

**Alaska Department of Fish and Game
Division of Wildlife Conservation**

**Federal Aid in Wildlife Restoration
Annual Performance Report of
Survey - Inventory Activities
1 July 1994 - 30 June 1995**

CARIBOU

Mary V. Hicks, Editor



**Grant W-24-3
Study 3.0
December 1995**

**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 mi²)
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: Three unsuccessful attempts were made to assess size and composition of the herd during October 1993. The latest complete survey was on 11 November 1992. We observed 400 caribou comprised of 244 cows, 101 bull and 55 calves. Ratios were 40 bulls and 22 calves per 100 cows. Calves composed 14% of caribou observed.

A total of 1550 applications were received for 200 permits to hunt caribou (either sex) during 1994. 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: Because a composition survey was not completed for this reporting period, we cannot assess herd status and trend. Composition data from 1992, when 400 animals were counted, indicate the herd increased during the early 1990s. The harvest of 28 caribou during 1994 from an estimated herd of 400 should not have a significant effect on the herd's ability to grow or remain stable.

No change in season or bag limit is recommended for 1995. If a survey is not completed in 1995-96, the bag limit should be changed to 1 bull until herd status is determined.

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

Project Location: Subunit 15A (1,300 mi²)
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 21 June 1995, plus 2 documented mortalities on 12 June 1995, indicated a minimum of 86 caribou, including 19 (22%) calves, were in the herd on 12 June 1995. One additional mortality, a

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collared cow with calf, occurred 24 June 1995. Her abandoned calf was also collared. Since the herd contained 16 radiocollared animals monitored weekly during May and June, it is believed the herd did not exceed 90 caribou at its peak population size in mid June. Documented mortalities through 30 June 1995 included 3 animals (2 cows and 1 bull). Two of these caribou were collared, and all were killed by highway vehicles on Bridge Access Road.

We counted 86 caribou (28% calves) on 20 June 1994.

Progress Meeting Project Objectives: The Kenai Lowlands herd remained stable over the past 2 years in spite of the severe winter of 1994/95. The observation of 62 adults in 1994 and 65 in 1995 is still well below the 105 adults counted in 1989. Low recruitment due to predation rather than limited habitat is still suspected to cause 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.

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

Project Location: Subunits 15B and 15C (3,563 mi²)
Killey and Fox River Herds

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

Work Accomplished During the Project Segment Period: We conducted fall surveys on 31 October 1994 on the 3 caribou herds resulting from the 1985 and 1986 reintroductions. Surveys were conducted by US Fish and Wildlife Service 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-five, 259 and 83 caribou were observed in the Twin Lakes, Killey River, and Fox River herds, respectively. Composition data were not obtained because we conducted the survey using a fixed-wing aircraft. The original releases totaled 80 animals.

Hunting was authorized on the Killey River herd in 1994. A total of 376 applications was received for 25 drawing permits. Fifteen permit holders reported harvesting 10 bulls and 1 cow. Successful hunters averaged 3.7 days afield and 14 (93%) of the 15 hunters were residents.

Fox River and Twin Lakes herds were not hunted during this reporting period.

Progress Meeting Project Objectives: The management objective of reestablishing viable caribou populations in suitable habitat in 15B and 15C has been achieved. Results from 1994

surveys compared to fall 1993 indicate the Twin Lakes herd increased by 29 percent, the Killey River herd declined by 8 percent, and Fox River increased by 30 percent. The minimum fall 1994 population size of these 3 caribou herds was 387 caribou, compared with 375 for fall 1993.

The Killey River herd was opened to hunting during the spring 1994 Board of Game meeting, allowing 25 permits to be issued fall of 1994. The Fox River herd now meets the department's management objective of 0.8 to 1.0 caribou per Km²; and therefore should be opened fall of 1995. The Twin Lakes herd is increasing; however, it is still too small to support additional mortality through hunting.

Because the count for the Killey River herd indicated a decline while other herds increased, we will closely monitor fall 1995 surveys. Preliminary results from radiotracking indicate animals are exchanging between the Twin Lakes and Killey River herds, but the extent of this exchange is unknown.

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

Project Location: Subunits 9A, 9B, 9C, 17 and 19B (45.500 mi²)
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: Analysis of harvest reports indicated that 3301 caribou (78.3% males, 21.1% females) were killed by 2954 hunters during this reporting period. Hunter success was 84.8%. Most of the successful hunters that returned harvest tickets were Alaska residents (53.8%). Most hunters killed 1 caribou (67.2%); the average take was 1.1 caribou/hunter. Hunters used aircraft most frequently for access (84.8%), 12.3% of hunters used boats, and 1.5% used snowmachines. The chronology of harvest was: August-34.6%; September-50.2%; October-February-7.8%; and, March-April-7.4%.

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 1994-95 at 6000 caribou.

In November 1994 the Board of Game approved a proposal to further liberalize the caribou hunting regulations by allowing same-day-airborne hunting during winter months. This regulation became effective 13 January 1995. The Board also approved a proposal to open a portion of Subunit 17C east of the Wood River and north of the Nushagak River to caribou

hunting in the fall. The Board of Game gave the department authority to open portions of Subunits 17A and 17C to caribou hunting when the number of caribou in the areas exceed 20,000.

We conducted photocensuses of the Mulchatna Caribou Herd (MCH) on 28-29 June 1994. Based on results of that survey, the minimum population estimate for the MCH was 168,351. These data indicate the herd continued to increase in size this reporting period.

No fall composition counts or capture efforts were conducted on the Mulchatna herd during this reporting period.

Approximately 35,000 caribou from the Mulchatna herd wintered in the lower Kuskokwim River, sharing ranges with the Kilbuck herd and expanding into areas that had not been occupied by caribou for at least 100 years. The primary concentration area was between the villages of Quinhagak and Goodnews. Most of the remainder of the herd shared the winter range of the North Peninsula herd between the Naknek and Kvichak Rivers. About 25,000 caribou spent much of the winter between the Iowithla and Wood Rivers.

Most of the Mulchatna caribou again calved in the Tikchik River basin in 1995. Several radiocollared caribou from the Kilbuck herd also used this calving area. Productivity within the core area was lower and later than in the past 4 years. From 18-22 May 1995 productivity was 30:100; by 31 May 1995 the number of caribou had decreased, but productivity was up to 48:100. We observed approximately 10,000 caribou each period. There was an obvious distinction between groups of barren and productive cows. We saw no evidence of predation on the calving grounds.

Caribou translocated from the Alaska Peninsula to the Nushagak Peninsula in 1987 continued to thrive this reporting period. During a composition count in October 1994, we observed 71.3 bulls:100 cows and 64.6 calves:100 cows. The sample of 986 caribou included 27% calves. No census was conducted, but we estimated 1200 caribou within the herd. Ten additional caribou were radiocollared in April 1995. Monthly radiotracking flights verified most of the herd remained on the Nushagak Peninsula. We developed a draft management plan in cooperation with local villages, and the Federal Subsistence Board approved a hunt which began January 1995.

Progress Meeting Project Objectives: The Mulchatna herd continued to grow in both 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 fall hunting season, we noted a record reported harvest.

Project Location: Subunit 9D and Unit 10 (4,900 mi²)
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 in June of 1995 revealed a minimum of 1434 caribou. Coverage of the summer range was comparable with previous years, and the total herd size was estimated at 1500, with 10.7% calves.

The decline from last year's count of 2137 caribou is rooted in another surge of natural mortality. Six (29%) of 21 collared caribou alive last June were dead by spring. Productivity continues to be low. The segment of the herd calving in the Caribou River Flats continues to be more successful with 24% calves ($n = 286$).

No hunting was allowed during the 1994-95 regulatory year.

Progress Meeting Project Objectives: The SAP herd has been below the population objective for several years, and 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; hunting will remain closed until the herd exceeds that number.

Project Location: Subunits 9C and 9E (24,000 mi²)
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 1994, and we classified 1857 caribou. Ratios were 34 bulls and 34 calves per 100 cows. Calves composed 20% of the fall sample, compared with 25% of the caribou counted in 1994 postcalving aggregations.

A photocensus on 26 and 27 June 1995 showed about 11,500 caribou, including 1537 counted by the USFWS in the Aleutian Mountains and on the Pacific Coast. Coverage of the

summer range was similar to 1994, and the herd size was estimated at 12,000, about the same as in 1994.

Hunters reported killing 475 bulls, 90 cows, and 5 caribou of unknown sex. Hunter success was 82%. Chronology of the harvest by month was as follows: July-0; Aug.-75; September-219; October-64; November-18; December-74; January-30; February-45; March-32; and April-11. Local residents, other Alaskans, and nonresidents accounted for 13%, 40%, and 46%, respectively, of successful hunters; but because of the 1-caribou bag limit for nonresidents, they accounted for 38% of the reported harvest. The 1994-95 reported harvest was 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. An unknown, but substantial, portion of 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 in December. This change, with the closure of the King Salmon Air Force base, resulted in a much reduced winter harvest.

In April 1995 we captured and radiocollared 18 females. We sampled blood, measured, and weighed these caribou.

Progress Meeting Project Objectives: Population estimates from 1991-93 were in the range of 16,000-17,500 caribou, lower than 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 increased winter harvest, when caribou are accessible along the Naknek/King Salmon road system. This increased harvest, especially of females, is a positive development, 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 of radiocollared cows. Results of the 1995 postcalving count indicate the herd did not decline further. Hunting restrictions implemented during the 1994-95 season reduced harvests, and natural mortality was reduced during 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 mi²)
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 1995 herd estimate is 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 70 animals during the 1994-95 season declined sharply from last year's 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 mi²)
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. 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 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 treaty natives in Canada occurs when Mentasta caribou mix with the Nelchina herd on winter range. However, the total take under these circumstances is thought to be very small. Complete 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 mi²)
Nelchina Herd

Project Objectives: To stabilize the herd at about 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 1994 postrut estimate for the Nelchina herd was 44,093 of which 34,611 were adults (>1 yr.). The estimate was extrapolated from a June 1994 postcalving aggregate count of 43,536 animals (56% cows) and the September 1994 sex and age survey which tallied 46 bulls:100 cows and 40 calves:100 cows. The June 1995 postcalving spring count was a photosurvey, and we counted 49,808 caribou. The 1995 postcalving composition count was 45 calves:100 cows.

Two Nelchina caribou hunts were held during 1994. The fall and winter state hunt was a Tier II subsistence permit hunt with 7500 permits issued and a preliminary harvest of 3103 caribou. This harvest figure is 35% below the 1993-94 harvest of 4738 caribou. Reasons for the rather large harvest decline were that fewer permits were issued (1500) and winter harvest was very low because most of the herd left Unit 13.

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 1622 permits were issued for the federal hunt. Harvest figures showed 187 caribou were taken for a permit success rate of 11%. The federal harvest declined steadily the past 4 years and was 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.

The herd's calving distribution in 1994 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 close to Eureka Summit.

During fall 1994 the herd followed a rather typical migration and distribution pattern. During late September caribou were distributed in a wide band from the Upper Susitna River to the Alphabet Hills. In late September the herd moved east from the Alphabet Hills in Unit 13B, across the Richardson Highway, through 13C, and into Unit 11 near Boulder and Drop Creeks. These animals continued traveling into Units 12 and 20E as far as Canada to winter ranges. Almost the entire Nelchina herd left Unit 13 during the winter of 1994-95. The only exception was the small Upper Susitna subhead and some main herd animals that wintered almost entirely in Cantwell in 13E. The remainder of the herd wintered in Unit 12, Subunit 20E and in Canada. There were virtually no caribou in the upper Tangle Lakes region of 13B. An undetermined but small number of caribou, mostly bulls, wintered south of the Glenn Highway in 13D, near Tazlina Lake and River.

By June 1995 most radiocollared caribou were in the Talkeetna Mountains, indicating the segments of the Nelchina herd had rejoined on the traditional calving and summer grounds.

Nelchina Range stations were repaired and plant conditions evaluated the summer of 1989; Lieb (1994) reported the results. Fifteen radio collars were placed on short yearlings during early April. However, capture mortality was high with 4 caribou dying within 3 days of capture. There were 31 radios located and working as of late June 1995.

We monitored caribou calving by flying every other day from 22 May until 1 June 1995. Radiocollared adults were tracked and observed daily until it was determined the cow had a calf. We also counted a sample of up to 100 adjacent caribou and determined the percent calves.

Body condition was monitored in short yearlings during an April captured operation. 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 1994 population estimate for the Nelchina caribou herd exceeds the herd management goal of 35-40,000 caribou. Spring calf production and/or survival was similar in 1994 and 1995 with the herd remaining fairly productive; however, calf production still did not approach levels observed during the mid 1980s when the herd increased rapidly. The bull:cow ratio meets the minimum objective for this herd; however, the number of large bulls has been declining because of heavy bull harvests.

The harvest quota for 1995 was increased 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 likely exceed the long-term carrying capacity of the range. In addition, body weights and condition parameters of short yearlings declined in 1994-95 and were among the lowest ever observed in the Nelchina herd. Short yearlings from the Nelchina were the lightest animals weighed in any herd except the Western Arctic herd.

Segment Period Project Costs:

	<u>Personnel</u>	<u>Operating</u>	<u>Total</u>
Planned	52.0	69.6	121.6
Actual	50.0	67.7	117.7
Difference	2.0	1.9	3.9

Submitted by:

Jeff Hughes
Survey-Inventory Coordinator

Project Title: Interior Caribou Population and Habitat Management

Project Location: Unit 12
Chisana Caribou Herd

Project Objectives and Activities:

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

Work Accomplished During the Project Segment Period: A sex and age composition count was flown 29 September 1994 during which we classified 543 caribou. The calf:cow ratio was 10.7:100 and the bull:cow ratio was 27.5:100. Using composition and mortality rate data in a predictive model, we estimated the October population between 775 and 830 caribou.

Between 1 and 3 April 1995, we collected blood samples from 22 adult cow caribou to determine herd pregnancy rate, herd genetics, and exposure to infectious diseases. Using a progesterone pregnancy testing technique, we estimated a herd pregnancy rate of 100% (22/22), exceeding the norm for Interior caribou herds. The cause for the higher than expected rate is the current age structure of the population. Few animals have been recruited into the population during the past 6 years, so most of the Chisana cows are within the prime breeding age. Tests to examine herd genetics and exposure to infectious disease have not been completed. On 29 May 1995, we surveyed the radiocollared cows to determine pregnancy rate and the incidence of early calf mortality. We located 21 animals and determined 19 were pregnant (90%). Incorporating pregnancy rate data collected during March capture activities, we estimated herd pregnancy rate was 95%. The peak of calving was 25 May. Eleven cows were still accompanied by a calf, indicating the early calf mortality rate was about 42%.

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 13%. Two of the 3 mortalities occurred between 31 May and 29 September. An avalanche caused 1 death, and wolves killed 2 caribou.

Plant fragment analysis was completed on the fecal samples collected during winter 1992. Most of the herd wintered near Wesley Lake in the Yukon. We evaluated range condition by determining the percent of lichen fragments in relation to the percent of moss in the fecal samples. The 1992 winter range was low quality, based on the fairly low proportions of lichen (41%) and high proportion of moss (29%) in fecal samples. We again collected fecal samples from the primary wintering areas during April 1995. Results should be available next year.

The bull/cow ratio declined below the minimum population objective during FY94 and has continued to decline in FY95. In response, the hunting season for Chisana caribou was closed. The hunting season will remain closed at least through FY96.

Progress Meeting Project Objectives: The Chisana herd has been declining since 1988 due to low calf recruitment. Adverse weather conditions, predators, and possibly poor quality winter range are 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, hunting did not affect herd growth. Because of low calf recruitment for the past 6 years, harvest caused a decline in the bull:cow ratio. Beginning in September 1994, caribou hunting within the Chisana caribou range will be prohibited until calf recruitment improves and the bull population increases above the management objective.

We initiated a study evaluating summer climatic conditions on productivity and nutrition of Chisana caribou. Results of this study should be available in 1996.

Project Location: Units 19 and 21
Big River Herd, Rainy Pass Herd, Beaver Mountains Herd, Tonzona Herd, and Sunshine Mountain Herd

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 1993-94 regulatory year: Big River herd (including Farewell) - 61; Rainy Pass herd - 35; Tonzona herd - 15; Beaver Mountains herd-3; Sunshine Mountain herd-1. We collected no additional information on predation or other mortality factors. Reported hunter success rate on all herds combined was 81%. 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: Subunit 20A
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.
 - a. Conduct annual fall composition counts.
2. Reverse the decline of the herd and increase the midsummer population to 6,000-8,000 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.
 - a. Cooperate with Research Project 3.37.

Work Accomplished During the Project Segment Period: On 30 June 1994, we counted 4341 caribou during our photocensus of the Delta herd. This represented a 19% increase from the number of caribou we counted last year (3661). The proportion of calves in the herd was noticeably higher than during the previous few years but not quantifiable from our photographs.

On 3, 4 and 6 October 1994, we completed a composition count of the Delta herd. We classified 2131 caribou (40-50% of the herd) and found 23 calves and 25 bulls:100 cows, and 10 large bulls:100 cows. Our sample included 1433 cows, 328 calves, and 370 bulls.

We have not yet compiled information on predation rates on caribou.

Progress Meeting Objectives: According to our parturition survey on 24 June 1994, the pregnancy rate (86% of 981 cows) and calf:cow ratio (64:100) improved substantially over 1993. This was confirmed by our photocensus one week later when we counted 19% more caribou (4341) than in 1993 (3661) and noticed many more calves. However, many calves apparently died between July and September. In early October 1994, the calf:cow ratio of 23:100 indicated recruitment was much higher than the previous 4 years (5-17:100). Although the population decline in the Delta herd had stopped, the herd was not increasing as rapidly as we had hoped.

We did not meet our objective for at least 30 bulls:100 cows (25:100) but did meet our objective for at least 6 large bulls:100 cows (10:100). There are relatively few young bulls in the population.

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 and will not be open in 1995.

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 (5 AAC 92.125) and will not likely be changed during the duration of the control program, which was suspended by the administration in December 1994 and revised and reauthorized by the Board of Game to resume January 1, 1996.

Project Location: Subunit 20D
Macomb Herd

Project Objectives and Activities:

1. Determine the size of the herd. Increase the herd to 1,000 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: A census was conducted September 28, 1994, resulting in a population estimate of 532 caribou. On October 2, 1994 composition data were collected and recorded for 345 caribou, resulting in estimates of 13 calves:100 cows and 21 bulls:100 cows.

The Macomb caribou hunting season remained closed during 1994-95 because of our failure to meet herd size and sex and age composition objectives.

The population management goal was revised when the Alaska Board of Game adopted regulations establishing intensive management of predators and prey in Unit 20D. The revised caribou population goal is for a population of 600-800 caribou, with a harvest goal of 30-50 caribou.

Progress Meeting Project Objectives: Data collected during this period indicated that herd size increased and the bull:cow ratio remained nearly constant. However, the hunting season remained closed because the herd size and herd composition did not meet objectives. Revised herd size objectives were developed for intensive management of predators and prey in this area.

Project Location: Subunit 20E
Fortymile Herd

Project Objectives and Activities:

1. When weather-related nutrition is favorable, manage harvest and, secondarily, predation to increase the herd to 50,000 adults or 60,000 caribou by the year 2000.
2. Maintain or increase the number of radiocollars to assist in population census efforts during FY94.
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 FY95, 45 1-3-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 75 and 90 during the year. In addition to our research study, the radiocollared caribou were monitored to determine timing for the census and fall composition surveys.

Based on the distribution of these caribou, a photocensus was conducted on 1 July 1994. In total, we counted 22,104 caribou, indicating herd growth has remained stable since 1992.

During FY95, the following 3 state 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 280 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. In total, 2845 permittees killed 309 bull caribou during the state hunts. Two federal subsistence hunts were also held in Units 20E and 25C during the year. We have not yet received results from the federal hunts. Hunters killed an estimated 335 caribou during FY95, with adjustments for illegal harvest. Hunters have removed less than 2% of the herd annually for the past 5 years. During this period, harvest has not been a limiting factor on population growth.

Many people within the Fortymile caribou range have become increasingly unhappy with 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 the state and federal agencies. The team's goals are 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 has been meeting periodically since October 1994 and expects to have a plan developed by October 1995 for public and board review.

During FY95, the estimated annual natural mortality rate for Fortymile caribou > 12 months old was 10.2%. Wolves were the primary cause of death (83%). The annual mortality rate during the first 12 months of life was 71%. The primary causes of death were wolf (38%), grizzly bear (32%), other predators (15%), and accidents/abandonment (15%). During May 1995 we radiocollared 52 caribou neonates. By 30 June 1995, 23/52 calves had died (44%) by the following causes: 6 by grizzly bears (26%); 8 by wolves (35%); 3 by golden eagles (13%); 4 by black bear (17%), 1 by wolverine (4%) and 1 by accident (4%).

A posthunt composition count was flown on 30 September 1994 and 3364 caribou were classified. The fall 1994 calf:100 cows and bull:100 cows ratios were 27.4:100 and 45.4:100, respectively. Calf recruitment remains low; consequently, the herd has been stable the past 3 years. Herd pregnancy rate has been normal (82-85%) the past 2 years and has not been a factor in calf recruitment.

We collected fecal samples from important wintering areas within the Fortymile herd's range in 1992 and 1993. Results indicate the range is of high quality based on high incidence of

lichens and low incidence of moss in their diet. We collected fecal samples from 6 different areas during winter 1994-95. Results should be available next year.

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 3 years, the bull:cow ratio has been increasing. Harvest will be limited below sustainable levels until the herd reaches the population objective. Past and ongoing research has shown predation is the main factor restricting rapid herd growth (> 10%). Without intensive predator management, the Fortymile herd's ability to increase will be limited, and the herd's population objective will not be met in the foreseeable future.

I recommend replacing the first project objective (Objective 1) with "Limit harvest below sustainable levels until the herd reaches 60,000 caribou to ensure harvest by humans is not limiting population growth." Future project goals and objectives for the Fortymile herd will be discussed and possibly decided on by the Fortymile Caribou Management Team. I recommend we continue with the existing goals and objectives until the team completes the Fortymile Caribou Plan.

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

Project Objectives and Activities:

Ray Mountains Herd

1. Determine population size, calving locations, rutting areas and winter distribution by 1996.
2. Radiocollar and monitor 20 caribou with a minimum of 6 aerial surveys per year.
3. Determine major mortality factors by 1997.
4. Monitor 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.
2. Radiocollar and monitor 5 caribou.

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.

2. Conduct annual fall composition counts.
3. Conduct calving surveys.
4. Prevent overharvest of the herd while allowing maximum harvest opportunities of the Western Arctic caribou herd when both occur in the same wintering grounds.
5. Maintain 20 radiocollars on females in the herd to monitor winter distribution.
6. Regulate Western Arctic caribou herd harvest through Emergency Order season openings.

Work Accomplished During the Project Segment Period: Twenty Ray Mountain caribou were radiocollared in October 1994 on the north side of the Ray Mountains to provide better data for meeting our objectives. Two caribou died of unknown causes, but their collars have not been recovered. In cooperation with BLM we have conducted 4 tracking flights, and to date the caribou have remained within 15 miles of their collaring location.

On 21 October 1994 we conducted a composition count of the Galena Mountain caribou herd located 20 miles north of Galena. We counted 211 caribou and found 25 bulls, 115 cows, and 41 calves with a bull:cow ratio of 22:100 and a calf:cow ratio of 40:100. This was the highest fall ratio of calves ever seen. At the same time we collared 8 additional female calves to bring the number of collared animals to 20. I recovered 1 radio collar from the mountains east of Galena on 16 March 1995. The collar was found on mortality mode in October 1994. Wolves were suspected of killing the caribou, based on bite marks on the collar.

On 22 October 1994 we collared 3 Wolf Mountain caribou in Hot Springs Creek. They have been tracked 3 times and have remained near Wolf Mountain. One collar was on mortality mode in December and was picked up on 4 March. I suspect it was a shed collar.

The reported harvest in these herds was 6 male caribou with 22 unsuccessful hunters. The unreported harvest by Tanana residents of the Ray Mountains herd is 10 caribou per year.

Progress Meeting Project Objectives: Hunting mortality currently has no effect on population growth. The range of the caribou during winter makes them accessible to hunters using snowmachines, but the season is closed at that time to prevent overharvest. The expansion of the Western Arctic caribou herd 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 groups of caribou which calve and winter in 3 distinct areas. These are the Ray, Galena, and Wolf Mountain herds and are treated separately. We now have enough collars on Ray Mountains caribou to assist with fall composition counts. We shall attempt to keep 20 collars in the herd until we meet our objectives. More collars need to be placed on Wolf Mountain to aid in meeting project objectives.

Project Location: Subunit 25C
White Mountains Caribou Herd

Project Objectives and Activities:

1. Establish population and harvest objectives by 1995.
 - a. Conduct aerial surveys of the White Mountains herd to estimate population size, distribution, and population composition.
 - b. Monitor anticipated increases in recreational use and mining development and ensure such development does not adversely affect the White Mountains herd.
 - c. Estimate harvest quotas for winter caribou hunts 877 and 878 by 1994.

Work Accomplished During the Project Segment Period: Population objectives for the White Mountains herd were developed during spring 1995. The White Mountains herd is small (<1500 caribou) and growing from 6-15% each year. Predation is not causing any detrimental effects to the population. Harvest on this herd is low, even after adjusting for the unreported harvest. The range conditions and body condition of the animals are both excellent. As long as the conditions mentioned previously persist, I believe we should manage this herd to fluctuate and grow naturally.

The following will be adopted as population and harvest objectives for FY96.

1. To allow continued growth and natural regulation of the White Mountains caribou herd.
2. To maintain a fall bull:cow ratio of 30 bulls:100 cows.
3. To maintain an annual reported harvest of <75 caribou, including a maximum of 30 cows during the winter drawing hunts.

BLM staff monitored calving during May 1995 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 4 October 1994. The composition sample of 418 included 25 calves:100 cows and 39 bulls:100 cows.

Caribou harvest reports indicate that 145 people hunted during the fall general season in the White Mountains area. Only 16 hunters reported being successful. Eighty percent of all hunters were from the Fairbanks area.

Three caribou were reported harvested during drawing hunts 877 and 878. Only 29 of 150 permittees reported using their permits, 16 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.

We reviewed and revised herd objectives and activities during this reporting period.

Progress Meeting Project Objectives: We met the objective of developing specific objectives for the population and harvest during this reporting period.

We did not complete a photocensus during this reporting period. The last photocensus was in 1992. We plan to complete a photocensus in 1996. If we continue to annually monitor calving in the spring and composition in the fall, photocensuses should be completed every 3 years.

We completed a composition count during this reporting period. The data indicate a stable population. BLM monitored calving during spring 1995. 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 deployed 11 radiocollars in April 1995 with assistance from BLM staff. We are planning to deploy 6 additional collars on animals this fall during the composition counts. We should begin to budget for maintenance of a minimum of 20 functioning radiocollars in the herd.

Reported use of the White Mountains herd has slightly increased since 1991. Reduced opportunity in other interior herds has minimally increased fall hunting pressure on the herd. In 1992 114 hunters reported hunting, with 15 successful. In 1993 120 hunters reported taking 21 animals, and 145 hunters reported taking 16 animals in 1994. Although total number of hunters has increased slightly, harvest has not increased proportionately. When BLM finishes the Nome Creek Development project, recreational use of the area will probably increase. We should continue to closely monitor this development and minimize potential conflicts between increased recreational access and the White Mountains herd.

Using a model developed by ADF&G research staff, we estimated the winter harvest of caribou could be 30 caribou of either sex. Variables used to extrapolate the model were conservative. The 50 permit increase for the 1993-94 season did not increase the participation substantially. The number of participating hunters only increased by 4 from 22 to 26 from the 1992-93 to 1993-94 season and was stable at 26 hunters for the spring 1995 season.

At the March 1995 meeting, the Board of Game supported a department proposal to extend the winter drawing hunt season to 1 month for each hunt; February for motorized vehicles and March for nonmotorized vehicles. This should increase participation by permittees but will probably have minimal effect on harvest. As part of that proposal, the board also allowed the department flexibility to increase the number of permits issued up to 250 total. We will examine the effects of lengthening the season before increasing the number of permits issued.

The new herd objectives and activities should read as follows:

Goal: 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 three years.
 - b. Monitor anticipated increases in recreational use and mining development and ensure such development does not adversely affect the White Mountains herd.

Project Location: Subunits 26B and 26C
Porcupine and Central Arctic Herds

Project Objectives and Activities:

1. Maintain minimum population size of 135,000 in the Porcupine caribou herd and 10,000 in the Central Arctic caribou herd.
2. Monitor the harvest through field observations, hunter reports, and contact with residents.
3. Coordinate data collection with Research Projects 3.34 and 3.35.
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 40 calves per 100 cows observed during composition counts in March 1995. The population is probably stabilizing.

We have not conducted a photocensus of the Central Arctic herd since July 1992 when we estimated 23,000 caribou. We completed early summer calving surveys with helicopter transects and by monitoring radiocollared caribou. The Central Arctic herd is stable or increasing slowly. Harvest has increased in recent years but is well within the sustainable level.

Progress Meeting Project Objectives: The population objectives for the Porcupine and Central Arctic herds continue to be met with both herds exceeding minimum population levels. We are also meeting harvest monitoring goals.

In view of the favorable status of the Porcupine and Central Arctic caribou herds, existing management objectives seem suitable.

Segment Period Project Costs:

	<u>Personnel</u>	<u>Operating</u>	<u>Total</u>
Planned	90.2	75.5	165.7
Actual	90.1	77.3	167.4
Difference	.1	-1.8	-1.7

Submitted by:

Kenton P. Taylor
Management Coordinator

ARND

Project Title: Western Alaska Caribou Management

Project Location: Unit 18 (42,000 mi²)
Kilbuck Mountain Herd

Project Objectives and Activities:

1. Allow for continued growth of the caribou population in Unit 18 from the current estimate of 2500 to 10,000 animals.
 - 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 3000 or more caribou.
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 mi² area in the southern portion of Unit 18. We continued the cooperative study with the Yukon Delta National Wildlife Refuge initiated in 1986. We conducted radiotelemetry and survey flights at periodic intervals to monitor distribution, calving success, recruitment and population size.

We estimated overall herd size using composition and census data collected late fall/early winter surveys when the animals became aggregated. We completed a census during early December 1993 with a minimum population estimate of 3682 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 per 100 cows (19% calves overall).

Observations of caribou movements and distribution were at periodic intervals during winter, calving, summer and the fall rutting period. From this movement data, we documented overlap in ranges of the Mulchatna herd and the Kilbuck herd. We instrumented an additional 8 yearling female caribou with radiocollars during the fall of 1992 to replace those lost due to mortality and/or low battery life. The radiotelemetry locations indicate the majority of Kilbuck animals use discrete calving areas and have a high fidelity to their present range. However, range overlap has been substantiated by locations of radiocollared animals. Two-thirds of the females originally collared in the Kilbuck Mountains have been located east of Nishlik Lake and intermixed with Mulchatna herd caribou.

During the state fall season (1-30 Sept. 1993), we issued registration permits to hunters. A harvest of 21 bull caribou was reported. During the federal seasons (31 December 1993-9 January 1994 and 22 February 1994-15 March 1994), 160 Federal "closed" registration permits were issued to 16 villages (10 per village). The reported harvest results are not available at this time, but we suspect it was much lower than previous years' reported harvest. The 1992-93 state registration permit harvest was 24 bull caribou reported by 260 hunters; the federal registration hunt harvest during the 1992-93 season was 63 bull caribou, for a combined 1992-93 harvest of 87 male caribou. However, during both the 1992-93 and the 1993-94 seasons, out-of-season harvest may have been substantially higher than the reported harvest, especially during winter months. Anecdotal information from local hunters indicates as many as 200 caribou may have been taken illegally between 1 December 1993 and 1 March 1994. Enforcement efforts increased, especially during hunting season, during the regulatory year.

Since the first Kilbuck Caribou Management planning meeting on 17 December 1990, a final version of the plan was approved by the Association of Village Council Presidents (AVCP), the FWS, and the department during March of 1993. The plan has goals and objectives allowing the herd to grow while offering a limited harvest by subsistence hunters. Twelve public meetings have been held with local Unit 18 village councils, FWS, and AVCP.

Progress Meeting Project Objectives: The Kilbuck herd has increased dramatically from an estimate of less than 1000 animals in 1985 to 3700 animals in December 1993. The combined preliminary reported harvest (80 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.

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 1995 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 seems assured before winter of 1994.

Project Location: Units 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.
 - Conduct a biennial photocensus to estimate population size.

- Conduct periodic radiotracking flights to monitor herd distribution.
 - Maintain a sample size of at least 100 operational radiocollars.
 - Conduct aerial surveys during early April to assess short yearling recruitment.
 - Conduct aerial surveys during early June to monitor calving success.
 - Monitor hunting and other mortality factors through harvest reporting, collection of biological specimens, public contacts, and unreported harvests.
 - Improve communication with the public to reduce the magnitude of unreported harvests.
2. Minimize conflicts between caribou and the reindeer herding industry.
 - Conduct midwinter 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.

Work Accomplished During the Project Segment Period: During September 1994, 266 caribou from the Western Arctic Herd (WAH) were instrumented with radiocollars near Onion Portage on the Kobuk River. We were able to maintain a minimum of 112 active radio collars and 5 PTTs on WAH animals during the segment period.

During the winter (October 1994 through April 1995), 9 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. We monitored the status of 112 radiocollared caribou 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 1995. 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. A total of 13,283 caribou were counted, yielding a recruitment ratio of 17 short yearlings:100 adults.

Calving ground surveys were completed during early June 1995 in the vicinity of the Utukok River, and Lisburne Peninsula. To maximize sampling effort, composition counts were made in the vicinity of radiocollared cows. The calf ratio was 58:100 adults.

We determined harvest using the WAH reporting system for local residents and the statewide harvest ticket system for nonlocal residents and nonresidents. During the 1994-95 hunting season, 277 local hunters reported a harvest of 731 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 is often poor, we believe the actual harvest is substantially higher than reported.

Progress Meeting Project Objectives: We were able to maintain a minimum sample size of 112 radiocollared caribou in the WAH during the reporting period. However, we should consider increasing the sample size because the herd size, estimated at 450,000 caribou, has grown considerably the last 5 years. The goal of maintaining a sample size of 100 active collared animals was developed a number of years ago when the herd size was substantially lower.

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 1995 indicate the recruitment rate of 17 short yearlings:100 adults falls within the range of recent recruitment years. Since 1986 recruitment has ranged from 18-27 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.

If the WAH continues to grow in size, we anticipate it will be difficult to complete the biennial postcalving photocensus because large herd size contributes to asynchronous aggregations and mixing of animals during the prolonged period of aggregation. During the 1993 photocensus caribou aggregated over a period of several days, and we observed a mixing of groups. Estimating the population size through a sampling procedure rather than a total count of postcalving aggregations may be necessary.

Project Location: Subunit 26A (53,000 mi²)
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.
 - Determine the herd population size every 2-3 years.
 - Determine calf production and the percentage of calves surviving their first winter.
 - Delineate the calving grounds each year.

- Identify and map the herd's movements and distribution throughout the year, using survey and radiotelemetry data.
 - Develop a system to capture caribou without the use of drugs.
 - Encourage local participation in research and management decisions.
 - Determine the extent of the harvest using methods acceptable to hunters as well as the participating agencies.
 - Determine sources of significant nonhunter mortality.
2. Provide educational opportunities for students and other members of the public.
 3. Minimize conflicts with industrial development.
 - Use satellite and VHF radio collars to monitor the distribution and movements of caribou near areas of potential industrial development to assess impacts.
 - Define critical caribou habitat areas such as calving, insect relief, and wintering areas in Subunit 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: The most recent photocensus was completed in July 1993. Photographs were taken while the caribou were in insect relief aggregations. We used radiotelemetry equipment to determine that most of the radiocollared caribou were in the photographed groups. Department and North Slope Borough Department of Wildlife Management (NSB) staff counted 27,686 caribou from the photographs. This represents an increase of 14% per year since the last count of 16,649 caribou completed in 1989.

We flew composition surveys on 4 October 1994 by locating collared cows and determined their calving success. We also counted the number of calves and adults in groups of approximately 100 animals surrounding the collared caribou. We found 10 collared animals and 5 had calves with them. Of 1681 caribou observed surrounding collared animals, 459 were calves. We calculated that there were 27% calves or 37 calves per 100 adults.

We flew short yearling composition surveys on 24 May 1995 by flying to the areas where collared cows were located and counting adults and short yearlings. Of 1637 caribou observed we counted 255 short yearlings for 15% short yearlings or 18 short yearlings per 100 adults.

Calving surveys were flown on 8 June 1995 to determine calving locations and calving success. We located 15 cows with radio collars and found that 5 cows had calves. One of these cows was collared as a yearling in July 1993. Of the cows >3 years old, 5 of 10 had calves. Some calves may have been born after 8 June; these should be found in surveys flown

in mid July 1995. Most calving took place east, northeast, and southeast of Teshekpuk Lake during 1995.

We monitored the movements of 3 satellite collared caribou throughout the year. Two animals wintered on the Chukchi Sea coast and 1 was near Cape Lisburne. Two animals spent the spring of 1995 in the Western Arctic Caribou Herd calving grounds, one with calf. The third caribou calved in the Teshekpuk Lake calving grounds. All 3 satellite collared caribou survived the winter of 1994-1995.

Progress Meeting Project Objectives: Nearly all of the management objectives are being met. During 1993-94 we completed a photocensus, summer and spring composition counts, and calving location surveys. Caribou were captured and collars were attached without using drugs. In 1994-95 we completed fall composition and spring short yearling surveys. We relocated caribou with VHF radio collars several times during the year and obtained detailed movement information from satellite radiocollars. We will continue to monitor caribou movements and use this information to protect critical habitat areas from effects of industrial exploration and development.

Students from North Slope schools were given educational opportunities to learn about research techniques for monitoring caribou populations and movements. We had students from Barrow, Nuiqsut, and Anaktuvuk Pass assist in capturing and attaching radiocollars to caribou during 1993-94. They used satellite collar locations to plot the movements of caribou through the fall and winter seasons.

TLH caribou harvest was relatively high. Much of the herd spent the winter near the villages of Wainwright, Atkasuk, Point Lay, and Barrow and were hunted by residents from those villages.

Segment Period Project Costs:

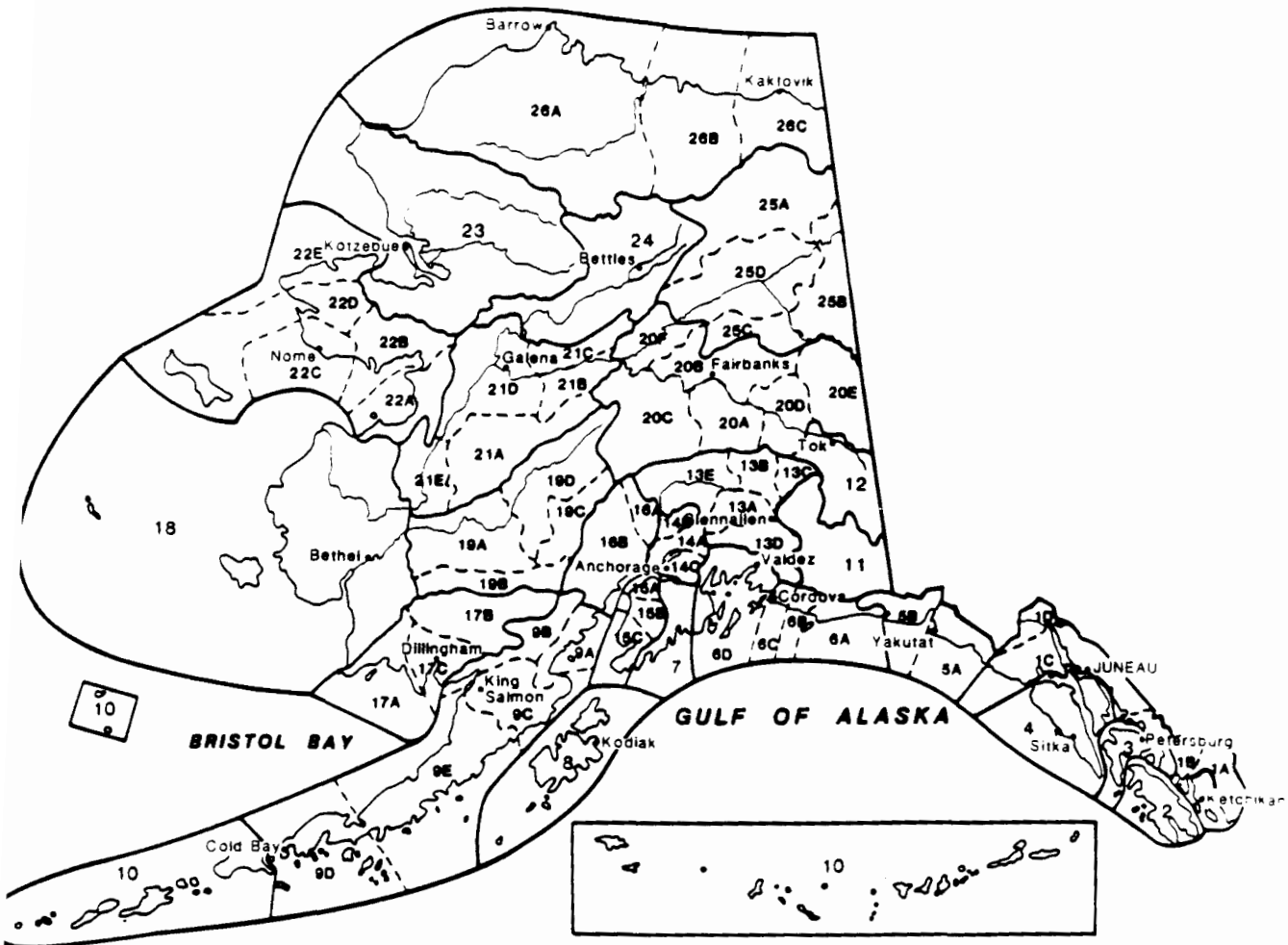
	<u>Personnel</u>	<u>Operating</u>	<u>Total</u>
Planned	123.0	57.2	180.2
Actual	123.0	94.9	217.9
Difference	0	-37.7	-37.7

Expenses for Subunit 26A were less than past years because it was not necessary to do a census or any capture work.

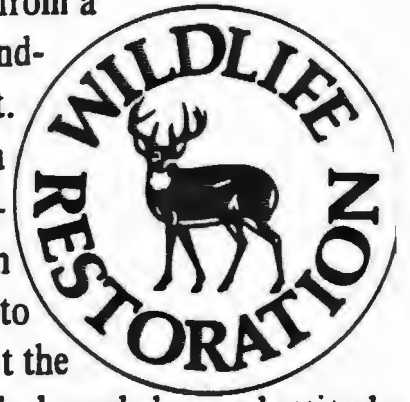
Submitted by

Steve Machida
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 attitude for responsible hunting. Seventy-five percent of the funds for this report are from Federal Aid.



KEN WHITTEN