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BROWN BEAR



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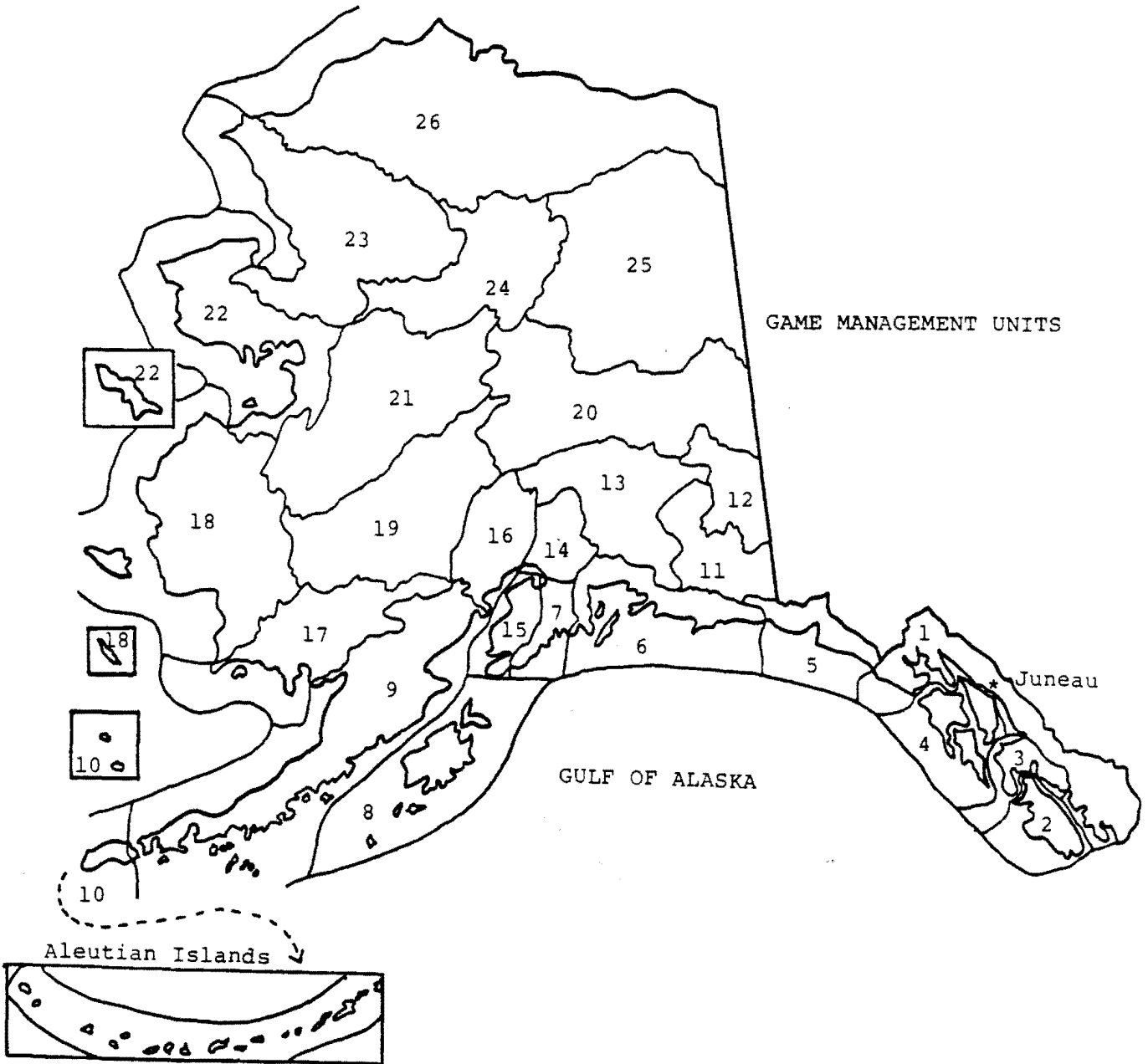
ARCTIC OCEAN

GAME MANAGEMENT UNITS

GULF OF ALASKA

Juneau

Aleutian Islands



PROJECT TITLE: Southeast Brown Bear Population Management

PROJECT LOCATION: Unit 1 (18,500 mi²)

The southeast Alaska mainland from Dixon Entrance to Cape Fairweather and those islands lying 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:

To 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.

To reduce the number of bears killed because of garbage habituation.

WORK ACCOMPLISHED DURING THE PROJECT SEGMENT PERIOD:

Data were collected during the mandatory sealing process. All successful hunters were required to present hides and skulls for sealing within 30 days of the harvest. Skulls were measured, and a rudimentary premolar was extracted for age determination. Other harvest-related data and anecdotal information were collected at that time.

One brown bear was attracted to garbage cans at a campground near Haines. Divisional personnel worked with state Park Rangers to aversively condition the bear, which has not returned. No other problems were reported.

PROGRESS TOWARDS MEETING PROJECT OBJECTIVES:

At 71%, the percentage of males in the harvest was above the management goal of 60%; however, the mean age for harvested males (6.2 years) fell short of the objective (6.5 years) for the second consecutive year. These harvest parameters have fluctuated over the past 5 years. No trend was apparent, but harvests will be closely watched to prevent local overharvests.

In an effort to maintain tighter controls on harvests and manage brown bears on a finer scale, a registration permit system has been implemented. Management quotas are being developed for discrete areas to meet the demands placed on individual populations as access increases, hunting and guiding patterns change, and resource development continues.

PROJECT LOCATION: Unit 4 (5,800 mi²)

Admiralty, Baranof, Chichagof, and adjacent islands.

PROJECT OBJECTIVES:

To 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.

To reduce the number of bears killed because of garbage habituation.

To monitor use of the Pack Creek viewing area.

WORK ACCOMPLISHED DURING THE PROJECT SEGMENT PERIOD:

Measurements were taken of the length and width of the skull, a premolar was extracted, the hide was examined for evidence of sex, and other pertinent data were noted. Age of teeth was determined by counting cementum annuli. Reduction of brown bear losses through defense of life or property (DLP) incidents (e.g., related to garbage habitation) was attempted through public education and interagency agreements. Biologists and technicians contacted visitors at Pack Creek throughout July and August to explain regulations of the Pack Creek Cooperative Management Area, prevent loss of bears to DLP, incidents, and promote public safety. The Pack Creek project was not funded by Federal Aid.

PROGRESS TOWARDS MEETING PROJECT OBJECTIVES:

The average age of harvested males was 6.6 years, exceeding the 6.5 years stated as a minimum objective. Males made up 65% of the total, while females composed 35%. The male:female ratio was 3.8:2.0, exceeding the minimum objective of 3:2.

PROJECT LOCATION: Unit 5 (5,800 mi²)

Cape Fairweather to Icy Bay, eastern gulf coast.

PROJECT OBJECTIVES:

To 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.

To reduce the number of bears killed because of garbage habituation.

WORK ACCOMPLISHED DURING THE PROJECT SEGMENT PERIOD:

Bears were sealed in Yakutat and Douglas. Anecdotal information was obtained from hunters during the sealing process. Harvest was analyzed from sealing certificates. Division staff met with Department of Environmental Conservation staff, who in turn visited the Yakutat landfill. The City of Yakutat was accordingly issued a noncompliance order, and further action is pending.

PROGRESS TOWARDS MEETING PROJECT OBJECTIVES:

Objectives were met during the reporting period. The male:female harvest ratio was 3:2, and the mean age of males was 6.4 years.

SEGMENT PERIOD PROJECT COSTS:

	<u>Personnel</u>	<u>Operating</u>	<u>Total</u>
Planned	24.3	6.0	30.3
Actual	28.0	5.0	29.3
Difference	-3.7	1.0	-2.7

Actual personnel costs are estimated. Operational costs were less than anticipated. Additional staff time was used responding to garbage-related problems in Hoonah and Angoon.

SUBMITTED BY:

David M. Johnson
Regional Management Coordinator

PROJECT TITLE: Southcentral Brown Bear Population Management

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

Units 7 and 15 (8,400 mi²)
Kenai Peninsula

Unit 8 (5,100 mi²)
Kodiak and adjacent islands

Units 9 and 10 (36,250 mi²)
Alaska Peninsula and Unimak Island

Unit 11 (12,800 mi²)
Wrangell Mountains

Unit 13 (23,400 mi²)
Nelchina Basin

Unit 14 (6,600 mi²)
Upper Cook Inlet

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

Unit 17 (18,800 mi²)
Northern Bristol Bay

PROJECT OBJECTIVES:

Unit 6

To maintain a brown bear population that will sustain an annual harvest of 35 bears composed of at least 60% males with a minimum average skull size of 23.0 inches.

Unit 7 and 15

To maintain an estimated population of 250 brown bears and a sex and age structure that will sustain a harvest composed of at least 60% males.

Unit 8

To maintain a brown bear population that will sustain an annual harvest of 150 bears composed of at least 60% males.

Units 9 and 10

To maintain a high bear density (population is currently estimated at approximately 5,700 outside national parks) with a sex and age structure that will sustain a harvest composed of 60%

males, with at least 50 males (≥ 8 yrs old) taken during the combined fall and spring season.

Unit 11

To maintain a brown bear population that will sustain an annual harvest of 25 bears composed of at least 50% males.

Unit 13

To maintain an estimated population of 1,200 brown bears and a sex and age structure that will sustain a harvest composed of at least 50% males.

Unit 14

To 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

To maintain a brown bear population that will sustain an annual harvest of 50 bears composed of at least 50% males.

Unit 17

To 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:

Monitor the harvest, seal harvested bears, and analyze data

Unit 6. Twenty brown bears were sealed in Cordova during the reporting period, and the total harvest for Unit 6 was 48 (sport harvest = 92%, DLP = 8%). Males, females, and unknowns represented 66%, 25%, and 9% of the harvest, respectively. The mean skull sizes and ages for males and females were 24.1 and 21.2 inches and 8.6 and 4.8 years, respectively. The spring and fall accounted for 66% and 34% of the harvest, respectively (i.e., 59%, 18%, 14%, and 9% were harvested in Units 6D, 6A, 6B, and 6C, respectively). Hunters used airplanes (50%), boats (41%), and other means (9%) to access hunting areas, and 9%, 25%, and 66% of the hunters were local residents, nonlocal residents, and nonresidents, respectively.

On 28 April a survey team located 13 brown bear dens and 52 sets of tracks, although some tracks may have been from the same bear. Montague Island produced 4 dens and 10 sets of tracks during 94 minutes of surveying. Hinchinbrook Island produced 8 dens and 34 sets of tracks in 68 minutes of surveying. Hawkins Island produced 4 sets of tracks in 12 minutes, and the Scott River

drainage of Subunit 6C produced 1 den and 4 sets of tracks in 28 minutes.

Units 7 and 15. The fall season was shortened by 14 days in 1989 to reduce the upward harvest trend. The 1989 season (10-25 May and 15 September to 15 October) resulted in a sport harvest of 5 bears (4 males, 1 female), representing 2.5% of the lower range of the current population estimate of 200 to 250 bears for Units 7 and 15.

Unit 8. Hides and skulls of brown bears killed were sealed in Kodiak before being transported out of the unit. Resident permits were issued by computer lottery, except for a small area of northern Kodiak Island where permit numbers were unlimited. Hunting activity was monitored in the field by periodic visits to hunting camps by state and federal enforcement personnel and biologists.

Permits were issued to 504 people, and 405 hunters reported going afield in 1989-90. During the fall of 1989, 215 permits were issued, 167 hunters went afield, and 45 bears (25 male, 20 females) were killed. In the spring of 1990, 231 permits were issued, 215 hunters went afield, and 106 bears (74 male, 32 females) were killed. The total harvest was 151 bears (99 males, 52 females). Residents killed 61 bears (40%); nonresidents killed 90 bears (60%). The mean skull size of males was 25.4 inches ($\bar{n}$ = 96), and the mean skull size of females was 21.6 inches ($\bar{n}$ = 49). Reported nonsport mortalities included 10 bears from DLP incidents and 10 bears from other causes.

Aerial composition surveys were conducted along selected streams on the Kodiak National Wildlife Refuge by U.S. Fish and Wildlife personnel. Composition of the 892 bears observed during 9 replicate surveys was 46% singles, 17% mature females, 6% 0.5-year-old cubs, 32% cubs >1 year old. A study of survival and productivity of female brown bears funded by the Kodiak Brown Bear Research and Habitat Maintenance Trust continued. A cooperative effort with the U.S. Fish and Wildlife Service (i.e., reproduction study) is scheduled for completion in 1992. Sixty-five radio-collared females were monitored in December 1989. Another study of interactions between deer hunters and brown bears is being conducted by the U.S. Fish and Wildlife Service on the Kodiak National Wildlife Refuge.

Units 9 and 10. The fall 1989 harvest in Unit 9 was a record 289 brown bears, (165 males, 113 females, and 11 unknowns); an additional 4 bears were reported as DLP kills, although it is believed the actual number is between 25 and 50 bears. The preliminary harvest during the spring 1990 season was 260 bears (194 males and 62 females). Slightly over 70% of the harvest during this reporting period was taken by nonresidents. On Unimak Island 3 males and 1 female were killed during the fall 1989 hunt, and 1 male was killed during the spring 1990 hunt.

Unit 11. Hunters killed 8 brown bears in Unit 11 during 1989, similar to the 10-year average of seven. Nonlocal Alaska residents harvested 6 (75%) bears; nonresidents, two (25%). The sex composition of the harvest included 5 (71%) males, 2 (29%) females, and 1 unknown. The mean skull size was 21.5 inches for males and 20.9 inches for females. Three successful bear hunters reported using aircraft as transportation, two used highway vehicles, and one each reported using a horse, an ORV, and feet. Successful hunters reported spending an average of 8 days afield.

Unit 13. Hunters killed 77 brown bears in Unit 13 during 1989, 12 more than in 1988 but well below the 5-year average of 116. Two male bears were killed in DLP incidents. Hunters took 26 bears (55% males) in the spring and 53 (60% males) in the fall. Males and females composed 59% ($n = 41$) and 41% ($n = 31$) of the overall harvest, respectively. Mean skull sizes were 21.2 and 19.3 inches for males and females, respectively. Unit residents took 7 (9%) bears, and other Alaska residents and nonresidents took 38 (49%) and 32 (42%) bears, respectively. Aircraft were the most popular means of transport (33%), followed by ORVs (18%), highway vehicles (16%), and horses (12%). Successful bear hunters spent an average of 3.8 days afield.

An aerial survey was conducted on 18 May 1990 to evaluate bear hunting effort and determine hunter concentration areas. Hunting effort was high in the Klutina Lake and River area in Unit 13D; elsewhere, hunting parties were scattered, but efforts were highest near major access points.

A meeting was held with divisional staff in an attempt to analyze the impacts of increased harvests on bear populations in various portions of Unit 13. Increased sport harvests since 1980 have reduced populations in tundra habitat types in Units 13A, 13B, and 13E, but the effects of a reduced population of bears on moose calf survivals were not determined. A JWM article is being prepared by staff on this topic.

Unit 14. In 1989 brown bear hunters harvested 12 bears: 2 from Unit 14A and 10 from Unit 14B; none were killed in Unit 14C. In addition to the harvest, 1 bear was killed in a DLP incident in Unit 14A. Resident hunters killed nine (75%) of the bears; nonresidents, three (25%). Of the 12 bears from Unit 14, six (50%) were males, four (33%) were females, and two (17%) were unknowns. For bears of known sex, the harvest composition was 100% males in Unit 14A and 50% males in Unit 14B.

All brown bears killed in Unit 14 were taken during the fall hunting season, and 10 of 12 bears (83%) were taken in September. The remaining 2 bears (17%) were killed in October. Successful hunters used a variety of transportation methods, but no method was dominant. Eight bears were killed by hunters using aircraft, horses, ORVs, and highway vehicles; 1 bear was taken using a boat. The transportation methods used to harvest 3 of the 12 bears were not determined.

Six of the 10 bears killed in Subunit 14B came from the Montana and Sheep Creek drainages, three from the Sheep River/Iron Creek drainages, and one along Sunshine Creek. Of the 2 bears killed in Unit 14A, one came from the Little Susitna River drainage and the other from the Matanuska River drainage.

Unit 16. Fifty-one brown bears were harvested in Unit 16 during 1989. Seven were taken in Unit 16A and 44 in Unit 16B. Thirty three (65%) of these were males, 13 (25%) were females, and five (10%) were unknowns. Eighteen of the 33 males had skull sizes greater than 24 inches. All of these large bears were taken during the spring season in late March, April, or May. The largest bear taken in the fall had only a 23.6-inch skull. Overall, 28 bears (24 males) were taken in the spring season and 23 (9 males) in the fall.

Unit 17. Hunters reported harvesting 29 brown bears, including 21 males (72%), 7 females (24%), and 1 unknown during this reporting period. Average skull size was 23.4 inches for males and 20.0 inches for females. Nonresidents reported killing 26 bears (90%), and 3 bears (10%) were taken by Alaska residents. All successful hunters used aircraft for access. The average length of hunt for successful hunters was 6.2 days.

Nineteen bears (10 males, 8 females, 1 unknown) were killed during the fall 1989 season, and 10 bears (all males) were killed during the spring 1990 season. One (unknown), 2 (1 male, 1 female), and 26 (20 males, 6 females) brown bears were killed in Units 17C, 17A, and 17B, respectively.

The decomposed carcass of an adult brown bear was found near the Dillingham city landfill. The sex and cause of death could not be determined, but it probably had died during the summer of 1989. Local residents say that at least 15 individual bears frequent the landfill.

Conduct composition surveys in Black Lake study area and along selected streams and identify and document important habitat

Unit 9. From 9 to 12 August 1989, 5 replicate aerial surveys (including 1 aborted survey that was "completed" by extrapolation from the other 4 surveys) were conducted at the Black Lake study area. A total of 904 bears were classified; 37% were single, independent bears. An average of 181 bears were seen per survey. Only 12% of the sample consisted of cubs of the year (COY), reflecting relatively poor production in 1989. On 13 August 1989 a survey was conducted on the east side of Becharof Lake from Bible Creek to Gas Rocks; 96 bears were observed. Single bears made up 60%, and 10% were COY.

A census conducted as part of the Interagency Black Lake Study revealed density estimates for several general habitat types of the Alaska Peninsula, ranging from a bear per 1 mi² to 1 bear per

7 mi². These estimates were used in a stratified extrapolation to estimate the bear numbers in Unit 9 by UCU area. Those estimates were used extensively at the spring 1990 Board of Game meeting and resulted in fall season modifications in some subunits in Unit 9.

PROGRESS TOWARDS MEETING PROJECT OBJECTIVES:

Unit 6

Although objectives were met, we are concerned about the harvest rates on major islands in Unit 6D. The length of the hunting season was reduced to 1 April-15 May on Montague Island to aid recovery of a population apparently depressed by hunting. Proposed timber harvest activities on Montague Island were a primary concern when the season reduction was recommended to the Board of Game in March 1990. Populations and allowable harvest levels will continue to be evaluated to prevent duplication of the problem on Montague Island.

Units 7 and 15

Over the past decade the sport and nonsport harvests of brown bears have steadily increased, reaching a reported average annual harvest of 15 for the past 4 years. This trend suggested that management action to reduce the overall harvest was needed to prevent it from exceeding annually sustainable levels. The elimination of the first 14 days of the fall season appeared to have accomplished the objective. At least 2 more regulatory years will be needed to fully evaluate the effect of the reductions for the 1989 season.

Unit 8

The 1989-90 harvest of 151 bears (66% males) met project objectives. The brown bear population trend appeared stable, and the harvest level was conservative. Lack of precise population trend assessment techniques limited management options. Aerial stream surveys and population simulation modeling are not always reliable indicators of trends.

Brown bear habitat in most of Unit 8 is relatively intact, but logging, development of remote lands for recreational cabins and commercial lodges, rural village expansion, and hydroelectric power projects pose threats to habitat integrity. Project objectives should be revised to provide direction for managing the brown bear population 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 mortalities.

Units 9 and 10

The extrapolated population estimate for Unit 9 is 5,680 brown bears on 23,500 mi², not including several national parks that are closed to hunting. This represents an overall density of 1 bear per 4.1 mi². Harvest age data were unavailable, but the average male skull size for the spring 1986 and 1988 seasons was 25.4 inches, the highest since 1971. Stream survey results and harvest statistics indicated that the population objectives were met; however, the trend of increasing harvests in Unit 9 is cause for concern. The Board of Game shortened the fall hunting season by 1 week beginning in 1991. The annual allowable harvest is estimated at about 280 bears for Unit 9. The drawing permit hunt for Unimak Island (Unit 10), which produces aesthetic hunting opportunities in an area of high brown bear density, continued to limit hunter effort.

Unit 11

Current harvests of brown bears are much lower than the estimated sustainable harvest and are considered to have little, if any, impact on the unitwide bear population. The proportion of males in the harvest exceeds the 50% minimum stated in the management objective. Although population data for brown bears in Unit 11 are not available, field observations of bears by ADF&G staff and the public suggested a relatively abundant and widely distributed population. The low harvests of the past 10 years have been attributed to increased restrictions on sport hunters as well as access for subsistence hunting by the National Park Service. In 1979 most of the unit was incorporated into the Wrangell Saint Elias National Park and Preserve. No changes in season dates and bag limits will be proposed because guidelines have been met.

Unit 13

The 1989 brown bear harvest in Unit 13 increased from that of the previous year, but it is well below the record-high harvests of the mid- to late 1980s. The percentage (59%) of males in the harvest is above the management objective (50%); however, to reduce the number of females in the harvest, the fall seasons were shortened (10 days) by delaying the opening to 10 September. Historically, females have composed a higher proportion of the harvest taken in early September by hunters primarily seeking moose and caribou. No other changes in season dates and bag limits were proposed.

Unit 14

Although no surveys to determine brown bear densities have been conducted, harvest data and incidental observations by Department staff and the public indicated that brown bears were relatively scarce in Units 14A and 14C but more abundant in Unit 14B. We believe that brown bear numbers have remained relatively low but stable during the past 5-10 years. In the past 3 years increased

bear sightings by the public indicated that bear numbers may have increased in portions of Units 14A and 14C. Based on comparisons of relative densities of bears in Units 14A, 14B, and 14C with known bear densities in other Alaska locations, an estimated 150-260 bears resided in Unit 14 during the reporting period. This estimate meets the population objective of at least 160 bears.

The percentages of males in the 1988 and 1989 harvests were 64% and 60%, respectively. Of the 43 bears of known sex harvested between 1986-1989, 60% were males. The brown bear density was relatively low in Unit 14, especially in Units 14A and 14C. The hunting seasons are relatively long and the unit is populated by more than 250,000 people. Given these conditions, the potential for overharvesting exists. Annual harvests, hunting pressures, and brown bear numbers will be carefully monitored to detect changes.

Unit 16

Reported harvest data suggest that the management objectives were met during this reporting period. The 1985-88 mean percentage of males in the harvest was 66%. In 1989, 65% of the 51 harvested bears were males. Since the initiation of the 1 September to 25 May season in 1984-85, the number of large males (24 inches or greater skulls) in the harvest has declined steadily (i.e., 31 in 1985 to 18 in 1989). The harvest of large bears in the fall has declined from a 1984-88 mean of 6 bears to zero in 1989. The harvesting of large bears in the fall is more a matter of chance than in the more selective spring harvest, where large bears are taken at or near den sites. This selectivity is shown by 1989 data, where 12 of 18 large bears were taken by guided nonresident hunters and 16 of the 18 were taken with the use of aircraft. It appears that the larger, older-age bears have been heavily exploited since 1985. Unless hunter preferences change, high harvest rates of older bears may lead to excessive harvests of smaller, younger bears, once older bears become difficult to find. Thus the number and sex ratio of harvested bears will be closely monitored over the next several years.

Unit 17

Reported harvest data suggest that the management objectives were met for the reporting period; however, no quantitative data are available on the population density of brown bears in the unit. Another difficulty in assessing the current status of brown bears is the paucity of information on the number of bears killed in defense of life or property and the magnitude of illegal harvests.

The Department should cooperate with the U.S. Fish and Wildlife Service and/or the National Park Service to fund a density estimate for at least a portion of the unit. We should also make an effort to encourage local residents to report all bears killed and educate them on nonlethal methods for dealing with nuisance

bears. The Department of Fish and Game and the Department of Environmental Conservation should work with the City of Dillingham and village governments to improve landfills so that they do not attract bears.

SEGMENT PERIOD PROJECT COSTS:

	<u>Personnel</u>	<u>Operating</u>	<u>Total</u>
Planned	87.7	30.8	118.5
Actual	87.7	29.6	117.3
Difference	87.7	-1.2	-1.2

Staff commitments related to the oil spill affected the level of field work possible during this period.

SUBMITTED BY:

Kenneth W. Pitcher and John N. Trent
Regional Management Coordinators

PROJECT TITLE: Interior Brown Bear Population And Habitat Management

PROJECT LOCATIONS: Unit 12 (10,000 mi²)
Upper Tanana and White River drainages,
including the northern Alaksa Range east of
the Robertson River, and the Mentasta,
Nutsotin, and northern Wrangell Mountains

Unit 19 (36,500 mi²)
Drainages of the Middle Fork and upper
Kuskokwim River upstream from the village of
Kalskag.

Unit 20 (50,400 mi²)
Tanana Valley, Central Alaska Range, White
Mountains, Tanana Hills

Unit 21 (44,000 mi²)
Middle Yukon River, including lower Koyukuk
River, Innoko River, and Melozitna River

Unit 24 (26,100 mi²)
Koyukuk River drainages upstream from the
Dulbi River

Unit 25 (53,100 mi²)
Eastern north slope of the Brooks Range

Units 26B and 26C (25,800 mi²)
Upper Yukon River drainage

PROJECT OBJECTIVES:

Unit 12

To effect temporary reductions in the grizzly bear population or extent of bear predation in areas where it is limiting moose population growth (e.g., fall calf:cow ratios $\leq 30:100$).

To sustain unitwide harvests of at least 25 bears.

To reduce bear harvests as well as stop or reverse bear population declines after moose populations increase to desired levels.

Unit 19

To provide a mean annual harvest of 30 bears with a minimum of 50% males in the harvest.

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

Unit 20A

To sustain a mean annual exploitation rate of 10-15% of the estimated grizzly population older than 2 years of age until 1992.

Unit 20B East

To provide a stable population with a mean annual harvest of no more than 8 brown bears and an average of at least 55% males in the harvest.

Unit 20C (Denali National Park)

To maintain a closed season on grizzly bears within Denali National Park.

To encourage efforts by the National Park Service to develop visitor guidelines and garbage disposal practices that reduce the potential for human-grizzly conflicts.

Units 20B West, 20C, 20F, and 25C

To provide stable populations with a combined mean annual harvest of up to 30 bears; i.e., maximum harvest of 10 bears per subunit.

Unit 20D

To manage a stable bear population.

To provide a mean annual harvest not to exceed 5% of the estimated population, including a minimum of 60% males.

To liberalize the season and bag limit in northern Unit 20D and increase the mean annual harvest of grizzly bears to 8-10% of the estimated population until moose calf survival increases.

Unit 20E

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).

To sustain harvests of at least 25 bears.

To reduce bear harvests to stop or reverse bear population declines after moose populations increase to desired levels.

Unit 21

To sustain a minimum annual harvest of 10 bears.

To reduce nuisance bears and the unreported harvest of those bears at fish camps during summer.

Unit 24

To 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.

To reduce nuisance bear complaints, to increase sealing compliance, and to reduce the unreported harvest of bears in the unit.

To work with U.S. National Park Service and U.S. Fish and Wildlife Service to determine bear density throughout the unit.

Unit 25

To maintain a mean annual harvest of less than 35 bears, while maintaining a minimum of 60% males in the harvest.

To determine population size and composition in Subunit 25(A) and 26 by 1992.

Units 26B & 26C

To maintain a mean annual harvest of less than 25 bears, while maintaining a minimum of 60% males in the harvest.

WORK ACCOMPLISHED DURING THE PROJECT SEGMENT PERIOD:

Overview

Current regulations require sealing of all brown/grizzly bears harvested in Region III. Results of sealing, harvest monitoring, and harvest data analyses have been provided by unit. Harvest data for the spring 1990 season are not yet available.

Management objectives were developed for brown/grizzly bear populations throughout the region during FY90. The FY87-92 Five Year Study Plan will be amended to reflect these revised management objectives. Future annual performance reports and management reports will provide information on progress toward these new objectives.

Monitor harvest, seal bears, analyze harvest data

Unit 12. Thirteen grizzly bears were sealed during the reporting period; 11 (85%) were taken in the fall, one in midwinter, and two in the spring. Females ($N = 8$) comprised 62% of the harvest, noticeably higher than the mean of 40% ($R = 22-55\%$) for the previous 5 years. Five of the 8 females were >5 years old. Alaska residents took 69% of the harvest.

Units 19, 21A, and 21E. During 1989, a harvest of 32 brown/grizzly bears was reported in Unit 19; 13 were males, 16 were females, and three were unknowns. Nonresidents harvested 27 (84%) of these. Most of the harvests in Units 21A and 21E are not reported. Only 3 bears (1 male and 2 females) were reported taken in Unit 21A, and none were reported for Unit 21E.

Unit 20. During 1989, 41 grizzly bears were reported taken by hunters (six in the spring and 35 in the fall). Fifty-six percent of the harvested bears were males. Seven bears were taken in defense of life or property in July and August of 1989. Distribution of the harvest was as follows: 20A, 22; 20B 10; 20C, 4; 20F 4; and 25C, 1 bears.

During the reporting period, 48 grizzly bears were reported taken; 57% of the harvested bears were males. The fall harvest was 35 bears, and the spring harvest was 13 bears. The distribution of harvest was as follows: 20A, 23; 20B, 12; 20C, 7; 20F, 4; and 25C, 2 bears.

Unit 20D. Harvest pressure for brown/grizzly bears is low in this unit. Only 2 males and 1 female were reported taken during the 1989 calendar year.

Unit 21. Most of the brown/grizzly harvest was by local residents; however, and reporting was poor. During the reporting period, 3 male bears were reported taken in Unit 21D.

Unit 24. During the reporting period, 10 bears were harvested. Nine were harvested in the fall, and one was harvested in the spring. Eight were males, and two were females. Eight bears were harvested in the Brooks Range, and two were harvested south of the Arctic Circle.

Unit 25. Hunters harvested 23 grizzly bears; 78% were from Unit 25A. Harvests were slightly less than last years take (25). Resident and nonresident hunters accounted for 8 and 15 grizzly bears, respectively. Males composed 64% of the harvest in Unit 25; 81% of hunters used aircraft for access, and they spent an average of 6.0 days afield.

Units 26B and 26C. Hunters harvested 23 grizzly bears during the reporting period; 78% came from Unit 25A. The harvest was slightly less than that for 1988-89 (25). Resident and nonresident hunters accounted for 8 and 15 grizzly bears, respectively. Males composed 64% of the harvest in Unit 25; 81% of hunters in the study area used air transportation, and they spent an average of 6.0 days afield.

PROGRESS TOWARDS MEETING PROJECT OBJECTIVES:

Unit 12

Diminished harvests during 1988 and 1989 indicate the objective of effecting temporary reductions in the grizzly bear population in Unit 12 has probably been achieved, at least in accessible portions of the area. The rationale for this objective was to lessen the extent of bear predation on moose. Improved calf:cow ratios during falls of 1988 and 1989 (i.e., an average of 32 calves/100 cows compared with 24 calves/100 cows before lowering bear populations) suggest a reduction in early calf mortality.

The harvest objective of sustaining an annual harvest of 25 grizzly bears in Unit 12 has not been met. The original harvest objective may have been unrealistically high. The lowering of harvests following recovery of moose populations has not been aggressively pursued. It is still uncertain whether the primary objective of benefitting moose population has been completely achieved. Nevertheless, the Board of Game reduced the bag limit to 1 bear/4 years for 1990.

Units 19, 21A, and 21E

Little progress has been made to increase legal harvests of brown bears in and around villages, fish camps, and other human habitations during open seasons in order to reduce human-bear conflicts during closed seasons. Incidental discussions with area guides and outfitters indicated no significant deviations from the previous year for bear distribution or abundance.

Unit 20

Management objectives for grizzly bears in the project area were based on management models that estimate grizzly population size, rather than solely on interpretation of harvest data. The change from harvest-based management to population-based management occurred during this project segment. Population-based management should allow more objective refinement of harvest goals and population objectives.

Unit 21B, 21C, and 21D

Management is based on harvest data. No progress was made on changing this goal nor on reduction of unreported harvest.

Unit 24

Management is based on harvest data, and harvests are below unit objectives. No progress was made in reducing unreported harvests or reducing bear complaints or in determining bear density.

Unit 25, 26B and 26C

Efforts to increase the reported harvest of bears by local residents have met with limited success. The reported harvest was less than the stated objective, and the percent males in the harvest is within management guidelines.

Management is based on harvest results and continues to be restrictive. All hunters may take a bear only every 4 regulatory years, and all nonresident hunters must obtain a drawing permit. The number of permits was increased from six to 10 in Unit 26C to provide more hunting opportunities. Permits in Unit 25 were reallocated between spring and fall seasons to increase the harvest of males in the spring and decrease harvest of females in the fall. Incidental observations indicated that grizzly bear numbers were increasing and management objectives met.

SEGMENT PERIOD PROJECT COSTS:

	<u>Personnel</u>	<u>Operating</u>	<u>Total</u>
Planned	32.1	1.0	33.1
Actual	32.1	1.0	33.1
Difference	0.0	0.0	0.0

SUBMITTED BY:

Kenton P. Taylor
Regional Management Coordinator

PROJECT TITLE: Arctic Brown Bear Population Management

PROJECT LOCATION: Unit 18 (41,200 mi²)
Yukon-Kuskokwim Delta

PROJECT OBJECTIVES:

To maintain brown bear populations at existing densities.

To monitor harvests through the sealing program and contacts with the public and improve compliance with bear harvest reporting requirements.

To minimize adverse human-brown bear interactions.

WORK ACCOMPLISHED DURING THE PROJECT SEGMENT PERIOD:

Local residents were advised of hunting season dates and bag limits, bear tag fees, sealing requirements, and other regulations pertaining to brown bear management by telephone, mail, radio and television and newspapers. Brown bears were also discussed at public meetings; special emphasis was placed on the need for better harvest reporting. Village leaders, hunters, and law enforcement personnel were contacted in an effort to minimize bear-human conflicts at camps and dumps. Public notices were posted at villages concerning different ways to reduce adverse encounters between bears and the public.

The sealing of brown bears took place at villages, the ADF&G office at Bethel, and hunters' residences. Two guided nonresident and 1 unguided resident hunters harvested 3 bears in the Kilbuck Mountains, and 1 unguided resident hunter harvested a bear along the Yukon River. An additional bear taken along the Yukon River was a DLP kill. Estimates of the unreported harvest are not available, but they are believed to be substantial.

PROGRESS TOWARDS MEETING PROJECT OBJECTIVES:

Public notices about problems with bears at community dumps has improved awareness of the need to clean up those areas in some villages. Only 1 DLP mortality was reported, even though some bears had been frequenting dumps. Some villages are improving landfill areas by fencing them in and burying or burning trash. More people are seeing the need to keep fish and hunting camps free of trash and garbage.

Public announcements, village meetings, and license vendor contacts concerning the need to purchase resident bear tags have improved compliance in some villages; however, many subsistence hunters fail to purchase tags because they consider it a "trophy" fee not applicable to their type of hunting. Weekly notices

concerning the need for sealing bears were sent during April and May to villages that traditionally harvest some brown bears, resulting in increased public awareness of the need for harvest information. However, until a significant number of hunters begin purchasing resident bear tags, most harvested bears will probably not be sealed. The \$25 bear tag is a significant "stumbling block" that discourages many local residents from reporting their harvest. Hunting season announcements have eliminated some of the problems with out-of-season and DLP kills.

Protection of important areas used by bears is being achieved through comments provided to Habitat Division and to the U.S. Fish and Wildlife Service Refuge Management Planning Team. Research on brown bear populations will probably become more important if harvests increase substantially or habitat disturbances become a problem. Improved harvest estimates are especially needed. Methods for assessing density and population status are needed as well. Investigations concerning the applicability of aerial stream surveys as a population assessment tool should be initiated.

PROJECT LOCATION: Unit 22 (25,200 mi²)
Seward Peninsula and that portion of the
Nulato Hills draining west into Norton Sound

PROJECT OBJECTIVES:

To maintain grizzly bears numbers at existing densities.

To minimize adverse interaction between bears and the public.

To develop 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 reporting period was 56 bears (i.e., 47 legals, 8 DLPs, and 1 illegal). Of those bears legally harvested, 27 were taken during the spring and 20 during the fall (35 males, 12 females). Nonresidents accounted for 32% of the harvest. Nine bears were taken from Unit 22A, 19 from Unit 22B, 11 from Unit 22C, eight from Unit 22D, and one from Unit 22E.

At least one premolar was collected from all harvested bears. Tissues were collected from 29 of the bears for Trichinosis determination. Numerous meetings were held with unit residents and reindeer herders to discuss possible ways of reducing bear-human interactions and predation by bears on reindeer.

A school program developed several years ago explaining the importance of wildlife management concepts, rules, and

regulations was used extensively throughout schools in Unit 22. Several trips were made to villages to explain the need for regulations and harvest reporting as well as to assist license vendors. A considerable amount of time was expended 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 locally during the evening hours and on weekends as well as in the surrounding villages. A village sealer was also available in Unalakleet to seal harvested bears in the southeastern portion of the unit.

PROGRESS TOWARDS MEETING PROJECT OBJECTIVES:

Limited progress has been made during past years in reducing confrontations between bears and the public. Some individuals, who in the past have had problems with bears in camps, have made an effort to keep cleaner camps to discourage them. Discussions with reindeer herders have resulted in some of them making attempts at reducing bear-reindeer interactions by spending more time with the reindeer, particularly at fawning time, and keeping them in areas where bear densities appear to be lower.

The unreported harvest of bears each year in Unit 22 is substantial. Many residents dislike grizzly bears and openly indicate their desire to have them eliminated completely. Efforts to inform the public of the importance of wildlife conservation and the need for regulations are starting to bear fruit in some communities; i.e., the number of individuals purchasing licenses and/or bear tags has increased. Additional contacts with local residents, particularly village residents, need to take place if more complete compliance with regulations is to become a reality.

Actual development of a grizzly bear management plan has not taken place, although initial steps were taken during the reporting period through communication with unit residents and representatives of several governmental agencies. The grizzly bear research program currently under way will hopefully yield needed information on bear densities and productivity. These data, coupled with information reported by the general public and others, will be used in producing a management plan for Unit 22.

PROJECT LOCATION: GMU 23 (43,000 mi²)
Kotzebue Sound/Western Brooks Range

PROJECT OBJECTIVES AND ACTIVITIES:

To maintain brown bear populations at existing densities.

To monitor harvests through the sealing program and contacts with the public and improve compliance with bear harvest reporting requirements.

To minimize adverse interactions between bears and the public.

WORK ACCOMPLISHED DURING THE PROJECT SEGMENT PERIOD:

During 1989, 38 bears (23 males, 13 females, and 2 unknowns) were reportedly harvested from Unit 23. The mean skull sizes of male and female grizzly bears were 21.8 and 20.1 inches, respectively. The mean ages of harvested male and female bears were 7.4 and 8.5 years, respectively. Eighteen bears were harvested during the spring season, and 20 were harvested during the fall season. Eleven bears were harvested by nonresidents, and 27 bears were harvested by residents.

During the segment period, a questionnaire was sent to 211 residents of Unit 23, polling their opinion of the status of grizzly bears in the Kotzebue Sound area. Fifty-one people (24%) responded to the questionnaire, and an Index of Abundance (IA) was calculated for the following drainages in GMU 23:

Noatak River drainage	100.0
Kobuk River drainage	81.2
Selawik River drainage	81.2
Northern Seward Peninsula	81.2
Wulik/Kivalina River drainages	100.0
Entire Unit 23	86.4

The procedures used for calculating an IA are outlined in Brand and Keith (1979). An IA greater than 50 indicates that the population has reportedly increased during the last 5 years (1985-89).

PROGRESS TOWARDS MEETING PROJECT OBJECTIVES:

Results of the public opinion questionnaire indicated that the local public considers the bear population to be at high densities and increasing. Local and nonlocal residents and nonresidents desire additional opportunity to harvest bears and would like to see the regulations liberalized; however, existing harvest data and results of an ongoing research study in the northern portion of Unit 23 indicated that harvest levels in the study area equalled or exceeded the maximum sustained yield for this population. We believe that immigration from less intensively hunted areas may be compensating for a localized overharvesting of bears or that bear densities may actually be decreasing at an undetectable rate. Until this apparent disparity is resolved, we recommend that hunting regulations not be liberalized until more definitive data are obtained.

As in most other units, bear management is based on data obtained through the harvest reporting system. Because many bears are taken and not reported, interpretation of the data is difficult. I recommend the development of a technique for evaluating population trends that can be used by managers.

LITERATURE CITED:

Brand, C. J. and L. B. Keith. 1979. Lynx demography during a snowshoe hare decline in Alberta. J. Wildl. Manage. 43:827-849.

PROJECT LOCATION: Unit 26A (53,500 Mi²)
Western North Slope

PROJECT OBJECTIVES:

To maintain brown bear populations at current levels.

To monitor the harvest through the statewide sealing program.

To minimize adverse interactions between bears and the public.

WORK ACCOMPLISHED DURING THE PROJECT SEGMENT PERIOD:

During 1989, 34 brown bears from Unit 26A were sealed. Fourteen (41%) were harvested east of 159 degrees W longitude, and 20 (59%) were harvested west of 159 degrees W longitude. Twenty-one (61%) were males, 12 (35%) were females, and the sex was unknown for one (3%). Twenty (59%) and 14 (41%) brown bears were taken during the fall and spring, respectively. One bear was harvested by a North Slope resident, 15 (47%) were harvested by nonlocal residents, and 18 (53%) were taken by nonresident hunters. The mean skull size was 21.1 inches for males and 19.5 inches for females. The mean age of harvested bears was 9.5 years, and the median age was 7 years. The age distribution of harvested bears is as follows:

Age (years)	0-4	5-9	10-14	15-19	20+	unknown
Number	13	6	5	2	5	2

Information was distributed through the media describing safe camping practices and the correct handling of problem bears. Posters on bear safety were placed in public locations.

PROGRESS TOWARD MEETING PROJECT OBJECTIVES:

Harvest levels may need to be reduced, if current brown bear population densities are to be maintained. The most recent

population estimate for Unit 26A was 645-780 brown bears. Trent (1988) assumed a maximum harvest limit of 4%, which computes to a sustainable yield of approximately 26-31 bears. The reported harvest in Unit 26A for 1990 was 34 bears. If the unreported harvest ranges between 38% and 54% (Trent 1988), then the total harvest ranges between 47 and 52 bears, well above the maximum sustainable harvest limit. There were no serious human-bear conflicts in Unit 26A during 1989, and the information disseminated to the public concerning bear safety seemed to be well received.

LITERATURE CITED

- Reynolds, H. V. 1984. Unit 24-26 brown/grizzly bear survey-inventory progress report. Pages 94-96 in J. A. Barnett, Ed. Annual report of survey-inventory activities. Part I. Brown/grizzly Bears. Vol. XIV. Alaska Dep. Fish and Game. Fed. Aid in Wildl. Rest. Prog. Rep. Proj. W-22-1 and W-22-2. Job 17.0 and 4.0. Juneau. 96pp.
- Trent, J. N. 1988. Unit 26A brown/grizzly bear survey-inventory progress report. Pages 185-189 in S. O. Morgan, ed. Annual report of survey-inventory activities. Part V. Brown/grizzly Bears. Vol XIX. Alaska Dep. Fish and Game. Fed. Aid in Wildl. Rest. Prog. Rep. Proj. W-23-1. Job 4.0. Juneau. 189pp.

SEGMENT PERIOD PROJECT COSTS:

	<u>Personnel</u>	<u>Operating</u>	<u>Total</u>
Planned	29.8	5.5	35.3
Actual	29.8	5.2	35.0
Difference	0	-0.3	-0.3

Vacancy at our office in Barrow for much of 1989 resulted in less expenditures for Subunit 26A.

SUBMITTED BY:

Steven Machida
Regional Management Coordinator



Federal Aid Project
funded by your purchase of
hunting equipment

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