

Alaska Department of Fish and Game  
Division of Wildlife Conservation



Federal Aid in Wildlife Restoration  
Annual Performance Report  
Survey-Inventory Activities  
1 July 1998 - 30 June 1999

# BROWN BEAR

Mary V. Hicks, Editor



IS

SK  
367.2  
.B3  
1998-99

ritten

Grant W-27-2  
Study 4.0  
October 1999

**STATE OF ALASKA**  
**Tony Knowles, Governor**

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

**DIVISION OF WILDLIFE CONSERVATION**  
**Wayne L. Regelin, Director**

Persons intending to cite this material should receive permission from the author(s) and/or the Alaska Department of Fish and Game. Because most reports deal with preliminary results of continuing studies, conclusions are tentative and should be identified as such. Please give authors credit.

Free copies of this report and other Division of Wildlife Conservation publications are available to the public. Please direct requests to our publications specialist:

**Mary Hicks**  
**Publications Specialist**  
**ADF&G, Wildlife Conservation**  
**P.O. Box 25526**  
**Juneau, AK 99802**  
**(907) 465-4190**

The Alaska Department of Fish and Game administers all programs and activities free from discrimination on the bases of race, color, national origin, age, sex, religion, marital status, pregnancy, parenthood, or disability. The department administers all programs and activities in compliance with Title VI of the Civil Rights Act of 1964, Section 504 of the Rehabilitation Act of 1973, Title II of the Americans with Disabilities Act of 1990, the Age Discrimination Act of 1975, and Title IX of the Education Amendments of 1972.

If you believe you have been discriminated against in any program, activity, or facility, or if you desire further information please write to ADF&G, P.O. Box 25526, Juneau, AK 99802-5526; U.S. Fish and Wildlife Service, 4040 N. Fairfield Drive, Suite 300, Arlington, VA 22203 or O.E.O., U.S. Department of the Interior, Washington DC 20240.

For information on alternative formats for this and other department publications, please contact the department ADA Coordinator at (voice) 907-465-4120, (TDD) 907-465-3646, or (FAX) 907-465-2440.

**ARLIS**  
**Alaska Resources**  
**Library & Information Services**  
**Anchorage Alaska**

SK  
257  
11  
222

**Project Title:** Southeast Brown Bear Population Management

**Project Location:** Unit 1 (18,300 mi<sup>2</sup>)

Southeast Alaska mainland from Dixon Entrance to Cape Fairweather and those islands lying east of Clarence Strait from Dixon Entrance to Caamano Point and all islands in Stephens Passage and Lynn Canal north of Taku Inlet.

**Project Objectives and Activities:**

- Maintain an average age of harvested males of at least 6.5 years and a male to female harvest ratio of at least 3:2
- Reduce the number of bears killed because of garbage habituation

**Work Accomplished During the Project Segment Period:** For the tenth consecutive regulatory year, we collected harvest data through mandatory registration permits. All permittees were required to report whether or not they hunted. Additionally, all successful hunters were required to present hides and skulls for sealing within 30 days of the kill date. We measured skulls from harvested bears and extracted a premolar tooth to determine age. We also collected additional harvest-related data and anecdotal information at the time of sealing.

**Progress Meeting Project Objectives:** Forty brown bears were killed in Unit 1 during this report period, only 33 of which were taken legally. One bear was taken illegally over bait in Unit 1D, and 1 male from Unit 1B, 1 female from Unit 1C, and 2 males and 2 females from Unit 1D were killed in defense of life or property (DLP). The harvest (including DLP kills and the bear taken illegally over bait) comprised 26 males (65%) and 14 females (35%), and did not meet our 3:2 male to female harvest objective. Harvests by unit, excluding DLPs, included 5 males and 1 female from Unit 1A, 6 males and 1 female from 1B, 3 males and 1 female from 1C, and 9 males and 8 females from 1D.

The average size of male skulls was 22.8 inches ( $n = 23$ ), similar to the previous season. The average size of female skulls was 19.8 inches ( $n = 11$ ), 1.0 inch smaller than the previous season.

We issued 303 registration permits during this report period. Besides the 35 successful hunters, there were 112 unsuccessful hunters, 155 who did not hunt, and 1 who did not report back to us. Age data for 1998–99 are not yet available, and averages for males and females taken during the 1997–98 season were 6.4 years ( $n = 22$ ) and 8.0 years ( $n = 10$ ), respectively. This did not meet our objective of maintaining an average of 6.5 years for harvested males.

**Project Location:** Unit 4 (5,800 mi<sup>2</sup>)

Admiralty, Baranof, Chichagof, and adjacent islands.

**Project Objectives and Activities:**

- Maintain an average age of harvested males of at least 6.5 years with a male to female harvest ratio of at least 3:2

- Reduce the number of bears killed because of garbage habituation.
- Monitor the harvest, seal harvested bears, and analyze harvest data.
- Monitor use of the Pack Creek viewing area on the Stan Price Wildlife Sanctuary.

**Work Accomplished During the Project Segment Period:** For the 1998–99 regulatory year, we issued 558 registration permits. Skulls of harvested bears were measured, premolars were extracted for age analysis, hides were examined for evidence of sex, and other pertinent data were noted. Extracted teeth were submitted for sectioning and analyses. We continued efforts to reduce DLP incidents through public education and interagency contacts. Biologists and technicians continued efforts at Pack Creek to better inform the public about regulations, bear life history, safety precautions, and to reduce losses of bears to DLP incidents. The Alaska Board of Game established the Unit 4 Brown Bear Management Team to provide a forum for further discussion of all aspects of management of bears in the unit.

**Progress Meeting Project Objectives:** Age data from 1998–99 harvested bears based on cementum analyses were not available prior to reporting deadlines. For 1997–98, mean age of sampled bears was 9.0 years. Preliminary registration permit data indicates sport hunters in 1998–99 took 128 bears, and 9 additional bears were taken illegally or in DLP situations. The sex ratio for the recorded mortality (137 bears) was 96 males, 39 females, and 2 bears of unknown sex (a male to female ratio of 2.5:1). Spring seasons continued to provide the greatest bear hunting opportunity and harvest, with 70% of the documented harvest during spring. Harvest by island in Unit 4 included 36% from Admiralty, 37% from Chichagof, and 27% from Baranof. In the 1998 field season 1392 people visited the Stan Price Wildlife Sanctuary to view brown bears at Pack Creek.

**Segment Period Project Costs:**

	<u>Personnel</u>	<u>Operating</u>	<u>Total</u>
Planned	52.2	45.0	97.2
Actual	<u>60.3</u>	<u>28.0</u>	<u>80.2</u>
Difference	-08.1	17.0	17.0

*Explanation:* One month more staff time was spent than anticipated due to DLP issues and permit issuance by Ketchikan and Petersburg staff. An increase in line 2–500 expenditures was primarily due to the purchase of telemetry equipment, drugs, and miscellaneous associated supplies to be used in Unit 4 population estimate work scheduled for summer 1999 and later. However, a net decrease was realized due to few field activities conducted during FY99.

**Submitted by:**

Bruce Dinneford  
Management Coordinator

**Project Title:** Southcentral Brown Bear Population Management

**Project Location:** Unit 6 (10,150 mi<sup>2</sup>)  
Prince William Sound and north Gulf Coast

**Project Objectives:** Maintain a brown bear population that will sustain an annual sport harvest of 35 bears comprised of at least 60% males with a minimum average male skull size of 23 inches.

**Work Accomplished During the Project Segment Period:** Thirty-six bears (22 males, 14 females) were harvested during fall 1998. Preliminary harvest data for spring 1999 indicated that an additional 25 bears (21 males, 3 females, and 1 of unknown sex) were taken. Males composed 72% of the take and mean skull size for males was 23.7 inches. Included in the reported harvest were 1 bear illegally killed and 2 bears shot in defense of life or property.

**Progress Meeting Project Objectives:** We exceeded our sport harvest objective by 26 bears, primarily because of increased harvest in Units 6A and 6D. However, the average skull size remained over 23 inches. It appears the brown bear population can sustain this increased level of sport harvest.

**Project Location:** Units 7 and 15 (8,400 mi<sup>2</sup>)  
Kenai Peninsula

**Project Objectives:** Maintain an estimated population of 250 brown bears with a sex and age structure that will sustain a harvest comprised of at least 60% males (three-year average of 6 female units).

**Work Accomplished During the Project Segment Period:** Preliminary harvest reports indicated annual harvest levels have remained at the upper level of management objectives. Both fall and spring hunting seasons were closed by emergency order during this reporting period.

Nuisance bears continued to be a problem on the Kenai. Three bears including 1 adult female bear were reported taken in defense of life or property (DLP) during the fall of 1998. Three additional bears were taken illegally and none of these was reported. One male bear was found dumped on the Swanson River road and the other 2 bears were collared research bears (both females) that were killed and their collars cut off. One additional adult female bear was killed during capture operations. Three bears were killed in Defense of Life or Property in the spring of 1999. Two were yearling female bears and the third a subadult male.

There were at least 3 bear-human encounters that resulted in nonlife-threatening injuries and 1 in a human fatality. A hiker was mauled near a residence in Unit 7, a grouse hunter was charged and knocked down in Unit 15A, and a moose hunter was bitten by a bear in Unit 15C. The latter bear was wounded, and we suspect that it was collared. The second bear was also shot with one round of birdshot. On 25 May 1999 a hiker on the Funny River Horse trail was fatally mauled by a brown bear. This bear may have been wounded because there were 2 empty shell casings at the

scene and some blood assumed to be the bear's. The bear was never located; however, bear hair was collected from the site for future DNA analysis.

**Progress Meeting Project Objectives:** We have closed the fall seasons in 1995, 1996, 1997, and 1998 by emergency order because of the high proportion of females taken and the increasing trend in DLP and illegal mortalities. During the March 1999 Board of Game meeting, the board accepted the department's proposal to change from a spring registration permit hunt to a fall registration permit hunt. High female harvests during the spring seasons in both 1997 and 1998 were the primary reasons for this change. From research results we learned that single adult female bears were at or in dens by 15 October. This indicates that a late October season should direct harvest effort to males and subadults that have not started to den.

Department personnel participated in 2 public forums to increase public awareness about brown bear conservation on the Kenai. The first was a "Town Hall Meeting" held 6 August 1998 in Homer. The second annual Kenai Peninsula Brown Bear Festival was held in Soldotna on 7 November 1998.

The department drafted a proposal to the Board of Fisheries to close Russian Creek (also known as Goat Creek) to fishing for the month of August to protect brown bears feeding in this area. The Department of Law advised the Board of Fisheries that they did not have the authority to regulate a fishery for wildlife conservation purposes. The proposal was redrafted to protect spawning salmon 300 yards upstream from the inlet of upper Russian Lake and was passed by the Board of Fisheries in 1999. This closure will take effect in August of 1999.

The department in conjunction with the Interagency Brown Bear Study Team (IBBST) initiated a management planning project. The project was initially begun in 1997 but was postponed until 1998 because of personnel changes; it is scheduled for completion in FY00. The IBBST is drafting a conservation assessment that will provide the framework for this stakeholder-driven planning process.

As interim chair of the IBBST, I drafted a request to the Commissioner of ADF&G to list the Kenai brown bear population as a population of special concern. This request was based on the potential for decline because of human encroachment into brown bear habitat. It was approved and the Kenai brown bear was officially listed on 27 November 1998.

Logging associated with the spruce bark beetle epidemic will continue to be the major factor affecting brown bear habitat on the Kenai Peninsula. Over 33,000 acres of timber sales were offered during regulatory year 1997-98. Additional federal, state, borough, and private forested lands are being planned for salvage logging.

**Project Location:** Unit 8 (5,100 mi<sup>2</sup>)  
Kodiak and adjacent islands

**Project Objectives:** Maintain a brown bear population that will sustain an annual harvest of 150 bears comprised of at least 60% males.

**Work Accomplished During the Project Segment Period:** With assistance from Kodiak National Wildlife Refuge staff and Wildlife Forever, we began working on a comprehensive overview of the status, management, and research on bears in Game Management Unit 8. We will use the information gathered from this overview as the basis of a bear management plan for the archipelago. Development of the management plan is anticipated within the next couple years.

We issued hunting permits to 501 people, 285 fall permits and 216 spring permits. During the fall season, 221 hunters went afield and killed 54 bears. In the spring season 216 hunters went afield and killed 95 bears. The annual sport harvest was 149 bears, 123 males (76%) and 36 females (24%). One bear, a female, was killed in the federal brown bear subsistence hunt. An additional 17 nonsport mortalities were documented as follows: defense of life or property - 12 (6 males, 6 females); illegal - 1 (1 male); natural/unknown - 4 (2 female, 2 of unknown sex).

**Progress Meeting Project Objectives:** The 1998–99 sport harvest of 149 bears approached the annual harvest objective of 150 bears. The harvest reduction was a direct result of poor hunter access and delayed den emergence caused by unusually cold weather during the Spring 1999 hunting season. Males composed 76% of the harvest, well above the minimum objective of 60% males.

**Project Location:** Units 9 and 10 (37,500 mi<sup>2</sup>)  
Alaska Peninsula and Unimak Island

**Project Objectives:** Maintain a high brown bear density with a sex and age structure that will sustain a harvest comprising 60% males with at least 50 males 8 or more years old taken during the combined fall and spring season.

**Work Accomplished During the Project Segment Period:** Three replicate stream surveys were attempted at Black Lake in August 1998, but due to bad weather only 1 was completed; during this survey we observed 158 bears. Single bears composed 33% of 522 bears classified during all attempted surveys. In May 1999 we used a combination line transect and double count method to estimate both brown and black bear densities in the northern half of Unit 9B. Final results are pending (Becker, in prep.). In total, 177 brown bears were seen, including some that were off transect lines. Average litter sizes for cubs ( $\bar{x} = 1.5$ ,  $n = 10$ ) and yearlings ( $\bar{x} = 1.4$ ,  $n = 12$ ) were smaller than for litters of older offspring ( $\bar{x} = 2.56$ ,  $n = 9$ ). This finding may reflect lower reproductive potential following 3 years of extremely poor sockeye salmon escapements into the Kvichak drainage. Overall, 51% of all brown bears seen were not in family groups. This high percentage of “single” bears may reflect low harvest rate and/or lower productivity.

In the Naknek drainage, registration permittees killed 10 bears during the fall 1998 season (RB 361) and 2 during the spring 1999 (RB371).

On Unimak Island, drawing hunt permittees killed 6 bears during the fall 1998 season. Reporting from the spring 1999 hunt is not yet complete, but the preliminary return is 6 bears.

**Progress Meeting Project Objectives:** Harvest statistics from the 1997–98 general seasons were well within the desired range. The extrapolated bear population for areas open to hunting in Unit 9 was 5680, and harvests for the past 4 years represented a harvest rate of 5%. Permit hunts were meeting their management objective.

**Project Location:** Unit 11 (12,800 mi<sup>2</sup>)  
Wrangell Mountains

**Project Objectives:** Maintain a brown bear population largely unaffected by human harvest, with annual harvest averaging less than 30 bears. Human-use objectives are to allow limited human harvests when they do not conflict with management goals for the unit or objectives for the population.

**Work Accomplished During the Project Segment Period:** We monitored the brown bear harvest in Unit 11 by sealing the hides and skulls of all bears killed. We interviewed hunters at the time of sealing to determine hunting method, means, and effort.

Preliminary harvest data for the 1998–99 season indicated 2 brown bears were killed in Unit 11, similar to last year's harvest of 3, but well below the previous 10-year average of 8 bears. The proportion of females (100%) in the harvest exceeded the 50% maximum in the management guidelines for brown bear harvest in this unit, but with a harvest so low, the sex ratio becomes meaningless. One bear was taken during the fall and 1 was taken during the spring. The harvest total could increase after we process spring sealing certificates. Non-local Alaskan residents killed both bears. Successful hunters used aircraft and a highway vehicle for transportation. These hunters reported spending an average of 2 days in the field.

**Progress Meeting Project Objectives:** Bear harvests in Unit 11 were much lower than the estimated sustainable harvest and did not have a negative effect on the bear population unitwide. The sex ratio is often skewed with small harvest. For example, the harvest last year was 3 bears and all were males. With only 5 bears taken during the past 2 regulatory years, the sex composition has no measurable effect on the Unit 11 bear population. Although population data for brown bears in Unit 11 were not available, staff and public field observations of bears suggested a relatively abundant and well-distributed population of brown bears. The low harvests of the past 15 years were attributed to increased restrictions on sport hunting and access for subsistence hunting by the National Park Service since 1979, when all of the unit was included in Wrangell St. Elias National Park and Preserve. Recent federal regulations opened subsistence brown bear hunting in Unit 11.

**Project Location:** Unit 13 (23,400 mi<sup>2</sup>)  
Nelchina Basin

**Project Objectives:** Reduce current brown bear numbers in an attempt to increase moose calf survival to fall but maintain a minimum estimated brown bear population of 350 bears.



**Work Accomplished During the Project Segment Period:** We monitored the brown bear harvest by sealing the hides and skulls of all bears killed. Hunters were interviewed at the time of sealing to determine hunting methods, means, success, and effort.

Preliminary harvest data for the 1998–99 hunting season indicated hunters took 114 brown bears. This preliminary figure is down slightly (15%) from last year's harvest of 134 bears but above the 5-year (1991–95) average of 91. There were 89 bears (61% males) taken during the fall of 1998 and 25 (92% males) in the spring of 1999. This spring harvest figure could increase as sealing certificates were still being processed at the time of this report. Males composed 68% of the overall harvest. Unit residents killed 3 bears (3%), other Alaska residents took 71 (62%) animals, and nonresidents harvested 40 (35%) bears. During fall 3- and 4-wheelers were the most popular method of transport (28%), aircraft were next (26%), and highway vehicles (17%) third. Aircraft vehicles were the most prominent (40%) transportation method during the spring hunt, followed by highway vehicles (24%) and snowmachines (12%). Skull size and age data of the harvested bears were not available for this report.

Brown bear harvests in Unit 13 were liberalized in 1995 by opening the season on 10 August, increasing the bag limit to a bear every year, and eliminating the \$25.00 resident tag fee. These regulations, coupled with increased hunting pressure due to liberalized caribou permits under a Tier I hunt, increased bear harvest to levels of the mid-1980s.

**Progress Meeting Project Objectives:** Brown bear harvests have declined in Unit 13 the last 2 years, with a 4% decline in 1997–98 and a 14% decline in 1998–99. This decline occurred in spite of liberal hunting regulations designed to increase bear harvests. The proportion of females in the harvest has also declined from a high of 58% in 1995–96, when regulations were liberalized, to 32% this year. It is unlikely that with a decline in the number of females in the harvest the Unit 13 brown bear population will be reduced significantly, and certainly not down to a level approaching the management objective of 350 bears.

Brown bear population estimates are available from Units 13E and 13A. The population estimate in 13E spans a 10-year period when harvests exceeded calculated sustainable rates. No change in population density could be detected between estimates. Estimates in 13A are similar to density estimates in 13E, indicating that increased bear harvests over the last 15 years have not reduced the brown bear population.

Current brown bear harvest rates are probably sustainable. Unless additional liberalization of seasons, bag limits, or methods and means are enacted, it is doubtful the Unit 13 brown bear population will be reduced. With large refugia in the form of 2 national parks on the eastern and western boundaries of the unit and large expanses of timbered habitat within the unit, it is highly unlikely that Unit 13 will have population reductions other than localized declines in heavily hunted areas.

I recommend liberalizing brown bear regulations by eliminating the tag fee and guide requirement for nonresidents.

**Project Location:** Unit 14 (6,600 mi<sup>2</sup>)  
Upper Cook Inlet

**Project Objectives:** Maintain a population of at least 150 brown bears. The human-use objective is to provide an opportunity for a low level of hunter harvest, not to exceed 15 bears when combined with defense-of-life-or-property (DLP) and illegal kills. Of these 15 bears, 5 or fewer should be adult females.

**Work Accomplished During the Project Segment Period:** During this reporting period, we sealed 15 brown bears for all of Unit 14. Hunters killed 10 bears, all during the fall season, 5 in Unit 14A and 5 in Unit 14B. The hunter harvest was 30% female bears. Five bears (3 males, 2 females) were killed DLP, and 1 bear of unknown gender was killed illegally. Males composed 67% of the reported kill.

**Progress Meeting Project Objectives:** At the spring 1999 Board of Game meeting, human-use objectives were modified to allow annual human-caused mortality for 15 bears. We believe the Unit 14 brown bear population is above objective levels and approaching societal carrying capacity. Female harvest will be monitored closely. Bears killed illegally or DLP composed 47% of reported mortality. Educating the public on bear behavior and increasing public awareness that garbage, livestock, salmon streams, beehives, and dog food attract bears should be included in division objectives. The division should examine the feasibility of establishing a statewide bear management position to develop outreach materials and seek alternative funding for outreach programs.

**Project Location:** Unit 16 (12,300 mi<sup>2</sup>)  
West Side of Cook Inlet

**Project Objectives:** Maintain a brown bear population that is stable or declining slightly. The human-use objective is to allow optimum opportunity to hunt brown bears while allowing a 3-year average harvest of 50–60 bears with an average maximum of 18 females greater than 2 years of age.

**Work Accomplished During the Project Segment Period:** During this period we sealed 66 brown bears for Unit 16. Hunters took 64 of these, including 2 bears in Unit 16A and 62 in Unit 16B. Females made up 39% of the hunter harvest. This included 2 females from Unit 16A and 25 females from Unit 16B. Ages of females were not available. Two female bears were killed in defense of life or property (DLP).

The 1996–98 average harvest (including DLP harvest) was 58.7 bears. If all females sealed this year were older than 2 years, the 3-year average would be 21 females greater than 2 years old.

**Progress Meeting Project Objectives:** Status of the brown bear population in Unit 16 was uncertain. Most local residents believe the brown bear population is increasing. The human-use objective for total harvest was achieved, but the 3-year average harvests for females exceeded the maximum desired level. Most (88%) female harvest occurred during the fall season. The spring harvest, which typically comprises male bears, has fluctuated greatly in recent years

relative to snow and travel conditions. The number of DLP kills continues to reflect increased reporting of these kills or an increase in conflicts with local residents and recreational users (primarily fishermen).

**Project Location:** Unit 17 (18,800 mi<sup>2</sup>)  
Northern Bristol Bay

**Project Objectives:** Maintain a brown bear population that will sustain an annual harvest of 50 bears comprising at least 50% males.

**Work Accomplished During the Project Segment Period:** Preliminary data indicate a reported harvest of 79 brown bears, including 57 males (72%) and 22 females (28%) during FY99. Average skull size was 23.9" for males and 20.9" for females. Nonresident hunters reported killing 71 bears (90%), nonlocal residents killed 3 bears (4%), and unit residents killed 5 bears (6%). Most successful hunters used aircraft for access (66%). The average hunt length for successful hunters was 4.3 days.

Thirty-five bears (19 males, 16 females) were killed during the fall 1998 season, and 44 bears (38 males, 6 females) were killed during spring 1999. Four bears (all males) were killed in Unit 17A, 55 (36 males, 19 females) in Unit 17B, and 20 (17 males, and 3 females) in Unit 17C.

Five brown bears (3 males, 2 females) were reported killed in defense of life or property and illegally during this reporting period. One was reported from Unit 17A, 2 from Unit 17B, and 2 from 17C. Incomplete information was received of another possible 7 bears illegally shot and left in the Togiak River during fall 1998. We also received unconfirmed reports of bears illegally taken in the Dillingham area.

**Progress Meeting Objectives:** No objective data are available on the population density of brown bears in Unit 17. There is also a paucity of information on bears shot illegally and in defense of life or property. Although we lack data, we believe the unit population of brown bears is stable to increasing.

A joint ADF&G-U.S. Fish and Wildlife Service research project started in 1992 was continued during this reporting period. The objectives of this project are to estimate bear densities, collect baseline population data, and to delineate habitat-use patterns for brown bears in portions of the Togiak and Yukon Delta National Wildlife Refuges (Units 17A and 18).

**Segment Period Project Costs:**

	<u>Personnel</u>	<u>Operating</u>	<u>Total</u>
Planned	135.8	9.6	145.4
Actual	133.8	9.6	145.4
Difference	0.0	0.0	0.0

**Submitted by:**

Michael G. McDonald  
Assistant Management Coordinator

**Project Title:** Interior Grizzly Bear Population and Habitat Management

**Project Location:** Unit 12 (10,000 mi<sup>2</sup>)  
Upper Tanana and White River drainages; including the northern Alaska Range east of the Robertson River and the Mentasta, Nutzotin, and northern Wrangell Mountains

**Objectives:** Manage harvests for a 3-year mean harvest that does not exceed 28 bears and has at least 55% males in the harvest.

**Activities Planned:**

1. Review and revise population management objectives.
2. Monitor harvests, seal harvested bears, and analyze harvest data.
3. Write regulatory years 1996–1997 through 1997–1998 brown bear management report.

**Activities Accomplished:**

1. Reviewed the management objective using harvest data and a revised population estimate, discussed the grizzly bear objective with local advisory committees and decided the population/harvest objective will continue for 3 more years.
2. Monitored harvest using information collected during sealing, analyzed data to determine if harvest was causing unit or area reduction in the bear population, and evaluated the effects of bear harvest on moose calf survival.
3. Completed regulatory years 1996–1997 through 1997–1998 grizzly bear management report.

**Project Location:** Units 19, 21A and 21E (59,756 mi<sup>2</sup>)  
Drainages of the Kuskokwim River upstream from the village of Lower Kalskag; Yukon River drainage from Paimiut upstream to, but not including, the Blackburn Creek drainage; the entire Innoko River drainage; the Nowitna River drainage upstream from the confluence of the Little Mud and Nowitna Rivers; and all drainages of the Kuskokwim River upstream of the village of Kalskag

**Objectives:**

1. Manage brown bear populations to sustain a mean annual harvest of no more than 70 bears with a minimum of 50% males in the harvest.
2. Increase legal harvests of brown bears in and around villages, fish camps, and other human habitations during open seasons to reduce human/bear conflicts during closed seasons.

**Activities Planned:**

1. Review and revise population management objectives.
2. Monitor harvests, seal harvested bears, and analyze harvest data (objectives 1 and 2).
3. Write regulatory years 1996–1997 through 1997–1998 brown bear management report (objectives 1 and 2).

**Activities Accomplished:**

1. Revised population management objectives.
2. Monitored harvest, sealed bears, and analyzed harvest data (objectives 1 and 2).
3. Wrote the management report for regulatory years 1996–1997 through 1997–1998 (objectives 1 and 2).
4. Purchased 30 copies of video “Take a Closer Look” for distribution to bear hunting guides (objective 1).

**Project Location:** Units 20A, 20B, 20C, 20F, and 25C (39,228 mi<sup>2</sup>)  
Central and Lower Tanana Valley, and Middle Yukon River drainages

**Objectives:**

*Unit 20A Mountains*

1. Decrease human-caused grizzly bear mortality until at least 1997 by managing for a 3-year mean annual human-caused mortality of no more than 3% of the adult females ( $\geq 6$  years old) and no more than 6% of the bears  $\geq 2$  years old.
2. Cooperate with a research project (H. Reynolds ADF&G Fairbanks); the project objectives are listed:
  - a. Determine the length of time necessary for recovery or stabilization of a reduced grizzly bear population following reductions in human-caused mortality rates.
  - b. Measure the recovery responses in the dynamics of the population, especially female population size, total population size, and production and survival of offspring.

*Eastern half of Unit 20B*

3. Manage human-caused grizzly bear mortality to provide a stable population with a 3-year mean annual human-caused mortality of up to 6 bears  $\geq 2$  years old, with an average of at least 55% males.

*Unit 20C within the original boundaries of Denali National Park*

4. Maintain a closed season on grizzly bear hunting.

*Unit 20A Flats, western half of 20B, remainder of 20C, 20F, and 25C combined*

5. Manage human-caused mortality to provide stable grizzly bear populations with a 3-year mean annual human-caused mortality of up to 26 grizzly bears  $\geq 2$  years old, with an average of at least 55% males.
6. Manage the 3-year mean annual human-caused grizzly bear mortality from individual areas with the following harvest objectives: no more than 3 bears from Unit 20A Flats, 3 from the western half of Unit 20B, 7 from Unit 20C, 7 from Unit 20F, and 6 from Unit 25C.

**Activities Planned:**

1. Review and revise population management objectives.
2. Monitor harvests, seal harvested bears, and analyze harvest data (objectives 1, 2a, 3, 4, 5, and 6).
3. Write regulatory years 1996–1997 through 1997–1998 brown bear management report (all objectives).

**Activities Accomplished:**

1. Reviewed population management objectives (objectives 1, 2a, 3, 4, 5, and 6).
2. Monitored harvests through sealing of harvested bears and analysis of harvest data (objectives 1, 2a, 3, 4, 5, and 6).
3. Completed regulatory years 1996–1997 through 1997–1998 management report (all objectives).

**Project Location:** Unit 20D (5637 mi<sup>2</sup>)  
Central Tanana Valley near Delta

**Objective:**

Manage for an annual harvest of 5–15 bears.

**Activities Planned:**

1. Review and revise population management objectives.
2. Monitor harvests, seal harvested bears, and analyze harvest data.
3. Write regulatory years 1996–1997 through 1997–1998 brown bear management report.

**Activities Accomplished:**

1. Reviewed population objectives. (No revisions were required.)
2. Sealed harvested grizzly bears; analyzed harvest data; and reviewed current hunting regulations. (Preliminary data indicated that 13 bears were killed.)
3. Wrote management reports for regulatory years 1996–1997 through 1997–1998.

**Project Location:** Unit 20E (10,680 mi<sup>2</sup>)

Fortymile, Charley, and Ladue River drainages, including the Tanana Uplands and all drainages into the south bank of the Yukon River upstream from and including the Charley River drainage

**Objectives:**

1. Manage to effect temporary reductions in the grizzly bear population or to reduce the extent of bear predation where it is limiting moose population growth (e.g., moose populations are below food-limiting densities with fall calf:cow ratios <25:100).
2. After moose populations increase to desired levels, reduce bear harvests to stop or reverse bear population declines.

**Activities Planned:**

1. Review and revise population management objectives.
2. Monitor harvests, seal harvested bears, and analyze harvest data (objectives 1 and 2).
3. Write regulatory years 1996–1997 through 1997–1998 brown bear management report (objectives 1 and 2).

**Activities Accomplished:**

1. Reviewed project objectives using harvest data collected during the sealing process and revised estimate of unit bear numbers and trends of the Unit 20E moose population size and sex and age composition. I will revise the population management objective to allow for maximum opportunity to hunt grizzly bears with safeguards to protect the population against an overharvest (Objectives 1 and 2).
2. Discussed project objectives and effects of harvest-caused localized bear reductions on moose calf survival with the Upper Tanana/Fortymile and Eagle Advisory Committees. (Both advisory committees are considering additional regulations to increase bear hunting opportunity as part of intensive management of Unit 20E moose and Fortymile caribou).
3. Completed regulatory years 1996–1997 through 1997–1998 grizzly bear management report.

**Project Location:** Units 21B, 21C, and 21D (20,655 mi<sup>2</sup>)  
Middle Yukon River, including lower Koyukuk River, Nowitna River and  
Meložitna River

**Objective:** Manage a grizzly population that will sustain a three-year mean annual harvest of at least 25 bears with at least 50% males in the reported harvest.

**Activities Planned:**

1. Review and revise population management objectives.
2. Monitor harvests, seal harvested bears, and analyze harvest data.
3. Write regulatory years 1996–1997 through 1997–1998 brown bear management report.

**Activities Accomplished:**

1. Monitored grizzly bear harvest and maintained a harvest below the harvest objective.
2. Enhanced compliance with reporting requirements due to use of Northwest Brown Bear Management Area harvest reporting tickets.
3. Completed regulatory years 1996–1997 through 1997–1998 bear management report.
4. Revised management objectives.

**Project Location:** Unit 24 (26,055 mi<sup>2</sup>)  
Koyukuk River drainage upstream from the Dulbi River

**Objectives:** Manage a grizzly bear population that will sustain a three-year mean annual harvest of at least 20 bears in the northern portion of the unit (north of Allakaket) and at least 15 bears in the southern portion of the unit (remainder), with at least 50% males in the reported harvest.

**Activities Planned:**

1. Review and revise population management objectives.
2. Monitor harvests, seal harvested bears, and analyze harvest data.
3. Write regulatory years 1996–1997 through 1997–1998 brown bear management report.

**Activities Accomplished:**

1. Monitored grizzly bear harvest and maintained a harvest below the objective.
2. Enhanced compliance with reporting requirements through use of Northwest Brown Bear Management Area harvest reporting tickets.



3. Completed regulatory years 1996–1997 through 1997–1998 bear management report.
4. Revised management objectives.

**Project Location:** Units 25A, 25B, 25D, 26B, and 26C (73,755 mi<sup>2</sup>)

Eastern North Slope of the Brooks Range and the upper Yukon River Drainage

**Objectives:**

1. In Unit 25 maintain a brown bear population capable of sustaining mean annual harvests of 29 bears in Unit 25A and 29 bears in Units 25B and 25D, with a minimum of 60% males in the harvest.
2. In Units 26B and 26C maintain a brown bear population capable of sustaining a mean annual hunter harvest of 13 bears in Unit 26B and 19 bears in 26C, with a minimum of 60% males in the harvest.

**Activities Planned:**

1. Review and revise population management objectives.
2. Monitor harvests, seal harvested bears, and analyze harvest data (all objectives).
3. Write regulatory years 1996–1997 through 1997–1998 brown bear management report (all objectives).

**Activities Accomplished:**

1. Sealed harvested brown bears, compiled harvest data, and evaluated and revised management objectives (all objectives).
2. Discussed the status of nonresident drawing permits with public interests (all objectives).
3. Tested a potentially more efficient and feasible population survey technique in Unit 26B (all objectives). (This survey technique was developed in Southcentral Alaska and might be suitable for use in tundra habitat. An evaluation was begun in June 1999 in an effort to develop feasible methods to estimate north slope bear populations and help refine harvest objectives. This activity was added to the management program during the fiscal year).
4. Completed the brown bear management report for regulatory years 1996–1997 through 1997–1998 (all objectives).

**Segment Period Project Costs:**

	<b>Personnel</b>	<b>Operating</b>	<b>Total</b>
Planned	58.2	1.0	59.2
Actual	41.8	23.9	65.7
Difference	16.4	-22.9	-6.5

**Explanation: Operating:** Additional funds were needed to conduct grizzly bear population density estimate in Unit 26B and to recapture and monitor radiocollared grizzlies in Unit 20A.  
**Personnel:** The biennial Brown Bear Management Reports were completed. Detailed time sheet accounting for an entire fiscal year was completed for the first time and will provide a more realistic 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 Brown Bear Population Management

**Project Location:** Unit 18 (42,000 mi<sup>2</sup>)  
Yukon-Kuskokwim Delta

**Project Objectives:**

1. Maintain brown bear populations at existing densities in Unit 18.
  - a. Monitor harvests through the sealing program, the Western Alaska Brown Bear Management Area (WABBMA) registration system, and contacts with the public.
  - b. Improve compliance with bear harvest reporting requirements.
  - c. Improve information about brown bear populations and densities in Unit 18 through a cooperative capture-recapture research project with the U.S. Fish and Wildlife Service (FWS) and the Bureau of Land Management (BLM) in the Kuskokwim Mountains.
2. Minimize adverse interactions between bears and the public.
3. Develop updated population management objectives through cooperative planning with the public and other agencies.

**Work Accomplished During the Project Segment Period:** We contacted local residents to explain hunting season dates and bag limits, bear tag fees and sealing requirements, and other regulations for brown bears in Unit 18. We scheduled public meetings to discuss brown bear management and improvements in harvest reporting by local residents, but they were postponed.

Formal and informal meetings occurred among representatives of the Association of Village Council Presidents (AVCP), FWS, Subsistence Division, local Advisory Committees, and local IRA councils. We discussed the WABBMA subsistence brown bear registration permit system, improving our harvest information, liberalization of seasons and bag limits, and the continuation of the cooperative brown bear research project.

The department, FWS, and BLM continued the cooperative brown bear radiocollaring project. Animals have been tracked since 1993 to determine seasonal movements and estimate productivity.

We compiled subsistence hunter reports and collected data during sealing of harvested bears. Preliminary harvest records from the 1998-1999 regulatory year indicate that no bears were reported taken to date by 34 registered hunters in the WABBMA and 2 bears were sealed under the general hunting regulations. Harvest data for the 1998-1999 season will not be finalized until receipt of harvest survey postcards from each hunter.

**Progress Meeting Project Objectives:** Public announcements, village meetings, and instructions to license vendors emphasizing the need to purchase resident bear tags or obtain WABBMA registration permits have improved knowledge of the hunting regulations. Allowing subsistence hunters to register for permits in lieu of the \$25 tag and sealing requirements was

initially very successful. It is hoped that use of these permits, along with elimination of the tag fee and sealing requirements in the WABBMA, will make regulations less intrusive to subsistence hunters and improve our ability to gather harvest information.

**Project Location:** Unit 22 (25,230 mi<sup>2</sup>)

Seward Peninsula and the adjacent mainland drained by all streams flowing into Norton Sound.

**Project Objectives:**

1. Maintain a healthy brown bear population in Unit 22 with reduced densities through liberalized harvest regulations.
  - a. Assess harvest through the sealing program.
  - b. Collect specimens as needed from hunter-killed bears.
  - c. Improve compliance with bear harvest reporting.
2. Minimize adverse interactions between bears and the public.
3. Develop updated management objectives in consultation with the public, interested local organizations, and other agencies.

**Work Accomplished During the Project Segment Period:** Harvest reports were examined and the known human-induced mortality during the reporting period was 88 bears. Hunters killed 35 bears (19 males, 16 females) during fall 1998 and 47 bears (34 males, 13 females) during spring 1999. Six bears (4 males, 2 females) were taken in defense of life or property (DLP) during the reporting period. The location and chronology of reported harvest is listed below:

<u>Unit</u>	<u>Fall 1998</u>		<u>Spring 1999</u>		<u>Total Harvest</u>
	<u>Males</u>	<u>Females</u>	<u>Males</u>	<u>Females</u>	
22A	8	5	10	5	28
22B	7	4	14	4	29
22C	3	5	4	1	13
22D	1	2	4	4	11
22E	0	0	2	0	2
DLP	4	2	0	0	6
<b>Total</b>	<b>23</b>	<b>18</b>	<b>34</b>	<b>13</b>	<b>89</b>

The 1998–1999 harvest was the highest ever recorded for Unit 22 and was 65% higher than the 5-year average harvest of 54 brown bears. The high harvest resulted from plentiful bears and exceptional spring snow conditions for snow machine hunting.

Nonresidents took 48% of the reported harvest. Unit 22 residents and Alaska residents from outside Unit 22 took 36% and 16% of the harvest, respectively. The 20 nonresident drawing permits for Units 22B and 22C and the 5 drawing permits for Units 22D and 22E were all issued in the drawing or over the counter.

The liberalized bear hunting regulations for Unit 22, adopted by the Board of Game in October 1997, went into effect during this reporting period. Unit 22, except for Unit 22C, was included in the Northwest Alaska Brown Bear Management Area (NWABBMA), which allows subsistence hunters to harvest 1 bear per regulatory year for food from 1 September–31 May by registration permit. Also, the season for general and drawing permit hunts was lengthened to September 1–May 31, except in Unit 22C, where the season remains September 1–October 31 and May 10–May 25. However, the new regulations were not responsible for the increased harvest seen during this reporting period. Only 1 bear was taken with a subsistence permit and 1 bear was taken during the period from October 31–April 15 when the season was previously closed.

Staff and Wildlife Protection worked with Village Public Safety Officers and village officials to explain defense of life or property regulations and to encourage the use of deterrents such as rubber bullets or cracker shells to drive bears away from villages. For the first time, the department had to destroy bears in the city of Nome when a sow and 2 cubs became habituated to foraging for food in town. Efforts continue to educate the public about bear behavior, bear safety, and ways of minimizing bear/human conflicts. As in past years, considerable time was spent answering questions from the public, writing newspaper articles, and mailing information and regulatory materials. Bears were sealed at the office in Nome, often after normal business hours and when we traveled to surrounding villages. A bear sealing agent was trained in White Mountain in addition to those already established in Unalakleet and Shishmaref.

**Progress Meeting Project Objectives:** Observations by staff and residents of Unit 22 indicate that brown bear numbers are increasing throughout the unit. Reports of bear encounters, complaints about nuisance bears, and bears taken in defense of life and property continue to increase. In response to public demand and concern about the effect of bear predation on moose calves in some parts of Unit 22, the department is recommending that bear regulations be further liberalized to increase harvest and to decrease bear densities in Unit 22.

Although people are becoming more conscientious about keeping clean camps and bear proofing their cabins, bear problems are increasing throughout the unit. Village dumps and traditional food storage practices continue to lure bears into villages, but we believe many of these problems are now reported and dealt with lawfully.

Efforts to inform the public of the importance of wildlife conservation and the need for regulations have been effective in some communities; the number of individuals purchasing licenses and bear tags or obtaining subsistence permits has increased. Additional contact with local residents, particularly village residents, is necessary to increase compliance with current bear hunting regulations. Development of a brown bear management plan with updated population objectives has not been undertaken. We will continue to use comments from the public and other agencies and data from our previously completed bear study to develop updated objectives for Unit 22.

**Project Location:** Unit 23 (44,000 mi<sup>2</sup>)  
Kotzebue Sound and Western Brooks Range

**Project Objectives:**

1. Maintain a minimum brown bear density of 1 adult bear per 26 mi<sup>2</sup> in the Noatak drainage.
2. Implement a community-based harvest reporting system to improve the accuracy of harvest data.
3. Encourage development of alternative brown bear survey techniques that do not depend on radiocollar mark-recapture procedures.

**Work Accomplished During the Project Segment Period:** We continued to inform local hunters of subsistence brown bear regulations and actively collected harvest data from participants in the Northwest Alaska Brown Bear Management Area (NWABBMA) subsistence hunt. In 1997–1998, 110 hunters registered in the subsistence brown bear hunt. All but 5 hunters lived in the management area, and 47 hunters resided in Unit 23. Eighty-six hunters reported a total NWABBMA harvest of 6 bears (2 males, 4 of unknown sex). Two bears were harvested in Unit 23. Participating hunters support continuing this hunt. We are currently collecting harvest data for the 1998–1999 subsistence hunt that will be reported in our 1999–2000 report.

Thirty-three nonresidents applied for 18 fall 1998 drawing permits. Eleven nonresident hunters applied for 18 spring 1999 drawing permits. We monitored harvests for the general and drawing permit hunts through sealing certificates. The fall and spring 1998–1999 brown bear general season and permit hunt harvest summary follows:

	Fall 1998				Spring 1999			
	<u>Male</u>	<u>Female</u>	<u>Unk</u>	<u>Total</u>	<u>Male</u>	<u>Female</u>	<u>Unk</u>	<u>Total</u>
Local resident	3	1	0	4	2	0	0	2
Nonlocal resident	14	2	1	17	1	0	0	1
Nonresident	10	3	0	13	6	0	0	6
DLP/accidental	0	0	0	0	0	0	0	0
Total	27	6	1	34	9	0	0	9

The Board of Game increased the number of spring nonresident drawing permits from 7 to 18 effective Spring 1999. There was a 3 bear increase in spring harvest compared to the 1998 season.

**Progress Meeting Project Objectives:** Incidental observations by department staff and reports from local residents and hunters indicate brown bear numbers in Unit 23 may have stabilized at relatively high levels.

**Project Location:** Unit 26A (53,000 mi<sup>2</sup>)  
Western North Slope

**Project Objectives and Activities:**

1. Maintain brown bear population at existing levels in Unit 26A.
2. Monitor harvest through the statewide sealing program, the Northwest Alaska Brown Bear Management Area (NWABBMA) registration system, and contacts with the public.
3. Minimize adverse interactions between bears and the public.
4. Develop updated population management objectives in consultation with the public and other agencies.
5. Liberalize harvest by nonresident hunters and simplify paperwork by replacing the permit system with a quota system, which will be dependent on cooperation with guides.

**Work Accomplished During the Project Segment Period:** In 1992 we completed a mark-recapture survey in the Utukok and Kokolik drainages in Unit 26A West (west of 159° W longitude) using radiocollared bears as the "marked" animals. From this survey we estimated a density of 7.7 bears/100 mi<sup>2</sup>, and a 95% confidence interval of 7.3–8.2 bears/100 mi<sup>2</sup>.

Using the 1992 density estimate, the current population estimate in Unit 26A is 900 to 1120 bears; 400 bears are estimated to be in Unit 26A West and 500–720 in Unit 26A East. This represents an increase from the pre-1987 population estimate of 645 to 780 bears (Trent 1989).

During their spring 1996 meeting, the Board of Game considered and approved a proposal eliminating the drawing permit requirements for nonresident brown bear hunters in Unit 26A and lengthened the season to 20 August–20 May. The new regulation allows greater flexibility and predictability for guides, but requires regular communication among guides, agencies, and the department. To avoid overharvest, guides need to voluntarily limit the harvest of their clients.

During the 1998–1999 season, hunters reported harvesting 10 bears, 10 in the fall and none during spring. Six bears were harvested in Unit 26A East (East of 159°) and 4 in Unit 26B West. Six males (60%) and 4 females (40%) were harvested. North Slope residents harvested 1 bear, nonlocal residents harvested 1 bear, and nonresidents harvested 8 bears. Six bears were harvested during August and 4 during September. For transportation, 9 hunters used aircraft and 1 used a boat. The mean number of days per hunt was 3.6.

We distributed information through the media describing safe camping practices, handling food and garbage, and the correct procedures for handling problem bears. Posters and pamphlets on bear safety were placed in public locations.

**Progress Meeting Project Objectives:** Since nonresident permit hunting had been undersubscribed and the harvest of bears in Unit 26A had been well below maximum sustained yield harvest, the Board of Game discontinued the nonresident drawing permit hunts in Unit 26A

by replacing them with a 2-year quota hunting system. In this system, if hunters exceed the maximum allowable harvest during the first year, the allowable harvest for the second year will be reduced by the quota excess during the first year. Allowable harvests are based on current bear population estimates. The 2-year quota system depends upon good communication and cooperation between the department and guides.

Sealing certificates indicate that the mean number of bears harvested during the last 3 seasons ( $\bar{x}$  = 16 bears) was well below the average number of bears harvested between 1990 and 1996 ( $\bar{x}$  = 26.6 bears). The reduced harvest was probably caused by a lack of a concurrent moose season and subsequent lack of hunters harvesting bear as a second hunt. Eliminating the drawing permit system has reduced paperwork and time spent administering the hunt and has not led to overharvest. We will continue communicating with the guides, urging them to limit their harvests and to selectively harvest male bears.

If we assume that safe harvest limits should not exceed 5% of the population, the allowable sustained yield for Unit 26A is approximately 51 bears. The reported brown bear harvest for 1998–1999 of 10 bears is well below this allowable limit. The reported harvests in Unit 26A East (6 bears) and Unit 26A West (4 bears) are well below the allowable limits of 31 and 20, respectively. In light of the fact that the number of bears harvested is much lower than the harvestable surplus, it would probably be safe to change the bag limit from 1 bear every 4 years to 1 bear per year to give people more opportunity to harvest bears.

There were no serious adverse encounters between brown bears and the public reported for Unit 26A during the segment period. The information distributed to the public on bear safety seemed to be well received.

**Literature Cited**

TRENT, JN 1989. Unit 26A brown/brown bear survey-inventory progress report. Pages 174– 184 in S. O. Morgan, ed. Annual report of survey-inventory activities, 1987. Vol. XIX, Part V. Alaska Department Fish and Game. Federal Aid in Wildlife Restoration Progress Report. Grant W-23-1, Study 4.0. Juneau. 189pp.

**Segment Period Project Costs:**

	<u>Personnel</u>	<u>Operating</u>	<u>Total</u>
Planned	23.6	4.0	27.6
Actual	23.6	6.1	29.7
Difference	0	-2.1	-2.1

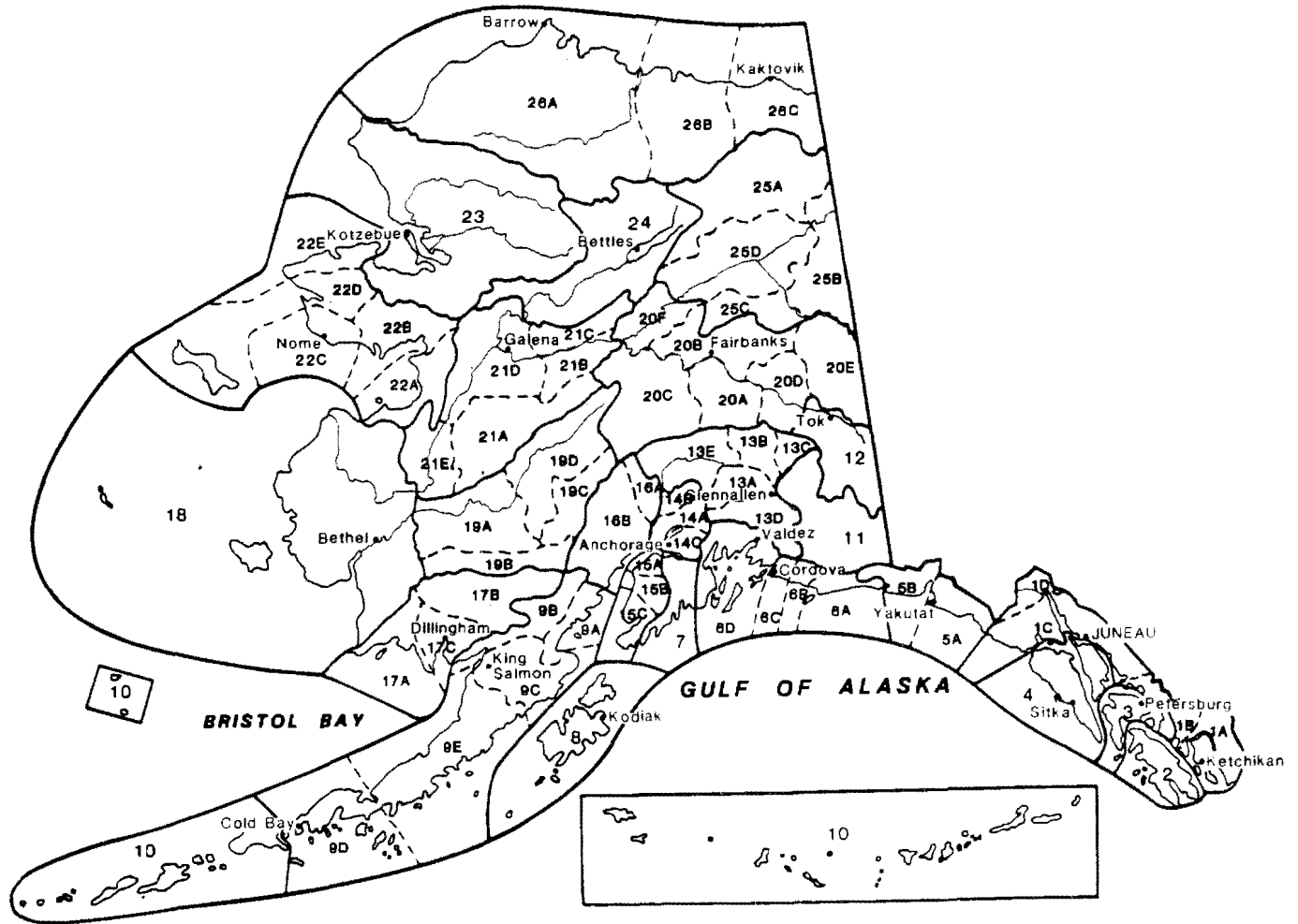
*Explanation:* Problems with nuisance brown bears in Unit 22 caused operating expenses to exceed planned costs. Additional expenses were incurred during efforts to immobilize and relocate problem bears near Nome.

**Submitted by:**

Peter Bente  
Survey-Inventory Coordinator



# Alaska's Game Management Units



**ARLIS**  
Alaska Resources  
Library & Information Services  
Anchorage Alaska

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



Ken Whitten

AR