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CARIBOU

Mary U. Hicks, Editor



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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. We conducted the latest complete survey on 11 November 1992. We observed 390 caribou, 234 cows, 101 bulls, and 55 calves. Ratios were 43 bulls and 24 calves per 100 cows. Calves composed 14% of the observed caribou.

We received 1522 applications for 200 permits to hunt caribou (either sex) during 1993. Twenty-nine (15%) hunters reported hunting successfully, 111 (56%) unsuccessfully, and 60 (30%) did not hunt. The reported harvest was 19 (66%) males and 10 (34%) females.

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 390 animals were counted, suggests the herd increased during the early 1990s. The harvest of 29 caribou during 1993 from an estimated herd of 405 should not have a significant effect on the herd's ability to grow or remain stable.

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 20 June 1994 indicated a minimum of 86 caribou including 24 (28%) calves. The herd contained 22 radiocollared animals, monitored almost daily during May and June. The herd did not exceed 90 caribou at its peak population size in mid June. Documented mortalities through June 1994 included 6 animals (2 cows and 4 calves).

Progress Meeting Project Objectives: The Kenai lowlands herd has increased in size during this reporting period, compared to 1993 survey results. Because of the intense monitoring during the current study, compared to monitoring during previous years, the increase was probably only slight. The observation of 62 adults in 1994 is still well below the 105 counted in 1989. The management objective was extended to 1998. No open season was allowed during the 1993 season; this should continue until the herd size reaches the management objective of 150 caribou.

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: On November 1993 we conducted an aerial survey of the caribou reintroduced during 1985 and 1986. Search efforts included the ranges of Twin Lakes, Killey River, and Fox River herds. We observed 36, 281, and 57 caribou in the Twin Lakes, Killey River and Fox River herds, respectively. Composition data were as follows: Twin Lakes-23 cows, 6 calves and 7 bulls; Killey River-140 cows, 62 calves and 79 bulls; and Fox River-31 cows, 7 calves and 19 bulls.

The minimum fall 1993 population size of these 3 caribou herds was 374 caribou, an increase of 17 % compared to 272 observed in November of 1992. The original releases totaled 80 animals.

We captured and radiocollared 4, 7, and 3 adult female caribou during April 1994 in the Twin Lakes, Killey River and Fox River herds, respectively. Nine animals were collared in the Killey River Herd and three in the Fox River Herd in 1991. We used collared caribou to reduce search time while locating herds to survey. Collars and capture costs were paid for by FWS.

Progress Meeting Project Objectives: The management objective of reestablishing viable caribou populations in suitable habitat in 15B and 15C has been achieved. The Killey River herd was opened to hunting during the spring 1994 Board of Game meeting; 25 permits will be issued fall of 1994. The Fox River herd now meets the department's management objective of 1.0 caribou per km² and should be opened in the fall of 1995. The Twin Lakes herd is increasing; however, it is still too small to support additional mortality through hunting.

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: Preliminary analysis of harvest reports indicated 1729 hunters harvested 2229 caribou (80.4% males, 19.6% females) during this reporting period. Hunter success was 84.8%. Most of the successful hunters that returned harvest tickets were Alaska residents (54.0%). Most hunters killed 1 caribou

(66.4%), and the average bag was 1.6 caribou per hunter. Twenty-nine hunters (1.3%) reported reaching the bag limit of 5 caribou. Hunters used aircraft most frequently for access (86.2%); 9.2% used boats, and 1.6% used snowmachines. The chronology of harvest was as follows: August-35.2%; September-49.0%; October-February-7.0%; and March-April-7.7%.

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 1993/94 at 4000-6000 caribou.

In March 1994, the Board of Game tabled a proposal to further liberalize the caribou hunting regulations by allowing same-day-airborne hunting during the winter months. The Board felt that there should be greater public awareness and comment on this proposal before they acted on it. A Board-generated same-day-airborne proposal will be considered in 1995.

I conducted a fall composition count on a large aggregation of caribou (ca. 50,000) at the headwaters of the Hoholitna and Mosquito Rivers on 18 October 1993. The group consisted of all sex and age classes, but many of the large bulls were lagging behind the rest of the group. I sampled 5907 caribou, including 1336 bulls (22.6%), 3172 cows (53.7%), and 1399 calves (23.7%). This yielded ratios of 42.1 bulls:100 cows, and 44.1 calves:100 cows.

We successfully collared 20 female caribou in the vicinity of Sparrevohn Air Force Station between 15 and 18 April 1994. The caribou we captured (27 females, 2 males) were in very good condition, with one exception. Virtually all of the adult females we captured were pregnant, including several that were estimated to be 2-year-olds. We collared 2 short-yearlings (0.9 yrs), including one captured along with her mother, who was also collared. We collared a long-yearling (1.9 yrs). Blue canvas visual collars were attached to all radiocollars. Because of equipment problems, we opted to forego calf collections.

Mulchatna caribou calved much further north and west in 1994 than had been previously documented. Most of the female segment of the herd (ca. 50,000 adults) calved in the Tikchik River basin, an area previously used as summer range. In addition to caribou from the Mulchatna herd, this calving area also contained 10 radiocollared caribou from the Kilbuck herd. Two independent estimates of calf productivity in the main group on 26 and 27 May 1994 were 70.0 and 69.1 calves:100 cows, respectively. There were also scattered groups from the Mulchatna River up to the Tikchik basin. We observed a large group of males (ca. 20,000) on the south and west slope of Taylor Mountain during calving.

We censused the Mulchatna caribou herd on 29 and 30 June 1994. Most of the herd aggregated near the headwaters of the Nushagak River. One group was approximately 18 miles long by 1 mile wide and contained an estimated 100,000 caribou. Photographs taken during the census have not yet been analyzed, but I estimate the herd size is now in excess of 150,000 caribou.

Cominco Exploration-Alaska contracted the Department to continue radiotracking flights to find caribou collared in the vicinity of their proposed Pebble Copper mine (northwest of Iliamna Lake) in 1992. I submitted a report on the 1993 activities to Cominco in January 1994.

Caribou translocated from the Alaska Peninsula to the Nushagak Peninsula in 1987 continued to thrive during this reporting period. During a survey in March 1994, we counted 1007 caribou. 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 for January 1995. Mike Hinkes (Togiak National Wildlife Refuge) and I presented a poster paper on the status and management of the herd at the International Caribou Conference in March 1994.

Progress Meeting Project Objectives: The Mulchatna herd continued to expand in 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 limit herd growth. Liberalization of hunting regulations and publicity about the size and health of the herd are increasing hunting effort. Even though the herd was relatively inaccessible during the fall hunting season, we 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 4,000-5,000 in midsummer with an October sex ratio of 20-40 bulls:100 cows.

Work Accomplished During the Project Segment Period: Staff conducted a helicopter composition survey in October 1993 and classified 745 caribou. Ratios were 30 bulls and 24 calves per 100 cows. Calves composed 16% of the fall sample, the same as in the 1993 post-calving aggregations.

A photo census between 22 and 28 June 1994 revealed a minimum of 2137 caribou. Coverage of the summer range was comparable to previous years, and total herd size was estimated at 2200-2300, with 21% calves in a sample of 1496 caribou.

During April 1994 we captured and radiocollared 14 adult cows. Two additional cows were killed during capture. We collected blood samples and weights from most caribou.

No hunting was allowed during the 1993-94 regulatory year.

Progress Meeting Project Objectives: The SAP herd has been below the population objective for several years; given the poor range conditions documented through other research, the available habitat may not be able to sustain the original population objective of

5000-6000 caribou. Consequently, a new cooperative management plan between the Department and Izembek National Wildlife Refuge was adopted in 1994. The new population objectives are outlined above.

Recent research has tentatively identified nutritional stress as the primary factor causing poor body condition, high natural mortality rates, and low productivity among these animals. The sample of animals captured in April seemed in slightly better physical condition than in previous years. The 1994 calf production was the highest recorded in over a decade. For the first time since 1983, the herd has not shown a continuing decline.

Hunting was closed by emergency order in 1993 when the herd was documented below 2500 animals and will remain closed until the herd exceeds that number. This hunting closure may have contributed to increased bull:cow ratio observed in 1993.

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 in 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 1993, and 3,021 caribou were classified. Ratios were 44 bulls and 40 calves per 100 cows. Calves composed 22% of the fall sample, compared to 30% of the caribou counted in 1993 postcalving aggregations.

A photo census between 27 and 30 June 1993 revealed a minimum of 12,000 caribou, including 1457 counted by the USFWS in the Aleutian Mountains and on the Pacific Coast. Coverage of the summer range was more extensive than during previous years, and the total herd size was estimated at 12,000-13,000, with 25% calves in a sample of 5614 caribou. This population estimate is significantly below the 1993 count of 15,000.

Hunters reported killing 1146 bulls, 172 cows and 9 of unspecified sex. Hunter success was 85%. Chronology of the harvest by month was as follows: July-0; Aug.-119; Sept.-294; Oct.-117; Nov.-15; Dec.-209; Jan.-256; Feb.-163; Mar.-123; and April-1. Local residents, other Alaskans, and nonresidents accounted for 9%, 59%, and 32%, respectively, of hunters, but because of the 1-caribou bag limit for nonresidents, they accounted for 22% of the reported harvest. We estimated the unreported sport and subsistence harvest at 400 and 700, respectively, resulting in a total harvest estimate of 2400. An unknown, but substantial, portion of the winter harvest in the Naknek drainage was of Mulchatna herd animals.

In 1993 the Board of Game extended the hunting season in Subunit 9E through April, but only 1 caribou was reported taken during April in 1993 and 1994. The season was again

lengthened for 1994, with an opening date of 1 July in the Pacific drainages of 9E south of Seal Cape, but no caribou were reported taken.

In April 1994 we captured and radiocollared 16 adult females. Blood samples and weights were taken for most of these.

Progress Meeting Project Objectives: Population estimates from 1991-93 have been in the range of 16,000-17,500 caribou and are 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 view 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 reflect a decline in herd size of approximately 25%, which coincided with a high rate of natural mortality to radiocollared cows. The herd is below the minimum population objective. Hunting restrictions may be implemented during the 1994/95 season to reduce harvests so the herd can rebuild to 15,000 animals.

Project Location: Unit 10 (300 mi²)
Adak Herd

Project Objectives: To maintain the precalving population at 150.

Work Accomplished During the Segment Period: U.S. Fish and Wildlife Service personnel completed 1 aerial survey during August 1993. The fall 1994 population of Adak caribou is between 700 and 850 animals.

In early 1993 the U.S. Navy decided to reduce the number of personnel on Adak from 5500 to 1100 by late 1993. 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 expanded hunting regulations allowed a reported harvest of 236 animals during the 1993-1994 season. This is the highest reported harvest of the Adak herd.

Progress Meeting Project Objectives: The management objective of maintaining the precalving population at 150 caribou was exceeded during this reporting period. The

managing agencies are concerned the herd's uncontrolled growth will eventually exceed the carrying capacity of the range and cause 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. The public will be given the opportunity to review and comment on this document, with comments due by 7 October, 1994. Management actions to remove the caribou will begin in March or April of 1995.

Project Objectives: To maintain the precalving population at 150.

Work Accomplished During the Project Segment Period: Three replicate helicopter surveys were flown 21-23 May 1993. Because of knowledge gained on previous flights, the final survey was the most accurate. We observed 661 caribou, comprising 501 adults and 160 (24%) calves. Because of the timing of the surveys, some cows had not yet given birth; an additional 75-100 calves may have been born during the season. The fall 1993 population should exceed 700 animals

Hunting this herd was administered by permit, and we issued 346 permits in regulatory year 1992-93. The total harvest was 137 caribou (81 bulls and 56 cows), a 5-year low. Hunter success was 56%. Forty-one percent of the successful hunters took 2 caribou and 59% killed 1 caribou, with successful hunters spending about 8 days afield. Sixty-five percent of the harvest was during September-November.

Progress Meeting Project Objectives: The management objective of maintaining the precalving population at 150 caribou was exceeded during this reporting period. There was continued concern that herd growth cannot be managed by sport harvest. The military community on Adak will decline in size in the future, and the sport harvest will decline also. In response to this problem, the Board of Game passed an emergency regulation in March 1993 extending the 1992-93 season through the end of June. This regulation was adopted for the 1993-94 hunting season. The Department and the U.S. Navy are discussing options dealing with the Adak herd.

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; to maintain a minimum of 35 bulls:100 cows.

Work Accomplished During the Project Segment Period: National Park Service (NPS) personnel completed work on the Mentasta Caribou Herd, conducting extensive research.

The October 1993 postrut estimate for the Mentasta Caribou Herd was 972 animals, of which 947 were adults and only 25 (2%) were calves. There has been virtually no calf recruitment since 1991 in the Mentasta herd. The Mentasta herd's late June postcalving aggregate count was 752 caribou. Preliminary results of a NPS study of neonatal calf survival indicate survival continues to be very low in 1994. 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 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 1994.

Progress Meeting Project Objectives: Herd size is well below the minimum management objective of 2500 adults. It is likely the stated management objective is unrealistic, given current calf predation. This objective was established while the herd was increasing, possibly because predator numbers were lower. Historic data suggest 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 large rapid decline in the Mentasta Caribou Herd was very low neonatal calf survival. Predation on newborn calves is so heavy that few survive to fall. The lack of recruitment over the past few years, coupled with natural mortality of adults, accounts for the population decline. Legal subsistence hunting has had little biological effect on this herd over the past 5 years, as nearly 100% of the animals taken were bulls, and the total harvest was low. Legal harvest was stopped in 1992 in Unit 11 and 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. Complete elimination of this incidental take will be impossible as long as mixed-herd harvests are allowed during 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 1993 postrut estimate for the Nelchina herd was 40,361 of which 34,491 were adults (>1 yr). The estimate was extrapolated from a June 1993 postcalving aggregate count of 46,226 animals (54% cows) and the September 1992 sex and age survey which tallied 41 bulls:100 cows and 24 calves:100 cows. The June 1994 postcalving spring count was 43,536 caribou with 56% cows. The number of cows observed was slightly higher than the 1993 estimate. Calf production and survival in spring 1994 was higher than the 37 calves:100 cows figure in 1993. A count of 2,014 caribou in a postcalving survey of the Upper Susitna River in Subunit 13E was similar to counts in previous surveys.

Two Nelchina caribou hunts were held during 1993. The fall and winter state hunt was a Tier II subsistence permit hunt with 9000 permits issued and 4738 caribou taken. There were 7067 Tier II permittees that hunted and the hunter success rate was 67%. The 1992 harvest was up 38% from the previous year's take of 3439 caribou. Harvest composition figures indicate a total kill of 2828 (60%) males and 1886 (40%) females. The cow harvest increased by 53% over the previous year's take of 1232 cows.

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 1697 permits were issued for the federal hunt. Harvest figures showed 294 caribou were taken for a permit success rate of 17%. Harvest was down 40% from 1992 when 488 caribou were reported taken, and it fell 55% below the 1991 harvest of 647 caribou.

The herd's summer distribution in 1993 was similar to the previous year. Calving and postcalving use traditionally occurs in the eastern Talkeetna Mountains in Subunits 13A, 13E, and 14B. As the herd expanded, more animals summered in Subunit 13B along the Denali Highway and in northern Subunit 13C.

During fall 1993, 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. A week later, large numbers of caribou (approximately 75% of the herd) were observed moving east from the Alphabet Hills in Unit 13B, across the Richardson Highway, through the middle of 13C, and on toward Mentasta Pass. These animals probably traveled on to Units 12 and 20E.

Periodic radiotracking for the 34 radiocollared cow caribou helped determine the distribution of the Nelchina herd for the winter of 1993-94. A minimum of 21 radiocollared cows and substantial portions of the herd were located in Unit 12 and Subunit 20E and as far east as

Beaver Creek in Canada. Although there were no radiocollared cows, an estimated 2000 caribou remained in the Tangle Lakes area of Subunit 13B most of the winter. We estimated the number of caribou wintering in 13E between 2000 and 4000. An undetermined number of caribou, mostly bulls, wintered south of the Glenn Highway in 13D, mostly around Tazlina Lake and River.

By June 1993, most radiocollared caribou were located in the Talkeetna Mountains, indicating the segments of the Nelchina herd had rejoined on the traditional calving and summer grounds.

Nelchina Range stations were repaired and plant conditions evaluated during the summer of 1989 and the results were reported by Lieb (1994).

We ordered new radiocollars but did not put them out this reporting period. There were 34 active collars in the Nelchina Herd.

Progress Meeting the Project Objectives: The 1993 population estimate for the Nelchina caribou herd closely approximated the herd management goal of 40,000 adults. Productivity declined appreciably for this herd based on spring 1993 postcalving calf:cow ratios. The reason for the decline in calf production is unknown but also occurred in other interior Alaska herds. Calf production increased in 1994 but still did not approach levels in prior years. The harvest quota was reduced somewhat in 1994 because of poor recruitment in 1993. Harvest quotas are adjusted yearly in an attempt to harvest the annual recruitment and stabilize the herd at its current level. Stabilizing the herd is supported by range station data which indicate moderate to extensive use of lichens in certain areas of the Nelchina Herd's range, particularly within their calving and summer areas. Further increases in herd size would likely exceed the long-term carrying capacity of the range.

The bull:cow ratio exceeded the minimum objective for this herd. However, the number of trophy bulls has been declining because of heavy harvest pressure. In order to maintain a high bull:cow ratio and a reasonable number of mature bulls, yet reduce the herd size, we increased the number of cows harvested. Increased cow harvests were accomplished by requiring all animals taken during winter hunts within Unit 13 to be antlered caribou only. Once the Nelchina caribou herd migrates from Unit 13 and mixes with the declining Mentasta herd, a cow harvest is not a wise management option because the Mentasta herd has declined so drastically.

Segment Period Project Costs:

	<u>Personnel</u>	<u>Operating</u>	<u>Total</u>
Planned	58.4	40.0	98.4
Actual	58.4	70.0	128.4
Difference	0.0	-30.0	-30.0

Explanation: Because of increased herd size in one area and increased search effort on others, additional funds were needed to complete surveys and photo censuses.

Submitted by:

Jeff Hughes
Wildlife Biologist

Project Title: Interior Caribou Population and Habitat Management

Project Location: Unit 12
Chisana Caribou Herd

Project Objectives and Activities:

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

Work Accomplished During the Project Segment Period: A sex and age composition count was flown on 5 October 1993 and 806 caribou were classified. The calf:cow ratio was 2.1:100 cows and the bull:cow ratio was 25.3:100. Using composition and mortality rate data in a predictive model, we estimated the October population between 900 and 950 caribou.

Between 27 and 30 March 1994, we collected blood samples from 30 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 77% (23/30), below normal for interior caribou herds. The cause for the lower than expected rate was that only 3 of 7 (42.9%) cows with a calf were pregnant, compared to 20 of the 23 lone cows (87.0%). Cows accompanied by calves were captured at a higher proportion than their representation in the herd; therefore, the herd pregnancy estimate was biased. Once we removed this bias, the estimated herd pregnancy rate was 85.4%. Peak calving occurred 2-3 days early during 1994. Tests to examine herd genetics and exposure to infectious disease have not been completed.

Fate of the radiocollared caribou was monitored jointly with the National Park Service and the Yukon Department of Natural Resources. We estimated the overwinter (1 October-26 May) mortality rate for adult cows to be 9%, which is normal for the Chisana Herd but substantially below the 28% rate during FY93. We have not determined the causes of mortality during FY94.

During FY94, a registration permit hunt was established within the range of the Chisana Caribou Herd with a quota of 20 bull caribou. Hunters were required to report within 5 days of the kill or if unsuccessful, within 15 days following close of season. During FY94, hunters reported harvesting 19 bull caribou. We collected all harvest reports and estimated unreported harvest to be 0. This harvest level did not affect overall population growth.

Progress Meeting Project Objectives: The Chisana Herd has been declining since 1988 due to low calf recruitment. Adverse weather conditions and predators are primary factors. Since 1991, harvest was reduced through a voluntary agreement with the principal hunters and guides and during 1993 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 5 years, harvest has 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.

On 10 February 1994, representatives of the Alaska Department of Fish and Game and the Wrangell-St. Elias National Park and Preserve met in Tok to discuss joint management of the Chisana Herd and to develop a cooperative Chisana Caribou Management Plan. Agency representatives agreed the draft plan will be ready to present to the advisory committees and regional councils fall 1994 and to the Alaska Board of Game and the Federal Subsistence Board spring 1995.

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:

- Increase herd sizes to:
 - Big River Herd: 1,500-2,000
 - Rainy Pass Herd: 1,000-1,500
 - Beaver Mountains Herd: 1,200-1,500
 - Sunshine Mountain Herd: 1,500-2,000
 - Tonzona Herd: 1,800-2,000
- Monitor mortality factors, including hunting, predation, and other factors.
- Estimate status, trends, and productivity of the herds from aerial surveys.

Work Accomplished During the Project Segment Period: Preliminary analyses of harvest tickets returned by hunters in the area indicated the following harvests for the 1992-1993 regulatory year: Big River Herd (including Farewell), 51; Rainy Pass Herd, 51; Tonzona Herd, 5; Beaver Mountains Herd, 4; Sunshine Mountain Herd, 2. We collected no additional information on predation or other mortality factors. Reported hunter success rate on all herds combined was 88%. 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 1994 in the Beaver Mountains and Sunshine Mountain indicate calf production was relatively good, but survival of calves was extremely low (<1% calves in the herd in early June 1994). Bear and wolf predation is probably responsible for the drastically low calf recruitment.

Progress Meeting Project Objectives: Again, rough population estimates were available only from the Beaver Mountains and Sunshine Mountain Herds. Hunting mortality remains insignificant, but populations continue to decline slightly. Because of suspected but

undocumented wolf and bear predation, these herds have remained below their targeted levels. Increases in those herds probably depend on the political ability to reduce predation effects. Meeting herd objectives will not be possible with Fish and Wildlife Service's continued selective enforcement of the Federal Airborne Hunting Act.

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.
 - Conduct annual fall composition counts.
2. Reverse the decline of the herd and increase the midsummer population to 6000-8000 caribou.
 - Conduct annual photocensus of the herd.
 - 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."
 - Reduce wolf predation on caribou by decreasing the wolf population.
 - 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.
 - Cooperate with Research Project 3.37.

Work Accomplished During the Project Segment Period: On 25 September 1993, we completed a composition count of the Delta herd and classified 1525 caribou, which was approximately 40-50% of the herd. The calf:cow ratio (4:100) is the second lowest on record, the fourth year of poor recruitment, and confirms the herd will decline again. We met our objective for at least 30 bulls:100 cows (33:100) and for at least 6 large bulls:100 cows (7:100). Our sample included 1109 cows, 48 calves, and 368 bulls. Unlike last year (1993) when we completed the entire fall composition count on/and north of the Tanana Flats, we completed the 1994 fall composition count within the herd's normal range in the foothills of Subunit 20A.

Due to inclement weather, we did not complete the photocensus of the Delta herd this reporting period; therefore, we cannot assess whether or not the population decline has reversed. For several reasons, however, we expect the population estimate for 1994 to be higher than in 1993. First, the wolf predation control program removed approximately 50%

of the Subunit 20A wolf population, so overwinter mortality rates in the herd should be substantially lower. Secondly, 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.

We did not meet our objective to sustain an annual harvest of 300-500 caribou from the Delta herd. Hunting seasons have been closed since late 1991 and are not expected to reopen until the termination of the wolf control program in 1996.

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

Progress Meeting Objectives: We have met our objectives for maintaining 30 bulls:100 cows and 6 large bulls:100 cows, as indicated in September 1993 by the 33:100 and 7:100, respectively.

We will be able to estimate the current population size of the Delta herd after completing a photocensus in July 1994. The population and harvest objectives listed above are part of the wolf predation control implementation plan regulations and will not likely be changed during the duration of the control program (through 1996).

Although we will not be meeting our harvest objective of 300-500 caribou until at least after the wolf control program is completed, we are retaining this objective but recommend modifying it to be met by fall 1996.

Project Location: Subunit 20D
Macomb Herd

Project Objectives and Activities:

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

Work Accomplished During the Project Segment Period: Staff conducted a census on October 2, 1993 and counted 458 caribou. Composition data recorded during the census resulted in estimates of 18 calves:100 cows, 22 bulls:100 cows, and 6 large bulls:100 cows.

The Macomb caribou hunting season remained closed during 1993-1994 because of the declining trend in population size and our failure to meet sex composition objectives.

The population management objective was revised and established a goal of increasing herd size to 800 caribou by the year 2000 with existing composition goals and to reestablish a hunting season by drawing permit when herd size increases to 600 caribou.

Progress Meeting Project Objectives: We made no progress meeting herd size and herd sex composition objectives. No permits will be issued to hunt this herd during the 1994 hunting season.

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.
 - Maintain or increase the number of radiocollars to assist in population census efforts during FY94.
 - Monitor harvest by issuing registration permits.
2. 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.
 - Monitor radiocollared caribou to determine mortality rate.
3. Maintain an October bull:cow ratio of at least 35:100.
 - Conduct fall sex and age composition counts.

Work Accomplished During the Project Segment Period: During FY94, 14 5-month-old female calves were radiocollared, bringing the number of active radiocollars in the herd to 75. Based on the distribution of the radiocollared caribou, a photo census was attempted during June 1993. However, we did not obtain a population estimate because of a camera malfunction.

During FY94, the following three state registration hunts were established within the range of the Fortymile Herd: 1) Hunt 863 included that portion of Subunits 20B and 20D within the Fairbanks Nonsubsistence Area and had a 1-bull bag limit, allowed nonresident hunters and a fall harvest quota of 50 bulls; 2) Hunt 865 included Subunit 20E and Subunit 25C south and east of the Steese Highway and had a 1-bull bag limit, allowed only Alaskan residents and a fall quota of 300 bulls; and 3) Winter hunt 865, which included Subunit 20E and Subunit 25C south and east of the Steese Highway, had a 1-bull bag limit, allowed only state residents

and a quota of 200 bulls. In total, 2,809 permittees killed 325 bull caribou during the state hunts. Two federal subsistence hunts were also held in Subunits 20E and 25C during the year. We issued 77 permits and at least 2 bulls were killed. Alaska hunters killed an estimated 337 caribou during FY94, with adjustments for illegal harvest.

On 8 and 9 February 1994, representatives of the Alaska Department of Fish and Game, U.S. Fish and Wildlife, Bureau of Land Management, and the National Park Service met with concerned citizens of Alaska and Canada to discuss Fortymile caribou management. Participants agreed to develop a cooperative management plan that meets the needs of the people and satisfies the legal mandates of the different agencies. A draft plan will be developed late fall/early winter 1994, and the final plan will be presented to the Alaska Board of Game and to the Federal Subsistence Board spring 1995.

During FY94, the estimated overwinter mortality rate of the radiocollared caribou was 3% for adult cows (1/40) and 17% for female calves (2/12). Of the 3 radiocollared caribou that died, wolves killed 1 calf and 1 adult, and a lynx killed the other calf.

During May 1994, 50 caribou neonates were radiocollared to determine the primary mortality factors during the first year of life. By 13 June 1994, 22/50 calves had died (44%) by the following causes: 8 by grizzly bears (36%); 6 by wolves (27%); 3 by golden eagles (14%); 2 by accident (9%); and 1 by a black bear, a wolverine, and by abandonment (5%).

A posthunt composition count was flown on 3 October 1993 and 3659 caribou were classified. The fall 1993 calf:100 cows and bull:100 cows ratios were 28.7:100 and 46.0:100, respectively. The calf:cow ratio was slightly higher than expected, considering the 1993 low herd pregnancy rate (65%) and the higher incidence of perinatal mortality (20%). The percentage of calves that died between June and October 1993 was lower, compared to the same period during 1990 and 1992. The estimated herd pregnancy rate for 1994 was 82.2%, which is normal for an interior caribou herd.

Progress Meeting Project Objectives: Because the annual growth rate of the herd was below 10%, the FY94 harvest quota was 2% of the estimated herd size and limited to bulls. This harvest had no effect on the herd's ability to grow. Due to the conservative quota and a bulls-only restriction for the past three 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 retarding rapid herd growth (> 10%). With the Alaska Board of Game's decision not to allow predator management to benefit the Fortymile Herd, 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. If weather-related nutrition is favorable and the herd is below 40,000 caribou, propose a short-term (< 5 years) wolf control program following procedures

outlined under option III of the Draft Upper Tanana/Fortymile Wolf Management Plan to cause a rapid increase of the herd." If it becomes apparent a wolf control program will not occur by year 1999, the harvest objectives should be changed to allow for additional harvest.

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

Project Objectives and Activities:

- Determine population size, trend and identity of caribou herds in the Ray Mountains and Kokrine Hills by 1992.
 - Conduct composition surveys.
 - Monitor hunter harvest through harvest reports.

Work Accomplished During The Project Segment Period: Twenty Galena Mountain caribou were radiocollared in April 1992 on their winter range to allow better data on separating the Wolf Mountain from the Galena Mountain herd. Three caribou died or were killed by wolves, and their collars were redeployed in October 1993 on 4 female calves. FWS continued to track the collared caribou throughout the winter.

On 12 October 1993, we conducted a composition count of the Galena Mountain Caribou Herd located 20 miles north of Galena. We counted 259 caribou and found 53 bulls, 165 cows and 41 calves for a bull:cow ratio of 32:100 and a calf:cow ratio of 25:100. This was the highest fall ratio of calves ever seen.

FWS conducted a calving survey 20-21 May 1994 and found 132 caribou with 7 calves and 99 caribou with 13 calves. On 24 May BLM flew the Wolf Mountain area and found 474 caribou with 121 calves.

The reported harvest in these herds was 9 male caribou with 17 unsuccessful hunters. The unreported harvest by Tanana residents of the Ray Mountains Herd is estimated at 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 (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 groups of caribou which calve and winter in 3 distinct areas. These are the Ray, Galena, and

Wolf Mountain Herds and will be treated separately. The objectives and activities for each herd will be redefined as listed:

Ray Mountain Herd

- 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.
- Determine major mortality factors by 1997.
 - Monitor hunter harvest through harvest reports and hunter interviews in Tanana and Rampart and investigate any radiocollared caribou deaths.

Wolf Mountain Herd

- Determine population size, calving locations, rutting areas and winter distribution by 1996.
 - Radiocollar and monitor 5 caribou.

Galena Mountain Herd

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

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

Project Objectives and Activities:

- Maintain minimum population size of 135,000 in the Porcupine Caribou Herd and 10,000 in the Central Arctic Caribou Herd.
 - Monitor the harvest through field observations, hunter reports, and contact with residents.
 - Coordinate data collection with Research Projects 3.34 and 3.35.
 - 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 conducting composition counts in June/July 1993 and March 1994 and 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. However, calf production and survival are generally good.

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, the existing management objectives seem suitable.

Segment Period Project Costs:

	<u>Personnel</u>	<u>Operating</u>	<u>Total</u>
Planned	97.0	54.5	151.5
Actual	67.8	70.0	137.8
Difference	29.2	-15.5	13.3

Submitted by:

Kenton P. Taylor
Management Coordinator

Project Title: Western Alaska Caribou Survey and Inventory

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.
 - Estimate herd size and demography of caribou in the Kilbuck Mountains in the southern portion of the Unit.
 - Determine the extent of movement and distribution of the Kilbuck herd and range overlap with the nearby Mulchatna Herd.
 - Allow a maximum harvest of 5% of the Kilbuck herd by registration permit (bull-only) until the herd reaches a size of 3000 caribou.
 - Adjust harvest levels after population reaches 3000 or more caribou.
2. Reduce the magnitude of illegal harvest of caribou occurring 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: We studied the demography of the Kilbuck herd in an area approximately 6400 mi² in size in the southern portion of Unit 18. A cooperative study by staff from the Yukon Delta National Wildlife Refuge and the Department since 1986 continued during the reporting period. We conducted radiotelemetry and survey flights to monitor distribution, calving success, recruitment and population size.

We estimated overall herd size using composition and census data collected during late fall and early winter surveys when the animals aggregated. During a census conducted during early December 1993, the minimum population estimate was 3682 caribou. We also completed a composition count 23 November 1993. The composition of 1733 caribou was 861 bulls, 675 cows, and 197 short yearlings. During the caribou calving survey conducted 26 May 1994, we observed 66 calves per 100 cows (19% calves).

We observed caribou movements and distribution during the winter, calving, summer and fall rutting period. From this movement data, we documented some overlap between the range of the Mulchatna herd to the east and the Kilbuck herd. An additional 8 yearling female caribou were instrumented with radiocollars during the fall of 1992 to replace those lost. All radiotelemetry information indicates the majority of Kilbuck animals use a distinct calving area and have a high fidelity to their present range. However, two-thirds of the radiocollared females originally collared in the Kilbuck Mountains were located east of Nishlik Lake and intermixed with Mulchatna herd caribou.

During the state's fall season (1 Sept.-30 Sept. 1993), we issued registration permits, and hunters reported a harvest of 21 bull caribou. 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 expect it to be much lower than previous years' reported harvest. The 1992-93 state registration permit harvest was 24 bull caribou reported by 260 hunters and 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 suggest that as many as 200 caribou may have been taken illegally between 1 December 1993 and 1 March 1994.

We increased enforcement efforts, especially during hunting season, the regulatory year.

Since the first Kilbuck Caribou Management planning meeting held 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 1993. The plan has goals and objectives promoting herd growth while allowing a limited harvest by subsistence hunters. Twelve public meetings have been held with local Unit 18 village councils, the FWS, and AVCP.

Progress Meeting Project Objectives: The Kilbuck herd has increased dramatically from an estimate of less than 1000 animals in 1985 to approximately 3700 animals as of 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.

Illegal harvest remains a problem in the eastern portion of the herd's range. However, increased enforcement efforts by the state improve documentation of illegal harvest. The Yukon Delta National Wildlife Refuge hired a federal enforcement officer to specifically deal with these out-of-season enforcement problems for fiscal year 1995.

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 prior to 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 radio collars.
 - 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 1993, 30 caribou from the Western Arctic Herd (WAH) were instrumented with radio collars near Onion Portage on the Kobuk River. We outfitted 23 caribou with conventional VHF collars and 7 animals with satellite collars (PTT's). We were able to maintain a minimum of 140 active radio collars and 10 PTT's on WAH animals during the segment period.

During the winter from October 1993 through March 1994, 9 telemetry distribution flights were conducted by staff from our Nome, Kotzebue, Fairbanks, and Barrow offices. The flights were conducted in Units 21D, 23, 24, 26A, and near eastern Norton Sound in Unit 22. The status of 140 radiocollared caribou was monitored during these flights.

The fieldwork portion of a photocensus of the WAH was completed during June and July 1993. We completed our count of the photographs during the segment period, estimating 450,000 caribou.

We conducted aerial recruitment surveys in Unit 23 when caribou were migrating north to the calving grounds during late April and early May 1994. To better distribute the 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 9956 caribou yielded a recruitment ratio of 19 short yearlings per 100 adults.

We completed calving ground surveys early June 1994 in the vicinity of the Utukok River, western Brooks Range, and Lisburne Peninsula in Unit 26A. In an effort to distribute sampling effort, composition was conducted in the vicinity of radiocollared cows. The calf:cow ratio was 38 calves: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 1993-94 hunting season, hunters reported a harvest of 1485 caribou. Harvest reporting by local residents is still in progress, and the harvests 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 maintained a minimum sample size of 140 radiocollared caribou in the WAH during the reporting period. However, we should consider increasing the sample size because the herd has grown considerably during the last 5 years and is currently estimated at 450,000 caribou. The goal of maintaining a sample size of 100 active-collared animals was developed a number of years ago when the herd was substantially smaller.

Aerial radiotelemetry and distribution surveys indicated that unusually large numbers of caribou wintered south of the Selawik Hills in and adjacent to reindeer ranges, and substantial losses of reindeer were reported. Additional survey flights in and adjacent to reindeer ranges may be warranted in the future to warn herders of impending movements of caribou that may affect them.

The short yearling surveys conducted late April and early May 1994 indicated the recruitment rate of 19 short yearlings:100 adults was within the range of recruitment observed during recent years. Since 1986, recruitment has ranged from 18 to 27 short yearlings per 100 adults.

Because of staff vacancies, we did less information/education work as planned. Improving the public's understanding of regulations and harvest reporting are 2 goals of our information/education program. Public contacts through information/education activities provide our staff with needed input about our caribou management program.

If the WAH continues to grow in size, the biennial photocensus may become more difficult to complete. During the 1993 photocensus, the entire postcalving group did not aggregate at the same time. Aggregations took place over the course of several days, and mixing of animals from different aggregations may prove to be more of a problem in future photocensuses if the herd continues to grow. In the future, estimating the population size through a sampling procedure rather than a complete count of postcalving aggregations may be necessary.

Project Location: Unit 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.
 - 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 by flying surveys and monitoring satellite collars during the appropriate times.
4. Develop updated management objectives in cooperation with the public and other agencies.

Work Accomplished During the Project Segment Period: We conducted a photocensus of the TLH on 9 July 1993. Photographs were taken while the caribou were in insect relief aggregations. We used radiotelemetry equipment to determine that most of the caribou with radio collars were in the photographed groups. Department and North Slope Borough Department of Wildlife Management (NSB) staff subsequently counted 27,686 caribou from the photographs. This represents an increase of 14% per year since the last count in 1989 of 16,649 caribou.

Through a cooperative project with the NSB and the U. S. Bureau of Land Management, 18 caribou were captured using a Hughes 500 helicopter equipped with a skid-mounted net gun during July 1993. We attached satellite radio collars to 5 caribou and standard VHF collars to 13 caribou to aid in population, productivity, and movement studies. We measured, weighed, and assessed the body condition of all captured caribou.

Calving success was much lower during 1993 than in previous years. We observed 2959 caribou between 15 and 17 July 1993 from a Hughes 500 helicopter, resulting in a count of 39 calves:100 cows and 97 bulls:100 cows. Of the cows with radio collars, 4 had calves which survived and 9 had calves that died.

Calving success improved during 1994. We surveyed 891 caribou and counted 63 calves:100 adults on 23 June 1994 from a C-206. Ten of 20 radiocollared cows had calves. Most calving took place east, northeast, and southeast of Teshekpuk Lake during both 1993 and 1994. We monitored movements of the 5 satellite-collared caribou throughout the year. Four animals wintered in the northern foothills and one on the south side of the Brooks Mountain Range. Two of the 5 satellite-collared caribou died during the winter.

Progress Meeting Project Objectives: We met nearly all management objectives. We completed a photocensus, summer and spring composition counts, and calving location surveys. Caribou were captured and collars were attached without using drugs. We relocated caribou with VHF radio collars several times during the year and gained detailed movement information from satellite radio collars. We will continue to monitor caribou movements and use this information to protect critical habitat areas from the effects of industrial exploration and development.

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

Fewer TLH caribou were harvested than in previous years. Widespread icing conditions caused most of the TLH caribou to leave the coastal plain, where most North Slope villages are located, and move to the foothills of the Brooks Range. There was probably more wolf predation than in past years because wolves are more plentiful in the foothills than on the coastal plain.

Segment Period Project Costs:

	<u>Personnel</u>	<u>Operating</u>	<u>Total</u>
Planned	123.0	57.2	180.2
Actual	123.0	67.7	190.7
Difference	0.0	-10.5	-10.5

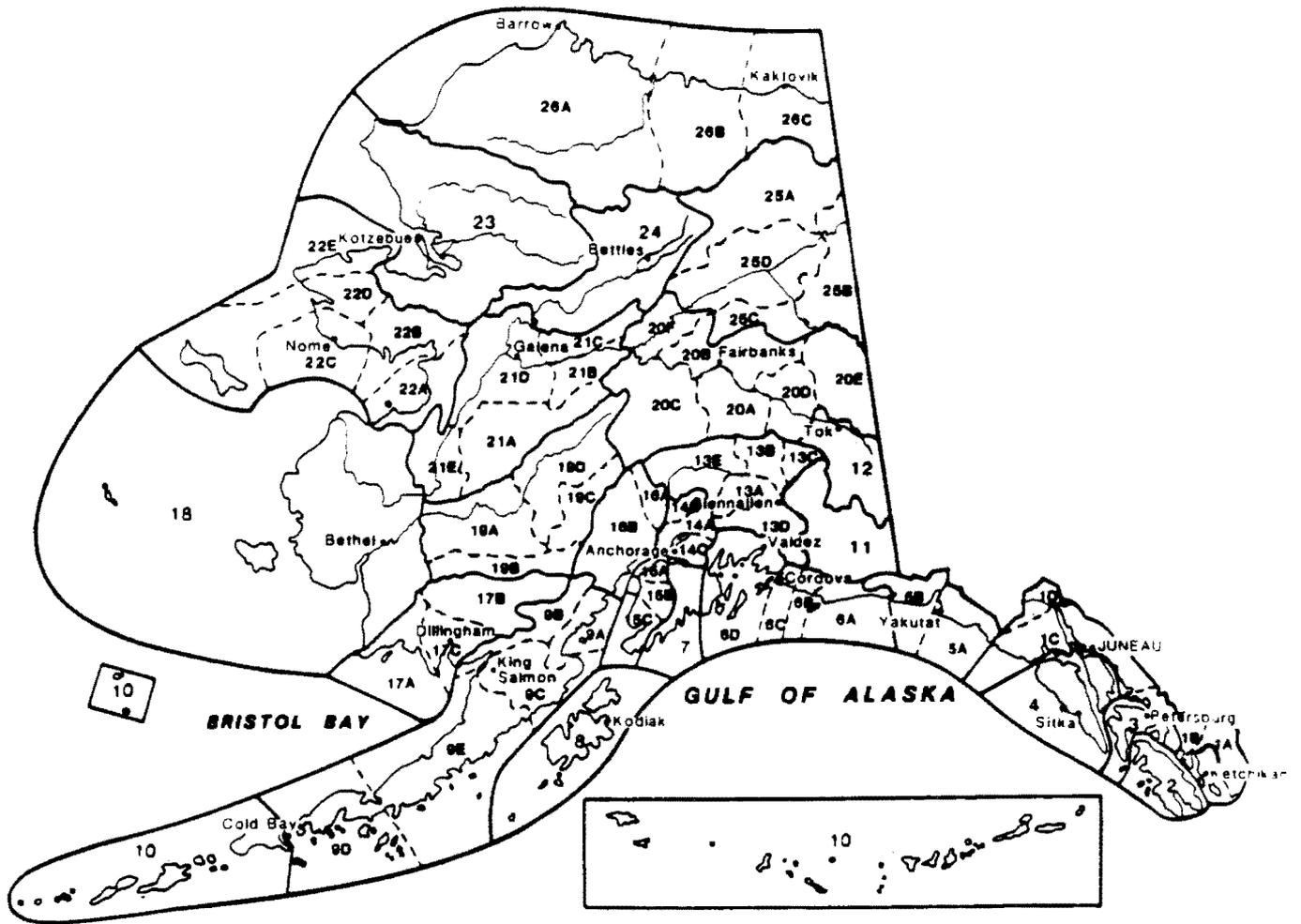
Explanation: WAH photocensus and a cooperative satellite telemetry project cost more than we anticipated.

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 distributes funds to states using a formula based on each state's geographic area and number of paid hunting license holders. Alaska receives a maximum of 5% of revenues collected each year. The Alaska Department of Fish and Game uses its funds to help restore, conserve, and manage wild birds and mammals. These funds are also used to educate hunters to develop skills and attitudes for responsible hunting. Federal Aid funds paid for 75% of this study.

