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CARIBOU

Mary V Hicks, Editor

: Ayres

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STATE OF ALASKA
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Project Title: **Southcentral Alaska Caribou Management**

Project Location: Unit 7 (3,520 mi^2)
Kenai Mountains Herd

Project Objectives: Maintain the posthunting herd at 400 until a carrying capacity is determined for their winter range.

Work Accomplished During the Project Segment Period: On 14 March 1996, a sex and age composition survey was completed for the Kenai Mountains caribou herd. The survey team used a Bell 206B Jet Ranger helicopter and a Piper PA-18 Supercub. We used the Supercub to locate animals and the helicopter to classify them. We were able to classify all but 22 of 425 caribou observed. Composition data revealed 237 (59%) cows, 97 (24%) bulls, and 69 (17%) calves. Ratios were 41 bulls and 29 calves per 100 cows. The current estimate places the herd size at over 500 caribou. The last complete survey was on 11 November 1992. We classified 390 animals: 234 (60%) cows, 101 ((26%) bulls, and 55 (14%) calves. Ratios were 43 bulls and 24 calves per 100 cows. Calves composed 14 percent of caribou classified. The herd size was estimated at 405 animals in 1992/93.

We received 1372 applications for 200 permits issued to hunt either sex caribou during 1995. Eighteen (9%) hunters reported hunting successfully, 88 (44%) unsuccessfully, and 94 (47%) did not hunt. The reported harvest comprised 10 (56%) males and 8 (44%) females. Successful hunters used the following transportation methods to access their hunting area: highway vehicles 13 (72%), horses 4 (22%), and aircraft 1 (6%). Nine (50%) animals were taken in August and 9 (50%) in September. All hunters were residents of the state.

In cooperation with USFWS, we captured 1 yearling and 11 eleven-month-old female calves. The primary purpose of this program is to determine mean weight of calves for comparison to weights of female calves in other herds. Mean calf weight was 57.6 kg (126.6 lb, range = 109.0 to 146.0 lb).

A total of 1550 applications were received for 200 permits to hunt caribou (either sex) during 1995. Twenty-eight (14%) hunters reported hunting successfully, 88 (44%) unsuccessfully, and 81 (41%) did not hunt. The reported harvest comprised 17 (61%) males and 11 (39%) females. Successful hunters used the following transportation methods to access their hunting area: highway vehicles 21 (75%), horses 4 (14%), aircraft 2 (7%), and 1 (4%) was unreported. Twenty-one (75%) animals were taken in August and 7 (25%) in September. All hunters were residents of the state.

Progress Meeting Project Objectives: The harvest of 18 caribou during 1995 from an estimated herd of at least 500 is insignificant in an attempt to reduce the herd's size. Surveys conducted in 1992 and 1996 indicate the herd increased from approximately 405 to 500 animals or about 24 percent. History of this herd also indicates that when the herd exceeds 450 animals, it declines sharply to about 300. I recommend the number of permits be increased to 250 for the 1996 season in an attempt to start reducing the herd's size. No change in season or bag limit is recommended

for 1996. If the 1996 harvest fails to sufficiently reduce the herd's size and the herd does not decline naturally, a change in season and bag limit to promote harvest of adult females should be implemented for the 1997 season.

A detailed management plan was written for all caribou herds on the Kenai Peninsula in October 1994.

Project Location: Unit 15A (1,300 mi^2)
Kenai Lowlands Herd

Project Objectives: To increase the herd to a minimum of 150 animals by 1998.

Work Accomplished During the Project Segment Period: We counted 86 caribou (22% calves) on 21 June 1995. An aerial survey on 21 June 1996 indicated a minimum of 96 caribou, including 27 (28%) calves in the herd. Thirteen of the 69 adults observed were mature bulls. The minimum ratio of calves per 100 cows was 48. After monitoring 8 radiocollared animals biweekly during May and June, we believe the herd did not exceed 110 caribou at its peak population size mid June. Documented mortalities before June during this reporting period included 2 radiocollared adult females (one illegally killed and one killed by the Skilak wolf pack).

Progress Meeting Project Objectives: Adult animals in the Kenai Lowlands herd have remained relatively stable over the past 3 years in spite of the severe winter of 1994/95. The observation of 62 adults in 1994, 65 in 1995, and 69 in 1996 is still well below the 105 adults counted in 1989. Low recruitment due to predation rather than limited habitat is still suspected to be the cause of the herd's small size. The management objective was extended to 1998. The season has been closed since 1993 and should remain closed until the herd size reaches the management objective of 150 caribou. A detailed management plan was written for all caribou herds on the Kenai Peninsula in October 1994.

Project Location: Units 15B and 15C (3,563 mi^2)
Killey and Fox River herds

Project Objectives: Reestablish viable caribou populations in suitable caribou range in Units 15B and 15C.

Work Accomplished During the Project Segment Period: Fall surveys were conducted on 11 November 1995 on the 3 caribou herds resulting from the 1985 and 1986 reintroductions. Surveys were conducted by FWS as part of an agreement with the state in the Kenai Peninsula Caribou Management Plan. Search efforts included most of the known ranges for these herds. Forty-eight, 261 and 83 caribou were observed in Twin Lakes, Killey River and Fox River herds, respectively. Composition data were not obtained since the survey was conducted using a fixed-wing aircraft. The four original releases totaled 80 animals.

In 1994 hunting was authorized on the Killey River herd. A total of 25 permits were issued each year with a bag limit of 1 caribou. In 1995, 272 applications were received for these permits. Twelve permit holders reported hunting, harvesting 8 bulls. Successful hunters averaged 4.5 days afield, and 7 (88%) of the 8 successful hunters were residents.

Hunting began on the Fox River herd in 1995 when we issued 15 permits. A total of 174 applications were received for these permits. Eight of the 15 permit winners reported hunting, harvesting five bulls. Successful hunters averaged 3.4 days afield, and four (80%) of the five were residents.

Twin Lakes herd was not hunted during this reporting period.

In cooperation with FWS, we captured 2 adult females in the Fox River herd and 6 adult females and 10 eleven-month-old calves in the Killey River herd. The primary purpose of this effort was to replace failing radio collars on adults and capture calves to determine their mean spring weight. Included in the capture of adults were 2 recaptures from the 1985 release, 1 recapture from the 1986 release, 2 from the 1991 collaring program, and 3 new captures. Adult females were not weighed; estimated weights ranged between 125 and 136.4 kg. (275 to 300 lb). Mean weight of calves was 65.7 kg (144.5 lb) and ranged between 140 to 151 lb.

Progress Meeting Project Objectives: The management objective of reestablishing viable caribou populations in suitable habitat in Units 15B and 15C was achieved. Results from 1995 surveys compared with fall 1994 suggest the 3 herds remained relatively stable. The suspected reasons for this failed increase in 1995 were the severe winter of 1994/95 and increasing predation by wolves and bears. Quality and quantity of habitat should not be a limiting factor since the density of the herds are still below 1 caribou per km^2. The minimum fall 1995 population size of these three caribou herds was 392 caribou, compared with 387 for the fall of 1994.

The Killey River herd was opened to hunting during the spring 1994 Board of Game meeting, allowing 25 permits to be issued in fall of 1994. The Fox River herd was opened in 1995, allowing for 15 permits. The Twin Lakes herd is still too small to support additional mortality through hunting.

Since the counts for these herds indicated no growth in 1996, fall 1996 surveys will be monitored closely. Preliminary results from radiotracking indicate animals are exchanging between the Twin Lakes and Killey River herds but the extent is unknown. A detailed management plan was written for all caribou herds on the Kenai Peninsula in October 1994.

Project Location: Units 9A, 9B, 9C, 17 and 19B (45.500 mi^2)
Mulchatna Herd

Project Objectives: To maintain a minimum population of 25,000 adults with a bull:cow ratio of 35 bulls:100 cows.

Work Accomplished During the Project Segment Period: Preliminary analysis of harvest reports indicated 3745 caribou (73.0% males, 26.3% females) were killed by 2305 hunters during this reporting period. Hunter success was 87.5%. Most of the hunters that returned harvest tickets were Alaska residents (56.0%). Most hunters killed more than 1 caribou (53.0%), and the average bag was 1.9 caribou/hunter. Hunters used aircraft most frequently for access (86.9%), 11.1% of the hunters used boats, and 1.1% used snowmachines. The chronology of harvest was August - 31.7%; September - 49.6%; October-February - 10.8%; and March-April - 7.5%.

Harvest data from these reports must be viewed with caution because overlays are not keypunched and there is no way of objectively analyzing the rate of return. Actual caribou harvests by Alaska residents are probably considerably higher than reported harvest. I estimated total harvest for 1995-1996 at 6500 caribou.

In November 1994 the Board of Game approved a proposal to further liberalize caribou hunting regulations by allowing same-day-airborne hunting during the winter months. This regulation became effective 13 January 1995. The Board also approved a proposal to open a portion of Unit 17C east of the Wood River and north of the Nushagak River to caribou hunting in the fall, and they gave the department authority to open portions of Units 17A and 17C to caribou hunting when the number of caribou in the areas exceed 20,000. Neither of these areas were opened during this regulatory year.

We conducted photocensuses of the MCH from 30 June to 3 July 1996. Aerial photographs taken during that survey are still being analyzed. Preliminary population estimates for the MCH was 200,000. These data indicate the herd continued to increase in size. No fall composition counts were conducted during this reporting period.

On 16-18 April 1996 we based out of Port Alsworth and used a skid-mounted net gun to capture and radiocollar 26 female caribou from the Mulchatna herd. All were captured in the vicinity of the Swan, Koktuli and Chulitna rivers on the border of Units 9B and 17B. We collared 1 yearling, 20 1.9-5.9-year-olds, and 7 6.9+ yr olds. All were in very good condition and almost all of the adults were pregnant. The average weight of the adults (>2.9 yrs) was 252 lbs. (114.9 kg)(n = 10); the average mandible length was 29.5 cm (n = 22); the average metatarsal length was 41.3 cm (n = 21); and the average total length was 196.5 cm (n = 21).

Approximately 30,000 caribou from the Mulchatna herd wintered in the lower Kuskokwim River, sharing ranges with the Kilbuck herd for the second winter in a row. The primary concentration area was between the villages of Quinhagak and Goodnews. Most of the remainder of the herd did not come to traditional winter ranges, staying either along the Aniak River drainage or near Stink Creek near Lime Village. Extremely low snow pack throughout winter was probably responsible for this behavior.

Most of the Mulchatna caribou calved east of the Tikchik River basin at the head of the King Salmon and Klutuspak Rivers in 1996. This calving area was also used by several radiocollared caribou from the Kilbuck herd. Another large group calved in the Mosquito River drainage.

Productivity within the core area was the highest yet recorded, at 75 calves per 100 adult cows. Other than a couple brown bears in the calving area, there was little evidence of predation.

Caribou translocated from the Alaska Peninsula to the Nushagak Peninsula in 1987 stabilized in number during this reporting period. A census was conducted in April, but poor survey conditions hampered the effort. About 900 caribou were observed. Monthly radiotracking flights verified that most of the herd remained on the Nushagak Peninsula, but we are seeing some movement of small bands of caribou into the Togiak River drainage. The Federal Subsistence hunt in 1995/96 yielded a reported harvest of 52 caribou. In 1996/97 the season will be liberalized to include an August season.

Progress Meeting Project Objectives: The Mulchatna herd continued to extend both their population size and range. No range investigations have been conducted in areas used by this herd. Trailing is extensive within the range of the herd, but food availability still does not seem to be limiting herd growth. Liberalization of hunting regulations and publicity about the size and health of the herd are increasing hunting effort. Even though the herd was relatively inaccessible during the fall hunting season, we again noted a record reported harvest.

Project Location: Subunit 9D and Unit 10 (4,900 mi^2)
Southern Alaska Peninsula Herd

Project Objectives: To maintain the population between 4000-5000 midsummer with an October sex ratio of 20-40 bulls:100 cows.

Work Accomplished During the Project Segment Period: A photocensus on 26-27 June 1995 revealed a minimum of 1434 caribou, of which 10.7% were calves. Coverage of the summer range was comparable to previous years, and total herd size was estimated at 1500-1600.

No hunting was allowed during the 1995-96 regulatory year.

Progress Meeting Project Objectives: The SAP herd has been below the population objective for several years; given the poor range conditions documented through other research, the available habitat may not be able to sustain the original population objective of 5000-6000 caribou. Consequently, a new cooperative management plan between the department and Izembek National Wildlife Refuge was adopted in 1994. The new population objectives are outlined above.

Recent research has tentatively identified nutritional stress as the primary factor causing poor body condition, high natural mortality rates, and low productivity among these animals.

Hunting was closed by emergency order in 1993 when the herd was documented below 2500 animals and will remain closed until the herd exceeds that number.

Project Location: Subunits 9C and 9E (24,000 mi^2)
Northern Alaska Peninsula Herd

Project Objectives: To maintain the population at 15,000 to 20,000 midsummer with an October sex ratio of at least 40 bulls:100 cows.

Work Accomplished During the Project Segment Period: A helicopter composition survey was conducted in October 1995, and 2907 caribou were classified. Ratios were 41 bulls and 24 calves per 100 cows. Calves composed 15% of the fall sample, compared with 21% of the caribou counted in 1995 postcalving aggregations.

A photocensus on 30 June 1995 tallied 11,629 caribou, including 2058 counted by the FWS in the Aleutian Mountains and on the Pacific Coast. Coverage of the summer range was similar to 1994 and 1995, and the herd has stabilized at about 12,000 animals.

Hunters reported killing 486 bulls and 47 cows during the 1995-96 season. Hunter success was 76%. Chronology of the harvest by month was as follows: July- 0; Aug.- 94; Sept.- 230; Oct.- 123; Nov.- 23; Dec.- 22; Jan.- 10; Feb.- 6; Mar- 3; and April- 1. Local residents, other Alaskans, and nonresidents accounted for 6%, 36%, and 57%, respectively, of successful hunters; because of the 1-caribou bag limit for nonresidents, they accounted for 51% of the reported harvest. The 1995-96 reported harvest was similar to 1994-95, and both were about 60% below the 1993-94 record harvest. We estimated the unreported sport and subsistence harvest at 200 and 500, respectively, resulting in a total harvest estimate of 1200-1300 caribou. No Mulchatna caribou moved into Units 9C or 9E during the 1995-96 winter, so unlike recent years none of the winter harvest in the Naknek drainage was Mulchatna herd animals.

In 1994, at the request of the Naknek/Kvichak Fish and Game Advisory Committee, the Board of Game implemented an emergency reduction in the winter bag limit to 1 caribou per month starting in December. This change, along with the closure of the King Salmon Air Force Base and a lack of caribou along the King Salmon road system, resulted in a much reduced winter harvest. Because of the concurrent brown bear season, the October 1995 caribou harvest was higher than in even numbered years.

In April 1995 we captured and radiocollared 18 female calves. Blood samples, measurements, and weights were taken. In October 1995 we collected 11 calves for assessment of body condition.

Progress Meeting Project Objectives: Population estimates from 1991-93 were in the range of 16,000-17,500 caribou and were lower than the estimates for 1988 and 1989 (>20,000). Liberal hunting regulations have contributed to keeping the NAP herd within the population objective the past 10 years while maintaining the desired sex ratio. Changes in the herd's distribution have led to an increased harvest during winter, when caribou are accessible along the Naknek/King Salmon road system. We viewed this increased harvest, especially of females, as a positive development in terms of maintaining the herd closer to the lower end of the population objective.

Results of the 1994 postcalving census showed a decline in herd size of approximately 25%, which coincided with a high rate of natural mortality to radiocollared cows. Results of the 1995 and 1996 postcalving counts indicate the herd did not decline further. Hunting restrictions during the 1994-95 season reduced harvests; natural mortality was also lower this reporting period. The herd remains below the minimum population objective and conservative hunting regulations will need to be kept in place until the herd approaches the minimum population objective of 15,000.

Project Location: Unit 10 (300 mi^2)
Adak Herd

Project Objectives: To maintain the precalving population at 150.

Work Accomplished During the Segment Period: No surveys were conducted this reporting period. The fall 1996 herd estimate is at over 1000 animals on Adak Island.

In early 1993 the U.S. Navy decided to reduce the number of personnel on Adak from 5500 to 1100 by late 1993. The number of personnel has been further reduced to 500, and all U.S. Navy staff will be gone 1 January 1998. The ADF&G and the FWS determined that our ability to harvest the annual production of caribou would be inadequate to prevent herd growth.

In an effort to maximize harvest and reduce the herd as much as possible while personnel were still available, the Alaska Board of Game issued an emergency order which extended the hunting season and removed the bag limit. The reported harvest of 50 animals during the 1995-96 season declined sharply from the 1993-94 high of 236.

Progress Meeting Project Objectives: The management objective of maintaining the precalving population at 150 caribou was met this reporting period. The managing agencies are concerned the uncontrolled growth of the herd will eventually exceed carrying capacity of the range and result in habitat damage. Therefore, the managing agencies have proposed to remove the nonnative caribou from Adak Island.

An environmental assessment has been prepared to address the removal of introduced caribou from Adak Island. The assessment includes a variety of alternative actions which will accomplish this mission. Management actions to address caribou management were scheduled to begin in March or April of 1995. A final finding of effects of any action is scheduled to be completed by the FWS early 1996.

Project Location: Unit 11 (13,300 mi^2)
Mentasta Herd

Project Objectives: To allow the population to fluctuate as dictated by available habitat and predation rates, to attain a minimum fall population of 2000 adult caribou before allowing harvest under state regulation, and maintain a minimum of 35 bulls:100 cows.

Work Accomplished During the Project Segment Period: The National Park Service (NPS) continued to fund ongoing research on the Mentasta Caribou Herd, including an ongoing research project investigating neonatal calf mortality. In cooperation with NPS, we conducted the fall 1994 composition count and assisted in the June 1995 postcalving census. The October 1994 postrut population estimate for the Mentasta Caribou Herd was 877 animals, with only 11 calves:100 cows. There has been extremely low calf recruitment since 1991 in the Mentasta herd. The Mentasta herd's late June 1995 postcalving aggregate count was 739 caribou. Preliminary results of a NPS study of neonatal calf mortality indicate calf survival was somewhat higher in 1995 than observed in previous years. In 1993 the mortality on radiocollared neonatal calves was 97%. Neonatal calf mortality was mainly attributed to predation by wolf and brown bear.

A state hunt has not been conducted for the Mentasta caribou since 1991. The NPS canceled a registration subsistence hunt scheduled for fall of 1992 for local rural residents because of continued decline in herd size, attributed to poor calf survival. The 1991 federal subsistence harvest was only 30 bulls.

The Mentasta caribou herd summered on its traditional range along the west slopes of Mt. Sanford and Mt. Drum. By early October the herd moved northeast into Unit 12 to winter. The herd moved back to normal calving grounds between Drop Creek and the Sanford River in spring 1995.

Progress Meeting Project Objectives: Current herd size is well below the minimum management objective of 2000 adults. The herd continued to decline this reporting period. It is likely the stated management objective is unrealistic given current levels of calf predation. This objective was established while the herd was increasing, possibly because predator numbers were lower. Historical data indicate a herd objective of 1500-2000 adults may be more realistic as a maximum objective. Management actions to prevent further herd decline other than controlling sport and subsistence harvests are not allowed under NPS rules.

The reason for the ongoing decline in the Mentasta Caribou Herd is very low neonatal calf survival. Based on preliminary NPS research, calf survival improved slightly in 1995 but is still well below past levels. Legal subsistence hunting had little biological effect on this herd over the past 5 years, as nearly 100% of the animals taken were bulls and harvest was low. Legal harvests were stopped in 1992 in Unit 11, but the herd continued to decline. Poaching, harvesting under a winter permit in other units, and a harvest by treaty natives in Canada occurs when Mentasta caribou mix with the Nelchina herd on winter range. However, total take under these circumstances is probably very small. Elimination of this incidental take will be impossible as long as mixed-herd harvests are allowed winter months. All hunts specifically intended for Mentasta caribou have been closed and should remain so until recruitment improves and the herd increases.

Project Location: Unit 13 (25,000 mi^2)
Nelchina Herd

Project Objectives: To stabilize the herd between 35-40,000 animals with a minimum bull:cow ratio of 40:100 by harvesting the annual growth increment; to maintain productivity rates of

approximately 10%, to maintain animal growth and body condition parameters similar to current body conditions and those of other interior caribou herds.

Work Accomplished During the Project Segment Period: The October 1995 postrut estimate for the Nelchina herd was 50,281 of which 39,172 were adults (>1 yr). The estimate was extrapolated from a June 1995 postcalving aggregate photo count of 49,808 animals (60% cows) and the September 1995 sex and age survey which tallied 34 bulls:108 cows and 38 calves:100 cows. The June 1996 postcalving spring count was a traditional aerial count with 48,666 caribou tabulated. The 1996 postcalving composition count was 55 calves:100 cows.

Two Nelchina caribou hunts were held during 1995. The fall and winter state hunt was a Tier II subsistence permit hunt with 12,000 permits issued and preliminary harvest of 4,457 caribou taken. This preliminary harvest figure is 44% above the 1994 harvest of 3,103 caribou. Issuing more subsistence permits (4,500) caused this rather large harvest increase.

The Bureau of Land Management conducted a fall and winter federal registration hunt in Unit 13 on their lands along the Denali and Richardson highways. Each hunter was allowed 2 permits (2-caribou bag limit) and 1,472 permits were issued for the federal hunt. The federal harvest was 226 (117 males, 105 females, 4 sex unknown). Until this year, the federal harvest had declined every year for the previous 4 years with the 1994 harvest of 187 being 71% below the 1991 harvest of 647 caribou. The reason for the harvest declines is that less land is open for federal hunting because of state land selections along the Denali Highway and caribou have been spending less time on federal lands.

The herd's calving distribution in 1995 followed the patterns observed for years. Calving and postcalving use has traditionally occurred in the eastern Talkeetna Mountains in Subunits 13A, 13E, and 14B. Postcalving aggregations were located northwest of the Kosina River.

During early fall 1995, the herd was located in the interior portions of Unit 13 and was not readily accessible to hunters from the highway system. By late September caribou were distributed in a wide band from the Upper Susitna River to the Alphabet Hills. However, in late September instead of starting their typical migration east into Units 13C and 11, the herd moved southwest, back into Subunit 13A. Most of the herd spent the rut and postrut period until late October in the eastern Talkeetnas between the Little Nelchina River and Lake Louise. In late October virtually all the herd moved east along the usual migration route across Unit 13 into Units 11 and 12. Essentially the entire Nelchina Herd left Unit 13 during the initial winter migration of 1995-96. Caribou began moving back into Unit 13C and Unit 11 by late January. By March a number of caribou could be found around Suslota Lake south of the Tok Cut-Off in Unit 13C.

By June 1996 most radiocollared caribou were located in the Talkeetna Mountains indicating the segments of the Nelchina herd had rejoined on the traditional calving and summer grounds. There were 41 radios located and working as of late June 1996.

Caribou calving was monitored by flying every other day from 23 May until 3 June 1996. Radio-collared adults were tracked and visual observations obtained every day until it was determined

the cows calved. Neonatal calves (n = 40) were captured during the peak of calving to obtain birth weights.

Body condition was monitored twice in short yearlings, once during September and again in April. After capture, the weight of female short yearlings and body condition parameters were taken from 15 animals and compared with similar data from past years in the Nelchina herd. Comparison of weights and condition index were also available between other interior caribou herds.

Progress Meeting the Project Objectives: The 1995 population estimate for the Nelchina caribou herd is above the herd management goal of 35,000-40,000 caribou. Spring calf production and/or survival was high in 1996 with calf production approaching levels observed during the mid-1980s when the herd increased rapidly. The bull:cow ratio dropped appreciably below the minimum objective for this herd, as the number of large bulls continued to decline because of heavy bull harvests.

The harvest quota for 1996 was increased to 15,000 in an attempt to reduce the herd to a level that approaches the management objective. Reducing the herd is warranted because range station data indicate moderate to extensive use of lichen in certain areas of the Nelchina Herd's range, particularly within their calving and summering areas. Further increases in herd size would probably exceed the long-term carrying capacity of the range. To ensure an adequate cow harvest for a decline in the cow base, a Tier I permit hunt for only cows and small bulls was established along with the Tier II regular subsistence hunt.

Body condition parameters improved slightly in 1995-96. Body weights for female short yearlings were higher in 1996 than in 1995. The peak of calving for radiocollared cows was 6 days earlier in 1996 than in 1995. However, the peak of calving for the Nelchina Herd is later than observed in adjacent interior herds. Neonatal calf weights for the Nelchina caribou herd were lighter than for calves in adjacent herds. Later calving dates and lower neonatal calf weights observed in the Nelchina Herd suggest animals in the herd are at a lower nutritional level than animals in adjacent interior herds.

Segment Period Project Costs:

	Personnel	Operating	Total
Planned	63.8	103.0	166.8
Actual	63.8	101.3	165.1
Difference	0	1.7	1.7

Submitted by:

Michael G. McDonald
Assistant Management Coordinator

Project Title: **Interior Caribou Population and Habitat Management**

Project Location: Unit 12 (9978 mi^2)
Chisana Caribou Herd

Project Objectives and Activities:
1. Maintain an October bull:cow ratio of at least 30:100.
2. Conduct aerial surveys of the herd to determine size, trend, and productivity.
3. Monitor mortality factors affecting the herd.

Work Accomplished During the Project Segment Period: The Alaska Department of Fish and Game and the National Park Service completed the Chisana caribou census on 22 June 1995, finding 740 caribou. The herd declined 63% since 1988. A sex and age composition count was flown 30 September 1995 during which we classified 542 caribou. The calf:cow ratio was 4.4:100 and the bull:cow ratio was 22:100. This was the seventh consecutive year of poor calf recruitment ($\bar{x}$ = 4.8/100; s = 4.9). The bull population has been declining since 1992 and is expected to continue as long as calf mortality remains high. Based on composition and mortality data, the fall population size estimate was 693 caribou.

On 28 May 1996, we surveyed radiocollared cows to determine pregnancy rate and incidence of early calf mortality. We located 14 animals and determined 13 were pregnant (93%); this was the second consecutive year of high pregnancy rates. The cause for the higher rate is the current age structure of the population. Few animals have been recruited into the population during the past 7 years, so most of the Chisana cows are within the prime breeding age. We estimated the peak of calving to be about 25 May. On 28 May, five cows were still accompanied by a calf, indicating the early calf mortality rate was about 62%. The late May estimated calf:cow ratio was 36:100 compared with ratios found in 1995, 52:100 and 1994, 73:100. In 1995 the calf ratio declined to 7:100 cows by 22 June.

The fate of radiocollared caribou was monitored jointly with the National Park Service and the Yukon Department of Natural Resources. We estimated the annual (1 June-31 May) mortality rate for adult cows to be 21%. Three of the 4 mortalities occurred between 30 September and 28 May. Cause of death has not yet been determined.

We evaluated range condition by determining the percent of lichen fragments in relation to the percent of moss in fecal samples collected during April 1995. About 75% of the herd wintered near the White River and Beaver Creek in the Yukon and the rest of the herd was near Chisana and Cooper Pass, Alaska.. The 1994/95 winter range was adequate with most fecal samples showing percentage lichens of > 60%.

The bull/cow ratio declined below the minimum population objective during 1993-1994 and has continued to decline. The season was closed in 1994 and will remain closed until the bull:cow ratio exceeds 30:100 cows and there is adequate calf recruitment.

Progress Meeting Project Objectives: The Chisana herd has been declining since 1988 due to low calf recruitment. Predation and, during the early 1990s, poor range quality caused by unfavorable weather conditions have been the primary factors. Between 1991 and 1993, harvest was reduced through either a voluntary agreement with principal hunters and guides or by a harvest quota regulated by a registration permit system. Under both systems, harvest did not affect herd growth although it did cause a decline in the bull:cow ratio because of low calf recruitment for the past 7 years. In September 1994 caribou hunting within the Chisana caribou range was closed because the bull:cow rate declined below 30 bulls:100 cows. Considering current herd trend, we cannot predict the opening of Chisana caribou hunting in the foreseeable future.

We initiated a study evaluating summer climatic conditions on productivity and nutrition of Chisana caribou. Results of this study should be available in 1997.

Project Location: Units 19 and 21 (80,411 mi^2)
Big River, Rainy Pass, Beaver Mountains, Tonzona, and Sunshine Mountain Caribou Herds

Project Objectives and Activities:

1. Increase herd sizes to:
   Big River Herd-1500-2000
   Beaver Mountains Herd-1200-1500
   Sunshine Mountain Herd-1500-2000
   Tonzona Herd-1800-2000
2. Monitor mortality factors, including hunting, predation, and other factors.
3. Estimate status, trends, and productivity of the herds from aerial surveys.

Work Accomplished During the Project Segment Period: Analyses of harvest tickets returned by hunters in the area indicated the following harvests for the 1994-95 regulatory year: Big River herd (including Farewell) - 82; Rainy Pass herd - 57; Tonzona herd - 25; Beaver Mountains herd - 2; Sunshine Mountain herd - 0. An additional 739 caribou were reported taken from the Mulchatna Herd in Unit 19. We collected no additional information on predation or other mortality factors. Reported hunter success rate on all herds combined was 83%. Except for a higher hunter success rate, these figures do not vary significantly from previous years' data. Aerial surveys conducted during spring and early summer 1995 in the Beaver Mountains and Sunshine Mountain indicate calf production was relatively good, but survival of calves was extremely low (<5% calves in the herd in early June 1995). Bear and wolf predation is probably responsible for the chronically low calf recruitment.

Progress Meeting Project Objectives: Rough population estimates were available only from the Beaver Mountains and Sunshine Mountain herds. Hunting mortality remains insignificant, but populations continue to decline slightly. Suspected but undocumented wolf and bear predation keep these herds below their targeted levels. Meeting herd objectives will not be possible unless predation levels on these herds are reduced.

Project Location: Unit 20A (6796 mi^2)
Delta Caribou Herd

Project Objectives and Activities:

1. Maintain a bull:cow ratio of at least 30:100 and a large-bull:cow ratio of at least 6:100.
   - Conduct annual fall composition counts.
2. Reverse the decline of the herd and increase the midsummer population to 6000-8000 caribou.
   a. Conduct annual photocensus of the herd.
   b. Cooperate with Research Study 3.37 to "evaluate the influence of weather, density, food limitation, hunting, and predation on the population dynamics of the Delta Caribou Herd."
   c. Reduce wolf predation on caribou by decreasing the wolf population.
   d. Implement a wolf control program.
3. Sustain an annual harvest of 300-500 caribou by 1996.
4. Gather information on predator:prey ratios and on the significance of predation and weather as natural mortality factors.
   - Cooperate with Research Project 3.37.

Work Accomplished During the Project Segment Period: On 20 June 1995 we counted 4646 caribou during our photocensus of the Delta herd. This represented a 7% increase from the number of caribou we counted last year (4341). The proportion of calves in the herd was noticeably higher than during the previous few years but not quantifiable from our photographs.

On 3 October 1995 we completed a composition count of the Delta herd. We classified 1567 caribou and found 20 calves and 24 bulls:100 cows, and 10 large bulls:100 cows. Our sample included 1085 cows, 219 calves, and 263 bulls. We measured fall calf weights which averaged 130 lbs.

We monitored radiocollared cows to determine survival and reproductive rates. Survival of adult cows was 90%.

Progress Meeting Objectives: Monitoring of radiocollared cows indicated good calf production again in 1995; however, 2-year-old cows still failed to reproduce. Sixty-four percent of 3-year-olds and 96% of cows older than 3 were pregnant.

We did not meet our objective for at least 30 bulls:100 cows (24:100) but did meet our objective for at least 6 large bulls:100 cows (10:100).

We also have not yet met our objective to sustain an annual harvest of 300-500 caribou from the Delta herd. Hunting seasons have been closed since late 1991; however, the Board of Game approved a limited (75 permits) drawing permit hunt for 1996.

Wolf control efforts were suspended in 1994. We made modest progress toward meeting herd size objectives.

We do not recommend any changes in objectives at this time. The population and harvest objectives listed above are part of the wolf predation control implementation plan regulations.

Project Location: Subunit 20D (5637 mi^2)
Macomb Caribou Herd

Project Objectives and Activities:

1. Determine the size of the herd. Increase the herd to 1000 animals by 1993, with a sex ratio of 40 bulls:100 cows and 10 large bulls:100 cows after the hunting season.
   a. Conduct aerial census of the herd to determine size, trend, and productivity.
   b. Monitor mortality factors affecting the herd.
   c. Monitor the limited permit hunt.

Work Accomplished During the Project Segment Period: In October 1995 the Alaska Board of Game adopted revised Macomb caribou population and harvest goals as part of a wolf predation control implementation plan for Unit 20D. The revised goals were to reverse the decline of the Macomb caribou herd and increase the fall population to 600-800 caribou with a sustainable harvest of 30-50 caribou per year by the year 2002.

A census and composition survey was conducted on October 1, 1995 and resulted in a population estimate of 477 caribou. Composition data resulted in estimates of 10 calves:100 cows and 39 bulls:100 cows.

The Macomb caribou hunting season remained closed during 1995-96 because of our failure to meet herd size and sex and age composition objectives.

We located 11 radiocollared caribou during the fall census.

Progress Meeting Project Objectives: Revised population and harvest goals were established. Data collected during this period indicated herd size remained below the population objective; calf survival remained poor. The hunting season stayed closed because the herd size did not meet objectives.

Project Location: Subunit 20E (10681 mi^2)
Fortymile Caribou Herd

Project Objectives and Activities:

1. Limit harvest below sustainable levels until the herd reaches 60,000 caribou to ensure hunting is not limiting population growth.
2. Maintain or increase the number of radiocollars to assist in population census efforts.

3. Monitor harvest by issuing registration permits.
4. If the mean annual rate of growth is greater than 10%, allow a maximum harvest of 3% of the herd and 1.5% of the females until herd size reaches 50,000 adults or 60,000 caribou. If the mean annual growth rate is 0% to 10%, allow a maximum harvest of 2% of the herd and 0.5% of the females. During years when the herd is declining, hunting will be further restricted and steps to reduce predation will be recommended, assuming poor caribou nutritional status is not a major factor.
5. Monitor radiocollared caribou to determine mortality rate.
6. Maintain an October bull:cow ratio of at least 35:100.
7. Conduct fall sex and age composition counts.

Work Accomplished During the Project Segment Period: During 1995-1996 60 1-2-day-old calves and 15 5-month-old female calves were radiocollared as part of a research study to determine limiting factors on the Fortymile caribou herd. The number of active radiocollars varied between 80 and 121 during the year. In addition to our research study, we monitored the radiocollared caribou to determine timing for the census and fall composition surveys. Based on the distribution of these caribou, a photocensus was conducted on 13 June 1995. In total, we counted 22,558 caribou. The Fortymile herd size has remained stable since 1990.

During 1995-1996, the following 3 state and 2 federal registration hunts occurred within the range of the Fortymile herd: 1) Hunt 863 included that portion of Units 20B south and east of the Steese Highway and 20D north of the Tanana River and had a 1-bull bag limit, allowed nonresident hunters, and had a fall harvest quota of 50 bulls; 2) Hunt 865 included Unit 20E and Unit 25C south and east of the Steese Highway and had a 1-bull bag limit, allowed only Alaskan residents and a fall quota of 300 bulls; and 3) winter Hunt 865, which included Unit 20E and Unit 25C south and east of the Steese Highway, had a 1-bull bag limit, allowed only state residents and a quota of 100 bulls. The two federal subsistence hunts were conducted using the same state permit in Units 20E and 25C during the year. In total, 2160 permittees killed 200 bull caribou. Hunters killed an estimated 216-232 caribou during 1995-1996, with adjustments for illegal harvest. Percent harvest was < 1% of herd size and did not limit the herd's potential to increase. Hunters have removed less than 2% of the herd annually for the past 6 years.

Many people are unhappy with current Fortymile herd size and trend, reduced hunting and viewing opportunities, and the complexities of the current dual management system. In response, several public groups requested ADF&G and the federal agencies to work with the public in developing a Fortymile caribou management plan. In July 1994 a Fortymile Caribou Management Team was established. The team consists of 19 public members and representatives from state and federal agencies. The team's goals were to develop recommendations dealing with desired herd population size, harvest levels and allocation, and ecosystem management to be used by the Alaska Board of Game and the Federal Subsistence Board during their regulatory decision process. The team met periodically since October 1994 and presented a management plan which included recommendations to reduce harvest and implement nonlethal predator control during the next 5 years and to work with landowners to protect the Fortymile range. The Alaska Board of Game (BOG), the Federal Subsistence Board, and the Yukon Wildlife Board have all unanimously endorsed the plan. The BOG implemented a portion of the plan by adopting a policy that will

reduce harvest beginning fall 1996. The BOG will act on a proposal to implement nonlethal predator control during the spring 1997 meeting.

During 1995-1996 the estimated annual natural mortality rate for Fortymile caribou >12 months old was about 7%. Wolves were the primary cause of death. The annual mortality rate for calves during 1995-1996 was 58%. The primary causes of death were wolf (43%), grizzly bear (27%), other predators (27%), and accidents/abandonment (3%). Of the newborn calves we collared during May 1996, by 30 June 1996 25/60 calves had died (42%) by the following causes: 10 by wolves (40%); 8 by grizzly bears (32%); 5 by golden eagles (20%); and 2 by natural causes (3%).

A posthunt composition count was flown on 28 September 1995 and 3303 caribou were classified. The fall 1995 calf:100 cows and bull:100 cows ratios were 32:100 and 43:100, respectively. Calf recruitment increased the past 2 years; the herd is expected to increase by 6%. Favorable weather conditions in terms of low snowfall and early greenup probably had the greatest effect on increased calf and adult survival. Herd pregnancy rate was much higher in May 1996 (97%) compared with 82%-85% the past 3 years. Assuming average summer and winter mortality, we believe the greater productivity should cause the herd to increase during 1996.

We collected fecal samples to determine range quality from 6 different areas used by the herd during winter 1994-95. Percent lichen of 60%-80% in the fecal samples from all 6 sample areas indicated good to excellent winter range.

Progress Meeting Project Objectives: Because the annual growth rate of the herd was below 10%, the FY95 harvest quota was 2% of the estimated herd size and limited to bulls. This harvest level did not limit the herd's ability to grow. Due to the conservative quota and a bulls-only restriction for the past 4 years, the bull:cow ratio increased. However, to meet the recommendations of the Fortymile Caribou Management Plan, harvest will be further reduced to 150 bulls (0.5%-0.6% of herd size) for the next 5 years. Research proposals and implementation plans are being written for nonlethal predator control for public and BOG review next year. Letters requesting support of the Fortymile Caribou Management Plan were sent to a wide audience, including the Commissioner of ADF&G and principal landowners in the range of the Fortymile herd.

To meet the recommendations of the Fortymile Caribou Management Plan, we recommend replacing the first project objective (Objective 1) with "Limit harvest to 150 bulls until 2001 or the termination of the Fortymile Caribou Management Plan." Second, add the following to Objective 2: "work with the Fortymile Team, other members of the public, and the BOG to implement a nonlethal predator control program in winter 1997/98."

Project Location: Unit 21D and Unit 24
Galena Mountain, Wolf Mountain, Ray Mountains Caribou Herds

Project Objectives and Activities:
Ray Mountain Herd

1. Determine population size, calving locations, rutting areas and winter distribution by 1996.
   - Radiocollar and monitor 20 caribou with a minimum of 6 aerial surveys per year.
2. Determine major mortality factors by 1997.
   - Monitor hunter harvest through harvest reports and hunter interviews in Tanana and Rampart and investigate any radiocollared caribou deaths.

Wolf Mountain Herd

1. Determine population size, calving locations, rutting areas and winter distribution by 1996.
   a. Radiocollar and monitor 20 caribou with a minimum of 6 aerial surveys per year.
   b. Determine major mortality factors by 1998.

Galena Mountain Herd

1. Promote expansion of the herd until it is large enough to allow an increase in the length of the hunting season.
   a. Conduct annual fall composition counts.
   b. Conduct calving surveys.
2. Prevent overharvest of the herd while allowing maximum harvest opportunities of the Western Arctic Caribou Herd, when both occur in the same wintering grounds.
   a. Maintain 20 radiocollars on female in the herd to monitor winter distribution.
   b. Regulate Western Arctic Caribou Herd harvest through emergency order season openings.

Work Accomplished During the Project Segment Period: On 13 October 1995 we conducted a composition count of the Galena Mountain Caribou Herd located 20 miles north of Galena. We counted 310 caribou and found 59 bulls, 211 cows, and 40 calves for a bull:cow ratio of 28:100 and a calf:cow ratio of 19:100. This was an average fall ratio of cow:calves. We currently have 15 radios on the herd, 3 collars were recovered during the period from mortalities. Wolves were suspected of killing 2 of the caribou based on evidence at kill sites.

On 12 October 1995 we collared 10 additional Wolf Mountain caribou in the Wolf Creek drainage. They were relocated 8 times near Wolf Mountain. One collar was on mortality mode in May. However, our attempts to retrieve the collar and determine cause of mortality were unsuccessful. It was from a female that appeared moribund in March, based on her separation from the main herd. The mortality site was located 10 miles north of the last live-sighting of the animal.

The reported harvest in these herds was 0 caribou by 10 unsuccessful hunters. The unreported harvest by Tanana residents of the Ray Mountains Herd is estimated at 5 caribou per year.

Progress Meeting Project Objectives: Hunting mortality currently has no effect on population growth. During winter caribou are accessible to hunters using snowmachines, but the season is closed at that time to prevent overharvest. The expansion of the Western Arctic Caribou Herd (WACH) into the Galena Mountain Herd winter range has increased the complexity of management of both herds.

We have determined the identity of caribou in the Ray Mountains and Kokrine Hills based on 3 distinct calving and wintering areas. These are the Ray, Galena, and Wolf Mountain herds. We

have enough collars on Ray Mountains caribou to assist with fall composition counts. We should try to keep 20 collars on the herd until our objectives are met. More collars need to be placed on Wolf Mountain caribou to aid in meeting project objectives. We do not plan to collar any additional Galena Mountain caribou.

Project Location: Subunit 25C (5,149 mi^2)
White Mountains Caribou Herd

Project Objectives and Activities: To allow continued growth and natural regulation of the White Mountains caribou herd.

1. To maintain a fall bull:cow ratio of 30 bulls:100 cows.
2. To maintain a reported harvest of <75 caribou, including 30 cows during the winter drawing hunts.
3. To maintain at least 20 radiocollared caribou in the herd to adequately measure herd dynamics.
   a. Conduct aerial surveys of the White Mountains herd to monitor distribution and population composition annually and estimate population size at least every 3 years.
   b. Monitor anticipated increases in recreational use and mining development and ensure such development does not adversely affect the White Mountains herd.

Work Accomplished During the Project Segment Period: BLM staff monitored calving during May 1996 to estimate pregnancy rate, first age of reproduction, and calf survival. Reproductive data from these surveys have not yet been compiled and summarized by BLM and were not available for this report. BLM staff have also periodically radiotracked the caribou to monitor seasonal movements and distribution.

To measure sex and herd composition, we completed a survey on 16 and 17 October 1995. The composition sample of 418 included 31 calves:100 cows and 36 bulls:100 cows. During the composition surveys, we also deployed 6 radiocollars onto female calves. The captured calves were in good body condition. The average weight was 136 lb.(range 121-154).

Caribou harvest reports indicate 123 people hunted during the fall general season in the White Mountains area. Only 10 hunters reported being successful. This is a decrease from 1994-95 when 145 hunters reported taking 16 caribou during the fall season.

No caribou were reported harvested during drawing hunts 877 and 878. Only 37 of 150 permittees reported using their permits, 24 during hunt 877 and 13 during hunt 878. A model was used to calculate winter harvest quotas. A winter harvest of 30 caribou was calculated to be a conservative allowable harvest. The longer season increased participation by 35%, from 26 to 37, for both hunts combined.

We have kept in contact with BLM regarding recreational use and development in the area.

Progress Meeting Project Objectives: We are achieving our goal of continued herd growth and natural population regulation. Fall 1996 composition and capture data indicate the herd is healthy and growing.

We are meeting our objective for a bull:cow ratio of at least 30:100. We completed a composition count during this reporting period. The data indicate a stable population.

We are meeting our objective of a <75 caribou total harvest, including a possible 30 cows during the winter hunt. We had only 10 reported harvested during fall and none during the winter season. We should consider increasing opportunity for winter caribou hunting, possibly increasing the number of permits or changing the drawing hunts to registration.

We are meeting our objective of maintaining at least 20 functioning radiocollars in the herd. We deployed 6 radiocollars in October 1996. We should plan in the FY98 budget to deploy 6-10 radiocollars to maintain this minimum number of radiocollars.

BLM monitored calving during spring 1996. BLM is also conducting periodic flights to monitor movements and distribution. ADF&G, in cooperation with the BLM, will continue to monitor the distribution, movements, and reproductive rates of the radiocollared caribou in this herd.

We did not complete a photocensus during this reporting period. The last photocensus was in 1992. We plan to complete a photocensus in 1997. If we continue to annually monitor calving in the spring and composition in the fall, photocensuses should be completed every 3 years.

We are meeting our objective of monitoring recreational use and development in the herd's range by keeping in contact with BLM and other associated agencies.

We recommend the following objective be added as follows.

4. Develop a strategy to increase winter hunting opportunities, while minimizing any potentials for overharvest.

Project Location: Subunit 26B (15,515 mi^2)
Central Arctic Herd

Project Objectives and Activities:

1. Maintain minimum population size of 10,000.
2. Monitor the harvest through field observations, hunter reports, and contact with residents.
3. Coordinate data collection with Research Project 3.35.
4. Conduct censuses and sex and age composition counts.

Work Accomplished During the Project Segment Period: Harvest report cards submitted by hunters in Unit 26B provided most of the harvest data, and staff is compiling harvest reports. Subsistence harvest data is gathered by FWS contractors and ADF&G Division of Subsistence.

A photocensus of the Central Arctic herd was conducted in July 1995 which estimated 18,100 caribou. We completed early summer calving surveys by monitoring radiocollared caribou. The fall 1995 composition count was not conducted because of adverse weather conditions. The Central Arctic herd is stable or decreasing slowly. Harvest has stabilized or decreased in recent years but is still well within the sustainable level.

Progress Meeting Project Objectives: The population objectives continue to be met with the herd exceeding the minimum population level. We are also meeting harvest monitoring goals. In view of the favorable status of the herd, existing management objectives seem suitable.

Project Location: Subunit 26C (10,300 mi^2)
Porcupine Herd

Project Objectives and Activities:

1. Maintain minimum population size of 135,000.
2. Monitor the harvest through field observations, hunter reports, and contact with residents.
3. Coordinate data collection with Research Project 3.34.
4. Conduct censuses and sex and age composition counts.

Work Accomplished During the Project Segment Period: Reports submitted by nonsubsistence hunters provided most of the harvest data in Alaska, and staff is compiling harvest reports. We gathered subsistence harvest data during visits to local communities. A joint FWS/local government harvest monitoring effort has improved harvest data for Venetie and Arctic Village.

Major activities relating to the Porcupine herd included monitoring movements, productivity, mortality, and seasonal distribution based on observations of radiocollared caribou. This herd declined from 178,000 in 1989 to about 160,000 in 1992. A census in July 1994 counted 152,000 caribou. Calf production and survival over the last year were generally good, with 45 calves per 100 cows observed during composition counts in March 1996. The population is probably stabilizing or increasing slowly.

Progress Meeting Project Objectives: The population objectives continue to be met with the herd exceeding the minimum population level. We are also meeting harvest monitoring goals. In view of the favorable status of the herd, existing management objectives seem suitable.

Segment Period Project Costs:

	Personnel	Operating*	Total
Planned	97.1	93.5	190.6
Actual	88.2	120.7	208.9
Difference	8.9	27.2	18.3

* Operating expenditures were more than planned because of expenses associated with a study of causes and timing of mortality of caribou calves in Unit 20A.

Submitted by:

David James
Management Coordinator

Project Title: Western Alaska Caribou Management

Project Location: Unit 18 (42,000 mi^2)
Kilbuck Mountain Herd

Project Objectives and Activities:

1. Allow for continued growth of the caribou population in Unit 18.
   a. Estimate herd size and demography of caribou in the Kilbuck Mountains in the southern portion of the unit.
   b. Determine the extent of movement and distribution of the Kilbuck herd and range overlap with the nearby Mulchatna Herd.
   c. Allow a maximum harvest of 5% of the Kilbuck herd by registration permit (bull-only) until the herd reaches a size of 3,000 caribou.
   d. Adjust harvest levels after population reaches 3,000 or more caribou.
   e. Allow for different seasons and bag limits when the population exceeds 5,000 and when substantial numbers of Mulchatna caribou immigrate into Unit 18.
2. Reduce the magnitude of illegal harvest of caribou in Unit 18.
3. Finalize the Kilbuck caribou herd management plan in cooperation with the public and other agencies.

Work Accomplished During the Project Segment Period: The demography of the Kilbuck herd was studied in a 6,400 mi^2 area in the southern portion of Unit 18. We continued the cooperative study with the Yukon Delta National Wildlife Refuge which was initiated in 1986. Radiotelemetry and survey flights were conducted at periodic intervals to monitor distribution, calving success, recruitment and population size.

The overall herd size has been estimated using composition and census data collected during late fall/early winter surveys when the animals became aggregated. We completed a census during early December 1993 with a minimum population estimate of 3,682 caribou. A composition count was also completed on 23 November 1993. The composition of 1733 caribou was 861 bulls, 675 cows, and 197 short yearlings. During the caribou calving survey on 26 May 1994, we observed 66 calves:100 cows (19% calves). No census or composition surveys have been completed in wither 1994 or 1995 because approximately 30,000 caribou from the nearby Mulchatna herd had entered the core Kilbuck wintering grounds. However, a calving ground survey on 31 May 1996 indicated there were 75 calves per 100 cows. Most of the radiocollared Kilbuck cows were mixed with the Mulchatna caribou herd near the upper King Salmon River.

Observations of caribou movements and distribution were made at periodic intervals during the winter, calving, summer and the fall rutting period. From the distributional data, we documented considerable overlap in ranges of the Mulchatna herd and the Kilbuck herd. An additional 32 short-yearling female caribou were instrumented with radiocollars during the fall of 1994 to replace those lost due to mortality and/or low battery life. Based on their subsequent movements, the caribou instrumented in 1994 were probably Mulchatna caribou. Previous radiotelemetry information for the Kilbuck herd from May 1987 to May 1993 indicated most Kilbuck caribou use

discrete calving areas and have a high fidelity to their present range. However, range overlap has been substantiated by more recent locations of radiocollared animals. Two-thirds of the females originally collared in the Kilbuck Mountains were located east of Nishlik Lake and intermixed with Mulchatna herd caribou in June 1994. Most of the radiocollared Kilbuck females remained far east of their traditional range during the latter part of 1994, 1995, and early 1996. A large portion of the Mulchatna herd entered Unit 18 in August 1996. We are preparing an emergency order to lengthen the caribou season until 31 March 1997 with a bag limit of 2 caribou.

During the state fall season (1-30 Sept. 1995), open registration permits were issued to 185 hunters; 178 (96%) reported hunting effort. A harvest of 21 bull caribou was reported with an average of 3 days to bag game. Hunters spent 352 days hunting in 1995. Seventy-six percent of the hunters used boats for access during the fall hunt; the remainder used aircraft.

During the federal seasons (31 December 1995-9 January 1996 and 22 February 1996-15 March 1996), 180 Federal "closed" registration permits were issued to 18 villages (10 per village). The reported harvest during the Federal registration hunt was approximately 60 caribou. During the state emergency order season from 1 October 1995 through 31 March 1996, preliminary harvest results are 18 caribou. Most of the villages did not participate in the federal hunt because the state season was more liberal. Unreported harvest is estimated at 200 caribou for this winter hunt. Estimated illegal harvest during the 1995-96 season may have been substantial. Anecdotal information from local hunters suggest that as many as 200 caribou may have been taken illegally, including several wasted caribou, between 1 December 1995 and 1 March 1996. Enforcement by State Fish and Wildlife Protection is being increased, especially during hunting season.

Progress Meeting Project Objectives: The Kilbuck herd has increased dramatically from an estimate of less than 1000 animals in 1985 to approximately 4500 animals in December 1995. The combined preliminary reported harvest (approximately 300 caribou) during the state and federal hunts was below 5% of the total estimated herd size. However, when combined with the estimated unreported and illegal harvest, the percentage of the herd harvested is much greater. We are presently increasing seasons and bag limits in response to influxes of the Mulchatna herd (Population Objective 1e). We will draft a proposal to lengthen the season for the 1997-98 regulatory year in cooperation with FWS and the villages in Unit 18.

The incidence of illegal harvest is still a problem in the eastern portion of the herd's range. However, increased enforcement efforts by the state helps document the amount of illegal harvest. A federal enforcement officer has been hired for fiscal year 1996 by the Yukon Delta National Wildlife Refuge to handle out-of-season take of caribou.

Increased support by the village governments and other agencies of caribou management in the Kilbuck Mountains has been greatly enhanced through the cooperative management planning process. Several village councils and AVCP have drafted resolutions in support of the cooperative management plan and finalization. The plan has been held statewide as an example of successful cooperative management.

Project Location: Unit 21D, 22, 23, 24, and 26A
Western Arctic Herd

Project Objectives And Activities:

1. Maintain a minimum population size of 200,000 caribou or larger.
   a. Conduct a photocensus every 2-3 years to estimate population size.
   b. Conduct periodic radiotracking flights to monitor herd distribution and mortality.
   c. Maintain a year-end sample size of at least 100 operational radiocollars on living caribou.
   d. Conduct aerial surveys during early April to assess short yearling recruitment.
   e. Conduct aerial surveys during early June to monitor calving success.
   f. Conduct aerial surveys during October to assess herd composition and retrieve radiocollars.
   g. Collect approximately 75 blood samples annually to monitor the incidence of selected diseases and pathogens.
   h. Monitor hunting and other mortality factors through harvest reporting, collection of biological specimens, public contacts, and unreported harvests.
   i. Improve communication with the public to reduce the magnitude of unreported harvests.
2. Minimize conflicts between caribou and the reindeer herding industry.
   - Conduct fall, winter, and spring surveys to monitor caribou distribution near reindeer herds.
3. Minimize conflicts with industrial development.
   - Monitor the distribution and movements of caribou near major industrial developments to assess impacts.
4. Develop updated population objectives in cooperation with the public and other agencies.
5. Begin planning for comanagement of the herd by holding scoping meetings with native groups, federal agencies, Fish and Game advisory councils, and other interested parties to establish goals and procedures for the comanagement process.

Work Accomplished During the Project Segment Period: During September 1995, 26 caribou from the Western Arctic Herd (WAH) were instrumented with radiocollars near Onion Portage on the Kobuk River. We began the reporting period with 123 active radiocollars on WAH animals, including 6 PTT satellite collars.

During the winter (October 1995 through April 1996), numerous telemetry distribution flights were flown by staff from our Nome, Kotzebue, Fairbanks, and Barrow offices. The flights were conducted in Units 21D, 23, 24, 26A, and near eastern Norton Sound in Unit 22. The status of all radiocollared caribou was monitored during these flights.

Aerial recruitment surveys were conducted in Unit 23 when caribou were migrating north to the calving grounds during late April and early May 1996. To maximize sampling effort, radiocollared animals were relocated, and composition was determined for up to 200 animals in the immediate

vicinity of the collared animal. We counted 5921 caribou, a recruitment ratio of 22 short yearlings:100 adults.

Calving ground surveys were completed during early June 1996 near the Utukok River and Lisburne Peninsula. Calf production was based upon observation of animals grouped with radiocollared cows. We observed 61 calves:100 adults.

Harvest was determined using the WAH reporting system for local residents, and the statewide harvest ticket system for nonlocal residents and nonresidents. During the 1995-1996 hunting season, 225 local hunters reported a harvest of 910 caribou. Harvest reporting by local residents is still in progress, and the harvest reported above should be regarded as preliminary. Because harvest reporting rates among local hunters are often poor, we believe actual harvest is substantially higher than reported.

We helped plan and attended WAH comanagement scoping meetings with village representatives in Barrow, Kotzebue, Nome, and Huslia to help identify goals and possible mechanisms for co-management of the WAH. Meetings were also held with federal agencies (U.S. Bureau of Land Management, U.S. National Park Service, U.S. Fish and Wildlife Service) and Fish and Game Advisory Councils in Anchorage and Fairbanks. We realize comanagement of the herd is an important task involving a long process, and we have made considerable progress by encouraging the principal constituencies to begin discussing the issue.

Progress Meeting Project Objectives: We were able to maintain a year-end sample size of 100 radiocollared caribou in the WAH during the reporting period. We do not plan to increase the sample of radiocollars in the herd because technological limitations occur when radiotracking more than 125 radiocollars at any one time. We believe increasing the number of WAH radiocollars would lead to inaccurate locations and mortality estimates of radiocollared animals.

Aerial radiotelemetry and distribution surveys show that large numbers of caribou use winter ranges south of the Selawik Hills within and adjacent to reindeer ranges. Substantial losses of reindeer through mixing with WAH animals occurred during the reporting period. We recommend additional survey flights within and adjacent to reindeer ranges to warn herders of impending movements of caribou that may affect the reindeer herds.

Short yearling surveys during late April and early May 1996 indicate the recruitment rate of 22 short yearlings:100 adults has been relatively low during recent years. Since 1986 recruitment has ranged from 17 to 32 short yearlings:100 adults.

Because of staff vacancies, we were not able to perform as much information/education work as planned. Improving the public's understanding of regulations and the need for better harvest reporting are 2 goals of our information/education program. In addition, information/education activities provide our staff with public contacts and their views regarding our caribou management program.

Project Location: Unit 26A (53,000 mi^2)
Teshekpuk Lake Caribou Herd

Project Objectives and Activities:

1. Maintain a stable or increasing population for the Teshekpuk Lake Herd (TLH) and provide for hunting on a sustained yield basis.
   a. Determine the herd population size every 2-3 years.
   b. Determine calf production and the percentage of calves surviving their first winter.
   c. Delineate the calving grounds each year.
   d. Identify and map the herd's movements and distribution throughout the year, using survey and radiotelemetry data.
   e. Develop a system to capture caribou without the use of drugs.
   f. Encourage local participation in research and management decisions.
   g. Determine the extent of the harvest using methods that are acceptable to hunters as well as the participating agencies.
   h. Determine sources of significant, nonhunter mortality.
2. Provide educational opportunities for students and other members of the public.
3. Minimize conflicts with industrial development.
   a. Use satellite and VHF radio collars to monitor the distribution and movements of caribou near areas of potential industrial development to assess impacts.
   b. Define critical caribou habitat areas such as calving, insect relief, and wintering areas in Unit 26A using aerial survey information and locations from satellite collars.
4. Develop updated management objectives in cooperation with the public and other agencies.

Work Accomplished During the Project Segment Period: Photographs for a photocensus were taken in July 1995 while the caribou were in insect relief aggregations. We used radiotelemetry equipment to determine that most of the radiocollared caribou were in the groups that were photographed. Department and North Slope Borough Department of Wildlife Management (NSB) staff subsequently counted 25,076 caribou from the photographs. During the 1993 photocensus 27,686 caribou were counted, so the herd has stabilized or declined slightly. In 1989 the herd size was 16,649 caribou, and it increased at a rate of 14% per year for the period 1989-1993.

Through a cooperative project with the NSB and the U.S. Bureau of Land Management, 18 caribou were captured using a Hughes 500 helicopter equipped with a skid-mounted net gun during July 1995. We attached satellite radio collars to 8 caribou and standard VHF collars to 10 caribou to aid in population, productivity, and movement studies. We collected blood samples and measured, weighed, and assessed the body condition of all captured caribou. Additionally, 8 caribou were collected and necropsied to test for disease, parasites, and contaminants.

We used a Hughes 500 helicopter for composition surveys on 20 July 1995 by flying transects in an area north of Teshekpuk Lake. We classified 1987 caribou and saw 824 cows, 560 bulls, and 603 calves. We found 30% calves and counted 73 calves:100 cows and 68 bulls:100 cows. We

flew short yearling composition surveys in a PA-18 on 21 April 1996 by flying to radiocollared cows and counting adults and short yearlings in the area surrounding the collared animal. Of 1000 caribou, we counted 239 short yearlings for 24% short yearlings, or 31 short yearlings:100 adults. On a dogsled trip between Umiat and Barrow during 1-4 May, I observed 1362 caribou and saw 336 calves for 25% short yearlings, or 32.7 short yearlings:100 adults. The percentage of short yearlings observed in 1996 was much higher than that of most previous years.

Calving surveys were flown on 14 June 1995 to determine calving location and success. We located 26 cows with radiocollars. Of the cows >3 years old, 22 of 24 had calves for a calving rate of 92%. This was the highest calving rate that we have witnessed from collared TLH caribou. Most calving occurred east, northeast, and north of Teshekpuk Lake during 1996, with more calving north of the lake than usual.

We monitored the movements of 9 satellite collared caribou throughout the year. The weather was mild, with no severe icing conditions, and all the satellite collared caribou spent the winter on the coastal plain, mostly between Dease Inlet and Wainwright. One animal collared in 1993 spent the spring and calved with the Western Arctic Caribou Herd near the Utukok River. The other 8 caribou returned to the Teshekpuk Lake calving grounds for calving. All 9 of the satellite collared caribou survived the winter of 1995-1996.

Progress Meeting Project Objectives: Nearly all of the management objectives are being met. During 1995-96 we completed a photocensus, summer and spring composition counts, and calving location surveys. Adult mortality was lower and overwinter calf survival and calving success higher than in all previous survey years. Caribou were captured and radiocollars were attached without using drugs. We relocated caribou with VHF radiocollars several times during the year and obtained detailed movement information from satellite radio collars. We will continue to monitor caribou movements and use this information to protect critical habitat areas from the effects of industrial exploration and development.

Students from North Slope schools were given educational opportunities for learning about research techniques for monitoring caribou populations and movements. Barrow and Nuiqsut students assisted in capturing and attaching radiocollars to caribou. They used satellite collar locations to plot the movements of caribou through fall and winter seasons.

TLH caribou harvest was moderate. Much of the herd spent the winter near the villages of Wainwright, Atqasuk, and Point Lay and were hunted by residents from those villages. Few caribou came close to Barrow, so harvest was not as great as in recent years.

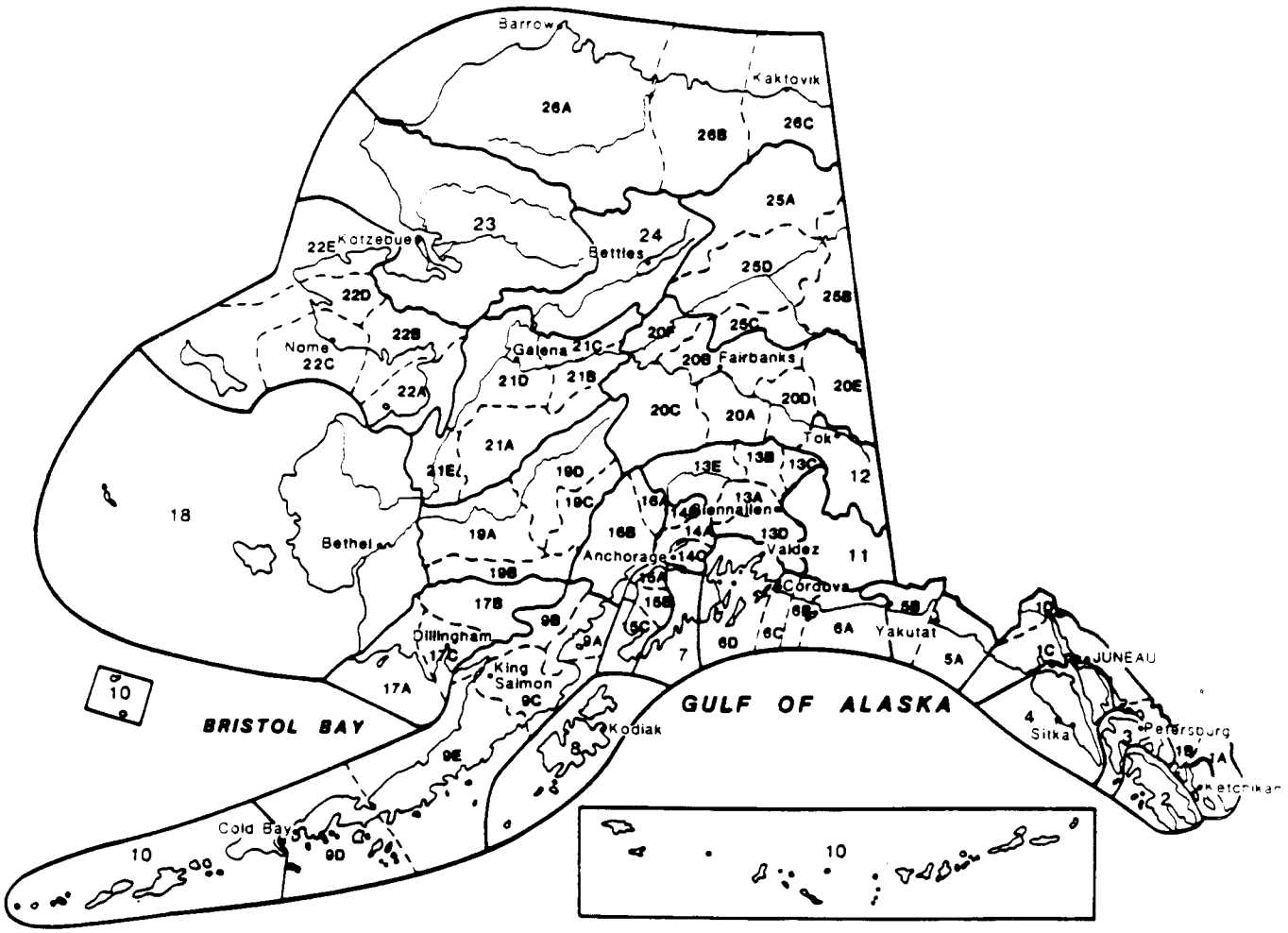
Segment Period Project Costs:

	Personnel	Operating	Total
Planned	127.1	105.4	232.5
Actual	134.0	71.3	205.3
Difference	-6.9	34.1	27.2

Submitted by:

Peter Bente
Survey-Inventory Coordinator

Alaska's Game Management Units



The Federal Aid in Wildlife Restoration Program consists of funds from a 10% to 11% manufacturer's excise tax collected from the sales of handguns, sporting rifles, shotguns, ammunition, and archery equipment. The Federal Aid program allots funds back to states through a formula based on each state's geographic area and number of paid hunting license holders. Alaska receives a maximum 5% of revenues collected each year. The Alaska Department of Fish and Game uses federal aid funds to help restore, conserve, and manage wild birds and mammals to benefit the public. These funds are also used to educate hunters to develop the skills, knowledge, and attitudes for responsible hunting. Seventy-five percent of the funds for this report are from Federal Aid.

LeeAnne Ayres