ALASKA DEPARTMENT OF FISH AND GAME

JUNEAU, ALASKA

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ANNUAL REPORT OF SURVEY-INVENTORY ACTIVITIES

PART I. BLACK BEARS AND BROWN BEARS

EDITED AND COMPILED BY

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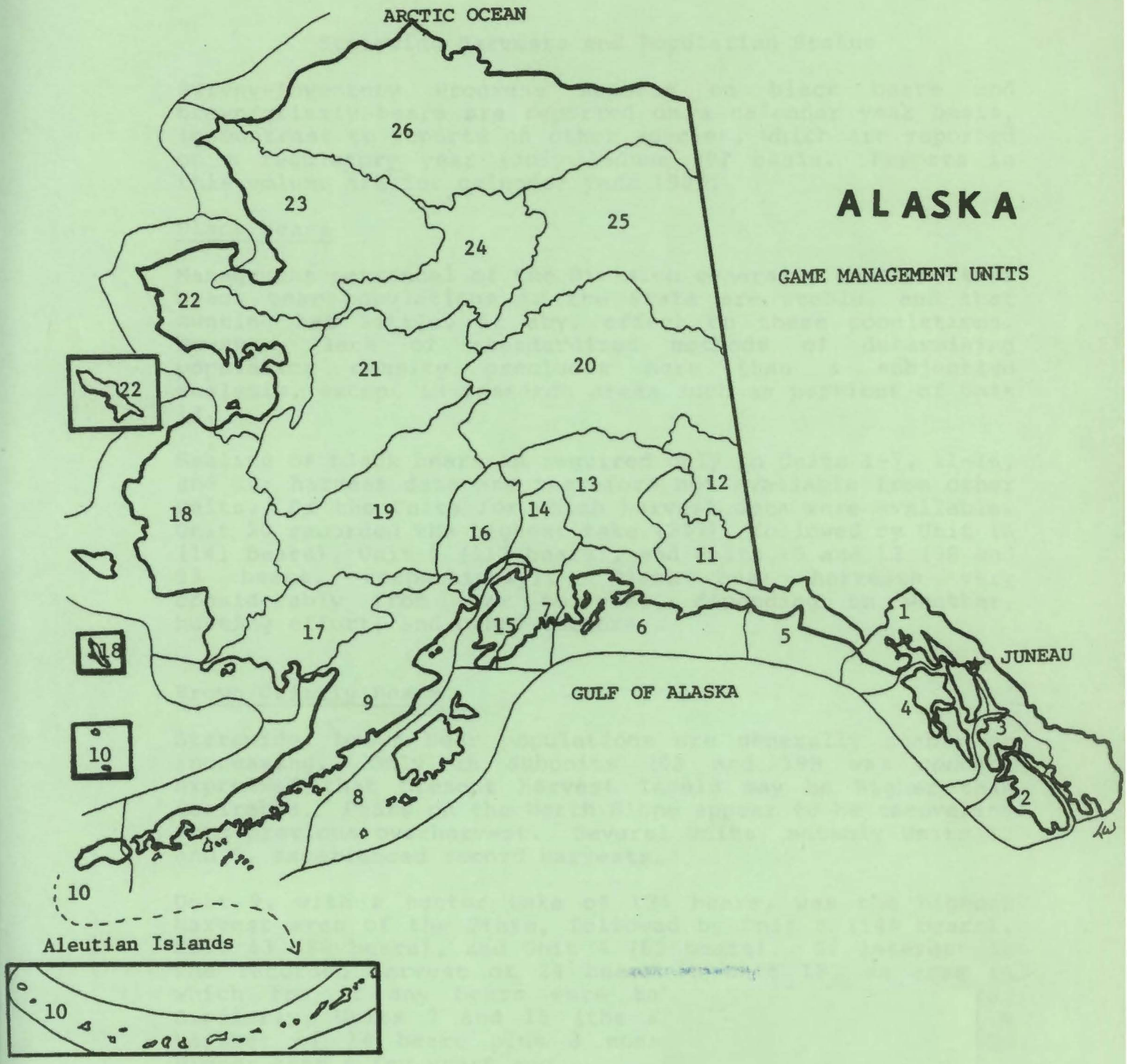
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Statewide Harvests and Population Status

Survey-Inventory Progress Reports on black bears and brown/grizzly bears are reported on a calendar year basis, in contrast to reports on other species, which are reported on a regulatory year (July 1-June 30) basis. Reports in this volume are for calendar year 1980.

Black Bears

Management personnel of the Division generally conclude that black bear populations in the State are stable, and that hunting has little, if any, effect on these populations. However, lack of standardized methods of determining population density precludes more than a subjective analysis, except in research areas such as portions of Unit 13.

Sealing of black bears is required only in Units 1-7, 11-16, and 20; harvest data are therefore not available from other Units. Of the Units for which harvest data were available, Unit 20 recorded the highest take (217), followed by Unit 16 (141 bears), Unit 6 (117 bears), and Units 15 and 13 (98 and 93 bears, respectively). Black bear harvests vary considerably from year to year, depending on weather, hunting effort, and other factors.

Brown/Grizzly Bears

Statewide, brown bear populations are generally stable or increasing. Only in Subunits 20A and 19B was concern expressed that present harvest levels may be higher than desirable. Bears on the North Slope appear to be recovering from previous overharvest. Several Units, notably Units 13 and 5, experienced record harvests.

Unit 9, with a hunter take of 191 bears, was the highest harvest area of the State, followed by Unit 8 (148 bears), Unit 13 (80 bears), and Unit 4 (63 bears). Of interest is the recorded harvest of 24 bears in Unit 18, an area in which few if any bears were taken until recent years. Similarly, Units 7 and 15 (the Kenai Peninsula) showed a harvest of 14 bears plus 3 nonsport kills, considerably higher than a few years ago.

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BLACK BEAR

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GEOGRAPHICAL DESCRIPTION: Ketchikan area and Prince of Wales Island

PERIOD COVERED: January 1, 1981-December 31, 1981

Season and Bag Limit

Sept. 1-Sept. 30	Two bears; provided that not more than one may be a blue or glacier bear and that the taking of cubs or females accompanied by cubs is prohibited.

Population Status and Trend

The black bear population in Subunit 1A and Unit 2 appears to be maintaining a fairly constant level, as indicated by harvest, hunter success, and general observations. The average skull size of males taken during spring seasons has remained relatively constant since 1975, and the high incidence of males in the spring harvest has not changed significantly.

Population Composition

No data were available.

Mortality

Twenty-five black bears from Subunit 1A and 69 from Unit 2 were reported taken by hunters in 1981 (Appendix A). Three additional bears were taken in defense of life or property.

The harvest for Subunit 1A represents a decrease of 7% from the 27 bears taken in 1980, while Unit 2 registered a 5% decrease from last year.

Seasons since 1974 are summarized in Appendix B. In the spring portion of the season in Subunit 1A, 6 bears were taken from Revilla and surrounding small islands; 12 were taken on the mainland. This is almost identical to the 1980 harvest. In Unit 2, 46 bears were taken in the spring. The corresponding 1980 harvest was 47 bears.

The sex ratio for the spring season in Subunit 1A was 94% males, identical to the average of the 1974-80 period. In Unit 2, the percent males in the spring harvest for 1981 was 85, slightly lower than the long-term average of 88%.

The fall harvest in Subunit 1A dropped from 8 bears in 1980 to 7 bears this year. Five of the 7 bears were males. In Unit 2, the 1981 fall harvest of 23 bears declined slightly from the 26 taken in 1980. The sex ratio for these 23 bears was 73% males, somewhat above the past 5-year average of 60%. The fall harvest has consistently produced a lower ratio of males than has the spring season.

The chronology of the harvest is shown in Appendix C. In Subunit 1A, 72% of the kill occurred during the spring season, and 78% of the spring bears were taken in the May 1-31 period. In Unit 2, 67% of the harvest occurred in the spring and 78% of these were taken in the May 1-31 period. The peak of the spring harvest in Subunit 1A occurred between May 11 and May 31, while in Unit 2, it was between May 1 and May 20. The Unit 2 spring harvest generally peaks a week earlier than the Subunit 1A harvest.

Transportation used by bear hunters in 1981 to reach hunting areas changed somewhat from last year. In Unit 1A this year, 72% of the bear hunters used boats, 16% used aircraft, and 12% hunted from a road system. In Unit 2, where the logging roads are more extensive, 75% used road vehicles, 13% used airplanes, and 12% traveled by boat. There was a moderate increase in bears killed from the Unit 2 road system, as would be expected from the increasing road system being developed on Prince of Wales Island.

Nonresidents took 16% of the bears from Subunit 1A and 38% of those from Unit 2. Eighty-three percent of the 30 bears taken by nonresidents were taken during the spring season.

Tabulation of data on incidental take of black bears shows 10% taken during the spring season were considered incidental, while 11% of the fall bears were indicated as taken incidentally to other activities. Normally, the fall season has a higher percent of incidental harvest.

Forty-two percent of the successful spring bear hunters and 57% of the fall hunters saved some or all of the meat from their bears.

Skull measurements once again showed considerably larger bears on Prince of Wales Island than in Subunit 1A. In 1A, 19 male skulls averaged 17.6 inches; in Unit 2, 46 males averaged 18.5 inches. Comparable figures for 1980 were 17.6 inches for 20 males from Subunit 1A and 19.2 inches for 48 males from Unit 2. Male skull sizes have remained fairly constant for the past 5 years with the exception of Unit 2 for this year. Appendix B shows skull sizes by area, sex, and season.

Age data for bears taken since 1978 are not available.

Eighty hunters took the 94 bears reported for 1981 from Subunits 1A and Unit 2, which indicates 14 hunters took 2 bears each.

Three cinnamon bears were taken this year. Some selectivity for the cinnamon color phase over the normal black phase occurs on the mainland. The cinnamon color phase in this area is found only on the mainland.

Management Summary and Recommendations

The black bear harvest for 1A is down 13% from the long-term average and down 7% from the 1980 harvest. In general, the Subunit 1A harvest has remained fairly constant. In Unit 2, the harvest appears to be rising slowly and steadily. The 1982 harvest is up 15% from the long-term average, but down 5% from the 1980 harvest. While the harvest for both Game Management Units should continue to increase, Unit 2 will probably show greater proportional increases because of the heavy logging activity currently in progress and also planned for the future. Extensive logging road systems are being opened and connected, making the area attractive to hunters having motorized camping units. In addition, outfitting services that will make the area more attractive to nonresidents are being proposed.

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APPENDIX A. Black bear sport harvest statistics for GMU's 1A and 2 with color phase, kill by nonresidents, mean skull size, and methods of transportation used in 1981.

GMU	Season	Total kill	# males	# females	Unk. sex	Kill by nonres.	Mean skull size, male		Mean skull size, female		% cinn.[a]	%transport used air	%transport used boat	%transport used vehicle
1A Mainland	spring	12	11	1	0	3(25%)	17.2[b]	(10)[c]	14.6	(01)	25	17	83	0
	fall	2	1	1	0	0	17.8	(01)		0	0	100	0	0
	totals	14	12	2	0	3(21%)	17.3	(11)	14.6	(01)	21	29	71	0
1A Revilla	spring	6	6	0	0	0	18.4	(06)		0	--	0	50	50
	fall	5	4	1	0	1(20%)	16.5	(02)	14.5	(01)	--	0	100	0
	totals	11	10	1	0	1(9%)	17.9	(08)	14.5	(01)	--	0	73	27
Total 1A	spring	18	17	1	0	3(17%)	17.7	(16)	14.6	(01)	--	12	76	12
	fall	7	5	2	0	1(14%)	16.9	(03)	14.5	(01)	--	29	71	0
	totals	25	22	3	0	4(16%)	17.6	(19)	14.5	(02)	--	16	72	12
2	spring	46	39	7	0	22(48%)	18.6	(33)	16.7	(07)	--	15	17	67
	fall	23	18	5	0	4(17%)	18.0	(13)	15.4	(03)	--	9	0	91
	totals	69	57	12	0	26(38%)	18.5	(46)	16.3	(10)	--	13	12	75

[a] Cinnamon phase occurs only on mainland.
[b] Size in inches.
[c] () = sample size.

APPENDIX B. Black bear harvest by season with sex ratios and skull sizes for GMU's 1A and 2, 1974-1981.

GMU	Year	Season	Total kill	% males	Mean skull size, male		Mean skull size, female	
1A	1974	spring	34	94				
		fall	13	62				
		year	47	83	17.8[a]	(36)[b]	15.2	(5)
1A	1975	spring	27	89	17.3	(21)	16.3	(3)
		fall	6	67	16.9	(4)	16.4	(1)
		year	33	85	17.2	(25)	16.3	(4)
1A	1976	spring	22	95	17.7	(21)	15.1	(1)
		fall	5	80	18.1	(4)	16.5	(1)
		year	27	93	17.8	(25)	15.8	(2)
1A	1977	spring	9	100	17.7	(9)		
		fall	7	57	13.7	(1)	15.4	(3)
		year	16	81	17.3	(10)	15.4	(3)
1A	1978	spring	15	87	18.2	(11)	15.8	(2)
		fall	9	67	17.4	(5)	16.2	(3)
		year	24	79	18.0	(16)	16.0	(5)
1A	1979	spring	27	93	17.8	(24)	15.6	(1)
		fall	3	33	---	---	17.1	(1)
		year	30	87	17.8	(24)	16.4	(2)
1A	1980	spring	19	100	17.8	(18)	---	---
		fall	8	38	16.1	(2)	15.7	(4)
		year	27	81	17.6	(20)	15.7	(4)
1A	1981	spring	18	94	17.7	(16)	14.6	(1)
		fall	7	71	16.9	(3)	14.5	(1)
		year	25	88	17.6	(19)	14.5	(2)
2	1974	spring	22	77				
		fall	5	60				
		year	27	74	19.1	(15)	16.2	(2)
2	1975	spring	27	93	19.5	(24)	17.5	(1)
		fall	15	53	18.8	(7)	16.5	(5)
		year	42	79	19.3	(31)	16.6	(6)
2	1976	spring	61	87	19.4	(50)	16.8	(6)
		fall	18	61	17.5	(8)	16.8	(7)
		year	79	81	19.1	(58)	16.8	(13)

APPENDIX B. Continued.

GMU	Year	Season	Total kill	% males	Mean skull size, male		Mean skull size, female	
2	1977	spring	34	85	19.0	(28)	17.2	(4)
		fall	17	65	19.5	(5)	15.9	(4)
		year	51	78	19.1	(33)	16.5	(8)
2	1978	spring	44	89	19.3	(39)	17.5	(2)
		fall	23	57	18.7	(11)	16.5	(7)
		year	67	78	19.2	(50)	16.7	(9)
2	1979	spring	47	98	19.1	(42)	17.6	(1)
		fall	23	61	18.4	(8)	16.9	(8)
		year	70	86	19.0	(50)	17.0	(9)
2	1980	spring	47	89	19.3	(35)	17.0	(3)
		fall	26	54	19.0	(13)	17.2	(9)
		year	73	77	19.2	(48)	17.2	(12)
2	1981	spring	46	85	18.6	(33)	16.7	(7)
		fall	23	78	18.0	(13)	15.4	(3)
		year	69	83	18.5	(46)	16.3	(10)

[a] Size in inches.

[b] () = Sample size.

APPENDIX C. Chronology of the 1981 black bear hunting harvest, GMU's 1A and 2.

	Subunit 1A	Unit 2
April 1-20	1	3
April 21-30	3	1
May 1-10	3	12
May 11-20	4	16
May 21-31	7	8
June 1-10		4
June 11-20		
June 21-30		2
Sept. 1-10	1	
Sept. 11-20	2	3
Sept. 21-30		7
Oct. 1-10	1	6
Oct. 11-20	1	4
Oct. 21-31	1	1
Nov. 1-10	1	2
Nov. 11-30		

BLACK BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNITS 1B and 3

GEOGRAPHICAL DESCRIPTION: Unit 1B - Southeast mainland from Cape Fanshaw to Lemesurier Point

Unit 3 - Islands of the Petersburg, Kake, and Wrangell areas

PERIOD COVERED: January 1, 1981-December 31, 1981

Season and Bag Limits

Sept. 1-June 15	One bear; provided that the taking of cubs or females accompanied by cubs is prohibited.

Population Status and Trend

No census activities were conducted during the report period, however, hunter success and field observations indicated a stable bear population in Subunit 1B and Unit 3. Black bears are more numerous in Unit 3 than in Subunit 1B.

Population Composition

No field data were collected. In Unit 3, the harvest was 81% (N = 52) males and 19% (N = 12) females. Two sealed bears were of undetermined sex.

Mortality

In 1981, the reported harvest was 66 black bears from Game Management Unit 3 and 1 from Subunit 1B. The single bear reported killed in Subunit 1B was the lowest reported over the same time period. The Unit 3 harvest is an increase of 29 over the 37 bears taken in 1980 and is the highest since the sealing program began in 1973. The decline in the Subunit 1B kill can be partially attributed to the shortening of the 1981 moose season at Thomas Bay from 1 month to 6 days. In 1980, 4 of the 8 bears taken in Subunit 1B were taken by moose hunters at Thomas Bay.

The 1981 black bear harvest in Unit 3 occurred on 5 islands (Tables 1, 2). Thirty-eight percent of the harvest came from Kupreanof Island, 24% from Kuiu Island, and 32% from Mitkof Island (Table 3). The remaining 6% of the harvest came from Wrangell and Woronkofski Islands.

Table 1. Unit 3 black bear harvest by location, sex, mean skull size, season of year, and hunter residency, 1981.

Location	Season	# males	Mean skull size	# females	Mean skull size	# unknown	Total bears	% Unit 3 harvest	Kill by nonresidents
Kupreanof Island	spring	18	18.9[a]	0	--	--	18	27	2(11%)
	fall	5	19.1	2	17.6	--	7	11	1(50%)
	totals	23	19.0	2	17.6	--	25	38	3(13%)
Kuiu Island	spring	11	18.7	2	15.7	--	13	20	6(46%)
	fall	3	17.5	0	--	--	3	4	2(67%)
	totals	14	18.1	2	15.7	--	16	24	8(50%)
Mitkof Island	spring	7	17.5	1	15.7	2	10	15	0
	fall	7	18.1	4	16.1	--	11	16	4(37%)
	totals	14	17.8	5	15.9	2	21	32	4(19%)
Wrangell Island	spring	2	18.4	--	--	--	2	3	--
	fall	--	--	1	18.7	--	1	2	--
	totals	2	18.4	1	18.7	--	3	5	--
Woronkofski Island	spring	--	--	--	--	--	--	--	--
	fall	--	--	1	16.8	--	1	2	--
	totals	--	--	1	16.8	--	1	2	--
Total Unit 3	spring	38	18.4	3	15.7	2	43	65	8(19%)
	fall	15	18.2	8	17.3	--	23	35	7(30%)
	totals	53	18.3	11	16.5	2	66	100	15(23%)

[a] Size in inches.

Table 2. Unit 3 black bear harvest by island, hunter effort, and residency, 1981.

Island	Area mi^2	Harvest	Sections/ bear	Average days/ hunter	% Nonresidents
Kupreanof	1,090	25	43.6	3.3	14
Kuiu	746	16	46.6	3.9	53
Mitkof	211	21	10.0	3.0	19
Wrangell	220	3	73.3	3.7	0
Woronkofski	23	1	23.0	1.0	0
Total	2,290	66	34.7	3.0	25

Nonresident hunters accounted for 24% of the Unit 3 black bear harvest (Table 2). On Kuiu Island, 53% of the bears were taken by nonresident hunters. The 16 successful nonresident hunters spent 47 hunting days for an average of 2.9 hunting days/bear harvested. Successful nonresidents took 56% of their bears during spring. Residents hunted 150 days for an average of 2.9 days/bear harvested. Residents took 74% of their bears in spring. No data are available for effort by unsuccessful hunters.

Although the kill on Kuiu Island from 1974 through 1979 accounted for over half of the Unit 3 total, the percentage dropped to 22 and 24 in 1980 and 1981, respectively. The Mitkof Island portion of the kill increased from 4% in 1979 to 32% in both 1980 and 1981. The Wrangell Island harvest remained low (5%) in 1981, increasing slightly from the 1980 figure of 3%. While Wrangell Island has a substantial bear population, bear hunting has not achieved the popularity with Wrangell hunters that it has with Petersburg hunters. A higher kill/Unit area occurred on Mitkof than on any of the other islands. Thirty-two percent of the 1981 harvest came from Mitkof Island which contains only 9% of the bear habitat of the Unit. This was probably due to the increased publicity about high bear populations associated with a research study by the University of Washington, the presence of foraging bears in the residential areas of Petersburg, the interconnected road system providing access to almost every part of the island, and an increased awareness of the food value of black bear meat.

In all of Unit 3, 65% of the bears were taken in spring, and 35% were taken in fall (Table 1). On Mitkof Island, 48% of the bears were taken in spring and 52% in fall. A total of 74% of the Unit

3 harvest was taken in May (N = 32), 19% in April, and 7% in June. The peak of the harvest was from May 20 to May 27, when 30% of the Unit 3 harvest occurred.

The average skull size for all Unit 3 males was 18.3 inches, while females averaged 16.5 inches. Bears from Kupreanof Island had the largest skull sizes, with males averaging 19.0 inches. Males from Mitkof Island were the smallest in the Unit, averaging 17.8 inches, possibly reflecting higher hunting pressure.

Transportation used by hunters in Unit 3 differs by island. On Kupreanof, 68% utilized boats, 18% airplanes, and 14% road vehicles. Kuiu Island also showed high boat use (65%), while 24% used aircraft, and 11% used wheeled vehicles. On Mitkof, with its heavy kill/Unit area (Table 2), only 18% used boats, none used aircraft, and 82% used wheeled vehicles. In all of Unit 3, boats were the most popular means of transportation (53%), vehicles were second (33%), and aircraft third (14%). As road construction continues on the major islands of Unit 3 by the U.S. Forest Service, use of vehicles to hunt black bears will increase. Wrangell Island is expected to have an interconnected road system (loop road) by 1984, which will provide access to drainages which are presently inaccessible.

Table 3. Annual percentage of Unit 3 black bear harvest by island, 1974-1981.

Year	Kupreanof	Kuiu	Mitkof	Wrangell	Etolin	Other islands
1974	18	61	4	10	7	0
1975	25	63	4	4	4	0
1976	33	57	3	2	3	2
1977	15	77	4	0	0	4
1978	29	61	3	0	2	0
1979	31	52	4	4	7	2
1980	40	22	32	3	0	3
1981	38	24	32	5	0	1

Management Summary and Recommendations

Although the Unit 3 bag limit was reduced from 2 black bears to 1 in 1980, the harvest increased from 37 in 1980 to 66 in 1981. The average annual black bear harvest in Unit 3 from 1974 through 1980 was 42. The trend in transportation means seems to be

toward automobile use. Populations in both Subunit 1B and Unit 3 are thought to be stable. Skull sizes remained in the upper range, indicating that older age classes are still prevalent in the harvest. A viable black bear census technique is needed to determine bear numbers and population trends.

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BLACK BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT 1C

GEOGRAPHICAL DESCRIPTION: Mainland portion of Southeastern Alaska between Cape Fanshaw and Eldred Rock

PERIOD COVERED: January 1, 1981-December 31, 1981

Season and Bag Limit

Sept. 1-June 15	One bear; provided that the taking of cubs or females accompanied by cubs is prohibited.

Population Status and Trend

No data were collected. However, no significant population changes are believed to have occurred.

Population Composition

No data were collected.

Mortality

The black bear harvest (based on sealing documents) for 1981 in Subunit 1C was 36 bears (31 males and 5 females), 3 bears below the 1980 harvest and 12 bears below 1979. The harvest included 3 black bears of the cinnamon color phase. Residency of successful black bear hunters in 1981 was 17 (58%) residents and 15 (42%) nonresidents. Guided hunts accounted for 8 bears (22%) taken in 1981, 7 by nonresidents, and 1 by a resident. The reported nonsport kill in 1981 was 4 bears (2 males and 2 females).

The average skull size of males ($\underline{N}$ = 29) was 20.4 inches and 16.0 = inches for females ($\underline{N}$ = 5). Age data for bears harvested in 1981 were not available.

Chronology of the 1981 harvest showed that 86% (31 bears) of the harvest occurred between March and June, with 58% in May alone. Of the remaining 5 bears, 2 were taken in September and 3 in October.

Successful hunters spent 142 days hunting black bears, averaging 4.2 days/bear. Days hunted ranged from 1 to 40 days (Note: one hunter reported hunting 40 days).

Distribution of the harvest in Subunit 1C in 1981 showed Point Coke to Cape Fanshaw as the highest harvest area ($\bar{N}$ = 12), followed closely by Berners Bay to Bishop Point with 10 bears. Point Bishop to Point Coke produced 8, and the Chilkat Range (west of Lynn Canal) 6 bears.

Modes of transportation used by successful hunters were boat (67%), vehicle (14%), aircraft (8%), foot (5%), and unspecified (6%).

Management Summary and Recommendations

Although the reported bear population has appeared relatively stable in Subunit 1C since 1974, the annual harvest has ranged from 35 to 64 bears. Weather conditions, particularly during the spring portion of the season when most bears are taken, is believed to be the major factor affecting harvest levels in Subunit 1C. The total of 36 bears taken in 1981 is below the average annual harvest of 45 bears from 1974 to 1980, but not unusually low for the Subunit.

An increase in hunter pressure and harvest is anticipated for Subunit 1C as human populations increase. Where remote facilities are being developed for logging, mining, and construction projects that require on-site living quarters for workers, hunting pressure and bear/human conflicts will no doubt increase in these areas. Bear harvest levels should be closely monitored, particularly in these areas to assure proper maintenance of bear population levels.

No trends in harvest data are apparent at this time to fully ascertain the effects of the 1980 reduced season and bag limit.

No changes in seasons or bag limits are recommended.

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BLACK BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT 1D

GEOGRAPHICAL DESCRIPTION: Mainland portion of Southeastern Alaska north of the latitude of Eldred Rock

Period Covered: January 1, 1981-December 31, 1981

Season and Bag Limit

Sept. 1-June 30	Two bears; provided that not more than one may be a blue or glacier bear and that the taking of cubs or females accompanied by cubs is prohibited.

Population Status and Trend

No significant changes are believed to have occurred during this report period, although data are lacking to determine an accurate population trend.

Population Composition

No data were collected.

Mortality

Sport harvest in 1981 was 16 bears, 4 cinnamon phase and 12 black phase. This harvest is considerably below last year's harvest of 24 bears but is basically the same as the 5-year average of 20 bears/year. Sex composition of the harvest was 12 males (75%) and 4 females (25%). No age structure data are available at this time.

The average skull size for the 12 males harvested was 17.1 inches (range 14.9 to 19.6), and that for the 4 females was 14.7 inches (range 12.9 to 15.7).

No nonsport mortality is known to have occurred during this report period.

Management Summary and Recommendations

The Subunit 1D black bear population appears to be stable, with the level of harvest and the skull size of the bears killed

consistent with data from previous report periods. Based on these criteria, no changes in seasons or bag limits are recommended at this time.

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BLACK BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT 5

GEOGRAPHICAL DESCRIPTION: Yakutat and Malaspina Forelands, Russell Fjord, Gulf of Alaska

Period Covered: January 1, 1981-December 31, 1981

Season and Bag Limit

Sept. 1-June 30	Two bears; provided that not more than one may be a blue or glacier bear and that the taking of cubs or females accompanied by cubs is prohibited.

Population Status and Trend

Current data are insufficient to assess population trends, however, no major changes in population status have been observed or reported during this period. Unitwide, the black bear population appears stable.

Population Composition

An aerial survey of the hill complex bounded by Russell Fjord on the north and east and Disenchantment Bay and Yakutat Bay on the west and south was conducted on October 10, 1981 using a Piper PA-18-125 Super Cub. Survey conditions were good, and 13 bears were observed in 65 min of survey time. Seven adults and 6 cubs were observed during the flight, all of the black color phase.

The snowline for the flight varied between 2,000 and 3,000 feet. None of the bears observed were above snowline, and many of them appeared to be digging what may have been winter dens.

Mortality

Total sport kill for Unit 5 was 19 bears (12 males, 5 females, and 2 of unknown sex. The harvest level is basically consistent with the average for the preceding 10-year period (N = 153, $\bar{x}$ = 15.3, range 3 to 23), and the sex composition of the kill is also comparable. Sixty-three percent of the harvest was during the spring segment of the season; the remaining 37% were shot as incidental take during fall.

Nonresidents accounted for 78% of the harvest, while residents took the remaining 22%. None of the hunters reported salvaging any meat from their bears. This is in contrast to last report period, when one-third of the hunters salvaged meat from their trophies, and it was questioned whether or not this might be a developing trend.

Two blue phase, or glacier, bears were taken, corresponding with the average of 1.5 bears/year for the Unit.

Management Summary and Recommendations

The black bear population appears to be stable unitwide; production appears to be good. The hunting pressure seems to remain fairly constant from year to year, but harvest levels fluctuate considerably. This fluctuation is most likely due to the wide variability in the spring weather and the resultant change in the timing of "leaf out." Guides plan their 1st hunt to begin about the same time each season, and if spring comes early or late on any given year, the harvest can differ from the "average."

No change in season or bag limit is recommended at this time.

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SUBMITTED BY:

Nathan P. Johnson
Regional Management Coordinator

Appendix A. Game Management Unit 5 black bear harvest for the period, 1971-81.

Calendar year	Total kill	# males	# females	# unknown	Color phase	
					black	blue
1971	3	3	0	0	3	0
1972	17	12	5	0	15	2
1973	19	12	7	0	18	1
1974	9	6	3	0	8	1
1975	12	8	2	2	10	2
1976	19	19	0	0	17	2
1977	19	11	2	0	12	1
1978	10	6	0	2	7	1
1979	22	12	9	1	18	4
1980	23	13	5	0	15	3
1981	19	12	5	2	17	2

BLACK BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT 6

GEOGRAPHICAL DESCRIPTION: Prince William Sound and North Gulf Coast

PERIOD COVERED: January 1, 1981-December 31, 1981

Seasons and Bag Limit

Jan. 1-June 30	One bear; provided that the taking of cubs or
Sept. 1-Dec. 31	females accompanied by cubs is prohibited.

Population Status and Trend

Sufficient data to determine current status or trend of black bears in Unit 6 were not available.

Population Composition

No data were available.

Mortality

The 1981 black bear harvest was 117 bears: 85 males, 26 females, and 6 of unknown sex.

The spring season accounted for 91% of the annual harvest with most of the harvest occurred between May 1 and June 15.

Male skull size averaged 16.8 inches, and female skull size averaged 15.5 inches. Nonresidents hunters took 20% of the bears.

Distribution of the harvest is shown in Appendix A.

Management Summary and Recommendations

The harvest of 117 black bears was about 10 bears above the 8-year average and nearly double the 1980 harvest of 66 bears. The harvest was well distributed throughout Unit 6.

No regulatory changes were recommended.

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Appendix A. Unit 6 black bear harvest by location, 1981.

Unit/ subunit[a]	Area	# harvested	%
6-01	East of Copper River to Icy Bay	11	9.4
6-02	Cordova to Copper River	5	4.3
6-03	Tatitlek to Cordova	16	13.7
6-04	Valdez Arm	19	16.2
6-05	Esther Island to Valdez Arm	23	19.7
6-06	Port Wells	15	12.8
6-07	Passage Canal to Port Nellie Juan	11	9.4
6-08	Port Nellie Juan to Cape Fairfield	13	11.1
6-10	Unit 6 - Unknown	4	3.4
Totals		117	100.0

[a] Management subunits designated for research purposes.

BLACK BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT 7

GEOGRAPHICAL DESCRIPTION: Eastern Kenai Peninsula

PERIOD COVERED: January 1, 1981-December 31, 1981

Season and Bag Limit

No closed season	Three bears; provided that taking of cubs or females accompanied by cubs is prohibited.

Population Status and Trend

Observations by Department personnel and comments from hunters indicated that black bears are abundant in most parts of Unit 7.

Population Composition

No data were available.

Mortality

A total of 55 black bears were killed in 1981, compared to 70 the previous year. The mean harvest for the past 8 years is 58 bears.

The sex composition of the harvest was 73% males, 24% females, and 3% unclassified. Currently, no age data are available for the 1981 harvest. Male and female mean skull sizes were 16.3 ($\underline{N}$ = 38) and 15.3 inches ($\underline{N}$ = 13), respectively. These means are identical to the 8-year mean skull sizes.

Management Summary and Recommendations

Despite a noticeable drop in harvest, black bears are abundant in Unit 7. Low-cost indices to black bear population trends should be sought. Examination of mesentery and/or subcutaneous fat deposits of bears harvested in the spring may provide 1 index to the general health of the bear population.

No changes in the season or bag limit were recommended.

PREPARED BY:	SUBMITTED BY:
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Game Biologist II	Survey-Inventory Coordinator

BLACK BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT 9

GEOGRAPHICAL DESCRIPTION: Alaska Peninsula

PERIOD COVERED: January 1, 1981-December 31, 1981

Season and Bag Limit

No closed season	Three bears; provided that the taking of cubs or females accompanied by cubs is prohibited.

Population Status and Trend

No data were available.

Population Composition

No data were available.

Mortality

Eight black bears were reported taken in northern Unit 9 in 1981 (7 by hunters and 1 in defense of life and property). Because sealing is not required in Unit 9, the reported kill probably does not reflect the total kill. Of the 7 hunter-killed bears, 2 were females, 4 were males, and the sex of 1 bear was unknown. All were of the black color phase. Four of the bears were killed incidentally to hunting for other species and the meat was salvaged from 3 bears. Six of the 7 reported hunter-killed bears were taken in late summer or fall; the other was taken in spring. A few local residents of Unit 9 occasionally kill black bears for personal use of the meat and hide, but the harvest by local people for personal use is opportunistic. The estimated total hunting mortality in Unit 9 is 10-20 bears/year.

Management Summary and Recommendations

Hunting pressure on black bears traditionally has been light in Unit 9. Many bears are taken incidentally to hunts for other species. Existing seasons and bag limits allow flexibility for hunters and do not threaten the bear population.

Recommendations

Hunters have not been required to seal the hide and skull of black bears taken in Unit 9. As a result, the reported harvest has not accurately represented harvest rates or hunting

pressure. The recent establishment of Lake Clark National Park resulted in the closure of areas formerly open to hunting in Subunits 9A and 9B. As a result, future hunting pressure will be greater in those areas that remain open to hunting. Therefore, it is recommended that a sealing requirement for black bears be implemented in Unit 9, so accurate harvest data can be obtained, and in turn, seasons and bag limits adjusted where necessary to provide for proper harvest of black bears in those areas that remain open to hunting.

No changes in season or bag limits were recommended.

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BLACK BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT 11

GEOGRAPHICAL DESCRIPTION: Wrangell Mountains

PERIOD COVERED: January 1, 1981-December 31, 1981

Season and Bag Limit

No closed season	Three bears; provided that the taking of cubs or females accompanied by cubs is prohibited.

Population Composition

No data were available.

Mortality

Hunters killed 8 black bears in Unit 11 during 1981. The sex composition was 6 males and 2 females; the mean skull size was 17.2 inches for males and 15.4 inches for females.

Management Summary and Conclusions

The harvest and hunting effort for black bears remained low in Unit 11. Most of the harvest was comprised of large males. The black bear population in Unit 11 can withstand the current level of harvest. No changes in season dates or bag limits were recommended.

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Survey-Inventory Coordinator

BLACK BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT 12

GEOGRAPHICAL DESCRIPTION: Upper Tanana and White Rivers

PERIOD COVERED: January 1, 1981-December 31, 1981

Seasons and Bag Limits

No closed season	Three bears; provided that the taking of cubs or females accompanied by cubs is prohibited.

Population Status and Trend

No standardized surveys of black bears have been conducted. Harvest data indicate that the black bear population in Unit 12 is stable and of moderate density in suitable forested habitat in the Tanana and Tok River drainages.

Mortality

The reported take of black bears during this period was 18 compared to an 8-year average harvest of 20 and the 1980 harvest of 24. The spring harvest of 3 bears in 1981 was the lowest recorded since 1974. The remaining 15 were taken during fall. Only 2 black bears were taken by nonresidents.

Males (14) composed 78% of the harvest and females (4) 22%. Males normally compose greater than 70% of annual harvests. The mean skull size of males and females was 16.2 inches and 15.1 inches, respectively. Age data for bears taken in 1981 were unavailable at the time of this report.

Seventy-two percent of the harvest (13) occurred in the Tanana River drainage, 22% (4) in the Tok River drainages, and 6% (1) in the Robertson River drainage.

Management Summary and Recommendations

The black bear population in Unit 12 is probably stable and limited primarily by natural factors rather than by hunting. Hunting pressure is low in relation to the population size and is largely restricted to the road system and major navigable rivers.

No changes in season and bag limit are recommended at this time.

PREPARED BY:	SUBMITTED BY:
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Game Biologist III	Regional Management Coordinator

BLACK BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT 13

GEOGRAPHICAL DESCRIPTION: Nelchina Basin

PERIOD COVERED: January 1, 1981-December 31, 1981

Season and Bag Limit

No closed season	Three bears; provided that the taking of cubs or females accompanied by cubs is prohibited.

Population Status and Trend

A preliminary density estimate of 1 bear/4.1 km^2 was obtained for the upper Susitna River area of Unit 13 (Miller and McAllister 1982). Frequent observations of black bears in similar forested habitats within Unit 13, especially Subunit 13D, suggested population densities equaled or exceeded this estimate.

Population Composition

Miller and McAllister (1982) provided composition data for bears captured in the upper Susitna River during Susitna Hydroelectric Project studies. Observed litter sizes for radio-collared black bears were 1.9 yearlings/litter (7 litters) in 1980 and 2 cubs/litter (8 litters) in 1981. The age at 1st reproduction was 4-5 years; the reproductive interval was 2-3 years. Males composed 59% of the captured bears $\geq$2 years of age. The average age for all captured bears $\geq$2 years of age was 7.2 years.

Mortality

Hunters killed 93 black bears during 1981. This is 10 bears more than the 1980 harvest and is the highest kill recorded for the Unit (Tobey 1981). Thirty-eight bears were taken in spring and 55 in fall. Sex composition of the harvest was 63 males (69%), 28 females (31%), and 2 sex unknown. The mean skull size for males was 16.4 inches, about the same as the 1980 mean of 16.6 inches. The mean skull size for females was 15.4 inches in both 1980 and 1981. Resident hunters hunters took 80 and nonresidents took 13 bears. Sixty-seven successful hunters (81%) indicated on bear sealing forms that they salvaged the meat. Black bears were reported as incidental take by only 39 successful hunters.

Natural mortality rates for adult black bears in Unit 13 are unknown. Mortality rates on 9 cubs-of-the-year were determined for 4 litters who were accompanied by radio-collared females (Miller and McAllister 1982). Of 9 cubs-of-the-year observed in these litters, 4 were lost.

Management Summary and Conclusions

Density estimates obtained for a portion of Unit 13 are similar to black bear densities reported for other areas of North America. Current data indicate reproductive rates are high, although not at the maximum for the species. Black bears are breeding at an early age, have a short reproductive interval, and have large litters. Limited data suggest cub mortality may be high, but this would be expected in the high-density population with limited habitat along the Susitna River.

The black bear harvest increased in 1981 for the 4th consecutive year. Males continued to dominate the harvest. Skull measurements show little change, suggesting large bears are present in the population and hunters are able to select for them. The black bear is gaining more respect as a big game animal as evidenced by the increased harvest and number of hunters salvaging the meat.

Density estimates, reproductive data, and kill figures suggest the current harvest is below the sustainable harvest level.

No changes in bag limit or season dates were recommended.

Literature Cited

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Tobey, R. W. 1981. Annual report of survey-inventory activities. Part I. in R. A. Hinman, ed. Alaska Dep. Fish and Game Fed. Aid in Wildl. Rest. Proj. W-19-1 and W-19-2. Juneau. 96pp.

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SUBMITTED BY:

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BLACK BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT SUBUNITS 14A and 14B

GEOGRAPHICAL DESCRIPTION: Upper Cook Inlet

PERIOD COVERED: January 1, 1981-December 31, 1981

Season and Bag Limit

No closed season

Three bears; provided that the taking of cubs or females accompanied by cubs is prohibited.

Population Status and Trend

Observations of bears by Department staff and complaints of nuisance bears by the public indicated an abundance of black bears in Subunits 14A and 14B.

Population Composition

No data were available.

Mortality

There were 76 black bears killed during 1981, 51 in Subunit 14A, and 25 in Subunit 14B. Two of these bears were taken in defense of life or property. Six of the successful hunters were nonresidents. The sex composition of the harvest and the mean skull size (in inches) for Subunits 14A and 14B were as follows:

	Spring season			Fall season		
Sex	Males	Females	Unknown	Males	Females	Unknown
Harvest	17	6	1	31	15	6
Skull size (N)	16.6(14)	15.6(4)	--	16.4(29)	15.8(12)	--

Management Summary and Recommendations

The black bear harvest has fluctuated since 1973, the 1st year that kill figures were recorded. At this time, hunting does not appear to be adversely affecting the bear population.

No changes in seasons or bag limits were recommended.

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BLACK BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT 14C

GEOGRAPHICAL DESCRIPTION: Anchorage

PERIOD COVERED: January 1, 1981-December 31, 1981

Seasons and Bag Limits

Unit 14C (except for that portion of 14C in Chugach State Park)	No closed season	Three bears; provided that the taking of cubs or females accompanied by cubs is prohibited.
Unit 14C in Chugach State Park	Day after Labor Day-May 20	One bear; provided that the taking of cubs or females accompanied by cubs is prohibited.

The drainages into Eklutna Lake and Eklutna River (excluding Thunderbird Creek and the East Fork of Eklutna River above the lake), the Eagle River drainage, the Anchorage Management Area within Chugach State Park, and the Fort Richardson Management Area were closed to black bear hunting.

Population Status and Trend

Black bears continue to be observed throughout the Subunit with no substantial deviation from former years. Sightings of bears in the Fort Richardson Management Area continue to be common at picnic sites and garbage dumpsters. Harvest data indicate that black bears remain most abundant in the Knik River-Lake George area.

Population Composition

No data were available.

Mortality

Sixteen black bears were killed in Subunit 14C. Thirteen were killed by sport hunters, 1 was killed when struck by an auto, and 2 were killed in defense of life or property. Eight bears were killed between Eklutna River and Lake George, 3 between Falls Creek and Portage, and 5 in the remainder of the Subunit. Nine of the bears killed by sport hunters were males, 3 were females, and 1 was of unknown sex.

Management Summary and Recommendations

Sport hunters in Subunit 14C have increased their kill of black bears by 1 bear annually since 1978. This minor increase most likely reflects a stable bear population.

The lengthened spring season in Chugach State Park, established in 1980, increased hunter opportunity; however, no black bears were reported killed.

No change in seasons or bag limits were recommended.

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BLACK BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT 15

GEOGRAPHICAL DESCRIPTION: Western Kenai Peninsula

PERIOD COVERED: January 1, 1981-December 31, 1981

Season and Bag Limit

No closed season	Three bears; provided that taking of cubs or females accompanied by cubs is prohibited.

Population Status and Trend

Current research being conducted in portions of Subunit 15A indicated a relatively high density of 1.5 black bears/km^2 of suitable habitat (Schwartz et al. 1981). Observations by Department personnel and observations by hunters also suggest that black bears were abundant in most of Unit 15.

Population Composition

No data were available.

Mortality

Hunters killed 98 black bears during the 1981 season. This harvest was similar to the 8-year mean of 92 bears but represented a 40% decline from the 1980 harvest of 162 bears. The harvest during the past 9 years has only exceeded 100 bears/year twice, 1976 and 1980.

The sex composition of bears taken in 1981 was 64% males, 31% females, and 5% sex unknown. Currently, no age information is available for the 1981 harvest. Mean skull size for males was 16.3 inches ($\bar{N}$ = 49), compared to a 8-year mean skull size of 16.2 inches. Female mean skull size was 14.8 inches ($\bar{N}$ = 29), compared to the 8-year mean of 15.3 inches. Nonresidents took 14% of the harvest.

Management Summary and Recommendations

Black bears remain a popular game animal on the Kenai Peninsula. They are widely distributed and provide valuable hunting opportunities, especially when seasons for other game animals are closed.

The 1981 harvest of 98 bears compares with the 8-year mean harvest of 92 bears but was 40% lower than the 1980 harvest. The overall population is believed to be healthy enough to sustain present levels of harvest.

No changes in season or bag limit were recommended.

Literature Cited

Schwartz, C. C., A. W. Franzmann, and D. C. Johnson. 1981. Black bear predation on moose. Alaska Dep. Fish and Game. Fed. Aid in Wild. Rest. Prog. Rep. Proj. W-17-11 and W-21-1. Juneau. 16pp.

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BLACK BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT 16

GEOGRAPHICAL DESCRIPTION: West side of Cook Inlet

PERIOD COVERED: January 1, 1981-December 31, 1981

Season and Bag Limit

No closed season	Three bears; provided that the taking of cubs or females accompanied by cubs is prohibited.

Population Status and Trend

Observations of bears by Department staff and the public indicate an abundant population of black bears in Unit 16.

Population Composition

No data were available.

Mortality

One hundred and forty-one black bears (79 males, 48 females, and 14 sex unknown) were killed during the 1981 season. This is a substantial decrease (43%) from the 1980 harvest of 248 bears but still above the 1973-79 mean of 118 bears.

The breakdown of the spring (January 1-June 30) and fall (July 1-December 31) harvests by Subunit was as follows:

	Spring season			Fall season		
Subunit	Males	Females	Unknown	Males	Females	Unknown
16A	5	5	0	15	11	1
16B	21	8	3	37	24	10
Unknown	0	0	0	1	0	0

The mean skull size, in inches, for black bears killed in Unit 16 was as follows:

	Spring season		Fall season	
	Male	Female	Male	Female
Skull size (N)	16.8 (23)	16.0 (13)	16.8 (47)	15.8 (30)

Management Summary and Recommendations

The annual kill of black bears has fluctuated each year. The lowest reported kill occurred in 1974 when 66 black bears were sealed; the highest reported kill occurred in 1980 when 248 bears were sealed. The mean kill from 1973 through 1981 was 135 bears.

Since black bears are generally associated with dense vegetative cover, it is believed hunters have little opportunity to select for specific age or size bears. The mean skull size for harvested males increased .7 and 1.6 inches, during spring and fall, respectively, from the previous year. The mean skull sizes for harvested females increased 1 inch in both spring and fall from the previous year. The increasing mean skull size is believed to be an indication that hunting is having little impact on the black bear population.

No changes in season or bag limits were recommended.

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BLACK BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT 17

GEOGRAPHICAL DESCRIPTION: Northern Bristol Bay

PERIOD COVERED: January 1, 1981-December 31, 1981

Season and Bag Limit

No closed season	Three bears; provided that the taking of cubs or females accompanied by cubs is prohibited.

Population Status and Trend

No data were available to evaluate the status and trend of the black bear population in Unit 17.

Population Composition

No data were available.

Mortality

Sealing of black bears is not required in Unit 17. One black bear was reported killed near the village of Aleknagik in July.

Management Summary and Recommendations

Data necessary for management of the Unit 17 black bear population were nonexistent. Regulation 5AAC 81.180(e) which requires sealing of bear skins and skulls should be amended to include black bears in Unit 17.

PREPARED BY:	SUBMITTED BY:
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Game Biologist III	Survey-Inventory Coordinator

BLACK BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT 20

GEOGRAPHICAL DESCRIPTION: Central Tanana-Upper Yukon Valley

PERIOD COVERED: January 1, 1981-December 31, 1981

Seasons and Bag Limits

No closed season	Three bears; provided that the taking of cubs or females accompanied by cubs is prohibited.

Population Status and Trend

Standardized surveys to determine black bear population status, sex and age composition, and trend were not conducted in Game Management Unit 20. Although harvest data, including sex and age composition, are collected through the black bear sealing program, it is not known if these data reflect actual changes in the bear population.

Mortality

According to information derived from sealing documents, 217 black bears were harvested in Unit 20 during 1980 (Table 1) including 17 nonsport kills. This is the largest harvest reported from Unit 20 since the sealing program was initiated in 1974. The nonsport harvest, one of the highest reported in recent years, was the result of firefighting activities by State and BLM fire crews. In addition, the paucity of wild berries throughout the Interior during 1981 may have resulted in more bears killed in defense of life or property. The 1981 sport harvest compares to 134 during 1980, 93 in 1979, 146 in 1978, 201 in 1977, 158 in 1976, 112 in 1975, and 97 in 1974. However, Game Management Unit boundaries were changed midway through 1981; therefore, 1981 harvest data are not strictly comparable to those of past years. Interest in black bear hunting is high, particularly by hunters from urban areas and among military personnel. Whether fluctuations in harvest levels are related to bear density, weather, hunting effort, or other factors is unknown.

Table 1. Sex, age, and location of kill for black bears harvested in Unit 20, 1981.*

Unit	Harvest				Age		
	M	F	Unk.	Total	M	F	Mean
20A	19	10	1	30	4.3	5.2	4.7
20B	35	23	3	61	6.3	5.0	6.3
20C and 20F**	75	27	7	109	6.1	7.7	6.4
20D	12	2	0	14	6.0	6.5	6.1
20E	2	1	0	3	10.5	3.5	7.0
Total	143	63	11	217	5.9	6.3	6.1

* Data are from the computerized black bear harvest data bank maintained in the Fairbanks office and therefore may not agree with the statewide harvest data program maintained in Anchorage. For a variety of reasons, we feel the Fairbanks data are the more accurate of the 2 programs.

**Nine bears were reported from Subunit 20F.

Harvest data do not indicate overexploitation in Unit 20 with the possible exception of Subunit 20A, where mean age of harvested bears is low. Male bears composed about 70% of the combined spring/fall harvest. Resident hunters accounted for 93% of the annual take, about the same as in recent years.

The harvest was about evenly divided between black bears taken incidentally to other activities and those taken while the hunter was specifically hunting bears. An estimated 90% of hunters salvaged meat from bears, about the same proportion as in recent years.

Management Summary and Recommendations

Although the population in Unit 20 is probably stable, black bear population dynamics are poorly understood in Interior Alaska. Little data are available regarding the effects of varying degrees of harvest levels on bear populations. Basic biology, movement patterns, and population status of black bears are also poorly understood. With the continuing high interest in black bear hunting and the increased hunting pressure experienced in the Interior, more should be learned about black bears so the species can be managed on a scientific basis rather than by guesswork and intuition.

Although hunting has affected the abundance of black bears in localized areas, overall populations appear to fluctuate independently of hunting.

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BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT 1

GEOGRAPHICAL DESCRIPTION: Southeastern Alaska mainland

PERIOD COVERED: January 1, 1981-December 31, 1981

Season and Bag Limit

Sept. 15-May 31	One bear every 4 regulatory years; provided that the taking of cubs or females accompanied by cubs is prohibited.

Population Status and Trend

No data were collected.

Population Composition

No data were collected.

Mortality

Based on brown bear sealing documents, the 1981 sport kill in Unit 1 was 16 bears (14 males and 2 females). One nonsport kill was reported in Subunit 1D near Haines. Resident hunters harvested 12 bears; nonresidents took 4.

Chronology of the harvest showed that 11 bears (10 males and 1 female) were taken during spring between April 27 and May 30; 5 bears (4 males and 1 female) were taken during fall between September 18 and October 29.

For males, a mean age of 9.0 years ($\underline{N}$ = 9) and the mean skull size of 22.2 inches ($\underline{N}$ = 11) were somewhat higher than the 7.8 years and nearly equal to the 22.5 inches for bears taken in 1980. In 1979, the mean age of males was 9.3 years; the mean skull size was 24.0 inches.

Management Summary and Recommendations

Harvest levels have remained relatively stable over the past several years. The harvest of 16 bears in 1981 was nearly equal to the previous 20-year average annual harvest of about 15 bears. The reported harvest for Subunit 1A was 7 bears in 1979, substantially above both the previous 9-year average of 2.1 bears/year and the 1980 and 1981 harvests of 1 bear each. This fluctuation in harvest was probably due to a short-lived interest in hunting in what was to become a national monument, based on the idea that future hunting opportunity would be lost because of

the change in land status. However, this fear was unfounded because national monuments under Forest Service jurisdiction remained open to sport hunting.

An increase in hunting pressure and harvest is anticipated for Unit 1 as human populations increase. Where remote facilities are being developed for logging, mining, and construction projects that require on-site living quarters for workers, hunting pressure and bear/human conflicts will no doubt increase in Unit 1. Bear harvest levels should be closely monitored, particularly in these areas to assure proper maintenance of population levels.

No changes in seasons or bags limit are recommended at this time.

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BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT 4

GEOGRAPHICAL DESCRIPTION: Admiralty, Baranof, Chichagof, and adjacent islands

PERIOD COVERED: January 1, 1981-December 31, 1981

Seasons and Bag Limit

Unit 4, Chichagof Island south and west of a line which follows the crest of the island from Rock Point (58¼00' N, 136¼21'W), to Rogers Point (57¼35' N, 135¼33' W) including Yakobi and other adjacent islands. Baranof Island south and west of a line which follows the crest of the island from Nismeni Point (57¼34' N, 135¼25' W), to the entrance of Gut Bay (56¼44' N, 134¼38' W), including the drainages into Gut Bay and including Kruzof and other adjacent islands.	Sept. 15-May 31	One bear every 4 regulatory years; provided that the taking of cubs and females accompanied by cubs is prohibited.
Remainder of Unit 4	Sept. 15-May 20	One bear every 4 regulatory years; provided that the taking of cubs and females accompanied by cubs is prohibited.

Population Status and Trend

Based on observations by Department personnel and reports of hunters and guides, the Unit 4 brown bear population appears to be at normal, historic levels, except perhaps for those areas where habitat alterations have influenced bear numbers or behavior.

The fall harvest which is usually skewed toward younger-aged animals, especially females, reduces the mean ages of bears in the harvest and is therefore a sampling artifact. The current short spring season also contributes to a lowering of the age of the sample as some guides admit to taking the 1st legal bear they encounter; whereas, under a longer season, they were more selective for larger and therefore older bears.

Population Composition

Interviews with guides and hunters and observations made by Department personnel resulted in the classification of 109 bears. Cubs of all ages represented 40% of those observations. This representation of cubs is abnormally high and might represent reporting bias in that some persons may take more notice of sows with cubs than of lone bears.

The average ages of the bears in the harvest were slightly below the 13-year average for males (7.2 vs. 7.8) and slightly above the 10-year average for females (8.0 vs. 7.7). In 1981, as in previous years, it is worth noting that there was a substantial number of old-age animals in the harvest; 15 of the 60 bears for which ages were available were over 11 years of age. The age data suggest a healthy population and one on which hunting has a negligible impact.

Mortality

The sport harvest in 1981 was 63 bears. Sex, age, and other characteristics of the harvest were well within the norm for Unit 4, except that there may be a trend developing toward a greater portion of the harvest being taken by nonresident, i.e., guided hunters (Appendix A). There may also be the beginning of a downward trend in the percentage of males in the harvest.

Twelve bears were known to have been taken in defense of life and property or illegally. There continues to be difficulty in obtaining compliance with sealing and the reporting procedures of nonsport kills as provided by 5 AAC 81.060(b).

Management Summary and Recommendation

From a total number perspective, it would appear the Unit 4 brown bear population is adequately healthy to support the sport hunting effort existing today. Two aspects of the harvest need be watched, however. First, there may be a trend developing in which nonresident (guided) hunters are taking a greater percentage of the harvest. If this continues, seasons can be adjusted to give resident sportsmen a greater hunting opportunity. Secondly, there may be a downward trend in the

percentage of males in the harvest. Bunnell and Tait (1980) report that parity in the sex ratio of a harvest is suggestive of a heavy harvest.

The 1981 sport harvest of 63 bears is in line with the parameters established by the Alaska Board of Game and is consistent with Division of Game's long-term management plan which has been endorsed by the Board. The nonsport kill continues to be excessive, but no ways are known to reduce that kill.

It is necessary that agencies involved with bear management in Game Management Unit 4 (the Alaska Department of Fish and Game, the Alaska Board of Game, the Alaska Guide Licensing and Control Board, and the U.S. Forest Service) work in concert to develop productive policies and actions.

No changes are recommended in seasons or bag limits.

Literature Cited

Bunnell, F., and D. Tait. 1980. Bears in models and in reality--implications to management. Pages 15-24 in C. Martinka and K. McArther, eds. Bears--their biology and management. Bear Biol. Assoc. Conf. Ser. 3. U.S. Gov. Print. Off. Washington, D.C.

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Appendix A. Brown bear sport harvest, calendar years 1961 through 1981, Game Management Unit 4 (ages include nonsport kills after 1980).

Calendar year	Total kill	% Kill in spring	% Males	% Nonresident kill	Mean skull size, male	Mean cem. lines Male (N)	Female (N)
1961	39	72	80	59			
1962	44	73	66	66			
1963	27	67	74	56			
1964	55	72	67	44			
1965	64	67	67	52			
1966	75	65	63	67			
1967	62	66	69	48	22.7[a]		
1968	50	72	76	36	22.3	8.0 (10)[b]	
1969	66	67	77	52	22.7	7.1 (32)	
1970	66	85	73	55	22.0	7.8 (40)	
1971	77	78	64	52	22.7	8.3 (44)	8.1 (15)
1972	77	66	75	53	22.5	8.8 (55)	6.4 (17)
1973	99	72	68	40	21.6	7.7 (63)	8.5 (32)
1974	84	74	73	51	22.2	7.6 (57)	7.7 (21)
1975	105	72	69	57	22.2	8.1 (66)	6.4 (29)
1976	141	79	64	60	22.4	9.4 (90)	8.6 (50)
1977	66	83	70	55	21.6	7.5 (44)	8.6 (17)
1978	67	73	75	52	21.5	7.5 (49)	7.8 (16)
1979	49	71	67	74	21.0	6.4 (31)	6.9 (15)
1980	66	60	57	53	22.2	8.1 (46)	8.7 (23)
1981	63	64	67	60	21.2	7.2 (36)	8.0 (26)

[a] Skull size in inches.
[b] () = number in sample.

BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT 5

GEOGRAPHICAL DESCRIPTION: Yakutat and Malaspina Forelands, Russell Fjord, Gulf of Alaska

PERIOD COVERED: January 1, 1981-December 31, 1981

Season and Bag Limit

Sept. 1-May 31	One bear every 4 regulatory years; provided that the taking of cubs or females accompanied by cubs is prohibited.

Population Status and Trend

No data were collected. However, general observations, hunter/guide interviews, and stream surveys indicate that the brown bear population in Unit 5 is currently stable.

Population Composition

Foot surveys were conducted on only 2 of the 4 drainages normally used as indicator streams for bear density. A good data base already exists for these streams because they have been routinely surveyed by the Commercial Fisheries Division.

Sockeye Creek was surveyed on July 16, 1981. Bear sign was abundant, but no bears were observed. Compared to last report period, the level of use appeared to be about the same.

The second drainage surveyed was Humpie Creek, which flows into Yakutat Bay. A foot survey was conducted on August 25, 1981. No bears were observed, but sign was abundant.

The Situk River-Mountain Stream drainage was not surveyed during this report period due to extremely high water levels, nor was the Italio River drainage due to logistical restraints.

An aerial survey of the hill complex bounded by Russell Fjord on the north and east and Disenchantment Bay and Yakutat Bay on the west and south was conducted on October 8, 1982 using a Piper PA-18-125 Super Cub. Survey conditions were good, but no brown bears were observed during 65 minutes of survey time.

As in past years, the Yakutat city landfill continued to be an attraction for many brown bears. Thirteen consistently utilized the dump, including 3 lone bears and 2 adult females with 4 young each. One of the females was accompanied by 4 yearlings, while the 2nd had 4 cubs of the year. The female with the 4 new cubs

(a marked individual) had produced 3 cubs in spring 1979 and had abandoned them as yearlings to rebreed in 1980, resulting in the production of 7 offspring over a 4-year period.

Mortality

Nonsport mortality for the report period included 2 bears that were killed in defense of life or property, and an additional unaccompanied cub of the year that was euthanized because it had severe injuries. The cub was first suspected to have gunshot wounds, but a necropsy showed it was probably injured in an altercation with another bear, possibly attempted predation.

Given the relatively high cub production observed unitwide, and the high number of bears associated with the Yakutat landfill, mortality resulting from intraspecific interactions can be expected to continue and possibly increase as long as this artificial food source exists.

The sport harvest for this period was 28 bears (19 males, 8 females, and 1 of unknown sex). This is the highest sport harvest recorded for GMU 5 since the inception of the sealing program in 1961 and represents a 69% increase over the 21-year average of 16.6 bears killed annually.

In spring, hunters killed 14 bears (12 males and 2 females). In fall, hunters also killed 14 bears, but with a sex composition of 7 males, 6 females, and 1 unknown, for an overall figure of 70% males in the harvest. This ratio compares favorably with past harvest records.

The mean skull size for 17 males was 21.4 inches, with an average age of 5.5 years (range 2.4 to 12.8). Seven females had a mean skull size of 20.8 inches and an average age of 4.2 years (range 2.8 to 13.8).

Management Summary and Recommendations

Currently, the brown/grizzly bear population in Unit 5 appears to be stable and may be increasing.

Observed cub production is good although some early abandonment and interspecific mortality appears to be occurring (at least in high-density, artificial-feeding situations), making the long-term effects of this initial recruitment to the population questionable.

The local landfill is still improperly managed and continues to be an important source of food for many bears, causing an artificially high population level adjacent to the community of Yakutat. These bears often visit the housing areas, resulting in frequent bear/human confrontations, some property damage, and difficult management problems. Fortunately, no human injuries or deaths have occurred in recent years, but many hours have been

spent responding to public requests for assistance and attempting to prevent the unnecessary destruction of animals. To alleviate these problems, it is imperative that changes be made in the operating procedures for the landfill.

The offal disposal site used by the fish processing plant in Dry Bay on the Alsek River has been an unnatural food source for brown bears for many years. There have always been a few bear problems associated with the high concentration of animals at the site, but no human injuries have occurred nor have many bears had to be destroyed. In recent years, however, a new and potentially disasterous situation has developed. As river rafting has become more popular and the number of rafters has grown, word about the "gut pile" has spread and it has become a tourist attraction. Consequently, probability of an injurious or fatal bear/human confrontation has risen dramatically; the situation must be corrected immediately.

Currently, officials from the Alaska Department of Environmental Conservation and the Department of Fish and Game, in conjunction with personnel from Glacier Bay National Park and the operators of the processing plant, are working on finding a solution before injuries occur or more bears have to be destroyed. This situation must be monitored closely in the future.

The sport kill of brown bears during this report period is the highest in 21 years of recordkeeping. At this time, it is unknown whether this represents an increase in hunting pressure or an increase in hunter success, but both aspects should be closely monitored in the future.

No changes in season length or bag limit are recommended at this time.

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BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT Unit 6

GEOGRAPHICAL DESCRIPTION: Prince William Sound and North Gulf Coast

PERIOD COVERED: January 1, 1981-December 31, 1981

Seasons and Bag Limit

Jan. 1-May 25	One bear every 4 regulatory years; provided that the taking of cubs and females accompanied by cubs is prohibited.
Oct. 10-Dec. 31	

Population Status and Trend

Sufficient data to determine current status or trend of brown bears in Unit 6 were not available.

Population Composition

No data were available.

Mortality

The brown bear sport harvest was 17 bears: 10 males, 6 females, and 1 of unknown sex. There was 1 nonsport kill reported in 1981.

Eleven bears were taken in spring and 6 in fall. Nonresident hunters took 9 bears; most of the nonresident harvest occurred during spring (7).

Males taken in 1981 averaged 23.5 inches in skull size and 5.8 years of age. Females averaged 22.2 inches in skull size and 5.6 years of age.

Distribution of the brown bear harvest was as follows:

1 - Montague Island
1 - Hinchinbrook Island
4 - Valdez to Cordova
1 - West Copper River Delta
10 - East of Copper River

Management Summary and Recommendations

The 1981 harvest of 17 brown bears was 41% below the 1980 level of 29 bears and was the smallest harvest since 1961. The 21-year average was 31 bears. Analysis of the harvest data indicated a general lack of hunting effort. Information on percentage of males, skull size, age, and nonresident harvest are all average or near average for Unit 6.

No regulatory changes were recommended.

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BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNITS 7 AND 15

GEOGRAPHIC DESCRIPTION: Kenai Peninsula

PERIOD COVERED: January 1, 1981-December 31, 1981

Seasons and Bag Limit

Unit 7	May 10-May 25 Sept. 10-Oct. 10	One bear every 4 regulatory years; provided that the taking of cubs or females accompanied by cubs is prohibited.
Unit 15	May 10-May 25 Sept. 1-Oct. 10	

Population Status and Trend

The amount of available brown bear habitat on the Kenai Peninsula has remained relatively stable over the past 20 years. Estimates of brown bear population densities in Units 7 and 15 are not available at this time. Incidental observations made during surveys for other game species and sightings made by the public suggest that the brown bear population is increasing.

Population Composition

No data were available.

Mortality

Sealing records show that 14 brown bears were taken in the 1981 sport harvest (Table 1). An additional 3 bears were killed in defense of life and property. Mean age in 1981 of males and females was 9.6 years ($\bar{N}$ = 5) and 5.7 years ($\bar{N}$ = 9), respectively, compared to 9.6 years ($\bar{N}$ = 5) for males and 6.2 years ($\bar{N}$ = 8) for females in 1980. The frequency of bears ≥6 years of age in the sport harvest has remained at 36% for the past 2 seasons. The entire 1981 harvest was by resident hunters.

Table 1. 1981 spring and fall brown/grizzly bear harvest on the Kenai Peninsula by Game Management Unit.

GMU 7				GMU 15			
Spring		Fall		Spring		Fall	
F	M	F	M	F	M	F	M
0	1	1	1	2	1	2	6

Management Summary and Recommendations

Brown bears are relatively abundant in parts of Units 7 and 15. However, the Kenai Peninsula is not currently recognized by guides or sport hunters as a popular brown bear hunting area. Brown bears have traditionally been harvested in an opportunistic manner. The 19-year average annual harvest, prior to the introduction of a spring season in 1980, was 6 bears. Since 1980, 21% of the bears have been killed during the spring season and 79% during the fall season.

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BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT 8

GEOGRAPHICAL DESCRIPTION: Kodiak and adjacent islands

PERIOD COVERED: January 1, 1981-December 31, 1981

Seasons and Bag Limit

Unit 8, that portion of Kodiak Island south and west of a line from Hidden Basin Creek to the mouth of Kizhuyak River, and Uganik and Amook Islands.	Oct. 25-Nov. 30 Apr. 1-May 15	One bear every 4 regulatory years by drawing permit only; provided that the taking of cubs and females accompanied by cubs is prohibited. See 5 AAC 81.055 and separate permit hunt supplement.
Unit 8, that portion of Kodiak Island north and east of a line from the mouth of Hidden Basin Creek to the mouth of Kizhuyak River and including Spruce Island.	Oct. 1-Nov. 30 Apr. 1-May 31	One bear every 4 regulatory years by registration permit only; provided that the taking of cubs or females accompanied by cubs is prohibited. See 5 AAC 81.055 and separate permit hunt supplement.
Remainder of Unit 8	Oct. 25-Nov. 30 Apr. 1-May 15	

Population Status and Trend

The sex and age composition of the brown bears killed in Unit 8 has shown little change in several years. High selectivity for males has continued and should maintain a stable population.

Population Composition

Aerial composition surveys along selected streams were conducted by the U.S. Fish and Wildlife Service in July and August. A total of 310 bears was observed in 7 replicate stream surveys. The composition of the bears observed was 169 singles (55%) and 41 adult females (45%) with young.

Mortality

Hunters killed 148 bears in 1982, 98 males (66%) and 50 females (34%). One hundred-eleven bears were killed during the spring season, 77 males (69%) and 34 females (31%). Thirty-seven bears were killed during the fall season, 21 males (57%) and 16 females (43%). The distribution of the kill by harvest subunit was: 1 - Afognak, Raspberry, and Shuyak Islands--14 bears; 2 - NE Kodiak Island--19 bears; 3 - SE Kodiak Island--21 bears; 4 - SW Kodiak Island--61 bears; and 5 - NW Kodiak Island--33 bears. Hunter success was 34% for the 436 permittees who reported hunting. A total of 558 drawing and registration permits was issued in 1981.

Mean age of 96 males was 6.5 years and mean age of 48 females was 7.3 years. Forty-nine males (51%) and 28 females (57%) were adult bears $\geq$5years of age.

Nine additional bear mortalities were reported. These mortalities included 6 bears taken in defense of life or property, 1 bear killed by an avalanche, 1 bear killed but lost by a hunter, and 1 bear dead of unknown causes. Sex composition of these mortalities was 4 males, 3 females, and 2 bears of unknown sex.

Seven incidents of bears being wounded were tallied from permit reports.

The total recorded brown bear mortality from all sources in Unit 8 was 157.

Management Summary and Recommendations

The harvest of 148 bears in 1981 was the highest since 1974 when 165 bears were killed. It was the 7th highest harvest since 1961. Exceptionally good hunting weather during the 1981 spring season resulted in 61% hunter success in the permit drawing hunt compared to only 55% success during spring 1980. A total of 111 bears was taken in the spring 1981 season compared to 89 bears taken during spring 1980. Fall season harvest was stable at 37 bears.

Recommended kill levels were exceeded in harvest subunits 2-5. The 1981 kill from these subunits totaled 134 bears, 12% above the recommended annual kill level of 120.

The harvest of 50 females in 1981 approximated the previous 20 years' average of 51 females annually. The harvest of 98 males in 1981 was well above the previous 20 years' average of 80 males/year.

Mean ages of both males and females were within the range of mean ages recorded during the previous 12 years.

The proportionally high take of males in 1981 and relatively stable age composition recorded for both sexes indicate that the brown bear population is being harvested at a sustainable level. The recommended kill of 55 bears in subunit 4 has been equaled or exceeded in 3 of the last 6 years. A slight reduction in the permits issued for this subunit should be made to reduce the kill to the recommended level.

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BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT 9

GEOGRAPHICAL DESCRIPTION: Alaska Peninsula

PERIOD COVERED: January 1, 1981-December 31, 1981

Seasons and Bag Limit

Unit 9C, the drainages of the Naknek River only.	Sept. 1-Oct. 31 May 1-June 30	One bear every 4 regulatory years by registration permit only; provided that the taking of cubs and females accompanied by cubs is prohibited. See 5AAC 81.055 and separate registration permit hunt supplement.
Unit 9D, that portion south and west of a line from Moffett Point to the eastern side of the eastern entrance of Kinzarof Lagoon and north of a line from the base of Cape Glazenap to Frosty Peak thence to the mouth of Old Man's Lagoon.	Oct. 1-Oct. 31 May 1-June 30	
Remainder of Unit 9	*Oct. 7-Oct. 21 May 10-May 25	One bear every 4 regu-regulatory years; provided that the taking of cubs or females accompanied by cubs is prohibited.

* Board policy is that the season in this portion of Unit 9 will be open every other regulatory year.

Population Status and Trend

No data were collected on population size or trend. Nevertheless, casual observations and comments from local residents and hunters suggest that bear densities remain high.

Population Composition

During the 1960's, the Department of Fish and Game conducted aerial surveys of bears concentrated on salmon streams along the Alaska Peninsula. Although a number of possible biases associated with counting and classifying bears was recognized (Erickson and Siniff 1963), results from these surveys were

rather consistent. Of the bears classified from 1962 to 1969, an average of 24% were females accompanied by young, 51% were young accompanied by females, and 25% were single bears.

Since 1980, the U.S. Fish and Wildlife Service has conducted aerial bear surveys on tributaries of Becharof Lake, on Unimak Island, and near Cold Bay. Surveys were expanded to the Ugashik Lakes in 1981. In general, methods used in 1980 and 1981 were similar to those employed in the 1960's. Results from 1980 and 1981 surveys were combined to yield an average composition of 18% females accompanied by young, 36% young accompanied by females, and 46% single bears. Although the USFWS surveys are not directly comparable to those conducted in the 1960's, the apparent difference in productivity should be evaluated in conjunction with recent harvest statistics.

Harvest data (Appendix A) from fall hunting seasons show a decline in female mean age between 1980 and 1981. In both fall and spring seasons, the percentage of females >5 years of age has declined. Age data on males in recent harvests do not show the same downward trend.

Mortality

Sport hunters killed 191 bears in 1981; 55% were males, normal for a fall season. Of the total kill, 161 bears were taken south of the Naknek River.

In addition to the take by sport hunters, 5 bears were reported killed in defense of life and property. The number of unreported defense kills was estimated at 6 to 10; rural residents were suspected of taking 10 to 15 bears for domestic use. Thus, the total human kill of bears was approximately 215.

No other mortality was documented during this report period.

Management Summary and Recommendations

That portion of Unit 9 north of the Naknek drainage has traditionally been lightly hunted due to limited access. Enlargement of Katmai National Park and the creation of Lake Clark National Park have reduced the amount of land available for bear hunting. Harvest statistics for this area should be closely monitored to ensure that bear populations on lands still open for hunting remain healthy.

The registration permit hunt on the Naknek River was designed to minimize bear/human conflicts in the most heavily settled portion of Unit 9. In 1981, 4 bears were taken. This hunt has been held for 6 years and appears to be working well. Hunters take an average of 5 bears/year from the drainage during the 162-day season, and the nonsport kill averages 2 bears/year.

The population is healthy; bears are well distributed. Potential problem bears that frequent residential areas are quickly removed.

The registration permit hunt in the Cold Bay area provides similar protection to that community. Unlike the Naknek hunt, however, the number of permits and harvest are rigidly controlled. A maximum of 10 permits are valid at any given time, and emergency closures may be used to prevent the yearly harvest from exceeding 4 bears. During the combined spring and fall seasons of 1981, 2 bears were taken.

That portion of Unit 9 south of the Naknek River is subdivided into 3 subunits, 9-02, 9-03, and 9-04 from north to south, with a total harvest guideline of 150 bears. If this harvest were evenly distributed on the basis of surface area, the total kill in the subunits would be 68, 27, and 55 bears, respectively. Presented in Appendix B are recent kill data for subunits 9-02 through 9-4 (fall season only).

During the past 5 years, annual harvests from the southern portion of Unit 9 have exceeded the 150-bear guideline by an average of only 9 bears/year. However, in 1980 and 1981, the harvest has averaged 18% above the guideline. Of concern is the decline in mean age of females and the smaller percentage of females >5 years of age in Subunits 9-02 and 9-03. It is not certain whether these data reflect an actual change in sex and age structure of the population or some other factors. In light of recent USFWS aerial surveys that suggest reduced recruitment into the population, management strategies in Unit 9 should undergo a comprehensive review following the spring 1982 season.

To further assess the composition and productivity of the bear population on the Alaska Peninsula, it is recommended that salmon streams in the Black Lake area be surveyed using procedures employed during the 1960's.

No changes in seasons or bag limits were recommended.

Literature Cited

Erickson, A. W., and D. B. Siniff. 1963. A statistical evaluation of factors influencing aerial survey results on brown bears. Trans. North Am. Wildl. Conf. 28:391-409.

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Appendix A. Game Management Unit 9 brown bear sport harvest, 1970-1981.

Year	Yearly harvest			Fall harvest				Spring harvest			
				Mean age		% >5 yr		Mean age		% >5 yr	
	Males	Females	Total	Males	Females	Male	Female	Male	Female	Male	Female
1970	103	50	158	5.6	7.2	36	45	8.2	6.6	75	1
1971	122	63	195	5.7	5.5	28	35	8.6	4.8	85	53[a]
1972	154	119	279	6.2	7.8	37	57	8.4	9.3	66	1
1973	138	98	242	5.6	7.3	33	50	6.4	5.7	69	45
1974	75	66	141	5.5	7.5	32	46	--	--	--	--
1975	120	96	224	5.6	7.0	30	47	6.9	7.2	60	61
1976	108	41	154	--	--	--	--	7.6	6.6	64	53
1977	108	77	189	4.5	7.0	25	46	--	--	--	--
1978	133	47	183	--	--	--	--	7.0	6.7	58	63
1979	109	55	167	5.1	6.0	27	38	--	--	--	--
1980	139	62	203	--	--	--	--	7.1	7.0	62	47
1981	105	84	191	5.7	5.6	31	32	--	--	--	--
Totals[b]	2,430	1,292	3,825								

[a] 1970-73 averaged because of small sample sizes.
[b] Totals include all bears taken since 1961.

Appendix B. Fall season harvest statistics for southern portion of Unit 9, 1975-1981.

Year	Total kill	% Male	% by nonres.	Mean skull size Male	(N)	Female	(N)	Mean age Male	(N)	Female	(N)	% >5 yr Male	Female
Subunit 9-02													
1975	46	54	74	22.8[a]	(24)[b]	21.7	(21)	5.6	(25)	7.9	(21)	24	57
1977	71	61	73	22.1	(40)	21.2	(26)	4.3	(38)	6.9	(25)	21	50
1979	66	62	79	23.1	(38)	20.8	(23)	5.0	(40)	5.5	(24)	38	30
1981	65	52	80	22.7	(31)	20.9	(28)	4.6	(33)	4.6	(31)	8	13
Mean	62	57	77	22.7		21.1		4.9		6.2	25	38	
Subunit 9-03													
1975	25	46	88	23.0	(11)	22.1	(12)	4.1	(11)	5.8	(13)	27	31
1977	35	60	80	23.7	(21)	22.1	(12)	4.7	(14)	7.6	(14)	36	50
1979	30	67	80	23.4	(20)	20.4	(10)	5.0	(20)	4.2	(10)	30	20
1981	46	50	70	22.8	(22)	21.1	(22)	4.7	(21)	4.6	(23)	33	27
Mean	34	56	79	23.2		21.4		4.6		5.8		31	32
Subunit 9-04													
1975	60	48	62	22.3	(27)	21.5	(29)	5.1	(27)	7.1	(29)	26	50
1977	53	49	70	22.2	(25)	21.6	(26)	4.4	(25)	7.1	(24)	20	44
1979	45	77	73	23.6	(34)	22.3	(10)	4.8	(34)	7.5	(10)	24	40
1981	50	57	78	24.0	(27)	22.2	(20)	6.4	(27)	7.5	(20)	29	52
Mean	52	58	71	23.0		21.9		5.2		7.3		25	46

[a] Skull size in inches.
[b] () = number in sample.

BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT 10

GEOGRAPHICAL DESCRIPTION: Unimak Island

PERIOD COVERED: January 1, 1981-December 31, 1981

Seasons and Bag Limit

May 10-May 25	One bear every 4 regulatory years by drawing permit only; provided the taking of cubs and females accompanied by cubs is prohibited.
Oct. 1-Oct. 21, extended to Nov. 4 by Emergency Order #02-04-81.	

Population Status and Trend

During mid-August 1981, staff of the Izembek National Wildlife Refuge made several aerial surveys of Unimak Island. Of 77 bears observed, 44 (57%) were alone, 7 were adult females with a total of 16 cubs, and 3 were females with a total of 7 yearlings. Similar surveys the previous year classified 92 bears, including 9 adult females with 25 cubs of the year. Although the sample sizes are small and the survey technique may result in duplicate counts of some bears, the drop in the number of 1980 cubs that were seen as yearlings in 1981 suggests poor survival.

At this time, the available data are inadequate to further assess brown bear status or trend.

Mortality

Three bears were reported taken by hunters on Unimak Island. A 13.4-year-old male was taken during the spring hunt; a 5.8-year-old male and 13.8-year-old female were taken during the fall hunt. No data were available on other causes of mortality.

Management Summary and Recommendations

Brown bear hunting on Unimak Island is limited by State permits and by Federal regulations limiting aircraft access to beaches and existing runways.

In 1981, only 1 of 7 spring permittees reported hunting. He spent 7 days in the field and saw 10 bears. Eight permits were issued for the fall hunt, but notification of permittees was delayed until the last week of September due to an administrative oversight. The season was extended by 2 weeks to allow permittees to prepare for a hunt. Four permittees reported hunting an average of 4 days and saw 38 bears. Two hunters were successful,

including 1 nonresident who took a bear during the season extension.

To prevent a repeat of the problem in notifying permit winners, it was recommended that permits be mailed from Anchorage, rather than from the King Salmon office.

Under the existing State permit system and Federal regulations, Unimak Island will continue to offer a high-quality wilderness experience with a good chance to harvest large bears.

No changes in seasons or bag limits were recommended.

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BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT 11

GEOGRAPHICAL DESCRIPTION: Wrangell Mountains

PERIOD COVERED: January 1, 1981-December 31, 1981

Seasons and Bag Limit

May 10-May 25	One bear every 4 regulatory years; Sept. 1-Oct. 31 provided that the taking of cubs and females accompanied by cubs is prohibited.

Population Status and Trend

No population data were collected, however, frequent observations by Department personnel and the general public indicated an abundant population of brown bears.

Population Composition

No data were available.

Mortality

Nine brown bears (2 males, 5 females, and 2 sex unknown) were killed in Unit 11. The mean age of these bears was 6.5 years. The mean skull size of males was 21.3 inches; female skulls averaged 19.5 inches. Resident hunters killed 6; nonresident hunters killed 3 bears.

Management Summary and Conclusion

The brown bear harvest increased slightly in 1981 after a 2-year decline attributed to the creation of the Wrangell-St. Elias National Monument. Sport hunting in the Wrangell-St. Elias National Monument was prohibited in 1979 under park regulations. The 1980 settlement of the Alaska Lands bill created park-preserve areas where sport hunting is once again allowed. For this reason, the brown bear harvest should increase as more guides and sport hunters utilize the park-preserve.

No changes in season or bag limit were recommended.

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BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT 12

GEOGRAPHICAL DESCRIPTION: Upper Tanana and White River drainages

PERIOD COVERED: January 1, 1981-December 31, 1981

Seasons and Bag Limit

Apr. 1-May 31	One bear every 4 regulatory years; provided that the taking of cubs and females accompanied by cubs is prohibited.
Sept. 1-June 10	

Population Status and Trend

Grizzlies are relatively abundant in Unit 12. According to local outdoorsmen, the number of grizzly bears has increased in recent years, but the population is believed to be stable at this time.

While no standardized surveys have been conducted, an approximate population estimate was calculated based upon past harvest data. Because the annual number of bears harvested has not varied greatly from the mean of 17.6 and mean ages of harvested bears have not changed appreciably, an estimate of 350 bears was calculated for the 8,600-square mi Unit (1 bear/25 sq mi). This estimate is based upon the assumption that grizzlies have been harvested at a maximum rate of 5% during the 21-year period 1961-81. If the mean annual harvest is actually less than 5% of the bear population, then the total bear population may be greater than 350.

Mortality

The 1981 reported harvest of 22 bears exceeded the 21-year annual average harvest (17.6) by 25%. None of the increase in 1981 was attributed to increased season length since only 2 bears were taken during the extended portion of the season. Only 4 bears were taken during the spring season. Of the 18 bears taken in fall, all but 2 were killed in September.

Males (14) composed 64% of the harvest compared to the historical proportion of 52%. The mean age of bears harvested in 1981 was 7.9 years ($\underline{N}$ = 19), compared to the historical average of 7.5 years ($\underline{N}$ = 202).

Among the 19 bears taken in 1981 for which ages were determined, 53% ($\underline{N}$ = 10) were <5 years of age. This compares to 59% in 1980 and 49%, historically.

The bear harvest was well distributed throughout the mountainous, southern half of Unit 12 in the Mentasta, Nutzotin, and north Wrangell Mountains. Although bears are relatively abundant in the eastern Alaska Range and, seasonally, in the main Tanana valley, no bears were taken in the latter 2 areas during 1981. Nonresident hunters took 9 bears (41% of the harvest), compared to 57%, historically.

Management Summary and Recommendations

Based upon harvest data and reports from local outdoorsmen, the grizzly population in Unit 12 appears to be relatively abundant, productive, and likely stable.

Lengthened bear seasons, while providing more hunting opportunity, have not resulted in an increased harvest of bears. The slight increase shown in the 1981 harvest may be attributable to greater hunting pressure in the Wrangell-St. Elias Preserve now that land and hunting status in that area have been settled.

No changes in season length are recommended. The bag limit could be increased to 1 bear/year, however, to increase the harvest by residents.

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BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT 13

GEOGRAPHICAL DESCRIPTION: Nelchina Basin

PERIOD COVERED: January 1, 1981-December 31, 1981

Seasons and Bag Limit

May 10-May 25	One bear every 4 regulatory years; provided that taking of cubs and females accompanied by cubs is prohibited.
Sept. 1-Oct. 31	

Population Status and Trend

A density of 1 brown bear/16-24 mi^2 was estimated for portions of of Unit 13 during 1979 (Ballard et al. 1980). The relative abundance of brown bears in Unit 13 is supported by frequent observations of bears made by Department personnel and the general public. Additionally, the public reported to the Department more incidents with problem bears in 1981 than in previous years.

Population Composition

The mean spring age composition for captured brown bears was determined for portions of Unit 13 in 2 separate studies (Miller and McAllister 1982). The 1979 upper Susitna studies showed a mean age of 7.4 years for both males and females captured. The mean ages during the Susitna Hydroelectric studies in 1980 and 1981 were 7.7 years for males and 7.9 years for females. These mean ages were calculated for captured individuals >3.0 years and are similar to the mean ages of harvested bears (>3.0 years).

The mean litter size for radio-collared female brown bears in the Susitna studies (1978-1981) was 2.3 newborn cubs (9 litters) and 1.6 yearlings (16 litters).

Mortality

The 1981 brown bear harvest was 80. The harvest was comprised of 50 males, 29 females, and 1 unknown sex. Twenty-four bears were taken during the spring season and 56 during fall.

The mean age of all bears in the harvest was 5.2 years, a decline from 5.4 years in 1980 and from 7.2 years in 1979. However, the 1981 age data included 8 illegal bears (7 yearlings and 1 cub) taken during 1981. Eleven yearlings were taken in 1980. The mean age of all harvested males declined from 6.5 years in 1979 to 5.0 years in 1980 to 4.3 years in 1981. No trends are apparent in mean ages of females harvested (6.9 years in 1981).

The mean skull size was 19.7 inches for males, compared with 20.9 inches in 1980. The mean skull size for females was 19.2 inches in 1981 and 19.1 inches in 1980.

In addition to the sport harvest, data from observations of radio-collared females with newborn cubs in 1981 indicated a 30% mortality rate during the 1st year of life (Miller and McAllister 1982).

Management Summary and Conclusions

Data derived from research conducted in Unit 13 indicated that adult brown bears have a high reproductive potential and that the population is young. A density estimate for Unit 13 brown bears exceeds estimates for other portions of Interior Alaska.

The sport harvest of bears has increased by a mean of 21% since initiation of spring seasons in 1980 and 1981 compared with the preceding 2 years without spring seasons. The harvest was comprised of mostly young, small bears, especially males.

Management guidelines allow for maximum brown bear hunting opportunities in Unit 13. In response to changes in age data and because of public feelings about bear predation on moose, the brown bear hunting regulations in Unit 13 should be carefully evaluated. However, continued research and intense management scrutiny of harvest figures and population data should be maintained to ensure harvests do not exceed management goals.

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BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT 14

GEOGRAPHICAL DESCRIPTION: Upper Cook Inlet

PERIOD COVERED: January 1, 1981-December 31, 1981

Seasons and Bag Limit

Unit 14A and 14C except that portion of 14C in Chugach State Park	Sept. 1-Oct. 10	One bear every 4 regulatory years; provided that the taking of cubs and females accompanied by cubs is prohibited.
Unit 14B	Sept. 1-Oct. 31 May 10-May 25	
Unit 14C in Chugach State Park	No open season	

Population Status and Trend

No data were available.

Population Composition

No data were available.

Mortality

Five brown bears, 3 males and 2 females, were killed in Unit 14 during this reporting period. All bears were killed during the fall season.

Management Summary and Recommendations

The length of the brown bear season was increased from 56 days in 1980 to 77 days in 1981; however, the harvest declined from 8 to 5 bears. There is little interest in brown bear hunting in this Unit. All brown bears were killed during the moose hunting season; it is believed they were taken incidentally by moose hunters.

Unit 14 has never experienced a large brown bear harvest. Between 1961 and 1971, the average annual harvest was 10; between 1972 and 1981, the annual harvest was 5.

No changes in seasons or bag limits were recommended.

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BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT 16

GEOGRAPHICAL DESCRIPTION: West side of Cook Inlet

PERIOD COVERED: January 1, 1981-December 31, 1981

Seasons and Bag Limit

May 10-May 25 Sept. 1-Oct. 31	One bear every 4 regulatory years; provided that the taking of cubs and females accompanied by cubs is prohibited.

Population Status and Trend

Frequent field observations and reports of nuisance bears indicated an abundant population of brown bears in Unit 16.

Population Composition

No data were available.

Mortality

Thirty-five brown bears were reported killed during the 1981 season. Four males were killed during the spring season; 16 males, 13 females, and 2 of unknown sex were killed during fall.

The mean skull sizes and ages of the brown bears killed in Unit 16 during 1981 were as follows (sample size in parentheses):

	Spring		Fall	
	Male	Female	Male	Female
Skull size (N)	23.9(4)	0	21.7(15)	20.5(12)
Age (N)	5.7(4)	0	6.6(16)	8.6(12)

Management Summary and Recommendations

The mean age (6.4 years) and skull size (22.2 inches) of the male harvest increased over the previous year (4.4 years and 20.6

inches). Mean age and skull size continue to fluctuate from year to year. These fluctuations are believed due to the small sample sizes rather than a trend in population status.

No change in seasons or bag limits were recommended.

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BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT 17

GEOGRAPHICAL DESCRIPTION: Northern Bristol Bay

PERIOD COVERED: January 1, 1981-December 31, 1981

Seasons and Bag Limit

May 10-May 25 Oct. 7-Oct. 21	One bear every 4 regulatory years; provided the taking of cubs and females accompanied by cubs is prohibited.

Population Status and Trend

No data were available to evaluate the status or trend of the brown bear population in Unit 17. General observations indicate population densities are stable or slowly increasing in Subunits 17A and 17C and are decreasing in 17B. The effect of high harvests in Subunit 17B may be a decrease in the mean age of the population.

Population Composition

No data were available.

Mortality

The total brown bear kill by sport hunters in 1981 was 26; 19 were taken during the spring season and 7 were taken during fall. Males composed 69% of the total kill. Twenty-three (88%) of these bears were reported taken in Subunit 17B, primarily from the King Salmon River and upper Nushagak River drainages. Three illegally taken bears were reported by the Division of Fish and Wildlife Protection. No bears taken in defense of life and property were reported, and none were reported taken by local residents.

The mean age of males in the harvest was 7.2 years (N = 18), and the mean age of females was 5.6 years (N = 8). A declining trend is evident for both sexes since 1977 (r = -.97 for males) (r = -.88 for females).

Management Summary and Recommendations

The Unit 17 brown bear population is subject to 3 distinct sources of mortality by the public: guided sport hunters, local

hunters, and by people who kill bears in defense of life and property. Most of the guided sport hunting occurs in 17B in the Nushagak Hills, King Salmon, and Mulchatna River drainages. Bears killed during this season by local hunters and those killed in defense of life and property are poorly documented but occur primarily in the lower portions of Subunits 17A and 17C. Guidelines of the current management plan for Unit 17 are not necessarily appropriate for both areas. While it is desirable to maintain a highly productive brown bear population in upper 17B, most residents of 17A and 17C would like to see a lower density of bears maintained near villages and fishing camps.

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BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT 18

GEOGRAPHICAL DESCRIPTION: Yukon-Kuskokwim Delta

PERIOD COVERED: January 1, 1981-December 31, 1981

Season and Bag Limit

Sept. 10-Oct. 10 May 10-May 25	One bear every 4 regulatory years; provided that the taking of cubs and females accompanied by cubs is prohibited.

Population Status and Trends

No data were available.

Population Composition

No data were available.

Mortality

The 1981 reported harvest of 24 bears was the highest ever recorded for Unit 18 (Table 1). This marked the 3rd consecutive year of increased hunting pressure in the Unit. As in the past 2 years, guided nonresident hunters accounted for a high percentage of the take (21 of 24 bears sealed, or 88%). Four guides operated in the Unit in 1981.

Table 1. 1981 Unit 18 grizzly bear harvest.

Season	Total harvest	Males			Females			# Nonres. hunters
		#	%	Mean age	#	%	Mean age	
Spring	6	3	50	12.0	3	50	7.7	6
Fall	18	12	67	6.1	6	33	8.5	15
Total	24	15	63	7.6	9	37	8.2	21

Harvested male bears ranged in age from 10 to 15 years and 3 to 15 years in the spring and fall seasons, respectively. Similarly, female bears ranged from 6 to 9 and 4 to 16 years. The mean ages of bears by sex and season are shown in Table 1. Comparative ages of bears from past years' sealing records are included in Table 2.

The 1981 bear harvest was widely distributed over the Unit. In spring, 2 bears were taken from the Andreafsky Hills and 1 each from the Kisaralik, Arolik, Goodnews, and Unaluk systems. All fall bears came from the Kilbuck/Ahklun Mountains complex with harvests reported from the following watersheds: Tuluksak (3), Kisaralik (5), Kwethluk (2), Eek (5), Kanektok (2), and Goodnews (1). As in 1980, reports were received of bears being shot and left in the field. Most of these alleged incidents occurred south of the Kuskokwim River. No other mortality was documented in 1981.

Table 2. Historic Unit 18 grizzly bear harvest from sealing records.

	Bears		Mean age			
Year/Season	Male	Female	Male	Female	Combined	Season dates
1970 S	--	--	--	--	--	5/15-5/31
1970 F	1	--	10.8	--	10.8	9/1-11/30
1971 F	5	1	9.0	2.8	8.0	9/1-11/30
1974 F	1	--	15.8	--	15.8	9/10-10/10
1976 F	--	1	--	9.8	9.8	9/10-10/10
1977 F	3	1	7.8	10.8	8.6	9/10-10/10
1979 S	4	2	8.4	3.9	6.6	5/10-5/25
1979 F	4	2	7.5	8.8	7.8	9/10-10/10
1980 S	3	2	15.1	7.9	12.2	5/10-5/25
1980 F	4	5	5.3	4.2	4.7	9/10-10/10
1981 S	3	3	12.0	7.7	9.8	5/10-5/25
1981 F	12	6	6.1	8.5	6.9	9/10-10/10

Note: There was no spring season in 1971, and no reported harvest for 1972, 1973, spring 1974, 1975, spring 1976, spring 1977, and 1978. Fall seasons were changed in 1974, spring seasons in 1975.

Management Summary and Recommendations

Research in northwestern Alaska has indicated that grizzly bear populations there can only sustain harvests of 3-5%. Because the harvest has steadily increased in Unit 18 over the last 3 years,

habitat availability, as well as bear ranges and densities, should be determined.

Attempts should be continued to document the illegal harvest of bears in the Unit. As guiding activities increase, so must Department cooperation with guides and their clients if management goals are to be achieved.

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BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT 19

GEOGRAPHICAL LOCATION: Middle and Upper Kuskokwim River

PERIOD COVERED: January 1, 1981-December 31, 1981

Seasons and Bag Limit

Unit 19A	May 10-May 25 Oct. 7-Oct. 21	One bear every 4 regulatory years, provided that the taking of cubs or females accompanied by cubs is prohibited.
Unit 19B	May 10-May 25 Oct. 7-Oct. 21	*One bear every 4 regulatory years by drawing permit only (16 permits will be issued during the fall season); however, the taking of cubs or females accompanied by cubs is prohibited. See 5 AAC 81.055 and separate drawing permit hunt supplement.
Unit 19C and 19D	May 10-May 25 Sept. 10-Oct. 10	One bear every 4 regulatory years, provided that the taking of cubs or females accompanied by cubs is prohibited.

* Permit requirement started with the July 1, 1981-June 30, 1982 regulatory year.

Population Status and Trend

Nearly all of the Unit 19 grizzly bear harvest comes from Subunits 19B and 19C. There has been only limited hunting effort in 19A and 19D because hunting conditions are much more difficult due to terrain and dense timber. Local residents report the grizzly bear population to be expanding in 19A and 19D, and bears are regularly encountered along rivers, especially near salmon spawning areas.

Past harvest data for Unit 19 indicate that during the 1960's the grizzly bear population was lightly exploited (15 bears/year); 81% of this harvest occurred along the Alaska Range in Subunit 19C. Through 1971, most hunting effort was by guided hunters in Subunit 19C, where 66% of the harvest was taken by nonresidents. In 1972, the harvest in 19B showed a sharp increase from an 11-year average of 2 bears to 17 bears/year. In 1973, 27 bears were taken. The bear population in 19B had been lightly exploited based on an average age of adult male bears (>5 years) of 9.0 years. In addition, harvest in Subunit 19C during 1973 and 1974 were the highest on record. Since then, the take in 19C has stabilized at 20-25 bears annually.

Beginning in 1974, grizzly bear harvests in Unit 19 were influenced by closures of bear seasons in Unit 9. When the 1974 spring bear season was closed in Unit 9, harvests increased markedly in Units 19 and 17. This pattern continues to influence harvests in both Units 19 and 17.

In 1975, fall harvest in Unit 19 was the highest on record. More guides operated in Unit 19 to satisfy criteria for exclusive guide areas established by the Guide Licensing and Control Board. Most of this hunting pressure was directed at bears in the Nushagak Hills in Subunit 19B.

In 1977, the harvest dropped, perhaps in response to reopening the season in Unit 9; at the same time, females composed over half of the kill. In 1978, 71 bears were taken, the highest kill on record. The increase was almost entirely directed to Subunit 19B where 41 bears were taken by 14 guides; there was intense competition among guides for the bears. Again, most of the harvest was taken in the fall when Unit 9 was closed. Females composed over 50% of the year's harvest. In 1979, the mean age of harvested males and females taken continued to decline. It was also suspected that there was an increase in falsified records of kill locations; some bears reported taken in Unit 19 were probably taken in other Units.

In 1980, mean ages of bears taken in spring and fall hunts reached their lowest recorded levels, especially for males. The low harvest of 37 bears for 1981 was primarily a result of the sharply reduced fall kill (2) in 19B.

Population Composition

Based on sealing data, the proportion of males in the population has declined steadily during the last 5 years, especially in Subunits 19B and 19C. Similarly, declines have occurred in the age of bears taken. These changes, coupled with observations that fewer bears are present in the Nushagak Hills now than in the mid-1970's, indicate that at least in Subunit 19B overexploitation has occurred.

Three major factors affecting the 1981 harvest were: (1) an unseasonably warm spring which caused bears to emerge from their dens early and to travel to timbered areas less accessible to hunters; (2) the fall season was shortened and moved to a period in October during which only 7% of the previous fall harvests had been taken; and (3) Subunit 19B was placed on a limited permit system effective in fall 1981, and only 2 bears were taken compared to an average fall harvest of 23. There were 26 applicants for the 16 available permits; however, 1 permit area only had 3 applicants for the 5 available permits. Of the 14 permits issued, 9 were drawn by residents, none of whom hunted bears in 19B.

The fall harvest of 22 bears in Subunit 19C was similar to the past average harvest of 23 bears. During 1981, limitation of hunting opportunities in Subunit 19B apparently did not result in a shift of hunting pressure to Subunit 19C.

Management Summary and Recommendations

Nearly all the grizzly bear harvest in Unit 19 is associated with guiding activities. Unfortunately, several of the guides operating in Subunits 19A and 19B have few, if any, ethical hunting standards. Fortunately, some have received substantial fines and jail terms in recent years which may tend to curb some abuses to wildlife resources. Because some guides have little regard for the proper management of bears and may falsely report kill sites, analysis of reported harvest data must be reviewed cautiously.

As a result of the largely unethical hunting activities of many guides in 19B during the 1970's and early 1980's, restrictive regulations were implemented in fall 1981 that have apparently effectively curtailed grizzly bear hunting in 19B. Although this will provide the bear population a respite from the heavy exploitation of the previous decade, the regulations should be reviewed next year to provide for an acceptable level of harvest. Hunting effort should be shifted to the spring when males are most frequently taken.

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BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT 20

GEOGRAPHICAL DESCRIPTION: Central Tanana Valley

PERIOD COVERED: January 1, 1981-December 31, 1981

Seasons and Bag Limit

Unit 20E	Apr. 1-May 31 Sept. 1-June 10	One bear every 4 regulatory years; provided that the taking of cubs or females accompanied by cubs is prohibited.
Remainder of Unit 20	Apr. 1-May 31 Sept. 1-Nov. 30	

Population Status and Trend

Although data regarding the population status of grizzly bears in Unit 20 were lacking, casual observations and other indices suggest the population was moderate in size and in most areas was probably static or beginning to decrease.

Mortality

According to information derived from bear sealing certificates, the grizzly bear sport harvest in Unit 20 increased from 49 in 1980 to 57 in 1981. Five additional animals were taken in defense of life or property. The 20-year mean harvest for Unit 20 is 35 bears.

Residents accounted for 57% of the harvest (26 bears), a decline from last year's 69%. Male bears composed 61% of the harvest, about the same as in recent years. The mean age of all bears killed was 7.5 years, ranging from 2.8 to 20.8 for males (mean 8.2 years) and from 2.8 to 18.8 for females (mean 5.6 years). The mean age of bears harvested since 1969 has averaged 6.9 years.

The harvest by Subunit is as follows:

Subunit	Spring	Fall	Total
20A	5	18	23
20B	3	3	6
20C	2	9	11
20D	0	5	5
20E	7	2	9
20F	1	2	3

The increased harvest occurred primarily in Subunits 20A and 20E, while harvest in Subunit 20C declined slightly from 1980 levels. Comparison of current and past harvest data is difficult because of revised boundaries for Subunits 20B, 20C, 20D, and the addition of 20F, which was formerly a portion of Unit 25.

Management Summary and Recommendations

Attempts to promote larger bear harvests in Subunit 20E resulted in a 3-fold increase in the 1981 harvest. The bear harvest there is unlikely to significantly increase because of the dense vegetation and hilly terrain, which make bear hunting difficult. In addition, most of the Subunit is inaccessible except by ski-equipped aircraft during spring.

The harvest in Subunit 20A and the adjacent portion of 20C east of the Nenana River increased from 20 in 1980 to 31 in 1981. Ten bears were taken from the Yanert River drainage during 1981, compared to only 4 in 1980. Recent harvests in Subunit 20A and adjacent 20C are above sustainable levels and should be reduced. Assuming that grizzly populations can sustain a maximum annual harvest of 4%, as most contemporary literature suggests, the population would have to exceed 740 animals to maintain the current level of harvest. Based on bear densities recorded elsewhere in Alaska, Subunit 20A and adjacent 20C probably contain no more than 130 bears.

Unless grizzly populations are to be managed primarily to benefit ungulates, the grizzly harvest should be substantially reduced in Subunits 20A and 20C.

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BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT 21

GEOGRAPHICAL DESCRIPTION: Middle Yukon

PERIOD COVERED: January 1, 1981-December 31, 1981

Seasons and Bag Limits

May 10-May 25	One bear every 4 regulatory years; provided that the taking of cubs or females accompanied by cubs is prohibited.
Sept. 10-Oct. 10	

Population Status and Trend

Field observations, nuisance reports, hunters' sightings, and pilot observations indicate a grizzly population of moderate density which appears stable.

Mortality

Hunting pressure on bears in Unit 21 continues to be low. Seven bears were harvested during spring, and 3 were taken in the fall. Of the 10 bears harvested, 7 were taken by nonresidents. Eight of the bears came from the Anvik-Nulato Hills in Subunits 21D and 21E.

Management Summary and Recommendations

Since 1961, annual harvests have had an insignificant impact on the bears in Unit 21. A much greater harvest could be sustained, but present hunter interest in grizzly bear hunting is low. Nuisance bears continue to bother fish camps, smokehouses, and trapping camps. A more liberal season is recommended along the Yukon and Koyukuk Rivers where the majority of problems with bears occur.

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BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT 22

GEOGRAPHICAL DESCRIPTION: Seward Peninsula

PERIOD COVERED: January 1, 1981-December 31, 1981

Seasons and Bag Limit

Resident: Sept. 1-Oct. 31 April 25-May 25	One bear every 4 regulatory years; provided that the taking of cubs and females accompanied by cubs is prohibited.
Nonresident: Sept. 1-Oct. 31 May 10-May 25	One bear every 4 regulatory years by drawing permit only; provided that the taking of cubs or females accompanied by cubs is prohibited. 20 permits will be issued: 14 in fall season and 6 in spring season. See AAC 81.055 and separate permit hunt supplement.

Population Status and Trend

The grizzly bear population in Unit 22 probably increased slowly during the last 3 decades (or longer). By 1979, bears occupied most of the suitable habitat on the Seward Peninsula, and numbers were probably near carrying capacity in most areas. A sharp increase in the bear harvest during the 1979 and 1980 hunting seasons reduced bear numbers in some drainages. However, bear densities remained relatively high throughout Unit 22.

Population Composition

Composition and productivity surveys were not conducted during the report period, but bear observations were noted in the course of other fieldwork. Comments from local residents and guides about bear abundance and distribution have been recorded for several years. From this information and limited survey data, the estimated population density throughout the 59,570 km^2 (23,000 mi^2) of Unit 22 ranges

from 1 bear/90 km^2 (35 mi^2) to 1 bear/155 km^2 (60 mi^2). Assuming this estimate is valid, the 1981 bear population numbered 375-650 animals. Based on the frequency of bear sightings and past hunting success, the higher figure is probably more accurate.

Mortality

No information was obtained on natural mortality, and hunting was the only known source of mortality. Hunters took 28 bears during the 1981 calendar year, 16 (57%) during the spring season and 12 (43%) during fall. The sex composition of the annual harvest was 22 males and 6 females. Nonresidents accounted for 25% (7 bears) of the 1981 harvest, compared to 61% and 76%, respectively during the 1980 and 1981 hunting seasons. The numbers of bears taken annually by residents and nonresidents during the last 6 hunting seasons are shown in Appendix A. The number and percentage of bears taken by nonresidents began increasing in 1976 and peaked dramatically in 1979. Concern about possible overharvest, particularly in select drainages of Subunit 22B led to the implementation of a permit system for nonresidents beginning with the 1980 fall season. The permit system accomplished its objective because the number of bears harvested by nonresidents declined to 7 bears during 1981, a figure comparable to the 1978 harvest.

The chronology of spring harvest from 1979 through 1981 is given in Table 1. The harvests are similar for the 3 hunting seasons and suggest that grizzly bears are more vulnerable to hunting early in the spring. One third to one half of the harvest occurred in the 1st 5 days of the season, and over 80% of the harvest occurred in the 1st half of the season. This situation was repeated in spring 1981 despite the fact that nonresidents could not legally participate in the hunt until May 10. In all 3 years, less that 20% of the harvest occurred during the 2nd half of the season. Snow cover is probably the single greatest influence on hunter success in the early portion of the season. Favorable snow conditions provide a means to travel extensively throughout the open terrain of the Seward Peninsula, both by snow machine and ski-equipped aircraft.

Table 1. Chronology of spring harvest, 1979-81.

Year	1st half of season (16 days)								2nd half of season (15 days)	
	April 25-30		May 1-5		May 6-10		Total		May 11-25	
	No.	%	No.	%	No.	%	No.	%	No.	%
1979	13	32	11	28	9	22	33	82	7	18
1980	8	32	11	44	2	8	21	84	4	16
1981	8	50	5	31	0	0	13	81	3	19

Distribution of the 1981 annual harvest by Subunit and drainage is given in Appendix B. Subunit 22C has the smallest area yet received the highest harvest. If the grizzly bear population were harvested heavily, one would expect a decline in the mean age of the bear population over time. This does not appear to have occurred. During the 4-year period of 1978-1981, males composed 80% of the harvest. For each of these years, the mean age of male bears was 7.7, 10.2, 8.1, and 11.4, respectively. Because of the large geographical area over which bears were taken and the small sample sizes (N = 106 for the 4 years combined), the data are best used to compare long-term trends rather than age differences over a short time span.

Management Summary and Recommendations

Miners and reindeer herders exerted heavy hunting pressure on grizzly bears during the early 1900's. The population probably reached its lowest level several decades ago, then underwent sustained growth for a number of years, and eventually occupied most suitable habitat. The size of the population is unknown at this time but is crudely estimated at 375-650 animals.

In 1979, the spring season was opened 2 weeks earlier (April 25 rather than May 10) in response to requests from local residents and support from the reindeer industry. However, the liberalized season also attracted a number of guides. The bear harvest took a dramatic jump, increasing to 11 times the 18-year average, and nonresidents accounted for 76% of the annual harvest. The Game Board responded by limiting nonresident participation in 2 ways: 1) by eliminating the early part of the spring season and making season dates identical to adjacent Units (May 10-May 25) and 2) by allocating 20 permits to nonresidents (14 in the fall

season and 6 in spring). Implementation of the permit system effectively reduced the nonresident harvest in 1981 to only 7 bears. A permit requirement was not the sole reason for the lower nonresident harvest. During 1979, Unit 22 was open for use by any guide registered in the Arctic area. In contrast, by 1981, most of Unit 22 had been assigned to 1-5 guides for their exclusive use. Guides with exclusive areas often harvest game more conservatively when they have a personal stake in the management of the area.

In 1980 and in 1981, the annual harvest was 31 and 28 bears, respectively. Under the current regulations, estimated harvest will range from 25 to 50 bears annually. The question is, whether the population will sustain a harvest of this magnitude. At the present time, bear population data are insufficient to allow accurate conclusions to be drawn; however, it is possible to construct a range of estimates that is reasonably reliable. The following information illustrates the number of bears that could be taken at densities of 1 bear/90 km^2 and 1 bear/155 km^2 if 5%, 8%, and 10% of the population were harvested:

Assumed bear density	Population est.	5% harvest	8% harvest	10% harvest
1 bear/90 km^2	643	32	51	64
1 bear/155 km^2	373	21	30	37

The bear density figures and harvest percentages are based on the results of bear research work conducted in Units 9 and 13 and Subunit 26A. For the Seward Peninsula, a harvest of 5% of the bear population is a probable safe minimum, and 10% is a questionable maximum. With a population density of 1 bear/90-155 km^2, the sustainable harvest is estimated to range from 21 to 64 bears. Until additional data are obtained, a harvest of 30-40 bears annually is a reasonably safe estimate of sustained yield. It should be noted, however, that bear density and harvest are not distributed uniformly throughout Unit 22. Subunit 22A has a relatively high bear density and a relatively low harvest. This situation contrasts with Subunit 22C which has a moderate bear density and a high harvest.

During the last 3 years, hunting pressure has increased substantially in Unit 22. The open terrain on the Seward Peninsula makes bears extremely vulnerable to hunters, especially during spring. Generally, hunters want to harvest the maximum number of bears the population can sustain. In addition, reindeer herd owners prefer that bear numbers be kept to a minimum. However, the status of the bear population on the Seward Peninsula is not well known. A research study should be initiated in northwestern Alaska to determine important grizzly

bear population characteristics and other relevant biological parameters. Without this information, it will be extremely difficult to make sound management recommendations.

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Appendix A. Unit 22 grizzly bear harvest by residency status, 1976-81.

Year	Residents			Nonresidents			Total kill			% Nonresident harvest
	Spring	Fall	Total	Spring	Fall	Total	Spring	Fall	Total	
1976	4	5	9	1	1	2	5	6	11	18
1977	5	2	7	2	3	5	7	5	12	42
1978	4	2	6	4	4	8	8	6	14	57
1979	7	5	12	33	5	38	40	10	50	76
1980	10	2	12	15	4	19	25	6	31	61
1981	15	6	21	1	6	7	21	12	28	25

Appendix B. 1981 grizzly bear harvest by Subunit and drainage.

Subunit and drainage	Male	Female	Total
22A			
Shaktoolik River	5	1	6
Unalakleet River	0	2	2
Ungalik River	1	0	1
22B			
Koyuk River	1	0	1
Tubutulik River	1	0	1
Fish River	1	1	2
22C			
Eldorado/Flambeau River	4	1	5
Sinuk/Cripple River	4	0	4
Feather River	2	0	2
Solomon River	1	0	1
Nome River	1	0	1
22D			
Pilgrim River	0	1	1
22E			
Arctic River	1	0	1
Totals	22	6	28

BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT 23

GEOGRAPHICAL DESCRIPTION: Kotzebue Sound

PERIOD COVERED: January 1, 1981-December 31, 1981

Seasons and Bag Limit:

Resident: Sept. 1-Oct. 10 May 10-May 25	One bear every 4 regulatory years; provided that the taking of cubs and females accompanied by cubs is prohibited.
Nonresidents: Sept. 1-Oct. 10 May 10-May 25	One bear every 4 regulatory years by drawing permit only; provided that the taking of cubs or females accompanied by cubs is prohibited. 25 permits will be issued. See 5 AAC 81.055 and separate drawing permit hunt supplement.

Population Status and Trend

The numbers of bears killed during 1980 (23) and 1981 (20) fell very close to the 20-year average of 21.3 (Fig. 1). Age and skull size also remained close to the 20-year average. From this very limited information, we infer that the population is not declining, but static or increasing.

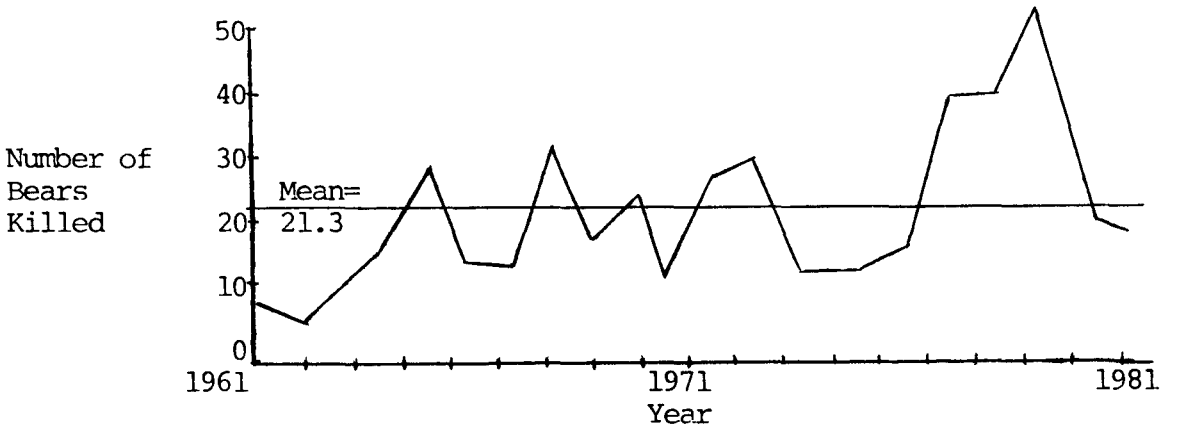
Population Composition

No information were available.

Mortality

Twenty grizzly bears were reported killed in 1981. Seventeen were males, whose age averaged 8.2 years. Female ages averaged 6.0 years. Four males were shot in the spring; the remainder were taken in fall. Nonresidents accounted for 35% of the 1981 bear harvest, compared to an average of 60% for the past 21 years. Twenty-five permits were available to nonresident hunters in 1981. Twenty-two permits were issued, and 7 recipients were successful.

Fig. 1. Annual Unit 23 bear harvest, 1961-1981.



Management Summary and Recommendations

Grizzly bears have low productivity. Because of this, they can be easily overexploited and are slow to recover from unwise management.

In Unit 23, there is a lack of specific data on population trends, annual reproduction and mortality, total number of bears, habitat carrying capacity, and critical bear habitat. Studies conducted in an adjacent portion of Unit 26 have been useful in setting harvest guidelines.

More so than for any other big game species, space and solitude are essential for the long-term maintenance of a grizzly bear population. The NANA region (Unit 23) is just beginning resource exploitation and industrial development. A concerted effort should be made during the next few years to map, describe, and evaluate grizzly bear habitat in Unit 23, as well as to delineate critical areas.

At the spring 1981 meeting, the Board of Game adopted a proposal to open the spring season on April 15 instead of May 10 to allow local residents an opportunity to hunt bears while there is still access by snow machine.

No additional changes in seasons or bag limits are recommended at this time.

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BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNITS 24-26

GEOGRAPHICAL DESCRIPTION: Brooks Range

PERIOD COVERED: January 1, 1981-December 31, 1981

Seasons and Bag Limit

Units 24-26 (permit areas only; see regulation booklet for area descriptions)	May 10-May 25 Sept. 1-Oct. 31	One bear every 4 regulatory years by drawing permit only; provided that the taking of cubs or females accompanied by cubs is prohibited.
Units 24-25 (nonpermit areas)	May 10-May 25 Sept. 1-Oct. 10	One bear every 4 regulatory years; provided that the taking of cubs or females accompanied by cubs is prohibited

Population Status and Trend

Research conducted in the Brooks Range showed that grizzly bear density within this large area ranges from 1 bear/17-300 mi^2, with an average density of about 1 bear/100 mi^2. Based on these densities and food availability within various areas, the Brooks Range Units are estimated to have a minimum population of 2,000-2,400 grizzlies. However, because of the very low reproductive capacity of these bears, only about 2% of the population (40-50 bears) should be harvested annually. To reduce the chance of overharvest, the Board of Game passed regulations establishing permit hunts for grizzlies in the Brooks Range and coastal plain portions of these Units beginning with the 1977-78 regulatory year.

Grizzly populations in Subunits 26B and 26C are likely beginning to recover from previous overharvest. Population trends in Units 24 and 25 and eastern Subunit 26A are probably stabilized or growing; in western Subunit 26A, numbers are probably increasing.

Population Composition

Recent population composition data are available only for the western Brooks Range near the headwaters of the Utukok and Kokolik Rivers. In that area, approximately 40% of bears >1 year were males and 60% were females. The sex ratio of cubs and yearlings was probably equal but may slightly favor females. Percentages of bears by age classes were as follows: cubs, 13.0%; yearlings, 10.7%; 2-year-olds, 13.7%; 3- and 4-year-olds, 10.7%; and >5 years of age, 51.9%.

Quantified parameters of grizzly bear reproductive capacity for the eastern Brooks Range (1973-75 data) and western Brooks Range (1977-81 data) are as follows (listed as eastern and western Brooks Range, respectively): mean age at production of 1st litter of 10.1 and 8.1 years; mean litter sizes of 1.8 and 2.0 cubs; reproductive intervals of 4.2 and 4.0 years; and mean reproductive rates of 0.42 and 0.50 cubs/year.

Mortality

The permit system in the Brooks Range has continued to effectively prevent overharvest. During 1981, 30 grizzlies were taken in Unit 26 and the portions of Units 24 and 25 where permits were required (Appendix A). A large portion of the Gates of the Arctic National Park is within the Unit 24 permit hunting area. Sport hunting is not allowed within the Park; as a result, hunting pressure in the remainder of the Unit was relatively high. Despite this situation, the grizzly take in portions of Unit 24 open to hunting was not considered excessive.

Management Summary

Grizzly bear harvest in the Brooks Range was within levels appropriate for the populations in the various Units. The harvest was relatively high in the permit hunting area in Unit 24 outside the newly established Gates of the Arctic National Park. In Unit 25, the take has increased due to additional guides establishing exclusive guiding areas in the Unit, but the harvest was not excessive. The western portion of Subunit 26A has received only light hunting pressure but has a relatively high bear population. A greater harvest could be sustained in this area, especially during spring seasons when females are not vulnerable to sport hunting. Harvest in areas outside the permit areas in Units 24 and 25 were within sustainable levels.

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Appendix A. Sport hunting harvest of grizzly bears in Units 24-26, 1977-81.

GMU	Estimated population	Est. max. harvest	5-year mean	Harvest 1977	1978	1979	1980	1981
Permit areas								
24	165-200	6	8*	10	12	2	9	7
25A	260-300	10	8*	13	4	10	5	9
26A west	225-275	7	4	2	2	1	8	6
26A east	250-300	8	5	7	5	5	5	5
26B	120-180	5	5	8	3	5	8	2
26C	100-150	2	2	3	4	1	1	1
Totals	1,120-1,400	38	32	43	30	24	36	30
Nonpermit areas								
24	**	**	5	1	8	5	4	5
25	**	**	9	11	10	14	8	1
Totals			14	12	18	19	12	6

* These figures include reported harvest only; additional illegal harvest very likely took place within permit areas and was reported as outside permit areas.

** Not calculated.