

Herd size, distribution, harvest, management issues, and research priorities relevant to caribou herds in Alaska

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Abstract: There are presently about 960 000 caribou in 32 herds in Alaska, including 4 herds shared with Yukon and Northwest Territories. Since complete population data were last published in the mid-1980s, Alaska's caribou population has doubled in size, largely from increases in the Western Arctic and Mulchatna herds. The number of recognized herds has increased by 6, largely because of increased use of radiotelemetry to inventory small caribou herds in inaccessible areas, and transplanting caribou to unoccupied ranges. About 33 000 caribou are harvested annually in Alaska, mostly from the Western Arctic, Mulchatna, and Nelchina herds. The primary wildlife management problem in Alaska for caribou and other species is the lack of clear management authority among state and federal agencies. Research priorities include work on the influence of short-term and long-term weather trends on nutritional ecology of caribou, and predation mitigation including sterilization, translocation, and diversionary feeding of wolves during the caribou calving period.

Key words: *Rangifer*, population size.

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Population Size and Distribution

Since the last published status report on caribou in Alaska (Williams & Heard, 1986), the number of recognized herds has increased from 26 to 32 (Fig. 1, Table 1). Increased use of radiocollars, a greater effort to inventory wildlife resources in remote areas of the state, and transplanting caribou to unoccupied ranges are primary factors resulting in the increase in recognized herds. The herd definition based on use of discrete calving areas, originally proposed by Skoog (1968), continues to be useful and appropriate for management. All major caribou herds (those larger than 5 000) are censused with aerial photography of postcalving aggregations every 1 to 3 years, and minor herds are censused (total count method) during the postcalving period or during the rut as frequently as needed for management.

As of the 1995 census season, there were about 960 000 caribou in Alaska including 4 herds shared with Yukon (Porcupine, Chisana, Nelchina, and Mentasta), and 1 shared with Yukon and Northwest Territories (Porcupine) (Fig. 1, Table 1). Over 800 000 of these caribou are in the 2 largest arctic herds

(Western Arctic and Porcupine), and the Mulchatna Herd (Table 1). The Mulchatna Herd has been increasing at about 17% per year since the mid-1970s and shows no signs of slowing (Van Daele, pers. comm.). The Western Arctic Herd grew at about 13% per year from 1977 to 1990 and then began to stabilize due to decreased calf production and recruitment and increased adult mortality. Many smaller Interior Alaska caribou herds declined from 1989 to 1994 due to warmer summers, severe winters, increased predation of calves, and increased vulnerability of adults to wolf predation (Boertje *et al.*, 1996; Valkenburg *et al.*, 1996a). Population size of most caribou herds in Alaska is no longer significantly influenced by harvest. However, the Fottymile Herd which was once one of Alaska's most important herds, has not recovered from a population low exacerbated by overhunting in the early 1970s (Davis *et al.*, 1978; Valkenburg *et al.*, 1994).

The distribution of most caribou herds in Alaska has remained virtually unchanged during the last 25 years. However, the prolonged increase of the

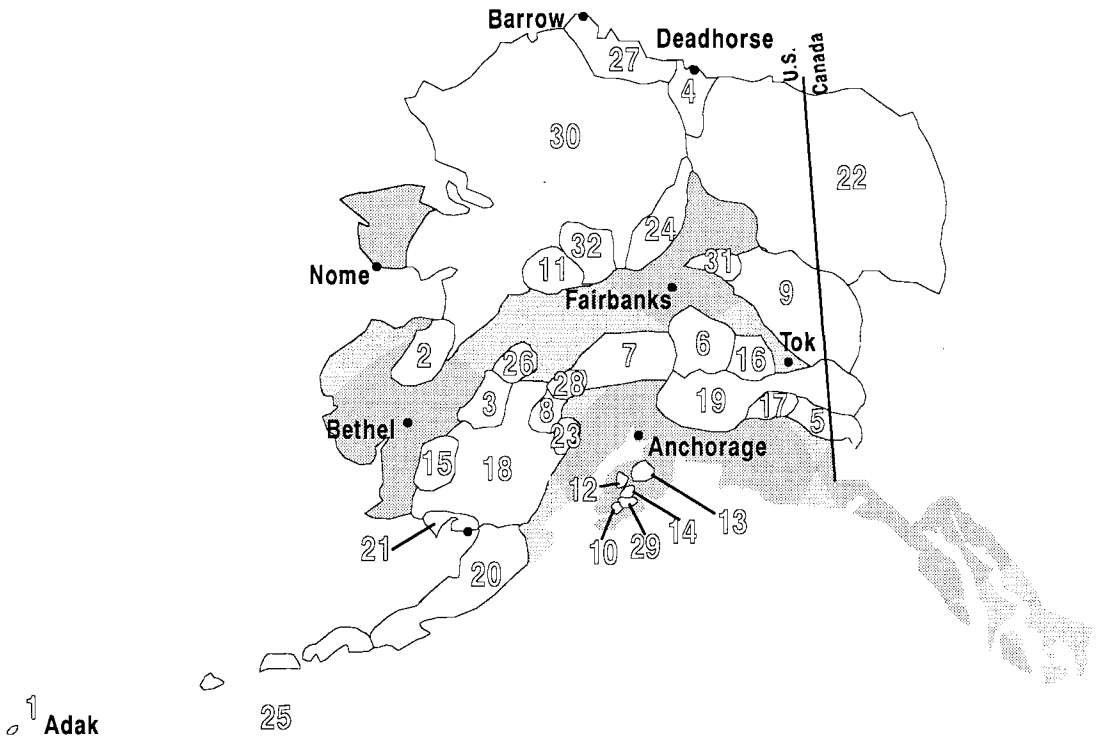


Fig. 1. Location of Alaskan caribou herds.

Mulchatna Herd in southwestern Alaska has resulted in a doubling of range size and reoccupation of ranges, especially winter ranges, that have not been used by caribou for over a hundred years. The Western Arctic Herd has also expanded its winter range southward in the area between the Yukon River and Norton Sound.

Harvest

About 33 000 caribou are being harvested annually in Alaska. An additional 2 500 caribou are taken each year from the Porcupine Herd and about 100 are taken from the Nelchina Herd in Canada. About half of the caribou taken in Alaska are harvested by about 25 000 local residents in the range of the Western Arctic Herd. Alaskan caribou herds presently could support a much larger harvest, especially the Western Arctic and Mulchatna herds, but these areas are largely inaccessible to most hunters because they are roadless, aircraft landing sites are limited, and native-owned lands have been closed to access by nonlocals in northwestern Alaska.

Along the road system in Interior Alaska caribou hunting opportunities have been limited in recent years because many of the more accessible herds

have declined from natural factors (Boertje *et al.*, 1996; Valkenburg *et al.*, 1996a), and recruitment continues to be low. The Nelchina Herd will continue to provide most of the road-accessible caribou hunting opportunity for the next several years, but it has been closed to all nonresident hunters because of state and federal subsistence priority laws.

Management Issues

Management authority

The primary wildlife management problem in Alaska for caribou and other species is conflicting management authority between state and federal agencies. In the United States, the states have traditionally been responsible for managing resident wildlife. However, in 1980 Congress provided for a federal takeover of management of subsistence hunting on federal public lands in Alaska if the state did not provide a priority for "rural residents." Because of the "equal opportunity clause" in the state constitution the state cannot provide a "rural preference," and, consequently, the federal law and state constitution are in conflict. Because wildlife management for subsistence uses on federal lands is

Table 1. Date of most recent census, 1995 population estimate and 1994–1995 harvest estimates for Alaskan caribou herds.

Herd no. ^a	Herd name	Year of census	Census count	1995 Estimate	1994–1995 Harvest estimate	Population trend since previous census
1	Adak	1993	661	1 500?	77	up
2	Andreafsky	1991	0	0	0	extirpated
3	Beaver Mountains	1993	429	200?	2	down
4	Central Arctic	1995	18 093	18 100	341	down
5	Chisana	1995	723	775	0 ^b	down
6	Delta	1995	4 646	4 700	0 ^b	stable
7	Denali	1995	931	2 300	0 ^b	stable
8	Farewell-Big River	1984	700	750?	46	down?
9	Fortymile	1995	22 558	22 600	338	stable
10	Fox River	1995	83	85	0 ^b	up
11	Galena Mountain	1993	259	400	2	unknown
12	Kenai Lowlands	1995	84	90	0 ^b	stable?
13	Kenai Mountains	1996	425	425	28	stable
14	Killey River	1995	261	290	11	up
15	Kilbuck	1993	3 682	4 216 ^c	47	down
16	Macomb	1995	477	500	0 ^b	down
17	Mentasta	1995	739	852	0 ^b	down
18	Mulchatna	1994	168 351	200 000	6 129	up
19	Nelchina	1995	49 808	50 281	3 579	up
20	Northern Peninsula	1995	11 500	12 000	1 273	down
21	Nushagak Peninsula	1993	1 007	1 519	35	up
22	Porcupine	1994	146 808	152 000	3 266 ^d	stable
23	Rainy Pass	1990	231	500?	57	unknown
24	Ray Mountains	1995	1 727	1 750	12	up
25	Southern Peninsula	1995	1 434	1 550	0 ^b	stable
26	Sunshine Mountains	1993	553	600?	0	unknown
27	Teshekpuk	1993	27 630	28 000	0 ^e	up
28	Tonzona	1991	1 101	800?	25	down
29	Twin Lakes	1995	48	50	0 ^b	up
30	Western Arctic	1993	451 067	450 000	20 000	up
31	White Mountains	1992	832	1,200	21	stable?
32	Wolf Mountain	1992	595	625?	2	unknown

^a Number corresponds with number on Fig 1.

^b No open season.

^c Merging with Mulchatna.

^d Includes Canadian harvest.

^e Included with Western Arctic harvest.

not separable from other management on other lands, the state and federal agencies are in conflict. Courts have issued contradictory rulings supporting opposing viewpoints, and the US Supreme Court has, so far, been unwilling or unable to address the issue. Congress must act in order to settle the issue, but state and federal politicians are caught between

major constituencies and are reluctant to take the lead. In response to perceived conflicts among hunters, large areas of federal land have been closed by federal regulation to caribou hunting by “nonrural” residents even though, in most cases, data do not support allegations of conflict. Problems with management decision-making mean that caribou

hunting opportunities have been eliminated or are restricted to well below biological limitations. Decision-making is also becoming inefficient and costly, and management planning is impossible amid the chaos.

Herd management issues

For the first time the Alaska Department of Fish and Game is proposing to control the size of a major caribou herd to prevent a long-term decline. The Nelchina Herd, which numbers 50 000 to 60 000, will be reduced to below 40 000 beginning in fall 1996. Body condition and body size have been declining and peak calving time has become relatively late (Eberhardt & Pitcher, 1992; Valkenburg *et al.*, 1996b). The 1996 harvest goal is 10 000 cows and up to 5 000 bulls. Under an experimental harvest regime, most hunters will be required to shoot a caribou with "6 antler points or less on 1 side" to prevent an overharvest of large bulls and promote harvest of cows. Road corridor closures will be used to avoid hunter crowding and allow caribou to cross roads relatively undisturbed.

The Adak caribou herd, was introduced to a predator-free island in the late 1950s to provide emergency food and recreational hunting for the US Navy. The herd was kept at a relatively stable size for almost 30 years by harvest, but since the base was decommissioned the herd is increasing rapidly and will soon overgraze the island. ADF&G worked with federal agencies, native groups, and environmental organizations to remove caribou from the island. However, fear of adverse publicity is preventing allocation of money by the US Congress, and the dilemma remains unresolved.

Research Priorities

After major caribou herds declined in the early 1970s, using refined survey methods ADF&G intensified ecological research on caribou in cooperation with the University of Alaska and other agencies. We intensively studied several caribou herds for 15 to 20 years, including periods of population increase and decline (c.f. Adams *et al.*, 1995; Gerhart *et al.*, 1996; Valkenburg *et al.*, 1996a,b; Whitten, 1996). Recent declines in Interior caribou herds were caused by increased vulnerability to wolf predation. New research priorities include: 1) determining how short- and long-term weather patterns affect caribou nutrition and vulnerability to predation; 2) developing nonlethal methods of pre-

dation management; and 3) monitoring caribou body condition. Three graduate student projects are nearing completion: 1) the influence of insects on feeding and other caribou behaviors, 2) the influence of moisture and sunlight regimes on plant nutrition and productivity, and 3) the influence of microclimate on selection of calving areas. Beginning in 1998, dominant wolves in the range of the Fortymile Herd will be neutered and subordinate wolves will be translocated to increase caribou calf survival in that herd. We will also continue experiments with diversionary feeding in the Delta Herd to keep key wolf packs from feeding on caribou calves during the critical 3-week period after calving (Valkenburg, 1997).

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