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BROWN BEAR

Susan M. Abbott, Editor

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Project Title: Southeast Brown Bear Population Management

Project Location: Unit 1 (18,500 mi^2) - Southeast Alaska mainland from Dixon Entrance to Cape Fairweather and those islands east of Clarence Strait from Dixon Entrance to Camano Point and all islands in Stephens Passage and Lynn Canal north of Taku Inlet

Project Objectives: Maintain an average age of harvested males of no less than 6.5 years with a male:female harvest ratio of at least 3:2; and reduce the number of bears killed because of garbage habituation.

Work Accomplished During the Project Segment Period: For the third consecutive season, we collected harvest data through mandatory registration permits. All hunters who obtained permits were required to report on the outcome of their hunts. Additionally, all successful hunters were required to present hides and skulls for sealing within 30 days of the date of kill. Skulls from harvested bears were measured and a premolar tooth was extracted to determine age. We also collected additional harvest-related data and anecdotal information at the time of sealing.

Progress Towards Meeting Project Objectives: Twenty-eight brown bears were killed in Unit 1 during this report period. The harvest included 57% males, very close to our desired objective of 60% males. Harvest by subunit included 3 males and 1 female in Subunit 1A; 4 males and 3 females in Subunit 1B; 3 males and 1 female in Subunit 1C; and 6 males and 7 females in Subunit 1D. One of the bears killed in Subunit 1A came from Revillagigedo Island, which has been inhabited by black bears for centuries, but has not been known historically to support brown bears. Average size of male skulls was 22 8/16" (n=13), and of female skulls was 20" (n=9).

One hundred and forty-four permittees were unsuccessful, 154 did not hunt, and 2 have not yet returned their permits. Forty-four nonresident permittees took 6 bears. Age data were not available at the time that this report was prepared. Three bears were killed in defense of life or property (DLP) in Unit 1 during this report period; one each in Subunits 1A (male), 1B (female), and 1D (male). The incident in Subunit 1A occurred on the Unuk River where a moose hunter was charged unexplainably by a large boar.

Project Location: Unit 4 (5,800 mi^2)
Admiralty, Baranof, Chichagof and adjacent islands

Project Objectives: Unit 4 brown bear management objectives are to: a) maintain an average age of harvested males of no less than 6.5 years with a male:female harvest ratio of at least 3:2; and b) reduce the number of bears killed because of garbage habituation.

Unit 4 brown bear management activities were to: a) monitor the harvest, seal harvested bears, and analyze data; b) conduct aerial survey of sows and cubs on portions of alpine habitat on Admiralty, Baranof, and Chichagof islands; and c) monitor use of the Pack Creek viewing area on the Stan Price Wildlife Sanctuary.

Work Accomplished During the Project Segment Period: Registration permits were issued to bear hunters. Measurements were taken of the length and width of the skull, a premolar extracted, the hide examined for evidence of sex, and other pertinent data were noted. Teeth were aged by counting cementum annuli. Reduction of brown bear loss to DLP incidents was attempted 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 to prevent loss of bears to DLP, and promote public safety and bear awareness.

Progress Towards Meeting Project Objectives: Data on the age of bears taken in the harvest were not available by report time. One hundred forty bears were harvested in 1991-92, of which 94 were male and 45 female. Two bears were reported killed in DLP incidents, fewer than in previous years. Five bears were taken illegally. Over 1,100 people visited the Stan Price Wildlife Sanctuary to view brown bears.

Project Location: Unit 5 (6,235 mi^2)
Cape Fairweather to Icy Bay, eastern Gulf of Alaska coast

Project Objectives and Activities: Unit 5 brown bear management objectives are to: a) maintain an average age of harvested males of no less than 6.5 years with a male:female harvest ratio of at least 3:2; and b) reduce the number of bears killed because of garbage habituation. Unit 5 brown bear management activities are to monitor the harvest, seal harvested bears, and analyze data. Bears were sealed in Yakutat and Anchorage. Harvest was analyzed from sealing certificates.

Progress Towards Meeting Project Objectives: Although age data was not available at the time of report preparation, the project objective of male:female kill ratio (3:2) was exceeded (3.4:1). The sport harvest of 40 bears was higher than the number taken last year (33) and is well above the 1985-1989 average of 29. A total of 211 days were expended for the successful hunters, an average of 5.3 days per hunter. Four of the 40 kills came from Subunit 5B, the remainder from Subunit 5A.

Segment Period Project Costs:

	Personnel	Operating	Total
Planned	$19.5	$8.2	$27.7
Actual	$19.5	$8.2	$27.7
Difference	0	0	0

Submitted by:

W. Bruce Dinneford
Management Coordinator

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

Project Locations:

Unit 6 (10,150 mi^2)
Prince William Sound and north Gulf Coast

Units 7 and 15 (8,400 mi^2)
Kenai Peninsula

Unit 8 (5,100 mi^2)
Kodiak and adjacent islands

Units 9 and 10 (36,250 mi^2)
Alaska Peninsula and Unimak Island

Unit 11 (12,800 mi^2)
Wrangell Mountains

Units 13 (23,400 mi^2)
Nelchina Basin

Unit 14 (6,600 mi^2)
Upper Cook Inlet

Unit 16 (12,300 mi^2)
West side of Cook Inlet

Unit 17 (18,800 mi^2)
Northern Bristol Bay

Project Objectives:

Unit 6: Maintain a brown bear population that will sustain an annual harvest of 35 bears composed of at least 60% males with a minimum average male skull size of 23 inches.

Units 7 and 15: Maintain an estimated population of 250 brown bears with a sex and age structure that will sustain a harvest composed of at least 60% males.

Unit 8: Maintain a brown bear population that will sustain an annual harvest of 150 bears composed of at least 60% males.

Units 9 and 10: Maintain a high brown bear density with a sex and age structure that will sustain a harvest composed of 60% males with at least 50 males 8 or more years old taken during the combined fall and spring season.

Unit 11: Maintain a brown bear population that will sustain an annual harvest of 25 bears composed of at least 50% males.

Unit 13: Maintain a population of 1,200 brown bears with a sex and age structure that will sustain a harvest composed of at least 60% males.

Unit 14: Maintain a population of at least 160 brown bears and a sex and age structure that will sustain a harvest composed of at least 60% males.

Unit 16: Maintain a brown bear population that will sustain an annual harvest of 50 bears composed of at least 50% males.

Unit 17: Maintain a brown bear population that will sustain an annual harvest of 50 bears composed of at least 50% males.

Work Accomplished During The Project Segment Period:

Unit 6: We completed aerial surveys to count numbers of tracks and dens in snow-covered alpine habitat on 24 April. We surveyed the Port Gravina and Port Fidalgo areas of Subunit 6D to obtain an index to the number of bears present immediately after den emergence. We flew a 200 mile linear transect, located 8 dens and saw 14 sets of tracks not associated with these dens. We estimated density at 0.10-0.25 bears/mi^2.

Twenty-five bears (13 males and 12 females) were harvested during fall 1991. The mean skull size for males taken during fall was 22.2 inches; males comprised 52% of the harvest. Preliminary harvest data for spring 1992 indicated 15 additional bears (11 males and 4 females) taken. Males comprised 73% of the take, and mean skull size for males was 24.7 inches. Final harvest numbers for spring will be available during fall 1992.

Units 7 and 15: Preliminary harvest reports indicate that annual harvest levels are stable and within management objectives. Eight bears (4 males and 4 females) were harvested in the fall including 1 female bear in Unit 7. An additional 3 male bears were reported in spring 1992 (all from Subunit 15C). Preliminary data show 64% were male bears. Final harvest numbers and statistics will be available in November 1992.

Two adult brown bears were also reported dead from natural causes in Unit 7. One brown bear reported in the harvest during spring 1992 was aged as a yearling. The hide and skull were seized and citations issued.

Unit 8: U.S. Fish and Wildlife Service (USFWS) personnel conducted aerial composition surveys along selected streams on the Kodiak National Wildlife Refuge from 17 July through 21 August 1991. Composition of the 1,024 bears observed in 9 replicate surveys was: 52% single; 15% maternal females; 13% cubs less than 1 year old and 21% cubs greater than one year old.

A study of survival and productivity of female brown bears, funded by the Kodiak Brown Bear Research and Habitat Maintenance Trust, was being done cooperatively with the USFWS. Forty-three radio-collared females were being monitored in December 1991. Survival of 86 cub litters, totaling 203 cubs, was 45% to weaning. The leading sources of mortality in adult females were natural causes (48%) and hunting (26%).

Hunting permits were issued to 529 people and 447 hunters reported going afield. During the 1991 fall season, 229 permits were issued, 175 hunters went afield, and 39 bears were killed. During spring 1992, 300 permits were issued, 272 hunters went afield, and 114 bears were killed. Total annual harvest was 153 bears and was comprised of 95 males (62%), 55 females (36%), and 3 unknown sex (2%). Alaska residents killed 64 bears(42%) and nonresidents killed 89 bears (58%). The mean skull size of males was 25.0 inches ($\underline{n}$ = 89) and for females it was 21.9 inches ($\underline{n}$ = 51). Fourteen males had skull sizes greater than or equal to 28.0 inches.

Nonsport mortalities included 9 bears killed in DLP incidents, 1 bear killed illegally, and 2 bears found dead. One other dead bear was found by a hunting guide, but no specimens were recovered.

At least 2 hunting guides negotiated exclusive hunting leases on land owned by Akhiok-kaguyak Corporation. Alaskan resident hunters, who seldom hire guides, may become increasingly confined to less accessible tracts of public land if this practice becomes more widespread.

An unusually high incidence of brown bear sightings and nuisance bear complaints near the town of Kodiak required frequent response in late summer and early fall 1991. One bear was killed when it damaged an occupied dwelling. Bears were frequently seen feeding on garbage at the municipal landfill and in dumpsters at several locations, as well as feeding on salmon in the nearby Buskin River.

Units 9 and 10: During 5-9 August 1991, we classified 739 bears at the Black Lake study area during 4 replicate aerial surveys; 49% were single, independent bears. An average of 185 bears was seen per survey.

The interagency Black Lake study continued during this report period. During early June 1991, 43 bears were captured, and routine monitoring of radio-collared bears continued.

The Exxon Valdez Oil Spill (EVOS) study of impacts of the 1989 oil spill continued and evolved into a cooperative study between the Alaska Department of Fish and Game (ADF&G) and the National Park Service (NPS) to evaluate the population dynamics of an unhunted population. In June 1992, 27 bears were captured in the study area. Radio-telemetry monitoring was on-going.

The brown bear hunting seasons in Unit 9 included general seasons from 7-21 October 1991 and 10-25 May 1992. Registration hunts for the Naknek and Cold Bay areas also occurred during fall 1991 and spring 1992. Only preliminary harvest data are available from these hunts. The fall 1991 harvest, including 4 Naknek and 2 Cold Bay bears, was approximately 271 bears. The spring 1992 harvest, including 1 Naknek and 2 Cold Bay bears is estimated at slightly over 270 bears. Only 1 bear was reported from Unimak Island during this report period.

Unit 11: We monitored the brown bear harvest in Unit 11 by sealing 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 1991-92 show 3 brown bears reported taken in Unit 11, well below the 10-year average of 8 bears per year. This harvest total could increase as spring 1992 certificates were still being processed. Local Alaskan residents took 2 (67%) brown bears and a nonlocal resident took 1 (33%). All bears sealed were males. Mean skull size for males harvested was 19.6 inches. Two successful bear hunters reported using aircraft as a method of transportation, and 1 reported using a highway vehicle. Successful hunters reported spending an average of only 2 days hunting in the field.

Unit 13: We monitored the brown bear harvest by sealing hides and skulls of all bears killed. We interviewed hunters at the time of sealing to determine hunting methods, means, success and effort.

Preliminary harvest data for the 1991-92 hunting season indicated 70 brown bears were taken by hunters while 3 females and 2 male cubs-of-the-year were killed in defense of life and property. This preliminary figure is 12 fewer bears than taken in 1990-91 and well below the previous 5-year average kill of 106. There were 34 bears (59% male) taken during fall 1991 and 41 (80% males) in spring 1992. This spring harvest figure could increase as sealing certificates were still being processed. Males comprised 71% (n = 53) of the overall harvest. During fall season, unit residents took 6 (18%) bears, other Alaskan residents killed 19 (56%) and nonresidents 9 (26%) bears. During fall, ORVs were the most popular method of transport (30%) followed by aircraft (27%) and highway vehicles (26%). Aircraft were the most prominent (56%) transportation method during the spring hunt followed by snowmachines (34%). Skull size and age data of the harvested bears were not available for this report.

Unit 14: A minimum of 17 bears killed in Unit 14 were presented for sealing. Nine were killed in Subunit 14A, and 6 in Subunit 14B. Three males were killed in defense of life or property, and 2 males were killed by trains. The hunter harvest was composed of 58% (n = 12) males. All bears killed by hunters were taken during the fall season.

Unit 16: A minimum of 22 brown bears were harvested in Unit 16 during 1991-92. Twelve were killed in Subunit 16A and 10 in Subunit 16B. This preliminary harvest had 15 (71%) male bears.

Unit 17: Preliminary data indicate a reported harvest of 36 brown bears, including 17 males (50.0%), 17 females (50.0%), and 2 of unknown sex during this report period. Average skull size was 22.2 inches for males and 20.2 inches for females. Nonresident hunters reported killing 30 bears (83%), nonlocal residents killed 2 bears (5%) and unit residents killed 4 bears (11%). Most successful hunters used aircraft for access (78%). The average length of hunt for successful hunters was 5.2 days.

Thirty-one bears (12 males, 17 females, 2 unknown) were killed during fall 1991 and 5 bears (5 males) were killed during spring 1992. Three bears (2 males, 1 female) were killed in Subunit 17A, 23 (9 males, 12 females, 2 unknown) in Subunit 17B, and 10 (6 males, 4 females) in Subunit 17C.

Two brown bears were found dead along the Dillingham road system during this report period. A young female bear was shot in the Aleknagik dump and left where it was killed. Only the paws and the gall bladder were removed from this bear. The other, an adult male, was found along the Snake Lake road where it had obviously been hauled and dumped over a cutbank. There were no reports of bears killed in defense of life or property in Unit 17 during this report period.

Progress Towards Meeting Project Objectives:

Unit 6: Harvest in Subunit 6D has exceeded the range of estimated sustainable yield for the past 5 years. To meet objectives in that subunit, the fall hunt has been closed on Montague Island and the fall season has been reduced by 30 days in the rest of Subunit 6D. Objectives were achieved in the other portions of Unit 6.

Units 7 and 15: Following the reduction in the 1989 season, the brown bear harvest apparently declined slightly and stabilized at objective levels. Sample sizes are small and it is difficult to detect a significant change in harvest levels. No changes in seasons or bag limits are recommended at this time.

Unit 8: The 1991-92 harvest of 153 bears with 63% males met project objectives. The brown bear population trend appeared stable, and the harvest level was conservative. Population trend assessment was imprecise, requiring a conservative harvest regime. Brown bear habitat in most of Unit 8 was relatively intact at this time, however, logging, recreational and commercial development of remote lands, village expansion, and hydroelectric power projects threaten habitat integrity.

Project objectives should be made more specific to include the objective of managing bear populations for all user groups. Research and management activities should be directed

at minimizing bear-human conflicts, identifying and protecting important habitat, assessing population trend, and quantifying nonhunting mortality.

Units 9 and 10: The extrapolated population estimate for Unit 9 is 5,680 bears on 23,500 mi^2 (not including several National Parks closed to hunting). This represents an overall density of one bear per 4.1 mi^2. Harvest age data was unavailable, but approximately 67% of the harvest were males. Stream survey results and preliminary analysis of harvest statistics indicate the population objectives are being met. We estimate the annual allowable harvest at 280 bears for Unit 9. While the Unit 9 harvest has apparently stabilized, harvests in Subunit 9E, the most heavily hunted subunit, may be exceeding desired levels. The drawing permit hunt for Unimak Island continues to limit hunting effort and produce a highly aesthetic hunting opportunity.

Unit 11: Current known bear harvests in Unit 11 are much lower than the estimated sustainable harvest and are considered to have no negative impact on the unitwide bear population. The proportion of males in the harvest exceeds the 50% minimum stated in management guidelines for brown bear harvest in this unit. Though population data for brown bears in Unit 11 is not available, field observations of bears by ADF&G staff and the general public suggest an abundant and well distributed brown bear population. We attribute the low harvests of the past decade to increased restrictions on both sport hunting and access for subsistence hunting by the NPS since 1979, when all the unit was included in Wrangell-St. Elias National Park and Preserve. No changes in season dates and bag limits will be proposed, as current guidelines are being met.

Unit 13: Preliminary harvest figures for the 1990-91 season suggested the number of brown bears taken in Unit 13 declined from the previous year's kill. The current brown bear harvest is well below the record high harvests of the mid to late 1980s. The percent males in the harvest increased this year and was above the 60% management guideline for brown bear harvests in Unit 13. To reduce the number of females in the harvest the 1990 fall brown bear season was shortened 10 days by delaying the opening to 10 September. Historically, females have comprised a higher proportion of the bears taken in early September by hunters primarily seeking moose and caribou. This change was apparently successful as the percent of males in the fall harvest exceeds that of females.

Spring harvests have increased over the past three years and now approach harvest levels observed during the mid-1980s. Although spring harvests are predominantly comprised of males, the total harvest in some areas has exceeded the sustainable harvest. Of particular concern is Subunit 13E which contributed 44% (n = 20) of the spring 1991 take and 66% (n = 27) in 1992. The 1992 spring take was the highest ever reported in Subunit 13E. Because this is the third consecutive year the brown bear kill has exceeded the estimated allowable take in Subunit 13E because of high spring harvests, I recommend a reduction in the length of the spring season. Because brown bears are more vulnerable early in the spring season, I recommend establishing the opening date of 25 April for spring bear season in Subunit 13E.

Unit 14: The 1991-92 harvest exceeded the total allowable harvest for the current population estimate. The female bear harvest also exceeded conservative levels of harvest. Short spring brown bear hunting seasons and reduced fall open seasons were deemed appropriate for maintaining a stable population. These season changes were recommended and adopted by the Board of Game.

New 5-year population and human-use objectives were drafted for Unit 14. The proposed population objective is to maintain a population of at least 150 brown bears in the face of increasing human population and development. The human-use objective is to provide an opportunity to allow low levels of human harvest in Subunits 14A and 14B by hunting as long as it does not conflict with maintaining the population objective. Average annual harvests (including defense of life or property kills) should not exceed 8 bears with at least 60% of the harvest being males.

Unit 16: Preliminary harvest data are incomplete, however the 1991-92 Unit 16 bear kill may not have reached the harvest objective of 50 bears. Harvest composition apparently was within objective standards. We estimate that portions of the Unit 16 brown bear population are declining based on indications that fall bear hunting effort had increased while harvest of bears declined.

New 5-year population and human use objectives were drafted for Unit 16. The proposed population objective is to maintain a brown bear population that appears largely unaffected by human use. The proposed human use objective allows optimum opportunity to hunt brown bears with an annual average (3-year) harvest of 50-60 bears which includes less than 2 female bears >3 years old from Subunit 16A and less than 17 female bears >3 years old from Subunit 16B.

Unit 17: 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. Without adequate population data or harvest data it is difficult to manage this population.

A joint ADF&G/USFWS research project began during spring 1992. 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 Unit 18). The project is funded by the USFWS and was initiated in response to liberalized bear hunting and reporting regulations in the area.

During their spring 1992 meetings, the Board of Game and the Federal Subsistence Board adopted regulations allowing subsistence harvests of brown bears in Unit 18 and portions of Subunits 17A and 17B. Subsistence hunters are allowed to take 1 bear per year by registration permit. A bear tag is not required. Hunters must salvage the meat and report their kill to ADF&G. Hides and skulls are not required to be sealed if they remain in the unit where they were harvested.

In an effort to reduce nuisance bear complaints and illegal kills, we began a public education effort. 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. ADF&G is working with local city and village government representatives and the Dillingham city police to enforce existing regulations when bear problems are caused by improper food or garbage storage.

Segment Period Project Costs:

	Personnel	Operating	Total
Planned	30.1	12.8	42.9
Actual	31.1	6.1	37.2
Difference	-1.0	+6.7	+5.7

Submitted by:

Ken Pitcher and John Trent
Management Coordinators

Project Title: Region III Brown/Grizzly Bear Population and Habitat Management

Regional activities for managing grizzly bears include sealing harvested bears, monitoring harvest, and analyzing harvest data on a game management unit basis.

Project Location: Unit 12

Project Objectives and Activities: Manage the grizzly bear population at a level capable of sustaining a harvest of 25 bears annually.

Work Accomplished During the Project Segment Period: Hunters reported taking nine grizzly bears (five males and four females) in Unit 12 during FY92. Seven bears were taken during fall and two during spring. Two male bears were taken in defense of life or property. The harvest was lower than the 5-year average of 16.

Progress Toward Meeting Project Objectives: The management objective of sustaining a harvest of 25 bears unitwide has not been met since 1985. Local declines in the bear population and more restrictive hunting regulations beginning in 1990 have probably been the key factors. In response to the regulation change, fewer local hunters have hunted bears. Local hunters took 27% of the harvest before the regulation change. Harvest data show that the Unit 12 grizzly bear population can sustain higher harvest, but probably not 25 per year without declining unitwide. Beginning on 1 July 1992, the grizzly bear bag limit will return to one bear (not accompanied by cubs) per year. The project objective was modified to allow more hunting opportunity but not allow a substantial population decline. The new objective is to manage harvests so that the 3-year mean harvest does not exceed 25 bears and has at least 55% males in the harvest.

Project Location: Unit 19

Project Objectives and Activities:

1. Manage grizzly bear populations to provide a mean annual harvest of 30 bears with a minimum of 50% males in the harvest.
2. 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.

Work Accomplished During the Project Segment Period: No data are available for the 1991-92 grizzly bear harvest in Unit 19. However, the increased season lengths probably led to slight increases in harvests. The 1991-92 harvest is expected to be about 40 bears in Unit 19, with the majority taken by nonresident hunters using aircraft for transportation.

Progress Toward Meeting Project Objectives: ADF&G has continued monitoring the Unit 19 harvest by sealing harvested bears. Efforts continued in area villages and fish camps to educate residents in an attempt to alleviate the chronic defense of life or property problems. The Board of Game established the Western Alaska Brown Bear Management Area, which includes a portion of this unit, to better meet the needs of local subsistence brown bear hunters.

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

Project Objectives and Activities:

1. In the Subunit 20A Mountains, manage harvests to sustain a 3-year mean annual exploitation rate of 10-15% of the estimated grizzly bear population ≥2 years old until 1992.
2. In Subunit 20B East (east of a line drawn north from Fairbanks through Haystack Mountain), manage total human-caused grizzly bear 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 sport harvest.
3. In the Subunit 20A Flats, 20B West, 20C, 20F, and 25C combined:
   a. 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 sport harvest.
   b. Manage the 3-year mean annual grizzly bear harvests from individual subunits with the following quotas: three from Subunit 20A Flats, three from Subunit 20B West, seven from Subunit 20C, seven from Subunit 20F, and six from Subunit 25C.

Work Accomplished During the Project Segment Period: ADF&G staff examined sealing certificates to provide preliminary information for this report. However, these numbers may represent some defense of life or property and research mortalities as well as hunter harvest.

In the Subunit 20A mountains (9,315 km^2), a preliminary count of sealing certificates indicates that 24 grizzly bears were harvested during 1989-90, 5 during 1990-91, and 11 during 1991-92. This results in a 3-year mean of 13 bears, which is approximately 13% of the estimated population of 97 grizzly bears ≥ 2 years old (1.04 bears/100 km^2). Reported harvest during 1991-92 includes 10 bears during fall 1991 (3 male, 5 female, 2 unknown sex) and 1 bear (male) in spring 1992.

In Subunit 20B East, 16 grizzly bears were harvested from 1989-90 through 1991-92, resulting in a 3-year mean of 5.3 bears per year. Sixty-three percent (10/16) of these bears were males.

From 1989-90 through 1991-92, 41 grizzly bears were harvested in Subunit 20A Flats, 20B West, 20C, 20F, and 25C combined, resulting in a 3-year mean of 14 bears per year. Seventy-five percent (30/40) of the known-sex bears were males.

The 3-year mean annual subunit grizzly bear harvests were 1.3 in Subunit 20A Flats; 3.0 in Subunit 20B West; 6.0 in Subunit 20C; 2.3 in Subunit 20F; and 1.7 in Subunit 25C.

Progress Toward Meeting Project Objectives: We met our objective to harvest 10-15% of the grizzly bears ≥ 2 years old in the Subunit 20A mountains through 1992. This objective had been set in cooperation with a research project to study the effects of harvest rates on grizzly bear population dynamics in the northcentral Alaska Range. Because this research project is now complete and the grizzly population has been declining in this area because of high harvests, we have revised objectives for this area as follows:

Subunit 20A Mountains:

1.a. Decrease harvest rates until at least 1995 by managing for 3-year mean annual harvests that include ≤ 3% of the adult females >6 years old and ≤ 6% of the grizzly bears ≥ 2 years old.

1.b. Cooperate with a research project W-24-1, Study 4.25 whose objectives are to: determine the length of time necessary for recovery or stabilization of a reduced grizzly bear population following reductions in human-caused mortality rates; and, measure the recovery responses in the dynamics of the population, especially female population size, total population size, and production and survival of offspring.

Harvest objectives for the remainder of the area were met, and we suggest no revisions in objectives at this time.

Project Location: Subunit 20D

Project Objectives and Activities:

1. In Subunit 20D south of the Tanana River, manage a stable grizzly 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 harvest.
2. In Subunit 20D north of the Tanana River, liberalize the season and bag limit to 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.

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

Work Accomplished During the Project Segment Period: The Board of Game adopted a regulation proposal to liberalize the grizzly bear bag limit in Subunit 20D north of the Tanana River from one bear every 4 years to one bear every year.

Two male and two female grizzly bears were sealed in Subunit 20D during the 1991-92 regulatory year. All four bears were taken south of the Tanana River. One of these bears was taken in the fall and three were taken during spring. No grizzly bears were taken north of the Tanana River.

Progress Toward Meeting Project Objectives: ADF&G staff sealed bears and analyzed harvest data. The harvest objective was met for the number of bears in southern Subunit 20D, but female harvest exceeded the objective. Harvest still remains below the northern Subunit 20D objective, and bag limits in this area were liberalized to increase harvest.

Project Location: Unit 21

Project Objectives and Activities:

1. Manage a grizzly bear population that will sustain a minimum annual harvest of 10 bears.
2. Reduce nuisance grizzly bears and the unreported harvest of those bears at fish camps during summer by increasing the legal harvest during the open season.

Work Accomplished During the Project Segment Period: One male bear was taken during spring in defense of life or property. Reporting of bears taken in defense of life or property is usually poor and an additional 3-5 bears may have been taken.

Progress Toward Meeting Project Objectives: Management is based on harvest data. We made minimal progress on changing the goals and objectives for the unit. We explained conservation education during school visits, which helped increase compliance with reporting harvest.

Project Location: Unit 24

Project Objectives and Activities:

1. Manage a grizzly bear population that 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.

2. Reduce nuisance grizzly bear complaints, increase sealing compliance, and reduce the unreported harvest of bears in the unit.
3. Work with U.S. National Park and U.S. Fish and Wildlife Service to determine grizzly bear density throughout the unit.

Work Accomplished During the Project Segment Period: Hunters harvested eight bears (6 males, 2 females) during the report period. Six bears were taken in the northern portion of the unit and 2 in the remainder of the unit. All were taken in fall.

Progress Toward 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 getting hunters to report harvest was made through conservation education during school visits and regulation changes that allow for the subsistence use of bears with minimum restrictions.

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

Project Objectives and Activities:

1. Maintain a mean annual harvest of less than 35 grizzly bears, while maintaining a minimum of 60% males in the harvest.
2. Determine population size and composition of grizzly bears in Subunit 25A by 1992.

Work Accomplished During the Project Segment Period: Harvest figures are unavailable for Subunits 25A, 25B, and 25D. Grizzly bear harvests remained stable in these subunits during the past 5 years, ranging from 5 to 8 bears yearly.

Progress Toward Meeting Project Objectives: The population harvest objective has consistently been met during the past 5 years. We made no progress determining the population size and composition of grizzly bears in Subunit 25A because of limited funds and a vacancy in the area biologist position during part of this report period. Population density estimates will probably not be made in this unit in the foreseeable future, and objective 2 should be deleted for FY93.

Project Location: Subunits 26B and 26C

Project Objectives and Activities:

1. Maintain a mean annual harvest of less than 25 grizzly bears, while maintaining a minimum of 60% males in the harvest.

Work Accomplished During the Project Segment Period: Current harvest figures are not available for Subunits 26B and 26C. Harvest levels increased substantially in alternate years beginning in 1987-88 in Subunit 26B when 13 bears were taken. The average annual harvest in Subunit 26B from 1986 to 1991 was 9.8. Annual harvests were substantially lower in Subunit 26C where the 1986-91 average annual reported harvest was 5.6 bears.

Progress Toward Meeting Project Objectives: Except for the 1990-91 season in Subunit 26B when the percent males in the harvest was 42.9, the objective of maintaining 60% males in the harvest has been consistently met in both subunits during the past 5 years. Reported annual harvests have never exceeded the objective of taking 25 bears or less in these subunits.

Segment Period Project Costs

	Personnel	Operating	Total
Planned	35.1	0.5	35.6
Actual	35.1	0.0	35.1
Difference	0.0	+0.5	+0.5

Submitted by:

Kenton P. Taylor
Management Coordinator

Project Title: **Western Alaska Brown Bear Survey and Inventory**

Project Location: Unit 18 (42,000 mi^2)
Yukon-Kuskokwim Delta

Project Objectives:

1. Maintain brown bear populations at existing densities in Unit 18.
   a. Monitor harvests through the sealing program 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 spring aerial surveys in the Kilbuck Mountains.
2. Minimize adverse interactions between bears and the public.
3. 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 about hunting season dates and bag limits, bear tag fee and sealing requirements, and other regulations pertaining to bear management. Brown bear management was also discussed at public meetings with special emphasis on the need for better harvest reporting. We contacted community leaders, hunters, and law enforcement personnel in an effort to minimize bear-human conflicts at camps and landfills. We posted public notices at communities on various ways to reduce adverse encounters between bears and the public.

Informal meetings occurred among representatives of the Association of Village Council Presidents (AVCP), USFWS, Subsistence Division, and local advisory committees to discuss better ways to obtain bear harvest information from subsistence hunters, provide more liberal seasons and bag limits for subsistence hunters, and eliminate bear sealing and tag fees requirements. Ideas and suggestions were incorporated into the Western Brown Bear Management Area proposal which was presented to the Board of Game during its Spring 1992 meeting. The Board of Game adopted this proposal with support from the USFWS, ADF&G, and the lower Kuskokwim Fish and Game Advisory Committee.

Cooperative efforts by the ADF&G and USFWS to fund reconnaissance flights of brown bear habitat in the eastern Kilbuck Mountains were proposed during December 1991. This funding has been secured by FWS for May and June 1992, and several flights have already been made.

The sealing of harvested bears normally occurs at villages, at the ADF&G office in Bethel, and at hunters' residences. One unguided hunter from Kwethluk harvested a bear during the September 1991 open season in the Kisaralik River drainage. A guided nonresident took a bear near Nyac during the September season. An estimate of the

unreported subsistence harvest is not available, but is believed to be substantial. After interviewing hunters from villages along the Kuskokwim River by telephone and through information provided by AVCP resource personnel, a minimum of 8 additional brown bears may have been taken by Kuskokwim area villages during spring 1992.

Progress Towards 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 or property this regulatory year even though some bears were apparently frequenting several landfills.

Public announcements, village meetings, and license vendor contacts about the need to purchase resident bear tags has improved regulatory compliance in Bethel, and among the Yukon River communities. However, non-compliance with regulations among Kuskokwim area villages remains a problem. Recent actions by the Board of Game to eliminate the $25 tag fee requirement for resident subsistence hunters, and the need to seal the skull and hide may significantly improve brown bear harvest reporting. Also, the longer seasons for brown bears in the Western Brown Bear Management Area make the regulations less intrusive to subsistence hunters, which should improve compliance.

Habitat protection of important areas used by bears is being achieved through comments provided to Habitat Division, and to the FWS Refuge Management Planning Team.

Improved bear harvest reporting and good quality bear density estimates within the heavily hunted areas in the Kilbuck Mountains and Kuskokwim Bay areas are needed. A proposed study by the FWS to radio-collar bears in the Kilbuck Mountains to obtain a capture-recapture density estimate has been proposed for spring 1993. Reconnaissance flights to identify bear use areas and bear sightings began during May 1992.

Project Location: Unit 22 (25,000 mi^2)
Seward Peninsula and that portion of the Nulato Hills raining west into Norton Sound

Project Objectives and Activities:

1. Maintain grizzly bear numbers at existing densities.
   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 interaction between bears and the public.
3. Begin development of a grizzly bear management plan in consultation with the public, interested local organizations, and other agencies.

Work Accomplished During the Project Segment Period: Known mortality during the report period was 46 bears (42 legal, and 4 defense-of-life-and-property). Of the bears legally taken, 27 were harvested during spring and the remaining 15 during fall. Sex composition of the legal harvest was 31 males, 10 females, and 1 sex unknown. Nonresidents accounted for 43% of the harvest. Thirteen bears were taken from Subunit 22A, 20 from Subunit 22B, 5 from Subunit 22C, 5 from Subunit 22D, and 3 from Subunit 22E. At least one premolar was collected from all harvested bears for use in several different studies currently in progress.

We expanded density data determined from the 3-year research study of the previous year to cover the western half of the unit (12,500 mi^2). The expanded population estimate for this area was 458 bears older than 2-years-old. A comparison by subunit of the density estimates, sustainable harvest estimates, and harvest suggested overharvest may be occurring in the western portion of Subunits 22B and 22C. These data also implied additional harvest could occur in Subunits 22D and 22E.

We held numerous meetings and impromptu discussions with unit residents and reindeer herders discussing possible ways to reduce adverse bear/human interactions and predation by bears on reindeer.

We made several trips to villages explaining the need for regulations and harvest reporting as well as assisting license vendors. We spent a considerable amount of time answering and making phone calls, writing newspaper articles, sending out mailings of regulation materials, and assisting the unit's license vendors.

Additional effort was expended sealing bears during the evening hours, on weekends and, depending on the circumstances, in the surrounding villages. A village sealer was also available in Unalakleet to seal harvested bears taken in the southeast portion of the unit.

Progress Towards Meeting Project Objectives: Limited progress was made in reducing confrontations between bears and the public. Some individuals who, in the past, have had problems with bears in camps have tried to keep cleaner camps to discourage bears. Discussions with the unit's reindeer herders resulted in some of them trying to reduce bear/reindeer interactions by spending more time with the reindeer, particularly at fawning time, and keeping reindeer in areas where bear densities appear lower.

We suspect that the unreported harvest of bears each year in Unit 22 is substantial. Many residents of the unit dislike grizzly bears, and openly express their desire to have them eliminated completely. Efforts to inform the public of the importance of wildlife conservation, and the need for regulations have been effective in some communities because the number of individuals purchasing licenses and bear tags has increased. Additional contact with local residents, particularly village residents, needs to occur if more complete compliance with current bear regulations is to become a reality.

Actual development of a grizzly bear management plan has not occurred, although we took initial steps during the past year by communicating with unit residents and representatives of several governmental agencies. We will use data from the recently completed bear study along with information reported by the general public and others to produce an effective Unit 22 bear management plan.

Project Location: Unit 23 (43,000 mi^2)
Kotzebue Sound and Western Brooks Range

Project Objectives:

1. Maintain brown bear population density at existing levels.
   a. Improve compliance with bear harvest reporting requirements by local Unit residents.
2. Minimize adverse interactions between bears and the public.
3. Develop updated population management objectives in consultation with the public and other agencies.

Work Accomplished During the Project Segment Period: An alternative set of brown bear hunting regulations for subsistence hunters was developed in Unit 23 during the report period. This involved extensive communication with the public, an attempt to estimate brown bear abundance throughout the Unit, and establishment of the Northwest Brown Bear Management Area by the Board of Game.

We compiled harvest data from sealing certificates submitted by successful bear hunters. A summary of the 1991-92 harvest by sex, hunter residency, and season is as follows:

	Fall 1991			Spring 1992		
	Male	Female	Unk.	Male	Female	Unk.
Local resident	1	0	1	9	2	0
Nonlocal resident	5	2	0	2	1	0
Nonresident	2	5	0	4	1	0
DLP/accidental	1	0	0	0	0	0
Total	9	7	1	15	4	0

Progress Towards Meeting Project Objectives: The Noatak brown bear research study completed 2 years ago indicated that the density of brown bears near the Red Dog Mine is high, and that the current harvest level in this area equals or exceeds the maximum harvest allowable for sustained yield of this population. This area should be censused by 1995 or 1996 to determine whether the new alternative subsistence hunting regulations reduced brown bear abundance. A technique to estimate brown bear population trends that is feasible for managers to apply on a regular basis is sorely needed in Unit 23.

Harvest data will be closely examined over the next several years to determine whether the subsistence hunting regulations will result in an increase in actual harvest.

Project Location: Subunit 26A (53,000 Mi^2)
Western North Slope

Project Objectives and Activities:

1. Maintain brown bear populations at current levels.
   a. Monitor the harvest through the statewide sealing program.
2. Minimize adverse interactions between bears and the public.
3. Develop updated population management objectives in consultation with the public and other agencies.

Work Accomplished During the Project Segment Period: Hunters reported harvesting 33 during 1991-92. In Subunit 26A West (west of 159^0 W. longitude), 11 bears were killed, and in Subunit 26A East (east of 159^0 W. longitude), 22 bears were killed. Twenty seven bears were males, 4 were females, and 2 were unknown. The mean skull size for harvested males was 20.0 inches, and 20.2 inches for females. Twenty six bears were harvested in September, 2 in October, 2 in April, and 3 were harvested in May. Aircraft were used for transportation by 31 hunters, and snowmachines by 2 hunters. The mean number of days per hunt was 5.6. Seventeen of the successful hunters were nonresidents and 14 were residents, including 2 who were local residents of Subunit 26A.

The current population estimate for bears in Subunit 26A is 900-1,120 bears; 400 bears are estimated in Subunit 26A West and 500-720 are estimated in Subunit 26A East (Reynolds 1989). This represents an increase from the pre-1987 population estimate of 645-780 bears.

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

Progress Toward Meeting Project Objectives: If we assume that safe harvest limits should not exceed 4% of the population, the allowable sustained yield for Subunit 26A is approximately 36-47 bears. The reported grizzly bear harvest for 1991-92 of 33 bears was within this limit. If Trent's (1989) estimate that the unreported harvest may approximate 38-54% of the reported harvest is accurate, an estimate of 45-51 bears harvested would result. This may slightly exceed 4% of the population. We conducted a census during summer 1992, and the finalized results will be reported in the next progress report. These results need to be examined, and a decision made as to whether the harvest remains within sustained yield limits.

There were no serious adverse encounters between brown bears and the public reported for Subunit 26A during 1991-92. The information distributed to the public on bear safety seemed to be well received.

Literature Cited

Reynolds, H. V. 1989. Unit 24-26 brown/grizzly 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 Dep. Fish and Game. Fed. Aid in Wildl. Rest. Prog. Rep. Proj. W-23-1, Study 4.0. Juneau. 189pp.

Trent, J. N. 1989. Subunit 26A brown/grizzly 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 Dep. Fish and Game. Fed. Aid in Wildl. Rest. Prog. Rep. Proj. W-23-1, Study 4.0. Juneau. 189 pp.

Segment Period Project Costs:

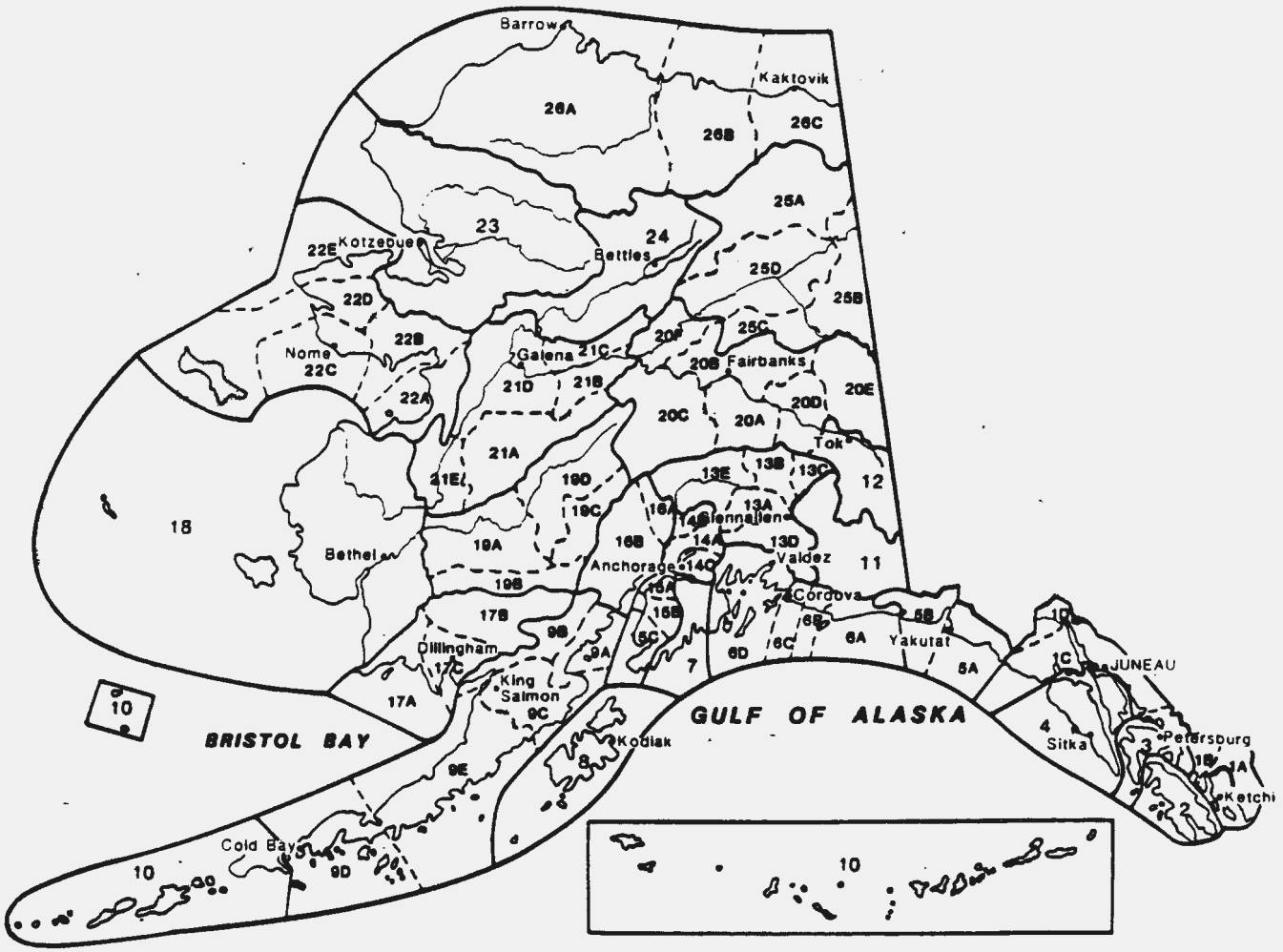
	Personnel	Operating	Total
Planned	27.0	6.8	33.8
Actual	27.0	4.2	31.2
Difference	0	-2.6	-2.6

Explanation: Reconnaissance flights in Unit 18 were funded by the USFWS resulting in a net cost savings.

Submitted by:

Steve Machida
Survey and Inventory Coordinator

Alaska's Game Management Units



WILDLIFE RESTORATION

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