# ALASKA DEPARTMENT OF FISH AND GAME
# JUNEAU, ALASKA

STATE OF ALASKA
Jay S. Hammond, Governor

DEPARTMENT OF FISH AND GAME
Ronald O. Skoog, Commissioner

DIVISION OF GAME
Ronald J. Somerville, Director

# ANNUAL REPORT OF SURVEY-INVENTORY ACTIVITIES

## PART I. BLACK BEARS AND BROWN BEARS

EDITED AND COMPILED BY

Robert A. Hinman, Deputy Director

VOLUME XI
Federal Aid in Wildlife Restoration
Project W-17-12, Jobs No. 17.0, 4.0 and 22.0



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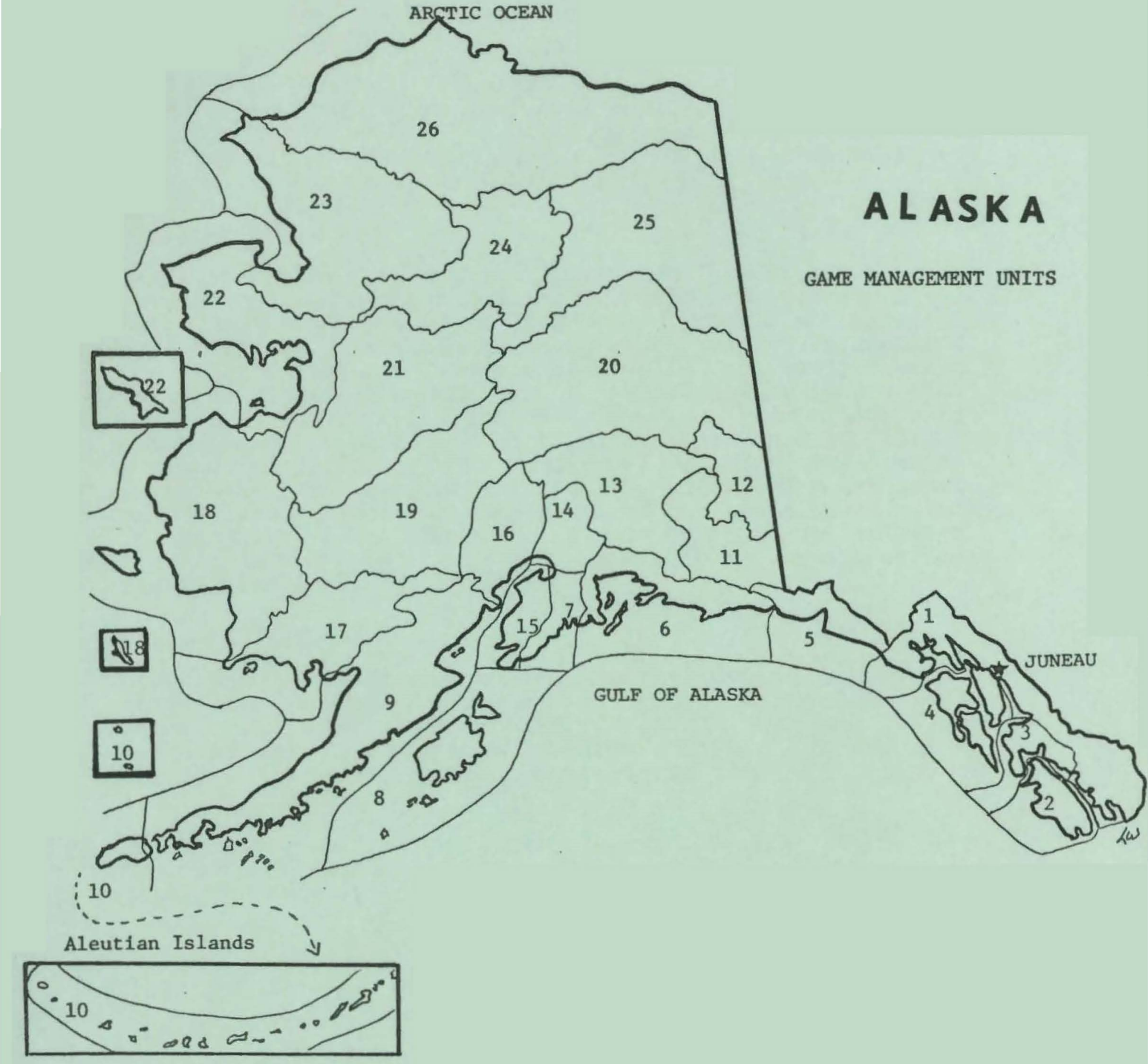
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## Statewide Harvests and Population Status

The 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. The following reports are for calendar year 1979.

### Black Bears

Black bears are abundant and populations are stable throughout much of the state. Sealing of bears is required only in Units 1-7, 11-16, and 20; statewide harvests are therefore not available. In those units in which sealing is required, the recorded take in 1979 was highest in Unit 16 (121 bears), followed by 100 bears in Unit 1, 93 bears in Unit 20, 88 in Unit 6, 81 in Unit 15, and 70 in Unit 13. Black bears are often taken incidental to hunting for other species, although hunting specifically for them is becoming more common, particularly in Southcentral Alaska. Black bears are hunted or utilized for food in some parts of the state, particularly inland areas of Southcentral Alaska and in the Interior. Present harvest levels do not appear to be impacting bear populations adversely.

### Brown/Grizzly Bears

Brown bear populations appear healthy statewide. In most units, harvests are stable and well balanced with the populations. In some areas, notably Subunits 19A and 19B and Units 22 and 23, increased guiding activity has caused an increase in harvests and a decrease in the reliability of location of kill data.

Total sport harvest was 881 bears. Leading units were Unit 9 (167 bears), Unit 8 (139), Unit 13 (73), Unit 19 (66), and Unit 23 (58).

CONTENTS

# BLACK BEAR

## SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNITS 1A and 2

GEOGRAPHICAL DESCRIPTION: Ketchikan Area and Prince of Wales Island

PERIOD COVERED: January 1, 1979 - December 31, 1979

### 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

The black bear population in Units 1A and 2 appeared to be maintaining a fairly constant level, as indicated by the harvest, hunter success and general observations. The average skull size of male bears 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

Thirty black bears from Game Management Unit 1A and 70 from Game Management Unit 2 were reported taken by hunters in 1979 (Appendix I). One additional bear was taken in defense of life or property.

The harvest for Unit 1A represented an increase of 25 percent over the 24 bears taken in 1978, while the Unit 2 harvest was up 4 percent over last year.

Appendix II summarizes the seasons since 1974. In the spring portion of the season in Unit 1A, 18 bears were taken on the islands and nine came from the mainland. Two of these 27 bears were females. In Unit 2, 47 bears were taken in the spring, one was a female.

The spring season kill in Unit 1A was 93 percent males, the same as the 1974-1978 period. In Unit 2, the percent males in the spring harvest for 1979 was 98, well above the 86 percent average for the 1974-1978 period.

The fall harvest in Unit 1A dropped from nine bears in 1978 to three this year, one of the three was a male. The Unit 2, 1979 fall harvest of 23 bears, was the same as 1978 with 61 percent males, about the same as the average for the past 5 years. 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 III. In Unit 1A, 90 percent of the kill occurred during the spring season, with 74 percent taken between May 11 - June 10. Sixty-seven percent of the harvest in Unit 2 occurred in the spring, and 72 percent was taken in the May 1-31 period. The peak of the spring harvest in Unit 2 occurred a little earlier this year than last, while in Unit 1A, it was essentially the same as 1978.

Transportation to hunting areas in 1979 changed from last year. In Unit 1A this year, 83 percent of the hunters used boats, 7 percent used aircraft and 10 percent hunted from a road system. In Unit 2, where the logging roads are more extensive, 52 percent used roads, 14 percent used airplanes and 33 percent boats.

Nonresidents took 10 percent of the bears from Unit 1A and 33 percent of those from Unit 2. Seventy-three percent of the 26 bears taken by nonresidents were taken during the spring season.

Tabulation of data on incidental take of black bears shows 5 percent of the bears taken during the spring season were considered incidental, while in the fall 41 percent were indicated to be incidental to other activities.

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

Skull measurements once again showed larger bears on Prince of Wales Island than in Unit 1A. In 1A, 24 males averaged 17.8 inches, while in Unit 2, 50 males averaged 19.0 inches. Comparable figures for 1978 were 18.0 inches for 16 males from Unit 1A and 19.2 inches for 50 males from Unit 2. Male skull sizes have remained fairly constant for the past 5 years. Appendix I shows skull sizes by area, sex and season.

Age data for spring-harvested bears has shown a substantial decline which began in 1977. The decline was not accompanied by a reduction in average skull size, however, and

when the ages for bears taken in 1979 also remained low, a check was made which showed variability in tooth aging techniques. Consequently, the 1979 age data are not presented here and an effort will be made during the winter of 1980-81 to standardize the aging techniques.

Eighty-four hunters took the 100 bears reported for 1979 from Units 1A and 2 indicating 16 hunters taking 2 bears each.

Four of the nine bears taken from the mainland were cinnamon colored. Hunters on the mainland (the only place this color is found) often select the cinnamon color phase over the normal black phase.

## Management Summary and Recommendations

The black bear harvest for Units 1A and 2 fluctuates from year to year and there does not seem to be much correlation between the two Units. This year, the Ketchikan area harvest was the same as the average for the past 5 years, while the Unit 2 harvest (Prince of Wales) was up 32 percent from the past 5-year average. In general, the Unit 1A harvest has been somewhat steady while the Unit 2 harvest has risen and will probably continue to rise as additional logging activity occurs and a more extensive road system is opened. Prince of Wales is the center for the majority of the logging effort in the southern part of the Panhandle and this activity is going to increase due to logging starting up on the Native Land selections. In addition, extensive road systems not currently connected to the main road and ferry terminal will soon be connected, allowing travel from Hydaburg to the north end of the Island. Both of these factors will cause an increase in the black bear harvest from Prince of Wales.

The take by nonresidents is not showing any significant or steady increase, but the designation of most of the mainland portion of Unit 1A as a National Monument may increase nonresident hunting effort there sometime in the future.

PREPARED BY:

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SUBMITTED BY:

Nathan P. Johnson
Regional Research/
Management Coordinator

APPENDIX I. Black Bear Sport Harvest Statistics for GMU's 1A and 2 with Color Phase, Kill by Non-Residents, Mean Skull Size and Methods of Transportation used for Calendar Year 1979.

| GMU | Season | Total Kill | No. Males | No. Females | Unk. Sex | Kill By Non-Res. | Mean Skull Size - Male ** | Mean Skull Size - Female ** | %* Cinnamon | Transport Used - % Air | Boat | Road Vehicle |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1-A Mainland | Spring | 9 | 8 | 1 | 0 | 0 | 17.2 (7) | 15.6 (1) | 44 | 0 | 100 | 0 |
| | Fall | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Total | 9 | 8 | 1 | 0 | 0 | 17.2 (7) | 15.6 (1) | 44 | 0 | 0 | 0 |
| 1-A Revilla | Spring | 18 | 17 | 1 | 0 | 2 (11%) | 18.0 (17) | 0 | 0 | 6 | 83 | 11 |
| | Fall | 3 | 1 | 2 | 0 | 1 (33%) | - | 17.1 (1) | 0 | 33 | 33 | 33 |
| | Total | 21 | 18 | 3 | 0 | 3 (14%) | 18.0 (17) | 17.1 (1) | 0 | 10 | 76 | 14 |
| Total 1-A | Spring | 27 | 25 | 2 | 0 | 2 (7%) | 17.8 (24) | 15.6 (1) | - | 4 | 89 | 7 |
| | Fall | 3 | 1 | 2 | 0 | 1 (33%) | - | 17.1 (1) | - | 33 | 33 | 33 |
| | Total | 30 | 26 | 4 | 0 | 3 (10%) | 17.8 (24) | 16.4 (2) | - | 7 | 83 | 10 |
| 2 | Spring | 47 | 46 | 1 | 0 | 17 (36%) | 19.1 (42) | 17.6 (1) | 0 | 15 | 43 | 43 |
| | Fall | 23 | 14 | 9 | 0 | 6 (26%) | 18.4 (8) | 16.9 (8) | 0 | 14 | 14 | 73 |
| | Total | 70 | 60 | 10 | 0 | 23 (33%) | 19.0 (50) | 17.0 (9) | 0 | 14 | 33 | 52 |

* Cinnamon phase occurs only on mainland.
** ( ) = Sample Size

Prepared By: Robert Wood, Game Biologist III

APPENDIX II. Black Bear Harvest by Season with Sex Ratios and Skull Sizes for GMU's 1A and 2, 1974 - 1979.

| Unit | year | Season | Total Kill | % Males | Mean Skull Size - Male (n) | | Mean Skull Size - Female (n) | |
|---|---|---|---|---|---|---|---|---|
| 1A | 1974 | Spring | 34 | 94 | | | | |
| | | Fall | 13 | 62 | | | | |
| | | Year | 47 | 83 | 17.8 | (36) | 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) |
| 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) |
| 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) |

(n) = Sample Size

Prepared By: Robert Wood, Game Biologist III

APPENDIX III. Chronology of the 1979 Black Bear Hunting Harvest Units 1A and 2.

| | Unit 1A | Unit 2 |
|---|---|---|
| April 1-20 | 2 | 2 |
| April 21-30 | 2 | 7 |
| May 1-10 | 1 | 10 |
| May 11-20 | 8 | 9 |
| May 21-31 | 6 | 15 |
| June 1-10 | 6 | 3 |
| June 11-20 | 3 | 0 |
| June 21-30 | 1 | 1 |
| Sept. 1-10 | 2 | 5 |
| Sept. 11-20 | | 4 |
| Sept. 21-30 | | 2 |
| Oct. 1-10 | | 3 |
| Oct. 11-20 | | 4 |
| Oct. 21-31 | 1 | 1 |
| Nov. 1-10 | | 2 |
| Nov. 11-30 | | 2 |

Prepared By: Robert Wood, Game Biologist III

# BLACK BEAR

## SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT 1B

GEOGRAPHICAL DESCRIPTION: Southeast mainland from Cape Fanshaw to Lemesurier Point

PERIOD COVERED: January 1, 1978 - December 31, 1979

### Season and Bag Limit

| | |
|---|---|
| Sept. 1 - June | 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

There are moderate densities of black bears in Unit 1B, with the highest density in the vicinity of Anan Creek, where pink salmon (*Onchorhynchus gorbuscha*) are the major attraction. The drainage of Anan Creek is closed to the taking of black bears. Populations are thought to be stable in Unit 1B.

### Population Composition

No data were collected in 1979.

### Mortality

Since 1973 the annual harvest of black bears in Unit 1B has ranged from 2 to 15 animals, with 3 animals (all males) being taken in 1979. Fig. 1 provides a summary of harvest data.

Most black bears killed in Unit 1B are probably taken by hunters pursuing other game. Nonresident hunters have taken less than half of the bears harvested since 1973. The Unit supports moose, goats, deer, and brown bears, all of which are more popular with resident hunters. All bears were taken in the spring.

### Management Summary and Recommendations

The average skull length for bears killed in 1979 was 10.29 inches and width averaged 6.25 inches (n=3). Because of the small sample size, no conclusions can be drawn from these data. Harvest levels are thought to be very low for the area.

No change in season or bag limit is recommended.

PREPARED BY:

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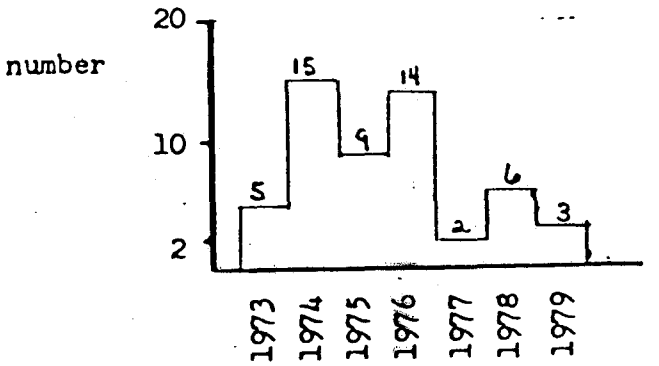
SUBMITTED BY:

Nathan P. Johnson
Regional Research/Management Coordinator

FIG. 1

UNIT 1B BLACK BEAR HARVEST

1973-1979



# BLACK BEAR

## SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNITS 1C and 1D

GEOGRAPHICAL DESCRIPTION: Mainland portions of Southeastern Alaska north of Cape Fanshaw

PERIOD COVERED: January 1, 1979 - December 31, 1979

### 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

Data were insufficient to determine a population trend. However, no significant changes are believed to have occurred since 1978.

### Population Composition

No data were collected.

### Mortality

The black bear harvest (based on sealing documents) in Unit 1C was 48 bears (38 males, 8 females and 2 unknown), which was an increase of 10 bears over 1978. Residency of successful black bear hunters in 1979 was 29 (69%) residents and 13 (31%) nonresidents. Hunters taking two bears were equally divided between residents and nonresidents, 3 each. Second bears taken comprised 12 percent of the total harvest. The reported non-sport kill in 1979 was two bears (1 male, 1 female). Five cinnamon-phase black bears were included in the harvest.

For Unit 1C in 1979, the average skull size was 17.1 inches for 34 males and 15.4 inches for seven females. These figures are nearly identical to those for 1978. In 1979, the mean age of 25 spring-killed male bears was 5.2 years and for four females was 4.3 years. In 1978, the mean ages for spring-killed males and females were 4.7 years and 5.7 years, respectively.

Chronology of the 1979 harvest showed that 81 percent (n=39) of the black bear harvest in Unit 1C occurred during April, May and June, with 62 percent in May alone. The remainder of the harvest, 19 percent, was nearly equally divided between September and October.

Successful hunters spent a total of 176 days hunting black bears in Unit 1C in 1979. The average number of days spent hunting per bear taken was 3.7.

Distribution of the harvest in Unit 1C in 1979 showed the mainland areas from Berners Bay to Pt. Bishop and Pt. Coke to Cape Fanshaw to have the highest harvests, 17 and 14 bears, respectively. In the former area the harvest was entirely by resident hunters. In the latter, all but two bears were taken by nonresidents, all using guides.

Modes of transportation used by successful hunters were aircraft (2%), off-road vehicle (2%), boat (71%), and other (25%).

Based on sealing documents, the black bear harvest in 1979 in Unit 1D was 19 bears (10 males, 8 females and 1 unknown), 27 percent below the 1978 harvest. However, the 1979 harvest compares closely with the previous 5-year average of 19.2 bears. Residency of successful black bear hunters in 1979 was 17 residents (94%) and one nonresident (6%). One resident took two bears. None of the successful hunters were guided. The harvest included nine black bears of the cinnamon phase.

For Unit 1D in 1979, the average skull size was 16.1 inches for eight males and 15.7 inches for seven females. These figures compare closely to the 1978 averages of 16.3 for 13 males and 15.4 inches for six females. The mean age of spring-killed males and females were identical (3.3 years) in 1979, down 1.0 years from 1978. Ages for 1979 fall-killed bears were not available.

Chronology of the harvest showed that 84 percent of the harvest occurred in the spring (47% in May and 37% in June) and 16 percent in the fall (11% in September and 5% in October).

Successful hunters spent a total of 44 days hunting black bears in Unit 1D in 1979. The average number of days spent hunting per bear taken was 2.3.

Distribution of the harvest showed that 17 bears were taken in the Chilkat Inlet-Chilkat River area, one in the Katzehin River drainage and one in the Taiya River drainage.

Modes of transportation used by successful hunters were not specified on 11 of the sealing documents. However, since the kill locations were near road systems the modes used were most likely either highway vehicle or foot. Thus the modes of travel would have been aircraft - 5 percent (n=1), boat - 21 percent (n=4), and vehicle or foot - 74 percent (n=14).

## Management Summary and Recommendations

Hunter questionnaire information obtained during spring 1979 indicated a relatively stable bear population in Unit 1C as compared to 1978. Hunter information from sealing documents indicated good numbers of bears sighted while hunting in Unit 1D, however, this information was limited. In Unit 1C the mean age of spring-killed males increased slightly from 4.7 years in 1978 to 5.2 years in 1979. The mean age of spring-killed females dropped from 5.7 years in 1978 to 4.3 years in 1979. In Unit 1D, the 1979 mean age of 3.3 years for both male and female spring-killed bears was 1.0 years lower than in 1978.. This continued decline in average ages in the harvest, though not as extreme as reported between 1977 and 1978, indicates a possible reduction of older age classes in bear populations in Units 1C and 1D. Reasons for this change are not fully known. A possible increase in hunter selectivity towards younger bears (for food), increased productivity due to hunting pressure, or natural fluctuations in the populations in Southeast Alaska are possible causes. With the black bears increasing importance as a game animal, new information through research and S&I activities will be needed in the near future to effectively manage the species. No changes in seasons or bag limits are recommended.

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# BLACK BEAR

## SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT 3

GEOGRAPHICAL DESCRIPTION: Islands of the Petersburg, Kake, Wrangell area of Southeast Alaska

PERIOD COVERED: January 1, 1978 - December 31, 1979

### 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

Since 1973, bear populations in Unit 3 have fluctuated. Harvest records have been the basis for estimates and have varied from 12 to 60 (Table 1). The 1979 population appeared to be high with a total of 50 animals harvested, and field observations indicated a good year.

### Population Composition

All age and sex data are collected when sealing hides and skulls and are reported in the mortality section. Surveys of animals in the field were limited to routine field observations during other activities.

### Mortality

In 1979, 50 black bears were harvested in Unit 3, nine more than the 1978 harvest. The black bear harvest for this Unit since 1973 is given in Fig. 1, which also shows the annual harvest of females.

Nonresidents account for over half of the bears killed in Unit 3 (Fig. 2) during most years. Kuiu Island continued to be the most popular black bear hunting area in Unit 3. Since 1973, 62 percent of the harvest has been from Kuiu Island.

The average skull length for male black bears was 11.5 inches and the average width was 6.7 inches. The skulls of females averaged 10.5 inches in length and 6.1 inches in width during 1979. Age information for 1979 was not available.

Table 1. Comparative black bear data, Unit 3.

| Year | Total Killed | Percent Females | Percent Killed in Spring | Average Days Hunted/Kill (resident) | Average Days Hunted/Kill (nonresident) |
|---|---|---|---|---|---|
| 1973 | 12 | 25.0 | 8.3 | 1.0 | 10.3 |
| 1974 | 27 | 7.4 | 74.0 | 2.4 | 7.8 |
| 1975 | 49 | 14.3 | 77.6 | 2.7 | 8.0 |
| 1976 | 60 | 11.7 | 80.0 | 1.8 | 5.6 |
| 1977 | 27 | 25.9 | 66.6 | 3.1 | 6.0 |
| 1978 | 41 | 29.3 | 80.5 | 2.4 | 5.4 |
| 1979 | 50 | 10.0 | 90.0 | 2.8 | 4.4 |

Data have been collected since 1973 and are displayed in Table 1. Except for the year 1973, most bears have been taken in the spring in this Unit. Resident hunters reported killing bears in less time that nonresidents. This could be because many residents kill bears incidental to other activities and do not consider themselves to be "bear hunting" unless they actually kill a bear.

Management Summary and Recommendations

The black bear is the most numerous big game animal in Unit 3 but is not actively sought by most resident hunters. Nonresidents have taken over half of the bears harvested since 1973. As other forms of hunting increase, the incidental take of black bears will increase proportionally. Populations and harvest will have to be monitored to insure that the proper seasons and bag limits are in effect.

PREPARED BY:

E. L. Young, Jr.
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SUBMITTED BY:

Nathan P. Johnson
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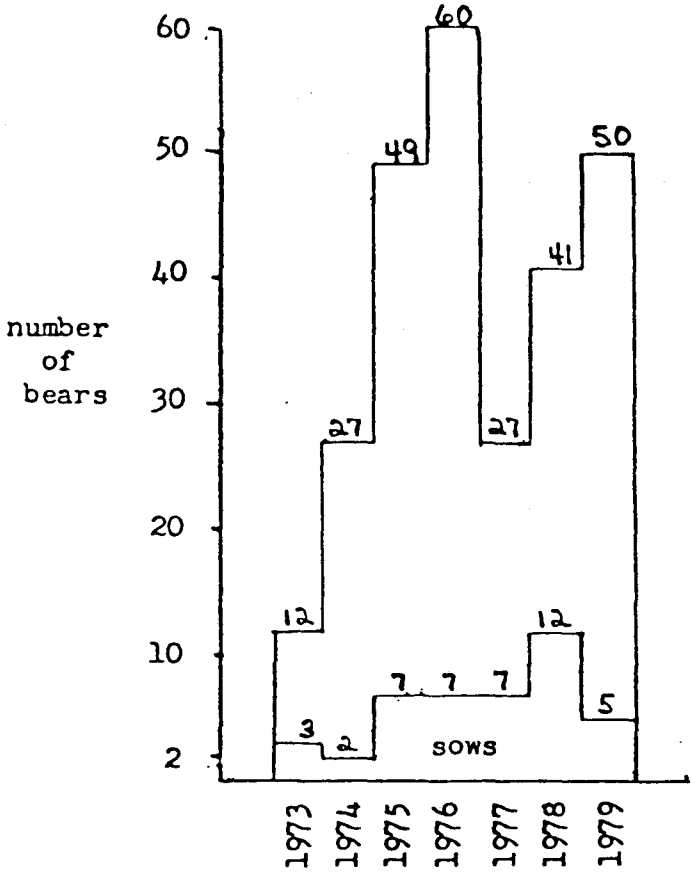
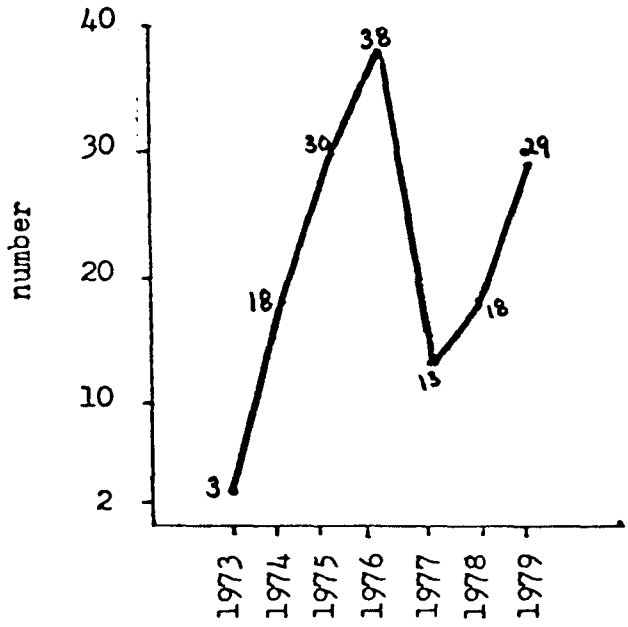
UNIT 3 BLACK BEAR HARVEST INFORMATION 1973-1979

FIG. 1




ANNUAL SPORT HARVEST AND NUMBER OF SOWS

FIG. 2




BEARS KILLED BY NONRESIDENT HUNTERS

UNIT 3

# BLACK BEAR

## SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT 5

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

PERIOD COVERED: January 1, 1979 - December 31, 1979

### 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 data were collected. However, black bear populations appeared to be stable throughout the unit, and no major changes in abundance were observed during the report period.

### Population Composition

No data were collected. However, based on general observations and hunter and guide interviews, the black bear population in GMU 5 appeared to be stable. In those areas of Unit 5 where they occur, black bears were fairly abundant with good production.

### Mortality

Black bear harvests in Unit 5 has been variable over the last nine years, ranging from a low of 3 in 1971 to a high of 22 during this report period (Appendix I). Residents harvested half of the bears killed while nonresidents harvested the other half. Nine (41%) of the successful hunters were guided and all were nonresidents. Four of the successful hunters (3 residents, 1 nonresident) salvaged meat from their kills.

Four blue phase or "glacier bears" were harvested during this report period. Although this is higher than the 1.6 bear annual average for the past 9 years, at this point it is not possible to relate the increase to anything but a high overall harvest.

The sex composition of the harvest was 12 males, 9 females and 1 unknown. The average cementum age of 20 spring-killed bears was 3.8 years with a range from 1 to 9 years.

Although allowed a second bear, none of the hunters filled their bag and those questioned, expressed very little desire to harvest a second black bear "unless it was a really nice one."

Management Summary and Recommendations

Overall, the black bear population appeared to be stable and production was fair to good. No changes in season or bag limit are recommended at this time.

PREPARED BY:

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SUBMITTED BY:

Nathan P. Johnson
Regional Research/
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APPENDIX I

GAME MANAGEMENT UNIT 5

Black Bear Harvest for 1971 through 1979

| Calendar Year | Total Kill | No. Males | No. Females | No. Unknown | Color Phase | |
|---|---|---|---|---|---|---|
| | | | | | Black | Blue |
| 1971 | 3 | 3 | Ø | Ø | 3 | Ø |
| 1972 | 17 | 12 | 5 | Ø | 15 | 2 |
| 1973 | 19 | 12 | 7 | Ø | 18 | 1 |
| 1974 | 9 | 6 | 3 | Ø | 8 | 1 |
| 1975 | 12 | 8 | 2 | 2 | 10 | 2 |
| 1976 | 19 | 19 | Ø | Ø | 17 | 2 |
| 1977 | 13 | 11 | 2 | Ø | 12 | 1 |
| 1978 | 8 | 6 | Ø | 2 | 7 | 1 |
| 1979 | 22 | 12 | 9 | 1 | 18 | 4 |
| TOTALS | 122 | 89 | 28 | 5 | 108 | 14 |

PREPARED BY: Ronald E. Ball, Game Biologist II

# BLACK BEAR

## SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT 6

GEOGRAPHICAL DESCRIPTION: Prince William Sound and North Gulf Coast

PERIOD COVERED: January 1, 1979 - December 31, 1979

### Seasons and Bag Limit

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

### Population Status and Trend

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

### Population Composition

No data were available.

### Mortality

The 1979 Unit 6 black bear harvest was 88 bears: 60 males, 24 females, and 4 unknown sex.

The spring season accounted for 93 percent of the annual harvest with the bulk of the harvest occurring between 7 May and 7 June.

Male skull size averaged 17.3 inches whereas females averaged 16.1 inches. The average age of males was 7.5 years as compared to 8.3 for females.

The distribution of harvest is shown in Appendix I.

### Management Summary and Recommendations

The 1979 Unit 6 black bear harvest is similar in magnitude to 1978 but well below 1974-1977 harvests. The 1979 harvest of 88 bears is 21 percent below the 6-year average, but the composition of the harvest was average.

The chronology of the bear harvest was typical, therefore, over 90 percent were taken during the spring season from mid-May to early June.

Bears taken in 1979 (both sexes) were larger and older than previously recorded for Unit 6.

The only area of concern was the small bear harvest in western Prince William Sound. It is unknown whether this was related to hunting pressure or bear abundance.

No regulatory changes were recommended.

PREPARED BY:

Julius Reynolds
Game Biologist III

SUBMITTED BY:

James B. Faro
Regional Management Coordinator

Appendix I Unit 6 black bear harvest by location, 1979.

| Unit/ Subunit | Area | Number | Percent |
|---|---|---|---|
| 6-01 | East of Copper River to Icy Bay | 14 | 15.9 |
| 6-02 | Cordova to Copper River | 2 | 2.3 |
| 6-03 | Tatitlek to Cordova | 6 | 6.8 |
| 6-04 | Valdez Arm | 15 | 17.1 |
| 6-05 | Esther Island to Valdez Arm | 12 | 13.6 |
| 6-06 | Port Wells | 8 | 9.1 |
| 6-07 | Passage Canal to Port Nellie Juan | 11 | 12.5 |
| 6-08 | Port Nellie Juan to Cape Fairfield | 17 | 19.3 |
| 6-10 | Unit 6 - Unknown | 3 | 3.4 |
| | Total | 88 | 100.0 |

Prepared by: Julius Reynolds, Game Biologist III

# BLACK BEAR

## SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT 7

GEOGRAPHICAL DESCRIPTION: Western Kenai Mountains

PERIOD COVERED: January 1, 1979 - December 31, 1979

### Season and Bag Limit

| | |
|---|---|
| Aug. 10 - June 30 | Three 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

Bear observations by Department staff during annual surveys of other species (primarily goats) and the increasing number of sightings reported by the public suggest that black bears are abundant in Unit 7.

### Population Composition

No data were available.

### Mortality

Sealing certificate records indicate that 47 black bears were killed in Unit 7 during 1979. The harvest was comprised of 24 males (51%), 18 females (38%) and 5 bears (11%) of undetermined sex. Nineteen bears were killed during the spring season and 28 were killed during the fall season. Nonresident hunters accounted for only four of the 47 black bears killed.

Mean age of males in the 1979 harvest (4.5 years) was approximately 1 year younger than the mean age of all males taken from 1973 to 1978. However, the mean age of females in the 1979 harvest (5.7 years) was the same as the mean age of all females taken from 1973 to 1978.

### Management Summary and Recommendations

The 1979 black bear harvest was slightly below the average annual harvest during the period from 1973 to 1978. I suspect that the decline in harvest resulted from a reduced hunting effort or unfavorable hunting conditions rather than a decline in the bear population.

PREPARED BY:

Ted H. Spraker
Game Biologist III

SUBMITTED BY:

James B. Faro
Regional Management Coordinator

# BLACK BEAR

## SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT 9

GEOGRAPHICAL DESCRIPTION: Alaska Peninsula

PERIOD COVERED: January 1, 1979 - December 31, 1979

### 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

Seven bears were reported taken in northern Unit 9 in 1979. Because sealing is not required for black bears taken in Unit 9, this figure does not necessarily reflect actual hunter kill. Some local residents of Unit 9 harvest black bears for personal use of the meat and hide. Estimated total hunting mortality is 15 to 20 bears per year.

No data were available on other causes of mortality.

### Management Summary and Conclusions

Hunting pressure has on black bears traditionally has been light in Unit 9. Many of the bears are taken incidental to hunts for other species. The meat of most bears is salvaged for human consumption. Existing seasons and bag limits allow flexibility for hunters and do not threaten the bear population.

### Recommendations

No changes in seasons or bag limits were recommended.

| PREPARED BY: | SUBMITTED BY: |
|---|---|
| Christian A. Smith | James B. Faro |
| Game Biologist III | Regional Management Coordinator |

# BLACK BEAR

## SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT 11

GEOGRAPHICAL DESCRIPTION: Wrangell Mountains

PERIOD COVERED: January 1, 1979 - December 31, 1979

### 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

Field observations, public interviews and nuisance reports indicate an abundance of black bears in Unit 11.

### Population Composition

No data were available.

### Mortality

Nine black bears (7 males, 2 females) were reported killed in 1979. The average skull size was 16.4 inches for males and 15.7 inches for females, nearly identical to 1978 (Tobey 1979).

Successful hunters spent an average of 3.2 days pursuing black bears. Of the nine successful hunters reporting, four were nonresidents. All nonresidents were on guided hunts. Six successful hunters used aircraft.

Sealing records indicate none of the successful hunters reported taking a black bear as an incidental animal in the bag, yet only two hunters reported salvaging the meat.

### Management Summary and Conclusions

The creation of Wrangell-St. Elias National Monument, encompassing essentially all of Unit 11, resulted in Federal regulations prohibiting sport hunting. The State of Alaska did not recognize nor enforce these Federal regulations. Establishment of this monument resulted in decreased hunting pressure throughout Unit 11. The black bear harvest reflects this decreased hunting effort and will probably not increase until passage of Federal (d)(2) legislation resolves the status of sport hunting in the monument.

The black bear population in Unit 11 can withstand the current level of harvest and no change in season dates or bag limits are recommended.

Literature Cited

Tobey, R. W. 1979. Annual Report of Survey-Inventory Activities. Alaska Fed. Aid in Wildl. Rest. Proj. W-17-11, Jobs No. 17.0, 4.0 and 22.0.

PREPARED BY:

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Game Biologist II

SUBMITTED BY:

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Regional Management Coordinator

# BLACK BEAR

## SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT 12

GEOGRAPHICAL DESCRIPTION: Upper Tanana and White Rivers

PERIOD COVERED: January 1, 1979 - December 31, 1979

### 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

Although no standardized bear surveys have been conducted, historic harvest data indicate the Unit 12 black bear population is stable and of moderate density in suitably forested habitat.

### Population Composition

No standardized surveys were conducted, but the high, stable proportion of males in the harvest indicates the population composition approximates that of an unhunted population. Reports of sows with cubs and yearlings are common.

### Mortality

Natural factors are likely responsible for most black bear mortality in Unit 12.

Eighteen black bears were reported taken by hunters during this reporting period; this represents little change from the 6-year average of 19 bears. This is a low level of hunter harvest considering the liberal season, bag limits, and the apparent density of black bears in the Unit.

Ten bears were taken in the spring prior to June 30, 1979, and eight were taken in the fall. Males comprised 76 percent of the harvest, slightly higher than the 6-year average of 72 percent. Skull sizes for 11 of the males averaged 16.6 inches and for 4 females averaged 13.9 inches, figures which were similar to average skull sizes reported in past years.

Fifty percent of the harvest (n=9) came from the Tanana River drainage, 33 percent (n=6) from the Tok River drainage, and the remaining 17 percent (n=2) from the Nabesna River drainage.

Management Summary and Recommendations

Black bear hunting is becoming increasingly popular near Tok in Unit 12, particularly along the road system. However, hunting pressure is still low in relation to the size of the bear population and availability of black bear habitat in the Unit. The meat of most bears is salvaged.

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SUBMITTED BY:

Oliver E. Burris
Regional Management Coordinator

# BLACK BEAR

## SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT 13

GEOGRAPHICAL DESCRIPTION: Nelchina Basin

PERIOD COVERED: January 1, 1979 - December 31, 1979

### 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

Frequent field observations, nuisance reports and hunter sightings indicate an abundant population in those areas of Unit 13 where black bears occur.

### Population Composition

No data were available.

### Mortality

The 1979 reported black bear harvest in Unit 13 was 70 bears (36 males, 29 females, 5 unknown), an increase of six bears over 1978. The mean skull size was 16.4 inches for males and 15.2 inches for females, a slight decrease for both from the 1978 values (Tobey 1979).

Sealing form response indicates 38 (54%) bears were taken incidental to other hunting activities, yet 51 (73%) hunters salvaged the meat. Of the successful hunters sealing bears, only eight (11%) were nonresidents.

Chronology of the harvest showed 43 (61%) black bears were killed during August10 - September 20, coinciding with other big game hunting seasons for Unit 13.

### Management Summary and Recommendations

Available data indicate little change in the level and composition of the harvest during 1979 over that reported in previous years. This sustained harvest indicates the Unit 13 black bear population has been relatively unaltered by harvest. No changes in season or bag limits are recommended at this time.

## Literature Cited

Tobey, R. W. 1979. Annual Report of Survey-Inventory Activities. Alaska Fed. Aid in Wildl. Rest. Proj. W-17-11, Jobs No. 17.0, 4.0 and 22.0.

PREPARED BY:

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Game Biologist II

SUBMITTED BY:

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Regional Management Coordinator

# BLACK BEAR

## SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNITS 14A and 14B

GEOGRAPHICAL DESCRIPTION: Upper Cook Inlet

PERIOD COVERED: January 1, 1979 - December 31, 1979

### 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

Frequent field observations, nuisance reports and hunter sightings indicate an abundant population of black bears in Subunits 14A and B.

### Population Composition

No data were available.

### Mortality

Thirty-seven black bears were harvested in Subunits 14A and 14B during 1979: 26 in 14A and 11 in 14B. This is a decline from the 45 black bears harvested during 1978. Only one successful hunter was a nonresident. One of these bears was taken in defense of life or property.

According to bear sealing records, the sex composition of the kill and the mean skull size (in inches) for Subunits 14A and B were as follows:

| | Spring | | | Fall | | |
|---|---|---|---|---|---|---|
| Sex | Males | Females | Unknown | Males | Females | Unknown |
| Harvest | 4 | 5 | 7 | 13 | 5 | 3 |
| Skull size (n) | 15.3(4) | 15.6(4) | | 17.3(11) | 14.3(4) | |

Age data from harvested black bears were not available.

### Management Summary and Recommendations

The black bear harvests in Subunits 14A and 14B have declined almost yearly since 1975 when 80 black bears were killed. The mean skull size for male black bears killed in Subunits 14A and 14B has increased 2.1 inches from that found in 1978 (Didrickson 1979). It is thought that this

increase represents random variation as black bears are generally associated with dense vegetative cover and hunters have little opportunity to select for large bears. Most black bears killed in the fall are believed to be harvested as chance encounters, or as additions to the bag during hunts for other species.

No changes in season or bag limits were recommended.

Literature Cited

Didrickson, J. C. 1979. Annual report of survey-inventory activities. Alaska Fed. Aid in Wildl. Rest. Proj. W-17-11, Jobs No. 17.0, 4.0 and 22.0.

PREPARED BY:

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Nicholas C. Steen
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SUBMITTED BY:

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Regional Management Coordinator

# BLACK BEAR

## SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT 14C

GEOGRAPHICAL DESCRIPTION: Anchorage

PERIOD COVERED: January 1, 1979 - December 31, 1979

### Seasons and Bag Limits

| | | |
|---|---|---|
| Unit 14C (except that portion 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 - April 30 | One bear; provided that the taking of cubs or females accompanied by cubs is prohibited. |

The Eklutna drainages, excluding Thunderbird Creek and the East Fork of Eklutna River above the lake, the Eagle River drainage, and all Turnagain Arm drainages within Chugach State Park from Campbell Creek on the north to Rainbow Creek on the south were closed to black bear hunting during 1979.

### Population Status and Trend

Black bears are found throughout the Subunit with the exception of lowland residential areas near Anchorage. They are most abundant in the Knik River-Lake George area. Population declines are not anticipated as most essential habitat is protected under restrictive State and Federal land classifications.

### Population Composition

No data were available.

### Mortality

Eleven black bears were killed in Subunit 14C. Ten bears were killed by sport hunters, and one was killed by Department personnel at a campground. Of the sport-killed bears, eight were males and two were of unknown sex. Seven bears were killed in the Knik River-Lake George area, two near Girdwood, and one in the Twentymile River drainage.

Management Summary and Recommendations

Harvest data indicate that most black bears were taken from the eastern portion of Subunit 14C within the drainages of Hunter Creek and Lake George. Few bears are taken within Chugach State Park. Although harvest levels within this Subunit are not excessive, a more uniform harvest distribution is desired. Therefore, it is recommended that the season within Chugach State Park be extended approximately 1 month in the spring, while the bag limit within areas outside the Park be reduced from three to one bear.

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SUBMITTED BY:

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Regional Management Coordinator

BLACK BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT 15

GEOGRAPHICAL DESCRIPTION: Western Kenai Peninsula

PERIOD COVERED: January 1, 1979 - December 31, 1979

Season and Bag Limit

| | |
|---|---|
| Aug. 10 - June 30 | Three 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

Preliminary data from research currently being conducted in a portion of Unit 15 indicates that black bears are abundant, with a minimum density of one bear per 1.6 square-miles of suitable habitat (Schwartz and Franzmann 1980). Although baseline data are not available to determine trends for the population, harvest statistics suggest the population size is sufficient to allow for future hunting.

Population Composition

No data were available.

Mortality

Sealing certificate records indicate that 81 black bears were harvested in Unit 15 during 1979. The harvest was comprised of 59 males (73%), 19 females (23%) and 3 bears (4%) of undetermined sex. Nonresidents killed 13 bears which accounted for 16 percent of the total 1979 harvest.

The mean age of male bears harvested during 1979 was 6.1 years and for female bears was 5.0 years. The mean ages for males for 1977 and 1978 were 4.5 years and 5.3 years, respectively. Age data for females for 1977 and 1978 were 6.3 and 5.2 years, respectively.

Management Summary and Recommendations

The 1979 harvest of 81 bears shows a significant increase in the kill from 1978 (63). However, it is well below the 1976 harvest of 128 bears. Factors such as availability of food, which greatly affect the distribution of bears, and unfavorable hunting conditions may have caused these fluctuations in the harvest.

The high percentage of males in the harvest (73%) and small change in mean ages over the past 7 years indicate the black bear population is being lightly hunted.

No changes in season or bag limit are recommended.

Literature Cited

Schwartz, C. C., and A. W. Franzmann. 1980. Population ecology of the Kenai Peninsula Black Bear. Fed. Aid in Wildl. Rest. Rep. Alaska Dept. Fish and Game, Juneau (in press).

PREPARED BY:

Ted H. Spraker
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SUBMITTED BY:

James B. Faro
Regional Management Coordinator

# BLACK BEAR

## SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT 16

GEOGRAPHICAL DESCRIPTION: West Side of Cook Inlet

PERIOD COVERED: January 1, 1979 - December 31, 1979

### 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

Frequent field observations, nuisance reports and hunter sightings indicate an abundant population of black bears in Unit 16.

### Population Composition

No data were available.

### Mortality

One hundred and twenty-one black bears, 74 males, 31 females and 16 unknown sex were reported killed in Unit 16 during 1979. This is a 28 percent decline from the record of 169 which were taken in 1978, and the third highest harvest since the sealing program was initiated in 1973.

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

| | Spring | | | Fall | | |
|---|---|---|---|---|---|---|
| Subunit | Males | Females | Unknown | Males | Females | Unknown |
| 16A | 7 | 4 | 1 | 12 | 6 | 2 |
| 16B | 23 | 11 | 6 | 32 | 10 | 7 |

The mean age for the black bears harvested (by subunit) during the spring of 1979 were:

| Subunit | Male | Female |
|---|---|---|
| 16A | 7.2 (3) | 3.1 (3) |
| 16B | 6.5(20) | 7.2(10) |

Ages for black bears harvested in Unit 16 during the fall of 1979 were not available.

Hunters indicated that 9 of 42 (21.4%) black bears killed during the spring and 35 of 66 (55.6%) bears killed during the fall were taken incidental to other activities.

Management Summary and Recommendations

The mean skull sizes of the male black bears killed during 1979 decreased 0.1 inches from the 1978 mean and are 0.3 inches below the 7-year average. Historically, mean skull sizes for both sexes of black bears have never varied more than 0.4 inches. Hunting does not appear to have influenced the Unit 16 black bear population as indicated by minimal skull size variations.

No changes in season and bag limits were recommended.

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SUBMITTED BY:

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Regional Management Coordinator

# BLACK BEAR

## SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT 17

GEOGRAPHICAL DESCRIPTION: Bristol Bay

PERIOD COVERED: January 1, 1979 - December 31, 1979

### 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 are available to evaluate the status or trend of the black bear population in Unit 17. Random field observations and reports of local residents indicate black bears inhabit most areas of Subunit 17B and are occasional visitors in northern portions of 17C.

### Population Composition

No population composition data were available.

### Mortality

Sealing of black bears is not required in Unit 17. Two black bears killed in Unit 17 were voluntarily presented for sealing during 1979. The estimated annual harvest for this unit is between 10 and 20 black bears, most of which are taken incidentally by hunters while on moose or caribou hunts.

### Management Summary and Recommendations

Data necessary for management of the Unit 17 black bear population are nonexistent. Unit 17 was excluded from the sealing requirement because it is considered a "bush" unit where obtaining compliance with sealing requirements is difficult, however, recent hunting pressure on this population has come from hunters residing on the Kenai Peninsula. Since there are now two permanent sealing officers stationed in Unit 17, it is recommended that the sealing requirement for black bears be extended to include this unit.


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SUBMITTED BY:

James B. Faro
Regional Management Coordinator

# BLACK BEAR

## SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT 20

GEOGRAPHICAL DESCRIPTION: Central Tanana Valley

PERIOD COVERED: January 1, 1979 - December 31, 1979

### 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 and Population Composition

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

### Mortality

The recorded harvest in 1979 was 93 bears and includes three non-sport kills. This compares to 146 in 1978, 201 in 1977, 158 in 1976, 112 in 1975, and 97 in 1974. It is not known whether the decline in bear harvests since 1977 reflects a decrease in the bear population, a change in the availability of bears to hunters, or is related to other factors.

Average age of black bears sealed in Unit 20 in the past 6 years has not changed significantly. The average age of males sealed has generally been less than that of females. The average age of all bears sealed has ranged from a low of 5.3 years in 1975 to a high of 6.4 years in 1978.

Most of the harvest occurred in Subunit 20C (44 bears), followed by Subunit 20B (28), 20A (11), 20D (6), and 20E (4). These proportions closely compare with the harvest distribution in previous years. The greatest part of the harvest occurred along roads and navigable waterways; however, 19 bears (21%) were taken with the aid of aircraft or off-road vehicles.

Since 1975, hunters presenting black bears for sealing were asked if the bear was taken incidentally. In 1979, 53 percent of the harvest was reported as incidental to other activities, while 39 percent were taken while the hunter was specifically seeking black bears.

Unit-wide sex composition of the harvest has changed somewhat in the 6 years sealing records have been kept. Males have comprised from 69 to 75 percent of the annual harvests during 1974 to 1978; however, the percentage of males in the harvest declined to 60 in 1979.

Sex composition of the harvest was also tabulated for the two most heavily hunted parts of Unit 20. In the Chena River drainage the percentage of males steadily rose from 62 percent in 1974 to 74 percent in 1977 and declined to 46 percent in 1978 and 1979. In the Elliott Highway, Minto Flats, Manley, and Dugan Hills vicinities the percentage of males in the harvest has fluctuated from 63 in 1974 to 75 in 1978 and 1979.

With a bag limit of three bears, some individuals take more than one bear. Since 1974 these second and third bears have accounted for between 5 and 11 percent of the harvest, and the third bear has always been less than 2 percent of the harvest. The second bear accounted for 9 percent of the harvest in 1979, the third bear 1 percent. These data indicate that although the limit is three bears, harvests have not been substantially greater than they would have under a one-bear limit.

There is some unreported harvest in Unit 20. The magnitude is unknown but may be significant in some areas.

Management Summary and Recommendations

The overall black bear population in Unit 20 has probably changed little or declined slightly in recent years. No measure of hunter effort is available, but the lower 1979 harvest is thought to have resulted primarily from reduced bear numbers rather than a decline in hunting pressure.

The black bear population appears to be declining in the Chena River drainage. The decreasing percentage of males in the harvest probably indicates that harvests exceed annual recruitment. Nevertheless, it may be desirable to maintain liberal seasons and bag limits in the Chena drainage to reduce bear/human conflicts and to help reduce moose calf predation.

Harvest trends should be closely monitored. It may be desirable to restrict hunting seasons and/or bag limits in some areas of the unit if the harvest increases greatly and other indicators point toward declining bear numbers.

The Department should obtain more data about basic biology and population status and trends of black bears in Interior Alaska. Black bears are an increasingly popular big game species with both residents and nonresidents and consequently deserve added attention from the Department.

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SUBMITTED BY:

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Regional Management Coordinator

BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT 1

GEOGRAPHICAL DESCRIPTION: Southeastern Alaska Mainland

PERIOD COVERED: January 1, 1979 - December 31, 1979

Season and Bag Limit

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

Population Status and Trend

No survey or inventory data were collected. However, discussions with hunters and general observations by Fish and Game personnel indicated that brown bear populations in Unit 1 have not changed significantly over the past year.

Population Composition

No survey or inventory data were collected.

Mortality

Based on brown bear sealing documents, the 1979 sport kill in Unit 1 was 20 bears (11 males, 8 females and 1 unknown). Two additional bears (1 male and 1 female) were taken in defense of life and property in Subunit 1D. The known sport harvest of 20 bears was a 33 percent increase over both the bears harvested in 1978 and the previous 18-year average of 15.3 bears. Historically, this level of harvest is not uncommon for the unit. Resident hunters accounted for 15 bears and nonresidents (all guided) accounted for 5. Harvest statistics are shown in Appendix I.

Chronology of the harvest showed that 13 bears (6 males and 7 females) were taken during the spring season and seven bears (5 males and 2 females) during the fall season.

For males, a mean age of 9.8 years (n=9), and the mean skull size of 24.0 inches (n=11) were somewhat higher than the 8.3 years and 22.0 inches for 1978. Most of this increase in average age and skull size can be attributed to the harvest of two old male bears in Unit 1D, averaging 17.0 years of age.

Management Summary and Recommendations

With the exception of Subunit 1A, harvest levels have not significantly changed over the past several years nor have they adversely affected bear populations in Unit 1. The spring harvest of seven brown bears in Subunit 1A in 1979 was a significant increase over the previous 9-year average of 2.1 bears taken during this period. This increase in harvest was due to a higher number of residents hunting for bears than in past years. Hunting pressure is expected to increase throughout Unit 1 as hunting pressure increases in other units in Southeastern Alaska, thus it must be closely monitored to assure proper harvest levels.

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

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Regional Research/Management Coordinator

## APPENDIX I

Brown/Grizzly Bear Sport Harvest,-Calendar Years 1961 Through 1979. By: Year, Total Kill, Number of Males, % of Males, No. by Nonresidents, % by Nonresidents, Mean Hide Size of Males, Mean Skull Size of Males, Mean Cementum Lines of Males and Calendar Year Seasons.

GAME MANAGEMENT UNIT 1

| Calendar Year | Total Kill | No. Males | % Males[1] | No. Nonres. | % Nonres. | Mean Size Male[2] | Mean Skull Size Male[3] | Mean Cem. Lines Male[4] | Calendar Year Seasons |
|---|---|---|---|---|---|---|---|---|---|
| 1961 | 12 | 8 | 67 | 1 | 8 | 13.2 (8) | 24.8 (1) | | 11/1-6/30<br>9/1-12/31 |
| 1962 | 13 | 9 | 75 | 4 | 31 | 14.0 (9) | 0 | | Same |
| 1963 | 7 | 4 | 57 | 2 | 29 | 14.5 (4) | 0 | | Same |
| 1964 | 20 | 17 | 89 | 2 | 10 | 13.1 (17) | 23.5 (5) | | Same |
| 1965 | 10 | 6 | 60 | 1 | 10 | 13.7 (5) | 23.2 (2) | | Same |
| 1966 | 14 | 10 | 71 | 4 | 29 | 12.9 (10) | 0 | | Same |
| 1967 | 29 | 14 | 48 | 7 | 24 | 13.2 (15) | 23.3 (6) | | 1/1-6/20<br>9/1-12/31 |
| 1968 | 17 | 10 | 59 | 4 | 24 | 12.9 (10) | 20.8 (8) | | 1/1-6/10<br>9/1-12/31 |
| 1969 | 24 | 16 | 67 | 1 | 4 | 13.7 (16) | 21.1 (15) | 3.8 (4) | 1/1-6/10<br>9/1-11/30 |
| 1970 | 13 | 6 | 46 | 4 | 31 | 11.2 (6) | 20.2 (6) | | 4/1-6/10<br>9/1-11/30 |
| 1971 | 10 | 7 | 70 | 4 | 40 | 13.3 (7) | 21.0 (7) | 5.4 (7) | 4/1-6/10<br>9/1-12/31 |
| 1972 | 17 | 8 | 50 | 4 | 24 | 12.8 (8) | 19.7 (7) | 5.7 (3) | 1/1-6/10<br>9/1-12/31 |
| 1973 | 11 | 5 | 45 | 2 | 18 | 16.0 (4) | 21.1 (4) | 12.3 (4) | 1/1-6/10<br>9/1-12/31 |
| 1974 | 18 | 14 | 78 | 4 | 22 | 13.2 (13) | 20.8 (12) | 6.4 (12) | Same |
| 1975 | 13 | 8 | 62 | 2 | 15 | 13.7 (8) | 21.5 (7) | 6.1 (8) | Same |
| 1976 | 21 | 10 | 50 | 7 | 33 | 15.4 (10) | 22.4 (10) | 6.9 (10) | Same |
| 1977 | 12 | 8 | 66 | 1 | 8 | 14.4 (5) | 21.0 (8) | | Same |
| 1978 | 15 | 11 | 73 | 4 | 27 | 14.2 (11) | 22.0 (11) | 8.3 (6) | Same |
| 1979 | 20 | 11 | 55 | 5 | 25 | 15.8 (10) | 24.0 (11) | 9.8 (9) | 1/1-6/10<br>9/15-12/31 |

1/ All male % based on known-sex bears.
2/ Length plus width given in ft. ( ) - sample size.
3/ Length plus width given in inches. ( ) - Sample size.
4/ ( ) - sample size.

BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT 4

GEOGRAPHICAL DESCRIPTION: Admiralty, Baranof and Chichagof Islands

PERIOD COVERED: January 1, 1979 - December 31, 1979

Season and Bag Limit

| | | |
|---|---|---|
| Unit 4, Chichagof Island south and west of a line which follows the crest of the island from Rock Point (58⅛00'N, 136⅛21'W), to Rogers Point (57⅛35'N, 135⅛33'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 (57⅛34'N, 135⅛25'W), to the entrance of Gut Bay (56⅛44'N, 134⅛38'W), including the drainages into Gut Bay and including Kruzof and other adjacent islands. | Sept. 15 - May 31 | One bear every four 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 four regulatory years; provided that the taking of cubs and females accompanied by cubs is prohibited. |

This season was adopted by Emergency Order 1-0179 effective April 14, 1979, for the spring season and through regular Game Board action for the fall season.

Population Status and Trend

Observations of guides and hunters suggested that the Unit 4 brown bear population appeared to be similar to pre-1976 populations and substantially better than the poor years of 1977 and 1978. These observations were supported by those of Departmental personnel. It did appear that there might have been fewer bears than during the years prior to 1972. Behavioral changes may have been responsible for fewer sightings of bears.

Aerial counts were made during late May and early June over those areas covered by the U.S. Forest Service during the 1960's (Perensovich 1966). The highest counts of the 1979 surveys exceeded the highs of the 1960 counts, but it was not known if the counts were truly replicates. These results indicate that an excessive population reduction has not occurred.

Population Composition

Hunter questionnaires, guide interviews, aerial surveys, and observations by Department personnel resulted in observations of 236 brown bears in 1979. Forty-one of these were yearlings or older cubs and 15 were cubs-of-the-year. These observations were made throughout the year and over the entire unit. The percentage of the population represented by cubs (24%) compared favorably with previous observations for the unit, as summarized by Johnson (In press). However, the percentage of cubs-of-the-year might have been somewhat below normal.

Mortality

Hunting and defense of life or property kills were the only recorded forms of mortality.

The sport kill in 1979 was 49 bears, 33 males and 16 females. This harvest was substantially below the long-term average for the unit. The reduction in the kill was effected by shortening the season, which eliminated the productive hunting periods of May 20-30 and September 1-15.

Statistics of the 1979 harvest were well in line with historical data except: 1) a significant reduction in the average age and, consequently, a reduction in the skull size and 2) a much higher than normal take by nonresident (guided) hunters (Appendix I).

There are two possible explanations for the age reduction. First, a lowered age class (and smaller skull size) could indicate a younger population resulting from overexploitation by sport hunters. A more plausible explanation, and one discussed by the guides, was that hunters, particularly guided hunters, were much less selective than normal and took the first legal bear they encountered. This nonselectivity among guides was motivated by the possibility of an in-season emergency closure if the kill approached 30 animals, or by the desire of guides to complete one hunt so that they could begin another.

The reduction in the percentage of the harvest by resident hunters was the result of decreased hunting opportunity because of the drastic season reduction.

There were no defense of life or property kills reported during 1979.

## Management Summary and Recommendations

The long-range management goal for Unit 4 brown bears is to provide for a high-quality hunting experience. This goal has been temporarily sidetracked by management needs because of the uncertainties of the status of the bear population. It has been further complicated by problems with, and in, the guiding industry. Favorable numbers of bears were observed in 1979, including a good representation of cubs. However, the ages of bears in the 1979 harvest were the lowest on record, leaving some doubt as to the population status of Unit 4 brown bears.

For the 1979 season, the Board of Game directed the Game Division to implement an Emergency Order in an attempt to reduce the sport kill of bears to about 30 animals on the more heavily hunted north and east portions of the unit. That directive was met by terminating the spring season on May 20, the date on which the most productive portion of the season begins. That action was successful, for the kill from the area was 27 animals. Unfortunately, the drastic season reduction concentrated hunters, particularly guided operations, in the favored locations. That was a predicted result and was the lesser problem in view of the concerns for the well-being of the bear population.

Because of the remaining uncertainty with the bear population, it is recommended that the present, conservative regulations remain in effect. The long-range management goal can more easily be met through cooperation with the guiding industry in which a limited number of guides are allowed to operate on a joint-use basis rather than exclusive use areas for individual guides. Individual, exclusive use areas will compound the problems of hunter interaction and competition for hunting space and for bears.

A serious, negative impact of reduction in the season has been a lessening of hunting opportunity for resident hunters.

## Literature Cited

Johnson, L. J. (In press.) Brown bear management in southeastern Alaska in Fourth Intnl. Conf. on bear res. and mgmt. C. J. Martinka ed. Kalispell, MT.

Perensovich, M. 1966. Brown bear studies, 1960-1966. U.S. For. Serv. Compl. Rep. 38 pp.

PREPARED BY:

Loyal J. Johnson
Game Biologist III

SUBMITTED BY:

Nathan P. Johnson
Regional Research/
Management Coordinator

Appendix I. Brown bear sport harvest, calendar years 1961 through 1979, Game Management Unit 4.

| Calendar Year | Total Kill | % Kill in Spring | % Males | % Nonresident Kill | Mean Skull Size Male* | Mean Cem. Lines** Male | Female |
|---|---|---|---|---|---|---|---|
| 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 | | |
| 1968 | 50 | 72 | 76 | 36 | 22.3 | 8.0(10) | |
| 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) |

*Length plus width given in inches.
**Tooth sample size given in parenthesis.

PREPARED BY: Loyal Johnson, Game Biologist III

# 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, 1979 - December 31, 1979

### Season and Bag Limit

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

### Population Status and Trend

No data were collected. Based on general observations, hunter/guide interviews, and stream surveys, the brown/grizzly bear populations were stable. Bear sightings have increased in recent years, but it was not known if this indicated an actual increase in bear numbers or just an increase in sightability.

### Population Composition

One unsuccessful aerial survey was conducted in late spring along Russell Fjord in an attempt to locate bears, den sites, and areas of concentrated use. The survey was flown between Moser Creek and Hubbard Glacier on the east side of the Fjord and from Osier Island to Mountain Lake on the west side, using a PA-18. Although survey conditions were fair, no bears were observed. Many tracks were observed above the snow line with most of them headed down into the timber and creek bottoms.

Four drainages with anadromous fish runs were surveyed on foot or by boat to determine bear utilization. Three of the areas (Sockeye Creek, Humpie Creek, Situk River) have been surveyed annually by Commercial Fisheries personnel and, thus, have good data bases for comparison, while the fourth (Italio River) has only been surveyed by air in recent years.

The first survey was conducted on foot along Sockeye Creek, on 18 July 1979. Bear sign was moderate, and one bear was observed moving through the brush. Although more sign was observed than during the previous report period, it was about average compared to past surveys.

The second drainage surveyed from 3-5 August 1979 was the Italio River, southeast of Yakutat. No recent ground observations were available for comparison, but five bears were observed during the float trip. The area is known to be a high density bear area, particularly during the salmon spawning season.

The third survey was conducted on the Situk drainage on 14 and 15 August 1979. The Mountain Stream portion of the drainage was conducted on foot with moderate success. No bears were observed, but bear sign was abundant, comparing favorably with observations of previous years. The Situk Lake and Situk River segment of the drainage was surveyed by kayak with frequent stops to examine the shoreline and obvious feeding areas. Only one bear was observed compared to four the previous year, but bear sign was abundant along the banks and gravel bars.

The fourth stream surveyed was Humpie Creek in Yakutat Bay on 29 August 1979. Bear sign was plentiful, as in previous years, but no bears were observed.

In addition to stream surveys, observations were obtained from registered guides hunting the area. Generally, they reported bears to be plentiful with an abundance of females with young being sighted. Overall, this information corresponded well with my observations throughout the Unit.

Mortality

Twenty-three brown bears (14 males, 9 females) were reported killed during the report period, including one non-sport mortality. Hunting pressure was about average compared to previous years, with the sport harvest equaling that of the last report period. Thirteen bears (9 males, 4 females) were killed in the spring, while the remaining nine bears (5 males, 4 females) were shot during the fall season. Overall, the sex composition and level of the harvest remained about the same as the last report period.

In addition to known mortality, one adult bear was wounded by hunters, a second "severely injured" bear was observed by reliable sources crossing a road, but could not be relocated, and a third "injured" bear was reported by commercial fishermen on the Situk River.

The average skull size for 14 sport-killed males was 21.8 inches, 1.9 inches smaller than the average for the 15 males measured in 1978. The nine measured females averaged 20.8 inches, 0.6 inches smaller than those harvested in 1978.

The average cementum age for males (n=14) was 6.2 years (range 3 to 15 years), compared to 7.8 years (n=15) for 1978. The average cementum age of the eight females was 7.8 years (range 3 to 15 years), 0.4 years older than for 1978.

Management Summary and Recommendations

The Unit 5 brown/grizzly bear population appeared to be stable and production was fair to good. No changes in season length or bag limit are recommended at this time.

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SUBMITTED BY:

Nathan P. Johnson
Regional Research/Management Coordinator

APPENDIX I

Brown Bear Sport Harvest for Calendar Years 1961 through 1979, Game Management Unit 5.

| Calendar Year | Total Kill | % Kill in Spring | % Males 1/ | % Nonresident Kill | Mean Skull Size 2/ Male | Mean Skull Size 2/ Female | Mean Cementum Lines Male | Mean Cementum Lines Female |
|---|---|---|---|---|---|---|---|---|
| 1961 | 9 | 44 (4) 3/ | 75 (6) | 56 (5) | 23.5 (3) | 22.2 (1) | 0 | 0 |
| 1962 | 7 | 14 (1) | 67 (4) | | 20.0 (1) | 20.0 (1) | 0 | 0 |
| 1963 | 5 | 80 (4) | 100 (4) | 20 (1) | 23.8 (2) | 0 | 0 | 0 |
| 1964 | 12 | 17 (2) | 33 (4) | 42 (5) | 0 | 0 | 0 | 0 |
| 1965 | 16 | 25 (4) | 75 (12) | 31 (5) | 21.5 (4) | 0 | 0 | 0 |
| 1966 | 22 | 14 (3) | 55 (11) | 73 (16) | 25.0 (2) | 21.5 (2) | 0 | 0 |
| 1967 | 16 | 25 (4) | 50 (8) | 69 (11) | 23.2 (5) | 19.4 (6) | 0 | 0 |
| 1968 | 17 | 29 (5) | 71 (12) | 35 (6) | 22.8 (9) | 21.7 (4) | 0 | 0 |
| 1969 | 19 | 53 (10) | 47 (9) | 47 (9) | 22.0 (9) | 20.0 (10) | 7.2 (5) | 5.6 (10) |
| 1970 | 7 | 71 (5) | 57 (4) | 57 (4) | 24.1 (4) | 19.8 (3) | 8.4 (3) | 3.6 (2) |
| 1971 | 21 | 48 (10) | 60 (12) | 33 (7) | 22.2 (10) | 18.9 (8) | 5.4 (9) | 3.4 (5) |
| 1972 | 21 | 19 (4) | 57 (12) | 38 (8) | 22.2 (11) | 19.4 (9) | 4.6 (6) | 4.6 (7) |
| 1973 | 23 | 30 (7) | 65 (15) | 26 (6) | 22.8 (11) | 21.0 (7) | 8.4 (10) | 9.0 (6) |
| 1974 | 13 | 31 (4) | 62 (8) | 0 | 21.7 (7) | 19.9 (5) | 4.2 (6) | 7.0 (5) |
| 1975 | 15 | 33 (5) | 67 (10) | 40 (6) | 19.7 (7) | 19.6 (3) | 3.6 (8) | 4.6 (4) |
| 1976 | 16 | 56 (9) | 75 (12) | 63 (10) | 22.6 (11) | 20.4 (4) | 6.9 (12) | 7.1 (4) |
| 1977 | 14 | 71 (10) | 71 (10) | 36 (5) | 22.0 (10) | 19.6 (4) | 8.2 (10) | 3.0 (4) |
| 1978 | 22 | 59 (13) | 73 (17) | 45 (10) | 23.7 (15) | 21.4 (6) | 7.8 (15) | 7.4 (5) |
| 1979 | 22 | 59 (13) | 64 (14) | 73 (16) | 22.1 (14) | 20.8 (8) | 4.2 (5) | 8.3 (4) |
| Average | 15.6 | 47 (117) | 63 (184) | 44 (130) | 22.4 (135) | 20.2 (81) | 6.5 (89) | 5.9 (56) |

1/ All male percentages based on bears of known sex.
2/ Length plus width in inches.
3/ ( ) = sample size.

PREPARED BY: Ronald E. Ball, Game Biologist II

# BROWN/GRIZZLY BEAR

## SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT 6

GEOGRAPHICAL DESCRIPTION: Prince William Sound and North Gulf Coast

PERIOD COVERED: January 1, 1979 - December 31, 1979

### Season and Bag Limit

| | |
|---|---|
| May 10 - May 25<br><br>Oct. 10 - Nov. 30 | One bear every four regulatory years; provided that the taking of cubs or females accompanied by cubs is prohibited. |

### 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 Unit 6 brown bear sport harvest was 21 bears: 12 males, 7 females, and 2 unknown sex. Four non-sport brown bears were also taken in 1979.

Fifteen bears were taken during the spring season and six during the fall season. Nonresident hunters accounted for 57 percent of the harvest with most of the nonresident harvest occurring during the spring season.

Males taken in 1979 averaged 14.3 feet in hide size, 23.1 inches in skull size, and 6.5 years of age. Females averaged 13.1 feet in hide size, 21.0 inches in skull size, and 6.5 years of age.

Distribution of the brown bear harvest was as follows:

2 - Montague Island
2 - Hinchinbrook Island
4 - Valdez - Cordova
2 - West Copper River Delta
11 - East of Copper River

Management Summary and Recommendations

The 1979 harvest of 21 brown bears was well below the 19-year average of 31.5 bears. It was the smallest harvest since 1971.

Composition of the harvest was normal, and the number of bears taken during the spring season was nearly average. The fall harvest of six bears was only half the normal fall harvest. Lack of guiding effort appeared to be the reason for the small fall harvest.

Hide size, skull size, and age data for both sexes were average for Unit 6.

Distribution of harvest was below average for all areas except east of the Copper River which was average.

Incidental observations of brown bears in Unit 6 are common, and there is no evidence to indicate the small harvest is a reflection of a reduced bear population.

No regulatory changes were recommended.

PREPARED BY:

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Game Biologist III

SUBMITTED BY:

James B. Faro
Regional Management Coordinator

# BROWN/GRIZZLY BEAR

## SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNITS 7 and 15

GEOGRAPHICAL DESCRIPTION: Kenai Peninsula

PERIOD COVERED: January 1, 1979 - December 31, 1979

### Season and Bag Limit

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

### Population Status and Trend:

Research to determine the density of brown bears in Units 7 and 15 has not been conducted. However, incidental observations during annual surveys for other species and sightings reported by the public suggests the population is increasing slightly.

### Population Composition

No data were available.

### Mortality

Data collected from sealing certificates indicated that two male and two female bears were killed in Unit 15 and none were killed in Unit 7 during the 1979 season. Three bears were killed by residents of the Kenai Peninsula and one was killed by a nonresident hunter. Historical harvest data for the Kenai Peninsula since 1961 was reported by Spraker (1979).

### Management Summary and Recommendations

Brown bears are relatively abundant in parts of Units 7 and 15. However, they are difficult to hunt because of dense vegetative cover. Additionally, the fall bear season opens 9 days after the opening of moose season in Unit 7, resulting in a reduction of incidental kills by hunters primarily after moose. There has not been a spring season in Unit 7 for the past 19 years.

A spring season from 10 May-25 May should be established and the fall season should be extended to 1 September-10 October to increase the opportunity to hunt brown bears in Unit 7.

No changes in season or bag limits are recommended for Unit 15.

Literature Cited

Spraker, T. H. 1979. Brown bear survey-inventory progress report. In R. A. Hinman, ed. Annual report of survey-inventory activities, Part I. Fed. Aid. Wildl. Rest. Rep. Alaska Dept. of Fish and Game, Juneau.

PREPARED BY:

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Game Biologist III

SUBMITTED BY:

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Regional Management Coordinator

BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT 8

GEOGRAPHICAL DESCRIPTION: Kodiak and Adjacent Islands

PERIOD COVERED: January 1, 1979 - December 31, 1979

## Season 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<br>Apr. 1 - May 15 | One bear every four regulatory years by drawing permit only; provided the taking of cubs and females accompanied by cubs is prohibited. See 5AAC 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<br>Apr. 1 - May 31 | One bear every four regulatory years by registration permit only; provided that the taking of cubs or females accompanied by cubs is prohibited. See 5AAC 81.055 and separate permit hunt supplement. |
| Remainder of Unit 8 | Oct. 25 - Nov. 30<br>Apr. 1 - May 15 | |

## Population Status and Trend

The sex and age composition of the brown bear harvests have remained similar for a number of years. Continued selectivity for males and low harvest of adult females should maintain a stable bear population at the present level of kill.

## Population Composition

Aerial surveys to determine brown bear population composition were conducted by the U.S. Fish and Wildlife Service. Alpine transects were flown in the Terror Bay, Uganik Bay and Uyak Bay areas. Stream surveys were flown on Dog Salmon River, Sturgeon River, Pinnell Creek, Connecticut Creek and Frazer and Red Lakes drainages. Results of these surveys are shown in Appendix I.

## Mortality

Hunters killed 139 bears, 83 males and 56 females, in 1979. One hundred and three bears (65 males and 38 females) were killed during the spring season and 36 bears (18 males and 18 females) were killed during the fall season. The distribution of the 1979 harvest and the number of bears taken in each subunit is shown in Appendix II.

The mean age of 83 males was 6.0 years. The mean age of 54 females was 6.7 years. Mean age of each sex was within the range of mean ages recorded during the previous 11 years. The 34 males and 22 females 5 years of age, or older, killed in 1979 was identical to the number reported for 1978. Harvest of females 5 years of age or older remained stable at approximately 15 percent of the annual kill.

Eight bear mortalities were documented from sources other than legal sport hunting. Four bears were killed in defense of life or property, 2 bears were killed illegally and 2 bears were found dead of unknown causes. Six of the mortalities occurred on Kodiak Island, one on Shuyak Island, and one on Afognak Island. The sex composition of these bears was 1 male, 3 females and 4 of unknown sex.

The total recorded mortality from all sources was 147 bears. Hunters reported wounding four bears which were not recovered.

Overall hunter success was 34 percent. The 118 nonresident hunters took 84 bears for 71 percent success. The 289 resident hunters took 55 bears for 19 percent success.

Four hundred and eighty-nine brown bear drawing and registration hunt permits were issued. A total of 407 permittees reported hunting with a 94 percent report return. One hundred and eighteen nonresidents (29%) and 289 residents (71%) reported hunting.

Hunting pressure in the drawing hunt increased slightly with 240 hunters reporting in 1979 compared to 223 reporting in 1978. Participation in the registration hunt nearly doubled with 167 hunters reporting in 1979 compared to 93 in 1978.

## Management Summary and Recommendations

The 1979 harvest of 139 bears nearly equaled the recommended maximum annual take of 140 bears. This was the highest harvest since the permit system was initiated in 1976. While the number of permits available for the drawing hunt remained unchanged during the 1976-79 period, frequency of permit use increased from 54 percent in 1976 to 73 percent in 1979. Annual harvest in the drawing hunt increased from

93 bears in 1976 to 118 bears in 1979. During the 1976-1979 period an average of 83 percent of the annual harvest was taken in the drawing hunt.

In the past, conditions of the drawing hunt allowed the issuance of excess permits on a first come basis as well as the filling of cancelled permits by alternate hunters. These practices facilitated the steady increase in frequency of permit use. In 1979 the Board of Game passed a regulation to disallow the issuance of unfilled or cancelled permits. This action, which went into effect for the fall 1979 season, was taken as an alternative to reducing the number of permits, which had been proposed by the staff. Although this measure did not result in a reduced fall harvest it is expected to result in a stabilized or slightly reduced spring harvest in 1980.

Hunting pressure in the registration hunt, at least during the spring season, appears to be related to alternate year season openings in Unit 9. Sixty-nine permittees reported hunting in spring 1977 and 92 in spring 1979 when the Unit 9 season was closed. In 1978 when the Unit 9 season was open, only 37 permittees reported hunting. Annual harvests ranged from 14 bears in 1978 (spring season open in Unit 9) to 27 bears in 1977 (spring season closed in Unit 9). Only 19 bears were killed in the 1979 registration hunt (spring season closed in Unit 9) although record hunting effort occurred.

Should the recommended maximum allowable harvest of 140 bears be exceeded in 1980, it is recommended that the number of permits be reduced proportionally in the appropriate subunits.

PREPARED BY:

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Game Biologist III

SUBMITTED BY:

James B. Faro
Regional Management Coordinator

APPENDIX I

Brown Bear Composition Counts, Kodiak National Wildlife Refuge, 1979

| Stream Counts | No. | % |
|---|---|---|
| Sows with cubs | 6 | 8% |
| Cubs | 9 | 13% |
| Single bears | 38 | 54% |
| Sows with yearlings | 6 | 8% |
| Yearlings | 12 | 17% |
| | 71 | 100% |

| Alpine Counts | No. | % |
|---|---|---|
| Sows with cubs | 14 | 16% |
| Cubs | 30 | 33% |
| Single bears | 20 | 22% |
| Sows with yearlings | 8 | 9% |
| Yearlings | 18 | 20% |
| | 90 | 100% |

| Combined Counts | No. | % |
|---|---|---|
| Sows with cubs | 20 | 12% |
| Cubs | 39 | 24% |
| Single bears | 58 | 36% |
| Sows with yearlings | 14 | 9% |
| Yearlings | 30 | 19% |
| | 161 | 100% |

PREPARED BY: Roger B. Smith, Game Biologist III III

APPENDIX II

Distribution of Brown Bear Harvest in Unit 8, 1979

| Harvest Subunit No. | Males No. | Males % | Females No. | Females % | Total No. | Recommended Maximum Annual Harvest |
|---|---|---|---|---|---|---|
| 1-Afognak, Raspberry and Shuyak Islands | 10 | 67% | 5 | 33% | 15 | 20 |
| 2-NE Kodiak Island | 11 | 61% | 7 | 39% | 18 | 15 |
| 3-SE Kodiak Island | 17 | 68% | 8 | 32% | 25 | 20 |
| 4-SW Kodiak Island | 29 | 56% | 23 | 44% | 52 | 55 |
| 5-NW Kodiak Island | 16 | 55% | 13 | 45% | 29 | 30 |
| | 83 | 60% | 56 | 40% | 139 | 140 |

PREPARED BY: Roger B. Smith, Game Biologist III

BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT 9

GEOGRAPHICAL DESCRIPTION: Alaska Peninsula

PERIOD COVERED: January 1, 1979 - December 31, 1979

## Seasons and Bag Limits

| | | |
|---|---|---|
| Unit 9C, the drainages of the Naknek river only. | Sept. 1 - Oct.31<br>May 1 - June 30 | One bear every four regulatory years by registration permit only; provided the taking of |
| 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. | Sept. 1 - Oct. 31 | cubs or females accompanied by cubs is prohibited. See 5 AAC 81.055 and separate permit hunt supplement. |
| Remainder of Unit 9 | *Oct. 7 - Oct. 21<br>May 10 - May 25 | One bear every four regulatory years; provided the taking of cubs or females accompanied by cubs is prohibited. |

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

## Population Status and Trend

Systematic surveys and population estimation procedures have not been developed for the Alaska Peninsula brown bear population. However, observations made on moose and caribou survey flights and records of production at McNeil and Brooks Rivers indicate that the population has a high reproductive rate. Overall bear density is believed to be equal to, or greater than, any historic level. The reproductive success and abundance of bears is most likely related to the substantial removal of mature males during the early 1970's. Several authors (Kemp 1976, Beecham 1978, Bunnell and Tait 1978) have documented and discussed the biological basis for increases in bear populations following removal of adult males.

## Population Composition

Heavy hunting pressure with strong selection for adult males in the early and mid-1970's modified the sex and age composition of the Peninsula bear population. Recent harvest statistics support the belief that the population is now dominated by young bears. Mean male skull sizes are 2 to 3 inches smaller than in the early 1960's when the population was more lightly hunted. The mean age of all bears taken is also lower than in the early 1970's.

On the other hand, harvest data also indicate that the population may be returning to a more natural age structure under the more conservative harvests of the late 1970's. The percentage of males and females over 5 years of age has been gradually increasing (Appendix II).

More detailed data on composition are lacking. However, an inference can be made from the harvest data that the predominance of males in the harvest (Appendix I) has left a majority of females in the living population. Such a skew in the sex ratio could favor production of cubs as long as sufficient males remain to breed most estrous females.

## Mortality

The total sport bear kill for Unit 9 in 1979 was 167. Males comprised 66 percent of the take (Appendix I) which is well above the average for a fall harvest. Of the total kill, 142 bears were taken south of the Naknek River where the Board of Game has selected a harvest guideline of 150 bears per year.

In addition to the take by sport hunters, four bears were reported killed in defense of life and property and two bears were known to have been killed illegally. Three to five unreported defense kills were believed to have occurred, and rural residents are suspected of taking three to 10 bears for domestic use. Thus, the total human kill of bears is estimated to be between 179 and 188.

## Management Summary and Conclusions

The registration permit hunt on the Naknek river is designed to minimize bear-human conflicts in the most heavily settled portion of Unit 9. This hunt has been held for 4 years and appears to be working well. Hunters take an average of six bears per year from the drainage during the 162-day season and the non-sport kill has averaged about two bears per year. The population is remaining healthy and bears are well distributed, but potential problem bears frequenting residential areas are quickly removed from the population.

This was the first year for the Cold Bay road system registration permit hunt. This hunt, like the one for Naknek, is designed to reduce bear-human problems. Because a portion of the hunt area is on the Izembek National Wildlife Range, the U.S. Fish and Wildlife Service requested that the number of hunters be limited to 10 at a time to maintain uncrowded hunting conditions.

When the Cold Bay season opened on 1 September 1979, many bears were still concentrated along salmon streams and their vulnerability was high. As a result, four female bears were taken in the first week of the season. It became apparent that if the season continued the eventual harvest would exceed the desired level so the season was closed on 7 September.

Because of the high vulnerability of bears in September in the Cold Bay area, the opening of this permit hunt should be moved to sometime in October. This change would make the hunt more effective by delaying the season until most of the bears had dispersed into remote areas and the few potential problem bears had moved toward communities or dumps. Close monitoring of the harvest, bear population and bear problems will be necessary to assess the effectiveness of this permit hunt.

The sport hunter harvest in the area south of the Naknek River was well distributed and close to the optimum level. This area is subdivided into three parts for management and research analyses. Based on size, these areas should contribute 70, 30 and 50 bears, respectively, to the guideline of 150 bears per year. The breakdown for the 1979 harvest was 67, 30 and 45 in these three areas.

The sex ratio of the harvest, 2 males:female, is unusual for a predominantly fall kill in Unit 9 (Appendix I). Sex ratio has been shown to be a sensitive measure of hunting pressure (Bunnell and Tait 1978) with a predominance of males generally indicating lighter hunting pressure. A relative reduction in hunting pressure could have resulted from greater hunter selectivity associated with fewer hunters and better hunting conditions, or from an overall increase in the bear population. The first of these causes is unlikely as no noticeable decline in hunter numbers occurred in 1979 and adverse weather severely reduced hunter mobility and efficiency. It appears more likely that the population is recovering from former years of high harvest and that the 150 bears per year guideline is allowing some increase in the population.

One other possible cause of the unusual sex ratio in this year's harvest is a relatively greater proportion of the sows being accompanied by cubs. An increase in family groups would reduce the overall number of vulnerable sows.

No data are available to test this hypothesis, but some indications do exist that this may be occurring in the central peninsula area (see below).

Support for general continuation of the current guideline of 150 bears per year comes from male skull size and age statistics. Mean male skull size and age increased by 0.8 inches and 0.6 years (sample sizes 100-109) over the previous fall kill in 1977 (Appendix II). Although these increases are minor, they represent a reversal in the trend toward smaller and younger bears which began in the late 1960's.

The incongruous decline in female skull and age statistics (Appendix II) justifies a further review of female harvest. Analysis on a local level reveals that the overall decline is due to changes in the central peninsula area. In fact, mean female skull size and age increased in northern and southern Unit 9. The decline in the central peninsula area is due to a proportionately greater harvest of sub-adult (less than 5 years old) females in 1979. This harvest pattern suggests that any old, potentially barren, females have already been removed from the population and that many sows of breeding age are accompanied by cubs. Thus, hunters now primarily select smaller, pre-reproductive females. This could also help explain the unusual sex ratio in this fall harvest.

The present scheme of opening the majority of Unit 9 on an alternating regulatory year basis is adequately controlling harvest and providing for maximum hunter participation and flexibility. Harvest statistics should be closely monitored to determine whether the initial increase in male sizes will continue. Unless total harvest levels south of the Naknek River increase or local over-exploitation develops, permits will not be necessary in most of Unit 9.

## Recommendations

The opening date for the fall season in the Cold Bay Road System permit hunt should be changed to early October.

No other changes in seasons or bag limits are recommended.

## Literature Cited

Beecham, J. 1978. Some population characteristics of exploited and unexploited black bear populations in Idaho. In C. J. Martinka, Ed. Bears - Their biology and management. (In press).

Bunnell, F. L., and D. Tait. 1978. Population dynamics of bears and their implications. Proc. of the Symp. on Large Animal Pop. Dyn. Salt Lake City, Utah. (In press.).

Kemp, G. A. 1976. The dynamics and regulation of black bear, *Ursus americanus*, populations in northern Alberta. In M. R. Pelton et al., eds. Bears - Their biology and management. IUCN Publ. New Series No. 40, Morges, Switzerland. pp. 191-197.

PREPARED BY:

Christian A. Smith
Game Biologist III

SUBMITTED BY:

James B. Faro
Regional Management Coordinator

Appendix I. Game Management Unit 9 yearly bear sport harvest 1970-1979.

| Year | Total kill | No. of males | No. of females | % of males |
|---|---|---|---|---|
| 1970 | 158 | 103 | 50 | 67% |
| 1971 | 195 | 122 | 63 | 66% |
| 1972 | 279 | 154 | 119 | 56% |
| 1973 | 242 | 138 | 98 | 58% |
| 1974 | 141 | 75 | 66 | 53% |
| 1975 | 224 | 120 | 96 | 56% |
| 1976 | 154 | 108 | 41 | 72% |
| 1977 | 189 | 108 | 77 | 58% |
| 1978 | 183 | 133 | 47 | 74% |
| 1979 | 167 | 109 | 55 | 66% |
| Totals | 3431 | 2186 | 1147 | 66%* |

* Totals include all bears taken since 1961.

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APPENDIX II

GAME MANAGEMENT UNIT 9

YEARLY BEAR SPORT HARVEST 1970 - 1979

| | Mean Skull Sizes | | | | Mean Ages | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Male | | Female | | All Males | | All Females | | Males Over 5 yr. | | Females Over 5 yr. | | |
| Year | Skull Size | Samp Size | Skull Size | Samp Size | Age | Samp Size | Age | Samp Size | Age | Samp Size | Age | Samp Size | Season Dates |
| 1970 | 24.0 | 099 | 22.2 | 047 | 06.9 | 093 | 07.0 | 044 | 09.8 | 054 | 10.6 | 021 | 56 Days Spring and Fall |
| 1971 | 24.0 | 117 | 21.5 | 060 | 06.8 | 112 | 05.4 | 061 | 10.4 | 054 | 09.2 | 020 | 47 Days Spring and Fall |
| 1972 | 23.5 | 146 | 22.0 | 112 | 06.8 | 146 | 08.0 | 115 | 10.7 | 066 | 11.1 | 067 | 47 Days Spring and Fall |
| 1973 | 23.5 | 134 | 21.5 | 089 | 06.0 | 129 | 06.8 | 093 | 08.3 | 064 | 10.2 | 044 | 31 Days Spring and Fall |
| 1974 | 22.4 | 066 | 21.6 | 060 | 05.5 | 073 | 07.5 | 065 | 10.0 | 023 | 11.9 | 030 | 15 Days Fall Only |
| 1975 | 23.1 | 117 | 21.6 | 093 | 06.0 | 119 | 07.0 | 095 | 10.0 | 048 | 10.6 | 047 | 31 Days Spring and Fall |
| 1976 | 24.5 | 105 | 21.1 | 040 | 07.5 | 099 | 06.5 | 038 | 09.4 | 064 | 09.2 | 020 | 16 Days Spring Only * |
| 1977 | 22.4 | 103 | 21.5 | 073 | 04.5 | 100 | 07.0 | 072 | 08.3 | 026 | 11.2 | 033 | 16 Days Fall Only * |
| 1978 | 24.4 | 127 | 21.5 | 044 | 06.9 | 129 | 06.8 | 046 | 09.5 | 075 | 08.8 | 029 | 16 Days Spring Only * |
| 1979 | 23.2 | 106 | 21.0 | 052 | 05.1 | 109 | 06.0 | 053 | 09.2 | 029 | 10.4 | 020 | 16 Days Fall Only * |
| TOTALS | 24.2 | 1685 | 21.6 | 0821 | 06.3 | 1164 | 06.9 | 0701 | 09.6 | 0537 | 10.5 | 0337 | ** |

* Except for Naknek Drainage Permit Hunt.

** Totals include all bears taken since 1961.

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BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT 10

GEOGRAPHICAL DESCRIPTION: Unimak Island

PERIOD COVERED: January 1, 1979 - December 31, 1979

Season and Bag Limit

| | |
|---|---|
| May 10 - May 25<br>Oct. 7 - Oct. 21 | One bear every four years; provided the taking of cubs or females accompanied by cubs is prohibited. |

Population Status and Trend

Due to small sample sizes, available data were inadequate to assess brown bear status or trend.

Population Composition

No data were available.

Mortality

Eight bears were reported taken by hunters on Unimak Island in 1979. Five of these bears were males: 3 adults, 1 sub-adult and 1 juvenile. The three females were aged at 1.8, 4.4 and 12.8 years. No data were available on other causes of mortality.

Management Summary and Conclusions

Brown bear hunting on Unimak Island has been controlled by a permit system administered by the U.S. Fish and Wildlife Service. Fifteen permits, valid for either the fall or spring season, were issued to Alaska residents in March 1979. Nine of the permittees (60%) actually hunted and eight bears were killed. The only hunter not known to kill a bear died in an airplane accident. Seven hunters reported seeing an average of 10 bears during their hunts which ranged from 2 to 18 days long. The presence of old bears (of both sexes) in the harvest, the high level of hunter success and the number of bears seen by each hunter indicate the population is being exploited conservatively.

During 1979, the State initiated a drawing permit system to supplant the Federal one. Under the new program, permit numbers will remain 15 per year, but they will be allocated as follows: seven spring, eight fall. This approach will assure hunter distribution and retain management control of the number of bears killed.

Recommendations

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, 1979 - December 31, 1979

Season and Bag Limit

| | |
|---|---|
| May 10 - May 25<br><br>Sept. 1 - Oct. 10 | One bear every four regulatory years; provided that the taking of cubs and females accompanied by cubs is prohibited. |

Population Status and Trend

Field observations coupled with sightings reported by hunters and local residents indicate an abundance of bears in Unit 11.

Population Composition

No data were available.

Mortality

The 1979 harvest of seven brown bears (4 males, 3 females) is a decrease of 14 bears from 1978 and the lowest reported harvest since 1961 (Tobey 1979). The average age was 9.3 years for males and 7.1 years for females. The average skull size was 22.4 inches for males and 17.9 inches for females, nearly identical to past harvests.

Nonresident hunters killed three bears in 1979, nine bears fewer than the 1978 nonresident take.

Management Summary and Recommendations

The decrease in the 1979 harvest of grizzly bears resulted from a decline in hunting pressure, not a decline in the bear population. The creation of Wrangell-St. Elias National Monument, encompassing essentially all of Unit 11, resulted in Federal regulations prohibiting sport hunting within the monument. The State of Alaska did not recognize nor enforce these regulations.

The legal status of sport hunting will be in contention until settlement of Federal lands legislation (d)(2) in Congress. Since most guides have ceased operations until the legal status of sport hunting is resolved, the non-

resident hunting pressure will remain minimal. Residents will probably continue to hunt although the effort will not equal levels attained prior to creation of these monuments.

No changes in season or bag limits were recommended.

Literature Cited

Tobey, R. W. 1979. Annual Report of Survey-Inventory Activities. Alaska Fed. Aid in Wildl. Rest. Proj. W-17-11, Job 17.0, 4.0 and 22.0.

PREPARED BY:

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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, 1979 - December 31, 1979

Seasons and Bag Limit

| | |
|---|---|
| May 10 - May 25<br>Sept. 1 - Nov. 30 | One bear every four regulatory years; provided that the taking of cubs and females accompanied by cubs is prohibited. |

Population Status and Trend

Although no standardized surveys have been conducted in this unit, grizzly bears are relatively abundant throughout the unit in suitable habitat. According to reports from local outdoorsmen, the grizzly population has increased in recent years.

Population Composition

No surveys have been conducted in the area, but based on observations of numbers of sows with cubs and yearlings productivity appears high.

Mortality

One instance of natural mortality was recorded; an adult male was reportedly killed by another adult male near Tetlin during November. Based on observations in the Brooks Range, it is possible that predation of cubs and sub-adults by adult male bears may be an important mortality factor.

The reported hunter harvest for 1979 was 24 bears which exceeded the 19-year average (17 bears per year) by 41 percent. Twenty-one of these were reported taken from a 4,000 square mile area north of the Wrangell-St. Elias National Monument; three were reported taken from other portions of the unit. Nonresident guided hunters took 55 percent of the bears.

Females comprised 58 percent of the harvest and all but one of the bears were taken in the fall season. Sows have comprised an average of 54 percent of the harvest since 1970. Although the high percentage of females in the har-

vest might indicate overexploitation of the grizzly population, neither the mean skull sizes, hide sizes, nor ages differ significantly from the 19-year averages.

Management Summary and Recommendations

The Unit 12 grizzly population, estimated to contain from 300 to 400 bears, is believed to have increased somewhat in recent years. Based upon research results in nearby Unit 13 and observations within Unit 12, grizzly predation is likely responsible for abnormally low rates of moose calf survival in many portions of Unit 12.

Because of the apparent abundance of bears and a desire to increase moose calf survival, the grizzly season was liberalized during fall 1979. However, the observed increase in the bear harvest from a historical average of about 17 bears annually to the 24 taken during this reporting period was not the result of the extended fall season. Rather, greater hunting pressure was exerted during September when the most pressure has taken place historically. Reported locations of many kills were probably not accurate as a result of hunters attempting to circumvent Federal regulations in the Wrangell Mountains.

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BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT 13

GEOGRAPHICAL DESCRIPTION: Nelchina Basin

PERIOD COVERED: January 1, 1979 - December 31, 1979

Season and Bag Limit

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

Population Status and Trend

Participants in Unit 13 brown bear research projects reported numerous bear sightings and resulting captures within study areas. Frequent brown bear observations are also made incidental to aerial surveys and counts for other species. These sources, along with reports from the public indicate an abundance of bears in Unit 13.

Population Composition

Data from research results are currently being analyzed.

Mortality

Seventy-three brown bears (39 males, 34 females) were killed in 1979, an increase of 10 bears over the 1978 harvest. Nonresidents killed 31 (42%) bears.

The mean age of both sexes was 7.2 years in 1979, slightly more than the 6.3 years for 1978 (Eide 1979). The mean skull size was 21.1 inches for males and 19.7 for females, virtually identical to 1978 figures.

Management Summary and Recommendations

Analysis of 1979 harvest data indicates the brown bear kill varied little from previous harvests. Large, older males continue to appear in the harvest, indicating that the opportunity for hunters to take trophy bears still exists. The brown bear population appears to be altered little by existing harvest levels.

Predator-prey studies in Unit 13 have identified brown bears as significant predators on moose populations. The public response to this research has been to demand more liberal

brown bear hunting regulations. In response to this public input, the first spring brown bear season ever conducted in Unit 13 will be held in 1980. The spring season will be 15 days long and will begin on 10 May. No additional changes in season dates or bag limits are recommended until the effect of the 1980 spring season is known.

Literature Cited

Eide, S. H. 1979. Annual Report of Survey-Inventory Activities. Alaska Fed. Aid in Wildl. Rest. Proj. W-17-11, Jobs No. 17.0, 4.0 and 22.0.

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# BROWN/GRIZZLY BEAR

## SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT 14

GEOGRAPHICAL DESCRIPTION: Upper Cook Inlet

PERIOD COVERED: January 1, 1979 - December 31, 1979

### Seasons and Bag Limit

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

### Population Status and Trend

Due to small sample size, available data are inadequate to assess brown bear status or trend.

### Population Composition

No data were available.

### Mortality

Three brown bears, one male and two females, were reported killed in Unit 14 by nonresident sport hunters. Two additional bears were taken in defense of life and property.

### Management Summary and Recommendations

Game Management Unit 14 has never experienced a large brown bear harvest. Between 1961 and 1972 the average annual harvest was 9.5 brown bears. From 1973 to 1979 the annual harvest declined to 4.6 bears. Prior to 1973, the season dates fluctuated but averaged 31 days per year. From 1973 until 1979, the season has remained fixed at 31 hunting days annually. In 1973 Chugach State Park was established and closed to the hunting of brown bear. This park encompasses the majority of Subunit 14C and is the probable cause for the reduced brown bear harvest in Unit 14.

No changes in season or bag limit were recommended.

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Regional Management Coordinator

# BROWN/GRIZZLY BEAR

## SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT 16

GEOGRAPHICAL DESCRIPTION: West Side of Cook Inlet

PERIOD COVERED: January 1, 1979 - December 31, 1979

### Seasons and Bag Limits

| | |
|---|---|
| May 10 - May 25<br><br>Sept. 1 - Oct. 10 | One bear every four regulatory years; provided that the taking of cubs and females accompanied by cubs is prohibited. |

### Population Status and Trend

Frequent field observations, nuisance reports, and hunter sightings indicate an abundant population of brown bears in Unit 16.

### Population Composition

No data were available.

### Mortality

Twenty-nine brown bears were killed in Unit 16 during the 1979 brown bear season. Four males and one female were harvested during the fall season and 11 males, 12 females, and 1 unknown during the spring season. No non-sport kills of brown bears were reported.

The mean skull sizes (in inches) of the brown bears harvested were as follows:

| | Spring | | Fall | |
|---|---|---|---|---|
| Unit | Male | Female | Male | Female |
| 16(n) | 25.7(4) | 20.7(1) | 21.5(11) | 20.6(12) |

### Management Summary and Conclusions

Didrickson (1979) expressed concern about the large 1978 harvest of 41 bears and associated small mean skull sizes. The mean skull size for male brown bears killed during spring 1979 increased 2.0 inches from the 1978 mean. The mean skull size for males killed during the fall increased

0.3 inches from the 1978 mean. Overall, the mean skull size for male brown bears increased 0.9 inches from 1978 to 1979. Fluctuations in annual mean skull sizes in Unit 16 are thought to reflect the small sample size rather than a change in the population status.

No changes in seasons or bag limits were recommended.

Literature Cited

Didrickson, J. C. 1979. Annual Report of Survey-Inventory Activities. Alaska Fed. Aid in Wildl. Rest. Proj. W-17-11, Jobs No. 17.0, 4.0 and 22.0.

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BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT 17

GEOGRAPHICAL DESCRIPTION: Bristol Bay

PERIOD COVERED: January 1, 1979 - October 31, 1979

Season and Bag Limit

| | |
|---|---|
| 10 May - 25 May<br>7 Oct. - 21 Oct. | One bear every four regulatory years; provided that the taking of cubs or females accompanied by cubs is prohibited. |

Population Status and Trend

Few population data are available for brown bears in Unit 17. Public comments and increasing complaints of nuisance bears indicate the population may be increasing.

Population Composition

No data were available.

Mortality

The sport kill of brown bears was 46. Thirty-one bears were taken during the spring season and 15 during the fall. Males comprised 73 percent of the spring kill, 64 percent of the fall kill, and 70 percent overall. Seventy-four percent of the bears were killed by nonresident hunters. Harvest by nonresident hunters was equally distributed between the spring and fall seasons. Most of the bears (25) were killed in drainages of the Mulchatna River.

Mean ages of males (8.6 yrs), females (6.4 yrs), males over 5 years (9.9 yrs), and females over 5 years (9.5 yrs) in the 1979 harvest declined from 1978 (9.3, 9.2, 11.7, and 13.6, respectively). The trend since 1975 for all males and all females has been a decline in age. No trend was apparent for males older than 5 years and the average age for the harvest of females older than 5 years has been increasing.

Management Summary and Recommendations

The annual kill of bears in Unit 17 has shown a steady increase since 1970. The 1979 sport kill of 46 bears was the highest since these data became available in 1961. The

extent to which alternate year seasons in Unit 9 influence the bear kill in Unit 17 has not been determined. With the exception of 1976, fall harvests have remained relatively constant since 1973. However, the spring kill in Unit 17 has been approximately double those in even years when Unit 9 did not have a spring season.

No change in season or bag limit was recommended.

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Regional Management Coordinator

BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT 18

GEOGRAPHICAL DESCRIPTION: Yukon-Kuskokwim Delta

PERIOD COVERED: July 1, 1978 - December 31, 1979

Season and Bag Limit

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

Population Status and Trend

No data are available for Unit 18.

Population Composition

No surveys were conducted in Unit 18 during the reporting period.

Mortality

Information obtained from sealing certificates indicated a total harvest of 12 bears in the unit during the 18-month reporting period. The following is a breakdown of that harvest:

| Season | Total Harvest | No. of Males % | No. of Females % | No. of Non-resident Hunters | No. of Guided Hunts |
|---|---|---|---|---|---|
| Fall 1978 | 0 | - | - | - | - |
| Spring 1979 | 7* | 5* (71) | 2 (29) | 4 | 5 |
| Fall 1979 | 5 | 3 (60) | 2 (40) | 4 | 4 |
| TOTALS | 12* | 8* (67) | 4 (33) | 8 | 9 |

* Includes one male bear taken illegally on June 20, 1979.

Male bears comprised 67 percent of the harvest during the reporting period. Ages of male bears harvested ranged from 4 to 15 years (mean 8.5) and female bears from 4 to 9 years (mean 5.5).

Hunting pressure within Unit 18 was split evenly between the two major river drainages (Yukon and Kuskokwim). In the

Kuskokwim River drainage, the majority of the bears were harvested southeast of Bethel on or close to the Kisaralik River. All of the recorded bears harvested from the Yukon River drainage were taken on or close to the Andreafsky River north of St. Marys.

Management Summary and Recommendations

The 1979 harvest of 12 bears was the highest on record for Unit 18 and can probably be attributed to increased hunting pressure brought on by a few registered guides offering bear hunts within the area. Nonresident hunters took 67 percent (8 bears) of the total harvest during 1979. Because so little is known about the density and productivity of grizzly bears within this area, it may be necessary to make adjustments to the regulations in the near future; however, at present no changes in the season or bag limits are recommended.

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Regional Supervisor

BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT 19

GEOGRAPHICAL DESCRIPTION: Middle and Upper Kuskokwim River

PERIOD COVERED: January 1, 1979 - December 31, 1979

Seasons and Bag Limit

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

Population Status and Trend

Sightings of grizzly bears suggest that the population has been increasing in most of Unit 19 during the last several years. However, in Subunits 19A and 19B (particularly the Nushagak Hills portions) hunting has reduced grizzly numbers.

Population Composition

Sealing data indicate that during the last 2 years the composition of the population has shifted toward younger bears. This has been particularly evident for bears in the Nushagak Hills area. In addition, female bears have become much more prevalent in the harvest. During 1978 and 1979, 53 and 47 percent, respectively, of the harvest was females.

Mortality

Fall and spring harvest data indicated that hunters took 66 bears, but in at least nine cases bears which were reported as taken in Unit 19 were probably harvested elsewhere. These inaccuracies were evident from examination of sealing certificates and comparison of known guiding activities with the reported kill sites. I was present in the area where at least two of the bears were reported taken and can verify that the reported locations of these kills are inaccurate. Regardless, the harvest of 57 bears, largely from Subunits 19A and 19B, is excessive considering the estimated population size in these areas.

Management Summary and Recommendations

Sealing data from spring and fall hunts in 1979 suggest the harvest of grizzly bears has exceeded the long-term produc-

tivity of bear populations in the Nushagak Hills portions of Subunits 19A and 19B. In this area illegal activities of unethical guides has begun to alter sex and age ratios of the resident bear population. This activity apparently is not decreasing despite conviction of several guides for violations of airborne hunting regulations. The creation of exclusive guide areas has helped, but some guides regularly hunt outside their areas. Nearly all bear hunting in Subunits 19A and 19B is by nonresidents. Therefore, a permit system is probably the best method for reducing the take of bears in these areas. If the harvest is spread over several drainages in these subunits an annual take of 20-25 bears is acceptable provided one-third of the kill occurs during spring.

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BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT 20

GEOGRAPHICAL DESCRIPTION: Fairbanks, Central Tanana River Drainage

PERIOD COVERED: January 1, 1979 - December 31, 1979

Season and Bag Limits

| | |
|---|---|
| May 10 - May 25<br><br>Sept. 1 - Nov. 30 | One bear every four regulatory years, provided that the taking of cubs or females accompanied by cubs is prohibited. |

Population Status and Trend

Data regarding the population status of grizzly bears in Unit 20 are lacking. Casual observations and other indices suggest the unit-wide population is moderate in size and has slowly increased during the last decade.

Population Composition

No data are available.

Mortality

According to data derived from bear sealing certificates, 37 grizzly bears were harvested in Unit 20 by sport hunters during 1979 compared to the 18-year mean harvest of 30 bears. This was the highest level of harvest reported since 1967 when 57 bears were taken. In addition, one bear was taken in defense of life or property.

The spring harvest was 16 bears (11 males and 5 females). This represented a considerable increase over the 16-year mean of 7 bears. Reasons for the increased spring harvest are unclear but may have been in response to favorable weather conditions which encouraged hunters to go afield. Department reports of bear predation on moose and caribou in Unit 20 may have given some hunters the incentive to hunt bears. All but two of the bears taken during the spring season were harvested by residents. The more popular hunting areas, as indicated by sealing records, included the Alaska Range and the Taylor Highway, with harvests of 21 and 5, respectively.

The fall harvest was 21 bears (14 males and 7 females). This is a slight decline from the 18-year mean of 24 bears. The fall season was lengthened from 40 to 91 days in 1979; the season had also been lengthened by 10 days in the beginning of the season in 1978. Analysis of harvest data indicates that five bears were harvested during the period the season was extended and five bears were taken prior to September 10. Therefore, by lengthening the season in 1978 and 1979 an increased harvest of 10 bears was realized. The additional season length did not increase harvest levels in lightly hunted areas; instead, all of the increase occurred in the more traditional hunting locations, primarily the Alaska Range.

Residents took 81 percent of the harvest, 87 percent during the spring season and 76 percent during the fall season. Male bears comprised 68 percent of the harvest. Since 1961 males have averaged 59 percent of the annual harvest, and that value has not changed significantly in recent years. The ages of bears killed ranged from 2 to 22 years for males (mean 10.7) and from 2 to 12 years for females (mean 4.7), for an overall mean of 8.6 years. The mean age for all bears harvested in 1979 did not vary greatly from the 1969-1978 mean, although this value declined by 2.2 for females and increased by 3.4 years for male bears.

Management Summary

It appears that efforts to increase the grizzly bear harvest in Unit 20 by increasing the season length have been moderately successful. However, much of Subunits 20C and 20E is inaccessible and changes in seasons have had little effect on harvest levels there.

Thirteen grizzlies were taken in the portion of the Alaska Range lying between the Wood River and the Parks Highway. If it is true that grizzly bear populations can sustain a maximum harvest of only about 4 percent, then this area would require a population of at least 325 bears to maintain this harvest level. It seems unlikely that a population of this magnitude exists in the area. However, to date there are no indications that harvest levels are excessive since the average age of the bears harvested has not declined. Male bears are still predominant in the harvest and there are no indications that the bear population is being depressed.

Grizzly harvest levels have fluctuated in Unit 20 for a variety of reasons, and the 1979 harvest was the third largest on record. Until new data indicate otherwise, further liberalizations of grizzly seasons to encourage larger harvests in the area between the Wood River and the Parks Highway may be unwarranted. However, increased harvests should be encouraged in other parts of Unit 20,

particularly in the vicinity of the Delta and Fortymile Caribou herds' calving grounds where predation by grizzly bears may be a significant source of calf loss.

New and innovative management schemes are necessary to direct grizzly bear hunting effort to lightly hunted areas and other locations where bear predation is believed to be a significant factor contributing to depressed ungulate populations. At the same time increased harvests should be avoided in traditional bear hunting locations which may already be sustaining maximum harvest levels.

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BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT 21

GEOGRAPHICAL DESCRIPTION: Middle Yukon

PERIOD COVERED: January 1, 1979 - December 31, 1979

Seasons and Bag Limit

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

Population Status and Trend

Population status and trend of grizzly bear populations in Unit 21 are unknown. However, observations during surveys for other species indicate that numbers range from very low at low elevations along the Yukon River to moderate in alpine areas and the western sections of the unit.

Population Composition

No data are available.

Mortality

Four grizzly bears were taken by sport hunters during 1979, two during the spring season and two during the fall season; in addition, one bear was taken in defense of life or property. During 1961-1978 the number of bears reported taken annually by hunters ranged from zero to seven and averaged two bears per year. Of the five bears killed during the report period, two were males, two were females, and one was of unknown sex. Two of the bears were killed by nonresidents.

Hunting pressure may increase in the area during the next few years if guides move into Unit 21 to establish exclusive guiding areas.

Management Summary

Since 1961 annual harvests have had an insignificant impact on the Unit 21 grizzly population. A much greater harvest could be sustained in this unit, but present interest in bear hunting is not great.

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BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 22

GEOGRAPHICAL DESCRIPTION: Seward Peninsula

PERIOD COVERED: July 1, 1978 - December 31, 1979

Seasons and Bag Limits:

| | |
|---|---|
| Sept. 1 - Oct. 31 | One bear every four regulatory years; provided that the taking of cubs or females accompanied by cubs is prohibited. |
| Apr. 25 - May 25 | |

Population Status and Trend

The grizzly bear population in Unit 22 probably increased some during the last 2 decades (or longer). Bears occupied most (if not all) the suitable habitat, and it appeared the density in many areas was near carrying capacity. A sharp increase in adult male mortality within the last year may have reduced bear density in a few drainages.

Population Composition

Grizzly bear composition and productivity surveys were not conducted during the report period, but bear observations were noted in the course of other field work. From these data and past surveys, bear density was estimated to be on the order of one animal per 40 to 60 square miles. Assuming this crude estimate was valid, the bear population numbered between 350 and 525 animals. Based on past hunting success, the higher estimate seemed more probable.

Mortality

No cases of natural mortality were observed. All known mortality resulted from bears being taken in defense of life or property or by hunters.

The 1978 fall harvest was inadvertently omitted from previous S&I reports and is included here for reference. Seven bears were killed; 4 males, 2 females, and 1 of undetermined sex. Nonresident hunters on guided hunts took four of the bears, residents harvested two, and the remaining bear was killed in defense of personal property.

During calendar year 1979, the reported harvest was 50 bears. This harvest was more than 11 times the previous 18-year average, and was 36 bears more than the previous all-time high of 14 bears taken in 1978. The dramatic increase was due to a substantial increase in guiding efforts, primarily from two guides who had not previously guided bear hunters in Unit 22 but had operated in adjacent units. The opening of the spring season on April 25, 15 days earlier than previous years, was also a contributing factor. Nearly continuous snow cover was an aid to hunters, particularly during the first 2 weeks of the season when bears were emerging from winter hibernation and could easily be tracked.

The chronology of the spring harvest is illustrated below. The first half of the season is broken into 5-day increments, and the second half is represented as a single block of time because the harvest was low.

| Harvest First Half of Season | | | | | | Harvest Second Half of Season | |
|---|---|---|---|---|---|---|---|
| April 25-30 | | May 1-5 | | May 6-10 | | May 11-25 | |
| No. | % | No. | % | No. | % | No. | % |
| 13 | 32 | 11 | 28 | 9 | 22 | 7 | 18 |
| Total: 16 days<br>No. 33<br>Percent 82 | | | | | | Total: 15 days<br>No. 7<br>Percent 18 | |

These data suggest that bears are more vulnerable to hunting early in the spring. Note that 82 percent of the harvest occurred in the first 16 days of the season, and nearly a third was taken in the first 5 days. Only 18 percent of the harvest was taken from May 11 through May 25; yet this period had nearly the same number of hunting days as the first half of the season and it was the "normal" hunting season during 4 prior years.

It should be noted that 22 bears were reported from the Koyuk drainage. All of these bears were taken on guided hunts, and the hides were delivered to Anchorage for sealing. The Koyuk drainage is not particularly large nor noted for its high density of bears. Analyzing the data, it is questionable whether all the bears actually came from the Koyuk drainage as reported. However, considering the varied logistical problems for guides and hunters, most of the bears were probably taken in either Units 22 or 23. The location of kill reported for the other drainages is probably accurate in most cases.

The reported distribution of the 1979 harvest by drainage was as follows:

| Location | Male | Female | Unknown | Total |
|---|---|---|---|---|
| Koyuk River | 21 | 1 | | 22 |
| Ungalik River | 3 | 3 | | 6 |
| Beach area, Cape Rodney North to Teller | 4 | 0 | | 4 |
| Inglutalik River | 1 | 2 | | 3 |
| Pilgrim River | 2 | 0 | 1 | 3 |
| Shaktoolik River | 2 | 1 | | 3 |
| Sinuk River | 2 | 0 | | 2 |
| Snake River | 2 | 0 | | 2 |
| Tubutulik River | 1 | 1 | | 2 |
| Fish River | 0 | 1 | | 1 |
| Serpentine River | 1 | 0 | | 1 |
| Unalakleet River | 1 | 0 | 1 | 1 |
| Total Harvest | 40 | 9 | 1 | 50 |

Analyses of skull measurements, sex, and age data indicated most of the 1979 harvest was composed of mature animals. Mean skull size was 22.9 inches, similar to measurements from other years. The age of both sexes ranged from 4 to 17 years. The mean age of all males in the sample was 8.2 years, and it was 9.8 years for all males over the age of 5. The largest sample size from any previous year was only nine bears which is too small for meaningful comparisons. The mean age of 39 male bears taken prior to 1979 (1970-78) was 8.7 years. The mean age was 13.0 years for that portion of the sample (22) whose age was over 5 years. When these data from the two samples for bears over 5 years of age are compared, the mean age of the 1979 sample was 3.2 years less (13.0 minus 9.8) than the combined group. It would be inappropriate to draw firm conclusions from these figures, but the decrease in mean age might be the result of one of the following:

1. There was an actual decrease in the mean age of the population over time.
2. Small areas were heavily hunted resulting in the harvest of a number of younger bears which reduced the overall mean age of the 1979 sample.
3. There was no appreciable change in age structure; rather the sample sizes are too small and the method of combining age groups for comparison is invalid.

Considering the increased hunting pressure and the higher harvest of bears, a combination of number one and two seems more probable.

Many local residents, particularly those living in rural villages, consider grizzly bears to be nuisance predators, and/or a serious threat to their personal safety. Each year there are a number of bear/human confrontations, often resulting in the death of the bear. These events often go unreported. It was estimated that there were three to six bears taken in this manner.

Management Summary and Recommendations

Miners and reindeer herders apparently exerted heavy hunting pressure on grizzly bears during the early 1900's, and it is thought that the population reached its lowest level several decades ago. From this point it is speculated that the grizzly population underwent a number of years of sustained growth and eventually occupied most of the suitable habitat. The size of the population is unknown at this time, but it is crudely estimated at 350 to 525 animals. It is thought that the higher figure is a more accurate representation of the true situation, but it is unlikely that there are more than 800 bears in Unit 22.

During 1979 there was a substantial increase in the number of bears taken; it was an increase of such magnitude that there was some question as to whether it was biologically prudent to allow a harvest of this level to continue. Harry Reynolds (personal communication) indicated an annual kill of 4 percent was a safe management objective for grizzly bears in the western Brooks Range. The productivity of bears on the Seward Peninsula is undoubtedly higher because of better food resources. A sustainable harvest of 5 percent is probably not unrealistic for a long-range management goal. If one assumes there are 600 bears in Unit 22 (which may be a liberal estimate), then the maximum that should be harvested annually is 30 bears.

If these assumptions are correct, it follows that the 1979 harvest may have exceeded the annual productivity by a considerable margin. Since 80 percent of the bears harvested were males, it did not appear as though the situation required immediate corrective actions. For a number of years hunting mortality has been relatively low, and during this period the population may have attained a disproportionate number of males. However, even if this was the case, it is unlikely that the population can sustain a harvest of 50 bears annually without adversely affecting the overall productivity and eventually causing a decline. Hunting mortality should be closely monitored, and, if the harvest remains near the 1979 level, appropriate steps should be taken to limit hunting.

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BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT 23

GEOGRAPHICAL DESCRIPTION: Kotzebue Sound

PERIOD COVERED: January 1, 1979 - December 31, 1979

Season and Bag Limit

| | | |
|---|---|---|
| Unit 23, that portion including the Squirrel River drainage, the Noatak River drainage below its confluence with the Kelly River, the Wulik River drainage, and all that portion of Unit 23 north and west of the Wulik River drainage.* | Sept. 1 - Oct. 10<br>May 10 - May 25 | One bear every four regulatory years by drawing permit only; provided that the taking of cubs or females accompanied by cubs is prohibited. 32 permits will be issued. See 5 AAC 81.055 and separate permit hunt supplement. |
| Remainder Unit 23 | Sept. 1 - Oct. 10<br>May 10 - May 25 | One bear every four regulatory years; provided that the taking of cubs or females accompanied by cubs is prohibited. |

* Boundary of permit area was different during the spring season.

Population Status and Trend

No information was available.

Population Composition

No information was available.

Mortality

Total reported brown/grizzly harvest for Unit 23 during 1979 was 58 bears. During the spring season, 14 male bears were reported harvested. The reported harvest for the fall season was 44 bears, 30 (68 percent) males, and 14 (32 percent) females.

During the spring season only male bears were reported taken, and their size and ages exceeded the 19-year average,

while both males and females taken in the fall were slightly less than the average (Table 1).

Table 1. Comparison of size and age of bears taken in 1979 with the 19-year average.

| | Skull Size | | Age | | Hide Size | |
|---|---|---|---|---|---|---|
| | 1979 | 19 year Average | 1979 | 19 year Average | 1979 | 19 year Average |
| Spring Male | 23.3 | 22.8 | 10.2 | 8.5 | 13.9 | 13.7 |
| Fall Male | 21.6 | 21.7 | 7.1 | 8.5 | 13.0 | 13.2 |
| Fall Female | 19.4 | 19.4 | 6.0 | 7.1 | 12.0 | 11.9 |

The reported harvest on the Seward Peninsula portion of the Unit increased considerably (Table 2), reflecting increased activity by one guide.

Table 2. Brown/Grizzly bear 1979 harvest by location, GMU 23.

| Location | Spring | Fall | Total |
|---|---|---|---|
| Cape Lisburne to Noatak | 4 | 17 | 21 |
| Noatak drainage | 2 | 4 | 6 |
| Seward Peninsula | 6 | 16 | 22 |
| Kobuk drainage | 0 | 2 | 2 |
| Selawik drainage | 1 | 4 | 5 |
| Unknown | 1 | 1 | 2 |
| Total | 14 | 44 | 58 |

Professional big game guides accounted for 37 bears; 29 in the fall and 8 in the spring (Table 3). The two guides harvesting the largest numbers of bears were Driver (17 bears) and Hayes (16 bears). Hayes guided all of his hunts on the Seward Peninsula. Driver confined most of his guiding to that area between Cape Lisburne and the Noatak River drainage.

Table 3. Brown/Grizzly bear 1979 harvest by guide, GMU 23.

| Guide | Spring | Fall | Total |
|---|---|---|---|
| Driver | 2 | 15 | 17 |
| Hayes | 6 | 10 | 16 |
| Jacobson | 0 | 2 | 2 |
| Thiel | 0 | 1 | 1 |
| Bryant | 0 | 1 | 1 |
| Total | 8 | 29 | 37 |

The boundary of the areas in which a permit was required prior to hunting was different for the spring and fall seasons. The area encompassed by the permit system in spring 1979 was that portion of Unit 23 draining into the Noatak River upstream from its confluence with the Nimiuktuk River. For this area, 32 permits were issued and hunters had the option of either using their permit during the fall 1978 or the spring 1979 season. For the fall 1979 season, the aforementioned area was encompassed in the Noatak National Monument and since sport hunting was prohibited in the Monument by Federal regulations, the Board of Game anticipated a change in hunting pressure outside the Monument and established the new permit area.

Of the 23 hunters obtaining permits to hunt in either fall 1978 or spring 1979, four took a bear in the fall. Of the remaining 19 hunters holding permits valid for the spring season, two were successful.

However, only one of the bears was reported taken within the permit area. This low harvest was due primarily to the fact that sport hunting in the permit area was banned by Federal monument regulations (Table 4).

Table 4. Brown/Grizzly bear 1979 drawing permit harvest, GMU 23.

| Season | Number of Applicants | Number of Permits Available | Number of Permits Issued | Harvest |
|---|---|---|---|---|
| Spring 1979 | 19 | 28 | 19 | 2 |
| Fall 1979 | 39 | 22 | 22 | 10 |
| Total | 58 | 50 | 45 | 12 |

In the permit area for the fall season there were 10 successful hunters out of 22 permit holders. All 10 bears were taken within the permit area. The fall permit area was located outside the new national park monuments.

Please refer to the Brooks Range Survey-Inventory Report for more information on Unit 23 permit holders.

Management Summary and Recommendations

A disproportionate part (33 bears) of the total harvest (58 bears) was taken by two guides concentrating in two areas: the Seward Peninsula and the area between Cape Lisburne and the Noatak River.

It can be hypothesized that a sizable percentage of the reported harvest came from locations other than those recorded on the sealing certificates. For instance, on the Seward Peninsula it is doubtful that Utica Creek could have eight legal bears available for taking in one fall season.

The Noatak drainage harvest (resident and guided) for 1979 was only 11 bears, substantially lower than the reported 1978 harvest in this area (23 bears). This lower take on the Noatak drainage indicated hunter distribution had been changed by actions of the Federal Government when they designated the majority of the Noatak drainage as national park monuments. Sport hunting and aircraft access for subsistence hunting is illegal in park monuments according to Federal law.

Because of Federal actions designating about 30 percent of Unit 23 as national park monuments, hunters will be forced to confine their hunting effort to a smaller portion of Unit 23. With reduced area available to sport hunters, the Department will need to carefully monitor hunting pressure. Traditional hunting areas found within the national park monuments will be abandoned and sport hunters will be searching out new areas. Close monitoring will be required in order to guard against an overharvest in a limited area.

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BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNITS 23 and 24-26

GEOGRAPHICAL DESCRIPTION: Brooks Range

PERIOD COVERED: January 1, 1979 - December 31, 1979

## Seasons and Bag Limits

| | | |
|---|---|---|
| Units 23-26 (permit areas only; see regulation booklet for area descriptions) | May 10 - May 25<br>Sept. 1 - Oct. 10 | One bear every four regulatory years by drawing permit only; provided that the taking of cubs or females accompanied by cubs is prohibited. |
| Units 24 and 25 (nonpermit areas) | May 10 - May 25<br>Sept. 1 - Oct. 10 | One bear every four regulatory years; provided that the taking of cubs or females accompanied by cubs is prohibited. |

The portions of Unit 23 in which permits were required were not the same during the spring and fall seasons. During the spring season the permit area included the upper Noatak River drainages in the northeastern portion of the unit and during the fall season included areas in the central and western portions.

## 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 $mi^2$ (depending on habitat quality), with an average density of about 1 bear/100 $mi^2$. Based on these densities and food availability within the 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 percent of the population, or from 40 to 50 bears, should be harvested annually without risking a population decline. 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 1977-1978 regulatory year.

Grizzly populations in Units 26B and 26C are likely beginning to recover from previous overharvests. Populations in

Units 24, 25, and eastern 26A are probably stabilized or growing; in the western portion of Unit 26A numbers are probably increasing.

## Population Composition

Recent population composition is available only for the western Brooks Range near the headwaters of the Utukok and Kokolik Rivers. In that area approximately 40 percent of bears older than yearlings were males and 60 percent were females; sex ratio of cubs and yearlings is probably equal but may slightly favor females. Percentages of animals in age classes were: cubs 13.0 percent, yearlings 10.7 percent, 2-year-olds 13.7 percent, 3- and 4-year-olds 10.7 percent, and those over 5 years of age 51.9 percent.

Other parameters measuring reproductive capacity were determined in the eastern Brooks Range in 1973-1975 and in the western Brooks Range in 1977-1979. These were as follows (listed as eastern and western Brooks Range, respectively): mean age at production of first litter of 10.1 and 8.5 years, mean litter size of 1.82 and 2.03 cubs, reproductive intervals of 4.24 and 4.03 years, and mean reproductive rates of 0.420 and 0.503 cubs/adult female/year.

## Mortality

During 1979 38 grizzlies were taken in the permit areas, a figure within the desired range of harvest. Of these, 36 were taken by hunters (Table 1) and two were taken in defense of life or property (1 in Unit 25, 1 in Unit 26C). In addition, several were very likely taken illegally without permits by local residents from Unit 26A. Because the permit system offered bears protection from the effects of increased hunting pressure caused by changes in the status of Alaska lands, additional areas in Unit 23 were included in the permit area in 1979. However, an excessive harvest took place in nonpermit areas of Unit 23 and other measures to reduce harvest should be considered.

Table 1. Sport hunting take of grizzly bears in Units 23 (portion) and 24-26, 1977-1979.

| Unit | 1977 | | | 1978 | | | 1979 | | |
|---|---|---|---|---|---|---|---|---|---|
| | Spring | Fall | Total | Spring | Fall | Total | Spring | Fall | Total |
| 23, permit area | 4 | 2 | 6 | 0 | 4 | 4 | 2 | 11 | 13 |
| 24, permit area | 6 | 4 | 10 | 0 | 10 | 10 | 0 | 2 | 2 |
| 24, remainder | NA | NA | NA | 0 | 2 | 2 | 0 | 4 | 4 |
| 25, permit area excluding ANWR* | 5 | 8 | 13 | 0 | 4 | 4 | 2 | 8 | 10 |
| 25, remainder | NA | NA | NA | 1 | 6 | 7 | 5 | 9 | 14 |
| 26A | 3 | 6 | 9 | 1 | 4 | 5 | 3 | 3 | 6 |
| 26B | 6 | 2 | 8 | 0 | 2 | 2 | 2 | 3 | 5 |
| 26C and that portion of 25 in ANWR* | 0 | 2 | 2 | 1 | 2 | 3 | 0 | 0 | 0 |
| Totals | 24 | 24 | 48 | 3 | 34 | 37 | 14 | 40 | 54 |

* Arctic National Wildlife Range

In the lowland portions of Units 24 and 25, south of the permit area, the hunter harvest was four bears and 14 bears, respectively. These figures are within the acceptable hunter take for these areas.

Management Summary

The grizzly bear harvest in the Brooks Range was within levels appropriate for the populations in these units. Harvest in the permit hunting area in Unit 24 was very low due to restrictions on hunting in the newly established national monument. In Unit 25 the take increased due to additional guides establishing exclusive guiding areas in the unit but the harvest was not excessive. The western portion of Unit 26A has received only light hunting pressure but has a relatively high bear population; a greater hunter harvest could be sustained in this area, especially during spring seasons when females are not vulnerable to sport hunting.

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