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**Federal Aid in Wildlife Restoration  
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# **CARIBOU**

**Mary U. Hicks, Editor**



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**Tony Knowles, Governor**

**DEPARTMENT OF FISH AND GAME**  
**Frank Rue, Commissioner**

**DIVISION OF WILDLIFE CONSERVATION**  
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**Project Title:** Southcentral Alaska Caribou Management

**Project Location:** Unit 7 (3,520 mi<sup>2</sup>)  
Kenai Mountains Herd

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

**Work Accomplished During the Project Segment Period:** On 7 January 1999, an aerial survey was completed for the Kenai Mountains Caribou herd. The survey was conducted using a Piper PA-18 Super Cub. We observed 380 caribou that were not classified because we used a fixed-wing aircraft. The 1998–99 estimate places the herd's postcalving population size at 425 caribou, 75 less animals than last year. Overall wintering conditions were rated as good due to the vast snow-free areas. Additionally, caribou were found further south on summer range probably due to the lack of snow.

We received 1348 applications for 250 permits issued to hunt either-sex caribou during 1998. Twenty-five (10%) hunters reported hunting successfully, 76 (31%) unsuccessfully, and 149 (60%) did not hunt. The reported harvest comprised 17 (68%) males and 8 (32%) females.

Successful hunters used the following transportation methods to access their hunting area: highway vehicles 18 (72%), horses 6 (24%), and aircraft 2 (8%). Fifteen (60%) animals were taken in August and 10 (40%) in September. In 1997 the Board of Game extended the season to include a November 10 to December 10 hunt. Eight hunters hunted from December 1 to 10 when access by snowmachines was allowed; no caribou were killed. Ten hunters hunted during this period last year and none was successful. Twenty-three (92%) of the 25 successful hunters were Alaska residents.

**Progress Meeting Project Objectives:** The harvest of 25 caribou during 1998 from an estimated herd of at least 425 represents a 6% harvest. Additionally, since only 8 of the 25 caribou harvested were females, the overall impact to production and growth was insignificant. Surveys conducted in 1992, 1997, and 1998 indicate the herd increased from approximately 405 to 550 animals or about 26 percent then declined to 425 in 1999. History of this herd also indicates that when the herd exceeds 450 animals (1997), it declines sharply to about 300. I recommend the number of permits be maintained at 250 and the season maintained for the 1999 season in an attempt to reduce the herd's size to approximately 400 animals postseason. If the 1999 harvest fails to sufficiently reduce the herd's size and the herd does not decline naturally, a change in season and bag limit to promote harvest of adult females should be implemented for the 2000 season.

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

**Project Location:** Unit 15A (1,300 mi<sup>2</sup>)  
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 22 June 1999 indicated a minimum of 140 caribou, including 29 (21%) calves, were in the herd. One hundred eleven of the 140 caribou were adults, compared to 94 adults counted in 1998 and 81 in 1997. An accurate assessment of yearlings was not possible because we used a fixed-wing aircraft, but we commonly observed yearlings. The observation of 29 calves is the second highest number in the Lowland Herd. Thirty calves were observed in 1998, 24% of 124 counted.

We identified bulls by size and antler development. Using this methodology, medium to large antlered bulls composed 24% ( $n = 26$ ) of the adults.

**Progress Meeting Project Objectives:** Adult animals in the Kenai Lowlands herd increased by 25% while the number of calves declined by 37% from 1996. Animals observed remained relatively stable over the past 3 years in spite of the severe winter of 1994–95. The observation of 62 adults in 1994, 65 in 1995, 69 in 1996, and 81 in 1997 is still well below the 105 adults counted in 1989. Low recruitment due to predation rather than limited habitat is still suspected to be the cause of the herd's small size. The management objective was extended to 1998. The season has been closed since 1993 and should remain closed until the herd reaches the management objective of 150 caribou.

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

**Project Location:** Units 15B and 15C (3,563 mi<sup>2</sup>)  
Killey and Fox River Herds

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

**Work Accomplished During the Project Segment Period:** We completed surveys on the 3 caribou herds resulting from the 1985 and 1986 reintroductions ( $n = 80$ ) into Units 15B and 15C. Search efforts included most of the known ranges for these herds. On June 23, 1999 we counted the Killey River and Twin Lakes herds, compiling the following totals and classifications: we classified 509 of the 546 caribou counted in the Killey River herd. Composition was 318 cows, 77 calves, and 114 bulls. Ratios were 25 calves and 36 bulls/100 cows, and calves composed 16% of observed caribou. Twin Lakes counts revealed 54 caribou, comprising 30 calves and 17 bulls/100 cows; calves composed 21% of the caribou observed. Survey conditions of the Twin Lakes herd were poor, resulting in a suspected low number of located animals. This herd is believed to contain about 65 to 70 caribou. The Fox River herd was last counted on November 21, 1998 when we located 67 caribou. Because we used fixed-wing aircraft to survey the Fox River herd, animals were only classified by age.

Hunting was authorized on the Killey River herd beginning in 1994. The department issued 25 permits each year with a bag limit of 1 caribou until 1996. In 1997 the number of permits issued was increased to 50 with the same bag limit. We received 412 applications for these permits in 1998. Thirty permit holders reported hunting, harvesting 26 bulls (87%). Successful hunters averaged 6.2 days afield and 25 (97%) of the 26 successful hunters were residents. Successful hunters used the following means of transportation: horses, 17 (66%); boat, 8 (31%); and aircraft, 1 (4%).

Hunting began on Fox River herd in 1995 when 15 permits were issued. The number of permits issued was reduced to 10 in 1996 and has remained the same through 1998. 144 applications were received for these permits in 1998. Six of the 10 permit winners reported hunting, harvesting 4 bulls. Successful hunters averaged 4.3 days afield and all were Alaska residents.

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

### **Progress Meeting Project Objectives:**

The Killey River herd was opened to hunting during the spring 1994 Board of Game meeting, allowing for 25 permits to be issued in the fall of 1994 to 1996 and 50 permits since 1997. The Fox River herd was opened in 1995, allowing for 15 permits in 1995 and 10 since 1996. Permits for both herds allowed a hunter to harvest 1 caribou. The Twin Lakes herd is still too small to support additional mortality through hunting.

The management objective of reestablishing viable caribou populations in suitable habitat in Units 15B and 15C has been achieved. Results from 1999 surveys compared to those in 1998 indicate the Killey River herd is now exceeding its projected range capacity of 1 caribou/km<sup>2</sup> (400 animals) and the calf to cow ratio is the lowest recorded for this herd. The number of animals counted in the Twin Lakes herd declined from 66 last year to 54 caribou this spring. Due to poor counting conditions and the lack of bulls located during the survey, this number represents the minimum in the herd. The Fox River herd declined from 96 counted on March 11, 1998 to 67 on November 21, 1998. No calves were observed in the November 21, 1998 count. Quality and quantity of habitat in the Fox River's range may be becoming a limiting factor since the density of the herd exceeded 1 caribou per km<sup>2</sup> in 1997-98. Additionally, black and brown bears are common in this area and on several occasions a pack of 6 wolves was observed feeding on caribou.

Preliminary results from radiotracking indicate animals are exchanging between the Twin Lakes and Killey River herds but the extent is unknown. The spring 1999 count revealed the Killey River herd size is well above the recommended stocking rate. Since hunters do not generally harvest cows in this hunt, a cow-only permit should be issued to reduce the herd's growth. A detailed management plan was written for all caribou herds on the Kenai Peninsula in October 1994.

**Project Location:** Units 9A, 9B, 9C, 17 and 19B (45,500 mi<sup>2</sup>)  
Mulchatna Herd

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

**Work Accomplished During the Project Segment Period:** Harvest reports for this reporting period have not been analyzed. Hunting effort was probably comparable to recent years.

During the 1998–99 season 1 emergency order was issued to open a hunting season on the Mulchatna Caribou Herd (MCH) which were moving into closed areas. Unit 18 (south of the Yukon) and Unit 17A (west of the Togiak River and north of Pungokepuk Creek) were opened from August 25 to March 31 with a bag limit of 5 caribou.

Regulations were changed at the spring 1998 Board of Game meeting to require that all meat on caribou taken in Unit 17 prior to October 1 must remain on the bones of the front quarters and hindquarters until removed from the field or processed for human consumption.

A scheduled photocensus of the MCH was not conducted. Though unable to quantify total herd size, the high proportion of calves and large number of caribou observed do not indicate a significant decline in herd size. Herd size is still estimated to be at least 200,000. Fall composition counts were conducted October 7, 1998 south of Koliganek and in the Mosquito River drainage. The composition from a sample of 3086 caribou was 40.6 bulls:100 cows and 33.6 calves:100 cows.

Herd movement for these caribou continues to be unpredictable. In July 1998 large numbers of caribou were located in the upper drainages of the Koktuli and Stuyahok Rivers. By early August, many thousands of caribou had moved in the lower end of the Nushagak River area between Portage Creek and Dillingham. By mid-August most of the caribou had moved north through the Nushagak Hills, scattering throughout their range. By mid-September large numbers of caribou were in the mid-Nushagak River drainage area and scattered in Unit 18. Because of low insect harassment, many of the caribou stayed in the lowlands. During the rut in early to mid October, large numbers were located south of Koliganek, the Mosquito River drainage, Unit 18, and the Stony and Swift River drainages. Throughout the winter of 1998–99, caribou from the Mulchatna herd were scattered throughout southwest Alaska as far north as McGrath and Nikolai. By mid-May most of the herd had moved to the Nuyakuk River and lower Mulchatna River where calving occurred. In late June large numbers of caribou were moving from the calving areas through the Shotgun Hills, Nushagak Hills, and Mosquito River area.

A May 1999 calving survey was not conducted, pending reevaluation of calving survey techniques.

Caribou translocated from the Alaska Peninsula to the Nushagak Peninsula in 1987 remained stable in number during this reporting period at about 1300 animals. Monthly radiotracking flights verified that most of the herd remained on the Nushagak Peninsula. Data from the Federal Subsistence hunt are still being analyzed.

**Progress Meeting Project Objectives:** The MCH continued to extend their range and probably grew in herd size. No range investigations have been conducted in areas used by this herd. Trailing is extensive within the range of the herd, but there is no evidence that food availability is limiting herd growth. Liberalization of hunting regulations and publicity about the size and health of the herd appear to be increasing hunting effort. An outbreak of footrot (Necrobacillosis) was observed in the herd during fall 1998. Though a considerable number of caribou were observed with symptoms of this bacterial infection, and dead caribou reported, the overall effect on the herd is unknown.

**Project Location:** Units 9C and 9E (24,000 mi<sup>2</sup>)  
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:** Between late May and October 1998, 3 cooperative projects were completed with substantial funding from the FWS. These projects included a parturition survey and calf mortality study, a postcalving count, and a fall radiocollaring/calf collection and sex/age composition survey. Final reports on these projects have been completed.

A helicopter composition survey was conducted in October 1998, and 1343 caribou were classified. Ratios were 31 bulls and 30 calves per 100 cows. Calves composed 19% of the fall sample. In fall 1998 we fitted 19 female calves and 2 female yearlings with standard radio collars and 6 adult females with satellite collars. By June 1999 67% of these had died. We collected 10 female calves to assess body condition and look for evidence of lungworms. All calves tested positive for lungworm.

A postcalving photo count was conducted during 26–29 June 1999 and preliminary estimates totaled 9300 caribou, including 2800 counted by the FWS in the Aleutian Mountains and on the Pacific Coast. Calves composed about 19% of the total count.

Hunters reported killing 453 bulls, 31 cows, and 6 caribou of unknown sex during the 1998–99 season. Chronology of the harvest by month was as follows: Jul-0; Aug-76; Sep-150; Oct-60; Nov-29; Dec-38; Jan-38; Feb-39; Mar-31; and Apr-3. Local residents, other Alaskans, and nonresidents accounted for 39%, 29%, and 40%, respectively, of successful hunters reporting. The 1998–99 reported harvest was similar to the previous 2 years, but we believe more residents reported their harvests than in most past years. Nonresidents took fewer caribou than normal because the Board of game reduced the length of their season. We estimated the unreported sport and subsistence harvest at 100 and 400, respectively, resulting in a total harvest estimate of 1000. Several thousand Mulchatna caribou moved into Unit 9C during the 1998–99 winter, and an unknown proportion of the winter harvest in the Naknek drainage consisted of Mulchatna herd animals.

**Progress Meeting Project Objectives:** Results of the 1994 postcalving census showed a decline in herd size of approximately 25%, which coincided with a high rate of natural mortality to



radiocollared cows and a record winter harvest. Results of the 1997, 1998, and 1999 postcalving counts indicate the herd has not stabilized and the decline is continuing. Hunting restrictions implemented during the 1998–99 season reduced harvest by nonresidents, yet natural mortality increased during this reporting period. At the March 1999 Board of Game meeting, this herd was put into a Tier II permit hunt with 600 permits to be issued by the state. An additional 60 federal permits will be issued for the 1999–00 season.

**Project Location:** Unit 9D and Unit 10 (4,900 mi<sup>2</sup>)  
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:** During October 1998 a helicopter survey classified 686 caribou in Unit 9D and documented ratios of 35 calves and 32 bulls:100 cows. We also captured and put standard radio collars on 13 calves and 1 yearling in Unit 9D. To further document movements and possible interchange between the Northern and Southern Alaska Peninsula herds, we put satellite radio collars on 6 males and 8 females  $\geq 2$  years old in Units 9E and 9D, respectively. We attempted to distribute these satellite collars throughout the mountainous region adjacent to the unit boundary, but weather precluded access to some areas.

With funding from the FWS, during June 1999 we conducted a parturition survey and a calf mortality study. In 1999 93% of caribou cows  $\geq 2$  years old were pregnant. Calves from the SAPCH were heavier in 1999 than in 1989. Through 18 June, 11 of 49 (22%) radiocollared calves died. By 26 June, another 11 calves died, resulting in a mortality rate 45%. Predators, primarily wolves (*Canis lupus*) and brown bears (*Ursus arctos*), killed most of the calves. A final report on this project is in preparation. During 26–29 June 1999 a postcalving photocensus of the Southern Alaska Peninsula caribou herd was conducted in Unit 9D. The total count, including visual tallies of smaller herds and photo counts of larger herds, was 3612 caribou (Table 1). This total count represents encouraging growth of this herd that is attributed to vastly improved productivity in 1998 and again this year. Last fall's composition survey showed that calves made up 21% of the sample, with a calf:cow ratio of 35:100. As of late June, the 1999 calf "crop" was also good, despite high mortality detected during the calf mortality study. Overall, calves made up 25.8% of all caribou seen (based on classification of 2850 caribou visually and from photos). As in past years, there was a significantly higher percentage of calves on the Caribou River Flats (34%) than in the Black Hills/Trader Mountain area (21.6%). In addition to the high number of calves and yearlings present, more extensive coverage, relatively good weather, and twice the normal number of radiocollared caribou to locate this year (48 [including 26 calves] of 52 radios) may have contributed to the increased count.

**Progress Meeting Project Objectives:** Hunting was closed by emergency order in 1993 when the herd was documented below 2500 animals and remained closed until FWS surveys in April 1997 counted 3200 caribou. The results of this survey were not easily explained given their counts of the 2 previous years and continuing low productivity, except in 1994. Federal subsistence hunts were held on Unimak Island and in Unit 9D during 1997–98 and 1998–99, but reported harvests were less than 40 caribou each year. The combination of low harvests and good



productivity the past 2 years has allowed the herd to begin to grow, now approaching the lower end of the population objective. In March 1999 the Board of Game reinstated a resident hunt from 1–20 September and 15 November–31 March and a nonresident registration permit hunt, with a 50 bull quota, from 5–25 September.

**Project Location:** Unit 13 (25,000 mi<sup>2</sup>)  
Nelchina Herd

**Project Objectives:** To stabilize the herd between 35–40,000 animals with a minimum bull:cow ratio of 40:100 by harvesting the annual growth increment; to maintain productivity rates of approximately 10%; to maintain animal growth and body condition parameters similar to both current body conditions and that of other Interior Alaska caribou herds.

**Work Accomplished During the Project Segment Period:** The October 1998 postrut estimate for the Nelchina herd was 38,552 caribou, of which 29,338 were adults (>1 yr.). The estimate was extrapolated from a June 1998 postcalving aerial count of 44,192 animals (56% cows) and the September 1998 sex and age survey that tallied 21 bulls:100 cows and 38 calves:100 cows. The July 2, 1999 total postcalving spring count was 33,125 caribou. The 1999 postcalving composition count was 32 calves:100 cows.

Two Nelchina caribou state hunts were held during 1998. The state hunts comprised a Tier II (TC566) subsistence permit hunt with 10,000 permits issued for bulls only in Unit 13 and a Registration (RC460) subsistence hunt in Tok for cows with 920 permits issued. The Tier II hunt permits were issued to the applicants with the highest eligibility score. The Tok registration hunt was open to any state resident. The preliminary harvest figures under the Tier II hunt was 2500 bulls and 400 cows under the Tok registration hunt. The Tier II hunt was closed by emergency order after the fall season because our harvest quota of 2500 bulls had been met. This closure had little impact on the total harvest as most of the caribou left the unit before the winter season. The Tok registration winter season was closed by emergency order after 5 days when the harvest quota was reached. The combined estimated harvest for both state hunts, including sex unknown animals, was 2900 caribou.

The Bureau of Land Management conducted a fall and winter federal registration hunt in Unit 13 on their lands along the Denali and Richardson Highways. Each hunter was allowed 2 permits (2-caribou bag limit), and 2427 permits were issued for the federal hunt. The federal harvest was 400 (221 bulls, 176 cows, 3 sex unknown), but the reporting rate was only 78%. This year's federal harvest was 236 animals above last year's take of 164 but still below the 1991 harvest of 647 caribou. The reasons for the harvest declines are twofold: less land is open for federal hunting because of state land selections along the Denali Highway, and caribou have been spending less time on the few federal lands remaining open.

The Nelchina Caribou Herd spent May through July 1998 in the eastern Talkeetna Mountains. Weather conditions in 1998 were less favorable than in 1997 as the spring was cold and wet, resulting in decreased, or at best, late forage production. During fall 1998 the herd was located in the interior portions of Unit 13 west of the Richardson Highway and south of the Denali, limiting hunter success from the highway system. Radiocollared caribou distribution was within a band

extending from the eastern Talkeetnas across the Lake Louise Flats south of the Denali Highway to the Gulkana River. Most of the herd was grouped for the rut along the Little Nelchina River by late September, but a few thousand animals grouped along the Maclaren River for the rut. In late October and early November, the caribou herd moved east along the usual migration route across Unit 13 into Units 11 and 12. According to radio collar data, 90% of the Nelchina Herd left Unit 13 during the winter migration of 1998–99 and wintered in Units 12 and 20E. Weather conditions on the winter range were again favorable with only moderate snow, but temperatures were colder than last year. Caribou did not begin moving back into Unit 13C and Unit 11 until late spring. Distribution during calving in 1999 was more dispersed than in previous years, with calving occurring from the little Nelchina River to Kosina Creek.

We monitored caribou calving by scheduling periodic flights, weather permitting, from 16 May–7 June. Radiocollared adults were tracked and we visually observed the caribou during each flight until the cows had calved. In the absence of a calf, a cow with retained antlers and distended udder was considered to have been pregnant, even if a calf was not observed. No 2-year-old caribou had a calf. The overall pregnancy rate for caribou 3 years old and older was only 50%. Adults, caribou older than 4 years of age, only had a 62% calving rate. Neonatal calves ( $n = 52$ ) were captured on May 28 during the peak of calving to obtain birth weights. Birth weights averaged 20.2 lbs. for males and 17.9 for females. For the second year in a row, weather conditions were poor throughout the calving period with cold, windy, wet weather. In addition, snow cover remained 3 weeks longer than usual on the calving grounds, resulting in calves being dropped in areas with over 50% snow cover.

Body condition was monitored twice in female calves, once during September 1998 and again in April 1999. After capture, caribou were weighed and body condition parameters were recorded and compared with similar data from past years in the Nelchina herd. Comparison of weights and condition indices were also available between other Interior caribou herds. Fall 1998 calf weights averaged 111.6 lbs., down from the 122.3-lb. average during fall 1997.

**Progress Meeting the Project Objectives:** The 1998 fall population estimate for the Nelchina Herd falls within the herd management goal of 35–40,000 caribou in the fall. The increase over the 31,893 estimate in 1997 was attributed mostly to increased calf production in 1998 with 6000 more calves born than in 1997. This good calf production was attributed to better summer weather in 1997 that caused increased forage production. Cows that are stressed on summer range are much less likely to have a calf the following year. Also contributing to the increase was a decline in the winter mortality rate in the Nelchina Herd during 1997–98, indicated by a 5% overwinter loss of radiocollared cows, compared to 15% in 1996–97. The reason for this 1-year (1996–97) increase in natural mortality is unknown.

Body condition parameters collected in the Nelchina Caribou Herd declined in 1998. Body weights for female calves were approximately 11 pounds lighter in fall 1998 than in fall 1997. Body weights for female calves in April 1999 were 3 pounds lighter for 8 recaptured calves, but 16 new captures were 8 pounds heavier than the recaptures. The reason for the weight differences between recaptures and new captures is unknown. Overall, spring weights indicate the winter of 1998–99 was relatively mild for caribou. The peak of calving for radiocollared cows was 28 May, 3 days later than the usual peak. Historically, the peak of calving for the Nelchina Herd is

always later than observed in adjacent Interior herds. Calf production based on pregnancy rates for radiocollared caribou and the 1999 spring composition survey was the lowest ever observed. Neonatal calf weights this year in the Nelchina caribou herd were high for the second year in a row and among the highest for Interior Alaska herds. High neonatal weights but lower fall calf weights indicate the quality or quantity of summer forage during 1998 declined. Poorer summer forage in 1998 could result in cows going into the breeding season in poorer condition and account for a decline in productivity. The annual (spring census 1998–spring 1999) mortality rate for radiocollared caribou was up slightly at 8% overall with 18% mortality for yearlings but only 6% for caribou older than yearlings.

**Recommendation:** The 1999 spring count indicates the 1999 fall estimate will be below the management objective of 35–40,000 caribou. To assure the herd does not continue to decline, the allowable take for the 1999 fall hunt should be reduced from 1500 bulls and cows each to 500 cows and 1500 bulls. This should be accomplished by reducing the Tier II permits from the 8000 initially planned to 6000. It is evident that productivity is down. Also, mortality appears to be increasing, presumably because of a large increase in wolf numbers on or near the calving ground.

**Segment Period Project Costs:**

	<u>Personnel</u>	<u>Operating</u>	<u>Total</u>
Planned	138.8	71.2	210.0
Actual	138.8	71.2	210.0
Difference	0.0	0.0	0.0

**Submitted by:**

Michael G. McDonald  
Assistant Management Coordinator

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

**Project Location:** Unit 12 (3300 mi<sup>2</sup>) and adjacent Yukon Territory, Canada (500–1000 mi<sup>2</sup>)  
Chisana Caribou Herd

**Objective:** Develop a management plan that recommends management and harvest strategies designed to meet the goal of managing the Chisana Herd for the greatest benefit of the herd and its users under the legal mandates of the managing agency and landowners.

**Activities Planned:**

1. Estimate status, trends, and recruitment levels through aerial surveys.
2. Determine pregnancy rate, peak of calving, parturition, and calf survival.
3. Conduct a fall sex and age composition count.

**Activities Accomplished:**

1. Completed herd productivity survey on 29 May 1999.
2. Conducted a fall sex and age composition survey on 30 September 1998.
3. Conducted 4 radiotracking surveys (October, January, May, and June) to monitor seasonal movements, range use, and season mortality.
4. Planned an interagency meeting (July 1999) to develop Chisana caribou management, operational, and research plans.

**Project Location:** Portions of Units 12 and 20D (1900 mi<sup>2</sup>)  
Macomb Caribou Herd

**Objective:** Increase the fall population to 600–800 caribou with a sustainable harvest of 30–50 caribou by the year 2002.

**Activities Planned:** Estimate status, trends, and productivity from aerial surveys.

**Activities Accomplished:**

1. Flew aerial survey on 30 September 1998, collecting composition data from 472 caribou and estimating a population of 522–572 caribou. Herd size is decreasing.
2. Conducted a registration permit hunt with a harvest quota of 25 caribou during 10–20 September 1998 and closed the hunt by emergency order on 15 September. Harvest totaled 32 caribou.

**Project Location:** Units 19A, 19B, 19C, 19D, 21A and 21E (59,756 mi<sup>2</sup>)  
Beaver Mountains, Big River-Farewell, Rainy Pass, Sunshine Mountain,  
and Tonzona Caribou Herds

**Objectives:**

1. Provide for a combined harvest of 25 caribou from the Sunshine and Beaver Mountains Herds.
2. Provide for a harvest of 50 caribou from the Tonzona Herd.
3. Provide for a harvest of 100 bull caribou from the Big River-Farewell Herd.
4. Provide for a harvest of 75 bull caribou from the Rainy Pass Herd.

**Activities Planned:** Estimate status, trend, and distribution of the herds from aerial surveys (all objectives).

**Activities Accomplished:**

1. Conducted aerial surveys in June to estimate status and distribution (all objectives).
2. Conducted aerial survey of the Mulchatna Herd during November.
3. Purchased 10 radiocollars to deploy in FY 00 (all objectives).

**Project Location:** Unit 20A (6796 mi<sup>2</sup>)  
Delta Caribou Herd (including former Yanert Herd)

**Objectives:**

1. Maintain a bull:cow ratio of at least 30:100 and a large bull:cow ratio of at least 6:100.
2. Reverse the decline of the herd and increase the midsummer population to 6000–8000 caribou.
3. Reduce wolf predation on caribou by decreasing the wolf population.
4. Sustain an annual harvest of 300–500 caribou.

**Activities Planned:** Estimate productivity, status, and trend from summer photocensus, fall sex and age composition counts, and annual mortality (objectives 1, 2 and 4).

**Activities Accomplished:**

1. Conducted a photocensus of the Delta herd during June 1999 (objective 2).

2. Conducted fall composition surveys of the herd (objective 1).
3. Monitored hunter effort and harvest timing and distribution through drawing permit reports (objective 4).

**Project Location:** Units 20B, 20C, 20D, 20E, 25C, and adjacent Yukon Territory, Canada (20,000 mi<sup>2</sup>)  
Fortymile Caribou Herd

**Objectives:**

1. Restore the FCH to its traditional range in Alaska and the Yukon.
  - a. Provide conditions for the Fortymile Herd to grow at a moderate annual rate of 5–10% between June 1996 and June 2001.
    - i) Reduce annual harvest quota to 150 bulls.
    - ii) Reduce calf mortality by wolves by reducing wolf numbers by 70–80% on the herd's summer range, excluding Yukon–Charley National Preserve, using a combination of public wolf trapping and nonlethal techniques including wolf fertility control and relocation.
  - b. Maintain an October bull:cow ratio of at least 35:100.
    - i) Maintain a bull-only harvest at a level that will not cause a reduction in bull numbers.
2. Minimize the impact of human activities on caribou habitat.
  - a. Work with land agencies, landowners, and developers to mitigate developments detrimental to caribou.
  - b. Maintain a near-natural fire regime.
3. Provide for increased caribou hunting, viewing, and other wildlife-related recreation in Alaska and Yukon.

**Activities Planned:**

4. Estimate status, trends, and recruitment levels from aerial surveys (objective 1).
5. Conduct a photocensus (objective 1).

**Activities Accomplished:**

- Completed a spring pregnancy/birth rate survey in May, estimated annual adult and calf survival using radiotelemetry, completed a postcalving photocensus in June, and conducted a fall sex and age composition survey in September (objective 1).

- Monitored herd movements once every 3 days during the hunting seasons to aid hunt management (objective 1).
- Administered 3 registration permit hunts covering Unit 20E and portions of Units 20B, 20D, and 25C and closed all 3 hunts early by emergency order (objective 1).
- Attended 2 Fortymile Caribou Management Team meetings and Alaska Board of Game meeting to report on the progress of the Fortymile herd management program (objective 1). The management team meetings were also part of a review process to ensure the Fortymile Caribou Management Plan was being implemented as intended.
- Worked with the coalition of the Upper Tanana/Fortymile, Delta, Eagle, Central, and Fairbanks Advisory Committees to produce a draft Fortymile caribou harvest plan (objectives 1 and 3).
- Produced 2 issues of *The Comeback Trail*, an information bulletin explaining the status and trend of the Fortymile herd, current management and research programs and results, and hunting and viewing opportunities; wrote informational articles about the herd and the nonlethal wolf control program for the Fairbanks and Anchorage papers and for the Alaska Hunting Bulletin (objective 3).
- Completed nonlethal wolf control activities on 7 wolf packs that reside on the herd's calving and summer ranges; and worked with 5 villages/communities, 2 Federal Regional Councils, and 3 advisory committees to find sites to relocate Fortymile wolves (objective 1). We treated 13 packs by July 1999.
- Formed a habitat committee with representatives from the Fortymile Caribou Management Team, the mining industry, US Air Force, and state and federal agencies that has effectively developed agreements that ensure adequate habitat protection for the herd; developed a web site displaying herd movements that industry uses to plan their daily activities (objective 2).
- Worked with Department of Natural Resources and Bureau of Land Management to complete 2 prescribed burns in the Fortymile caribou range; worked closely with Department of Natural Resources in determining which natural wildfires that had started within the herd's range were fought (objective 2).
- Completed RY 1996–1997 through 1997–1998 caribou management report, and co-authored “Reducing Mortality on the Fortymile Caribou Herd” research report (objectives 1 and 3).

**Project Location:** Units 20F, 21C, 21D, and 24 (48,000 mi<sup>2</sup>)  
Galena Mountain, Ray Mountain, and Wolf Mountain caribou herds

**Objectives:**

1. Harvest no more than 50 cows and 75 bulls from the Ray Mountain Herd.
2. Harvest no more than 10 cows and 25 bulls from the Wolf Mountain Herd.



3. Harvest no more than 10 cows and 25 bulls from the Galena Mountain Herd.

**Activities Planned:**

1. Estimate status, trend, and productivity of the herds from photocensus and aerial surveys (all objectives).
2. Continue radiotelemetry flights in the Galena and Ray Mountain herds to determine demographics and conduct photocensuses (objectives 1 and 3).

**Activities Accomplished:**

1. Conducted aerial reconnaissance surveys of Galena and Ray Mountain herds (objectives 1 and 3).
2. Monitored reported harvest through harvest ticket reporting (all objectives).
3. Completed regulatory years 1996–1997 through 1997–1998 caribou management report (all objectives).

**Project Location:** Western half of Unit 25C and small portions of Northern Unit 20B and Eastern Unit 20F (3090 mi<sup>2</sup>)  
White Mountains Herd

**Objectives:**

1. Maintain a fall bull:cow ratio of 30 bulls:100 cows.
2. Maintain a reported harvest of <75 caribou, including 30 cows during the winter drawing hunts.

**Activities Planned:** Conduct radiotelemetry flights to monitor herd demographics (objectives 1 and 2).

**Activities Accomplished:**

1. Monitored registration hunt through permit reports (objectives 1 and 2).
2. Conducted fall aerial surveys using an R-22 helicopter for composition counts and a fixed-wing aircraft to locate groups of caribou (objective 1).

**Project Location:** Units 25A, 25B, 25D, and 26C (58,240 mi<sup>2</sup>)  
Porcupine Herd

**Objectives:**

1. Maintain a minimum population of 135,000 caribou.

2. Monitor the harvest through field observations, hunter reports, and contact with residents.
3. Conduct censuses and sex and age composition counts.

**Activities Planned:**

1. Estimate status, trend, and productivity from aerial surveys (objectives 1 and 3).
2. Conduct a photocensus (objectives 1 and 3).
3. Conduct calving ground surveys (objectives 1 and 3).

**Activities Accomplished:**

1. Conducted an aerial photocensus on 30 June and 1 July 1998 and compiled results during July and August 1998 (objectives 1 and 3).
2. Monitored production and survival of calves of radiocollared cows during June 1999; periodically monitored movements, productivity, mortality, and seasonal distribution of the herd (objectives 1 and 3).
3. Collected data on Canadian harvest and composition from the Yukon Department of Renewable Resources and summarized harvest data by regulatory year (objective 2).

**Project Location:** Unit 26B (15,515 mi<sup>2</sup>)  
Central Arctic Herd

**Objective:** Maintain a minimum population size of 10,000 caribou

**Activities Planned:**

1. Capture and radiocollar female caribou
2. Estimate status, trend, and productivity from aerial surveys
3. Conduct a photocensus
4. Conduct calving ground surveys

**Activities Accomplished:**

1. Captured and radiocollared 19 female caribou in late June 1999.
2. Radiotracked caribou in April 1999 to determine winter locations and number of working collars; radiotracked and located caribou in early June to obtain parturition rates and again in late June to obtain calf:cow ratios; purchased 20 collars to continue monitoring the herd.

**Segment Period Project Costs:**

	<u>Personnel</u>	<u>Operating</u>	<u>Total</u>
Planned	31.9	1.9	33.8
Actual	0.1	1.9	82.0
Difference	31.8	0.0	-48.2

*Explanation: Personnel:* There were no major changes to planned work activities, and the biennial caribou management reports were completed. The underexpenditure of planned personnel funds, documented here for the first time with detailed timesheet accounting for an entire fiscal year, will provide a better basis for personnel expenditure projections in future federal aid work plans.

**Submitted by:**

Roy Nowlin  
Regional Management Assistant

David James  
Management Coordinator

**Project Title:** Western Alaska Caribou Management

**Project Location:** Unit 18 (42,000 mi<sup>2</sup>)  
Kilbuck Mountain Herd

**Project Objectives:**

1. Allow for continued growth of the caribou population in Unit 18.
  - a. Estimate herd size and demography of caribou in the Kilbuck Mountains in the southern portion of the unit.
  - b. Determine the extent of movement and distribution of the Kilbuck Herd and range overlap with the nearby Mulchatna Herd.
  - c. Allow a maximum harvest of 5% of the Kilbuck herd by registration permit (bull-only) until the herd reaches a size of 3000 caribou.
  - d. Adjust harvest levels after population reaches 3000 or more caribou.
  - e. Allow for more liberal seasons and bag limits when the population exceeds 5000 and when substantial numbers of animals from the Mulchatna Caribou Herd immigrate into Unit 18.
2. Reduce the magnitude of illegal harvest of caribou in Unit 18.
3. Finalize the Kilbuck caribou herd management plan in cooperation with the public and other agencies.

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

No census or composition surveys have been completed since 1994 because many caribou from the nearby Mulchatna herd entered the core Kilbuck wintering grounds.

We periodically observed caribou movements and distribution during winter, calving, summer, and fall rut. From the distribution data, we documented considerable overlap in ranges of the Mulchatna herd and the Kilbuck herd. Radiotelemetry information for the Kilbuck herd from May 1987 to May 1993 indicated most Kilbuck caribou use discrete calving areas and have a high fidelity to their present range. However, range overlap has been the rule since 1994. Continuing radiotelemetry flights confirm this trend.

Final harvest information is not yet available.

**Progress Meeting Project Objectives:** The Kilbuck herd increased dramatically from an estimate of less than 1000 animals in 1985 to approximately 4500 animals in December 1995. There is no reason to expect that herd growth has not continued. We are presently setting seasons and bag limits in response to influxes of the Mulchatna herd (Population Objective 1e). The season is now opened by emergency order with a bag limit of no more than 5 caribou. This authority was used to open a season from September 5, 1998–March 31, 1999 with a 5-caribou bag limit.

The influx of caribou from the Mulchatna Herd and the liberal seasons and bag limits presently offered make illegal take less of a biological concern. However, compliance with the use of harvest tickets is still a major concern because without compliance, our ability to accurately assess the magnitude of the harvest is compromised. Promoting better use of these tools is a main goal.

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

**Project Location:** Unit 21D, 22, 23, 24, and 26A  
Western Arctic Caribou Herd (WACH)

**Project Objectives:**

1. Maintain a minimum population size of 200,000 caribou.
  - a. Conduct a photocensus every 2–3 years to estimate population size.
  - b. Conduct periodic radiotracking flights to monitor herd distribution and mortality.
  - c. Maintain a year-end sample size of at least 100 operational radio collars on living caribou.
  - d. Conduct aerial surveys during April and May to assess short yearling recruitment.
  - e. Conduct aerial surveys during early June to monitor initial calf production.
  - f. Conduct aerial surveys during October to assess herd composition, retrieve radio collars and collect clinically diseased caribou to determine causative agents.
  - g. Collect approximately 100 blood samples annually to monitor the incidence of diseases and pathogens.
  - h. Monitor hunting and other mortality factors through harvest reporting and public contacts.

2. Improve public communication.
  - a. Reduce unreported harvests.
  - b. Involve students in the Onion Portage collaring project as part of our educational program.
  - c. Facilitate the exchange of information between managers and hunters.
3. Minimize conflicts between caribou and the reindeer industry.
  - a. Conduct radiotracking flights to monitor the distribution of caribou near reindeer ranges.
  - b. Notify the Reindeer Herders Association of the location and movements of satellite-collared caribou near reindeer ranges.
4. Monitor the distribution and movements of caribou near the Red Dog Mine, Port Site and Road to assess impacts and minimize conflicts with industrial development.
5. Improve the accuracy of harvest data for the WACH.
  - a. Begin collecting harvest data using community harvest assessment techniques for selected villages within the range of the WACH to eventually estimate the total harvest by rural residents.
  - b. Issue reminder letters to nonlocal hunters who hunt WACH caribou under the statewide harvest ticket system and fail to voluntarily report the results of their hunt.
6. Continue to develop a comanagement initiative for the herd involving native groups, sport hunters, commercial operators, federal agencies, Fish and Game advisory committees, regional advisory councils, and other interested parties.
  - a. Begin the process of electing representatives to a WACH cooperative management working group.
  - b. Update the WACH management plan.

**Work Accomplished During the Project Segment Period:** During September 1998, we instrumented 28 caribou with radio collars (18 conventional collars and 10 satellite collars) near Onion Portage on the Kobuk River.

During this reporting period staff conducted many telemetry relocation flights from our Nome, Kotzebue, Fairbanks, and Barrow offices. In addition, Gates of the Arctic National Park chartered radiotelemetry relocation flights in the central Brooks Range. Flights were conducted in Units 21D, 22, 23, 24 and 26A. We conducted numerous telemetry relocation flights on the central and eastern portions of the Seward Peninsula during October 1998–May 1999 to minimize conflicts between caribou and the reindeer industry.

Based on 40 radiocollared caribou and 8438 caribou counted during aerial composition surveys during October 1998, the ratios of cows, calves, and bulls were 45 calves:100 cows and 54 bulls:100 cows.

Aerial recruitment surveys in Unit 23 were conducted during April and May 1999. We counted 7329 caribou and observed 15 short yearlings:100 adults in 34 groups having 36 radiocollared cows.

Calving ground surveys were completed during June 1999 in the northern foothills of the Brooks Range, the southern portion of the North Slope, and the Noatak River drainage and Nulato Hills. Our estimate of calf production (58 calves:100 cows) was based upon observation of 81 radiocollared cows.

We monitored harvest using the WACH registration permit system for local residents and the statewide harvest ticket system for nonlocal residents and nonresidents. In addition, community harvest estimates were conducted for caribou and other wildlife species in Shaktoolik, Koyuk, and Shungnak during late winter and spring 1999. Compliance with reporting requirements is low for nonlocal hunters and especially low for local hunters. Therefore, all harvest data represent minimum counts. Subsistence hunters are estimated to take approximately 20,000 caribou within the range of this herd annually, and sport hunters take approximately 3000 caribou.

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

**Progress Meeting Project Objectives:** We maintained a year-end sample size >100 radiocollared caribou in the WACH during the reporting period. We increased the number of satellite collars in the WACH from approximately 4–7 to 12.

**Project Location:** Unit 26A (53,000 mi<sup>2</sup>)  
Teshekpuk Lake Caribou Herd

**Project Objectives:**

1. Maintain a stable or increasing population for the Teshekpuk Lake Herd (TLH) and provide for hunting on a sustained yield basis.
  - a. Determine the herd population size every 2–3 years.
  - b. Determine calf production and the percentage of calves surviving their first winter.
  - c. Delineate the calving grounds each year.
  - d. Using survey and radiotelemetry data, identify and map the herd's movements and distribution throughout the year.
  - e. Develop a system to capture caribou without the use of drugs.



- f. Encourage local participation in research and management decisions.
  - g. Determine the extent of the harvest using methods that are acceptable to hunters and the participating agencies.
  - h. Determine sources of significant, nonhunter mortality.
2. Provide educational opportunities for students and other members of the public.
  3. Minimize conflicts with industrial development.
    - a. Use satellite and VHF radio collars to monitor the distribution and movements of caribou near areas of potential industrial development to assess impacts.
    - b. Using aerial survey data and locations from satellite collars, define critical caribou habitat areas such as calving, insect relief, and wintering areas in Unit 26A.
  4. Develop updated management objectives in cooperation with the public and other agencies.

**Work Accomplished During the Project Segment Period:** Photographs were taken for a photocensus during July 1999 and will be analyzed during the winter. Previous censuses in 1989 (16,649 caribou), 1993 (27,686 caribou), and 1995 (25,076 caribou) show the TLH increased at a rate of 14% per year during the period 1989–1993, and since then the herd has stabilized or declined slightly. Department staff and the North Slope Borough Department of Wildlife Management (NSB) conducted these censuses.

In a cooperative effort with the NSB and BLM, we captured 11 caribou north of Teshekpuk Lake on June 29, 1998. We netted the caribou using a Robinson 220 helicopter with a hand-held net gun and restrained them using a blindfold and hobble ropes. We attached 2 satellite and 9 VHF radio collars to aid in population, productivity, and movement studies. We collected blood samples and measured, weighed, and assessed the body condition of the captured caribou.

We conducted composition surveys on June 30, 1998 using a Robinson 220 helicopter to fly transects north of Teshekpuk Lake. We classified 3302 caribou and saw 1364 cows, 1023 bulls, and 915 calves. We counted 67 calves:100 cows and 75 bulls:100 cows. The number of calves and bulls was in the midrange of what we have seen in past years.

We flew fall composition surveys on October 13, 1998 by flying to radiocollared cows and counting adults and calves in the area surrounding the collared animal. Among 458 caribou, we counted 90 calves (20% calves). This was midrange for fall field observations.

Short yearling counts were flown from 21–23 April 1999. We used a Cessna 185 to radiotrack and observe 25 collared cows, 8 of which had short yearlings at heel (32 short yearlings:100 cows). We also classified 2040 caribou in the areas surrounding the collared animals and counted 1608 adults and 432 short yearlings (21% short yearlings) or 26 short yearlings:100 adults. This count was very similar to the 1998 fall composition results, indicating that overwinter calf survival was very similar to that of adults.

Calving surveys were flown during 4–12 June 1999. We located 36 collared cows, and 24 of these had calves at heel, representing 67% calving success. Most of the calves were born between 6–11 June. All of the collared caribou that had calves at heel were near Teshekpuk Lake. Twenty out of 24 of the cows with calves were either south or southeast of the Lake. During most years a greater percentage of cows calve east or northeast of the lake. A late snow melt-off seemed to hold the caribou farther south.

We monitored movements of 3 satellite-collared caribou that all stayed on the coastal plain all winter. Caribou 9705 (PTT#8760) wintered between Wainwright and Atqasuk during 1997–1998. This year 9705 summered north of Teshekpuk Lake and on Cape Simpson, wintered south of Admiralty Bay, then traveled back to Teshekpuk Lake in June and had a calf. We attached satellite collar #8761 to caribou 9808 and collar #8762 to caribou 9809 during June 1998. Caribou 9808 summered north of the lake and around Admiralty Bay, wintered around Atqasuk, and traveled back to Teshekpuk Lake in June, but was not seen with a calf. Caribou 9809 spent most of the summer and all of the winter south of Teshekpuk Lake and calved there.

**Progress Meeting Project Objectives:** Nearly all of the management objectives are being met. We took photographs during July 1999 for a photocensus. During 1998–1999 we completed summer and fall composition counts, short yearling counts, and calving location and success surveys. Caribou were captured and radio collars were attached without using drugs. We relocated caribou with VHF radio collars several times during the year and collected detailed movement information from satellite radio collars. We will continue to monitor caribou movements and use the data to determine critical habitat areas.

Students from North Slope schools were given educational opportunities for learning about research techniques for monitoring caribou populations and movements. Barrow, Anaktuvuk Pass, and Ouzinke students used satellite collar locations to plot the movements of caribou through fall and winter.

Mortality among the collared caribou may have been as low as 8%. However, some of the collared caribou that were not found might have died outside the survey area. In previous years mortality has averaged 21%. Not many TLH caribou wintered near Barrow, and the harvest rate was probably relatively low during 1998–1999.

We worked with the North Slope Borough to develop a more effective harvest monitoring system based on having harvest monitors in each village. The number of caribou reported harvested in Anaktuvuk Pass, Atqasuk, and Nuiqsut during 1994–1995 were 311, 187, and 249, respectively (Brower and Opie, 1996 and 1997). It is impossible to determine how many of these were from the TLH.

### **Literature Cited**

BROWER, HK AND RT OPIE. 1996. North Slope Borough Subsistence Harvest Documentation Project: Data for Anaktuvuk Pass, Alaska for the Period July 1, 1994 to June 30, 1995. Department of Wildlife Management, North Slope Borough, Barrow, Alaska USA.

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**Segment Period Project Costs:**

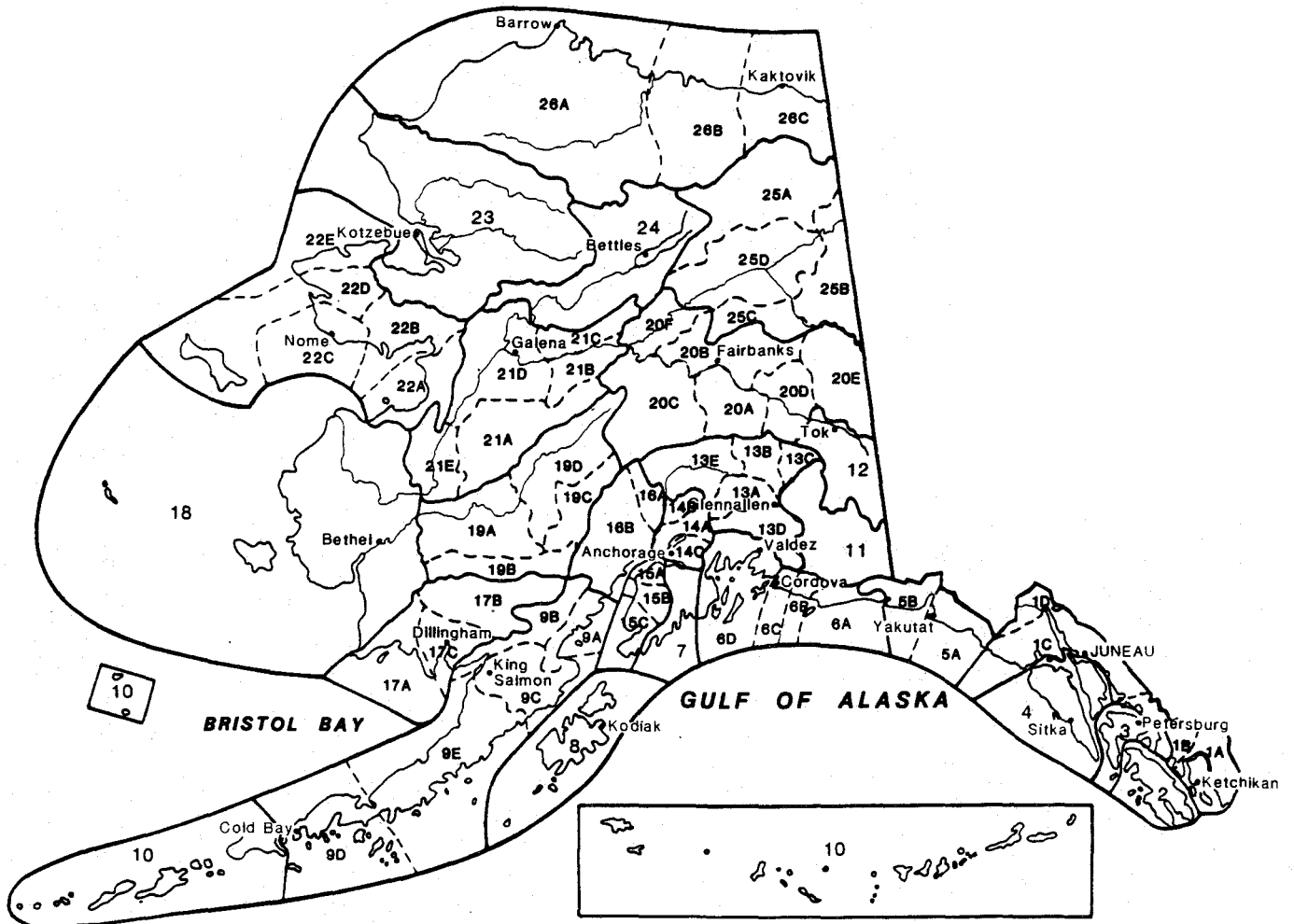
	<u>Personnel</u>	<u>Operating</u>	<u>Total</u>
Planned	216.5	167.5	384.0
Actual	216.5	178.0	394.5
Difference	0.0	-10.5	-10.5

*Explanation:* Additional expenses for satellite collars and ARGOS data retrieval costs for the WACH caused operating expenses to exceed planned costs. More satellite collars were deployed because of improved collar technology and continued growth of the herd.

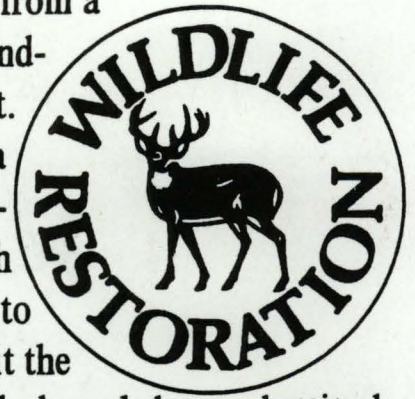
**Submitted by:**

Peter Bente  
Survey-Inventory Coordinator

# Alaska's Game Management Units



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



Ken Whitten