area, which was approved for an additional five years in the fall of 2021. During the winter's reduction efforts, 50 wolves were removed through helicopter-based, aerial shooting from a 21,500 km^2 treatment area. Winter weather conditions were below average for much of the winter; however, the timing of implementation coincided with some optimal snow conditions for tracking and removing wolves. The program incurred a total cost of $157,800, primarily associated with helicopter services and radio collar purchase.

Fourteen wolf packs were encountered, ranging in size from 2–11 wolves, and an average pack size of 4.2 individuals. One lone wolf was also encountered and was radio-collared. It was estimated that nine wolves remained within or immediately adjacent to the South Peace treatment area, for a remaining wolf density of 0.5 wolves/1000 km^2 and a wolf reduction rate of 85%. The rate of reduction, and the resulting wolf density, is expected to contribute positively to caribou population stability or growth. Following last year's wolf reduction efforts, calf recruitment across the South Peace herds was high once again (ranging from 46–70 calves per 100 cows, or 19–28% calves in the population) and survival of radio-collared adult females was also high (ranging from 92–93%). Since the onset of wolf reduction in 2015, the combined South Peace caribou herds have more than doubled in size (increased by 166%), and the Klinse-Za herd specifically has more than quadrupled in size (in conjunction with maternal penning [McNay et al. 2022]), and Kennedy Siding has tripled (in conjunction with supplemental feeding [Heard 2024]).

Southern Mountain – Northern Group

Graham

The Graham caribou herd previously served as the experimental control population to compare wolf reduction efforts in the South Peace to a non-treatment herd. However, it became apparent that the Graham caribou population was declining at a rapid rate in comparison to the treatment populations. Thus, wolf reduction was initiated in 2020, and the winter of 2023-2024 was the fifth year of the program. The program was approved for an additional five years in fall of 2021. During the winter's reduction efforts, however, it became apparent that the winter conditions for tracking, capturing, and removing wolves were extremely poor. Although some attempts were made to implement the program, it was deemed that an effective removal effort could not be achieved and ultimately the winter's reduction efforts were halted. Only one wolf was removed prior to canceling the program for the winter. The program incurred a total cost of $48,300 (prior to being canceled) primarily associated with helicopter services, helicopter fuel, radio collars, and accommodations.

One small pack of two wolves were encountered during the early efforts, and signs of several other packs were observed, but conditions were too poor to attempt removal, or to accurately enumerate the abundance of wolves in the treatment area. Following last year's wolf reduction efforts, aerial surveys in March 2024 reported high calf recruitment rates indicative of positive population growth (48 calves per 100 cows, or 21% calves in the population) and high survival rates of radio-collared adult females (93% survival) throughout the year. The population is estimated to be growing at a rate of 14% annually since the initiation of wolf reduction.

Itcha-Ilgachuz

The Itcha-Ilgachuz caribou population was selected as a recipient of wolf reduction treatments due to an extended period of rapid population declines, primarily attributed to unsustainable rates of wolf predation. Initially this herd was a recipient of a two-year emergency wolf reduction program, undertaken during the 2019-2020 and 2020-2021 winters. During the two-year emergency program, 113 wolves were removed within the wolf treatment area. Following consultation and engagement, a further five years of wolf reduction was approved to support this herd's recovery in fall of 2021. The winter of 2023-2024 was the fifth year of wolf reduction efforts and 59 wolves were removed through helicopter-based, aerial shooting from a 25,540 km^2 treatment area.

Seventeen wolf packs and one lone wolf were detected, with an average pack size of 4.7 wolves and ranging in size between 2–12 wolves. Winter weather presented good wolf tracking conditions and wolf abundance was high in the area. The program incurred a total cost of $211,000, primarily associated with helicopter and fixed-wing services, as well as accommodations for crews. Approximately 21 wolves remained within the Itcha-Ilgachuz treatment area following reduction efforts, for a remaining wolf density of 0.8 wolves/1000 km^2. Within core range for the Itcha-Ilgachuz caribou, a wolf reduction rate of 75% was achieved. An aerial recruitment survey for Itcha-Ilgachuz caribou did not occur in March 2024, although recruitment survey data from March 2023 documented a high proportion of calves in the population at 24.2% – the highest's recorded since the 1980's. It is expected that the winter 2023-2024 wolf reduction efforts will continue to contribute positively to caribou population stability or growth.

Tweedsmuir

The Tweedsmuir-Entiako caribou herd had significant annual population declines (>10% per year) between 2014 and 2019 due to high predation rates by wolves. In response to the herd's decline, the Province implemented a two-year emergency wolf reduction program in the winter of 2020. In the fall of 2021, the program was approved for an additional five years. During the 2023 winter's reduction effort, thirteen wolf packs were encountered ranging in size from 1–8 individuals, with an average pack size of 3.0 wolves. Thirty-three wolves were removed through helicopter-based operations from the 15,785 km^2 treatment area. An estimate of twelve wolves remained within the treatment area, for a remaining density estimate of 0.8 wolves/1000 km^2 and a wolf reduction rate of 73%. Weather conditions were challenging throughout the winter due to warm conditions, infrequent snowfall, and lower than average snowpack.

The program incurred a total cost of $278,400, primarily associated with helicopter services, fixed-wing services, and radio collar purchase. Following two years of wolf reduction efforts in Tweedsmuir-Entiako, the population growth rate (lambda, λ) changed from λ= 0.89 (2014-2019; Demars and Serrouya 2019) pre-wolf reduction to λ=1.17 (2020-2022) post-wolf reduction. Additionally, in October of 2023, the largest minimum count since 2006 was recorded at 241 caribou.

Takla

The Takla caribou herd has declined by approximately 75% over the past two decades, with an estimate 31 individuals remaining as of 2023. Due to these ongoing declines, Takla Nation and the Caribou Recovery Program collaborated to develop a wolf reduction program to prevent extirpation of the Takla herd. Takla Nation is leading the recovery actions for this herd, including the implementation of the aerial wolf reduction efforts. The program has conditional approval to proceed for three years. The winter of 2023-2024 was the first year of implementation, and 27 wolves were removed across the 10,360 km^2 treatment area. The program incurred a cost of $198,700 primarily associated with helicopter costs, crew rates, and accommodations. Weather conditions were suboptimal for tracking and locating wolves, as snowpack was very low, and most rivers and lakes did not freeze until late-January.

Local reports suggest an additional 74 wolves were removed via Indigenous and licensed hunting and trapping. It was estimated that the pre-reduction density of wolves in the treatment area was 14 wolves/1000 km^2, and that 44 wolves remained at the end of winter, for a post-reduction wolf density estimate of 4.4 wolves/1000 km^2. A full census of the caribou herd did not occur during winter of 2024, as survey conditions were too poor. A calf recruitment count was obtained, and calves made up only 8.3% of the population. A positive response in the caribou population to Year 1 of wolf reduction would not generally be detectable until the following year, so attempts will be made to conduct a full caribou population census in winter of 2025.

Southern Mountain – Southern Group

Central Selkirks

The Central Selkirks caribou herd is the southernmost extant caribou population in B.C. This herd is at imminent risk of becoming functionally extirpated, thus an emergency effort to reduce both wolves and cougars was initially implemented through 2019-2020 to 2020-2021. The program was approved for an additional five-year period in fall of 2021. During this winter's reduction efforts, there were no wolves

removed across the 2,872 km^2 treatment area. Tracking conditions were favourable across the herd area for much of the winter but no sign was detected during removal efforts. However, three cougars were removed through ground-based, targeted removal within caribou habitat. The program incurred a total cost of $90,000 primarily associated with helicopter services and dog handlers. Based on a pre-removal track survey and in combination with observations during helicopter removal efforts, four small packs, averaging 1.5 wolves per pack, were documented within the treatment area. As of March 2024, approximately six wolves remained within the Central Selkirks treatment area, for a remaining wolf density of 1.4 wolves/1000 km^2.

Since predator reduction began, there have been no documented adult female caribou mortalities as a result of cougar or wolf predation. This result is expected to contribute positively to caribou population stability or growth, notably in combination with the continuation of Year 3 of the maternal penning project in spring of 2024.

Columbia North

Wolf reduction has been underway for the Columbia North caribou population since 2017 as a recovery measure under the Mountain Caribou Recovery Implementation Plan and includes portions of the Columbia South and Frisby Boulder herds. Targeted, ground-based cougar reduction has been implemented more recently to further the recovery efforts. The program was approved for an additional five years in fall of 2021. The winter of 2023-2024 was the eighth year of wolf reduction, and fifth year of cougar reduction. During this winter's reduction efforts, eight wolves were removed through helicopter-based, aerial shooting from a 6,911 km^2 treatment area. Tracking conditions were favourable during the removal period, and crews felt confident that all wolves detected were removed. Additionally, three cougars were removed through ground-based, targeted removal within caribou habitat. The program incurred a total cost of $130,000 primarily associated with helicopter services and dog handlers.

Since 2018, annual population monitoring of caribou through recruitment surveys and censuses have documented consecutive years of population growth. The rate of predator reduction, and the resulting wolf density, in addition to the targeted removal of cougars, is expected to continue to contribute positively to caribou population stability or growth.

Hart Ranges

The Hart Ranges caribou population was selected as a recipient of wolf reduction treatments due to rapid population declines recorded over the past ten years. The Hart Ranges is the largest population designated as Southern Group of Southern Mountain Caribou and is expected to yield the largest population returns in response to wolf reduction efforts. The 2023-2024 predator reduction program was the fifth year of a seven-year program approval, during which reduction efforts consisted of wolf removal through helicopter-based aerial shooting within a 13,730 km^2 treatment area. A total of 25 wolves were removed from the Hart Ranges treatment area this year. Weather conditions, particularly throughout the month of January, facilitated effective and efficient tracking and removal efforts. The program incurred a cost of $177,000 for the season, primarily associated with helicopter/contractor services and radio-collar purchase.

An estimate of five wolves remained within or immediately adjacent to the Hart Ranges treatment area, for a remaining wolf density of 0.4 wolves/1000 km^2 – well below the maximum wolf density threshold of 3 wolves/1000 km^2 recommended for caribou population recovery. This equated to a wolf reduction rate of 83%. Mark-Resight surveys were flown for caribou within the Hart Ranges in March 2024 to estimate population size and trend within the herd. Preliminary results indicate an increasing growth rate for the Parsnip and Hart South of 23% and 8%, respectively. This equates to an overall population estimate of 628

individuals in the Hart Ranges (with 21% calves observed), suggesting a continued increase from prior years' survey results. Additional caribou population surveys within the range are currently planned for March 2025.

North Cariboo Mountains

Wolf reduction was initiated in the North Cariboo Mountains subpopulation in 2022 in response to continued caribou population decline. The subpopulation declined from 284 to 187 individuals between 2002 and 2018. Only 145 caribou were estimated in the North Cariboo in 2020. The North Cariboo Mountains herd is one of the larger remaining subpopulations of Southern Group of Southern Mountain caribou and is adjacent to ongoing wolf reduction areas in the Hart Ranges. In 2020, a total of 46 wolves in six packs were estimated in the North Cariboo range (7.7 wolves/1000 km^2) based on results of a winter snow track survey. A total of 15 wolves were removed from the North Cariboo Mountains treatment area in 2024 – the 3rd year of wolf reduction in the area. It was estimated that just one wolf remained within the treatment area following the reduction efforts, for a remaining wolf density of 0.1 wolves/1000 km^2. The program incurred a total cost of $60,000 primarily associated with helicopter services and radio-collar purchase.

In March 2024, a caribou calf recruitment survey was flown to estimate the number of calves in the population. Poor survey conditions did not facilitate a Mark-Resight survey at the time, so no population estimate could be derived at the time. Based on the survey results, the North Cariboo population was composed of only 11% calves, which is lower than expected following the previous winter's wolf reduction efforts. A subsequent caribou population survey is planned for the North Cariboo in March 2025, to better understand the effect of predator reduction on this caribou population.

Barkerville

The Barkerville caribou population was selected as a recipient of wolf reduction treatments due to a continued period of population declines, primarily attributed to unsustainable rates of wolf predation. The survival rate for radio-collared female caribou in 2022-2023 was only 64.2%, which is considered very low. The population had been declining at approximately 17% annually between 2020-2023. Following consultation and engagement in the fall of 2023, a two-year wolf reduction program was approved to support this herd's recovery. The winter 2023-2024 was the first year of wolf reduction for this subpopulation and 14 wolves were removed through helicopter-based, aerial shooting from a 5,882 km^2 treatment area.

Seven wolf packs were detected ranging in size between 2–6 wolves, with an average pack size of 3.9 wolves. Wolf tracking conditions were generally good at the time of the wolf reduction efforts, although were preceded by extended periods of low snow coverage in the area. Wolf abundance was moderate in the treatment area, with a pre-reduction density estimate of 4.6 wolves/1000 km^2. The program incurred a total cost of $53,000, primarily associated with helicopter services. Approximately 13 wolves remained within the Barkerville treatment area following the reduction efforts, for a remaining wolf density of 2.2 wolves/1000 km^2. An aerial recruitment survey for Bakerville caribou is planned to occur in March 2025. It is expected that winter 2023-2024 wolf reduction will contribute positively to caribou population stability or growth.

Conclusion

Ongoing monitoring continues to show the utility of predator reduction as an effective management action for recovering at-risk caribou populations. Public engagement and consultation with Indigenous communities were conducted in the fall of 2021 to seek an additional five-year approval to continue predator reduction efforts across 13 of B.C.'s 60 caribou herds. Two additional herds were included for wolf reduction treatments, following consultation and engagement in the fall of 2023. The B.C. Caribou Recovery Program is committed to implementing and monitoring a rigorous and adaptive predator reduction program to support caribou recovery while other, longer-term solutions are applied. Despite some suboptimal weather conditions in several treatment areas, and some lower removal rates, the predator reduction activities undertaken during the winter of 2023-24 were largely successful and are expected to contribute positively to caribou population recovery.

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