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CHAPTER 7: CARIBOU MANAGEMENT REPORT

From: 1 July 2012
To: 30 June 2014[1]

LOCATION

GAME MANAGEMENT UNIT: 12 (3,300 mi^2) and adjacent Yukon, Canada (500–1,000 mi^2)

HERD: Chisana

GEOGRAPHIC DESCRIPTION: Upper Chisana and White river drainages in the Wrangell–St. Elias National Park and Preserve in southeastern Unit 12 and adjacent Yukon, Canada

BACKGROUND

The Chisana caribou herd (CCH) is a small, nonmigratory herd inhabiting east-central Alaska and southwestern Yukon, Canada. Skoog (1968) assumed CCH was derived from remnant groups of Fortymile caribou that used the Chisana's range during the late 1920s and early 1930s. However, in Canada the Chisana herd has been classified as *Rangifer tarandus caribou*, grouped under the northern mountain ecotype of woodland caribou. Behaviorally, the Chisana herd is typical of other mountain herds, particularly with respect to calving, where, rather than aggregating, they disperse up in elevation and away from other calving females (Farnell and Gardner 2002). The Alaska Department of Fish and Game (ADF&G) has classified the Chisana herd as *Rangifer tarandus granti caribou* along with all other caribou herds in Alaska. Genetic analysis conducted by Zittlau et al. (2000) supports the classification of Chisana caribou as woodland caribou and found that the genetic distance between CCH and 5 other nearby caribou herds is large, suggesting the herd has been unique for thousands of years. The difference in classification between Canada and the U.S. has not influenced management of the herd.

Little is known about CCH population trends before the 1960s. Skoog (1968) estimated CCH at 3,000 animals in 1964; however, methodology used to develop this estimate was not reported, making the validity of the estimate questionable. By the mid- to late 1970s the herd likely declined to about 1,000 caribou. Similar declining trends were reported in other Interior caribou herds. During the 1980s, environmental conditions were favorable and the herd was estimated at about 1,900 caribou by 1988. The herd then declined to an estimated low of 315 caribou by 2002 (Table 1). Weather and predation were likely the primary causes for the decline (Farnell and Gardner 2002). However, following a more intensive population survey by the U.S. Geological

[1] At the discretion of the reporting biologist, this unit report may contain data collected outside the report period.

Survey (USGS) in 2003, the CCH population was estimated at 720 caribou, substantially higher than the 2002 estimate.

During the early 1900s, CCH was an important food source for area residents. However, subsistence use of the herd declined from the 1930s through the mid-1950s (Reckord 1983). Since the mid-1950s few people in Alaska or Yukon have depended on Chisana caribou for food (Chisana Caribou Herd Working Group 2012). Guided hunting was the primary use of CCH from the mid-1950s through 1994. Primarily, 5 guide-outfitters hunted the herd (4 operated in Alaska and 1 in Yukon). Due to limited access, use of CCH for wildlife viewing is negligible.

Between 1979 and 1994 the bag limit in Alaska was 1 bull caribou, and harvest was limited (Table 2). By 1991 declining bull numbers became a concern, and harvest was reduced through voluntary compliance by guides and local hunters. In 1994 the bull portion of the population declined below the management objective of 30 bulls:100 cows, and all hunting of Chisana caribou ended in Alaska.

During 2003–2006 a captive rearing program was conducted by the Yukon Department of Environment (YDE) in Yukon. Twenty to 50 pregnant female caribou were captured annually in March–April, held in a holding facility in Yukon, and released from the holding facility after calves were 5 weeks old. This program successfully increased the number of calves recruited into the population during 2003–2006. Based on abundance surveys and population models for 2004–2013, the population appears to be stable at 694–766 animals (Adams and Roffler 2005, 2007; Bentzen 2011, 2013).

A cooperative draft CCH management plan was developed in 2001, and a Yukon CCH recovery plan was developed in 2002. Both plans were designed to aid herd recovery. The management and recovery plans were in effect during 2002–2007. A process to update the cooperative CCH management plan began in 2008, and the updated plan was completed in 2012 (Chisana Caribou Herd Working Group 2012).

MANAGEMENT DIRECTION

During 1 July 2012–30 June 2014, CCH management and research was cooperatively developed to aid herd recovery. Activities that met the different mandates and philosophies of ADF&G, NPS, and YDE were assigned to the respective agencies, and the management objectives match the minimum requirements for a sustainable harvest set in the cooperative management plan.

The Chisana management goal and objectives are:

MANAGEMENT GOAL

- Manage the Chisana herd for the greatest benefit of the herd and its users under the legal mandates of the managing agencies and landowners.

MANAGEMENT OBJECTIVE

Objective 1: Maintain fall calf recruitment above a 3-year average of 15 calves:100.

Objective 2: Maintain a fall bull:cow ratio above 35 bulls:100 cows.

METHODS

Since 2003 ADF&G has participated in international cooperative (USGS, NPS, YDE and ADF&G) research and management projects to evaluate the population dynamics and effects of recovery efforts on CCH.

In 2005 the USGS developed a method to estimate the Chisana population (Adams and Roffler 2005, 2007). This technique uses observers in a helicopter to visually search the herd range for caribou while a fixed-wing aircraft with radiotelemetry equipment is used to determine numbers of radiocollared caribou missed by the helicopter crew. In this way a sightability correction factor can be obtained, making it possible to estimate the population size from observed caribou. Population estimates were developed with this method in 2005, 2007, 2010, and 2013.

The 2013 abundance survey encompassed the known herd range during rut and the general locations of radiocollared caribou located during a radiotracking flight a week before the census, and it included all the areas surveyed in 2005, 2007, and 2010. In 6 hours of helicopter survey time ADF&G and NPS staff searched the herd range within Alaska, including the Beaver Creek drainage, Carl Creek, Ophir Creek, and Solo Creek Flats to the White River. The Horsefeld area, Skolai Pass, and Eucre Mountain were also searched, but no caribou were found. An additional 6 hours of helicopter survey time was spent in the Yukon portion of the CCH range, primarily between the White and Donjek rivers directly east of the Alaska border (T. Hagel, YDE, personal communication, 2015).

ADF&G, NPS, and YDE conducted herd composition counts during fall 2008–2013.

Harvest data were summarized by regulatory year (RY), which begins 1 July and ends 30 June (e.g., RY13 = 1 July 2013–30 June 2014). Although ADF&G did not issue permits during RY12–RY13, harvest data since 1990 are included in this report (Table 2).

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Population Size, Population Composition, and Herd Distribution and Movements

Herd status and movements during RY04–RY08 are summarized in unpublished USGS progress reports (L. Adams, USGS, personal communication, 2015). Preliminary data indicated that age structure was skewed toward old animals and recruitment of wild-born calves remained chronically low. The USGS population survey in October 2007 indicated that CCH numbered approximately 766 caribou (719–823; 90% CI) with 13 calves:100 cows and 50 bulls:100 cows (Table 1).

The 11–12 October 2013 abundance survey yielded an estimated 701 caribou (639–763; 90% CI) based on 631 caribou (including 62 with radio collars) sighted by observers in the helicopter and the fixed-wing aircraft (Table 1).

October 2008–2013 composition surveys indicated CCH has been relatively stable since 2008 (Table 1). In 2008 we estimated 44 bulls:100 cows, a substantial increase from the low of 17 bulls:100 cows in 1999. Bull:cow ratios were 64:100 in 2012 and 49:100 in 2013.

The fall 2012 estimate of 20 calves:100 cows is consistent with most mountain caribou herds in Canada (20–25 calves:100 cows; Environment Canada 2012). Following winter 2012–2013, which included prolonged cold and deep snow (U.S. Department of Agriculture 2013), the 2013 ratio declined to 16 calves:100 cows.

Radiotracking data during RY12–RY13 indicate the herd primarily used historic range in the White river drainage between the Alaska Highway bridge in Yukon and the Solo Creek Flats in Alaska, with some movements as far east as the Donjek River in Yukon. No Chisana caribou were observed west of the Nabesna River during RY12–RY13.

Due to funding limitations, no spring parturition surveys were conducted during July 2012–June 2014. Therefore, we are unable to compare spring birth rates to fall calf:cow ratios to further examine herd condition or summer mortality. Previous surveys indicated high parturition rates (Farnell and Gardner 2002), implying that summer nutrition was likely adequate.

MORTALITY

Harvest

There was no legal harvest of Chisana caribou in Alaska during RY94–RY11. All harvest in Yukon ended in 2001.

Alaska Board of Game Actions and Emergency Orders. During the February–March 2010 meeting, the Board of Game (board) established a joint state–federal drawing permit hunt for the Chisana caribou herd starting in RY11. This hunt uses guidelines set in the *Management Plan for the Chisana Caribou Herd, 2010–2015* (Chisana Caribou Herd Working Group 2012), which recommends a bulls-only harvest of 2% of population, split 50:50 between Yukon and Alaska as long as the herd is stable or increasing and ratios remain above 15 calves:100 cows (based on a 3-year average), and 35 bulls:100 cows. These harvest guidelines were similar to guidelines used for other small caribou herds in Yukon and deemed appropriate for management of CCH (Environment Canada 2012). As part of the 2010 proposal the board reviewed whether CCH is associated with significant long-term customary and traditional use and found no requirement for a state subsistence allocation.

In May 2010 the Federal Subsistence Board voted to defer a similar proposal for the joint state–federal hunt until more information could be gathered and the 2012 management plan was completed and signed by all participating groups and agencies. In January 2012 the Federal Subsistence Board authorized limited harvest of CCH consistent with the management plan (Chisana Caribou Herd Working Group 2012). Because the Alaska portion of the CCH's range lies entirely on federal lands within the Wrangell–St Elias National Preserve, permits have only been available to federally-qualified subsistence hunters. Due to the limited allowable harvest, an ANILCA Section 804 analysis was conducted, and only residents of Chisana, Northway, Tetlin, Tok, Mentasta Lake, and Chistochina were identified by the Federal Subsistence Board as eligible to hunt Chisana caribou.

Human-Induced Mortality. ADF&G has not issued registration hunt permits for CCH since RY93 (Table 2). Past reports from local residents and incidences of radiocollared caribou that were harvested indicate little or no illegal harvest in Alaska during RY12–RY13. In Yukon during 1996–1999, First Nation members killed 3–20 Chisana caribou annually along the Alaska

Highway. Beginning in 2002, Yukon First Nation members voluntarily stopped harvesting Chisana caribou.

NPS staff issued a total of 9 CCH harvest permits annually in fall 2012 and fall 2013 with a 1–30 September hunting season. In 2012, 8 hunters reported hunting, and 2 bulls were harvested. In 2013, 7 hunters reported hunting, and 3 bulls were harvested.

Other Mortality

ADF&G conducted no activities to evaluate other causes of CCH mortality during RY12–RY13. However, as summarized by Gardner (2003), predation by wolves was identified as the most likely factor limiting herd growth. The limiting role of disease and parasites on CCH is poorly understood, however, disease has not been considered to be a factor influencing long-term population trends (Farnell and Gardner 2002, Bentzen 2011).

HABITAT

Assessment

No habitat assessment activities were conducted during RY12–RY13. Gardner (2003), Lenart (1997), and Boertje (1984) provided information about habitat within the CCH's range. Fecal samples containing high proportions of mosses and evergreen shrubs relative to lichens may indicate much of the range may be suboptimal (Farnell and Gardner 2002).

Enhancement

No habitat enhancement activities were conducted during RY12–RY13.

NONREGULATORY MANAGEMENT PROBLEM/NEEDS

The process to update the cooperative CCH management plan began in 2008. Participating members in this international planning process included YDE, White River First Nation, Kluane First Nation, Canadian Wildlife Service, NPS (Wrangell–St. Elias), FWS (Tetlin Refuge), and ADF&G. In July 2012 these members of the Chisana Caribou Herd Working Group completed the *Management Plan for the Chisana Caribou Herd, 2010–2015* (Chisana Caribou Herd Working Group 2012). This plan will guide harvest in Alaska and Yukon as long as the herd remains stable or increases. It summarizes the CCH's status and sets guidelines for future management with objectives, actions, and tasks associated with population monitoring, harvest, habitat, predation, research, and public awareness. It also coordinates the work of authorities to guide management of CCH to support a stable or increasing population while balancing the differing management concerns and goals of the agencies.

CONCLUSIONS AND RECOMMENDATIONS

CCH experienced a substantial (60%) decline during 1988–2005, primarily due to poor calf recruitment and high adult mortality associated with adverse weather and predation (Farnell and Gardner 2002). During 1991–2003 predation was the cause of 89% of the documented mortality among radiocollared cows ≥4-months old (Gardner 2003). Similar levels of predation likely occurred during RY08–RY13 (L. Adams, USGS, personal communication, 2015).

Hunting was allowed during the herd's initial decline (1989–1994); however, annual harvest was restricted to bulls and generally below 2% of the estimated population. Hunting in Alaska did not appear to limit the herd's ability to grow.

When hunting was allowed the primary users of the Chisana herd were nonresidents. During RY90–RY93, 43% of hunters participating in the Chisana caribou hunt were nonresidents who took 58% of the harvest, while local subsistence users took 9% of the harvest (Fig. 1). Because this is an international herd and extensive efforts have been made to help the herd recover to sustainable levels, care must be taken to include input from all interested parties in managing harvest. As allowed under the *Management Plan for the Chisana caribou herd, 2010–2015*, hunting of CCH was resumed in Alaska in fall 2012. However, the limited number of permits are available to local federally-qualified subsistence users only.

We met our management objective during RY12–RY13 to develop and implement management strategies to maintain a stable or increasing herd with calf recruitment above 15 calves:100 cows and a bull:cow ratio above 35 bulls:100 cows. The Chisana herd can likely sustain the limited bulls-only harvest with little effect on the overall population. However, harvest of Chisana caribou will require careful monitoring. In October 2013, 71 active VHF radio collars remained on Chisana caribou. Radio collars were last deployed in 2006 and have functioned beyond their expected battery life. As these transmitters fail it will become increasingly difficult to collect accurate information on population size, sex ratios, and productivity needed to sustainably manage harvest on this small caribou herd. Long-term monitoring will require radio collars to be deployed in the near future. ADF&G will likely continue to have limited funds in the near future but will continue to provide personnel support and participate in cooperative management activities and research efforts for CCH during the next report period.

For the next reporting period the management objectives will remain the same. However, the management goal will be revised to reflect the goal in the 2010–2015 Chisana herd management plan, and management activities will be revised to reflect current management efforts.

The revised goal for the next report period will be:

- Manage Chisana herd for a stable or increasing population trend, within sustainable levels, and without significantly compromising herd health and habitat condition.

The revised activities for the next report period will be:

- Cooperatively with YDE and NPS, develop and implement management strategies to maintain a stable or increasing herd (Objective 1 and 2).

- Conduct annual fall composition surveys (Objectives 1 and 2).

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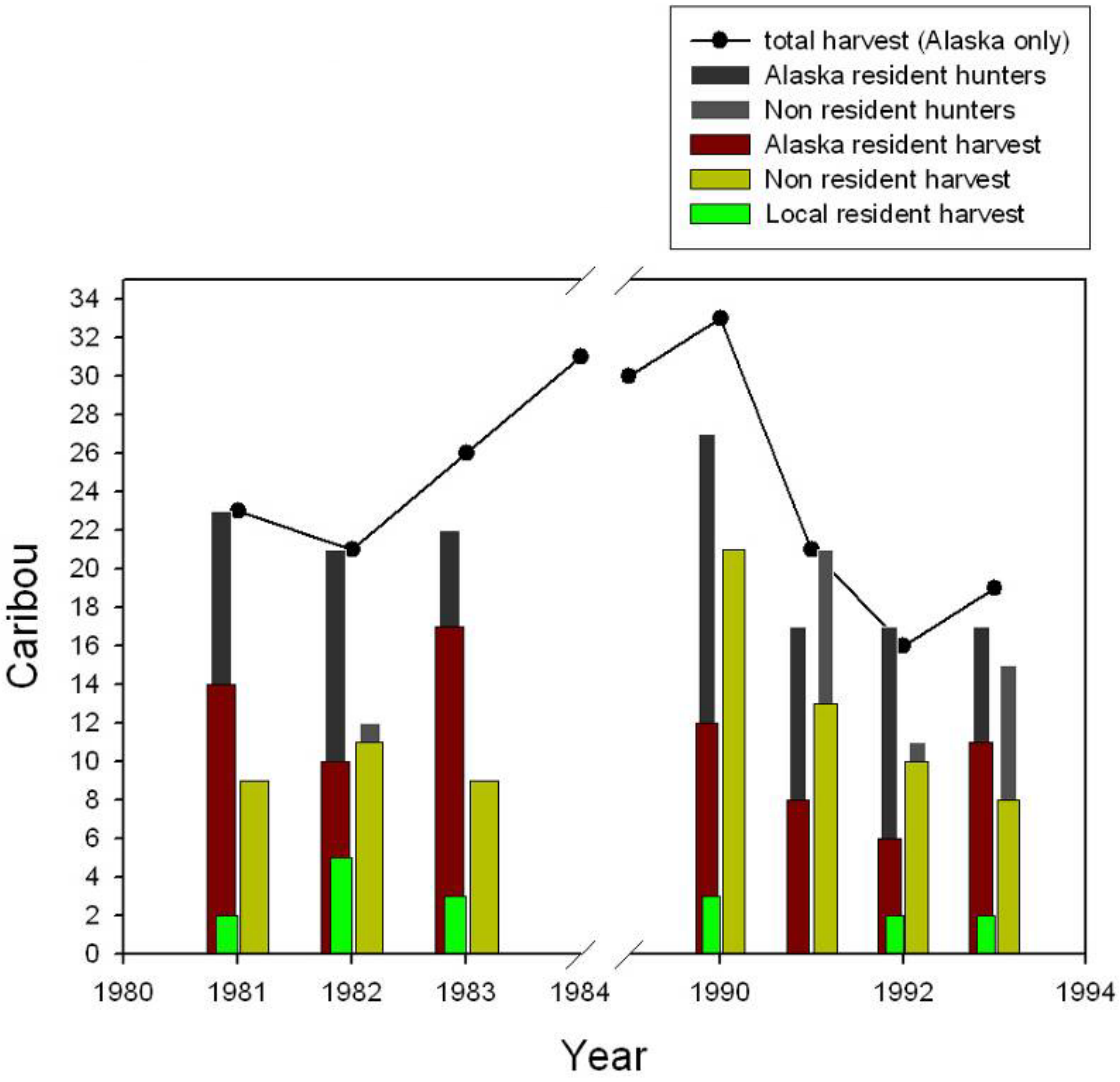

Figure 1. Chisana caribou harvest and hunter residency for 1981–1993 in Alaska only (hunter residency data are unavailable for 1984–1989).

Table 1. Chisana caribou fall composition counts and estimated population size, Alaska, 1990–2013.

Date (mm/dd/yy)	Bulls: 100 Cows	Calves: 100 Cows	% Calves	% Cows	% Small bulls (% of bulls)	% Medium bulls (% of bulls)	% Large bulls (% of bulls)	% Bulls	Composition sample size	Estimated herd size
10/4–5/90	36	11	7	68	37	44	19	25	855	1,680[a]
9/29/91	40	1	1	71	45	42	13	28	855	1,488[a]
9/27/92	31	0	0	76	34	43	23	24	1,142	1,270[a]
10/5/93	24	2	2	79	30	45	24	19	732	869[a]
9/29/94	27	11	8	72	20	44	35	20	543	803[a]
9/30/95	21	4	4	80	30	23	47	17	542	679[a]
9/30/96	16	5	4	83	40	18	42	13	377	575[a]
10/1/97	24	14	10	72	3	68	28	18	520	541[a]
9/28/98	19	4	3	81	49	14	37	15	231	493[a]
10/1/99	17	7	6	81	57	16	27	14	318	470[a]
9/30/00	20	6	5	80	52	25	23	15	412	425[a]
10/1/01	23	4	3	79	42	23	34	18	356	375[a]
9/30/02	25	13	10	72	28	23	49	18	258	315[a]
9/30/03	37	25	15	62	n/a	n/a	n/a	23	603	720[b]
9/30/05	46	23	14	59	n/a	n/a	n/a	27	646	706[b]
10/12/06	48	21	13	59	34	33	33	28	628	n/a[c]
10/13–14/07	50	13	8	61	n/a	n/a	n/a	30	719	766[b]
10/9/08	44	21	13	61	n/a	n/a	n/a	26	532	n/a[c]
10/6–10/09	48	15	9	61	31	32	37	30	505	n/a[c]
10/11–15/10	42	23	14	61	30	16	54	25	622	697[d]
10/3/11	42	16	14	66	21	27	52	25	542	n/a[c]
10/15/12[e]	64	20	11	54	n/a[f]	n/a[f]	n/a[f]	35	215	n/a[c]
10/11–12/13	49	16	10	61	n/a[f]	n/a[f]	n/a[f]	30	631	701[d]

[a] Alaska Department of Fish and Game survey results methods described by Gross (2005).
[b] U.S. Geological Survey survey results. Bulls were not classified to size.
[c] No sightability correction factor was determined, herd size could not be estimated.
[d] Alaska Department of Fish and Game, National Park Service, Yukon Department of Environment survey results using estimation technique developed by Adams and Roffler (2005, 2007).
[e] Due to poor weather conditions in Alaska, the survey was only conducted within the portion of the herds range in Yukon by the Yukon Department of Environment.
[f] Bulls not classified to size.

Table 2. Chisana caribou harvest, Alaska and Yukon, regulatory years[a] 1990–2013.

Regulatory year	Alaska harvest						Yukon harvest		Total harvest
	Reported				Estimated				
	M	F	Unk	Total	Illegal	Total	Reported	Unreported	
1990	34	0	0	34	0	0	11	5–20	50–65
1991	21	0	0	21	0	0	0	5–20	26–41
1992	16	0	0	16	0	0	0	5–20	21–36
1993	19	0	0	19	0	0	0	5–20	24–39
1994[b]	0	0	0	0	0	0	0	5–20	5–20
1995	0	0	0	0	3	3	0	1–3	4–6
1996	0	0	0	0	3	3	0	7	10
1997	0	0	0	0	3	3	0	3–5	6–8
1998	0	0	0	0	3	3	0	20	23
1999	0	0	0	0	3	3	0	3–5	6–8
2000	0	0	0	0	1	1	0	1–3	2–4
2001	0	0	0	0	1	1	0	1–3	2–4
2002	0	0	0	0	0–3	0–3	0	0[c]	0–3
2003	0	0	0	0	0–3	0–3	0	0	0–3
2004	0	0	0	0	0–3	0–3	0	0	0–3
2005	0	0	0	0	0–3	0–3	0	0	0–3
2006	0	0	0	0	0–3	0–3	0	0	0–3
2007	0	0	0	0	0–3	0–3	0	0	0–3
2008	0	0	0	0	0–3	0–3	0	0	0–3
2009	0	0	0	0	0–3	0–3	0	0	0–3
2010	0	0	0	0	0–3	0–3	0	0	0–3
2011	0	0	0	0	0	0	0	0	0
2012[d]	2	0	0	2	0	0	0	0	2
2013[d]	3	0	0	3	0	0	0	0	3

[a] Regulatory year begins 1 July and ends 30 June (e.g., regulatory year 1990 = 1 July 1990–30 June 1991).
[b] No registration permits were issued for the Alaska hunt during regulatory years 1994–2008.
[c] After 2001, Yukon First Nation members in Canada voluntarily stopped harvesting Chisana caribou.
[d] Permits issued to federally-qualified subsistence users only.