



## MEMORANDUM

TO: Tim Peltier, Regional Supervisor

FROM: Todd Rinaldi, Regional Management Coordinator

DATE: November 2025

SUBJECT: 2025 Spring MCH Intensive Management Activities

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### Introduction

In 2022, the Board of Game (BOG) directed the Division of Wildlife Conservation to conduct predator removal activities to benefit the Mulchatna Caribou Herd (MCH) as a component of the intensive management (IM) of Caribou (*Rangifer tarandus*) in Game Management Units (Units) 9B, 17, 18, 19A, and 19B, with the first year of department predator removal occurring in May 2023. The predator control objective is to lethally remove all wolves and bears from the western segment of the West Mulchatna Caribou Herd (WMCH) calving grounds and does not specify numerical reduction goals for predator populations (ADF&G 2023). The WMCH predator control efforts are intended to increase calf survival to support population growth by reducing predation of newborn calves. The calving grounds occupy a small portion of the Game Management and IM units, which have robust predator populations, ensuring removal will be sustainable at the unit level.

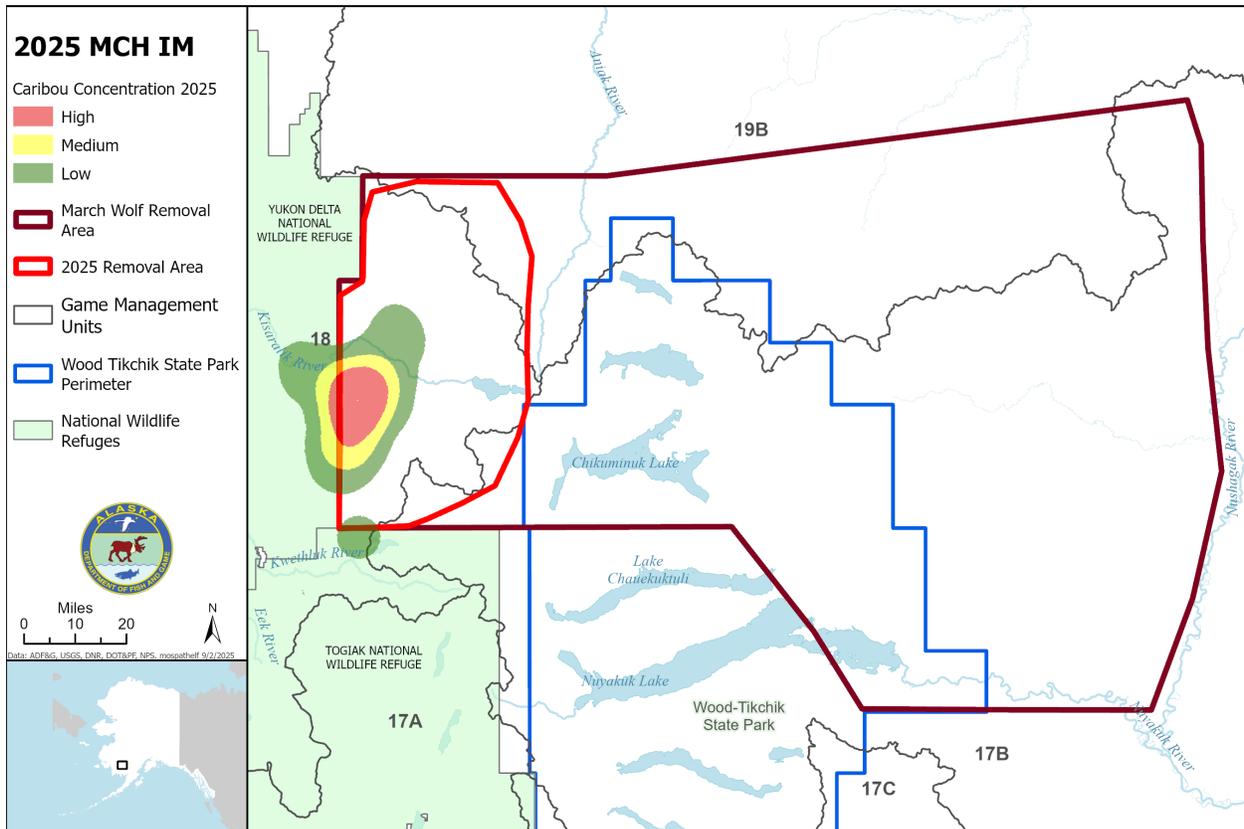
There are two predator removal periods that are designed for optimal detection of target predators and to coincide with the caribou calving period. The early period in March or April focuses on preventing wolf predation by tracking and removing wolves before WMCH initiates their migration from winter range to calving range; the area encompasses both current and recent calving grounds. The May period encompasses current WMCH calving grounds while caribou are actively calving with the objective of lethally removing all bears and wolves to increase calf survival when calves are most vulnerable; this is achieved by removing predators two weeks before and after peak calving.

The WMCH has historically initiated their eastbound spring migration around 10 May from their wintering grounds near the lower Kuskokwim River towards the upper Tikchik Mountains.

Between 2013 and 2022, the WMCH migrated to calving grounds within the western portion of Unit 17B near the Tikchik River. The WMCH calving grounds have slowly and incrementally shifted northwest over the same period. In 2023 there was a major shift in WMCH calving grounds to the upper Kisaralik drainage in eastern Unit 18 where they have continued to calve since then (Figure 1). This year, the WMCH initiated its eastward migration in late April, an earlier movement than previous years, and arrived on the border of state lands around 25 April.

Methods

The 2025 removal occurred over 2 periods with a broadened search area during the first period of 11–14 March (3,700 mi<sup>2</sup>; Figure 1) and the primary period of 10 May–5 June 2025 (530 mi<sup>2</sup>; Figure 1). Due to a court order, lethal operations by the department ceased on 14 March and 12 May, after three days of lethal removal in both removal periods. As a continuation of the department’s caribou-calf, cause-of-death study beginning in 2011, calves were collared and monitored through the duration of the program. Nonlethal minimum counts of brown and black bears, and wolves were conducted within the calving grounds from 22 May–4 June.



**Figure 1.** Mulchatna Caribou Herd intensive management predator removal areas, and distribution of 32 GPS radiocollared, Mulchatna caribou herd adult females during 10 May–5 June.

## March

In 2025 the early wolf-removal period occurred in March, which was approximately 1 month earlier than in 2024 to capitalize on snow cover. Each day, three aircraft (R44 helicopter; C185 and PA-18 Super Cub fixed-wings) searched for wolf tracks, kills, or wolves. The addition of the early wolf-removal period is an expansion from the first year of the program as tracking wolves in late May was difficult. Historic and recent pack locations and den sites were used as a starting point for search efforts. If wolves were located by fixed-wing, locations were relayed to the helicopter, while another fixed-wing followed any additional individuals from a pack. Two department staff were on board the helicopter, one person was an additional observer, and removed the door prior to pursuing wolves, while the second department staff was the gunner. Shotguns with 2<sup>3</sup>/<sub>4</sub>"-00 buckshot were used to lethally remove wolves. After completion of any wolf removal, all wolves were sealed with CITES (Convention on International Trade in Endangered Species) locking tags. Wolves removed were distributed to a local skinner for processing.

## May–June

Each day, aircraft (R44 helicopter; C185 and Maule M6 fixed-wings) searched for predators on the calving grounds and young calves for capture. Two department personnel were in the helicopter, one designated for calf capture, and the other for predator removal. Permits, including special exemptions and commercial use for helicopter landings are required within Wood-Tikchik State Park (WTSP) and were acquired in March, although the department did not conduct any removal activities, capture events, or dye marking within the state park.

## Predator Removal and Marking

When bears or wolves were located the helicopter allowed for quick and humane removal. The field crew salvaged the hide and skull of bears for sealing when safe to do so. Wolf hides were not salvaged due to poor fur quality this time of year. When possible, a tooth was collected from bears for aging and hair was collected for possible genetic and isotopic analysis.

Three 55-gallon fuel drums were staged near the calving grounds on state land with a small battery, portable pump and spill containment bib. An additional fixed-wing (Maule MX-7) was utilized three times over the duration of the project to haul fuel to keep primary aircraft focused on search and telemetry efforts.

Through the same search intensity and methods described above, Department staff marked bears with temporary oil-based dye to assess the number of individuals or unique independent bears on the calving grounds. Department staff utilized the helicopter to position themselves and create a unique dye pattern using marking pellets (Nelson Paint Company) on the bear for individual identification. Bear location, pelage and size, and known or likely sex were recorded along with the coloration, number, and location of each dye mark. If the bear had dependent bears associated with it the size, color, and number of cubs were noted but cubs were not marked. Bear marking was conducted in accordance with IACUC #0148 2025 037.

### Caribou Calf Capture

Calf captures were based on Vaginal Implant Transmitter (VIT) expulsion from marked cows, allowing the Department to proportionally deploy calf collars in relation to the number of calves being born each day. Chase and handling times of calves were not to exceed 20 seconds. Scent control was addressed by wearing Tyvek suits and fresh rubber gloves, and no removed predators were handled or placed inside the helicopter prior to captures. Radio collars were stored in Zip-loc bags with odiferous vegetation from the area. Once caribou calves were captured by hand they were weighed, sexed, and fitted with a VHF radio collar. Collars from mortalities were redeployed after intensive cleaning and scent control if in good working condition. Calves were radiotracked daily for survival and mortality investigations. If staff encountered a calf carcass it was collected and sent to the veterinarian for a necropsy.

### Results

A total of 13 predators (11 brown bears and 2 wolves) were removed in the March and May 2025 removal efforts. Removal activities, calf collaring and dye marking occurred on state lands in Unit 17B, 18, and 19B. Eight of 26 days were abbreviated due to efforts solely focusing on calf collaring and necropsies during the peak of calving. Weather precluded all efforts for 3 days total. The remaining effort included caribou calf capture and bear marking.

### March

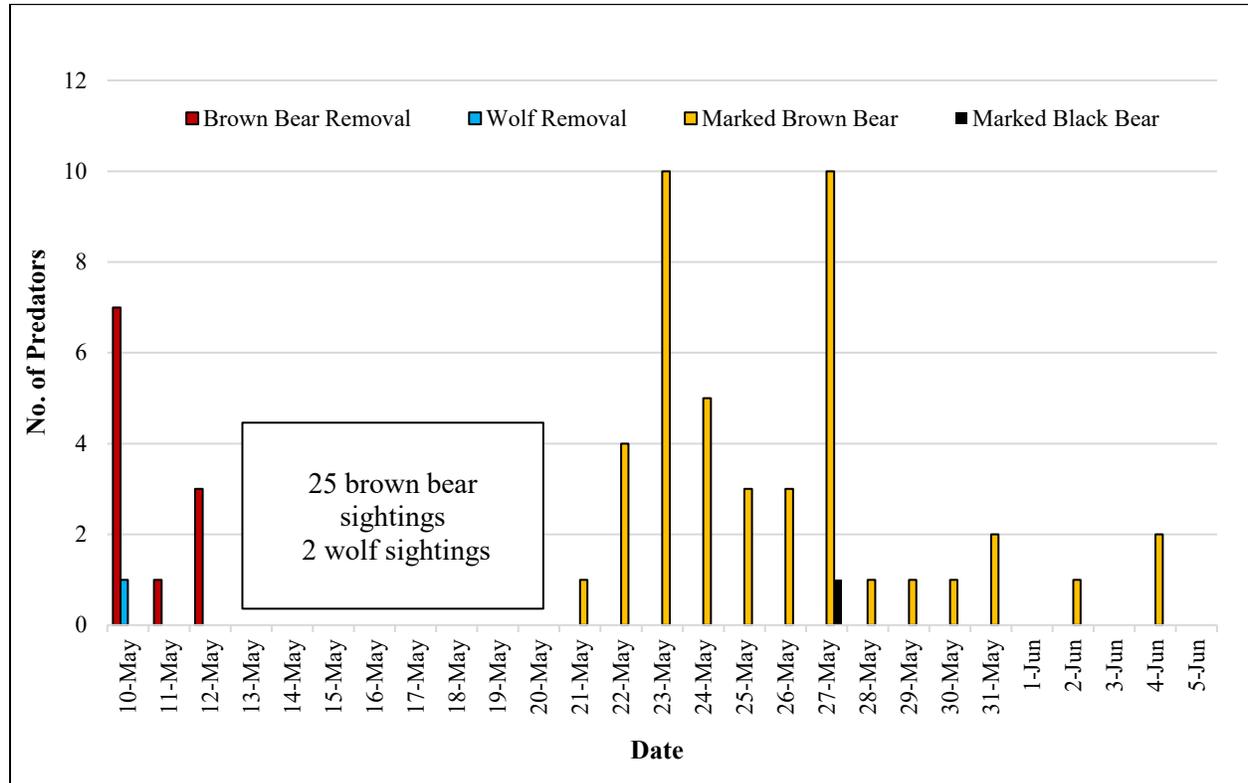
One female wolf was removed from the southwestern portion of Unit 19B across three days of effort. Tracking conditions were poor in the southern portions of the removal area but improved as we searched north. Tracks of a pack of six were first detected within the removal area and tracked to the Kipchuk River outside of the removal area.

### May–June

#### Removal and Marking

Effort included three of 27 scheduled days for lethal removal. A total of 11 adult brown bears (6 females, 5 males) and 1 female wolf were removed during this period (Figure 2). All brown bear skulls were recovered. Ten out of 11 brown bear hides were salvaged which took an average of 30 minutes to skin out. More specific ages will be available after cementum age tooth analysis is complete. The single bear's hide that was not salvaged was due to poor hide quality. None of the animals removed were marked (e.g., radiocollar, lip tattoo, ear tag) or showed any evidence of being handled previously. The single wolf removed was not salvaged but was checked for evidence of breeding. Subsequent checks for additional wolf tracks that may have visited the mortality site were also done. Hides were shipped as often as possible to Anchorage and picked up by ADF&G Region IV staff from Palmer to be distributed to taxidermists. Some bear skulls were retained for educational purposes, otherwise they were destroyed. The meat of 2 bears was salvaged and distributed to two Unit 18 communities.

Department staff dye-marked 45 independent brown bears, observed 11 brown bear cubs, and marked 1 black bear between 21 May and 4 June (Figure 2). An additional 25 bears and 2 wolves are reported as seen between 13 and 19 May (Figure 2), but this was after removal efforts ceased and before bear marking began. As such, it is unknown if these 25 bears were later marked, left the removal area, or other. During the marking period staff encountered previously marked and unmarked bears daily and recorded locations of each. The dye used started to fade within a couple weeks. The individual bears remained identifiable and unique throughout the marking period. Colors that showed up best were purple, blue, and pink.



**Figure 2.** Independent predators encountered by date; lethal removal occurred from 10–12 May and marking and detection efforts from 21 May–4 June.

### Calf Captures and Mortality Investigations

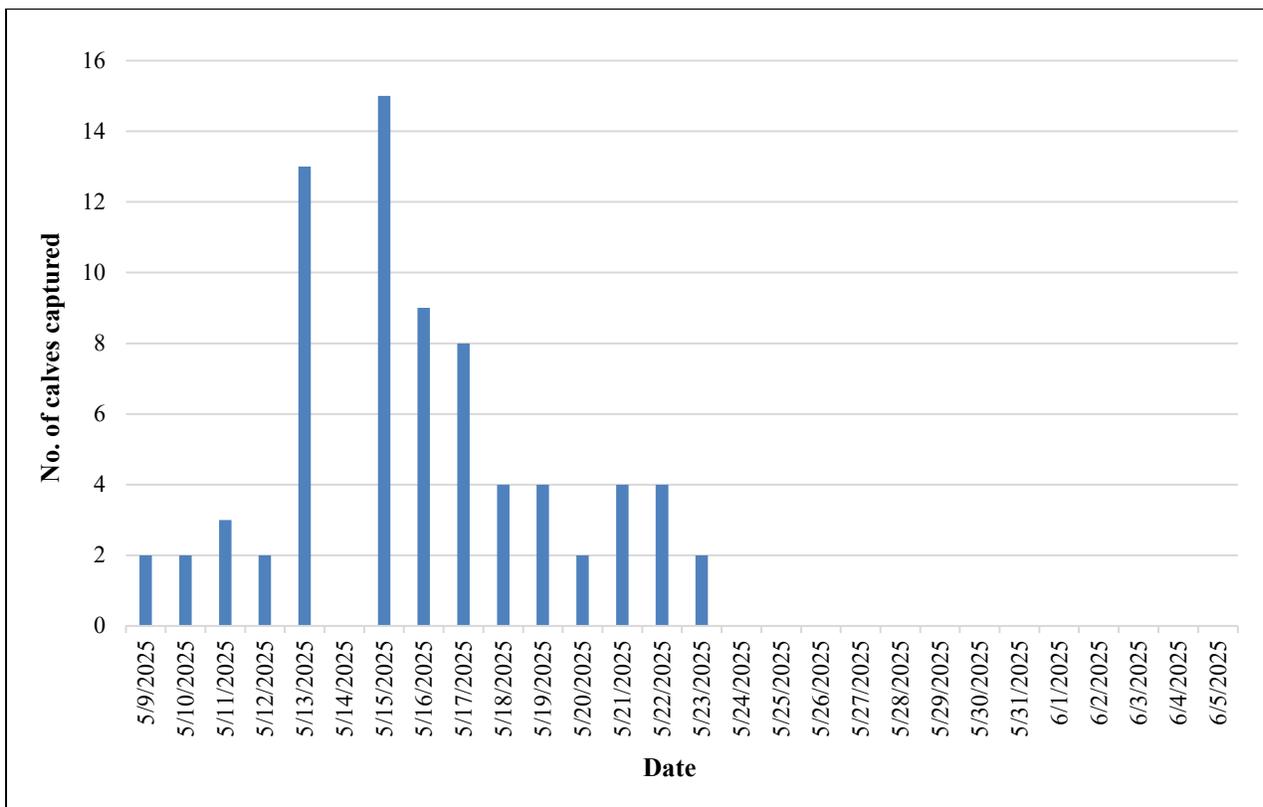
Seventy-four calves were collared (30 females, 42 males, and 2 unknowns) on the WMCH calving grounds between 9 May and 23 May (Figure 3). Of the 74 calves collared, 16 died (78% survival, 22% mortality) of various causes with the first mortality detected 12 May, and the last mortality detected during the removal period was 20 May, although monitoring occurred through 4 June.

Calf carcasses were shipped as often as necessary to department veterinary staff in Anchorage or Fairbanks for necropsy. Of the 74 calves collared, proximate cause of death was 9.5% ( $n = 7$ ) by bear, 3% ( $n = 2$ ) by wolf/canid, 9.5% ( $n = 7$ ) by non-predation causes. Clinical necropsies were inconclusive for 2 calves assigned to bear predation in the field (2 of 7). One calf mortality which appeared to be bear predation in the field was confirmed through subsequent necropsy to have died of starvation before being scavenged by bear(s).

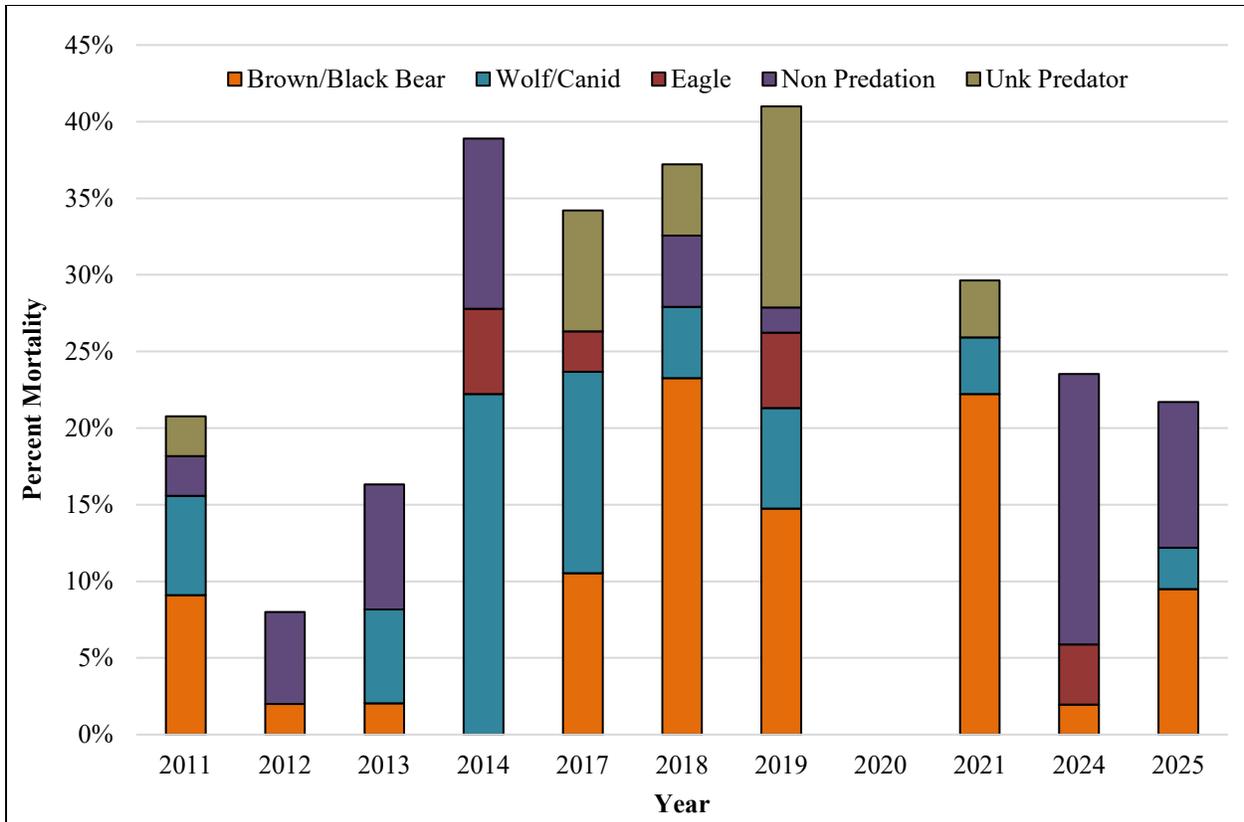
In addition to the 16 collared calf mortalities, an additional 9 uncollared calf carcasses were collected and sent for necropsy. From the uncollared calves, 11.1% ( $n=1$ ) was confirmed as bear mortality, 33.3% ( $n=3$ ) by wolf/canid, 44.4% ( $n=4$ ) by non-predation, and 11.1% ( $n=1$ ) that could not be determined.

The non-predation causes of mortality for both collared and uncollared calves were primarily starvation. In collared calves 5 of the 7 non-predation mortalities were due to starvation (71%) and 2 from trauma (29%). In uncollared calves 3 of the 4 non-predation mortalities were from starvation (75%) and the fourth mortality was a stillbirth (25%).

There was no detection of *Brucella spp.* in calf carcasses as determined through PCR analysis of lymph nodes and bone marrow (Colorado State Vet Lab). Additionally, tissue was submitted from lung or lymph node for the Bovine Respiratory Disease PCR Panel and *Mycoplasma ovipneumoniae* PCR (Kansas State Vet Lab), and ear skin for bovine viral diarrhea virus PCR (Wyoming State Vet Lab), all were reported as negative. Results of bone composition and *Erysipelothrix rhusipathiae* PCR have been submitted and results are pending.



**Figure 3.** Western Mulchatna caribou herd calf captures by date, spring 2025.



**Figure 4.** Western Mulchatna Caribou Herd collared caribou calf proximate cause of death 2011–2025.

### Discussion

This year marked the third year of predator removal efforts for the Mulchatna caribou herd but was significantly constrained by legal challenges. Following the cessation of removals, the department shifted its focus to monitoring efforts, including continued collaring efforts of WMCH caribou calves to track mortalities and marking bears with dye to estimate the number of individual bears using the calving grounds. In July 2025 a special BOG meeting reinstated the regulation to allow the Department to remove predators.

### Removal and Marking

There are 3 periods of wolf removal in attempts to benefit the MCH: Same day airborne (SDA) take by public permittees (December–May), the department’s early removal period (March–April), and the department’s primary removal period (May–June). The SDA area and the early wolf removal period overlap spatially, which requires the department to close SDA during early removals. While this has been accepted by the public, department publications and BOG discussions have noted limited effectiveness of SDA in its objective of increasing calf-to-cow ratios (Paragi and Landsiedel 2024, Lichwa and Landsiedel 2025a). Despite the presence of 3 removal periods, wolf predation on calves has remained evident. These observations make it difficult to demonstrate the effectiveness of SDA and the early removal period as a significant

number of wolves have not been removed in either period. Wolves continue to be detected and removed during the department primary removal window, and MCH population parameters did not improve until department removal of bears suggesting that the primary period of bear removal is the most important period.

In the first 3 days of the primary period, staff removed 11 adult brown bears and 1 wolf. In the subsequent week, staff observed 25 brown bears, 1 black bear, and 2 wolves followed by the marking of 45 individual brown bears and observation of 11 cubs during the final 2 weeks of the program. Because it is unknown whether the 25 bears observed were later among those marked, or whether they left the area before marking began, the number of independent bears documented could have ranged from 56 to 81 on observations alone.

Removals in 2023 and 2024 totaled 94 and 81 brown bears, respectively, and this year's removal and observations fall within that pattern. On the low end, the 11 bears removed and 45 marked may indicate the beginning of a diminishing population of bears available for removal, during the narrow timeframe and the small geographic area of the calving grounds, compared to previous years. On the high end, if the 25 bears observed were in addition to those that were marked, and their cubs, the total number of bears removed would have been nearly identical to previous removal efforts. This uncertainty makes it challenging to interpret bear population numbers solely from removal and observation data but demonstrates that even with previous removal efforts a high number of brown bears remain in the area.

### Calf Survival and Cause of Death

Survival during the removal period in 2024 and 2025 was nearly the same at 76% ( $n = 51$ ) and 78% ( $n = 74$ ), respectively. Substantial removals in 2023 and 2024 may have reduced predation pressure to a point where higher calf survival could be maintained even with minimal additional removal in 2025. However, bear-caused mortalities did increase significantly from 2% ( $n = 1$ ) in 2024 to 9.5% ( $n = 7$ ) in 2025.

While collared calf survival is similar, the calf-to-cow ratio and WMCH population estimates have increased in completed population and composition surveys since department removal program began (Landsiedel and Lichwa 2024, Lichwa and Landsiedel 2025b). These results support the proposition that the MCH predator removal by the department is achieving its primary objective of increasing calf survival to facilitate population growth. Continued observations and marking of many bears in 2025 indicate that the brown bear population remains open and dynamic, but the critical outcome for caribou is that survival was high under conditions of limited removal. Monitoring survival, recruitment, and population trend will remain a priority to ensure that herd recovery is truly on a sustained path.

Calves collared during the primary period will be monitored and a sample of females will be recaptured in October 2025 and affixed with collars appropriate for adult caribou. These known-age

animals will be monitored annually to assess survival, age at first reproduction, and relocated for other survey and inventory efforts.

### Other Considerations

Department research indicates that summer range constrains the ability of lactating MCH females to accrete fat stores between late summer and early fall, when adult female energetic needs and mortality are highest. Studies of other northern herds show that summer nutritional limitation can also result from prolonged insect harassment that limits foraging opportunities (Johnson et al. 2022). Recent monitoring continues to document brucellosis exposure in the herd, but ongoing research shows no population-level effects on pregnancy, calf survival, or calf recruitment. Additionally, transmission is not consistent, as one adult WMCH female with a new infection documented in October 2024 did not pass it to her newborn calf in May 2025.

In the past 2 years, some necropsied calves (collared and uncollared) have been documented with little to no internal fat and with low levels of minerals. Neonatal animals typically have limited fat and mineral reserves, but in some cases, it appears exhaustion of fat reserves resulted in calf death, likely from abandonment. We do not know what caused abandonment in all cases, but in one instance we observed a brown bear chasing cows and calves resulting in calf abandonment. Nonetheless, high pregnancy rates and some of the heaviest calf weights in the state indicate that nutrition and disease are not limiting reproduction in the MCH and are not primary factors limiting population growth currently.

### Staff Operational and Monitoring Considerations

The WMCH calved in nearly the same location as in the previous 2 years, giving staff and contractors 2 years of experience to draw upon. During the second year, staff were able to spend more days afield, because the operating base was shifted from Dillingham to Bethel, putting crews 40 miles closer to the calving grounds and removing mountainous terrain between the base and work area. Other modifications from the first year included adding a third fixed-wing aircraft for staff, gear, hauling fuel; establishing fuel caches in the field; and having excess fuel available in Koliganek prior to the start date. Fuel is critical in these remote areas. In 2024, 2 drums of fuel were staged, whereas this year 3 drums were staged, requiring additional charters to fill but proving essential to keeping operations going. The helicopter typically required one fuel cycle this year compared to 2 in 2024, reflecting reduced workload and less time spent daily in the field. Following the same outline as 2024 and adding the third fuel drum in any future removal efforts will keep the project going efficiently.

Most logistics were simplified this year given that that removal efforts had ceased, and there was a lag before bear marking began. During that time, the crew was dedicated to calf captures and mortality investigations. In a 4–5 day window around peak calving, it took more than a half a day each day to capture all calves and complete mortality investigations. Had predator removal been active, there would have been little time available for predator searching and removals. In previous years of calf capture and removal, one employee would begin skinning the bear while the other

conducted the calf captures. However, in the future, if removals are to continue, priorities (calf capture or predator removal) will need to be predetermined, because during peak periods it is likely one activity will get less effort. This is evident in the increase in collars deployed this year compared to last; 51 and 74 in 2024 and 2025, respectively, and only 3 collars in 2023. If lethal removal is not conducted in future years, biologists recommend collaring bears with state funds during the same period to evaluate movement and population parameters. This would address public interest and advance knowledge of brown bears in the area. Dye marking remains an option if removal does not occur, but it is expensive given that only a minimum count can be obtained.

### Conclusion

This was the third year of scheduled, department predator removal efforts for the MCH, though legal challenges constrained removal activities in both the early and primary periods. Despite these limitations, collared calf survival remained high, and the population survey continued to show increase in WMCH abundance. A composition survey is scheduled in October 2025 to assess calf-to-cow ratios. Field observations documented many brown bears, indicating that a substantial number of bears remain in the calving area. Continued monitoring of survival, recruitment, predator activity, and mortality investigations is important to assess causes of mortality and removal effectiveness.

### Budget

Operational costs for the removal operations and calf captures were \$402,240.82 (Table 1) of State of Alaska General Fund money. No federal money was used to complete operations. The decrease in this year's expenditures is due to shorter days from both removal effort periods ending before scheduled. The largest expenditure was aircraft time and fuel.

**Table 1.** Expenditures for the Mulchatna caribou herd intensive management predator removal program April–June 2025.

<b>Item</b>	<b>Quantity</b>	<b>Total</b>
Fuel	3,856 gallons, \$8.73–11.50/gal.	\$34,745.83
Shipping (hides, calf carcasses)	11 shipments	\$1,079.22
Hide processing	1 wolf, 10 brown bears	\$3,200.00
Fixed-wing aircraft	2	\$145,047.50
Rotary-wing aircraft	1	\$163,875.00
Charters for Fuel caches	4	\$7,440.00
Housing	30 nights	\$18,560.00
Supplies/equipment	–	\$4,955.32
Calf expandable collars	95	\$23,337.95
<b>TOTAL</b>		<b>\$402,240.82*</b>

\* Invoice processing may not be complete at the time the memo is distributed.

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