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Division of Wildlife Conservation

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1 July 1993 - 30 June 1994

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BROWN BEAR

Mary V. Hicks, Editor



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1993-94

Grant W-24-2
Study 4.0
December 1994

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STATE OF ALASKA
Tony Knowles, Governor

DEPARTMENT OF FISH AND GAME
Carl L. Rosier, Commissioner

DIVISION OF WILDLIFE CONSERVATION
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Project Title: Southeast Brown Bear Population Management

Overview: Brown bears are distributed throughout the Southeast Alaska region in Units 1, 4, and 5, and are occasionally found on islands in Unit 3. Population densities are the highest in Unit 4. Population and density estimates have been made on northeast Chichagof and Admiralty islands. Brown bear are near black bear in mainland locations, notably the Yakutat Forelands.

Project Location: Unit 1 (18,300 mi²)
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 fifth consecutive season, we collected harvest data through mandatory registration permits. We required all permittees 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 date of kill. 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: Hunters harvested 24 bears in Unit 1 during this report period. One of these bears, a male from Subunit 1D, was taken illegally. The total of 18 males and 6 females again met our 3:2 harvest objective. Harvest by subunit, including the illegal kill, included 3 males and 1 female from Subunit 1A, 2 males and 1 female from 1B, 4 males and 2 females from 1C, and 9 males and 2 females from 1D.

The average size of male skulls was 22.0 inches (n = 16), and the average for female skulls was 20.3 inches (n = 6). These averages are nearly identical to the 22.0 and 20.1 inches for males and females last season.

We issued 279 registration permits during this report period. There were 112 unsuccessful permittees and 143 did not hunt. Nonresident hunters harvested 7 bears and residents took 17 bears. One successful resident hunter failed to obtain a permit prior to hunting. Age data were not available at the time we prepared this report.

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Project Location: Unit 4 (5,800 mi²) - 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: We issued 587 registration permits to bear hunters. Staff measured skull length and width, extracted a premolar, determined sex, and noted other pertinent data. Staff aged teeth by counting cementum annuli. We attempted to reduce brown bear loss to defense of life and property (DLP) incidents through public education and contact with other agencies. Biologists and technicians contacted visitors at Pack Creek throughout July and August to explain regulations of the Stan Price Wildlife Sanctuary, prevent loss of bears to DLP, promote public safety, and provide bear life history information.

Progress Meeting Project Objectives: Age data from harvested bears were not available by report time. Preliminary registration permit data documents 105 bears taken by sport hunters in 1993-94, including 69 males and 36 females (a 3.8:2 male to female ratio). Twenty-seven percent of the year's harvest was taken in the fall season. Three bears were reported killed in defense of life and property and one was taken illegally. Nine hundred sixteen people visited the Stan Price Wildlife Sanctuary to view brown bears.

Project Location: Unit 5 (6,200 mi²)
Cape Fairweather to Icy Bay, eastern gulf coast

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 data.

Work Accomplished During the Project Segment Period: Bears were sealed in Yakutat and Anchorage. We analyzed harvest from sealing certificates.

Progress Meeting Project Objectives: 1993-94 age data were not available at the time we prepared this report (for the previous regulatory year, the average age of brown bears killed in Unit 5 was 5.2 years, lower than the objective). The project objective of a 3:2 male to female kill ratio was exceeded (3.8:2). The harvest of 29 bears (19 males, 10 females) was 7 fewer than the number taken last year, but the ratio of females in the harvest grew. The harvest was

somewhat smaller than the 1986-1992 average of 33. Successful hunters spent 110 days hunting, an average of 4.2 days per hunter. Four of the 29 kills (3 males, 1 female) came from Subunit 5B, the remainder from 5A.

Segment Period Project Costs:

	<u>Personnel</u>	<u>Operating</u>	<u>Total</u>
Planned	19.6	8.2	27.8
Actual	35.5	8.2	43.7
Difference	15.9	0	15.9

Explanation: Staff spent additional time analyzing Unit 4 harvest and population data.

Submitted by:

Bruce Dinneford
Management Coordinator

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Project Title: Southcentral Brown Bear Population Management

Project Location: Unit 6 (10,150 mi²)
Prince William Sound and north Gulf Coast

Project Objectives: Maintain a brown bear population that will sustain an annual 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: Four bears (3 males, 1 female) were harvested during fall 1993. The mean skull size for males taken during fall was 22.3 inches, and males composed 75% of the harvest. Preliminary harvest data for spring 1994 indicated an additional 12 bears (9 males and 3 females) were taken. Males composed 75% of the take, and mean skull size for males was 25.1 inches. Final harvest numbers for spring will be available during fall 1994.

Progress Meeting Project Objectives: We achieved unitwide objectives. Male skull size during fall was slightly below the objective, but this was a result of small sample size. Harvest was within the estimated desirable range in all subunits.

Project Location: Units 7 and 15 (8,400 mi²)
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.

Work Accomplished During the Project Segment Period: Preliminary harvest reports indicated annual harvest levels increased above management objectives. Eleven bears (8 males and 3 females) were harvested in the fall including 1 male bear in Unit 7. An additional 10 bears were reported in the spring of 1994 (9 males and 1 female), including 3 males in Unit 7. Preliminary data showed 81% were male bears. Final harvest numbers and statistics will be available in November 1994.

Nuisance bears remained a substantial problem on the Kenai. Six of the 21 bears (29%) reported were taken in defense of life and property. In addition, an orphaned cub was transported to Grizzly Country (a bear viewing and educational facility) in Montana. Two nuisance yearling bears were trapped and moved during the spring of 1994. One bear was trapped in the Russian River campground and transported to the Caribou Hills in Unit 15C. The other bear was trapped near north Coho Loop road in Unit 15C and moved to upper Mystery Creek in Unit 15A.

Progress Meeting Project Objectives: Following the reduction in the 1989 season, brown bear harvest declined slightly then increased above objective levels. During the spring 1994 Board of Game meeting, the Board shortened and moved the fall hunting season to 1-25 October, in response to continued high harvest levels.

Logging associated with the bark beetle epidemic will be the major factor affecting brown bear habitat on the Kenai Peninsula. Approximately 5000 to 6000 acres were logged during this reporting period, and more than 6000 acres will be cut during the next regulatory year.

Project Location: Unit 8 (5,100 mi²)
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: Working cooperatively with the U.S. Fish and Wildlife Service (FWS), we aerial surveyed in a 103 mi² area in the Karluk drainage during May 1994. We observed an average of 8.9 bears/hour and 77 bears/100 mi² for the 4 replicate surveys. The highest previous density observed in adjacent drainages was 44 bears/100 mi² in the Aliulik Peninsula of southeastern Kodiak Island. Our objective was to develop an economical technique for estimating population trends which do not require capturing and marking bears.

Aerial composition surveys were along selected streams on the Kodiak National Wildlife Refuge by FWS personnel during July and August 1993. Composition of the 519 bears observed in 6 replicate surveys was 47% single; 17% maternal females; 37% cubs less than 1 year old and 23% cubs greater than one year old. Aerial stream surveys were also initiated along 3 streams in the Aliulik Peninsula, and there we recorded nearly identical composition.

We issued hunting permits to 492 people, 204 fall permits and 288 spring permits. During the 1993 fall season, 163 hunters went afield and killed 54 bears. In the spring 1994 season, hunters killed 108 bears. The annual harvest was 162 bears, 112 males (70%), 49 females (30%), and 1 bear of undetermined sex.

Progress Meeting Project Objectives: The 1993-94 harvest of 162 was slightly less than the previous 10-year mean of 167 bears, but above the 150 bear harvest objective. Males composed 70% of the harvest, exceeding the objective of 60% males. The harvest of 49 females was below the previous 10-year mean of 59 females.

The annual harvest objective, 150 bears, was exceeded in 9 of the past 10 years. This trend prompted a recommendation to reduce hunting permits. The Board of Game directed the department to evaluate requiring guided, nonresident hunters to harvest bears of a minimum skull size and age. Guides supported the proposal, thinking it would lower the harvest,

minimize the harvest of females, and not reduce the number of hunters. The Board will reconsider the issue in November 1994.

The bear population seems stable, but we will monitor increasing harvest. Research should be directed at minimizing bear-human conflicts, identifying and protecting important habitat, assessing population trends, and identifying nonsport mortality.

Project Location: Units 9 and 10 (37,500 mi²)
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: The interagency Black Lake study continued during this reporting period with routine monitoring of radiocollared bears.

The EVOS study of impacts of 1989 oil spill continued and evolved into a cooperative study between the department and the National Park Service to evaluate the population dynamics of a high density unhunted bear population. In June 1993, 30 bears were captured in the study area. Radiotelemetry monitoring was ongoing.

The brown bear hunting season in Unit 9 was open during the 1993-94 regulatory year. During the October 1993 season, approximately 240 bears were killed in Unit 9; 64% were males. The preliminary harvest from the May 1994 season was 225; 76% were males. On Unimak, 4 bears were taken during the fall 1993 season, and 5 bears were harvested during the spring 1994 hunt. In the Naknek drainage, 6 bears were taken during the fall season. During the spring 1994 season, hunters harvested 5 bears. The fall 1993 registration hunt in the Cold Bay area was closed on October 8, after 2 bears were killed. The spring 1994 Cold Bay hunt was closed after the second bear was killed on 18 May.

Progress Meeting Project Objectives: Harvest statistics from the 1993-94 season were well within the desired range. The 1993 and 1994 harvests were below recent annual harvests that averaged 275 bears. The extrapolated bear population for areas open to hunting in Unit 9 was 5680, and harvests over the past 4 years represented a harvest rate of 4.5%. Permit hunts were meeting their management objective. However, increased participation in the Naknek registration hunt by nonresidents and military affiliated sportsmen, combined with improved means of transportation, have lead to concern that more nonproblem bears were being taken in remote portions of the hunt area.

Project Location: Unit 11 (12,800 mi²)
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 1993-94 season indicated 4 brown bears were killed in Unit 11, well below the 10-year average of 8 bears per year. This harvest total could increase as spring 1994 certificates were still being processed. Nonlocal Alaska residents and nonresidents killed 2 bears. Two successful bear hunters reported using aircraft as a method of transportation, and 2 reported using a highway vehicle. Successful hunters reported spending an average of only 3 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 unitwide bear population. The proportion of males in the harvest met the 50% minimum in the management guidelines for brown bear harvest in this unit. Although population data for brown bears in Unit 11 was 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 14 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.

Project Location: Unit 13 (23,400 mi²)
Nelchina Basin

Project Objectives: Maintain a population of 800 to 1000 brown bears, as estimated from trend data in intensive study areas. The human-use objective is to maintain an average harvest of less than 6% of the extrapolated population estimate.

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 1993-94 hunting season indicated 64 brown bears were taken by hunters. This preliminary figure was 46 bears less than taken in 1992-93 and the lowest harvest of bears in Unit 13 since 1978. There were 39 bears (47% males) taken during the fall of 1993 and 25 (80% males) in the spring of 1994. This spring harvest figure could increase as sealing certificates were still being processed. Males composed 60% of the

overall harvest. During the fall season unit residents took 7 bears, other Alaska residents killed 33 animals, and nonresidents harvested 24 bears. During the fall, aircraft were the most popular method of transport (33%), followed by 3/4 wheelers (26%) and horses (18%). Snowmachines were the most prominent (32%) transportation method during the spring hunt, followed by highway vehicles and aircraft (28%). Skull size and age data of the harvested bears were not available for this report.

Progress Meeting Project Objectives: Preliminary harvest figures for the 1993-94 season indicate the number of brown bears taken in Unit 13 decreased from the previous year's kill. The brown bear harvest was well below the record high harvests of the mid to late 1980s. The percentage of males in the harvest was above the 60% management guideline, but females exceeded males in the 1993 fall harvest. Historically, females have composed a higher proportion of the bears taken in early September by hunters primarily seeking moose and caribou. To reduce the number of females in the harvest, the 1990 fall brown bear season was shortened by 10 days by delaying the opening to 10 September. This change was successful as the percentage of males in the fall harvest in 1992-93 exceeded that of females. In 1993, the Board increased the fall season by 10 days, opening the season on 1 September.

Determining a population trend and sustainable harvest rate for brown bears in Unit 13 has been difficult. Density estimates from 13E suggested recent high harvests were not sustainable. However, some harvest parameters such as percentage of adult males have not consistently decreased as expected if the population had declined. The brown bear population may be larger than estimated and/or bears being taken in the unit may be emigrating from parks adjacent to the unit. A 3-year project to estimate bear density was begun in Subunit 13E. It has not been difficult to find bears to mark in the spring, suggesting there has not been a large decline in the population in the study area. The harvest was sustainable in all portions of Unit 13 with the possible exception of Subunit 13E. Recent harvests in Subunit 13E have been very high and exceeded sustainable harvest projections based upon prior population estimates and a harvest rate of 6%.

Project Location: Unit 14 (6,600 mi²)
Upper Cook Inlet

Project Objectives: Maintain a population of at least 160 brown bears and a sex and age structure that will sustain a harvest of at least 60% males.

Work Accomplished During the Project Segment Period: A minimum of 12 bears was killed in Unit 14. Two were legally killed in Subunit 14A, and 3 were killed in Subunit 14B. In addition, 1 sow was killed by a train in Subunit 14B, and her 3 yearling cubs were reputedly shot in defense of life or property and never reported. Also, 1 male was killed in a collision with an automobile in Subunit 14C; a 3-year-old bear was shot by the area biologist after it had been hit by a train and deemed a dangerous nuisance in a residential area. Its sibling was reputedly shot and wounded after it became a garbage bear in a residential area.

The hunter harvest comprised 60% (n = 5) males. Two bears killed by hunters were taken during the fall season and 3 in the spring season.

Progress Meeting Project Objectives: The 1993-94 harvest exceeded the total allowable harvest for the current population estimate. Four of the 12 bears (3 adults, 1 yearling) were females. Season changes adopted by the Board of Game 2 years ago have reduced the sport harvest by about one-half. However, road and train kills and bears shot in defense of life or property continued to compose a large proportion of bears killed in Unit 14.

Project Location: Unit 16 (12,300 mi²)
West side of Cook Inlet

Project Objectives: Maintain a brown bear population that seems largely unaffected by human harvest. Human-use objectives are to allow optimum opportunity to hunt brown bears while sustaining a 3-year average harvest of 50 to 60 bears which includes less than 2 females, less than 2 years-old from Subunit 16A, and less than 17 females, less than 2 years-old from Subunit 16B.

Work Accomplished During the Project Segment Period: We sealed 42 brown bears from Unit 16. Two were reported taken from Subunit 16A and 30 in Subunit 16B. Twenty-nine (70%) were males, 13 (30%) were females. Overall, 20 bears, all males, were taken by hunters during the spring season and 22 (9 males) during the fall. One female bear was killed in defense of life or property.

Progress Meeting Project Objectives: Reported harvest data indicated management objectives were met. The 3-year average was 63 bears, even though harvest this period was the lowest recorded since season length was liberalized in 1985. Fall harvest in 1993 was low because of lower hunting density caused by restrictive moose bag limits. Spring 1994 harvest was low because of poor weather conditions for hunting.

Project Location: Unit 17 (18,800 mi²)
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 19 brown bears, including 14 males (74%) and 5 females (26%) during the 1993-94 season. Average skull size was 22 inches for males and 20.7 inches for females. Nonresident hunters reported killing 15 bears (79%), nonlocal residents killed 2 bears (11%), and unit residents killed 2 bears (11%). Most successful hunters used aircraft for access (89%).

Thirteen bears (9 males, 4 females) were killed during the fall 1993 season, and 6 bears (5 males, 1 female) were killed during spring 1994. Two bears (1 male, 1 female) were killed in Subunit 17A, 14 (11 males, 3 females) in Subunit 17B, and 3 (2 males, 1 female) in Subunit 17C.

Two brown bears were killed in defense of life or property during this reporting period. A yearling male bear was shot at a residence along the Kanakanak Road in July 1993. Its sibling was shot when the 2 were raiding a smokehouse full of fish in late June 1993. In September, a young adult female was shot by a Dillingham resident at his home on Wood River road. The bear, staying in an alder patch near a local bus stop, probably was attracted to a meat house full of moose.

Progress Meeting Project Objectives: No objective data were available on the population density of brown bears in the Unit. There is also a paucity of information on bears shot in defense of life or property and illegal kills. Subjective evidence suggested the unitwide population of brown bears was stable.

A joint ADF&G/FWS research project was started during the spring of 1992 and 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 (Subunit 17A and 18). Bears radiocollared in 1993 were tracked at least twice per month. The 1994 collaring project was again controversial because of ethical concerns raised by the Association of Village Council Presidents (AVCP). A compromise was reached prior to capture, 8 subadult bears were recollared and 9 new bears were collared. The department, FWS and AVCP agreed to meet during the next year to explore ways to achieve the objectives of the project while being sensitive to traditional Yup'ik customs.

During this reporting period, I continued monitoring bears using the Dillingham dump. At least 30 bears used the dump during the summer of 1993. The dump is scheduled to be closed within the next couple of years. I attempted to capture 2 adult females by ground darting and was successful in radiocollaring 1 of them. She kept her collar for 2 weeks before ripping it off.

In an effort to reduce nuisance bear complaints and illegal kills, a public education effort has been initiated in the Unit. Radio announcements, public meetings, and a weekly newspaper article are being used to teach rural residents about bear behavior and to disseminate advice on how to deal with bear problems. The Department is working with local city and village government representatives and Dillingham city police to enforce existing regulations when bear problems are caused by improper food or garbage storage.

Segment Period Project Costs:

	<u>Personnel</u>	<u>Operating</u>	<u>Total</u>
Planned	93.5	32.9	126.4
Actual	93.5	28.9	122.4
Difference	0.	4.0	4.0

Submitted by:

Jeff Hughes
Management Coordinator

Project Title: **Region III Brown Bear Population and Habitat Management**

Project Location: Unit 12

Project Objectives and Activities:

- . Manage harvests so the 3 year mean harvest does not exceed 24 bears and has at least 55% males in the harvest.

- . Seal bears; analyze harvest data.

Work Accomplished During the Project Segment Period: During FY94, the preliminary reported harvest was 17 grizzly bears (10 males and 7 females) in Unit 12. The harvest was comparable to the 5-year annual average (16). Males composed 59% of the harvest. Fifteen bears (88%) were taken during the fall and 2 during spring (12%). Most harvest was in the southeast portion of the unit (Chisana and White Rivers) and within the Tok and Little Tok River drainages. One additional bear was taken in defense of life or property.

Progress Meeting Project Objectives: In Unit 12, the 3-year mean harvest average was 17 bears and the percentage of males in the harvest has been 59% which exceeds the management objectives. The harvest density is not excessive even in the most popular hunting areas. Future grizzly bear harvest in Unit 12 is expected to remain comparable to the FY94 harvest due to the present regulation allowing one bear per regulatory year.

Project Location: Unit 19

Project Objectives and Activities:

- . Manage grizzly bear populations to provide a mean annual harvest of 30 bears with a minimum of 50% males in the harvest.

- . Increase legal harvests of grizzly bears in and around villages, fish camps, and other human habitations during open seasons to reduce human-bear conflicts during closed seasons.

- . Monitor harvest, seal bears, and analyze harvest data.

Work Accomplished During the Project Segment Period: Final data are not yet available concerning the harvest of brown bears from the area for the 1993-94 regulatory year. Data available as of late 1993 for the 1992-93 grizzly bear harvest in Unit 19

indicate a harvest of 56 bears. This is consistent with the predictions given the increased season length.

Progress Meeting Project Objectives: We continued monitoring Unit 19 harvest by sealing harvested bears. Efforts have continued in area villages and fish camps to educate residents to alleviate the chronic defense of life and property (DLP) problems.

Project Location: Subunits 20A, 20B, 20C, 20F, and 25C

Project Objectives and Activities:

Subunit 20A Mountains:

- . Decrease harvest rates until at least 1995 by managing for a 3-year mean annual harvest of no more than 3% of the adult females (≥ 6 years old), and no more than 6% of the grizzly bears ≥ 2 years old.
- . Cooperate with a new research project (W-24-1, Study 4.25) having these objectives:
 - . To determine the recovery or stabilization time for a reduced grizzly bear population following reductions in human-caused mortality rates.
 - . To measure the recovery responses in the dynamics of the population, especially female population size, total population size, and production and survival of offspring.

Subunit 20B East: (east of a line drawn north from Fairbanks through Haystack Mountain)

- . Manage total human-caused grizzly mortality to provide a stable population with a 3-year mean annual harvest of up to 6 bears ≥ 2 years old, with an average of at least 55% males in the harvest by hunters.

Subunit 20A Flats, 20B West, 20C, 20F, and 25C combined:

- . Manage harvest to provide stable grizzly bear populations with a 3-year mean annual human-caused mortality of up to 26 grizzly bears ≥ 2 years old, with an average of at least 55% males in the harvest by hunters.
- . Manage the 3-year mean annual grizzly bear harvests from individual areas with the following quotas: 3 from Subunit 20A Flats, 3 from Subunit 20B West, 7 from Subunit 20C, 7 from Subunit 20F, and 6 from Subunit 25C.

Work Accomplished During the Project Segment Period: Preliminary counts of sealing certificates indicate in 1993-94 we sealed 11 grizzly bears from Subunit 20A Mountains (6 males and 5 females); 0 from Subunit 20B East; 7 from Subunit 20A Flats; 1 from each of Subunits 20B West, 20C, and 20F; and 3 from Subunit 25C. We do not have cementum ages from these bears yet.

During this reporting period, we treated several bear issues. We completed a grizzly bear management report, which includes a thorough compilation and analysis of data for grizzly bears in this area through spring 1993. For a pamphlet, we summarized spring 1994 grizzly bear hunting opportunities. Our department and the NPS coordinated efforts to resolve a conflict in Kantishna with a problem grizzly bear.

Progress Meeting Objectives: Our spring 1992 estimate of the grizzly bear population in Subunit 20A Mountains included 33 adult females (6 years or older) and 111 bears 2 years or older. Therefore, our objectives were to limit the 3-year mean harvest to no more than 1 adult female (3%) and 7 bears 2 years or older (6%).

Although we do not yet have ages for bears killed during 1993-94, we probably exceeded our objective to limit the mean harvest of adult females. One adult female was killed in 1991-92, 2 were killed in 1992-93, and unless none were killed in 1993-94, then the 3-year mean will exceed our objective of 1 adult female.

In addition, we have not met our objective to limit the harvest to 7 bears 2 years and older. Ten bears 2 years and older were killed in 1991-92, 22 were killed in 1992-93, and 11 were killed in 1993-94 (ages not available). If all the bears killed in 1993-94 were 2 years and older, the 3-year mean of 14.3 bears will be twice as high as our objective for 7 bears 2 years or older.

We did several things to reduce this harvest, especially of adult females. We submitted a proposal to the Board of Game to shorten the fall grizzly bear hunting season in Subunit 20A by 9 days. The Board adopted the proposal and, beginning in fall 1994, the hunting season will open Sept. 10 instead of Sept. 1. In addition, we solicited the public's help in reducing the harvest of adult females. We printed and distributed small decals reminding hunters to "take a closer look" to determine the sex of bears they want to harvest. The decals describe physical and behavioral characteristics of adult males. These characteristics are explained in detail in a video we recommend called *Take a Closer Look*. We also designed and printed wallet-sized cards illustrating the differences between grizzly bears and black bears, including profiles, tracks, etc.

During the next reporting period, we will work with the research biologist to modify this objective slightly to identify (1) what population estimate will be used to estimate percent harvested, and (2) problems associated with using harvest data from a regulatory year versus calendar year. This latter issue results in bears from 2 cohorts being lumped for

data analysis (i.e., a 5-year old in fall 1993 is a different cohort than a 5-year old in spring 1994).

In Subunit 20B East, the 3-year mean (1991-92 through 1993-94) human-caused mortality of 5 grizzly bears met our objective for up to 6 bears. However, only 42% (5/12) of bears harvested by hunters were males, so we did not meet our objective for at least 55% males.

The preliminary annual grizzly bear harvest in the remaining areas has only included 13, 11, and 10 bears 2 years and older, during the last 3 years, respectively. The resulting mean of 11.3 bears is less than half of our objective for up to 26 bears. In addition, 66% (19/29) of the bears harvested by hunters were males, which also meets our objective for at least 55% males. The 3-year mean annual human-caused mortality for individual areas included 4.3 for Subunit 20A Flats, 2.3 for Subunit 20B West, 3.3 for Subunit 20C, 1.3 for Subunit 20F, and 1.0 for Subunit 25C. Harvest quotas for these areas were only exceeded in Subunit 20A Flats, which had an objective of 3 bears.

During the next reporting period, we will continue efforts to collect information on Subunit 20A grizzly bear population dynamics and harvest. We recommend adding the following objective:

- . To minimize human-bear conflicts by providing information and assistance to the public and agencies.

Project Location: Subunit 20D

Project Objectives And Activities:

- . In Subunit 20D south of the Tanana River, manage a stable bear population to provide a mean annual harvest not to exceed 5% of the estimated population >2 years old, with a minimum of 60% males in the kill.
- . Monitor harvest, seal bears, and analyze harvest data.
- . In Subunit 20D north of the Tanana River, increase the mean annual harvest of grizzly bears to 8-10% of the estimated population >2 years old, until moose calf survival increases in the area to at least 30 calves:100 cows for 3 consecutive years.
- . Monitor harvest, seal bears, and analyze harvest data.

Work Accomplished During the Project Segment Period: The preliminary reported harvest for 1993-94 was 7 grizzly bears in Subunit 20D during the 1993-94 regulatory

year. Five bears (4 males and 1 female) were taken south of the Tanana River. Two bears were taken north of the Tanana River and consisted of 1 male and 1 female.

Progress Meeting Project Objectives: We analyzed harvest data and sealed bears. The overall harvest objective was exceeded in southern Subunit 20D, but harvest continues to be below the objective for northern Subunit 20D.

Project Location: Subunit 20E

Project Objectives and Activities:

- . Manage to effect temporary reductions in the grizzly bear population or extent of bear predation where bear predation is limiting moose population growth (e.g., fall calf:cow ratios <30:100).
- . Manage the grizzly bear population in this subunit at a level capable of sustaining a harvest of 25 bears annually.
- . After moose populations increase to desired levels, reduce bear harvests to stop or reverse bear population declines.

Work Accomplished During the Project Segment Period: During FY94, the preliminary reported harvest was 20 grizzly bears (9 males and 11 females) in Subunit 20E exceeding the 5 year average of 14 bears. Males represented 45% of the harvest. Nineteen bears (95%) were taken in the fall and one (5%) during the spring. No bears were taken in defense of life or property.

Progress Meeting Project Objectives: The majority of the grizzly bear harvest is in the central portion of the subunit. The grizzly bear population in that area has been reduced 30%. We are evaluating the effects of this reduction on moose calf survival. If it appears the reduction is still not great enough to cause an increase in moose calf survival, we will recommend restricting the season and bag limits for greater protection to female bears. The percentage of males in the bear harvest for the past 3 years has averaged 53%; however, a greater percentage of females was taken during 2 of those years. The harvest of 25 bears per year in Subunit 20E is sustainable if the harvest is spread over most of the unit. Through public contact, we are trying to distribute hunters more evenly throughout the season and to shift some of the fall pressure to the spring season.

Project Location: Unit 21

Project Objectives and Activities:

- . Manage a grizzly population which will sustain a minimum annual harvest of 10 bears.

- . Monitor harvest, seal bears, and analyze harvest data.
- . Reduce nuisance bear interactions and the unreported harvest of those bears at fish camps during summer by increasing the legal harvest during the open season.
- . Visit schools and fish camps to educate people on bear conservation.

Work Accomplished During the Project Segment Period: During this report period 5 male bears and 1 female were taken, only 2 of which were harvested during fall. Reporting of bears taken in defense of life or property is usually poor in the unit, and an additional 3-5 bears may have been taken.

Progress on unreported harvest was made through conservation education during school visits.

Progress Meeting Project Objectives: Management is based on harvest data. Minimal progress was made on changing the objectives and activities for the unit.

Project Location: Unit 24

Project Objectives and Activities:

- . Manage a grizzly population which will sustain a maximum annual harvest of 18 bears in the northern portion of the unit and a maximum harvest of 13 bears in the remainder of the unit.
- . Monitor harvest, seal bears, and analyze harvest data.
- . Reduce nuisance bear complaints, increase sealing compliance, and reduce the unreported harvest of bears in the unit.
- . Visit schools and fish camps to educate people on bear conservation.
- . Determine bear density throughout the unit.
- . Work with U. S. National Park Service and U. S. Fish and Wildlife Service to initiate a survey plan

Work Accomplished During The Project Segment Period: During the report period 6 male bears were harvested. All but one were taken in the northern portion of the unit. Five bears were taken during fall and 1 during spring.

Progress on unreported harvest was made through conservation education during school visits. We issued permits for hunting within the Northwest Arctic Bear Management area; participation and harvest information is reported under Unit 23.

No progress was made to survey bears in the unit.

Progress Meeting Project Objectives: Management is based on harvest data, and harvests are below unit objectives. We made no progress in determining bear density. Progress on unreported harvest was made through conservation education during school visits and regulation changes allowing for subsistence use of bears under the Northwest Arctic Bear Management system.

Project Location: Subunits 25A, 25B, and 25D

Project Objectives and Activities:

1. Establish new harvest goals in view of revised population estimates.
2. Evaluate the possibility of a cautious liberalization of harvest by nonresident hunters in Subunit 25A through revised permit quotas, establishing a registration permit system, or discontinuing the use of a permit system.

Work Accomplished During the Project Segment Period: Final harvest figures are unavailable for Subunits 25A, 25B, and 25D, but harvest levels will probably continue to be well below the maximum. An effort was made to reevaluate the need for and status of the drawing permit hunt in Subunit 25A, involving discussions with USFWS and guides. This led to a department proposal to eliminate the nonresident permit hunts in Subunits 25A and 26C. The Board of Game approved the proposal which will take effect in regulatory year 1994/95. The permit requirement will be replaced with increased communication with guides so we do not exceed a conservative sustainable harvest.

Progress Meeting Project Objectives: The population harvest objective has been consistently met during the past 5 years. We revised population estimates, but no large-scale enumeration efforts were possible. We made substantial progress in simplifying hunting regulations, opening lines of communication with guides, and building a more appropriate management program commensurate with bear population status.

The following revision should be made to Objective 2: Evaluate the effect of liberalized nonresident seasons on the brown bear harvest in Subunit 25A. Activity 1. Communicate with guides to assist them in voluntarily maintaining a total harvest in Subunit 25A that does not exceed the sustainable harvest of 29 bears while maintaining a minimum of 60% males in the harvest. Activity 2. Monitor harvest, seal bears, and analyze harvest data.

Project Location: Subunits 26B and 26C

Project Objectives and Activities:

- . Establish new harvest goals in view of revised population estimates.
- . Evaluate the possibility of a cautious liberalization of harvest by nonresident hunters in Subunit 25A through revised permit quotas, establishing a registration permit system, or discontinuing the use of a permit system.
- . Monitor harvest, seal bears, and analyze harvest data.

Work Accomplished During the Project Segment Period: Current harvest figures are unavailable for Subunits 26B and 26C. In recent years harvest has generally been less than the maximum desired, except in Subunit 26B where the harvest goal has been occasionally exceeded by a small amount. We reevaluated the drawing permit system for nonresidents because of changes in federal guide area assignments, revised bear population estimates, and the Spring 1994 Board of Game's deletion of the permit requirement for nonresidents in Subunit 26C.

Major activities during this period included administering the permit system, revising bear population estimates, reevaluating the permit system, and promulgating revised nonresident hunting regulations for bears in Subunit 26C.

Progress Meeting Project Objectives: The population harvest objective has been consistently met during the past 5 years. Population estimates were revised but no large-scale enumeration efforts were possible. We made substantial progress in simplifying hunting regulations, opening lines of communication with guides, and building a management program more appropriate to the bear population status.

Segment Period Project Costs:

	<u>Personnel</u>	<u>Operating</u>	<u>Total</u>
Planned	35.0	.5	35.5
Actual	35.5	.2	35.7
Difference	-0.5	.3	-0.2

Submitted by:

Kenton P. Taylor
Management Coordinator

Project Title: Western Alaska Brown Bear Survey and Inventory

Project Location: Unit 18 (42,000 mi²)
Yukon-Kuskokwim Delta

Project Objectives and Activities:

- Maintain brown bear populations at existing densities in Unit 18.
 - . Monitor harvests through the sealing program, the Western Alaska brown bear registration system, and contacts with the public.
 - . Improve compliance with bear harvest reporting requirements.
 - . Improve information about brown bear populations and densities in Unit 18 through a cooperative capture-recapture brown bear research project with the FWS and BLM in the Kilbuck Mountains.
 - . Improve communication with the public to reduce the magnitude of illegal, unreported, and defense-of-life-and-property kills
- Minimize adverse interactions between bears and the public.
 - . Assist the public in dealing with nuisance bear problems at villages, camps, dumps, and industrial developments.
- Develop updated population management objectives in consultation with the public and other agencies.

Work Accomplished During the Project Segment Period: We contacted local residents by telephone, mail, radio, and television announcements, and by newspaper articles concerning hunting season dates and bag limits, bear tag fee and sealing requirements, and other regulations pertaining to brown bear management. Brown bear management was also discussed at public meetings with special emphasis on the need for improved harvest reporting. We contacted community leaders, hunters, and law enforcement personnel in an effort to minimize bear-human conflicts at camps and landfills. Public notices were posted in communities, offering ways to reduce adverse encounters between bears and the public.

Formal and informal meetings occurred among representatives of the Association of Village Council Presidents (AVCP), the U.S. Fish and Wildlife Service (FWS), Subsistence Division, local advisory committees, and local IRA councils to discuss the Western Alaska Brown Bear Management Area (WABBMA), the subsistence brown bear registration permit system, improving harvest information, liberalization of seasons and bag limits, and the ongoing cooperative brown bear research project.

The Department, FWS, and the U. S. Bureau of Land Management (BLM) began a cooperative project to capture brown bears and radiotrack these animals over a period of 6

years to develop a brown bear density estimate south of the Kuskokwim River. Sealing of harvested bears and reporting by subsistence hunters occurred at villages, at the Department office in Bethel, and at hunters' residences. Department and AVCP staff interviewed some subsistence hunters concerning their hunting activities.

Progress Meeting Project Objectives: Public notices about bear/landfill problems has improved public awareness of the need to clean up these areas. No bears were reported taken in defense of life and property this regulatory year, even though some bears were frequenting several landfills.

Public announcements, village meetings, and license vendor contacts regarding the need to purchase resident bear tags or obtain Western Alaska Brown Bear permits has improved compliance with hunting regulations. Subsistence hunters' registering for a permit, in lieu of the \$25 tag and sealing requirements, was initially successful. We issued 99 of these permits throughout the Delta villages during 1992-93, and hunters reported a harvest of 7 male bears. We hope 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. During the 1993-94 season, we issued 67 Western Alaska Brown Bear Management Area permits.

Final harvest records from the 1992-93 regulatory year indicate hunters reported 7 bears taken in the WBBMA and 5 bears were sealed under the general hunting regulations. All 7 of the subsistence brown bears were male bears. The general hunt harvest consisted of 1 male bear and 4 female bears. Harvest data for the 1993-94 season is forthcoming and will not be finalized until after June 1994, when harvest survey postcards will be sent to each hunter.

Community harvest surveys conducted by staff of the FWS, AVCP, and a contract anthropologist indicate subsistence brown bear harvest for the WABBMA was 29 bears. However, this report is still preliminary and includes harvest data from Units 17 and 19 as well as from Unit 18.

Staff captured and marked 41 brown bears during the June 1993 brown bear capture-recapture study in the Kilbuck Mountains. Of these 41 bears, we radiocollared 26 for further monitoring. Currently 21 of these collars are still active on female bears. We extracted a premolar, collected blood samples, and weighed and measured most of the 41 captured bears. We propose continued monitoring and a second capture for 1994. During June 1995 we will census Unit 18 and develop a density estimate.

During June 1994, the second premarking phase of the project was to begin. The plan was to recapture 8 juvenile bears for refitting of their collars and collar 24 additional bears. However, recent litigation and injunctions in federal court may force the project to be delayed for one year. This court injunction is still pending. In the meantime, the ADF&G, the FWS, and village governments have begun cooperative management planning meetings to begin an

information and education process about bear management and to find less intrusive methods to estimate bear densities with a reasonable degree of confidence.

We are achieving habitat protection of important areas used by bears through comments to Habitat Division and to the FWS Refuge Management Planning Team.

Project Location: Unit 22 (25,230 mi²)
Seward Peninsula and that portion of the Nulato Hills draining west into Norton Sound

Project Objectives and Activities:

- Maintain grizzly bear numbers at existing densities.
 - . Assess harvest through the sealing program.
 - . Collect specimens as needed from hunter-killed bears.
 - . Improve compliance with bear harvest reporting.
- Minimize adverse interaction between bears and the public.
- Develop updated management objectives in consultation with the public, interested local organizations, and other agencies.

Work Accomplished During the Project Segment Period: Radio collars on bears from the Unit 22 bear study, initiated during spring 1989, provided us with valuable information. Throughout the year, staff conducted 6 survey flights and located 31 marked bears on 75 occasions. We added these data on locations, association, and mortality to the ongoing database. During spring 1994, staff removed 21 active transmitters, officially ending the study.

Known human-induced mortality during the reporting period was 45 bears. Hunters took 19 bears (9 males, 9 females, 1 of unknown sex) during fall 1993, and 25 bears (19 males, 6 females) during spring 1994. One bear was taken in defense of life and property.

Location and chronology of the Unit 22 harvest by sex is as follows:

Subunit	Fall 1993			Spring 1994	
	Males	Females	Unknown	Males	Females
22A	2	0		2	0
22B	1	3	1	11	3
22C	4	3		1	2
22D	2	3		3	1
22E	0	0		1	1

Unit 22 residents accounted for 43% of the legal harvest; other Alaskan residents and non-residents accounted for 18% and 39% of the harvest, respectively.

During the reporting period, staff participated in numerous meetings and impromptu discussions with Unit 22 residents and reindeer herders, discussing ways of reducing adverse bear/human interactions and bear predation on reindeer.

Department staff and Fish and Wildlife Protection officers traveled to villages on several occasions to explain the need for regulations and harvest reporting and to assist license vendors. As in past years, we devoted a substantial amount of time answering and making phone calls, writing newspaper articles, sending out mailings of regulatory materials, and assisting the Unit's license vendors.

Staff members spend additional effort each year sealing bears during the evening and weekends and in the surrounding villages. A village sealer is also available in Unalakleet to seal harvested bears taken in the southeast portion of the unit.

Progress Meeting Project Objectives: Limited progress has been made in reducing confrontations between bears and the public. Some individuals who had problems with bears in camps have made an effort to keep cleaner camps, discouraging bears.

Discussions with the Unit's reindeer herders about reducing bear/reindeer interactions caused some herders to spend more time with the reindeer and herd reindeer to areas with lower bear densities.

Many residents of Unit 22 dislike grizzly bears and openly express their desire to have them eliminated. Informing the public of the importance of wildlife conservation and the need for regulations has been effective, reflected by the increase in people purchasing licenses and bear tags. We need additional contact with local residents, particularly village, if compliance with current bear regulations is to become a reality.

We have not developed a grizzly bear management plan and updated population objectives. Staff, however, did take initial steps by communicating our intent with unit residents and representatives of several governmental agencies. We will use data from the recently completed bear study and information reported by the public in producing a Unit 22 bear management plan.

Project Location: Unit 23 (43,000 mi²)
Kotzebue Sound and the western Brooks Range.

Project Objectives and Activities:

- Maintain brown bear population densities between 1 bear/40 mi² and 1 bear/20 mi².

- Improve compliance with bear harvest reporting requirements by local residents
- Minimize adverse interactions between bears and the public.

Work Accomplished During the Project Segment Period: We continued to provide information on the new subsistence brown bear season to local hunters and collected harvest data. We issued 97 registration permits to brown bear hunters in the Northwest Alaska Brown Bear Management Area during the 1992-93 season. Eighty-five hunters reported taking 12 bears (7 males and 5 females). Ten of the 12 bears taken were from Unit 23. We issued permits for the 1993-94 season; harvest reporting is in progress.

We monitored the nonsubsistence, general hunting season through sealing requirements, and the following harvest was documented:

Trophy Hunt	Fall 1993			Spring 1994		
	Male	Female	Unknown	Male	Female	Unknown
Local Resident	1	0	0	3	2	0
Nonlocal Resident	8	3	0	3	0	0
Nonresident	6	1	0	5	0	0
DLP/accidental	1	0	0	1	0	0
Total	16	4	0	12	2	0

Progress Meeting Project Objectives: Based on incidental observations and reports from local residents and hunters, brown bear numbers in Unit 23 are stable or increasing. With a lower reported harvest and abundant ungulate prey, we are probably meeting the objective of 1 bear per 20-40 mi².

In order to improve harvest compliance, we mailed out permits to those hunters that received a permit the previous year and called hunters who had not responded by mail. We anticipate 2-3 years will be needed to familiarize local residents with the new subsistence regulations.

Project Location: Unit 26A (53,000 mi²)
Western North Slope

Project Objectives and Activities:

- Maintain brown bear population level at existing levels in Unit 26A.
 - Monitor the harvest through the statewide sealing program.
- Minimize adverse interactions between bears and the public.

- Develop updated population management objectives in consultation with the public and other agencies.

Work Accomplished During the Project Segment Period: During June of 1992 staff conducted a mark-recapture census in the Utukok and Kokolik drainages in Unit 26A West (west of 159° longitude) using radiocollared bears as the "marked" animals. We estimated a density of 7.7 bears/100 mi², and a 95% confidence interval of 7.3 to 8.2 bears/100 mi².

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

We have not yet received all of the data on harvested bears for 1993-94. Based on the information currently available, 26 bears were reported harvested during 1992-93. One was taken in defense of life and property, and the cause of death for 2 is unknown. In Subunit 26A West, 4 bears were killed, and in Subunit 26A East (east of 159° W. longitude), 22 bears were killed. Eighteen bears were males, 5 were females, and 3 were unknown. The mean skull size for harvested males was 20.7 inches and 19.7 inches for females. Two bears were harvested during August, 12 during September, 2 during October, 4 during April, and 6 during May. Aircraft were used for transportation by 12 hunters, snowmachines by 5 hunters, boats by 5 hunters, 2 hunted by foot, and 2 were unknown. The mean number of days per hunt was 4.8. Twelve of the successful hunters were nonresidents and 14 were residents, including 4 who were local residents of Unit 26A.

We distributed information through the media describing safe camping practices regarding food and garbage and the correct handling of problem bears. We placed posters and pamphlets on bear safety in public locations.

Progress Meeting Project Objectives: If we assume safe harvest limits should not exceed 4% of the population, the allowable sustained yield for Subunit 26A is approximately 36 to 47 bears. The reported grizzly bear harvest for 1993-94 of 26 bears is well below this allowable limit. Even if unreported harvest is as high as 50% of the reported harvest, the actual harvest of 39 bears would still be within safe harvest limits. In Subunit 26A East where most of the bears were killed during 1993-94, the current harvest of 20 bears was within the allowable limit (20-28). We should consider liberalizing the limit for bears in Unit 26A.

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 was well received.

Segment Period Project Costs:

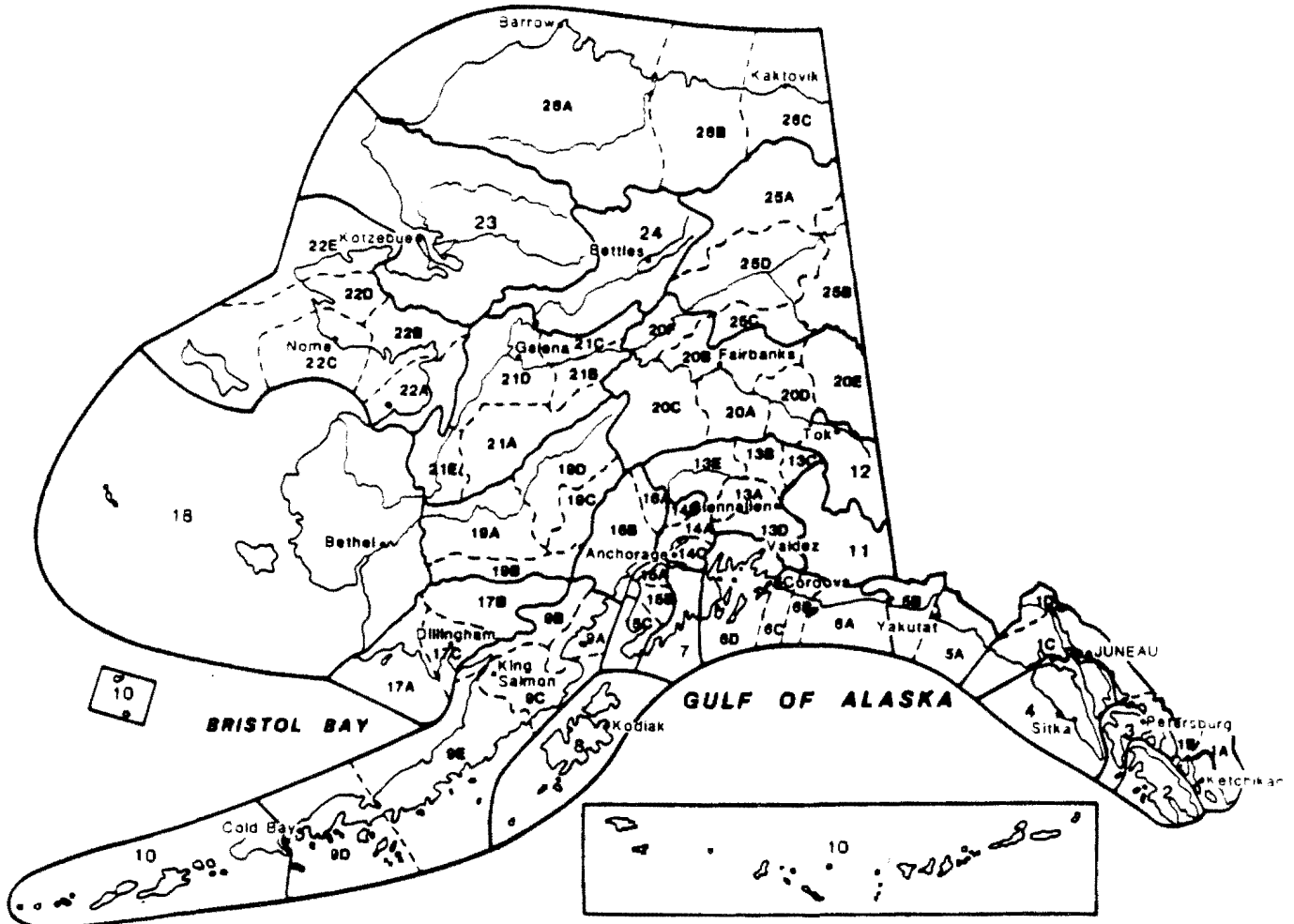
	<u>Personnel</u>	<u>Operating</u>	<u>Total</u>
Planned	27.0	6.8	33.8
Actual	27.0	10.0	37.0
Difference	0	+3.2	+3.2

Explanation: Cost of removing telemetry collars in Unit 22 was higher than anticipated.

Submitted By:

Steven Machida
Survey-Inventory Coordinator

Alaska's Game Management Units



The Federal Aid in Wildlife Restoration Program consists of funds from a 10% to 11% manufacturer's excise tax collected from the sales of handguns, sporting rifles, shotguns, ammunition, and archery equipment. The Federal Aid program distributes funds to states using a formula based on each state's geographic area and number of paid hunting license holders. Alaska receives a maximum of 5% of revenues collected each year. The Alaska Department of Fish and Game uses its funds to help restore, conserve, and manage wild birds and mammals. These funds are also used to educate hunters to develop skills and attitudes for responsible hunting. Federal Aid funds paid for 75% of this study.

