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CARIBOU

Mary V Hicks, Editor

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STATE OF ALASKA
Tony Knowles, Governor

DEPARTMENT OF FISH AND GAME
Frank Rue, Commissioner

DIVISION OF WILDLIFE CONSERVATION
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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 caribou until a carrying capacity is determined for their winter range.

Work Accomplished During the Project Segment Period: On 14 March 1997, an aerial survey was completed for the Kenai Mountains caribou herd. The survey team used a Piper PA-18 Supercub. A total of 452 caribou were observed but were not classified because we used a fixed-wing aircraft. The 1997 estimate places the herd's postcalving population size at 550 caribou. The previous complete sex and age composition survey was conducted on 14 March 1996. Using a Bell 206B Jet Ranger, we classified 403 animals, yielding the following results: 237 (59%) cows, 97 ((24%) bulls, and 69 (17%) calves. Ratios were 41 bulls and 29 calves per 100 cows. Calves composed 17 percent of all caribou classified. The herd size was estimated at 405 animals in 1992/93.

We received 1060 applications for 250 permits issued to hunt caribou of either sex during 1996. Twenty-three (9.2%) hunters reported hunting successfully, 105 (42%) unsuccessfully, and 122 (49%) did not hunt. The reported harvest comprised 10 (44%) males and 13 (56%) females. Successful hunters used the following transportation methods to access their hunting area: highway vehicles 16 (70%), horses 2 (9%), aircraft 0 (0%), ATV 1 (4%) and unknown 4 (17%). Eighteen (78%) animals were taken in August and 5 (22%) in September. Twenty-two (96%) of the 23 successful hunters were residents of the state.

Progress Meeting Project Objectives: The harvest of 23 caribou during 1996 from an estimated herd of at least 500 is insignificant in an attempt to reduce the herd's size. Surveys conducted in 1992 and 1997 indicate the herd increased from approximately 405 to 550 animals or about 26 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 maintained at 250 and the season increased for the 1997 season in an attempt to start reducing the herd's size. No change in bag limit is recommended for 1997. If the 1997 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 1998 season.

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: An aerial survey on 19 June 1997 indicated a minimum of 98 caribou, including 17 (17%) calves, were in the herd. Eighty-one of the 98 caribou were adults, an increase of 20 adults since the count in 1996. An accurate assessment of yearlings was not possible since a fixed-wing aircraft was used, but yearlings were

commonly observed. We counted 96 caribou (27% calves) on 21 June 1996.The reduction in number of calves (27 to 17) may be a product of lower production due to aged cows in the herd, increase in calf predation, or both.

Progress Meeting Project Objectives: Adult animals in Kenai Lowlands herd increased by 25 percent while the number of calves declined by 37 percent from 1996. Total animals observed remain 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, 69 in 1996 and 81 in 1997 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 so until the herd size reaches the management objective of 150 caribou.

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: Spring surveys were conducted on the 3 caribou herds resulting from the 1985 and 1986 reintroductions. Surveys were conducted by the U.S. Fish and Wildlife Service (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. On June 11, 1997 the Killey River and Twin Lakes herds were counted, resulting in the following totals: Killey River-376 (86 calves-23%) and Twin Lakes 73 (14 calves-19%). The Fox River herd was counted on June 3, 1997 and 81 (15 calves-19%) caribou were found. These totals compare with 261, 48 and 83, respectively, found in these herds last year. Complete composition data were not collected because the survey was conducted with a fixed-wing aircraft. The 4 original releases totaled 80 animals.

Hunting was authorized on the Killey River herd beginning in 1994. A total of 25 permits were issued each year with a bag limit of 1 caribou. In 1996, we received 271 applications for these permits. Seventeen permit holders hunted, harvesting 12 bulls (71%). Successful hunters averaged 3.6 days afield and 10 (83%) of the 12 successful hunters were residents. Eight successful hunters used horses (67%), 3 used boat (25%) and 1 used aircraft (8%) for transportation.

Hunting began on the Fox River herd in 1995 when 15 permits were issued. We reduced the number of permits issued to 10 in 1996 and received 204 applications for these permits. Three of the 10 permit winners reported hunting, resulting in the harvest of 2 bulls. Successful hunters averaged 9.0 days afield and both were residents.

The Twin Lakes herd was not hunted during this reporting period.

Progress Meeting Project Objectives: We achieved our management objective of reestablishing viable caribou populations in suitable habitat in 15B and 15C. Results from 1997 surveys compared with those of 1996 indicate that Killey River and Twin Lakes herds have continued to increase, while the Fox River herd has declined slightly. Quality and quantity of habitat in the Fox River's range may becoming a limiting factor since the density of the herd is about 1 caribou per km^2. The minimum spring 1997 population size of these 3 caribou herds was 530 caribou, compared with 392 for the spring of 1996.

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, 1995 and 1996. The Fox River herd was opened in 1995, allowing 15 permits in 1995 and 10 in 1996. The Twin Lakes herd is increasing, although it is still too small to support additional mortality through hunting.

Preliminary results from radiotracking indicate animals are exchanging between the Twin Lakes and Killey River herds but the extent is unknown.

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: Harvest reports for this reporting period have not yet been analyzed. Hunting effort was comparable or slightly higher than previous years.

During the 1996-97 season several Emergency Orders and Regulations were issued to open hunting seasons on Mulchatna caribou herd (MCH) that were moving near villages in closed areas. Subunit 19D, near McGrath, was opened from 1 November to 31 January (5 caribou), Unit 18 (south of the Yukon) and Subunit 17A (west of the Togiak River) were opened from 18 October to 31 March (2 caribou), Subunit 17A (north of Pungokepuk Creek) was opened from 23 November to 31 March (2 caribou). Subunit 17C (west of the Wood River and north and east of Weary River) was opened from 25 December to 25 January (1 caribou), and Subunit 17C (between the Kokwok and Wood Rivers) was opened from 25 December to 15 April (5 caribou).

At the spring 1997 Board of Game meeting, regulations for the 1997-98 season were changed to reflect the increase of the herd's range. Caribou bag limits within most of Units 17, 9B, and 19B were liberalized to allow a hunter to take 5 caribou, as long as no more than 2 bulls are taken during the rut (October and November). The open season in the portion of Unit 17C between the Kokwok and Wood Rivers was lengthened to 1 August to 15 April; the old season was 1 August to 30 September.

The Board also gave ADF&G authority to open the caribou season in Units 17A, 17C (west of Wood River), and 18 (south of the Yukon) when sufficient numbers of Mulchatna caribou are

present. The bag limit in those special openings can be 5 caribou. In the western portion of subunit 17C, the Board directed ADF&G to open the area only when 5,000 or more caribou are present north of the Tuklung/Igushik Rivers.

A high incidence of failure to salvage meat prompted the Board to prohibit "boning" of caribou and moose harvested in Units 17, 19B, and 9B. All hunters in these areas must keep the meat attached to the 4 legs and the ribs until it is either processed for human consumption or removed from the area.

We conducted photocensuses of the MCH on 30 June-3 July 1996. Aerial photographs taken during that survey indicated a minimum population size of 192,818 caribou. We estimated the MCH included 200,000 caribou this year. These data indicate the herd continued to increase in size. No fall composition counts were conducted during this reporting period.

For the second year in a row, most of the MCH did not concentrate on traditional winter ranges. They spent the winter on the four corners of their range, with an additional group in the middle. About 30,000 were in the Togiak drainage. Another 25,000 were in the Aniak drainage near the Buckstock River. The area between Sparrevohn, Stink Creek, and the Swift River was very well tracked, indicating at least 20,000 caribou wintered there. The main concentration was in the Swan River flats between Tutna, Nikabuna and Swan Lakes. This later group moved between the Swan flats, Kaskanak flats, and Kvichak River during the winter, while the other groups were relatively stationary. The most surprising group was about 20,000 caribou near the Nushagak River north of Koliganek on Harris Creek. The extremely low snow pack throughout the winter was probably responsible for this distribution.

Most of the MCH calved east of the Tikchik River basin at the head of the King Salmon and Klutuspak rivers in 1997. This calving area was also used by most of the radiocollared caribou from the Kilbuck herd. Another large group calved in the Mosquito River drainage. Productivity within the area was the lowest yet recorded, at 28.5 calves per 100 adult cows. Other than a few brown bears in the calving area, there was little evidence of predation. Reduced productivity may be the result of very dry conditions experienced during the summer of 1996.

The number of caribou translocated from the Alaska Peninsula to the Nushagak Peninsula in 1987 remained stable during this reporting period at 1300 animals. Monthly radiotracking flights verified that most of the herd remained on the Nushagak Peninsula, with little interchange with the segment of the MCH that wintered within 10 miles of the Nushagak Peninsula. Data from the Federal Subsistence hunt are still being analyzed. In 1996/97 the season was liberalized to include an August season.

Progress Meeting Project Objectives: The population and range of the MCH continued to increase. Although no range investigations have been conducted in areas used by this herd. trailing is extensive 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.

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

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

Work Accomplished During the Project Segment Period: The USFWS counted 603 caribou on Unimak Island in January 1997 and 3240 caribou in Unit 9D in April 1997. In April 1997 we captured and radiocollared 13 female calves in 9D and 5 on Unimak Island. Blood samples, measurements and weights were taken.

On 1 June 1997, a parturition survey was conducted in Unit 9D during which 460 and 406 caribou were classified on the Caribou River Flats (CRF) and Black Hills/Trader Mountain (BHTM) areas, respectively. On the CRF and BHTM areas 82% and 78%, respectively, of cows ≥2 years old showed evidence of being parturient, and 40% and 10% already had calves. Compared to results from 1989 and 1992, calving was about 5 days earlier in 1997.

A photocensus on 29 June 1997 revealed a minimum of 1696 caribou, of which 14% were calves. Coverage of the summer range was comparable to previous years, and the count was similar to results in 1993-95 and to FWS winter transect counts during 1993-96. Because of the discrepancy between the April survey and the postcalving count in June, the FWS arranged for extended coverage during 9-11 July 1997. During this second survey, we located all 22 functioning radio collars and visually estimated 1557 caribou. Combining the 29 June data with animals seen during 9-11 July outside the core area, a minimum population total is 1844 with 15% calves. On 12 July we surveyed the northern side of Unimak Island and counted 99 adults and 41 calves.

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; because of 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 should remain closed until the herd exceeds that number. Although there are some indications that caribou are in better physical condition now and the Unimak segment is clearly showing good productivity, recruitment and adult female mortality in Unit 9D indicate population growth is unlikely. The results of the April 1997 survey by the FWS in Unit 9D are not easily explained. A subsistence hunt on Unimak Island is now justified to prevent rapid population growth that could exceed the carrying capacity of the island. Hunting in 9D should not be imposed until another winter survey and/or data on recruitment and survival substantiate the herd is starting to recover.

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 animals 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 1996, and 2572 caribou were classified. Ratios were 48 bulls and 36 calves per 100 cows. Calves composed 19.4% of the fall sample, compared with 24.8% of the caribou counted in 1996 postcalving aggregations.

A photocensus was conducted in June 1997 and preliminary estimates totaled 10,000 caribou, including 2000 counted by the FWS in the Aleutian Mountains and on the Pacific Coast. Coverage by the FWS was curtailed because of an emergency situation requiring the refuge aircraft.

Hunters reported killing 438 bulls and 43 cows during the 1996-97 season. Hunter success was 85%. Chronology of the harvest by month was as follows: July-0; Aug.-92; Sep.-173; Oct.-104; Nov.-21; Dec.-24; Jan.-30; Feb.-12; Mar.-20; and Apr.-1. Local residents, other Alaskans, and nonresidents accounted for 13%, 32%, and 54%, respectively, of successful hunters, but because of the 1-caribou bag limit for nonresidents, they accounted for 46% of the reported harvest. The 1996-97 reported harvest was similar to 1994-95 and 1995-96, and all 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. Unlike 1995-96, several thousand Mulchatna caribou moved into Units 9C and 9E during the 1996-97 winter, and an unknown proportion of the winter harvest in the Naknek drainage was Mulchatna herd animals.

In April 1997 we captured and radiocollared 14 females calves and 4 yearling females. We took blood samples, measurements and weights. In October 1996 we collected 10 calves for assessment of body condition.

Progress Meeting Project Objectives: Population estimates from 1991-93 ranged between 16,000 and 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 the 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. The 1997 count indicates a slight decline during the past year, but count results are still preliminary. Hunting restrictions implemented during the 1994/95 season reduced harvests, and natural mortality was reduced this

reporting period. The herd remains below the minimum population objective, and conservative hunting regulations 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 animals.

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. A regulation was established allowing for no closed season and no bag limit for caribou on Adak Island, effective 1 July 1993.

The reported harvest of 50 animals during the 1995-96 season was a sharp decline 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 introduced 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 by 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%. Virtually all neonatal calf mortality was attributed to predation, mostly 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, and may have been overly optimistic. Historic data indicate a herd objective of 1500-2000 adults may be more realistic as a maximum objective. NPS rules prevent management actions that prevent further herd decline, other than controlling sport and subsistence harvests.

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 historic 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 First Nations in Canada occurs when Mentasta caribou mix with the Nelchina herd on winter range. However, the total take under these circumstances is probably very small. Complete elimination of this incidental take will be impossible as long as mixed-herd harvests are allowed in winter months. All hunts specifically intended for Mentasta caribou have been closed and should remain closed 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 both current body conditions and that of other Interior caribou herds.

Work Accomplished During the Project Segment Period: The October 1996 postrut estimate for the Nelchina herd was 44,273 caribou, of which 34,492 were adults (>1 yr). The estimate was extrapolated from a June 1996 postcalving aerial count of 48,666 animals (57% cows) and the September 1996 sex and age survey which tallied 34 bulls:100 cows and 38 calves:100 cows. The June 1997 total postcalving spring aggregate photo count was 34,894 caribou. The 1997 postcalving composition count was 38 calves:100 cows.

Two Nelchina caribou state hunts were held during 1996 in Unit 13. The fall and winter state hunt was composed of a Tier II subsistence permit hunt with 10,000 permits issued for bulls only and a Tier I subsistence hunt for cows and small bulls with 36,600 permits issued. The Tier II hunt permits were issued to the 10,000 applicants with the highest eligibility score. The Tier I hunt was a registration hunt and any state resident could get a registration subsistence permit by mail. The harvest under the Tier II hunt was 1728 bulls. The Tier I harvest was 2519 cows and 726 small bulls. The combined harvest for both state subsistence hunts including sex-unknown animals was 4983 caribou.

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 1579 permits were issued for the federal hunt. The federal harvest was 212 (composition data unavailable). This year's federal harvest was similar to the past few years' reported take, which were well below the 1991 harvest of 647 caribou. The reasons for the harvest declines are 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 what little federal lands remain open.

The herd's calving distribution in 1996 followed historical patterns. Calving and postcalving use has traditionally occurred in the eastern Talkeetna Mountains in Units 13A, 13E, and 14B. Postcalving aggregations were located south of the Black River.

During fall 1996 the herd was located in the interior portions of Unit 13 and crossed the Richardson Highway intermittently in small groups, limiting accessibility to hunters from the highway system. Radiocollared caribou distribution was within a band extending from the eastern Talkeetna Mountains across the Lake Louise Flats south of the Alphabet Hills to the Gulkana River. In late September the caribou herd moved east along the usual migration route across Unit 13 into Units 11 and 12. Virtually the entire Nelchina Herd left Unit 13 during the winter migration of 1996-97. Caribou did not begin moving back into Units 13C and 11 until late spring, and caribou were 2 weeks late reaching the calving grounds. Some early calves were dropped on

the Lake Louise Flats before the caribou reached the traditional calving grounds in the eastern Talkeetna Mountains.

Caribou calving was monitored by flights every other day from 21 May-28 May. Radiocollared adults were tracked and we observed every flight until we determined the cows had calved. In the absence of a calf, a cow with retained antlers and distended udder was considered to have been pregnant, even if a calf was not observed. We captured neonatal calves (n = 60) for birth weights during the peak of calving.

We monitored body condition twice in female calves, once during September and again in April. After capture, caribou were weighed and body condition parameters recorded and compared with similar Nelchina herd data from past years. Comparison of weights and condition indices were also available between other Interior caribou herds.

Progress Meeting the Project Objectives: The 1996 fall population estimate for the Nelchina caribou herd declined by over 5000 caribou but was still well above the herd management goal of 35,000-40,000 caribou. The management action of increasing cow harvests to bring the herd size down to objective levels was responsible for the 1996 decline. The caribou harvest increased and the cow harvest increased; for the first time, cow harvest exceeded the bull harvest. The fall bull:cow ratio remained stable but below the minimum objective for this herd, primarily because of the high yearly bull harvests.

Spring calf production and/or survival declined appreciably in 1997 and is the lowest observed since 1993. The low calf production/survival observed this year is attributed to poor summer range conditions in 1996 due to a severe drought on the calving grounds. We assume summer stress decreases body condition of caribou, which could result in a decline in pregnancy rate the next spring. This year's poor calf production will reduce caribou numbers in the NCH by 3,000-4,000 animals.

The spring 1997 photo count of 34,894 caribou is approximately 10,000 caribou below modeling predictions for the spring census. Almost half of the decline in the total spring count is attributed to the observed decline in calf production/survival. However, there is also a decline of over 5,000 adult caribou that cannot be explained. Speculation as to the reasons for the lower adult count includes: (1) poor count, (2) increased mortality of adult cows during winter, (3) higher illegal loss and related wounding loss and unreported kills.

Body condition parameters declined in 1996. Body weights for female calves were lower in fall 1996 than in fall 1995. Body weights for female calves in April 1997 were the same as fall weights, indicating summer range caused the decline in calf condition and the winter of 1996-97 was relatively mild. The peak of calving for radiocollared cows was 3 days later in 1997 than in 1996. 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 in the Nelchina Herd indicate the animals are at a lower nutritional level than animals in adjacent Interior herds. The mortality rate for radiocollared caribou was 15%, an increase from the 5-10% of recent years.

Recommendation: Reduce the cow harvest quota to no more than 1,000 animals for the 1997-98 season. Determine if natural mortality rates have increased by monitoring mortality on radio-collared caribou.

Segment Period Project Costs:

	Personnel	Operating	Total
Planned	83.4	101.6	185.0
Actual	83.4	102.1	185.5
Difference	0.0	-0.5	-0.5

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: We completed a sex and age composition count on 30 September 1997 during which we classified 377 caribou. The calf:cow ratio was 4.8:100 and the bull:cow ratio was 16:100. This was the eighth consecutive year of poor calf recruitment ($\bar{x}$ = 4.9/100; s = 4.5). The bull population has been declining since 1992 and is expected to continue as long as calf recruitment remains low. Based on composition and mortality data, the fall 1996 population size estimate was 600 caribou. The herd has declined 68% since 1988.

On 28 May 1997 we surveyed radiocollared cows to determine pregnancy rate and incidence of early calf mortality. We assessed 11 animals and determined 9 were pregnant (82%). Pregnancy rates exceeded 95% between 1994 and 1996. The two radiocollared animals not pregnant in 1997 were pregnant in 1995 and 1996. Severe weather conditions have been the primary factor reducing pregnancy rates. Since 1989 few cows have been recruited into the population during the past 7 years, so most of the Chisana cows are within breeding age. In 1993, following a severe winter and summer drought, 50% of Chisana cows were pregnant. Drought conditions prevailed during summer 1996 and may have caused reduced pregnancy rates, especially for younger- and older-aged animals. Reduced pregnancy rates were also documented for the Delta and Denali herds.

We estimated the peak of calving to be about 25 May 1997. On 28 May 7 cows were still accompanied by a calf. The late May estimated calf:cow ratio was 64:100, compared with ratios in 1996 of 36:100, 1995-52:100, and 1994-73:100. In 1996 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 summer (1 June-30 September), winter (1 October-30 May), and annual (1 June-31 May) mortality rates for adult cows to be 14%, 25%, and 29%, respectively. Wolves were the primary predator responsible for 85% of the mortalities.

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 calf recruitment is adequate.

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 8 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 and management options, I do not expect opening the 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 will be reported in 1998.

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:
   Big River Herd-1500-2000
   Beaver Mountains Herd-1200-1500
   Sunshine Mountain Herd-1500-2000
   Tonzona Herd-1800-2000
   Rainy Pass Herd - 1500-2000
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) - 55; Rainy Pass herd - 30; Tonzona herd - 13; Beaver Mountains herd - 1; Sunshine Mountain herd - 0. An additional 704 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 81%, with 88% of the reported harvest on bulls. Fifty-three percent of the reported harvest was by nonresidents of the state. Air transport remained the most common access method (88%). Except for a slight decline in the reported harvest from all herds, these figures do not vary significantly from previous years' data. Incidental to Dall Sheep surveys in Unit 16, 1093 Rainy Pass Caribou were tabulated during July 1996, and I suspect there were an additional 1000-1500 animals present in Unit 19, bringing the herd total to 2100-2600. Aerial surveys conducted during spring and early summer 1997 in the Beaver Mountains and Sunshine Mountain indicate calf production was relatively good, but survival of calves remained extremely low (5% calves in the herd in early June 1997). 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. 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.
4. Gather information on predator:prey ratios and on the significance of predation and weather as natural mortality factors.

Work Accomplished During the Project Segment Period: On 22 June 1996 we estimated 4100 caribou during our photocensus of the Delta herd. This represented a decrease from the number of caribou we counted last year (4341) but is consistent with the stable to slightly increasing trend indicated by research data.

On 9 October 1996 we completed a composition survey of the Delta herd. We classified 1532 caribou and found 21 calves and 30 bulls:100 cows, and 9 large bulls:100 cows.

Progress Meeting Project Objectives: We completed all scheduled surveys under adequate conditions, although caribou were aggregated in rather small groups during the photocensus. We continue to gain ground on our bull:cow ratio objective probably due to increased recruitment during the last few years. In addition we continued to exceed our objective for large bulls: 100 cows.

Improvement in large bull:100 cow ratios resulted in approval of a limited drawing hunt for bulls during the 1996-1997 regulatory year. Although far from our harvest objectives, 26 caribou were taken from 75 permits.

Wolf control efforts were suspended in 1994. We have made modest progress 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: Unit 20D (5,637 mi^2)
Macomb Caribou Herd

Project Objectives and Activities:

1. Increase the size of the Macomb caribou herd to 600-800 caribou, with an annual harvest of 30-50 caribou per year by the year 2002.
   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: A census and composition survey was conducted on October 2, 1996 and resulted in a population estimate of 586 caribou. Composition data resulted in estimates of 30 calves:100 cows and 43 bulls:100 cows.

The Macomb caribou hunting season remained closed during 1996-97 because of our failure to meet herd size and sex and age composition objectives.

We radiocollared eight 4-month-old caribou calves on October 20, 1996. The mean weight of captured calves was 128.3 pounds.

Progress Meeting Project Objectives: Data collected during this period indicated herd size increased but remained slightly below the population objective, calf survival increased, and the bull: cow ratio increased. In addition, the weight of 4-month-old calves increased. The hunting season stayed closed because the herd size did not meet the objective.

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

Project Objectives and Activities:

1. Limit harvest to 150 bulls until year 2001 or the termination of the Fortymile Caribou Management Plan.
2. Continue to work with the Fortymile Team, other members of the public, and the Board of Game to implement nonlethal wolf control in winter 1997/98.
3. Maintain or increase the number of radiocollars to assist in population census efforts.
4. Monitor harvest by issuing registration permits.
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 1996-97 56 1-2-day-old calves, 12 adult cows, 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 followed the radiocollared caribou to determine timing for the census and fall composition surveys and to monitor the fall and winter hunts. We conducted the photocensus on 18 June 1996. In total, we counted 23,458 caribou. The Fortymile herd was relatively stable between 1990 and 1995 (about 22,000 to 23,000 caribou). During 1996, the herd increased about 4%.

During 1996-97, the following 3 registration hunts occurred within the range of the Fortymile herd: 1) state Hunt 863 allowed nonresident hunters and included that portion of Unit 20B south and east of the Steese Highway and 20D north of the Tanana River, with a 1-bull bag limit and a fall harvest quota of 15 bulls; 2) state/federal Hunt 865 allowed only Alaskan residents and included Unit 20E and Unit 25C south and east of the Steese Highway, with a 1-bull bag limit and a fall quota of 85 bulls; and 3) state/federal winter Hunt 865 allowed only state residents and included Unit 20E and Unit 25C south and east of the Steese Highway, with a 1-bull bag limit and a quota of at least 50 bulls. The federal hunts followed the same harvest quota but offered 15 extra days of hunting on federal land before the state opening of the winter hunt. In total, 1025 permittees reported taking 135 bull caribou. Including illegal harvest, the total 1996-97 estimated harvest was 145-155. Percent harvest was < 0.5% of herd size and did not affect herd growth. Hunters have removed less than 2% of the herd annually for the past 7 years.

During 1996-97 the estimated annual natural mortality rate for Fortymile caribou >12 months old was about 12%. Wolves were the primary cause of death. The annual mortality rate for calves during 1996-1997 was 60%. The primary causes of death were wolf (47%), grizzly bear (31%), other predators (17%), and accidents/abandonment (6%). Of the newborn calves we collared during May 1997, by 14 June 1996 10/56 calves had died (18%) by the following causes: 3.5 by wolves (35%); 5.5 by grizzly bears (55%); and 1 by a wolverine (10%). Between 1994 and 1996, 38-40% of the calves died by mid-June and wolf predation caused 33-43% of the deaths. Probable causes for the lower mortality rate are lower wolf numbers on the calving grounds due to high trapper catches in the adjacent area during the past 2 years and shifting the primary calving grounds to an area the herd has not used for at least 10 years.

A posthunt composition count was flown 29 September 1996, and we classified 4582 caribou. The fall 1996 calf:100 cows and bull:100 cows ratios were 36:100 and 41:100, respectively. Calf recruitment increased the past 2 years and, consequently, the herd increased by 4%. Herd growth can be attributed to increased survival and natality rates. Wolf predation was lower due to reduced wolf numbers following elevated harvest rates on the wintering grounds. Increased natality rate was due to favorable weather conditions, allowing the herd to be in prime condition throughout the year. Herd pregnancy rate in May 1997 (85%) is about average for the Fortymile Herd. During 1996, herd pregnancy rate was 97%. Due to higher than normal calf production last year and reduced predation rates so far this year, the herd should show a relatively low growth rate (4-6%) during 1997.

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. Samples were collected from 5 areas during winters 1996 and 1997; data are forthcoming.

Many Alaskan and Yukon residents were dissatisfied with the state's management of the Fortymile herd during the 1980s and early 1990s. 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 management recommendations to be used by the Alaska Board of Game and the Federal Subsistence Board during their regulatory decision process that would allow the Fortymile herd to recover and once again use its traditional range in Alaska and Yukon.. The team met periodically since October 1994 and presented a 5-year management plan which included recommendations to reduce harvest, implement nonlethal predator control, 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 the first segment of the plan by adopting policy that reduced harvest beginning fall 1996. During spring 1997, the BOG directed ADF&G to begin a nonlethal predator control program including relocating the subordinate wolves and sterilizing the alpha pair in no more than 15 packs within the herd's calving and summer ranges in fall 1997.

Progress Meeting Project Objectives: Harvest was reduced to 150 bulls during 1996-97 following the recommendations in the Fortymile Caribou Management Plan. This harvest level (0.5%) did not limit herd growth. Under guidance of the Fortymile Caribou Management Team, ADF&G developed an implementation plan to conduct nonlethal predator control in 1997 through 2001. The BOG adopted the plan in spring 1997, and wolf fertility control and wolf relocation will start in October or early November 1997. A research program will be initiated concurrently to monitor the effects of the program. If the program is not effective in increasing herd growth, the program will be terminated after 3 years. The Fortymile Management Team will continue to monitor the program to ensure all actions taken meet the intent of the plan. No changes to the current management direction or harvest regulations are recommended at this time.

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

Project Objectives and Activities:

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 radio collars on female in the herd to monitor winter distribution.

b. Regulate Western Arctic Caribou Herd harvest through emergency order season openings.

Wolf Mountain Herd

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.

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.

Work Accomplished During the Project Segment Period: On October 11, 1996 we conducted a composition count of the Galena Mountain Caribou Herd located in the Natlaratlen River and Hozatka Lake area north of Galena. We counted 232 caribou and 151 cows, 19 calves, and 56 bulls, for a bull:cow ratio of 37:100 and a calf:cow ratio of 13:100. This was the lowest fall ratio of calves/100 cows since 1992. We currently have 14 active collars on the herd. One collar was recovered during the reporting period.

On October 11, 1996, we conducted a composition count of the Wolf Mountain Caribou Herd located in the lower Melozitna River. We counted 266 caribou and found 167 cows, 37 calves, and 62 bulls, for a bull:cow ratio of 37:100 and a calf:cow ratio of 22:100. We currently have 8 active collars on the herd.

On October 5, 1996, we conducted a composition count of the Ray Mountain Caribou Herd. We counted 1387 caribou and 971 cows, 145 calves, and 271 bulls, for a bull:cow ratio of 27.9 bulls/100 cows and a calf:cow ratio of 14.9 calves/100 cows. We currently have 15 active collars on the herd. We recovered 3 collars during the reporting period.

The reported harvest from the Galena Mountain and Wolf Mountain herds was 1 caribou taken out of 6 hunters. Six hunters reported unsuccessfully hunting for caribou in the area used by the Ray Mountain herd. The unreported harvest by residents living along the Yukon River 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 on any of these herds. In winter hunters use snowmachines to access caribou, but the season is closed at that time to prevent overharvest. The occasional extension 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 we meet our objectives. More collars need to be placed on

Wolf Mountain caribou to aid in meeting project objectives. We do not plan to collar additional Galena Mountain caribou. Determining major causes of mortality may require more intensive study than just radiocollaring yearling females. Neonatal mortality may, in fact, be an important factor, but present monitoring efforts are unlikely to shed much light on this.

Project Location: Unit 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.
4. Develop a strategy to increase winter hunting opportunities, while minimizing potentials for overharvest.

Work Accomplished During the Project Segment Period: To measure sex and herd composition, we completed a survey on 2 October 1996. The composition sample of 513 included 259 cows, 139 calves, and 115 bulls, resulting in composition measures of 54 calves:100 cows and 44 bulls:100 cows.

Preliminary caribou harvest reports indicate 82 people hunted during the fall general season in the White Mountains area. Only 12 hunters reported success. There was a decrease in hunters from 1995-96 when 123 hunters reported going afield, with similar harvest of 10 caribou taken during the fall season.

No caribou were reported harvested during drawing hunts 877 and 878.Only 106 permits out of 150 possible were issued; hunt 877 issued 75 permits, and only 31 permits were issued for hunt 878. Seventeen of the 106 permittees reported using their permits, 13 during hunt 877 and 4 during hunt 878. A winter harvest of 30 caribou was calculated to be a conservative allowable harvest.

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

Internal discussions regarding extending opportunities for the winter hunt have been initiated. Discussions with the local advisory commmittee will occur before the Spring 1998 Board of Game Meeting proposal deadline.

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 12 reported harvested during fall and none during the winter season.

We are meeting our objective of maintaining at least 20 functioning radio collars in the herd. During the Fall 1998 composition work we will be deploying at least 10 new collars.

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 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 are increasing opportunity for winter caribou hunting by increasing the number of permits to 250 and will be submitting ideas to the local advisory committee to increase opportunity to hunt caribou during the winter in the White Mountains.

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

Project Objectives and Activities:

1. Maintain minimum population size of 10,000 caribou.
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. Preliminary summary indicates 184 caribou were harvested compared with approximately 300 - 400/year between 1991 and 1995. Subsistence harvest data is gathered by FWS contractors and ADF&G Division of Subsistence. Harvest has stabilized or decreased in recent years but is still well within the sustainable level.

During August 1996, 9 caribou were captured and collared. A fall 1996 sex and age composition count was conducted in October 1996. The composition sample size was 3062 caribou with 67 calves/100 cows and 61 bulls/100 cows. Caribou were radiotracked several times throughout the

year to monitor distribution. In June 1997, we determined pregnancy rates of radiocollared caribou (51.7% pregnancy rate) and conducted a calving survey by following designated transects from the Colville River to the Canning River. Pregnancy rate for this more intensive survey was 72%.

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. A photocensus is planned for July 1997. In view of the favorable status of the herd, existing management objectives are suitable.

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

Project Objectives and Activities:

1. Maintain minimum population size of 135,000 caribou.
2. Monitor the harvest through field observations, hunter reports, and contact with residents.
3. 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. 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 since 1995 have been good, with about 75-80 calves per 100 cows at birth, 50 calves per 100 cows in late June, and 40 calves per 100 cows in March. 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	142.7	115.9	258.6
Actual	74.2	110.1	184.3
Difference	68.5	5.8	74.3

Explanation: Personnel costs were lower than expected for two reasons: 2 wildlife biologist positions were vacant for a total of more than 12 months. Additionally, 5 regional office positions (1 wildlife biologist and 4 technicians) were charged to nonfederal

aid projects instead of caribou S&I. Operating costs were less than expected because savings were realized in survey work in Units 20A, 20E, 19, and 26B.

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:

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 3000 caribou.
   d. Adjust harvest levels after population reaches 3,000 or more caribou.
   e. Allow for more liberal seasons and bag limits when the population exceeds 5000 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 6400 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.

No census or composition surveys were completed in winter 1994, 1995 or 1996 because many caribou from the nearby Mulchatna herd had entered the core Kilbuck wintering grounds.

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. 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. In 1997 no flights were made by the department during the reporting period because of the death of the Unit 18 area biologist in November 1996.

Harvest data from 1996-97 has not yet been finalized.

Progress Meeting Project Objectives: The Kilbuck herd had increased dramatically from an estimate of less than 1000 animals in 1985 to approximately 4500 animals in December 1995. There is no reason to expect that herd growth has not continued. We are presently increasing seasons and bag limits in response to influxes of the Mulchatna herd (Population Objective 1e). We drafted a proposal to lengthen the season for the 1997-1998 regulatory year in cooperation with FWS and the villages in Unit 18 which was approved by the Board of Game. The season is now opened by emergency order with a 5 caribou bag limit.

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 since 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 Alaska Village Council Presidents (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: Units 21D, 22, 23, 24, and 26A
Western Arctic Herd (WAH)

Project Objectives:

1. Maintain a minimum population size of 200,000 caribou.
   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, and public contacts.
2. Improve public communication.
   a. Reduce unreported harvests.
   b. Involve students in the Onion Portage collaring project as part of our educational program.
   c. Facilitate the exchange of information between managers and hunters.
3. Minimize conflicts between caribou and the reindeer industry.
   a. Conduct radiotracking flights to monitor the distribution of caribou near reindeer ranges.
   b. Notify the Reindeer Herders Association of the location and movements of satellite-collared caribou near reindeer ranges.
4. Minimize conflicts with industrial development.
   a. Monitor the distribution and movements of caribou near Red Dog Mine, Port Site and Road to assess effects.

5. Develop updated population objectives in cooperation with the public and other agencies.
6. Continue to assess the feasibility of comanagement of this herd with native groups, sport hunters, commercial operators, federal agencies, Fish and Game advisory committees, regional advisory councils and other interested parties.

Work Accomplished During the Project Segment Period: During September 1996, 38 caribou were instrumented with radiocollars near Onion Portage on the Kobuk River. We began the reporting period with 138 potentially active radiocollars on WAH caribou (124 cows and 14 bulls), of which 13 were satellite collars (12 cows and 1 bull).

During the reporting period, numerous telemetry relocation flights were flown by staff from our Nome, Kotzebue, Fairbanks, and Barrow offices. The flights were conducted in Units 21D, 22, 23, 24 and 26A. We conducted numerous telemetry relocation flights on the central and eastern portions of the Seward Peninsula during October 1996-May 1997 as caribou reoccupied historic ranges now used by the reindeer industry. All radiocollared WAH caribou were monitored during these flights.

We conducted aerial recruitment surveys in Unit 23 during late April through late May 1997. During these surveys radiocollared caribou were relocated and we determined composition for 200 animals in the immediate vicinity of each collared individual. For 56 collared cows in 40 groups, we counted 11,736 caribou and observed 26 short yearlings:100 adults.

Calving ground surveys were completed during early June 1997 in the northern foothills of the Brooks Range, southern portion of the North Slope, Noatak drainage, and eastern Seward Peninsula. Our estimate of calf production (58 calves:100 cows) was based upon observation of 90 radiocollared cows.

Harvest is monitored using the WAH registration permit system for local residents, and the statewide harvest ticket system for nonlocal residents and nonresidents. Compliance with reporting requirements is low for nonlocal hunters, and especially low for local hunters. Therefore, all harvest data represent minimum counts. Subsistence hunters are estimated to take approximately 20,000 caribou within the range of this herd annually, and sport hunters approximately 3,000 caribou.

We continued to discuss comanagement of this herd with private organizations, federal land management agencies, guides, local state advisory committees, and federal regional councils.

Progress Meeting Project Objectives: We maintained 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 inefficient and incomplete relocation surveys which, in turn, would compromise the accuracy of mortality and recruitment estimates that are based on collared caribou.

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 this reporting period.

Short yearling surveys during late April through May 1997 indicate the recruitment rate of 26 short yearlings:100 adults is higher than during recent years. Since 1986 recruitment has ranged from 17 to 32 short yearlings:100 adults.

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

Project Objectives:

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 harvest using methods that are acceptable to hunters and 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: We did not attempt a photocensus during the reporting period. Previous censuses in 1989 (16,649 caribou counted), 1993 (27,686 caribou), and 1995 (25,076 caribou) show the TLH increased at a rate of 14% per year during the period 1989-1993, and since then the herd has stabilized or declined slightly. These censuses were completed by department staff and the North Slope Borough Department of Wildlife Management (NSB).

Through a cooperative project with the NSB, we captured 2 caribou just north of Anaktuvuk Pass; we used a Hughes 500 helicopter equipped with a skid-mounted net gun during April 1996. We attached satellite radio collars to aid in population, productivity, and movement studies. We collected blood samples and measured, weighed, and assessed the body condition of the captured caribou.

We flew fall composition surveys in a PA-18 on 21 October 1996 by flying to radiocollared cows and counting adults and calves in the area surrounding the collared animals. Among 924 caribou, we counted 191 calves for 21% calves, or 26 calves:100 adults. No short yearling surveys were flown because the TLH caribou were very spread out and were mixed in with Western Arctic Herd caribou.

Calving surveys were flown on 6 and 26 June 1997 to determine calving location and success. Only 8 radiocollared cows were found near Teshekpuk Lake; on 6 June, 6 of these cows had calves. The caribou were very late in arriving at the calving grounds because they had traveled much further south during the winter than normal. We located 21 radiocollared cows near the lake on 26 June, but only 7 of these had calves at their side. Of the 13 cows not near the traditional calving ground on 6 June, only 1 had a surviving calf on 26 June. Calving occurred east, northeast, and north of Teshekpuk Lake during 1997, but very few cows calved in the traditional calving area compared with previous years.

We monitored the movements of 7 satellite-collared caribou throughout the year. Six of the satellite-collared animals traveled south of the Brooks Range and were distributed between Cape Lisburne and the Seward Peninsula in the wintering range of the Western Arctic Caribou Herd. One animal wintered between Atqasuk and Wainwright. Four of the caribou died. One of the surviving caribou calved in the TLH calving grounds, one calved southwest of the lake, and one arrived in the Teshekpuk Lake area by late June but did not have a surviving calf.

Progress Meeting Project Objectives: Nearly all of the management objectives are being met. During 1995-1996 we completed a photocensus. During 1996-1997 we completed fall composition counts and calving location surveys. Caribou were captured and radiocollars were attached without using drugs. We relocated caribou with VHF radio collars 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 gained educational opportunities for learning about research techniques for monitoring caribou populations and movements. Barrow and Nuiqsut students assisted in capturing and attaching radio collars to caribou. They used satellite-collar locations to plot the movements of caribou through fall and winter seasons.

TLH caribou harvest may have been higher than normal. Much of the herd spent the winter near villages in the Northwest Borough, and hunting pressure may have been fairly high. Adult mortality was higher than in recent years. Four of 7 satellite-collared animals died, compared with no satellite-collared animal deaths in 1995-96. Mortality among the TLH caribou with VHF collars was approximately 31%; in previous years it has averaged 21%.

We worked with the North Slope Borough to develop a more effective harvest monitoring system, having harvest monitors in each village. The number of caribou reported harvested in Anaktuvuk Pass, Atqasuk, and Nuiqsut during 1994-95 were 311, 187, and 249, respectively (Brower and Opie, 1996 and 1997). It is impossible to determine how many of these were from the TLH.

Literature Cited

BROWER, H.K., AND R.T. Opie. 1996. North Slope Borough Subsistence Harvest Documentation Project: Data for Anaktuvuk Pass, Alaska for the Period July 1, 1994, to June 30, 1995. Department of Wildlife Management, North Slope Borough, Barrow, Alaska. 36 pages.

——. 1997. North Slope Borough Subsistence Harvest Documentation Project: Data for Nuiqsut, Alaska for the Period July 1, 1994, to June 30, 1995. Department of Wildlife Management, North Slope Borough, Barrow, Alaska. 44 pages.

——. 1997. North Slope Borough Subsistence Harvest Documentation Project: Data for Atqasuk, Alaska for the Period July 1, 1994, to June 30, 1995. Department of Wildlife Management, North Slope Borough, Barrow, Alaska. 40 pages.

Segment Period Project Costs:

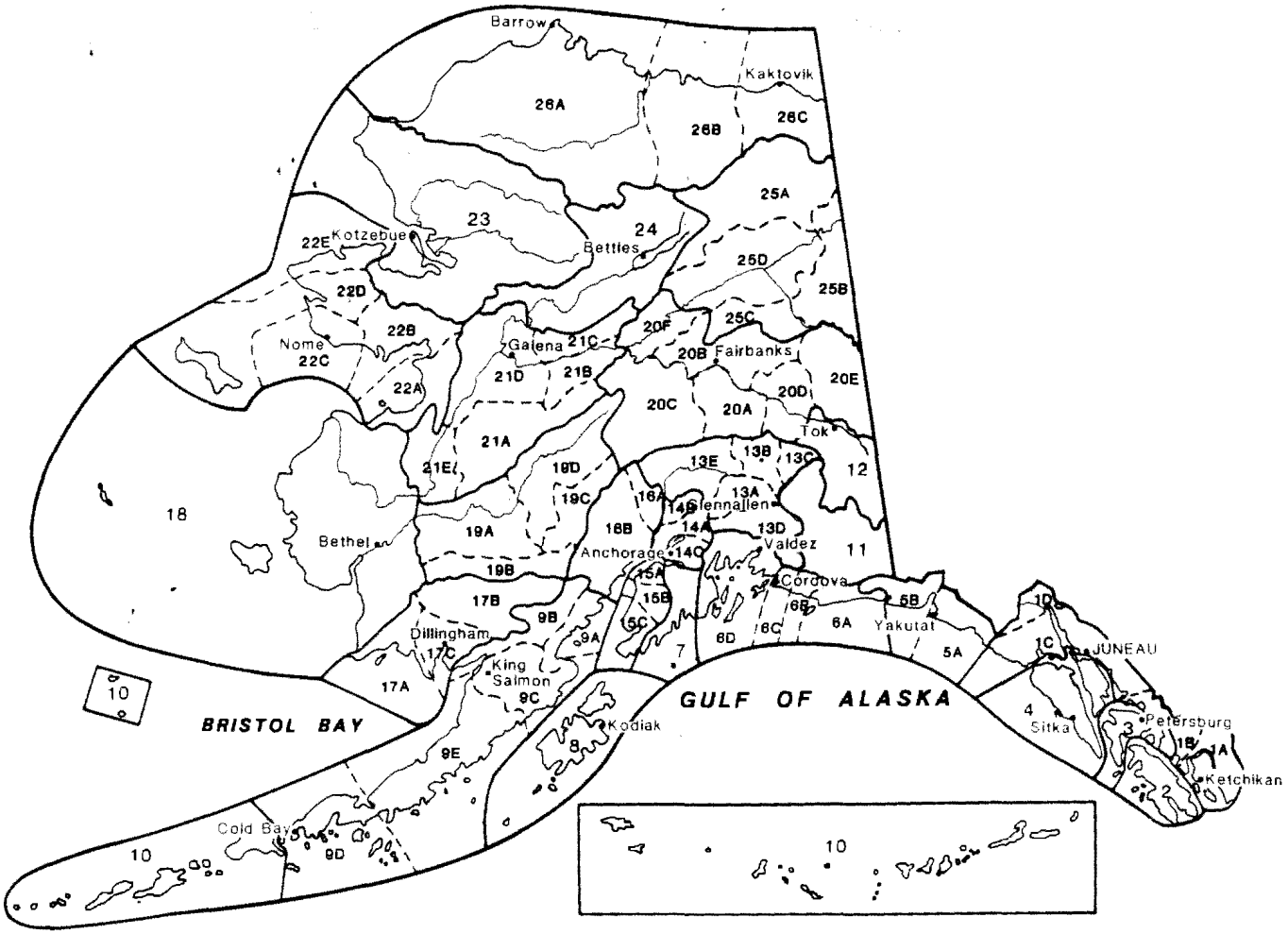
	Personnel	Operating	Total
Planned	144.0	57.2	201.2
Actual	125.5	95.5	221.0
Difference	18.5	-38.3	-19.8

Explanation: Cost summary is approximate. Region V did not have administrative support for a fiscal summary at the close of the reporting period. Operating costs for the Western Arctic Herd photocensus in July 1996 were higher than expected.

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.

Pat Costello