ALASKA DEPARTMENT OF FISH AND GAME
JUNEAU, ALASKA

STATE OF ALASKA
William A. Egan, Governor

DEPARTMENT OF FISH AND GAME
James W. Brooks, Commissioner

DIVISION OF GAME
Frank Jones, Director

ANNUAL REPORT OF SURVEY-INVENTORY ACTIVITIES
PART I. DEER, BROWN/GRIZZLY BEAR, SHEEP, BISON, ELK AND MUSKOXEN

Edited and compiled by
Donald E. McKnight, Research Chief

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(Printed January 1974)

MEMORANDUM OF TRANSMITTAL

January 1974

TO: James W. Brooks, Commissioner
Alaska Department of Fish and Game

FROM: Franklin F. Jones, Director
Division of Game
Alaska Department of Fish and Game
Juneau

SUBJECT: Annual Report of Survey-Inventory Activities

Surveys and inventories include all routine data collections directed toward assessment of the status of game populations and the determination of allowable annual game harvests. These reports, which are written primarily by Area Management Biologists, provide information on the current status of Alaska's game populations and include, when applicable, recommended hunting regulation changes. Reported harvest data for most species are obtained from computerized analyses of harvest tickets (Job 22.0), and continuing aerial surveys provide the basis for assessment of population trends for most populations.

Information in these reports is presented by game species and management units in most instances. A brief summary of statewide harvests and population trends is provided. A map showing Alaska Game Management Unit boundaries has been included for those unfamiliar with these units.

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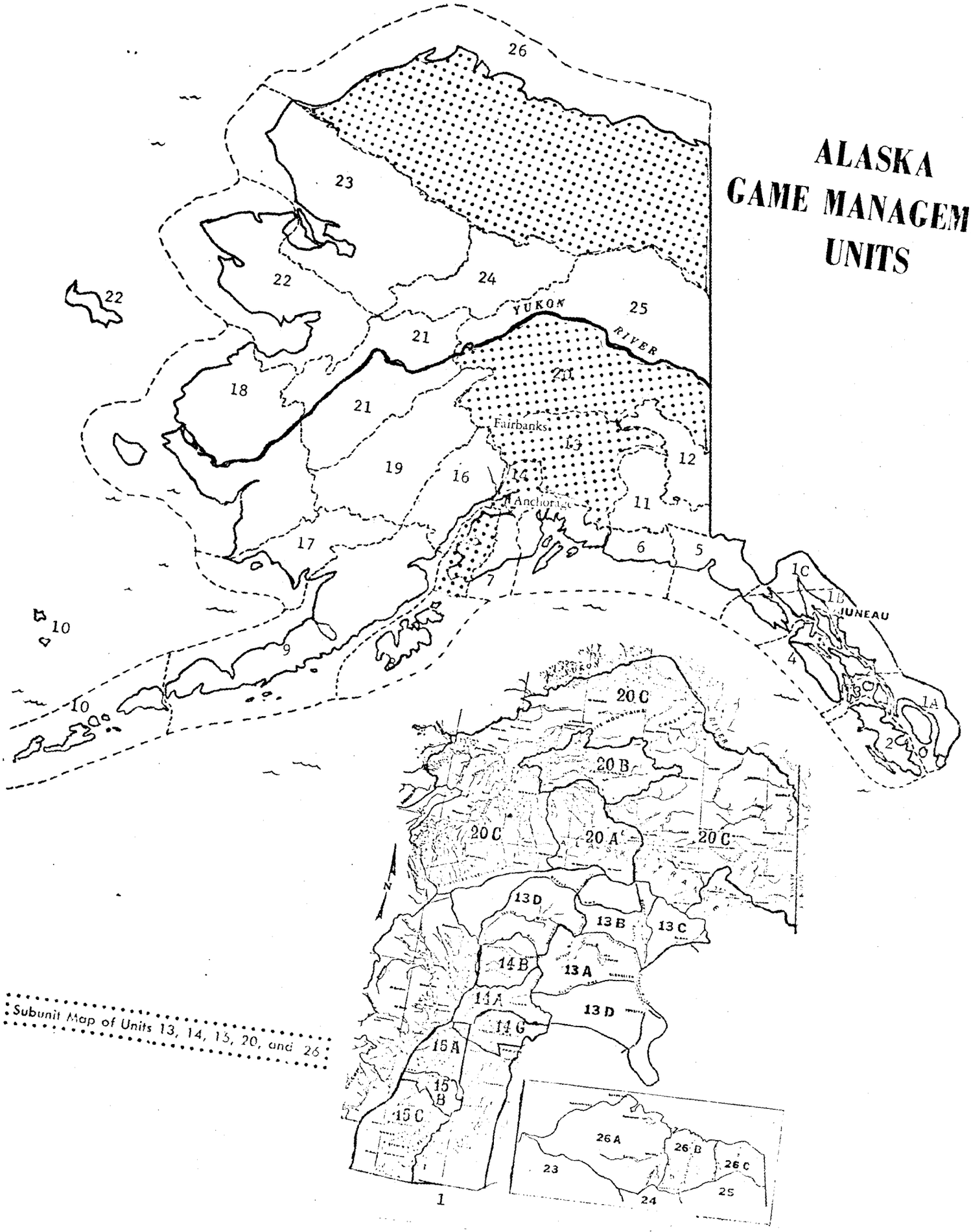
ALASKA GAME MANAGEMENT UNITS



Subunit Map of Units 13, 14, 15, 20, and 26

STATEWIDE HARVESTS AND POPULATION STATUS

Brown/Grizzly Bear

The 1972 legal sport harvest of 828 brown/grizzly bears was 25 percent greater than the average of the previous 10 years (663 bears/year), and second in magnitude only to the harvest of 855 bears obtained in 1966. Guided, nonresident hunters took 508 bears or 61 percent of the total harvest. The spring 1972 take was 245 animals, with the remaining 583 bears being harvested during the fall season. During 1972, 77 bears were harvested in Game Management Unit 4 (Admiralty, Baranof and Chichagof Islands), 132 were taken in G.M.U. 8 (Kodiak) and 278 were harvested in G.M.U. 9 (Alaska Peninsula). Collectively these three units contributed 59 percent of the total 1972 statewide brown/grizzly bear sport harvest. The 1972 harvest of 278 bears on the Alaska Peninsula was the highest ever recorded for that unit.

Alaska's brown/grizzly bear populations remained static or showed moderate increases in 1972 and, with the exception of those in G.M.U. 9, maintained stable sex and age compositions.

Dall Sheep

The 1972 harvest of 1,170 Dall sheep was the highest ever reported in Alaska. Overall hunting success was 37 percent, with 28 percent of resident hunters taking sheep and 71 percent of guided nonresidents being successful. Nonresident hunters took 468 sheep or 40 percent of the total statewide harvest. The 1972 harvest in the once lightly hunted Brooks Range was 236 sheep; fully 40 percent greater than that in 1971 and 95 percent higher than the average harvest for the previous five years (121 sheep/year). Harvests in other mountain ranges in the state have remained remarkably consistent through the 1967-1972 period.

Statewide Dall sheep populations remained stable through 1972.

Sitka black-tailed deer

The 1972 deer harvest in Alaska, as determined from personal interviews of a sample of deer hunters, was approximately 4,500 animals. Over half of the statewide harvest came from Game Management Unit 4, Admiralty, Baranof and Chichagof Islands. A combination of poor hunting conditions (mild fall weather), low deer populations and decreased hunting effort resulted in the lowest deer harvest since statehood.

Heavy snow accumulations during the 1971-72 winter caused further losses to Alaska's already badly depleted deer populations. Herds throughout the state remain at low levels resulting from severe winters during three of the past four years.

Elk

The 1972 harvest of 18 elk was the lowest recorded since general open elk seasons were instituted in 1955. Surveys during 1972 indicated

a further downward trend in the Afognak Island elk population; apparently resulting from successive severe winters in 1970-71 and 1971-72.

Bison

In 1972, 15 permit-bearing hunters harvested 15 bull bison from the Delta herd, and 5 permittees took 2 bulls from the Healy Lake herd. During the first hunt allowed on the newly-established Farewell herd 10 permittees harvested 9 bulls and 1 cow. An additional bull was killed but not salvaged. No hunting was permitted in the Copper River herd in 1972 as a result of poor reproduction and survival following the severe 1971-72 winter.

Muskoxen

The critical imbalance of adult sex ratios persisted in the Nunivak Island muskox population through 1972 (61 percent of animals 2 years old or older were males). It appears that fairly extensive mortality and range deterioration occurred during the 1971-72 winter.

The Nelson Island herd, resulting from transplants of 23 muskoxen in 1967 and 1968, numbered 44 animals in 1972. Sightings of approximately 23 to 27 muskoxen on the Seward Peninsula, 11 muskoxen at Cape Thompson and at least 35 muskoxen on the North Slope during 1972 raise hopes that these transplanted groups will eventually provide the nuclei for several Mainland herds. Calves were born in the North Slope and Seward Peninusla herds during this reporting period.

DEM

DEER

SURVEY-INVENTORY PROGRESS REPORT - 1972

Game Management Units 1A and 1B - Southeast Mainland, south from Cape Fanshaw.

Seasons and Bag Limits

Unit 1A	August 1 - November 30	Three deer; provided that antlerless deer may be taken only from November 1 - November 30.
Unit 1B	August 1 - November 30	
Unit 1B	August 1 - November 30	Two antlered deer.

Harvest and Hunting Pressure

Hunter and harvest information was obtained from a personal hunter survey of 10.5 percent of the hunting license holders in Ketchikan, Wrangell and Petersburg. Ketchikan hunters killed 100 percent of the deer reported taken in Subunit 1A. No deer were reported taken in Subunit 1B.

Sixty-four percent of the 197 license holders contacted in Ketchikan had hunted deer during the 1972 season and 23 percent of these hunters killed one or more deer. The harvest by 1,214 Ketchikan hunters was calculated to be 524 deer, 80 percent of which were taken in Subunit 1A. The average number of deer taken per hunter was 0.4.

Sex ratio of the kill was 44 percent does and 56 percent bucks.

All indications during the 1972 season pointed to a substantially lowered deer population compared to 1971. Hunting license sales dropped 14 percent from 1971, the percentage of license holders who actually hunted decreased from 74 to 64 and hunter success fell from 39 percent in 1971 to 23 percent in 1972. Hunting effort rose from 8 hunter days per deer in 1971 to 13.6 in 1972. Percent of females in the kill rose from 28 in 1971 to 44 in 1972, probably reflecting the change in the antlerless season from October to November when more does are available but also indicating less selectivity for bucks.

Composition and Productivity

Nine winter mortality transects were walked in April and May 1972, and 12 dead deer were found, indicating the severe conditions of the 1971-1972 winter.

Management Summary and Recommendations

The 1971-1972 winter was apparently more severe than the preceding winter. Deer numbers were lower this year, yet the winter mortality transects indicated 1.8 dead deer per mile of beach compared to 0.7 from the 1970-1971 winter.

Observations made while walking mortality transects indicated overall range condition to be excellent. Deer populations are apparently well below average carrying capacity.

Hunter success probably fell off more than the data indicate because of the change in dates of the antlerless season from October to November. More does were at lower elevation during the later 1972 anterless portion of the season and this increased their availability.

Adverse hunter reaction can be expected to any season liberalization because of the low deer population. August hunting is an alpine hunt of high quality and the small kill of bucks has little effect on the population. An August 1, opening should be maintained if possible.

Submitted by: Robert E. Wood, Game Biologist III

DEER

SURVEY-INVENTORY PROGRESS REPORT - 1972

Game Management Unit 2 - Prince of Wales Island

Seasons and Bag Limits

August 1 - November 30	Three deer; provided that antlerless deer may be taken only from November 1 - November 30.

Harvest and Hunting Pressure

Data concerning the deer harvest in Unit 2 are obtained from hunter contact surveys in towns outside of Unit 2. None of the small villages and logging camps located within the unit were surveyed. Two hundred and forty-nine deer or nine percent of the recorded harvest for Southeast Alaska were reported taken in Unit 2. Fifteen percent of the harvest reported by Ketchikan hunters came from Unit 2, while Wrangell hunters took 36 percent of their deer from this unit. Had all the villages been surveyed, the kill from this unit would have been considerably higher.

The hunting effort expended on Prince of Wales Island dropped considerably from 1971, due to a change in regulations that eliminated December either-sex hunting. In 1971, Subunits 1A and 1B closed November 30, while Unit 2 remained open until December 31. This disparity drew Ketchikan and Wrangell hunters to Unit 2 during December.

Composition and Productivity

Four dead deer were found on 15 one-mile-long mortality transects walked in Unit 2 in the spring of 1972. This low rate of mortality from the severe winter of 1971-1972 is probably a result of a very low deer population, as well as milder conditions on outer Prince of Wales Island.

Visual examination of browse species made while walking the mortality transects indicated no use to light use for the 15 miles of beach that were covered.

Management Summary and Recommendations

Unit 2 received very light hunting pressure during the 1972 deer season. A low deer population was the major reason.

The 1973 season will eliminate August hunting and curtail the anterless portion of the season. The light hunting effort in the unit has virtually no effect on the deer population, and an effort should be made to regain the August part of the season, as it provides an excellent, high quality hunt. The antlerless harvest, while insignificant, creates an adverse public reaction, and no attempt should be made at this time to increase the antlerless harvest.

Submitted by: Robert E. Wood, Game Biologist III

DEER

SURVEY-INVENTORY PROGRESS REPORT - 1972

Game Management Unit 3 - Petersburg, Wrangell area

Seasons and Bag Limits

August 1 - November 30 — Two antlered deer.

Harvest and Hunting Pressure

Data on harvest and hunting effort were obtained from personal interviews with a 10 percent sample of the licensed hunters in Wrangell and Petersburg.

Deer populations in Unit 3 have been at an extremely low level for the past several years and consequently most hunting effort occurs in the surrounding units.

All of the Unit 3 harvest was taken by Wrangell hunters. None of the Petersburg hunters who were contacted had killed a deer in Unit 3. Based on a small sample, the deer kill in Unit 3 declined 60 percent from 255 in 1971 to to 102 in 1972, indicating more losses during the 1971-1972 winter and a decrease in hunting effort.

Of the 60 licensed Wrangell hunters who were contacted, only 53 percent hunted deer, and of these only 22 percent or 9 hunters were successful. The number of hunter days per deer taken was 20. The harvest by Wrangell hunters was divided as follows: Unit 2 - 36 percent; Unit 3 - 46 percent; Unit 4 - 18 percent.

Seventy licensees were contacted in Petersburg, only 66 percent of whom hunted deer. Hunter success was 20 percent and hunting effort per deer taken was 15 days. One third of the harvest was antlerless. Expanded figures indicate 438 Petersburg deer hunters killed 143 deer, 7 percent of which came from Unit 1 and 93 percent of which were taken in Unit 4.

Composition and Productivity

Sixteen winter mortality transects were walked in Unit 3 in the spring of 1972 and 18 dead deer were found. The winter of 1971-1972 was so severe that even with a low deer population, significant losses occurred. The 60 percent drop in the 1972 harvest from the preceding season also shows this was true.

Management Summary and Recommendations

Deer numbers in Unit 3 are probably at (or close to) an all time low. Hunter success has declined to the point where not one deer was taken in the unit by any of the 80 Petersburg license holders who were contacted. A strong public reaction to any liberalization of the season can be expected and for this reason, the current (1972-73) bag limit of one buck should be maintained until deer numbers show an increase.

Submitted by: Robert E. Wood, Game Biologist III

DEER

SURVEY-INVENTORY PROGRESS REPORT - 1972

Game Management Unit 4 - Admiralty, Baranof and Chichagof Islands

Seasons and Bag Limits

August 1 - December 31	Four deer; provided that antlerless deer may be taken only from Sept. 15 - Dec. 31.

Harvest and Hunting Pressure

Post hunting season hunter interviews, which have been conducted annually since 1959, suggest that deer hunting in Southeast Alaska was poorer in 1972 than any year on record. The hunter interview is conducted by contacting licensed hunters at random on the street after the hunting season. It is usually done in January. Only the licensees who actually hunted deer during the previous season are used in making harvest calculations. Based on 879 license sales in Sitka during 1972, and 86 percent interviewees who actually hunted, the 1972 interview was a 16.5 percent sample.

The sport/subsistence kill of deer from Unit 4 was calculated to be about 2,500 deer. An estimated 75 percent of the Unit 4 harvest was taken by residents of the larger communities of Southeast Alaska where hunters reported deer harvest as follows: Juneau 581, Ketchikan 25, Petersburg 123, Wrangell 16, Sitka 1,068. The remainder of Unit 4 harvest was taken by residents of Hoonah, Pelican, Angoon, Tenakee, Elfin Cove, Port Alexander and the eight active logging camps. No interviews were conducted in the smaller communities. As some of those people rely heavily on deer for subsistence, the combined estimated kill of 700 deer may be low.

Sitka hunters, who hunt mostly on Baranof and Chichagof Islands, expended 4.9 days hunting effort per deer bagged. Among the licensees who actually hunted (86%), hunter success (persons taking at least one deer) was 51 percent and those hunters took an average 1.42 deer. About 50 percent of the kill occurred during December. Forty-six percent of the harvest was female. Juneau hunters, who took 70 percent of their deer on Admiralty Island, expended 8.9 days of hunting effort per deer bagged. Hunter success was 30 percent and hunters took an average of 0.50 deer. Fifty-six percent of the kill occurred during December. Does accounted for 47 percent of the harvest.

The harvest figures for Baranof and Chichagof Islands are somewhat lower than average, reflecting a decreased deer population. Harvest data from Admiralty Island indicate a substantial decrease in the deer populations. Weather is a substantial factor affecting deer harvests in Southeast Alaska. The majority of hunters, especially those who utilize deer for subsistence as compared to recreational hunting, typically hunt late in the season after snow at higher elevations drives the deer to the beaches. This weather situation did not develop until the last week of December ln 1972. Thus, in spite of the lowered deer population, the 1972 harvest would no doubt have been lower than normal anyway. Sixty-eight percent of the hunters interviewed in

Sitka felt that hunting was at least as good as previous years but most cited weather as being the factor which prevented them from taking a greater harvest. Lack of favorable hunting weather may be one of the reasons for the 21 percent reduction of hunting license sales over the previous 11 year average of 1,108 licensees.

Harvest tickets have been mandatory for deer hunters since 1969, however, they have been less than enthusiastically received by hunters. The data derived from that system have not provided fully reliable management information. Additionally there has been considerable delay in obtaining prompt returns of compiled data. In recent years the kill figures derived from hunter interviews have been about two times those derived from harvest ticket returns. Some comparisons of these two methods are shown in Appendix I.

Again this year, harvest ticket returns showed about half the total harvest indicated by hunter interviews. Sex ratios of the harvest are somewhat different and harvest chronology is not in close agreement. Location of the harvest by island shows fairly close agreement between the two methods for Admiralty and Kruzof Islands. Harvest ticket returns showed about 50 percent higher harvest from Chichagof over the hunter interview whereas, the hunter interview showed a 50 percent higher harvest from Baranof. It would appear that the personal contact of the hunter interview and the ability to help the hunter remember where, when, how, etc. his deer was taken, results in more reliable information than does the harvest ticket. The interview is also a good method of contact with the hunting public.

Composition of the Harvest

Interviews with hunters indicate that bucks accounted for 54 percent of the Unit 4 sport harvest. There was little deviation from that sex ratio when viewed on an island basis. Age composition of hunter-harvested deer is shown in Appendix II. The number of yearling deer taken by hunters amounted to only 10.5 percent. These deer would have been fawns during the severe winter of 1972-72 when winter losses were known to have been very high. The number of two-year old deer in the sample was only 8.1 percent. Again, the very severe winter of 1970-71 when those animals would have been fawns, caused severe winter losses. Finally, it is suspected that deer are less abundant than they have been in the past; the very obvious result of severe losses occuring in the 1968-69, 1970-71, and 1971-72 winters. The 1972 jaw collection supports this contention as 64 percent of the jaws examined were from deer three years old and older. A high proportion of older age animals is one of the classic manifestations of a declining population. Therefore, although the sample is admittedly small, it appears to support or at least complement other indications of some suspected changes occurring within the Unit 4 deer population.

Natural Mortality

Natural mortality, more specifically winter loss, is a major factor controlling deer populations in Unit 4. It is also one aspect of the life

history of deer which can be fairly well assessed. Mortality is assessed by searching transects one mile in length along the beach fringe area in known key deer wintering areas. During May and June 1972, 24 miles of beach were walked and 30 dead deer were found. This indicates 1.25 deaths per mile of beach. However while doing the same transects in May 1973, it became obvious that many carcasses were overlooked during the 1972 survey. For example, in Eliza Harbor on Admiralty Island in 1973, I found a minimum of 21 carcasses of animals which succumbed during the winter of 1971-72, yet the 1972 survey in that harbor turned up only two carcasses. My findings in 1973 indicate that the 1972 estimate of 1.25 deaths per mile of beach is at a minimal estimate six times too low. Of the 30 carcasses found in 1972, six were males, 12 were females and six were of unknown sex. Ages were; 10 fawns, 13 adults and 7 unknown. Mortality for 1971-72 was reported as being highest on Baranof Island, but my 1973 findings suggest it was considerably higher on Admiralty than Baranof, Chichagof or Kruzof.

The 1973 spring mortality surveys were conducted over 22 miles of beach. Eleven transects were read on Admiralty, three on Baranof, seven on Chichagof and one on Kruzof. Fourteen instances of winter mortality were located; all fawns. Eight were on Admiralty, none on Baranof, five on Chichagof and one on Kruzof. Seven of the dead deer were males, one female and six sex unknown. The average mortality per mile of beach in Unit 4 was 0.64.

In terms of total snowfall and accumulation, the winter of 1972-73 was mild. In spite of the mild winter, a death rate of 0.64 per mile of beach would appear to be fairly high. We do not presently have a qualitative system of measuring deer range condition and utilization, but while walking the mortality transects, estimates of the extent of browsing, degree of utilization and overall range conditions were made. Condition estimates varied from "poor to fair" for Admiralty to "good" on Baranof and Kruzof. All areas showed chronic heavy use. In view of the rather poor condition of the winter range in Unit 4, winter mortality is probably an annual natural phenomenon, regardless of winter severity.

Management Summary and Conclusions

Deer populations in Unit 4 are typically controlled by weather, more precisely, snow depth and duration of the accumulation. Hunting, except perhaps in very localized situations, has little influence on deer numbers or sex and age ratios. Our regulations should then be as liberal as possible, yet they should also reflect our appreciation of the ecology-conservation movement prevalent in this country today. The traditional regulations in Alaska which allow a five month season, protect anterless deer until September 15, at which time fawns are presumably self sufficient and have their adult peltage, allow liberal bag limits, prohibit shooting from motor driven vehicles and terminate the season at the onset of mid-winter, appear ideal.

It does appear that deer numbers are presently below former levels. This is not surprising since three of the past five winters have been

sufficiently severe to cause over-winter losses, especially of young of the year. Still, the Unit 4 deer population is probably the healthiest of any in the state at the present time.

Recommendations

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

Submitted by: Loyal J. Johnson, Game Biologist III

APPENDIX I Comparisons of Deer Harvest Ticket returns with Hunter Interview Data.
Game Management Unit 4.

Total Harvest

Harvest ticket -- 1423
Hunter Interview -- 2500

HARVEST TICKET			PERCENT OF HARVEST BY ISLAND		HUNTER INTERVIEWS			
				ISLAND				
MALE	FEMALE	TOTAL	PERCENT		MALE	FEMALE	TOTAL	PERCENT
64	46	110	7.9	Kruzof	13	6	19	9.7
207	197	404	29.2	Admiralty	26	23	49	22.5
182	117	299	21.6	Baranof	56	46	102	46.8
247	319	566	41.0	Chichagof	22	26	48	22.0
700	679	1379/1	99.7		117	101	218	100.0

SEX RATIO OF HARVEST

	PERCENT MALES	PERCENT FEMALES
Harvest ticket	51	49
Hunter Interview	54	46

CHRONOLOGY BY MONTH

HARVEST TICKET			HUNTER INTERVIEW /3	
MONTH	NUMBER	PERCENT	NUMBER	PERCENT
August	41	3.3	10	6.6
September	68	5.5	15	9.9
October	104	8.4	24	15.8
November	242	19.6	28	18.4
December	777	63.0	75	49.3
	1232/2	99.8	152	100.0

1) Does not include 53, no area sepcified
2) Does not include 200, no date specified
3) Sitka hunters only

APPENDIX II Age Analysis of Deer Jaws Collected from Sitka Hunters in 1972.

Game Management Unit 4.

MALES		AGE IN	FEMALES		
NUMBER	PERCENT	YEARS	NUMBER	PERCENT	TOTAL
9	20	Fawn	6	14.6	17.4
7	15.6	1	2	4.9	10.5
1	2.2	2	6	14.6	8.1
5	11.1	3	6	14.6	12.7
11	24.4	4	7	17.1	20.9
12	26.7	5+	14	34.1	30.2
(28)	(62.2)	(3, 4, 5) (Combined)	(27)	(63.8)	(64)

DEER

SURVEY-INVENTORY PROGRESS REPORT - 1972

Game Management Unit 6 - Prince William Sound

Season and Bag Limits

August 1 - December 31	Four deer; provided that antlerless deer may be taken only from Sept. 15 through December 31.

Harvest and Hunting Pressure

The 1972 IBM harvest report data revealed a total harvest of 130 deer (47.7% males) by 332 reporting hunters. The 1972 harvest is the smallest since the initiation of the harvest report system in 1969 and is about half the 1971 harvest (Appendix I).

General harvest information obtained by interviewing 100 Cordova hunters indicated an estimated harvest of 180 deer (for Cordova hunters) which is considerably higher than the statewide IBM harvest figure. The 1972 harvest is the lowest on record as the average number of deer taken by Cordova area hunters from 1965-1972 was 693.

Chronology of the 1972 deer harvest was obtained from IBM data and Cordova hunter interviews.

Month	IBM Percent	Cordova Percent
August	0	3
September	4	30
October	35	3
November	20	20
December	34	43
Unknown	7	0
TOTAL	100	99

The chronology is basically the same except for September and October where the percentages are reversed. Most likely the IBM data are more accurate since Cordova hunters interviewed in early January have a hard time recalling which month they killed a deer, especially if it was taken during the first half of the season.

Composition and Productivity

Age data from deer taken by local hunters were not obtained since an adequate sample could not be collected.

An alpine deer survey flown over Hawkins and Hinchinbrook Islands (Appendix III) indicated the general low deer populations on both islands.

Eight of ten winter browse *(Vaccinium)* utilization transects were read in the spring of 1972. The average utilization was 65.1 percent for the winter of 1971-72 which is slightly higher than the 8 year average of 61.7 percent (Appendix IV).

Management Summary and Conclusions

The winter of 1971-72 was severe. Total snowfall at the Cordova FAA airport was the greatest in 20 years of recording snow data. The effects of the 1971-72 winter coupled with the fairly harsh 1970-71 winter are reflected in the 1972 harvest. Severe winters coupled with lack of winter range are the controlling factors in the Prince William Sound deer population. Hunting is believed to have little or no effect on the population.

Recommendations

Retain the present hunting season and bag limits.

Submitted by: Julius Reynolds, Game Biologist III

APPENDIX I

1969-1972 Deer Harvest--Harvest Report Data

Unit 6

Year	Males	Females	Unknown	Total
1969	150	109	0	259
1970	418	204	9	631
1971	145	104	3	252
1972	62	68	0	130

submitted by: Julius Reynolds, Game Biologist III

APPENDIX II

Cordova Hunter Harvest Data

Unit 6

	1972	1971	1970	1969	1968	1967	1966	1965
Licensees interviewed 1/	100	100	100		100	100	100	100
Hunting license sales 2/	600	600	600		600	600	600	600
Estimated Harvest 3/	180	450	744		1062	678	858	882
Males Harvested 4/	43%	52%	59%	Z	57%	59%	62%	66%
Days Hunted 5/	942	1320	1836		2124	2196	1962	1818
Deer per licensee 6/	0.3	0.8	1.2	E	1.8	1.1	1.4	1.5
Days per Deer 7/	5.2	2.9	2.5		2.0	3.2	2.3	2.1
Licensees that did not hunt 8/	51%	41%	26%	R	24%	23%	17%	19%
Hunted but took no Deer 9/	33%	26%	20%		13%	31%	26%	20%
Hunter success 10/	33%	56%	73%	O	83%	60%	69%	75%
Success Ratio 11/	16%	33%	54%		63%	46%	57%	61%
Taking one deer 12/	7%	13%	17%		12%	13%	16%	21%
Taking two deer 13/	5%	7%	16%		15%	12%	11%	9%
Taking three deer 14/	3%	3%	9%		9%	8%	15%	16%
Taking four deer 15/	1%	10%	12%		27%*	13%	15%	15%
Harvest Location:				D				
Mainland 16/	0	3%	8%		6%	10%	9%	4%
Hawkins Island 17/	70%	77%	31%	A	36%	35%	48%	53%
Hinchinbrook Island 18/	13%	15%	28%		37%	39%	38%	27%
Montague Island 19/	10%	0	26%	T	19%	13%	1%	12%
Other 20/	7%	5%	7%		2%	3%	4%	4%
Harvest Period:				A				
August 21/	3%	5%	4%		5%	9%	6%	12%
September 22/	30%	12%	21%		7%	12%	11%	8%
October 23/	3%	24%	40%		26%	12%	38%	22%
November 24/	20%	8%	29%		24%	17%	21%	23%
December 25/	43%	51%	6%		38%	50%	24%	35%

1/ Sample size: random sample of persons in Cordova that bought a hunting license. Sample is 1/6 of licenses.
2/ Approximate number of Cordova residents that obtained a hunting license.
3/ Number of deer reported taken by the licensees interviewed (100) projected by 6 (approximate number of Cordova license holders).
4/ Percent of males in the harvest.
5/ Sample projected by 6 (approximate number of Cordova license holders).
6/ Average number of deer taken per licensee.
7/ Average number of days hunted per deer taken by licensees.
8/ Percent of licensees that did not hunt.
9/ Percent of licensees that hunted but were unsuccessful.
10/ Percent of hunters that were successful. (Success ratio of persons that actually hunted.)
11/ Percent of licensees that were successful.
12/ Percent of licensees taking one deer.
13/ Percent of licensees taking two deer.
14/ Percent of licensees taking three deer.
15/ Percent of licensees taking four deer.

16/ Percent of harvest from Mainland.
17/ Percent of harvest from Hawkins Island.
18/ Percent of harvest from Hinchinbrook Island.
19/ Percent of harvest from Montague Island.
20/ Percent of harvest from other islands (Green, Latouche, etc.).
21/ Percent of harvest occurring in August.
22/ Percent of harvest occurring in September.
23/ Percent of harvest occurring in October.
24/ Percent of harvest occurring in November.
25/ Percent of harvest occurring in December.

* 16% of hunters interviewed admitted taking more than the legal limit of 4 deer.

Submitted by: Julius Reynolds, Game Biologist III.

APPENDIX III

Aerial Alpine Deer Surveys

Unit 6

Year	Hawkins	Hinchinbrook
1965	46*	216*
1966	65	170*
1967	18*	92*
1968	100	200
1969	38	126
1970	zero data	zero data
1971	88*	25*
1972	50	25

* Average of two flights.

Submitted by: Julius Reynolds, Game Biologist III.

APPENDIX IV

Prince William Sound Deer Browse Utilization

Unit 6

Year	Vaccinium Percent Utilization	Plant Condition	Plant Height	Number Leaders	Number Transects
1964	82.0	1.7	29.0"	335	5
1965	71.6	2.1	29.7"	321	5
1966	79.9	2.4	26.6"	307	8
1967	62.6	2.4	26.0"	198	9
1968	38.6	2.4	28.0"	273	10
1969	63.6	2.4	28.2"	308	10
1970	30.2	2.3	30.1"	377	10
1971		Z E R O	D A T A		
1972	65.1	2.2	27.0"	225	8
AVERAGE	61.7	2.2	28.1"	293	8.1

submitted by: Julius Reynolds, Game Biologist III.

DEER

SURVEY-INVENTORY PROGRESS REPORT - 1972

Game Management Unit 8 - Kodiak and Adjacent Islands

Seasons and Bag Limits

Unit 8, only that portion which includes the drainages that flow into Chiniak Bay and from Cape Chiniak to Sequel Point	Aug. 1 - Nov. 1	One deer; provided that antlerless deer may be taken only from Oct. 1 - Nov. 1.
Remainder of Unit 8.	Aug. 1 - Dec. 31	Four deer; provided that antlerless deer may be taken only from Sept. 15 - Dec. 31.

Harvest and Hunting Pressure

Hunter harvest information was gathered by telephone and personal interviews of 10.7 percent of the Kodiak resident license holders (Appendix I). The 1972 total harvest extrapolated from these interviews was 587 animals. Females comprised 38 percent of the harvest and males 62 percent. Forty-four percent of the harvest was taken during November. Only 12 percent of the harvest was made during the first two months of the season, August and September. The greatest hunter harvest by subunit was recorded in Subunit 4 (Kizhuyak Bay-Viekoda Bay-Kupreanof Peninsula) with 20.6 percent of the harvest. Only 35 percent of the harvest came from areas acessible by the road system as compared to 52 percent in 1971.

The 1972 harvest of 587 animals was down considerably from the 915 animals taken in 1971 (Appendix II). Although fewer hunters went afield in 1972, percent hunter success was nearly unchanged from 1971 levels.

Composition and Productivity

No sex or age composition data were collected in 1972.

Winter mortality was assessed by walking 26.75 miles of beach transects during April and May. Seven carcasses were located, an average of 0.26 deer/mile. All were apparent victims of malnutrition as indicated by condition of longbone marrow. The seven mortalities included two female fawns, one adult female, and four adults of unknown sex.

The indicated 1972 winter loss was somewhat less that the 1.7 deer per mile mortality recorded in 1971. Scattered reports from area residents further confirm the conclusion, however, that serious winter mortality in deer did occur during the 1972 winter.

Management Summary and Recommendations

Deer in Unit 8 remain at relatively low population levels due primarily to a series of severe winters. Although hunting pressure and total harvest

declined somewhat in 1972, hunter success remained rather stable. With the low population and correspondingly low hunter effort and harvest, hunting is not appreciably affecting deer numbers. No changes in seasons or bag limits are recommended.

Submitted by: Roger B. Smith, Game Biologist III

APPENDIX I

Unit 8 - 1972 Deer Harvest Statistics Projected* from Hunter Interviews

	Number	Percent
License buyers	1461	--
Hunter interviews	157	10.7
License buyers who did not hunt	772	52.8
Deer hunters afield	689	47.0
Successful deer hunters	317	46.0
Males in harvest	363	62.0
Females in harvest	224	38.0
Total deer harvested	587	--
Days hunted per deer	5.2	--
Total days hunted	3035	--
Deer per hunter	0.86	--
Deer per successful hunter	1.85	--

* Projections were obtained by multiplying sample figures by 9.3 (ratio of license buyers to hunter interviews).

Submitted by: Roger B. Smith, Game Biologist III

APPENDIX II

Unit 8 - Deer Harvest Statistics, 1966 - 1972

	1966	1967	1968	1969	1970	1971	1972
Number of Hunters:	1,180	1,800	2,300	1,441	658	925	689
Number of Deer Harvested:	720	1,500	2,100	1,420	870	915	587
% Hunter Success:	42	48	74	43	55	45	46
Number of Deer per Hunter:	.6	.8	.9	1.0	1.3	1.0	.85
Number of Hunting Days per Deer:	9.3	5.7	5.0	6.3	2.4	4.5	5.2

Submitted by: Roger B. Smith, Game Biologist III

BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT - 1972

Game Management Unit 1 - Southeast Mainland

Seasons and Bag Limits

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

Harvest and Hunting Pressure

The harvest of brown bears in Unit 1 during 1972 was 17 animals. This is a considerable increase from the 10 taken the previous year, but within the limits of variation over the previous 11 years (7-27) and only slightly above the average for that period (14.9). The take in Unit 1 is so small that large percentage variations can be caused by weather and other factors during the hunting season.

A summary of Unit 1 brown bear harvests since 1961 is presented in Appendix I.

The number of bears taken is too small to provide significant parameters which might indicate over-harvesting (percent males taken, average male skull size, and average age), at least on an annual basis.

The average age of seven bears taken in Unit 1 in 1971 was 5.4 years; the average for three male bears taken in 1972 was 5.7 years. Because of the small sample, these averages probably mean little however.

Composition and Productivity

No data available.

Management Summary and Conclusions

The Unit 1 bear harvest is small and there is no indication that present levels of harvest are detrimental to bear populations in this unit.

Recommendations

No regulatory changes are recommended.

Submitted by: David A. Johnson, Game Biologist III

BROWN/GRIZZLY BEAR - GMU 1 - Southeast Mainland
APPENDIX I

Brown/Grizzly Bear Sport Harvest, Calendar Years 1961 through 1972. By: Year, Total Kill, Number of Males, % of Males, Number of Non-residents, % of Non-residents, Mean Hide Size of Males, Mean Skull Size of Males, Mean Cementum Age of Males and Calendar Year Seasons.

Calendar Year	Total Kill	No. Males	% Males 1/	No. Non-res.	% Non-res.	Mean Hide Size Male2/	Mean Skull Size Male 3/	Mean Cem. Age Male 4/	Calendar Year Seasons
1961	13	9	69	1	8	11.1			11/1-6-30 & 9/1-12/31
1962	14	9	64	4	29	14.0			Same
1963	7	5	71	2	29	13.9			Same
1964	20	16	84	2	10	13.9			Same
1965	8	6	75	1	13	13.8			Same
1966	13	9	69	4	31	13.3			Same
1967	27	12	44	8	30	13.8	18.5		1/1-6/20 & 9/1-12/31
1968	18	11	61	4	22	12.9	20.9		1/1-6/10 & 9/1-12/31
1969	21	13	65	1	5	14.0	22.2	3.8(4)	1/1-6/10 & 9/1-11/30
1970	13	6	46	4	31	13.6	20.2	4.7(6)	4/1-6/10 & 9/1-12/31
1971	10	7	70	4	40	13.4	21.0	5.4(7)	4/1-6/10 & 9/1-12/31
1972	17	9	56	4	24	13.1	20.1	5.7(3)	1/1-6/10 & 9/1-12/31

1/ All male % based on known-sex bears
2/ Length plus width given in feet
3/ Length plus width given in inches
4/ Tooth sample size in parenthesis

Submitted by: David A. Johnson, Game Biologist III

BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT - 1972

Game Management Unit 4 - Admiralty, Baranof, and Chichagof Islands

Seasons and Bag Limits

September 1 - June 10	One bear every four regulatory years; provided the taking of cubs or females accompanied by cubs is prohibited.

Harvest and Hunting Pressure

The sport harvest of brown bears in Unit 4 during calendar year 1972 was 77 animals, exactly the same number as was taken in 1971. Both years' harvests were the highest ever recorded for the unit. The mean annual harvest prior to 1971 was about 60 bears. There has been a slow but steady increase in the harvest since 1961. The composition and distribution of the harvest has remained quite consistent since about 1965; approximately 75 percent of the harvested animals are males, about 40 percent of the harvest is taken by non-resident hunters and 65-70 percent of the harvest is made in the spring. Mean male hide size is 13.5 feet square, mean male skull size is 22 inches and mean male age is 7.8 years. Those figures for 1972 showed 73 percent males in the harvest, 35 percent taken by non-resident hunters, 64 percent of harvest taken in spring, mean male hide size 14.1 feet, mean male skull size 22.2 inches and mean male age 8.8 years.

There was one significant change in the harvest for 1972. Previously about 55 percent of the harvest came from Admiralty Island, 17 percent from Baranof, and about 28 percent from Chichagof. In 1972, the distribution of the harvest from those islands was 36 percent from Admiralty, 23 percent from Baranof, and 41 percent from Chichagof. The trend of an increasing harvest from Chichagof Island has been apparent for the past several years, but not at the rate demonstrated in 1972. Pertinent harvest and related data are presented in Appendix I and II.

There were five known defense of life and/or property kills in Unit 4 during 1972.

Composition and Productivity

There are no data on the composition and productivity of brown bears in Game Management Unit 4. However, males continued to represent a high percentage of the harvest. The ages and sizes of bears continue to hold up well in spite of the increased kill. This indicates that the bear population is probably much higher than previously suspected. The high percentage of males in the harvest is probably due to hunter selectivity for larger bears.

Management Summary and Conclusions

Brown bear harvest data from Unit 4, including age, skull size, hide size, and total kill, are remaining quite constant and higher than other similar areas in the State. It appears that seasons and bag limits are comensurate with the bear population. If the kill from Chichagof continues to rise, as it did in 1972, the pertinent harvest data should be carefully reviewed.

Recommendations

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

Submitted by: Loyal J. Johnson, Game Biologist III

APPENDIX I

Brown Bear harvest, S. Admiralty and ABC totals (legal sport kill only)

Location	1964	1965	1966	1967	1968	1969	1970	1971	1972
South Admiralty Island									
Pybus Bay	3	4	16	7	5	3	10	8	8
Gambier Bay	9	7	3	1	4	3	7	4	3
Chaik Bay	3	5	3	3	2	4	2	1	2
Hood Bay	1	1	2	6	0	4	0	0	0
	16	17	24	17	11	14	19	13	13
% of Adm. total	48%	51%	53%	53%	38%	45%	49%	33%	46%
% of S. Adm. total	84%	89%	69%	72%	69%	56%	73%	43%	68%
Kootznahoo Inlet Area	0	1	2	2	2	2	2	3	1
Eliza Harbor	0	0	3	0	1	3	0	6	2
Little Pybus Bay	1	0	1	1	0	4	0	1	1
	1	1	6	3	3	9	2	10	4
% of Adm. total	3%	3%	13%	9%	10%	29%	5%	26%	14%
% of S. Adm. total	5%	5%	17%	14%	19%	36%	8%	33%	21%
Whitewater Bay	1	0	2	0	0	2	1	2	2
Tyee Area	0	1	2	1	1	0	1	2	0
Wilson Cove	1	0	1	1	1	0	2	3	0
	2	1	5	2	2	2	4	7	2
% of Adm. total	6%	3%	11%	6%	7%	6%	10%	18%	7%
% of S. Adm. total	11%	5%	14%	19%	13%	8%	15%	23%	10%
S. Adm. total	19	19	35	22	16	25	26	30	19
% of Adm. total	58%	58%	78%	69%	55%	81%	67%	72%	68%
All Admiralty total	33	33	45	32	29	31	39	39	28
% of Unit 4	65%	52%	62%	51%	57%	47%	54%	51%	36%
All Baranof total	5	14	12	14	6	11	12	13	17
% of Unit 4	10%	22%	16%	22%	12%	17%	17%	17%	23%
All Chichagof total	13	16	16	17	16	24	21	25	32
% of Unit 4	25%	25%	22%	27%	31%	36%	29%	32%	43%
Unit 4 total	51	63	73	63	51	66	72	77	77

BROWN/GRIZZLY BEAR - GMU -4 - ADMIRALTY, BARANOF, AND CHICHAGOF ISLANDS

APPENDIX II

Brown bear sport harvest, Calendar Years 1961 through 1972. By: Year, Total Kill, Number of Males, Percent Males, Number killed by Nonresident Hunters, Percent Killed by Nonresident Hunters, Percent of Kill During Spring Season, Mean Hide Size of Males, Mean Skull Size of Males, Mean Cementum Age of Males, and Calendar Year Seasons

GAME MANAGEMENT UNIT 4

Calendar Year	Total Kill	No. Males	% 1* Males	No. Nonres.	% Nonres.	% kill spring season	Mean Hide 2* Size Male	Mean Skull 3* Size Male	Mean Cem. Age Male 4*	Calendar Year Seasons
1961	39	31	80	23	59	74	15.1			1/1-6/30 9/1-12/31
1962	44	29	67	29	66	70	14.6			Same
1963	27	20	74	15	56	58	14.4			Same
1964	55	37	69	24	44	73	14.2			Same
1965	64	43	68	33	52	64	13.7			Same
1966	75	47	67	50	67	65	13.1			Same
1967	62	43	72	30	48	66	13.2	22.7		1/1-6/20 9/1-12/31
1968	50	38	78	18	35	72	12.7	22.3	8.0 (10)	1/1-6/1 9/1-12/31
1969	66	51	77	34	52	67	13.7	22.7	7.1 (32)	1/1-6/10 9/1-11/30
1970	56	40	73	36	65	85	13.7	22.0	7.6 (40)	4/1-6/10 9/1-11/30
1971	77	49	74	40	52	78	14.1	22.7	8.3 (44)	4/1-6/10 9/1-12/31
1972	77	58	75	41	53	64	14.3	22.5	8.8 (55)	1/1-6/10 9/1-12/31

1* All male % based on known-sex bears.
2* Length plus width given in feet.
3* Length plus width given in inches.
4* Tooth sample size in parenthesis.

BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT - 1972

Game Management Unit 5 - Yakutat

Seasons and Bag Limits

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

Harvest and Hunting Pressure

The sport harvest of brown bears in Unit 5 during calendar year 1972 was 21 animals consisting of 12 males and 9 females (Appendix I). Harvest distribution during the 1972 spring and fall seasons was 4 (3 males and 1 female) and 17 (9 males and 8 females), respectively. In 1971 the sport kill was 20 bears (12 males, 6 females and 2 unknown). Non-residents took 57 percent of the 1972 harvest and in 1971, 35 percent of the harvest. The nonsport kill (defense of life or property) for 1972 was 6 bears.

The mean male hide size, skull size and cementum age in 1972 were 14.1 feet (length plus width), 22.2 inches (length plus width) and 5.0 years (sample size 6), respectively. The 1971 mean age of 8 bears was 5.8 years. The mean age of 13 brown bears (both sexes) harvested in Unit 5 in 1972 was 4.9 years. The 1971 mean age of 14 bears (both sexes) was 4.9 years. Game Management Unit 5 contributed 18.4 percent of the total brown bear harvest from Southeastern Alaska (Units 1-5) and 2.6 percent of the statewide harvest in 1972.

Composition and Productivity

No composition data other than those resulting from harvest information are available.

Management Summary and Recommendations

The 1972 harvest of 21 brown bears is higher than the 1961-1971 average of 14 bears but similar to previous harvests in 1966, 1969 and 1971. The present annual harvest level is not adversely affecting the brown bear population in Unit 5 as shown from data in Appendix I.

Bear abundance and light hunting pressure indicate Unit 5 can support increased recreational hunting.

Submitted by: David A. Johnson, Game Biologist III

BROWN/GRIZZLY - GMU 5 - Yakutat
APPENDIX I

Brown/Grizzly Bear Sport Harvest, Calendar Years 1961 through 1972. By: Year, Total Kill, Number of Males, % of Males, Number of Non-residents, % of Non-residents, Mean Hide Size of Males, Mean Skull Size of Males, Mean Cementum Age of Males and Calendar Year Seasons.

Calendar Year	Total Kill	No. Males	% Males1/	No. Non-res.	% Non-res	Mean Hide Size Male 2/	Mean Skull Size Male 3/	Mean Cem. Age Male 4/	Calendar Year Seasons
1961	9	6	75	5	63	13.6			1/1-6/30 & 9/1-12/31
1962	7	4	57	0	0	15.5			Same
1963	4	4	100	0	0	15.5			Same
1964	11	4	36	5	45	14.5			Same
1965	15	12	80	4	27	14.5			Same
1966	22	11	55	16	73	15.2			Same
1967	15	8	53	10	67	14.5	23.7		1/1-6/20 & 9/1-12/31
1968	18	13	72	7	39	14.0	23.4	7.8(5)	1/1-6/10 & 9/1-12/31
1969	20	10	50	9	45	13.8	21.8	7.0(6)	1/1-6/10 & 9/5-11/30
1970	7	4	57	4	57	13.3	24.0	9.0(3)	4/1-5/31 & 10/10-11/30
1971	20	12	67	7	35	14.0	22.1	5.8(8)	5/10-5/25 & 10/10-11/30
1972	21	12	57	8	38	14.1	22.2	5.0(6)	5/10-5/25 & 10/10-11/30

1/ All male % based on known-sex bears
2/ Length plus width given in feet
3/ Length plus width given in inches
4/ Tooth sample size in parenthesis

Submitted by: David A. Johnson, Game Biologist III

BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT - 1972

Game Management Unit 6 - Prince William Sound

Seasons and Bag Limits

Unit 6	May 10 - May 25 Oct. 10 - Nov. 30	One bear every four regulatory years provided that the taking of cubs or females accompanied by cubs is prohibited.

Harvest and Hunting Pressure

The brown bear harvest in 1972 for Unit 6 was 38 bears: 20 males and 18 females. The 1972 harvest was double the 1971 harvest (19 bears) but well below the peak harvest of 63 bears in 1968 (Appendix I).

The actual hunting pressure exerted in Unit 6 is unknown but a review of the bear sealing forms reveals the following brown bear harvest: Montague Island - 11, Hinchinbrook Island - 6, mainland west of Cordova - 7 and mainland east of Cordova - 14.

The chronology of the fall harvest was 16 bears taken in October and only 2 in November. The majority (78 percent) of the fall harvest occurred the first two weeks of the season.

Composition and Productivity

There is no means of obtaining good composition and productivity data in Unit 6 at present.

Management Summary and Conclusions

The 1972 harvest of 38 brown bear for Unit 6 closely approximates the eight year mean as shown in Appendix II. Since 1961 there has been considerable fluctuation in seasons, harvests, and indicators of the well-being of brown bear in the harvest. To date no clear trend in average skull size or average age of Unit 6 brown bears is evident but the 1972 harvest level may be high enough to alter age structure in the population. It may be helpful from the standpoint of analyzing harvest data if the Unit 6 brown bear season remained unchanged.

Recommendations

Retain the current season and bag limit.

Submitted by: Julius Reynolds, Game Biologist III

APPENDIX I

Brown Bear Harvest by Season and Sex, Unit 6

Year	Spring				Fall				Total			
	M	F	Unk.	Total	M	F	Unk.	Total	M	F	Unk.	Total
1972	14	5	0	19	6	13	0	19	20	18	0	38
1971	10	2	0	12	3	4	0	7	13	6	0	19
1970	8	10	0	18	4	4	1	9	12	14	1	27
1969	8	5	1	14	4	5	0	9	12	10	1	23
1968	21	12	4	37	18	7	1	26	39	19	5	63
1967	22	7	3	32	13	8	3	24	35	15	6	56
1966	14	9	1	24	6	8	0	14	20	17	1	38
1965	12	11	0	23	6	5	0	11	18	16	0	34
AVG.	13.6	8.1	-	22.3	7.5	6.8	-	14.9	21.6	14.9	-	37.8

Submitted by: Julius Reynolds, Game Biologist III

APPENDIX II

Brown-Grizzly Bear Sport Harvest, Calendar Years 1961 through 1972: Participation by Nonresidents in the Bear Harvest with Mean Hide, Skull Size and Cementum Lines of Male Bears Presented for Sealing, Unit 6.

Calendar Year	Total Kill	No. Males	% Males[1]	No. Nonres.	% Nonres.	Mean Hide Size Male[2]	Mean Skull Size Male[3]	Mean Cem. Lines Male[4]	Calendar Year Seasons
1961	13	8	62	3	23	13.2	-	-	1/1-6/30
1962	24	17	71	9	38	13.3	-	-	Same
1963	32	16	53	5	16	14.0	-	-	Same
1964	32	22	76	9	28	14.6	-	-	Same
1965	34	18	53	8	24	15.4	-	-	Same
1966	38	20	53	7	18	14.6	-	-	Same
1967	56	35	70	26	46	14.2	22.4	-	1/1-6/20 9/1-12/31
1968	63	39	67	33	52	14.4	23.5	7.1 (26)	1/1-6/10 9/1-12/31
1969	23	12	55	8	35	14.7	23.4	9.3 (10)	1/1-6/10 9/15-11/30
1970	27	12	46	9	33	14.5	23.6	5.9 (8)	4/1-5/31 10/10-11/30
1971	19	13	68	10	53	14.9	24.1	9.2 (12)	5/10-5/25 10/10-11/30
1972	38	20	53	19	50	13.7	22.3	6.1 (20)	5/10-5/25 10/10-11/30

[1] All male % based on known-sex bears.
[2] Length plus width given in feet.
[3] Length plus width given in inches.
[4] Tooth sample size in parenthesis.

Submitted by: Julius Reynolds, Game Biologist III

BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT - 1972

Game Management Unit 7 - Seward

Seasons and Bag Limits

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

Harvest and Hunting Pressure

Brown/grizzly bear sealing records indicate that one brown bear was taken in Unit 7 during the 1972-73 hunting season (Appendix I). This bear was a female and was taken by a non-resident hunter.

In the past 12 years nine bears have been sealed from Unit 7 of which six have been males and three females.

Composition and Productivity

Hide and skull size data are so limited because of the low level of harvest that they can not be analyzed with any degree of confidence.

Management Summary and Conclusions

One female bear was sealed from Unit 7 during the 1972-73 season. In the past 12 years nine bears have been sealed from Unit 7 of which six were males and three females.

The low level of harvest and high level of males in the harvest indicate that the sporting take of bears in this unit is well below the potential sustained yield level.

Recommendations

No changes are recommended.

Submitted by: Paul A. LeRoux, Game Biologist III

Appendix I

BROWN/GRIZZLY BEAR - GMU 7

Table 1. Harvest and hunting pressure, Unit 7.

Calendar Year	Total kill	No. Males	% Males[1]	No. Nonres.	% Nonres.	Mean Hide Size Male[2]	Mean Skull Size Male[3]	Mean Cem Age Male[4]	Calendar Year Seasons
1961	1	0	0	0	0	0	------	------	9/1 - 9/30
1962	1	0	0	0	0	0	------	------	Same
1963	1	0	0	1	100	0	------	------	Same
1964	0	0	0	0	0	0	------	------	Same
1965	0	0	0	0	0	0	------	------	10/15 - 11/1
1966	0	0	0	0	0	0	------	------	9/1 - 9/30
1967	1	1	100	1	100	0	24.2	------	10/15 - 11/1
1968	0	0	0	0	0	0	------	------	Same
1969	2	2	100	1	50	15.2	24.3	7.5(2)	Same
1970	2	2	100	0	0	13.3	18.9	------	9/20 - 10/15
1971	0	0	0	0	0	0	------	------	9/10 - 10/10
1972	1	0	0	1	100	0	0	0	9/10 - 10/10

1/ All male % based on known-sex bears
2/ Length plus width given in feet
3/ Length plus width given in inches
4/ Tooth sample size in parentheses

Submitted by: Paul LeRoux, Game Biologist III and
Leo H. Miller, Game Technician V

BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT - 1972

Game Management Unit 8 - Kodiak and Adjacent Islands

Seasons and Bay Limits:

Unit 8, that portion of Kodiak Island south and west of the Kodiak National Wildlife Refuge boundary and Uganik Island.	Oct. 20 - Dec. 31 March 1 - May 15	One bear every four regulatory years; provided that the taking of cubs or females accompanied by cubs is prohibited.
Unit 8, remainder of Kodiak Island.	Sept. 1 - July 5*	One bear every four regulatory years; provided that the taking of cubs or females accompanied by cubs is prohibited.
Unit 8, Raspberry, Afognak and Shuyak Islands only.	Oct. 20 - Dec. 31 March 1 - May 15	One bear every four regulatory years; provided that the taking of cubs or females accompanied by cubs is prohibited.

Harvest and Hunting Pressure

The 1971-72 sport harvest of 132 bears was the highest since 1967 when 184 animals were taken (Appendix I). Sixty-six animals were taken in both the spring and fall seasons. Nine bears were killed in the Afognak-Shuyak-Raspberry Island complex and the remainder came from Kodiak and adjacent islands. Harvest by non-residents increased from 46 percent in 1971 to 55 percent in 1972. Hunter questionnaire records obtained from the U.S. Fish and Wildlife Service for Kodiak National Wildlife Refuge show a 38 percent hunter success ratio during spring season with 167 hunters reporting. Fall season success was 55 percent for 114 reporting hunters. Land use permits were issued by the Refuge to 176 hunting parties in the spring season and 119 during the fall season.

Mean hide and skull sizes were little changed from 1971 (Appendix I) and these parameters indicate no apparent trends for the last five years. Males comprised 61 percent of the harvest. There is a slight upward trend indicated in the average of the male component of the harvest. The percentage of animals in the 11 year + age class shows a slight upward trend since 1969 (Appendix II).

An unusually heavy harvest, 23 bears from the Shearwater Peninsula during the spring season prompted a closure there by emergency regulation. This area presently has a lengthy spring season compared to the adjacent Kodiak Refuge season.

* The Shearwater Peninsula was closed to hunting by emergency regulation from June 10 through September 9, 1972.

Composition and Productivity:

No information is available for 1972.

Management Summary and Conclusions:

The present harvest level on bears in Unit 8 appears to be well within the capacity of the population to maintain the current level. Mean hide and skull sizes have remained stable over the last eight years. The apparent increase in average age of the males harvested in 1971 and 1972 over previous years and the increasing percentage of older bears in the harvest further support the conclusion that present harvest in Unit 8 is not excessive. While the overall harvest presently being attained may represent a conservative approach, the potential for excessive harvest in localized areas is present.

Annual harvest in the Afognak-Shuyak-Raspberry Island complex has averaged 13.6 animals during the period 1962-1972. This area currently sustains about 10 percent of the average annual harvest from Unit 8. Much of the area is heavily timbered and hunting conditions there are relatively more difficult than in the remainder of the unit. The area could probably sustain additional hunting pressure and harvest.

Recommendations:

It is recommended that the spring season on the Shearwater Peninsula be shortened to conform to that of the Kodiak National Wildlife Refuge. It is also recommended that an additional hunting period be added in the Raspberry-Afognak-Shuyak Island area.

Submitted by: Roger B. Smith, Game Biologist III

APPENDIX I

Brown-Grizzly Bear Sport Harvest, Calendar Years 1961 through 1972: Participation by Nonresidents in the Bear Harvest with Mean Hide, Skull Size and Cementum Lines of Male Bears Presented for Sealing.

GAME MANAGEMENT UNIT 8

Calendar Year	Total Kill	No. Males	% Males[1]	No. Nonres.	% Nonres.	Mean Hide Size Male[2]	Mean Skull Size Male[3]	Mean Cem. Lines Male[4]	Calendar Year Seasons
1961	118	78	66	72	61	16.9			1/1-5/31
1962	131	91	78	84	64	16.5			Same
1963	112	77	69	55	49	16.2			Same
1964	118	72	63	62	53	15.2			Same
1965	186	111	60	90	48	15.7			Same
1966	199	106	54	96	48	15.7			Same
1967	184	107	58	91	49	15.3	23.6	5.0 (14) Fall	1/1-5/20 10/1-12/31
1968	104	61	59	62	60	15.6	23.9	6.2 (52)	Same
1969	97	62	64	53	55	15.9	24.2	6.2 (53)	1/1-5/20 11/1-12/31
1970	91	62	68	45	49	15.3	23.6	6.0 (57)	3/1-5/10 10/20-12/31
1971	113	63	60	51	45	15.1	24.0	6.8 (59)	3/1-5/10 10/20-12/31
1972	132	79	61	72	55	15.2	24.0	6.7 (76)	3/1-5/15 10/20-12/31

1/ All male % based on known-sex bears.
2/ Length plus width given in feet.
3/ Length plus width given in inches.
4/ Tooth sample size in parenthesis.
5/ Kodiak National Wildlife Refuge only.

APPENDIX II

Unit 8 - Age Class Distribution of Brown Bear Harvest, 1968-1972.

Age Class (No. Cementum Lines)	1968 (N=71; 68% of 104 in Harvest)	1969 (N=83; 85.6% of 97 in Harvest)	1970 (N=85; 93.4% of 91 in Harvest)	1971 (N=110; 97.3% of 113 in Harvest)	1972 (N=124; 93.9% of 132 in Harvest)
1	1.4	---	---	---	---
2	1.4	4.8	5.9	2.7	0.8
3	18.3	10.8	18.8	27.3	12.1
4	15.5	16.9	11.8	20.9	16.9
5	18.3	16.9	14.1	8.2	21.0
6	9.9	12.0	10.6	6.4	8.0
7	11.3	14.5	5.9	6.4	4.0
8	7.0	6.0	11.8	3.6	7.3
9	4.2	6.0	1.2	4.5	5.6
10	---	3.6	4.7	1.8	4.8
11+	12.7	8.4	15.3	18.2	19.4

Submitted by: Roger B. Smith, Game Biologist III

BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT - 1972

Game Management Unit 9 - Alaska Peninsula

Season and Bag Limits

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

Harvest and Hunting Pressure

During 1972, a record harvest of 278 brown bear was reported in Unit 9 (Appendix I). Two hundred and twenty-eight bears were harvested south of the Naknek River - Katmai National Monument; this exceeds the desired harvest level of 150 bears annually for this area. Spring brown bear hunters took 61 bears and fall hunters took 217 bears. The sex of the harvest was slightly biased towards males (57 percent males). The majority of the harvest was by non-residents (74 percent); however, the resident harvest was the largest on record (74 bears). A continued decline was noted in male hide size and skull size (Appendices I and II).

Composition and Productivity

Seven years of data provided by the brown bear research project show that bears observed on the Chignik-Black Lake study area average 2.3 cubs per litter. At McNeil River, the mean litter size during the past four years has been 2.1. The cause of this difference is not known but may reflect a reproductive response to the heavier hunting pressure exerted on the Chignik-Black Lake bear populations.

The sex ratio of all bears captured during the Chignik-Black Lake study was 71 males per 100 females. For cubs 2.5 years of age or younger, the ratio was 127 males per 100 females, but for bears 3.5 years or older, the ratio had been reduced to 44 males per 100 females. Sport hunting is a major factor in altering the adult sex ratio in favor of females. Males are legal during every hunting season once they have separated from their mothers. Additionally, a large percentage of males are taken in the spring because hunters are more selective towards larger bears which are usually males, and because single pregnant females which were legal in the fall are accompanied by cubs and, therefore, protected in the spring.

Management Summary and Conclusions

The record 1972 harvest of brown bears reported from Unit 9 exceeded the desired harvest level. The spring season produced a harvest within acceptable limits, but during the fall season an excessive harvest occurred. Many factors combined to produce this large fall harvest. The Bristol Bay red salmon *(Oncorhynchus nerka)* run was one of the smallest on record and the late run of silver salmon *(O. kisutch)* was poor. This left the brown bear population without an adequate source of salmon for food. As a result,

bears dispersed away from salmon streams and moved into open areas to feed on berries and rodents. As a result, bears were frequently found in exposed situations where they could be easily sighted, stalked and killed by hunters. The situation was further abetted by a mild fall without the late October storms that normally reduce hunting efficiency and opportunity. The combination of these natural factors contributed to the increased harvest, and management policies should recognize the fall of 1972 as abnormal.

The high percentage of females in the kill indicates that the fall, 1972 harvest was excessive (Appendix III). Data gathered by the brown bear research project further substanitate this opinion. Nearly 30 percent of all bears tagged in June, 1970, have been taken by sport hunters . Many of these animals were cubs in 1970 and were legal during only one or two hunting seasons. Steps should be taken to reduce the annual sport harvest to a level of approximately 150 bears south of the Naknek River-Katmai National Monument.

Recommendations

Many changes have been discussed to reduce the brown bear harvest in Unit 9 to a more acceptable level. A check-in, check-out system was rejected because of administrative and manpower limitations. Permits were rejected because of enforcement difficulties and because they would unduly restrict the opportunity of the public to hunt. It was believed that the total harvest could be lowered without setting a definite limit on the number of hunters in the field. Dividing the unit into subunits with separate seasons and/or harvest quotas may encourage inaccurate reporting of kill locations and bootlegging of unsealed hides out of the state. It was finally decided to attempt to adjust the harvest level through the manipulation of season length and dates.

It is recommended that both the spring and fall seasons be maintained, but that the length of the fall season be reduced. The annual harvest for the unit should contain 65 to 70 percent male bears. When the sex ratio of the overall harvest begins to approach 50:50 as it did in 1972, the harvest is beginning to cut into the mature female segment of the population which is necessary to maintain high reproduction. However, if the sex ratio in the harvest greatly exceeds 70 percent males, there may not be adequate mature males available to breed available females. Because mature females normally breed every three years, a sex ratio in the population of one mature male for every three mature females will result in a one to one ratio of males to receptive females. Under this management, the population should be its most productive, and the highest level of harvest could be maintained.

It would not be possible to maintain the desired ratio of males to females with a fall hunting season alone. Because males emerge from hibernation before females, they are more vulnerable to hunters in the spring.

This differential mortality is necessary to offset the nearer equal sex ratios obtained in the harvest during the fall season. However, should the fall season produce an excessive harvest, the following spring season should be closed to afford protection for the bear population. Should it become impossible to maintain both seasons annually, yet not exceed the desired level of harvest through the manipulation of season length and dates, the possibility of managing the resource through a system of alternating a single season, either spring or fall, each year should be considered.

Submitted by: James B. Faro, Game Biologist III

APPENDIX I

GAME MANAGEMENT UNIT 9

Brown/Grizzly Bear Sport Harvest, Calendar Years 1961 through 1972: Participation by Non-residents in the Bear Harvest with Mean Hide, Skull Size and Cementum Age of Male Bears Presented for Sealing.

Calendar Year	Total Kill	No. Males	% Males	No. Nonres.	% Nonres.	Mean Hide Size Male 1/	Mean Skull Size Male 2/	Mean Cem. Size Male 3/	Calendar Year Season
1961	120	85	73	71	59	16.4			1/1-5/31, All of 9;10/1-12/31, S. of Egegik Puale Bay, Rem. of Unit 9/10-12/31
1962	155	109	70	97	63	16.4			Same
1963	164	100	65	114	70	16.1			1/1-5/31, 9/1-12/31
1964	155	103	70	108	70	16.1			Same
1965	208	136	67	137	66	15.7			1/1-5/31, All 9 N. of Meshik 9/1-12/31 S. of Meshik 9/15-12/31
1966	230	157	71	173	75	15.7			N. of Meshik 1/1-5/31, 9/1-12/31 S. of Meshik 1/1-5/31 & 9/15 12/31
1967	211	143	68	163	77	15.8	23.5	6.6(30)	1/1-5/20, 9/15-12/31
1968	158	111	73	134	85	15.5	24.3	7.6(48)	1/1-5/10, 9/15-12/31
1969	91	67	75	67	74	15.8	24.5	8.0(57)	1/1-5/10 All of 9 & 9/15-10/30 N. of Park, 10/1-11/30 S. of Park
1970	156	102	66	116	74	15.1	24.0	7.8(90)	S. of Park 5/1-5/15, N. of Park 5/1-5/25, All of 9 10/1-10/31
1971	190	118	65	135	71	15.1	23.7	7.1(109)	5/10-5/25, 10/1-10/31
1972	278	154	57	204	73	14.7	23.4	7.1(146)	Same

1/ Length plus width given in feet. 2/ Length plus width given in inches. 3/ Tooth sample size in parenthesis.

Submitted by: James B. Faro, Game Biologist III

APPENDIX II

Average Male Brown/Grizzly Skull Size Recorded in Inches, and by Year, Season and Residency of Hunter for Unit 9.

YEAR	SPRING				FALL				TOTAL		
	RES.		NONRES.		RES.		NONRES.				
	No.	Size	No.	Size	No.	Size	No.	Size	No.	Size	Sample Size %
1967	-	-	-	-	6	23.9	44	23.5	50	23.5	93
1968	5	23.5	49	25.5	9	23.3	40	23.0	103	24.3	93
1969	10	23.9	36	25.5	5	22.5	15	23.2	66	24.5	99
1970	10	24.4	43	25.5	14	21.0	32	23.2	99	24.0	97
1971	4	26.2	37	24.8	22	22.3	50	23.2	113	23.7	96
1972	12	24.5	29	25.0	28	22.7	78	23.0	145	23.4	94

APPENDIX III

Comparison of Spring and Fall Harvest Data for Brown Bears, GMU 9, 1972.

	Spring Season	Fall Season	Both Seasons
Number of Bears	60	215	275
Percent Males	67.2	51.6	55.3
Percent females	29.5	46.5	42.5
Percent unknown sex	3.3	1.9	2.2
Mean hide size			14.7
Mean skull size			23.9

Submitted by: James B. Faro, Game Biologist III

BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT - 1972

Game Management Unit 10 - Aleutian Islands

Seasons and Bag Limits

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

Harvest and Hunting Pressure

Five bears were reported taken during the fall 1972 hunting season by Alaskan residents. No bears were reported taken during the spring season, and no bears were taken by nonresidents. Three of the five bears were males (Appendix I). Due to the small sample, no conclusions can be made concerning skull size, hide size, or age of the harvest.

Composition and Productivity

No information is available.

Management Summary and Conclusions

Unimak Island has the only brown bear population in the Aleutian Island Refuge System. Hunting on the island is controlled by a permit system regulated by the U. S. Fish and Wildlife Service. In recent years the island has been hunted by Alaskan residents only; no guide service has been established in the area.

Recommendations

The present level of harvest is controlled by the availability of permits and is considered conservative. Liberalization of the existing seasons would probably have no effect on the harvest. No changes in seasons or bag limits are recommended at this time.

Submitted by: James B. Faro, Game Biologist III

APPENDIX I

Brown/Grizzly Bear Sport Harvest, Calendar Years 1961 through 1972: Participation by Nonresidents in the Bear Harvest with Mean Hide, Skull Size and Cementum Age of Male Bears Presented for Sealing, Unit 10.

Calendar Year	Total Kill	No. Males	% Males	No. Nonres.	% Nonres.	Mean Hide Size Male[1]	Mean Skull Size Male[2]	Mean Cem. Age Male[3]	Calendar Year Season
1961	1	1	100	0	0	18.1	-	-	1/1-5/31 10/1-12/31
1962	3	2	67	0	0	16.6	-	-	Same
1963	0	0	0	0	0	0	-	-	1/1-5/31 9/1-12/31
1964	15	9	60	5	33	16.4	-	-	Same
1965	10	7	70	1	10	15.9	-	-	1/1-5/31 9/15-12/31
1966	6	4	67	1	17	16.1	-	-	Same
1967	8	3	38	0	0	13.4	23.5	-	1/1-5/20 9/15-12/31
1968	4	2	50	4	100	14.9	23.2	5.0 (2)	Same
1969	4	3	75	0	0	19.4	27.3	15.0 (1)	1/1-5/10 10/1-11/30
1970	5	4	80	0	0	12.5	19.9	3.0 (4)	5/1-5/15 10/1-10/31
1971	4	1	25	0	0	15.4	23.4	4.0 (1)	5/10-5/25 10/1-10/31
1972	5	3	60	0	0	14.1	19.9	4.0 (2)	Same

1/ Length plus width given in feet.
2/ Length plus width given in inches.
3/ Tooth sample size in parenthesis.

Submitted by James B. Faro, Game Biologist III

BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT - 1972

Game Management Unit 11 - Wrangell Mountains - Chitina River

Seasons and Bag Limits

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

Harvest and Hunting Pressure

Tabulated data on brown/grizzly bear harvests from 1961 through 1972 are presented in Appendix I. The percentage of males in the harvest has been relatively high, and most of the bears have been taken by non-resident hunters. The mean skull size is relatively large and has shown no downward trend since 1967. The ages of samples of the bear harvests show the bears were relatively old.

Composition and Productivity

No data are available.

Management Summary and Conclusions

The low bear harvest without obvious downward trend since 1961, the high percentage of males in the harvest without obvious downward trend since 1961, and the relatively old age of the male bears harvested (shown directly by tooth cementum ages and indicated by relatively large skull sizes) are all indications of a lightly exploited bear population. Assessments of bear abundance made by reported observations of guides and hunters are lacking for this area. There is no reason to believe that bears are not as abundant as the habitat will support, however.

Recommendations

All indices indicate the brown/grizzly bears in Unit 11 are harvested below the level of sustained yield. It is believed that the harvest could be substantially increased until indices of bear abundance or hide size begin to reflect the effects of harvesting.

Spring bear seasons have been held in Unit 11 from 1965 through 1970. The maximum spring harvest occurred during 1970 when five bears were taken. It is recommended that a limited spring season in Unit 11 be reinstated.

Submitted by: Carl McIlroy, Game Biologist III

APPENDIX I

Brown-Grizzly Bear Sport Harvest, Calendar Years 1961 through 1972: Participation by Nonresidents in the Bear Harvest with Mean Hide, Skull Size and Cementum Lines of Male Bears Presented for Sealing.

GAME MANAGEMENT UNIT 11

alendar Year	Total Kill	No. Males	% Males 1/	No. Nonres.	% Nonres.	Mean Hide Size Male 2/	Mean Skull Size Male 3/	Mean Cem. Lines Male 4/	Calendar Year Seasons
1961	5	3	75	2	40	11.8			5/15-6/15 9/1-12/31
1962	14	6	43	11	79	12.4			Same
1963	9	6	67	7	78	12.6			Same
1964	22	13	65	16	73	13.2			Same
1965	18	8	47	14	78	13.3			Same
1966	12	10	91	9	75	12.4			Same
1967	20	10	50	15	75	12.4	23.2		Same
1968	15	8	53	7	47	12.0	20.9	6.8(4)	Same
1969	9	6	67	2	22	15.3	22.8	7.2(5)	5/15-6/15 9/1-9/30
1970	16	10	63	7	44	13.5	22.0	8.9(9)	5/15-6/10 9/15-10/5
1971	17	9	64	15	88	13.9	23.5	8.8(9)	9/15-10/5
1972	13	7	54	9	69	12.8	22.2	8.6(7)	9/10-10/10

1/ All male % based on known-sex bears.
2/ Length plus width given in feet.
3/ Length plus width given in inches.
4/ Tooth sample size in parenthesis.

Submitted By: Lee Miller, Fish & Game Technician V

BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT - 1972

Game Management Unit 12 - Upper Tanana-White River

Seasons and Bag Limits

Unit 12	Sept. 10 - Oct. 10	One bear every four regulatory years; provided that the taking of cubs or females accompanied by cubs is prohibited.

Harvest and Hunting Pressure

Harvest data for Unit 12 since 1961 are presented in Appendix I. Even though the 1972 kill of nine bears is the lowest recorded, the mean male hide size and mean male skull size are the highest. Grizzly bear harvest patterns for Unit 12 do not appear to be related to bear abundance and they have not changed significantly since 1961.

It is believed that most hunters who harvested grizzlies in Unit 12 during 1972 took them incidentally while hunting other species. There are no practical means presently available to accurately measure grizzly hunting effort on a unit basis, although grizzly tag sales may be the best indicator of nonresident hunting pressure. This measure cannot be used to determine the pressure within a specific game management unit, however.

Composition and Productivity

No data available.

Management Summary and Recommendations

The grizzly harvest for Unit 12 continues to be small, probably well below the number that could be safely taken. The skull and hide size data are probably meaningless because of the small sample size involved. If a large enough age sample could be obtained from hunter-killed bears it would probably fairly accurately reflect the age composition of the mature bear population. Nearly all grizzly hunting in this unit is largely nonselective as to size (hunters tend to take the first legal bear available).

Unit 12 is large and contains much prime grizzly habitat. The 1972 harvest of nine animals can only be considered a token harvest; the grizzly population should be able to withstand a geographically well-distributed harvest several times larger.

Casual observations suggest that in Unit 12 grizzlies are probably more numerous than they were several years ago and that the unit supports a moderate bear population. Hunting is not presently limiting the grizzly population in Unit 12.

PREPARED BY:

Larry Jennings
Game Biologist

SUBMITTED BY:

Oliver E. Burris
Regional Management Coordinator

APPENDIX I

Characteristics of the Brown/Grizzly Bear Sport Harvest in Unit 12

Calendar Year	Total Kill	No. Males	% Males[1]	No. Nonres.	% Nonres.	Mean Hide Size Male[2]	Mean Skull Size Male[3]	Mean Cem. Lines Male[4]	Calendar Year Seasons
1961	15	8	53	9	60	11.8			5/15-6/15 9/1-12/31
1962	19	9	47	6	32	11.8			Same
1963	23	13	59	17	74	12.0			Same
1964	15	9	60	4	27	13.1			Same
1965	19	8	44	4	21	12.5			Same
1966	12	6	50	5	42	12.7			Same
1967	16	7	50	10	63	11.4	20.5		Same
1968	16	7	47	9	56	11.8	20.4	5.0 (1)	Same
1969	13	8	62	8	62	11.6	19.9	7.6 (7)	5/15-6/15 9/1-9/30
1970	15	9	60	10	67	12.0	21.9	6.3 (8)	5/15-6/10 9/15-10/5
1971	13	9	69	7	54	12.0	20.7	4.1 (9)	9/15-10/5
1972	9	3	33	7	78	13.6	23.0	12.7 (3)	No spring 9/10-10/10
12 year average	15.4	8.0	51.9	8.0	51.9				

1/ All male % based on known-sex bears.
2/ Length plus width given in feet.
3/ Length plus width given in inches.
4/ Tooth sample size in parenthesis.

BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT - 1972

Game Management Unit 13 - Nelchina Basin

Seasons and Bag Limits

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

Harvest and Hunting Pressure

Tabulated data on brown/grizzly bear harvests are presented in Appendix I. The total harvest has fluctuated since 1961 with two peak years of harvest occurring during 1966 (63 bears) and 1971 (72 bears). The percentage of males in the harvest has shown no downward trend since 1961. The chronology of the harvest is depicted on the bar graph on Appendix II. Most of the 1972 harvest occurred during the first 7 days of open season.

Composition and Productivity

No data are available.

Management Summary and Conclusions

The fluctuating total harvest and lack of downward apparent trend in percentages of males in the annual harvests from Unit 13 are not indicative of excessive harvesting. Since management decisions must be made on the basis of available information, the weight of evidence suggests that the bear population in Unit 13 is younger because it is expanding.

Recommendations

Available information indicates that an increased harvest of bears from Unit 13 is allowable from the standpoint of sustained yield of trophy bears. Further manipulations of seasons may be desirable.

Submitted by: Carl McIlroy, Game Biologist III

APPENDIX I

Brown-Grizzly Bear Sport Harvest, Calendar Years 1961 through 1972: Participation by Nonresidents in the Bear Harvest with Mean Hide, Skull Size and Cementum Lines of Male Bears Presented for Sealing.

GAME MANAGEMENT UNIT 13

Calendar Year	Total Kill	No. Males	% Males 1/	No. Nonres.	% Nonres.	Mean Hide Size Male 2/	Mean Skull Size Male 3/	Mean Cem. Lines Male 4/	Calendar Year Seasons
1961	42	20	50	26	62	13.0			9/1-9/30
1962	34	22	65	19	56	13.8			Same
1963	42	22	54	27	64	12.6			Same
1964	35	14	41	22	63	12.8			Same
1965	44	25	58	21	48	12.9			Same
1966	63	33	56	41	65	13.2			Same
1967	29	16	57	13	45	12.8	21.5	6.5 (15) Fall	9/15-10/5
1968	38	18	49	19	50	12.9	22.0	5.9 (9)	Same
1969	17	15	88	9	53	13.4	22.5	6.9 (12)	9/20-10/20
1970	27	18	69	15	56	12.7	20.6	5.3 (16)	9/15-10/5
1971	72	32	48	43	60	12.3	20.6	5.2 (24)	9/1-10/5
1972	47	27	57	24	51	13.1	21.3	7.1 (27)	9/10-10/10

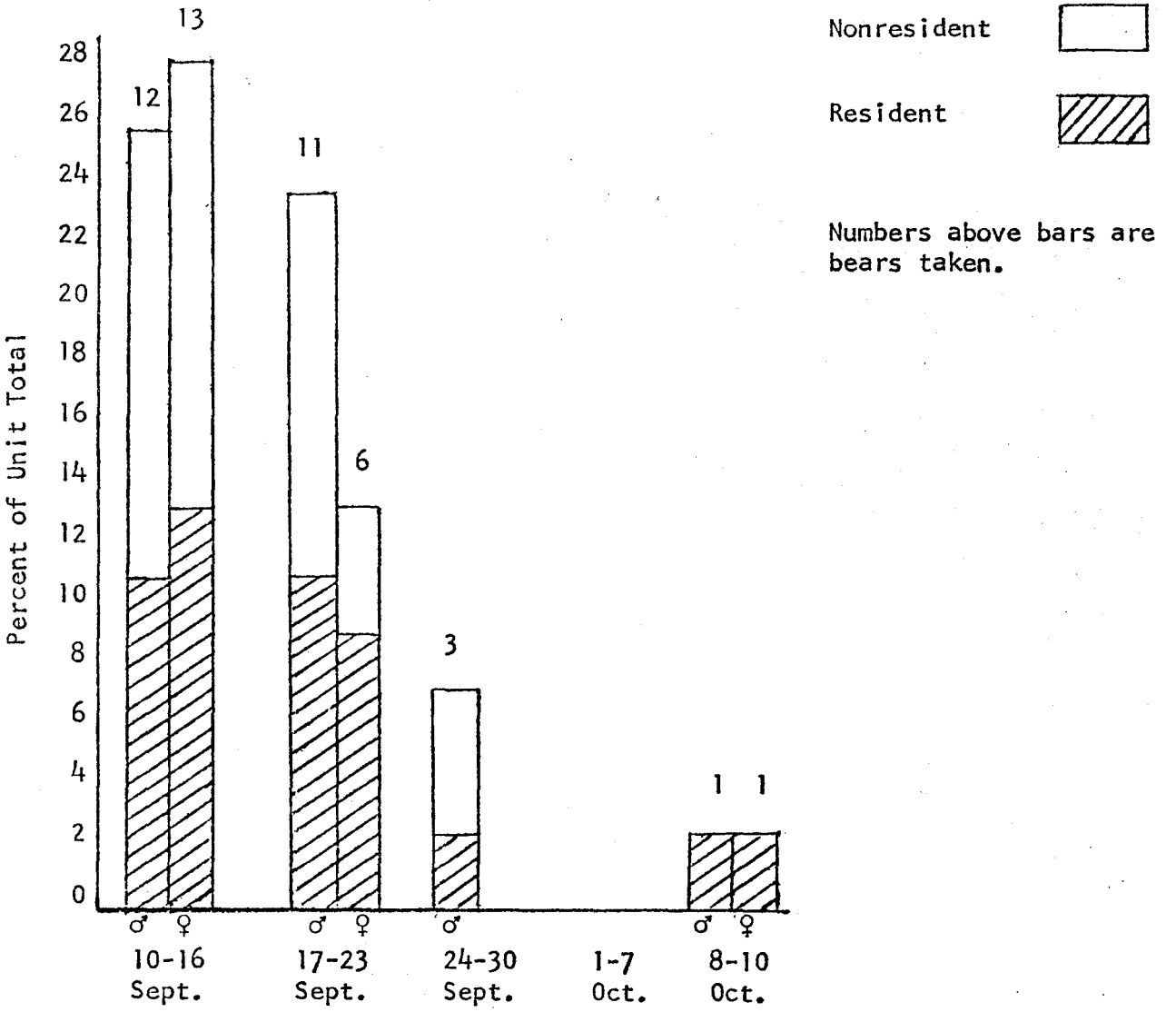
1/ All male % based on known-sex bears.
2/ Length plus width given in feet.
3/ Length plus width given in inches.
4/ Tooth sample size in parenthesis.

Submitted By: Lee Miller, Fish & Game Technician V

APPENDIX II

CHRONOLOGY OF BROWN BEAR HARVEST

G.M.U. 13 - FALL 1972



Submitted By: Lee Miller, Fish & Game Technician V

BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT - 1972

Game Management Unit 14 - Upper Cook Inlet

Seasons and Bag Limits

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

Harvest and Hunting Pressure

The 1972 brown/grizzly bear harvest in Unit 14 was 4 animals (Appendix I), representing a reduction of 12 bears from 1971's harvest of 16. No reported non-sport kills were recorded in Unit 14 in 1972. The single most probable reason for the major reduction was a change in the opening date of the season; from September 1, in 1971 to September 10, in 1972. The chronological order of harvest reveals that most bears are taken during the first 10 days of the season.

No bears were taken by non-resident hunters during 1972; all 4 were harvested by residents. In the past ten years, non-resident hunters have taken an average of 3.1 bears a year. It is probable that the time period in which the first 10 days of this season was conducted is not conducive to guiding operations, thus eliminating the non-resident for all practical purposes. As reported last year, it is highly probable that most brown bears killed in Unit 14 are taken incidental to other hunting.

Three of the bears were taken in the Talkeetna Mountain Range of Game Management Unit 14 and one was taken in the Chugach Mountain Range.

Composition and Productivity

Two of the brown bears harvested were males and two were females.

Mean hide size, age and skull size of males all were larger in 1972 than in 1971, but these data are derived from a kill of only two male bears and are considered inconclusive.

Management Summary and Conclusions

The brown/grizzly bear harvest in Unit 14 was reduced from 16 in 1971 to 4 in 1972 by manipulating the fall season to open 10 days later, from September 1, 1971 to September 10, 1972. Most bears are taken incidental to other hunting and as a result, harvests fluctuate from year to year depending on season dates, availability of bears, weather, and other related factors.

Recommendations

There are scant data to suggest that brown bears in Unit 14 are being over or under harvested at this time. To make data comparable, it is suggested that seasons remain the same for a number of years.

Submitted by: Jack C. Didrickson, Game Biologist III

Appendix 1. Brown/Grizzly Bear Sport Harvest, Calendar Years 1961 through 1972. Participation by Non-residents in the Bear Harvest with Mean Hide, Skull Size and Cemuntum Age of Male Bears Presented for Sealing, in Alaska's Game Management Unit 14.

Calendar Year	Total Kill	No. Males	% Males 1/	No. Nonres.	% Nonres.	Mean Hide Size Male 2/	Mean Skull Size Male 3/	Mean Cem Age Male 4/	Calendar Year Seasons
1961	14	6	43	7	50	12.6	--	--	9/1-9/30
1962	8	4	50	0	0	13.1	--	--	Same
1963	13	8	67	5	38.4	12.9	--	--	Same
1964	12	9	75	1	8	12.9	--	--	Same
1965	15	7	47	7	47	12.7	--	--	9/1-10/15
1966	5	2	40	2	40	13.5	--	--	9/1-9/30
1967	12	6	55	6	50	12.0	21.2	--	Same
1968	11	3	30	6	55	14.5	22.0	5.7 (3)	Same
1969	3	3	100	0	0	11.7	18.7	2.0 (3)	9/20-10/20
1970	6	1	17	0	0	11.6	----	2.0 (1)	9/15-10/5
1971	16	6	38	4	25	11.8	20.0	3.5 (6)	9/1-10/5
1972	4	2	50	0	0	12.6	22.2	5.0 (2)	9/10-10/10

1. All male % based on known-sex bears.
2. Length plus width given in feet.
3. Length plus width given in inches.
4. Tooth sample size in parenthesis.

Submitted by: Jack C. Didrickson, Game Biologist III
Leo H. Miller, Game Technician V

BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT - 1972

Game Management Unit 15 - Western Kenai Peninsula

Seasons and Bag Limits

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

Harvest and Hunting Pressure

Brown/grizzly bear sealing reports indicate that two brown bear were taken (from Unit 15) during the 1971-72 season (Appendix I). The harvest was composed of one male and one female. The harvest for the 1972-73 season was 63.0 percent below the average of 5.4 for the previous 5 years and 55.6 percent below the average of 4.5 for the previous 10 years.

Composition and Productivity

Hide and skull size data (Appendix II) are so limited, because of the low level of harvest, that they cannot be analyzed with any degree of confidence.

Management Summary and Conclusions

The harvest of brown bears appears to be on a downward trend, however there is no reason to believe that this is due to a decline in bear numbers. The largest recorded harvest occurred in 1968 when the brown bear season extended from September 1 - September 30. The 1969 season was the same as 1968, but since then has started later and in 1970 and 1971 was five days shorter (Appendix I). Also later brown bear seasons provide less opportunity for moose hunters to take a brown bear.

Recommendations

No changes in seasons or bag limits are recommended.

Submitted by: Paul A. LeRoux, Game Biologist III

APPENDIX I

Brown-grizzly bear sport harvest, calendar years 1961 through 1972. Participation by nonresidents in the bear harvest with mean hide, skull size and cementum age of male bears presented for sealing.

GAME MANAGEMENT UNIT 15

Calendar Year	Total Kill	No. Males	% Males[1]	No. Nonres.	% Nonres.	Mean Hide Size Male[2]	Mean Skull Size Male[3]	Mean Cem. Age Male[4]	Calendar Year Seasons
1961	4	2	50	0	0	18.6			9/1-9/30
1962	5	2	40	3	60	11.5			Same
1963	4	2	50	0	0	12.8			Same
1964	2	2	100	2	100	12.9			Same
1965	3	1	33	1	33	13.2			Same
1966	4	1	25	1	25	17.3			Same
1967	4	2	50	1	25	15.5	24.5		Same
1968	11	7	64	1	9	14.5	25.1	2.0(2)	Same
1969	6	4	67	0	0	14.3	24.8	7.0(2)	Same
1970	3	2	67	1	33	15.3	26.3	8.0(1)	9/20-10/15
1971	3	2	67	0	0	12.4	19.6	3.0(1)	9/20-10/15
1972	2	1	50	0	0	-	23.7	4.0(1)	9/10-10/10

1/ All male percentage based on known-sex bears.
2/ Length plus width given in feet.
3/ Length plus width given in inches.
4/ Tooth sample size in parenthesis.

Submitted by: Paul LeRoux, Game Biologist III

APPENDIX II

Average male brown/grizzly skull size recorded in inches by year, season and residency of hunter for Unit 15.

	SPRING				FALL				TOTAL		
	Res.		Nonres.		Res.		Nonres.				
Year	No.	Size	No.	Size	No.	Size	No.	Size	No.	Size	Sample Size %
67	No Season				1	24.9	1	24	2	24.5	100
68	No Season				5	25.1	-	-	5	25.1	71
69	No Season				3	24.8	-	-	3	24.8	75
70	No Season				1	26.3	0	0	1	26.3	100
71	No Season				2	19.6	0	0	2	19.6	100
72	No Season				1	23.7	0	0	1	23.7	100

Submitted by: Paul A. LeRoux, Game Biologist III

BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT - 1972

Game Management Unit 17 - Bristol Bay

Seasons and Bag Limits

Unit 17	May 15 - June 10 Sept. 1 - Oct. 15	One bear every four regulatory years; provided that the taking of cubs or females accompanied by cubs is prohibited.

Harvest and Hunting Pressure

Thirty-five bears were reported harvested in Unit 17 in 1972. This is the largest harvest for the unit in the history of the bear sealing program (Appendix I). Males comprised 63 percent of the harvest. Non-resident hunters took 77 percent of the bears. Male skull sizes are presented in Appendix II.

Composition and Productivity

No information is available.

Management Summary and Conclusions

Unit 17 has shown a pattern of increased harvest in recent years. This harvest reflects the increased hunting pressure it is receiving as more guides become established in the unit or the nearby Lake Iliamna-Lake Clark region of Unit 9. However, since the fall brown bear season in Unit 17 opens a full month in advance of the heavily hunted Alaska Peninsula, some of the harvest reported for this unit probably came from Unit 9. A season coinciding with that of Unit 9 would probably produce a lower harvest and more accurate reporting data.

Recommendations

The fall brown bear season in Unit 17 should be the same dates as Unit 9.

Submitted by: James B. Faro, Game Biologist III

APPENDIX I

Brown/Grizzly Bear Sport Harvest, Calendar Years 1961 through 1972: Participation by Nonresidents in the Bear Harvest with Mean Hide, Skull Size and Cementum Age of Male Bears Presented for Sealing, Unit 17.

Calendar Year	Total Kill	No. Males	% Males	No. Nonres.	% Nonres.	Mean Hide Size Male[1/]	Mean Skull Size Male[2/]	Mean Cem. Age Male[3/]	Calendar Year Season
1961	2	1	50	0	0	13.7	-	-	5/15-6/15 9/1-12/31
1962	2	2	100	0	0	15.5	-	-	Same
1963	3	1	33	0	0	16.3	-	-	Same
1964	5	2	40	4	80	11.5	-	-	Same
1965	6	2	33	5	83	13.3	-	-	Same
1966	9	4	50	4	44	14.1	-	-	Same
1967	11	3	27	10	91	14.8	22.5	-	Same
1968	10	7	70	6	60	13.6	23.4	7.3 (3)	Same
1969	5	2	40	3	60	15.3	23.2	8.5 (2)	5/15-6/15 9/1-10/15
1970	23	12	55	20	87	14.7	23.0	6.4 (11)	5/15-6/10 9/1-10/15
1971	33	21	66	26	79	14.1	23.2	6.4 (17)	5/15-6/10 9/1-10/15
1972	35	22	63	27	77	13.9	22.1	8.2 (21)	Same

1/ Length plus width given in feet.
2/ Length plus width given in inches.
3/ Tooth sample size in parenthesis.

Submitted by: James B. Faro, Game Biologist III

APPENDIX II

Average Male Brown/Grizzly Skull Size Recorded in Inches, and by Year, Season, and Residency of Hunter for Unit 17.

	SPRING				FALL				TOTAL		
	Resident		Nonres.		Resident		Nonres.				Sample
Year	No.	Size	No.	Size	No.	Size	No.	Size	No.	Size	Size %
1967	-	-	-	-	-	-	2	22.5	2	22.5	100
1968	2	23.5	-	-	1	20.8	2	24.6	5	23.4	71
1969	1	23.5	-	-	-	-	1	22.8	2	23.2	100
1970	0	0	4	25.4	1	19.6	7	22.1	12	23.0	100
1971	0	0	5	25.6	3	21.4	10	22.6	18	23.2	86
1972	1	24.1	2	24.6	5	20.3	13	22.3	21	22.1	95

Submitted by: James B. Faro, Game Biologist III

BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT - 1972

Game Management Unit 18 - Yukon-Kuskokwim Delta

Seasons and Bag Limits

Unit 18	Sept. 1 - Nov. 30 May 15 - May 31	One bear every four regulatory years; provided that the taking of cubs or females accompanied by cubs is prohibited.

Harvest and Hunting Pressure

No grizzly bears were reported taken in Unit 18 from 1961 to 1969. One was reported in 1970, six were reported in 1971, and none were reported in 1972. This is partially a result of noncompliance with sealing regulations and the relative remoteness of bear habitat in this area to most guide operations. This situation may change in the near future. Grizzly are relatively abundant in the Killbuck Mountains and in the vicinity of the Andreafsky River watershed, including the surrounding hills east to the boundary of Unit 21.

Composition and Productivity

Portions of Unit 18 were surveyed by air in 1972, but not completely enough to record with any confidence the composition and relative abundance of grizzly bears in this area. A more complete survey is anticipated for the fall of 1973.

Management Summary and Recommendations

Continued alertness to the unreported harvest is stressed as a management need in this unit.

PREPARED BY:

Peter E. K. Shepherd
Game Biologist

SUBMITTED BY:

Oliver E. Burris
Regional Management Coordinator

BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT - 19 72

Game Management Unit 19 - McGrath

Seasons and Bag Limits

Unit 19	Sept. 1 - Oct. 15 May 15 - June 10	One bear every four regulatory years, provided that the taking of cubs or females accompanied by cubs is prohibited.

Harvest and Hunting Pressure

The reported 1972 sport kill of grizzly bear in Unit 19 was 46 animals (Appendix I). This harvest represents a significant increase from the 28 bears taken in 1971 and is a reflection of the steady increase in hunting pressure predicted for this area. Sixty-four percent of the 1972 kill was males, and 67 percent of the bear were taken by nonresidents, indicating a slight increase in resident take. A continued trend toward greater bear harvest is anticipated, especially in the Alaska Range portion of Unit 19.

Composition and Productivity

Aerial surveys were conducted between May 10 and May 12, 1972. Light and snow conditions were generally excellent for this count; however, some of the more heavily hunted areas in the Alaska Range were severely wind blown and individual bear sightings as well as track observations were few. In 14 hours of flying, 14 bear were sighted. Fresh tracks of 80 other bear were also recorded as indicative of additional individuals (Table 1). Three recently occupied dens were located and recorded.

Table 1. Results of the 1972 grizzly surveys in Unit 19.

Date	Number of Bears Observed	Number of Individual Trails	Total	Hours Flown
5/10/72	6	27	33	5.0
5/11/72	6	32	38	6.0
5/12/72	2	21	23	3.0
	14	80	94	14.0

The survey data suggest grizzly bear are abundant in portions of

Unit 19 and generally distributed throughout this unit in moderate numbers. Impressive bear populations occur in the drainages of the Holitna River, Aniak River, and Buckstock River. These areas have yet to be hunted heavily by residents or guided nonresidents. It is expected that this condition may soon change, as guides seek new hunting areas.

Trend count areas should be established in the Alaska Range from the Tonsona River headwaters to the Stoney River. Additional areas, such as the lower Kuskokwim Mountains between the Holitna and Aniak rivers, are suggested as census areas in order to monitor shifts in hunting activity and to establish the size of current bear populations.

Highly important to the success of these counts is their seasonal timing. A spring census is often aided by snow cover and good light conditions, but may fail to adequately sample the sow and cub segments of the populations. Early fall (August) may be the best time to survey Interior grizzly populations. Grizzlies are more commonly seen at this time in the alpine areas and creek bottoms where food is more readily obtainable. In addition, a more representative picture of the population composition would be obtained at this time.

Management Summary and Recommendations

Based upon my impression of bear numbers and the increasing harvest in the Alaska Range portion of the unit, the kill may now or could eventually exceed the annual increment of this particular population.

PREPARED BY:

Peter E. K. Shepherd
Game Biologist

SUBMITTED BY:

Oliver E. Burris
Regional Management Coordinator

APPENDIX I

Characteristics of the Brown/Grizzly Bear Sport Harvest in Unit 19

Calendar Year	Total Kill	No. Males	% Males[1]	No. Nonres.	% Nonres.	Mean Hide Size Male[2]	Mean Skull Size Male[3]	Mean Cem. Lines Male[4]	Calendar Year Seasons
1961	13	6	50	9	69	11.4			5/15-6/15 9/1-12/31
1962	11	7	64	3	27	13.3			Same
1963	11	5	56	8	73	13.2			Same
1964	19	12	63	13	68	12.3			Same
1965	18	6	35	15	83	12.4			Same
1966	18	5	29	14	78	12.7			Same
1967	17	7	44	13	76	13.5	22.6		Same
1968	15	6	50	10	67	12.1	21.1	4.7 (3)	Same
1969	10	6	67	8	80	11.5	20.3	5.3 (7)	5/15-6/15 9/1-10/15
1970	20	12	71	16	80	11.5	19.5	6.5 (11)	5/15-6/10 9/1-10/15
1971	[illegible]	[illegible]	72	22	79	14.0(14)	22.8	7.3 (14)	5/15-6/10 9/1-10/15
1972	46	27	64	31	67	13.2	21.5	7.1 (26)	5/15-6/10 9/1-10/15
12 year average	18.8	10.6	56.2	13.5	71.7				

1/ All male % based on known-sex bears.
2/ Length plus width given in feet.
3/ Length plus width given in inches.
4/ Tooth sample size in parenthesis.

BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT - 1972

Game Management Unit 20 - Fairbanks, Central Tanana

Seasons and Bag Limits

Unit 20	Sept. 10 - Oct. 10	One bear every four regulatory years; provided that the taking of cubs or females accompanied by cubs is prohibited.

Harvest and Hunting Pressure

The legally reported sport harvest of grizzly bears in Unit 20 during 1972 was 36 bears, an increase of six bears over the 1971 harvest, and five bears higher than the 12-year (1961-1972) average harvest of 31 (Appendix 1).

For the second consecutive year there was a uniform fall-only season in all subunits of Game Management Unit 20. In 1972 the fall season was 10 days longer than the 1971 season (Appendix 1).

Harvest chronology data from 1971 and 1972 indicate that the longer season may have helped to disperse hunting pressure, despite the fact that a major portion of the harvest occurred during the first week of the season (Table 1).

Table 1. Chronology of harvest for 1971 and 1972 seasons.

		Number Killed	Percent of Harvest
1971	Sept. 15-21	19	63
	Sept. 22-28	5	17
	Sept. 29-Oct. 5	6	20
1972	Sept. 10-16	15	42
	Sept. 17-23	8	22
	Sept. 24-30	10	28
	Oct. 1-10	3	8
Total		36	

Male bears comprised 58 percent of the harvest in 1972, closely approximating the 12-year (1961-1972) average of 56.5 percent.

Nonresident hunters harvested 58 percent of the bears during the 1972 season, representing the largest proportion of the harvest by nonresidents in 12 years, and well above the 12-year average harvest of 37 percent by nonresidents (Appendix 1). This is partially explained by the absence of a spring season, which reduced the potential resident harvest in most of the unit when nonresident guided hunts are less common.

Table 2 lists the variation in spring and fall harvests since 1961 in Unit 20, a reflection of hunting effort by guided nonresidents, and residents who take bears incidental to hunting for other big game species in the fall. Spring harvests rarely exceeded one-half the fall take, and the 10-year average harvest (only 10 spring seasons in 12 years) of eight bears in spring shows a marked variation from the 12 year fall average harvest of 25 bears.

Table 2. Game Management Unit 20 grizzly bear sport harvest by season.

Year	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972
Spring	6	4	10	5	17	12	4	5	7	9	-	-
Fall	11	22	34	41	15	45	11	18	19	16	30	36

Analysis of kill locations obtained from sealing certificates indicates a relatively small portion of bear habitat in Unit 20 supports the majority of the harvest. Several drainages in the Alaska Range have consistently furnished a major portion of the bear harvest the past four years (1969-1972). Summarized below are annual harvest data for known location kills and the percent of harvest contributed by specific drainages in Unit 20.

Table 3. Harvest and percent of unit harvest by area, 1969-1972.

Year	Total Unit Harvest	Upper Kantishna Harvest and (Percent)	Toklat Harvest and (Percent)	Yanert-Upper Nenana Harvest and (Percent)	Delta Harvest and (Percent)	Percent of Total Unit Harvest for Four Areas
1969	26	2 (8)	4 (15)	5 (19)	7 (27)	(69)
1970	25	2 (8)	2 (8)	7 (28)	1 (4)	(48)
1971	30	6 (20)	- -	10 (33)	3 (10)	(63)
1972	36	4 (11)	11 (30)	11 (30)	6 (17)	(89)

It is apparent that the central and western portions of the Alaska Range lying within Game Management Unit 20 have been the major source of the harvest the past four years. It is not known whether this is a

reflection of higher bear density, or more concentrated guiding activity and hunting pressure in those areas (Kantishna, Toklat, and Yanert rivers) adjacent to McKinley National Park.

Data on sex, age, hide size and skull size of bears harvested in 1972 are presented in Appendix 1. Despite the increased harvest, bears were older and larger compared to the 1971 harvest, and skull and hide size closely approximate the five-year average. Average male age (7.4 years) is slightly lower than the five-year average of 8.9, but higher than the age of bears harvested in 1971 (6.1 years).

Composition and Productivity

No formal surveys were undertaken; however, observations made by Department personnel in conjunction with other S & I studies in the central Alaska Range revealed a minimum of six adults and five cubs, and a maximum of eight adults and nine cubs assuming there were no resightings.

Management Summary and Recommendations

Despite the steadily increasing bear harvest in Unit 20 since 1967, and heavier hunting pressure for other big game species in certain portions of the unit (which would increase the harvest of bears taken incidental to other hunting), parameters used to evaluate overharvest (hide size, skull size, and age) indicate the bear population is capable of supporting the current level of harvest. There has been no appreciable reduction in the percentage of male bears in the harvest the past four years indicating a fairly constant rate of recruitment of adult bears to the huntable population. This is substantiated in part by the proportion of adult and cub bear sightings by Department personnel in a small portion of the Alaska Range in 1972.

There is presently no means available to determine hunting pressure for grizzly bear in Unit 20. Considering the magnitude of change in the harvest since 1961, a maximum of 46 in 1964 to a minimum of 15 in 1967, with little change in the mean hide size, it is likely that the bulk of the harvest is taken incidentally to other hunting and that changes in the harvest primarily reflect changes in the availability of bears.

In view of these circumstances it is unlikely that hunting has been a major factor in controlling the bear population; however, hunting may affect the density during periods of low populations and the rates of increase and decrease. The negligible spring harvests of past years also tend to support the assumption that there is little intentional hunting of only grizzly bear.

We do not have reliable information on abundance, productivity or composition in this unit. Therefore the harvest should not be allowed

to increase significantly above the past average levels. Considering the general increasing trend in license sales and the increase in pressure on other big game species in Unit 20, more restrictive regulations may be necessary in the near future.

PREPARED BY:

Melvin Buchholtz
Game Biologist

SUBMITTED BY:

Oliver E. Burris
Regional Management Coordinator

APPENDIX I

Characteristics of the Brown/Grizzly Bear Sport Harvest in Unit 20

Year	Total Kill	No. Males	% Males[1]	No. Nonres.	% Nonres.	Mean Hide Size Male[2]	Mean Skull Size Male[3]	Mean Cem. Age Male[4]	Regulatory Year Seasons
1961	17	12	71	4	24	13.0			9/1-12/31 5/15-6/15
1962	26	16	62	5	19	12.6			Same
1963	44	25	57	7	16	12.4			Same
1964	46	28	64	15	33	13.0			Same
1965	32	18	56	11	34	13.7			Same
1966	57	28	50	22	39	13.2			A 9/1-12/31 B&C 9/1-12/31 5/15-6/15
1967	15	6	40	2	13	13.3	21.3		A 9/15-12/31 B&C 9/15-12/31 5/15-6/15
1968	23	17	74	5	22	13.4	22.2	15.2 (5)	A 9/15-10/15 B&C 9/15-12/31 5/15-6/15
1969	26	15	58	7	27	13.0	20.9	9.2 (14)	A 9/20-10/20 B&C 9/1-30 5/15-6/15
1970	25	15	61	7	30	13.3	21.2	6.6 (14)	A 9/15-10/5 B&C 5/15-6/10 9/15-10/15
1971	30	12	52	14	47	11.4	18.6	6.1 (11)	A,B&C 9/15-10/5
1972	36	21	58	21	58	12.7	21.6	7.4 (18)	A,B,C&D 9/10-10/10
12 year average	31.4	17.7	56.5	10.0	31.8				

1/ All male % based on known-sex bears.
2/ Length plus width given in feet.
3/ Length plus width given in inches.
4/ Tooth sample size in parenthesis.

BROWN-GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT - 1972

Game Management Unit 21 - Middle Yukon

Seasons and Bag Limits

Unit 21	Sept. 1 - Nov. 30 May 15 - May 31	One bear every four regulatory years, provided that the taking of cubs or females accompanied by cubs is prohibited.

Harvest and Hunting Pressure

Grizzly bears are rarely hunted intentionally or reported killed in Unit 21. Normally, only a few legal bears are taken (Appendix I). None were reported in 1972. However, grizzly hides are fairly commonly seen in the outlying villages. Most of these bears are shot when disturbing caches and cabins.

Hunting pressure can be expected to increase in the next few years as the professional guides seek new areas. Several guides have expressed considerable interest in the Anvik River area of Unit 21. This drainage and the surrounding hills are known to be good to excellent bear habitat.

Composition and Productivity

Bear habitat in Unit 21 was surveyed by air on May 28, 1972. Four bears, including a sow with two yearling cubs, were seen in addition to 15 individual trails in 3.3 hours of aerial survey. The bear population centers of Unit 21 are in the Beaver Mountains, Kuskokwim Mountains, Anvik River watershed, the mountain systems to the west of the Yukon River, and in the Kokrine Hills. Present levels of utilization do not justify extensive surveys of most of these areas with the exception of the Beaver Mountains. Trend counts should be flown annually in this section of the Kuskokwim Mountains.

Management Summary and Recommendations

Continued effort should be expended to determine the unreported kill in this unit.

PREPARED BY:

Peter E. K. Shepherd
Game Biologist

SUBMITTED BY:

Oliver E. Burris
Regional Management Coordinator

APPENDIX I

Characteristics of the Brown/Grizzly Bear Sport Harvest in Unit 21

Calendar Year	Total Kill	No. Males	% Males[1]	No. Nonres.	% Nonres.	Mean Hide Size Male[2]	Mean Skull Size Male[3]	Mean Cem. Lines Male[4]	Calendar Year Seasons
1961	3	1	33	0	0	12.9			5/15-6/15 9/1-12/31
1962	7	4	57	2	29	13.9			Same
1963	3	2	67	0	0	12.1			Same
1964	0	0	0	0	0	0			Same
1965	0	0	0	0	0	0			Same
1966	1	1	100	0	0	12.4			Same
1967	1	1	100	0	0	14.8			Same
1968	1	0	0	0	0	0			Same
1969	2	0	0	0	0	0			5/15-6/15 9/1-11/30
1970	1	0	0	0	0	0	-	-	5/15-5/31 9/1-11/30
1971	2	2	100	0	0	14.9	23.2	12 (1)	9/1-11/30
1972	0	0	0	0	0	0	0	0	5/15-5/31 9/1-11/30
12 year average	1.7	1.9	52.8	0.2	9.5				

1/ All male % based on known-sex bears.
2/ Length plus width given in feet.
3/ Length plus width given in inches.
4/ Tooth sample size in parenthesis.

BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT - 1972

Game Management Unit 22 - Seward Peninsula

Seasons and Bag Limits

Unit 22	Sept. 1 - Oct. 31	One bear every four regulatory years, provided that the taking of cubs or females accompanied by cubs is prohibited.

Harvest and Hunting Pressure

The reported sport harvest remains very low in this unit with only two bears taken in 1972 (Appendix I). The unreported take is believed to be considerably greater, however, total kill for the unit probably did not exceed 15 in 1972. At least two bears were taken in defense of property by reindeer herders. Few people in Unit 22 hunt for grizzly bears specifically but they will take them during the moose season.

Composition and Productivity

No surveys were undertaken. Local residents report that grizzlies are common along the beach between Unalakleet and St. Michaels during the spring. Observation during other surveys indicate that grizzlies may be increasing although they still are not abundant.

Management Summary and Recommendations

In 1973 the spring season will be reinstated. The effects of the 1973 spring season should be evaluated before new seasons or bag limits are initiated. The total harvest has always been small and observations of bears in conjunction with other duties indicate that the harvest could be increased substantially.

PREPARED BY:

Robert E. Pegau
Game Biologist

SUBMITTED BY:

Oliver E. Burris
Regional Management Coordinator

APPENDIX I

Characteristics of the Brown/Grizzly Bear Sport Harvest in Unit 22

Calendar Year	Total Kill	No. Males	% Males[1]	No. Nonres.	% Nonres.	Mean Hide Size Male[2]	Mean Skull Size Male[3]	Mean Cem. Lines Male[4]	Calendar Year Seasons
1961	1	1	100	0	0	14.0			5/15-6/15 9/1-12/31
1962	1	1	100	0	0	11.8			Same
1963	-	-	-	-	-	-			Same
1964	-	-	-	-	-	-			Same
1965	1	1	100	1	100	13.5			Same
1966	2	1	50	1	50	16.2			Same
1967	3	2	67	0	0	14.5	23.0		Same
1968	6	3	50	0	0	13.2	21.3	5.0(2)	Same
1969	2	1	50	0	0	11.7	22.7	0	5/15-6/15 9/1-11/30
1970	2	2	100	0	0	16.0	24.9	11.0(2)	5/15-5/31 9/1-11/30
1971	2	1	50	0	0	12.8	20.0	3.0(1)	9/1-11/30
1972	2	1	50	0	0	14.8	0	0	9/1-10/31
12 year average	1.8	1.2	63.6	0.2	9.0				

1/ All male % based on known-sex bears.
2/ Length plus width given in feet.
3/ Length plus width given in inches.
4/ Tooth sample size in parenthesis.

BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT - 1972

Game Management Unit 23 - Kotzebue Sound

Season and Bag Limits

Unit 23	Sept. 1 - Oct. 31	One bear every four regulatory years, provided that the taking of cubs or females accompanied by cubs is prohibited.

Harvest and Hunting Pressure

The reported sport harvest in Unit 23 was 27 grizzly bears which is the largest take for a year with only a fall season. It is believed that there may have been several bears taken in other units which were closed and reported to have been taken in Unit 23. There were 12 bears sealed that supposedly were taken near the boundary of Units 24 and 26.

The harvest was 76 percent male bears. The percent males in the harvest, hide size, and skull size of the males harvested were not significantly different from the 12-year averages (Appendix I). The average age of 18 male bears was 11.4 years. Nonresidents took 81 percent of the reported harvest which was a substantial increase over previous harvests (Appendix I).

Efforts were made to more accurately assess the take of grizzly bears by local residents but much improvement is still needed.

Composition and Productivity

No surveys were made.

Management Summary and Recommendations

The fall harvest increased but the reported kill may not be accurate because some bears may have been taken in closed units and reported to have been taken in Unit 23. Almost all of the increased kill is by nonresidents. Several "new" guides operated in Unit 23 this year, apparently this was the reason for the substantial increase in the kill by nonresidents. Local residents took most of their bears in conjunction with other hunting activities.

PREPARED BY:

Robert E. Pegau
Game Biologist

SUBMITTED BY:

Oliver E. Burris
Regional Management Coordinator

APPENDIX I

Characteristics of the Brown/Grizzly Bear Sport Harvest in Unit 23

Calendar Year	Total Kill	No. Males	% Males[1]	No. Nonres.	% Nonres.	Mean Hide Size Male[2]	Mean Skull Size Male[3]	Mean Cem. Lines Male[4]	Calendar Year Seasons
1961	6	4	67	2	33	13.9			5/15-6/16 9/1-12/31
1962	5	4	80	3	60	12.9			Same
1963	11	8	73	8	73	13.7			5/1-6/15 8/20-12/31
1964	14	12	86	5	36	13.7			5/1-6/15 9/1-12/31
1965	27	24	89	18	67	13.5			Same
1966	12	11	92	8	67	13.7			5/15-6/15 9/1-12/31
1967	12	10	83	7	58	13.9	22.9		Same
1968	29	24	83	17	59	13.5	22.6	11.4 (18)	Same
1969	14	12	86	9	64	13.2	22.0	7.6 (8)	5/15-6/15 9/1-11/30
1970	26	19	73	15	58	13.9	22.0	6.9 (10)	5/15-5/31 9/1-11/30
1971	13	7	54	7	54	13.2	21.9	11.7 (6)	9/1-11/30
1972	27	19	76	22	81	13.8	22.0	11.4 (18)	9/1-10/31
12 year average	16.3	12.8	78.6	10.1	78.6				

1/ All male % based on known-sex bears.
2/ Length plus width given in feet.
3/ Length plus width given in inches.
4/ Tooth sample size in parenthesis.

BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT - 1972

Game Management Unit 24 - Koyukuk

Seasons and Bag Limits:

Unit 24	May 15 - May 31	One bear every four regulatory years; provided that the taking of cubs or females accompanied by cubs is prohibited.

Harvest and Hunting Pressure

Nine bears were reportedly harvested during the 1972 spring season. There was no fall season. Residents harvested four males and one female; nonresidents took two males and two females. There was no open season in 1971. Seventeen bears were reported taken in 1970, with eight of them coming from the spring season.

One additional bear was killed in defense of property in September at the Coldfoot camp of Alyeska Pipeline Service Company.

Hunting pressure appears to be increasing somewhat for bears and other big game species, and has increased dramatically for sheep. This general increase in pressure will probably result in a higher harvest of grizzlies.

Mean male hide size, skull size, and tooth cementum lines for the past 12 years are shown in Appendix I.

The characteristics of the males killed in 1972 do not appear to be significantly different from the averages for the 11 year period.

These figures are remarkably consistent considering the small sample size, and give no cause for alarm.

Composition and Productivity

No information is available.

Management Summary and Recommendations

Because of the general increase in hunting pressure, pending industrial development, and local and national concern for arctic grizzlies, the harvest should be controlled conservatively until more information is obtained.

PREPARED BY:

Spencer Linderman
Game Biologist

SUBMITTED BY:

Oliver E. Burris
Regional Management Coordinator

APPENDIX I

Characteristics of the Brown/Grizzly Bear Sport Harvest in Unit 24

Calendar Year	Total Kill	No. Males	% Males[1]	No. Nonres.	% Nonres.	Mean Hide Size Male[2]	Mean Skull Size Male[3]	Mean Cem. Lines Male[4]	Calendar Year Seasons
1961	3	1	33	1	33	14.2			5/15-6/15 9/1-12/31
1962	5	3	60	0	0	12.5			Same
1963	8	5	71	1	13	13.0			5/15-6/15 8/20-12/31
1964	9	7	78	3	33	13.7			5/1-6/15 8/20-12/31
1965	11	7	64	4	36	12.8			Same
1966	16	6	40	10	63	12.9			5/15-6/15 8/20-12/31
1967	13	9	75	9	69	13.8	22.1		5/15-6/15 9/1-12/31
1968	5	4	80	3	60	13.3	22.1		Same
1969	9	7	78	4	44	12.5	21.7	7.7 (7)	5/15-6/15 9/1-11/30
1970	17	11	65	11	65	12.1	21.2	11.7 (6)	5/15-5/31 9/1-11/30
1971	NO SEASON								
1972	9	6	67	4	44	13.2	21.4	12.0 (6)	5/15-5/31
11 year average	9.5	6.0	62.8	4.5	47.6				

1/ All male % based on known-sex bears.
2/ Length plus width given in feet.
3/ Length plus width given in inches.
4/ Tooth sample size in parenthesis.

BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT - 1972

Game Management Unit 25 - Ft. Yukon

Seasons and Bag Limits

Unit 25	May 15 - May 31	One bear every four regulatory years; provided that the taking of cubs or females accompanied by cubs is prohibited.

Harvest and Hunting Pressure

A harvest of six bears was reported for the 1972 spring season. There was no fall season. Residents harvested two males and one female; nonresidents took two males and one female. There was no open season in 1971. Fourteen bears were reported taken in 1970 with six of them coming from the spring season.

One additional bear was killed by a guide in August in defense of property.

Although past harvests have been light, there appears to be an increase in guide and hunter activity and we may expect an increase in the harvest.

Mean male hide size, skull size, and tooth cementum lines for the past 11 years are shown in Appendix I. The characteristics of the males killed in 1972 do not appear to be significantly different from the averages for the 11 year period.

These figures indicate no adverse effects from the present level of harvest.

Composition and Productivity

Renewable Resources Consulting Service obtained 78 grizzly observations in Game Management Unit 25 in 1972, primarily from the Chandalar and Junjik rivers. These observations are compared below to the 1970 and 1971 figures for Game Management Unit 26, RRCS's 1972 data from Game Management Unit 26, and the 1972 observations for Game Management Unit 26.

Percent of bears in observed samples.

	Unit 26 1970	Unit 26 1971	Unit 26 1972 (RRCS)	Unit 26 1972	Unit 25 South Slope 1972
No. observations	522	167	120	41	78
Single bears	57	72	67	59	53
Sows with young	16	9	11	15	17
Cubs	28	19	10 22	24 26	25 30
Yearlings			12	2	5

Though probably not statistically significant, the GMU 25 composition data indicate fewer single bears and more young than any of the three years of GMU 26 data.

Management Summary and Recommendations

Game Management Unit 25 may be unable to support a substantially increased kill in view of increasing hunting pressure for all species; however, present harvest figures are not considered excessive. Because of pending industrial development and resultant local and national concern for arctic grizzlies, the harvest should be conservatively controlled until more population information is obtained.

PREPARED BY:

Spencer Linderman
Game Biologist

SUBMITTED BY:

Oliver E. Burris
Regional Management Coordinator

APPENDIX I

Characteristics of the Brown/Grizzly Bear Sport Harvest in Unit 25

Calendar Year	Total Kill	No. Males	% Males[1]	No. Nonres.	% Nonres.	Mean Hide Size Male[2]	Mean Skull Size Male[3]	Mean Cem. Lines Male[4]	Calendar Year Seasons
1961	4	4	100	2	50	12.1			5/15-6/15 9/1-12/31
1962	5	3	60	3	60	13.4			Same
1963	6	1	33	6	100	13.8			5/15-6/15 8/20-12/31
1964	11	7	64	4	36	12.6			5/1-6/15 8/20-12/31
1965	11	5	45	6	55	12.9			Same
1966	25	18	72	14	56	13.1			5/1-6/15 8/20-12/31
1967	17	11	65	13	76	13.3	21.8		5/1-6/15 9/1-12/31
1968	10	8	80	4	40	12.5	20.8	4.0 (2)	Same
1969	12	9	75	8	67	12.5	20.3	6.5 (4)	5/15-5/31 9/1-11/30
1970	13	8	62	7	54	12.9	21.6	8.7 (6)	Same
1971	NO SEASON								
1972	6	4	67	3	50	12.9	21.6	10.3 (4)	5/15-5/31
11 year average	10.9	7.1	65.0	6.4	58.3				

1/ All male % based on known-sex bears.
2/ Length plus width given in feet.
3/ Length plus width given in inches.
4/ Tooth sample size in parenthesis.

BROWN/GRIZZLY BEAR

SURVEY-INVENTORY PROGRESS REPORT - 1972

Game Management Unit 26 - Arctic Slope

Seasons and Bag Limits

Unit 26 NO OPEN SEASON

Harvest and Hunting Pressure

There was no reported sport harvest in 1972. One small, unsealed grizzly hide was found in the Barrow dump. It was dried, however, and may not have been killed in 1972.

In September, the Department killed one very old male bear that had been feeding on open garbage at a Mobil Oil Company camp on the Ivishak River. This animal's condition was very poor. Hair was thin and patchy, no body fat was evident, and the teeth were excessively worn.

The harvests for 1968-1971 were 14, 16, 14 and 23 animals, respectively. As the 1971 Brown/Grizzly Survey-Inventory Progress Report pointed out, the increase in harvest between the years 1968-1970 and the 1971 harvest is significant, considering approximately 40 percent of Game Management Unit 26 was closed in 1971.

There is presently no means available to measure interest in Brooks Range bear hunting. I believe interest in Brooks Range bear hunting has increased in the past few years. The number of Brooks Range sheep hunters has increased from 171 in 1970 to 351 in 1973. This represents a potential for increased fall bear harvest incidental to sheep hunts, even considering the relatively small overlap between sheep hunting pressure and present grizzly season dates.

Mean male hide size, skull size, and tooth cementum lines for the past 11 years are presented in Appendix I.

When the average age of 11 male grizzlies (11.1 cementum lines) live captured in 1971 is compared with 13 male grizzlies (9.3 cementum lines) killed by hunters in 1971 and the composition of the bears observed in 1971 (two single legal bears to every illegal sow or cub), and the composition of the kill (14 male to 9 female) the comparison suggests that hunters select only for legal bears. They probably do not or cannot distinguish between small and large single bears.

Composition and Productivity

Renewable Resources Consulting Service obtained 120 grizzly bear observations in Game Management Unit 26 in 1972 from the Itkillik River east to Canada. Most of these were from the Canning River area, however. ADF&G biologists and cooperators reported 41 additional sightings.

These data are presented below with the 1970 and 1971 figures for Game Management Unit 26. Seventy-eight RRCS observations from the south slope of the Brooks Range in Game Management Unit 25 are also listed.

Percent of bears in observed samples.

	Unit 26 1970	Unit 26 1971	Unit 26 1972 (RRCS)	Unit 26 1972 (ADFG)	Unit 25 South Slope 1972
No. observations	552	167	120	41	78
Single bears	57	72	67	59	53
Sows with young	16	9	11	15	17
Cubs	28	19	10 22	24 26	25 30
Yearlings			12	2	5

Though probably not statistically significant, the Game Management Unit 25 composition shows fewer single bears and more young than any of the three years of Game Management Unit 26 data.

Management Summary and Recommendations

Game Management Unit 26 may be unable to support a substantially increased kill in view of increasing hunting pressure for all species. Because of pending industrial development and resultant local and national concern for arctic grizzlies, the harvest should be conservatively controlled until more population information is obtained.

Both S & I and research studies will be underway in 1973 to provide needed population dynamics information which should add to our management capabilities. Compared to southern coastal populations, the lower productivity, smaller body size and lower density of Game Management Unit 26 bears indicate a population more susceptible to overexploitation than elsewhere.

PREPARED BY:

Spencer Linderman
Game Biologist

SUBMITTED BY:

Oliver E. Burris
Regional Management Coordinator

APPENDIX I

Characteristics of the Brown/Grizzly Bear Sport Harvest in Unit 26

Calendar Year	Total Kill	No. Males	% Males[1]	No. Nonres.	% Nonres.	Mean Hide Size Male[2]	Mean Skull Size Male[3]	Mean Cem. Lines Male[4]	Calendar Year Seasons
1961	1	1	100	0	0	10.2			5/15-6/15 9/1-12/31
1962	2	1	50	1	50	15.0			Same
1963	13	8	73	4	31	12.8			5/1-6/15 8/20-12/31
1964	16	12	80	5	31	13.9			5/1-6/15 9/1-12/31
1965	5	3	60	1	20	13.4			Same
1966	9	5	63	4	44	13.0			5/15-6/15 9/1-12/31
1967	4	2	67	2	50	10.4	20.0		Same
1968	14	13	93	8	57	12.0	21.1	5.7(7)	Same
1969	16	11	79	6	38	12.8	22.0	7.4(7)	5/15-6/15 9/1-11/30
1970	14	10	77	11	79	12.9	22.8	10.1(9)	9/1-11/30
1971	23	14	64	20	87	13.1	22.6	9.3(13)	26A 9/1-11/3 26B&C No Season
1972	NO SEASON								
11 year average	10.6	8.3	77.7	5.6	52.9				

1/ All male % based on known-sex bears.
2/ Length plus width given in feet.
3/ Length plus width given in inches.
4/ Tooth sample size in parenthesis.

SHEEP

SURVEY-INVENTORY PROGRESS REPORT - 1972

Game Management Unit 9 - Alaska Peninsula

Seasons and Bag Limits

Unit 9	Aug. 10 - Sept. 20	One ram with 3/4 or larger curl

Harvest and Hunting Pressure

Based on harvest ticket returns, the harvest of rams in Unit 9 since 1962 is presented below:

Year	Harvest	Year	Harvest
1962	0	1968	10
1963	1	1969	7
1964	2	1970	2
1965	0	1971	2
1966	0	1972	3
1967	0		

Composition and Productivity

No data are available.

Management Summary and Conclusions

Sheep on the Alaska Peninsula are restricted to that portion of the Alaska Range east of Lake Clark. Hunting pressure is light.

Recommendations

No changes in hunting season or bag limits are recommended.

Submitted by: Jim Faro, Game Biologist III

SHEEP

SURVEY-INVENTORY PROGRESS REPORT - 1972

Game Management Unit 11 - South and west portions of the Wrangell Mountains and the northern portion of the eastern Chugach Range.

Seasons and Bag Limits

Aug. 10 - Sept. 20	One ram with 3/4 curl horns or larger.

Harvest and Hunting Pressure

Ram harvest from Unit 11, ram harvests statewide, and the percentage of statewide harvests from Unit 11 are given in Appendix I. These data illustrate gradually increasing ram harvests both statewide and from Unit 11. The percentage of the statewide harvest from Unit 11 has fluctuated around 16.0 percent without apparent trend.

Hunter success and mean horn length can be used as indices of hunting pressure. The percentage of hunters that are residents is useful information when comparisons are made using success of both resident and non-resident hunters. This is true because non-resident hunters are required to have a guide and frequently have a substantially higher probability of success. Harvest and hunting pressure are presented in Appendix II for the two mountain ranges within Unit 11.

Sample sizes from the eastern Chugach Range are small, apparently accounting for the large fluctuations among the yearly indices. Ram harvests and numbers of hunters from the Wrangell Mountains have increased from 1967 through 1972. Hunter success has fluctuated without apparent trend. The mean horn length of harvested rams has apparently been increasing. Harvest records previously described may be expected either (1) where the animal production of the resource equals or exceeds the losses, (2) where hunters continually move into local areas previously unexploited, or (3) both. Examination of the past harvests on a drainage basis revealed no indication that hunters were continually moving into previously lightly hunted areas. I conclude, therefore, that the annual production of legal rams has apparently exceeded the annual losses, including harvests.

A comparison of hunter success from the portion of the Wrangell Mountains within Unit 11 and from statewide 1972 harvest data is given in Appendix III. These data show that the Wrangell Mountains are a premium hunting area, especially for the Alaskan resident. Not only do resident Alaskan hunters have a relatively larger probability of success in the Wrangell Mountains, but the mean horn size of rams harvested in the Wrangell Mountains by Alaskan residents (36.0 inches) was slightly larger than the mean horn length of rams harvested by non-residents (35.3 inches).

Composition and Productivity

Composition data obtained from various areas on the southern Wrangell Mountains by Departemnt of Fish and Game employees are presented in Appendix IV.

These data illustrate stable or increasing percentages of legal rams found within specific areas during sequential counts. Where boundaries of specific areas are the same during sequential counts, sample sizes have been larger. Percentages of lambs have fluctuated at moderate to high levels. These data coupled with harvest information, may be indicative of an expanding sheep population.

A comparison of composition data found in various areas of the Wrangell and Chugach Mountains during a 1973 sheep survey is illustrated in Appendix V. Relatively low percentages of legal rams were found in the vicinities of Mt. Sanford, the Crystalline Hills, and Chitistone Mountain. Reduced percentages of rams in these areas may be due to relatively greater hunting pressure, distribution of ram concentrations outside of count areas, or other factors.

Management Summary and Conclusions

The harvest data from Unit 11, primarily obtained from the southern Wrangell Mountain sheep populations, describe a top quality hunting area. Although ram harvests and hunting pressure have been generally increasing, the rate of increase of harvests is comparable to the increase statewide. Hunter success and trophy quality (indicated by mean horn length) have remained high since 1967. Composition data show an increasing percentage of legal rams, in spite of increased harvests. This may indicate an expanding sheep population.

The sheep population in the Unit 11 portion of the Wrangell Mountains appears to be increasing. As time, money, and research information derived from ongoing sheep studies become available, a more intensive effort should be put forth to monitor the Wrangell Mountain population in particular.

Recommendations

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

Submitted by: Carl W. McIlroy, Game Biologist III

APPENDIX I

A Comparison of Annual Ram Harvests, Statewide and from Unit 11, and the Percentage of Statewide Ram Harvests from Unit 11.

	Ram Harvests				Ram Harvests		
Year	Statewide	Unit 11	Percent	Year	Statewide	Unit 11	Percent
1962*	667	117	17.6	1968	1122	215	19.1
1963	970	131	13.5	1969	955	157	16.4
1964	919	151	16.5	1970	998	171	17.2
1965	885	131	14.8	1971	1079	178	16.5
1966	955	125	13.1	1972	1170	173	14.8
1967**	922	149	16.2				

*1962 was the first year of harvest ticket report. Coverage may have been incomplete.

**Reported kill by 15 January 1968

Submitted by: Carl W. McIlroy, Game Biologist III

APPENDIX II

A Comparison of Hunter Data from Portions of Mountain Ranges within Unit 11

	1967	1968	1969	1970	1971	1972
Unit 11 Portion of Eastern Chugach Range						
Ram Harvest*:	0	8	7	10	4	1
Number of Resident and Non-Resident Hunters:	0	12	12	22	7	3
Percent Hunter Success:	-	66	58	45	57	33
Percent of All Hunters that are Residents:	-	66	42	52	29	33
Mean Horn Length, inches:**	-	31.6	37.4	33.9	30.9	30.0
Unit 11 Portion of Wrangell Mountains						
Ram Harvest*:	149	199	150	161	174	171
Number of Resident and Non-Resident Hunters:	246	303	329	308	376	344
Percent Hunter Success:	61	66	45	52	69	64
Percent of All Hunters that are Residents:	63	69	71	75	69	64
Mean Horn Length, inches:**	34.6***	34.1	34.6	35.1	35.1	35.3

*The summed ram harvests from the eastern Chugach Range and the Wrangell Mountains do not equal the Unit 11 total harvest because of rams not included in this table whose specific kill location is unknown.

**Mean horn length is based on ram harvested by both resident and nonresident hunters.

***Mean horn length from the 1967 harvest is based on rams harvested by resident hunters only.

Submitted by: Carl W. McIlroy, Game Biologist III

APPENDIX III

A Comparison of Hunter Success Between All Alaskan Hunters and Hunters Within the Unit 11 Portion of the Wrangell Mountains Only

	Statewide %	Unit 11 Portion of Wrangell Mountains %
Percent Hunter Success,		
All Hunters:	37	64
Resident Hunters:	28	35
Nonresident Hunters:	71	79
Percent of All Hunters That are Alaskan Residents:	73	64

APPENDIX IV

A Comparison of Composition Data Obtained from Various Areas in the Southern Wrangell Mountains.*

Year	Area	Legal Rams	Lambs	Unid.	Total	Percent Rams	Percent Lambs
1962	Nadina River to Kennicott Glacier	87	109	445	641	13.5	17.0
1963	Nadina River to Kennicott Glacier	91	149	527	767	17.3	19.4
1973	Dadina River to Kennicott Glacier	124	118	632	874	19.6	13.5
1967	Dadina River to Kluvesna River	48	--	254	302	15.8	--
1973	Dadina River to Cheshnina River	35	23	150	208	16.8	11.1
1970	MacColl Ridge	26	60	134	220	11.8	27.3
1973	MacColl Ridge	28	45	171	244	11.5	18.4
1970	Chitistone River to Canyon Creek	14	35	94	143	9.9	24.5
1973	Chitistone River to Canyon Creek	17	28	105	150	11.3	18.7

*The following data are grouped into areas with the same or similar boundaries.

Submitted by: Carl W. McIlroy, Game Biologist III

APPENDIX V

A Comparison of Sheep Composition Data Obtained From Various Areas in the Chugach Mountains and Wrangell Mountains During the June, 1973 Survey.

Date	Area	Legal Rams	Lambs	Unid.	Total	Percent Rams	Percent Lambs
6/16-17/73	#3-4; Mt. Sanford	16	38	166	220	7.3	17.3
6/16/73	#5; Mt. Drum	--	--	73	73	--	--
6/16-17/73	#6; Mt. Wrangell	35	23	150	208	16.8	11.1
6/16/73	#7; Iron Mtn.-Kotsina R.	51	47	312	410	12.4	11.5
6/22/73	#8; Mt. Blackburn-Kuskulana Pass	31	38	139	208	14.9	18.3
6/16/73	#9; Fireweed Mtn-Hidden Cr.	7	10	31	48	14.6	20.1
6/17-19/73	#11; Nikolai Butte-Pyramid Peak	17	28	105	150	11.3	18.7
6/18/73	#12; MacColl Ridge	28	45	171	244	11.5	18.4
6/21-22/73	#13; Chitistone Mtn.	17	83	186	286	5.9	29.0
6/17/73	#14; Crystalline Hills	17	42	124	183	9.3	23.0
	Total Wrangell Mtns. excluding Area #5	219	354	1384	1957	11.2	18.1
6/20-21/73	A; Tebay River to Copper River	--	--	48	48	--	--
6/19-20/73	B; Hanagita Ridge-Nelson Mtn.	17	21	100	138	12.3	15.2
6/21-22/73	C-D; Klu River-E. Fork Bremner R.	0	0	0	0	--	--
6/21-22/73	E; Goodlata Peak	2	0	4	6	--	--
6/21-22/73	F; Tana River to Canada	34	9	35	78	43.6	11.5
	Total Chugach Mtns. excluding Area A	53	30	199	282	18.8	10.6

Submitted by: Carl W. McIlroy, Game Biologist III

SHEEP

SURVEY-INVENTORY PROGRESS REPORT - 1972

Game Management Unit 12 - Mentasta Mountains and the north slope of the Wrangell Mountains

Seasons and Bag Limits

Unit 12	Aug. 10 - Sept. 20	One ram with 3/4 curl or larger

Harvest and Hunting Pressure

The reported sheep harvests, hunter pressures, success percentages and horn lengths in inches for Unit 12 are given in Table 1.

Table 1. Harvest, hunters and horn size in Unit 12, 1967-1972.

Year	Sheep Harvest	Number of Hunters	Success Percent	Mean horn Length (in.)
1967	119	-	-	31.9 (119)*
1968	107	246	43	34.5 (107)*
1969	122	235	52	33.6 (117)*
1970	124	247	50	34.4 (116)*
1971	182	341	53	35.6 (169)*
1972	199	402	49	34.6 (187)*

*n = number of sets of horns in sample.

The harvest of rams and the number of hunters have increased by 9 and 17 percent, respectively, from 1971. Analysis of the harvest information on a drainage basis does not show any major shifts in pressure. The Nabesna River drainage again supported approximately 40 percent (80 rams) of the harvest and the Rock Lake - Ptarmigan Lake area supported close to 20 percent (34 rams).

Composition and Productivity

No information on productivity or composition was gathered during this report period.

During July of 1971 a distribution and abundance survey was conducted in the Mentasta Mountains, the northern portion of Unit 12. The count was completed in three hours of count time from a Supercub 150. Counting conditions were only fair due to gusty winds during the flight. The biologist who made the flight recommended that the area be recounted under better weather conditions.

The main concentrations of sheep were found on the Noyes Mountain complex. A total of 1014 sheep were observed. Seven hundred and eighty

sheep were classified. A low lamb:ewe ratio of 24:100 was determined and legal rams made up 11 percent of the total sheep populations.

The total of 1014 sheep observed does not represent a total count of sheep in the area but does indicate an abundant population.

Distribution and abundance surveys covering both the north and south slopes of the Wrangell Mountains are planned for the summer of 1973. A trend count area for composition and production information will be established following these surveys.

Management Summary and Recommendations

No changes in the regulations regarding trophy rams are recommended.

Information on composition and productivity should be gathered on an annual basis and a trend count area should be established in the Unit 12 portion of the Wrangell Mountains.

At the present time there is no biological justification for regulations that prohibit the harvesting of ewe sheep. It is recommended that consideration be given to regulations that would allow the harvest of a limited number of ewe sheep. Regulations providing for this harvest should not allow the harvest of all sex and age classes of sheep, but should be directed specifically at the ewe segment, thus protecting the younger rams. Regulations should allow for the continued harvest of trophy rams.

Submitted by: Arthur C. Smith, Game Biologist II

SHEEP

SURVEY-INVENTORY PROGRESS REPORT - 1972

Game Management Unit 13 - Central portion of Chugach Mountains, and eastern portion of Talkeetna Mountains.

Season and Bag Limits

Unit 13	Aug. 10 - Sept. 20	One ram with 3/4 curl horns or larger.

Harvest and Hunting Pressure

Ram harvests from Unit 13, ram harvests statewide, and the percentage of statewide harvests from Unit 13 are tabulated below:

	Ram Harvests				Ram Harvests		
Year	Statewide	Unit 13	Percent	Year	Statewide	Unit 13	Percent
1962*	667	107	16.1	1968	1122	159	14.1
1963	970	132	13.6	1969	955	155	16.2
1964	919	156	17.0	1970	998	134	13.4
1965	885	143	16.2	1971	1079	139	12.9
1966	955	154	16.1	1972	1170	125	10.7
1967**	922	152	16.4				

*1962 was the first year of harvest ticket reporting. Coverage may have been incomplete.
**Reported kill by January 1968.

Harvests from Unit 13 reached a high in 1968 and have since declined. The mean percentage of statewide harvests from Unit 13 during 1962 through 1967 (15.9) is higher than the mean percentage of statewide harvests from Unit 13 during 1968 through 1972 (13.4). Examination of these data shows that this is due both to the decreasing Unit 13 harvests and the increasing statewide harvests.

Hunter success and mean horn length are useful indices of hunting pressure. The percentage of success of resident sheep hunters is more useful than nonresident success when comparisons are made because nonresident hunters are required to have a guide and generally have a substantially higher probability of success. These data are illustrated below for the two mountain ranges reported on in Unit 13.

	1967	1968	1969	1970	1971	1972
Unit 13 portion of eastern Talkeetna Mountains						
Ram Harvest*	69	87	95	91	71	64
Number of Hunters	218	221	267	229	193	248
Percent Hunter Success	32	39	35	40	37	26
Percent Resident Hunters	78	77	77	72	74	84
Mean Horn Length, inches, by combined resident and nonresident hunters	31.1**	31.9	31.5	32.3	31.4	30.2

	1967	1968	1969	1970	1971	1972
Unit 13 portion of Chugach Range						
Ram Harvest*	62	58	60	41	60	54
Number of Hunters	121	112	158	124	156	128
Percent Hunter Success	51	52	38	33	38	42
Percent Resident Hunters	68	74	79	81	74	78
Mean Horn Length, inches	33.1**	35.5	36.2	34.1	35.1	33.8

*The summed ram harvests from the eastern Talkeetna Mountains and the central Chugach Range do not equal the Unit 13 total harvest because of rams not included in this table whose specific kill location is unknown and because of a small number of rams killed in Unit 13 from the Alaska Range East of McKinley.

**Mean horn length from the 1967 harvest is based on rams harvested by resident hunters only.

Ram harvests from the Unit 13 portion of the Eastern Talkeetna Mountains apparently reached a peak during 1968 through 1970. Indices for the 1972 harvest changed when an increase in resident hunters, coupled with a reduced ram harvest, resulted in a markedly lower hunter success. The mean horn length of rams harvested during 1972 was also smaller. In the central Chugach Range, ram harvests and number of hunters have fluctuated without apparent trend. Although hunter success has been reduced since 1969, mean horn length data do not clearly show a correlating trend.

On a drainage basis, ram harvests from the Chickaloon River and Boulder Creek vicinity do show a trend:

	1951*	1967	1968	1969	1970	1971	1972
Ram Harvests	43	32	34	24	13	9	11
Mean Horn Length, inches	--	31.3	31.1	28.4	29.4	30.7	27.3

*Data from U.S. Fish and Wildlife Service report by Scott.

The decline in harvests and decline in mean horn length in the eastern Talkeetna Mountains are primarily due to the reduced contribution from the Chickaloon River-Boulder Creek area. No trends in ram harvests are apparent when the data on drainages of the central Chugach Range are examined.

A comparison of hunter success from the statewide harvest, and the Unit 13 portion of the central Chugach Range and eastern Talkeetna Mountains is given below:

	Statewide	Unit 13 Portion of Chugach Range	Unit 13 Portion of Talkeetna Mtns.
Percent Hunter Success,			
All hunters	37	42	26
Resident hunters	28	36	18
Nonresident hunters	71	81	62
Percent Resident Hunters	73	83	78

Compared to the statewide average, the central Chugach Range is a little higher and the eastern Talkeetna Mountains are a little lower in terms of hunter success. For Unit 13 as a whole, the mean horn length of rams harvested by resident hunters (31.5) was smaller than the mean horn length of rams harvested by nonresident hunters(33.1).

Composition and Productivity

Composition data for sheep in Unit 13 are very limited. The following composition data for sheep in the Unit 13 portion of the southern Talkeetna Mountains are obtained by A.D.F.&G. and U.S.F.W.S. employees:

		Legal Rams		Lambs		
Area	Year	No.	%	No.	%	Sample Size
Unspecified	1953	30	9.7	58	18.7	309
Horn & Syncline-Fortress Mtns.	1959	117	8.3	269	19.1	1410
Boulder Cr. Drainages	1967	15	3.8	12	27.9	392

Survey conditions were noted as poor for classification accuracy during the 1967 survey. These values may illustrate a sharp drop in percentage of legal rams and may have been an early indicator of harvest data changes found in 1972. Sample sizes cannot be compared because of different boundaries in count areas from year to year.

Management Summary and Conclusions

Ram harvests from Unit 13 have remained relatively static (central Chugach Range) or declined (eastern Talkeetna Mountains) in comparison to the generally increasing statewide ram harvests. The area most effected by hunting has been the Chickaloon River-Boulder Creek area where ram harvests have decreased over 60 percent since 1967-68, and mean horn length has been markedly reduced. The Talkeetna Mountains appear to be declining in terms of quality hunting.

Much more information should be obtained before knowledgeable management decisions can be made. Sketchy records during the late 1940's and early 1950's indicate that the sheep population was dramatically increasing in the Talkeetna Mountains during that period.

As time, money, and useful management techniques, derived from the Crescent Mountain research studies, become available, a more intensive effort should be put forth to assess these populations' status.

Recommendations

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

Submitted by: Carl W. McIlroy, Game Biologist III
Sterling H. Eide, Game Biologist IV
Raymond J. Kramer, Game Biologist III

SHEEP

SURVEY-INVENTORY PROGRESS REPORT - 1972

Game Management Unit 14 - Upper Cook Inlet

Seasons and Bag Limits

Aug. 10 - Sept. 20	One ram with 3/4 curl horns or larger.

Special Controls:

Two sets of special controls regarding sheep hunting applied to portions of GMU 14C in 1972. One regulation applying to the West Chugach Management Area was promulgated by the Alaska Board of Fish and Game. In addition, a separate control was initiated by the Department of Nautral Resources unilaterally, causing some confusion among sheep hunters in GMU 14C.

In Game Management Unit 14C within the Chugach State Park further restrictions were promulgated concerning firearm discharge. These restrictions are on file at the Division of Parks, Department of Natural Resources.

Harvest and Hunting Pressure

The total 1972 reported harvest in Unit 14 was 77 rams (Appendix I). The average harvest for the previous ten years (1962 through 1971) has been 75, with harvests varying from a high of 110 in 1963 to a low of 49 in 1966.

Game Management Unit 14 can be broken down into four fairly discrete areas for which the harvest can be determined from harvest report data (Appendix II). These include that portion of GMU 14A in the Chugach Mountains, the GMU 14C portion of the Chugach Mountains, the portion of GMU 14A in the Talkeetna Mountains, and the GMU 14B segment of the Talkeetna Mountains. In all of the areas mentioned above the 1972 sheep harvest compares favorably with harvest from the 1968-71 period for which these data are available.

To obtain an index of hunter success, data for the entire Chugach Mountain Range and the entire Talkeetna Mountain Range have been utilized; this is due to the IBM Harvest Program design.

The Chugach Mountain data include portions of the mountain range in Units 7, 11, 13 and 14. In the entire Chugach Range 470 hunters took 112 sheep for a 24 percent success ratio (Appendix III). Success ratios during the period 1967 through 1971 have varied from 19 to 22 percent with numbers of hunters varying from 503 to 655. In 1972 the resident hunter success ratio was 21 percent, which is the highest recorded since these data have been available. The previous high was 17 percent in the years 1968, 1969, and 1970. In 1972 nonresidents who hunted sheep in the entire Chugach Mountain Range experienced a relatively low success ratio for guided hunts (58 percent) which falls within the range of 57 to 73 percent success ratios recorded in the previous five years.

In the Talkeetna Mountains, of which the Chulitna Mountains and Watana Creek Hills are a part, the range includes portions of Units 13 and 14. Three hundred and four hunters harvested 81 sheep for a 27 percent success ratio (Appendix IV) in the entire Talkeetna Mountain Range. Success ratios during the 1967 through 1971

period have varied between 31 and 37 percent while the number of hunters has varied from 240 to 343. Success ratios of both non-resident and resident hunters declined in the Talkeetna Mountains in 1972. Resident sheep hunter success has steadily fallen from a high of 27 percent in 1969, to 26 percent in 1970, 22 percent in 1971 and 18 percent in 1972. Non-resident sheep hunter success climbed from 67 percent in 1969 to 69 percent in 1970 and 75 percent in 1971, then decreased to 56 percent in 1972. Exact reasons for the fluctuations in hunter success are unknown.

Composition and Productivity

During a goat survey of GMU 14C in June, 1972 all sheep observed were also tallied. A total of 1,050 sheep were seen in the GMU 14C portion of the Chugach Range. Of these 219 sheep were classified as rams, at least 26 of which were known to be legal rams.

Previous surveys of sheep in GMU 14C (Appendix V) indicated the area contained minimal populations of 477 in 1951 (Scott, USFWS) and 868 in 1968 (Nichols, ADF&G).

In the Peters Creek study area (that portion of GMU 14C between Eagle River-Eagle Galcier and Eklutna River-Eklutna Glacier), 365 sheep were observed in 1972. This figure is similar to population counts in the study area in 1968 and 1969 (Appendix V).

Management Summary and Conclusions

The reported ram harvest of 77 in GMU 14 is similar to the previous ten year average of 75.

The 1972 total Chugach Mountain harvest was comparable to 1967 through 1971 harvests, but a slight increase in the overall success ratio may be due to a reduction in hunting pressure. The decrease in hunting pressure may be the result of the closure of portions of Chugach State Park to the discharge of firearms during a portion of the sheep season. Many sheep hunters were afield prior to the time the emergency regulations were released to the news media, resulting in confusion.

Success ratios for the resident hunters in the Chugach Mountains were the highest since the Alaska Department of Fish and Game began compiling these data in 1967, while non-resident hunter success was at a relatively low level for guided hunts.

Aerial surveys in GMU 14C indicate the area has had a high total population of sheep for the past several years.

The total Talkeetna Mountains sheep harvest decreased to a low of 81 in 1972 with the lowest hunter success ratio since the Department of Fish and Game began compiling these data in 1967. The number of hunters who reported hunting sheep in the Talkeetna Mountains in 1972 was 37 percent above the 1971 level while the reported harvest of sheep in 1972 was four less than the 1971 level. In the GMU 14 portions of the Talkeetna Mountains, sheep harvests were higher than they have been since 1969 in both the GMU 14A and GMU 14B portions of the Talkeetna Mountians (Appendix II).

Recommendations

Management of sheep cannot be implemented without harvesting sheep of both sexes. A limited, permit harvest of ewe sheep should increase lamb survival and relieve pressure on sheep range during critical periods.

To avoid confusion by the hunting public, it is recommended that the West Chugach Management Area be eliminated, because it duplicates Chugach State Park Rules and Regulations to a large extent.

Submitted by: Jack C. Didrickson, Game Biologist III
Don Cornelius, Game Biologist II

Appendix 1. Reported Harvest of Dall Sheep Rams in Alaska's Game Management Unit 14 for the Years 1962 through 1972*.

1962[1]	1963	1964	1965	1966	1967[2]	1968	1969	1970	1971	1972	1962-1971 Average
99	110	67	62	49	72	76	94	63	59	77	75

* In a few cases hunters only report mountain range in which they hunted. When they fail to indicate the Game Management Unit, they are arbitrarily placed in certain Game Management Units.

1 1962 was the first year the harvest ticket regulation was in effect. Coverage is known to have been incomplete.

2 Reported kill as of 15 January, 1968.

Submitted by: Jack C. Didrickson, Game Biologist III.
Don Cornelius, Game Biologist II.

Appendix II. Reported Harvest of Dall Sheep Rams in Portions of the Two Mountain Ranges in Alaska's Game Management Unit 14 for the Years 1968 through 1972.

	1968	1969	1970	1971	1972	1968-1971 Average
Chugach Mtns. Portion in GMU 14A (between Knik R. Glacier and Matanuska R.)	16	11	9	8	14	11.0
Chugach Mtns. Portion in GMU 14C (between Knik R., Knik Glacier, Knik Arm and Turnagain Arm).	31	40	44	34	35	37.3
Talkeetna Mtns. Portion in GMU 14A (South-East slope of Talkeetna Mtns.).	13	22	3	11	13	12.3
Talkeetna Mtns. Portion in GMU 14B (Western slope of Talkeetna Mtns.).	3	1	5	3	7	3.0
Total reported sheep harvest for which specific areas could be determined.	63	74	61	56	69	63.5
Total reported sheep harvest for GMU 14	76	94	63	59	77	73.0

Submitted by Jack C. Didrickson, Game Biologist III
Don Cornelius, Game Biologist II

Appendix III. Reported Harvest of Dall Sheep Rams, Numbers of Hunters, and Success of Hunters for Alaska's Chugach Mountain Range, in Game Management Units 7, 11, 13 and 14, 1967 through 1972.

	All Hunters*			Residents			Non-residents		
Year	Kill No.	Hunters	Success	Kill No.	Hunters	Success	Kill No.	Hunters	Success
1967	115	521	22%	67	455	15%	48	66	73%
1968	113	630	21%	99	570	17%	34	60	57%
1969	138	655	21%	102	593	17%	33	51	65%
1970	108	503	21%	67	404	17%	22	37	59%
1971	109	586	19%	70	518	14%	35	53	66%
1972	112	470	24%	79	378	21%	25	43	58%

* All Hunters category is higher than resident plus non-resident categories combined. This is due to the inclusion of reports from hunters who did not note residency.

Submitted by: Jack C. Didrickson Game Biologist III.
Don Cornelius, Game Biologist II.

Appendix IV. Reported Kill of Dall Sheep Rams, Numbers of Hunters, and Success of Hunters for Alaska's Talkeetna Mountain Range, Chulitna Mountains, and Watana Creek Hills, 1967 through 1972.

	All Hunters*			Residents			Non-residents		
Year	Kill No.	Hunters	Success	Kill No.	Hunters	Success	Kill No.	Hunters	Success
1967	84	272	31%	50	224	22%	34	48	71%
1968	110	343	32%	64	273	23%	46	70	66%
1969	118	318	37%	64	235	27%	51	76	67%
1970	99	268	37%	45	175	26%	43	62	69%
1971	85	240	35%	39	178	22%	44	59	75%
1972	81	304	27%	41	227	18%	34	61	56%

* All Hunters category is higher than resident plus non-resident categories combined. This is due to the inclusion of reports from hunters who did not note residency.

Submitted by: Jack C. Didrickson, Game Biologist III
Don Cornelius, Game Biologist II

Appendix V. Number of Sheep Counted in Peters Creek Study Area in Alaska's Game Management Unit 14C, 1949 through 1972.

	1949	1950	1951	1955	1956	1959	1967	1968	1969	1972
Number of Sheep	54	165	210	265 (partial)	314	477	298	393	403	365
Source	Scott (USFWS)	Scott (USFWS)	Scott (USFWS)	Scott (USFWS	Scott (USFWS)	Didrickson (ADF&G)	Nichols (ADF&G)	Nichols (ADF&G)	Nichols (ADF&G)	Nichols & Kramer (ADF&G)

Submitted by: Jack C. Didrickson, Game Biologist III
Don Cornelius, Game Biologist II

SHEEP

SURVEY-INVENTORY PROGRESS REPORT - 1972

Game Management Unit 15 - Kenai Mountains

Seasons and Bag Limits

Aug. 10 - Sept. 20	One ram with 3/4 curl horns or larger.

Harvest and Hunting Pressure

Based on harvest report return the harvest of rams since 1962 has been as follows:

1962 - 35*	1968 - 52
1963 - 93	1969 - 31
1964 - 26	1970 - 42
1965 - 35	1971 - 25
1966 - 48	1972 - 18
1967 - 47	

* 1962 was the first year of the harvest ticket regulation. Coverage is known to have been incomplete.

One hundred and seventeen hunters reported hunting sheep in Unit 15 during the 1972 season of which 18 (15.3 percent) were successful (Appendix I). Hunters afield dropped 25.0 percent from 1971 and hunter success decreased by 0.6 percent.

Composition and Productivity

Survey data for the area between Killey Glacier and Tustumena Glacier show continuous growth of the population from 123 in 1950 to 756 in 1968. Between 1968 and 1972 numbers declined from 756 to 597, a decline of 21 percent (Appendix II). A similar decline was reported for Surprise Mountain in the 1970 Sheep Survey and Inventory Report.

Trend surveys conducted over all of Unit 15 except Round Mountain show a decline from 1,267 in 1968 to 1,017 in 1972. The decline was 19.7 percent.

Management Summary and Conclusions

Hunters afield in Unit 15 declined by 25.0 percent between 1971 and 1972 while hunter success declined by 0.6 percent.

Surveys indicate that sheep numbers increased in Unit 15 from 1950 through 1968, then declined by 19.7 percent between 1968 and 1972. Severe winter conditions during the winter of 1969-70 produced the documented decline on Surprise Mountain and were also most likely the cause of the general decline between 1968 and 1972.

The decline in sheep numbers between 1968 and 1969 may be a sign that sheep numbers have exceeded the optimum carrying capacity of the range, however,

successive surveys will be needed to establish that this is the case.

Recommendations

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

Surveys of selected areas should be conducted annually to monitor trends.

Submitted by: Paul A. LeRoux, Game Biologist III

Appendix I

Sheep harvest and hunting pressure, Unit 15 - Kenai Mountains

Year	Mountain Range	Number Successful	Percent Successful	Number Unsuccessful	Percent Unsuccessful	Total Sample*
1969	Kenai	31	27.0	84	73.0	115
1970	Kenai	42	31.6	91	68.4	133
1971	Kenai	25	16.0	131	84.0	156
1972	Kenai	18	15.4	99	84.6	117

* Does not include hunters who did not give zip code (less than 1%).

Submitted by: Paul A. LeRoux, Game Biologist III

Sheep - Game Management Unit 15 - Western Kenai Peninsula

Appendix II

Sheep trend count data Unit 15, 1950-1972

Date	Area	Total Adults	Lambs	Total Sheep
6/19/68	Surprise Mountain	207	68	275
6/13/72	Surprise Mountain	156	45	201
7/16/68	Skilak Glacier to Killey River	46	9	55
8/8/72	Skilak Glacier to Killey River	66	10	76
1950	Killey River to Tustumena Glacier			123
1951	Killey River to Tustumena Glacier			157
1962	Killey River to Tustumena Glacier	251	38	289
1966	Killey River to Tustumena Glacier	426	100	526
7/68	Killey River to Tustumena Glacier	594	162	756
8/7-8/72	Killey River to Tustumena Glacier	444	127	597*
7/17-18/68	Tustumena Glacier to Bradley Lake	158	22	180
7/26-27/72	Tustumena Glacier to Bradley Lake	126	17	143
7/18/68	Bradley Lake South	1	0	1
7/28/72	Bradley Lake South	0	0	0
1968	All of Unit 15 except Round Mtn.	1006	261	1267
1972	All of Unit 15 except Round Mtn.	792	199	1017*

* Includes 26 unclassified sheep.

Submitted by: Paul A. LeRoux, Game Biologist III

SHEEP

SURVEY-INVENTORY PROGRESS REPORT - 1972

Game Management Unit 16 - West Side of Cook Inlet

Seasons and Bag Limits

Aug. 10 - Sept. 20	One ram with 3/4 curl horn or larger.

Harvest and Hunting Pressure

Based on harvest ticket returns, the harvest of rams from 1962 through 1972 is presented below:

1962*- 4	1968 - 9
1963 - 15	1969 - 14
1964 - 20	1970 - 11
1965 - 16	1971 - 8
1966 - 6	1972 - 11
1967** 4	

* 1962 was the first year of the harvest ticket regulation. Coverage is known to have been incomplete.

** Reported kill by January 15, 1968.

Of the 11 sheep reported to have been taken in Unit 16 in 1972, three were taken in the Yentna River - Mt. Dall area and eight were harvested in the Rainy Pass vicinity. The harvest of 11 rams in 1972 compares favorably with the 1962-1971 average harvest of 10.7 sheep.

Composition and Productivity

No sheep counts were conducted in Unit 16 during 1972.

Management Summary and Conclusions

As has been reported in past years, little sheep hunting pressure is exerted in the limited portions of Unit 16 which contain sheep. It appears that hunting has little measurable effect on Unit 16 sheep populations.

Recommendations

Until further research on sheep has been completed in other Game Management Units, there does not appear to be any reason to request changes in present Unit 16 sheep hunting regulations.

Submitted by: Jack C. Didrickson, Game Biologist III

SHEEP

SURVEY-INVENTORY PROGRESS REPORT - 1972

Game Management Unit 17 - Bristol Bay

Season and Bag Limits

Unit 17	Aug. 10 - Sept. 20	One ram with 3/4 or larger curl

Harvest and Hunting Pressure

Two rams were reported harvested in Unit 17 in 1972. Based on the harvest ticket program, the reported harvest since 1962 for the unit is presented below:

Year	Harvest	Year	Harvest
1962	9	1968	17
1963	1	1969	9
1964	12	1970	6
1965	11	1971	6
1966	9	1972	2
1967	7		

Composition and Productivity

No data are available.

Management Summary and Conclusions

Hunting pressure in Unit 17 for sheep is light.

Recommendations

No changes in hunting season or bag limits are recommended.

Submitted by: Jim Faro, Game Biologist III

SHEEP

SURVEY-INVENTORY PROGRESS REPORT - 1972

Parts of GMU's 12, 13 and 20 - Alaska Range East of McKinley Park (ARE)

Seasons and Bag Limits

Unit 12, 13 and 20*	Aug. 10 - Sept. 20	One ram with 3/4 curl or larger
*Unit 20-that portion known as the Delta Management Area	Aug. 10 - Sept. 20**	One ram with 3/4 curl or larger

**From 12:01 a.m., August 5 to 12:01 a.m., August 26 no motorized vehicles nor pack animals may be used to transport hunters, hunting gear or game within the Delta Management Area.[1]

[1]Due to a different management plan in the Delta Management Area, the survey and inventory report for this area follows the ARE report.

Harvest and Hunting Pressure

The reported sheep harvests, hunter pressures, success percentages and mean horn lengths in inches for the ARE from 1967-1972 are given in Table 1.

Table 1. Harvest, hunters, and horn size in the Alaska Range East, 1967-1972.

Year	Sheep Harvest	Number of Hunters	Percent Success	Mean Horn Length (in.)
1967	120	310	39	--
1968	192	578	33	33.7 (n=142)*
1969	166	486	34	33.5 (n=154)*
1970	211	515	41	33.9 (n=201)*
1971	230	712	32	33.9 (n=221)*
1972	234	755	30	33.1 (n=208)*

*n = number of sets of horns in sample.

The reported harvest of sheep and the number of sheep hunters within the ARE continued to increase in 1972.

The percent success decreased but not significantly.

Analysis of the harvest ticket information on a drainage basis shows that hunting pressure was distributed differently in 1972. As

seen in Table 2 the percent of the ARE harvest that was taken in the eastern portion of the range (Johnson, Robertson, Tok rivers area) increased from 14 percent in 1968 (16 rams) to 26 percent in 1972 (62 rams). The percent of ARE hunters in this area has shown a similar increase. In 1968 the Johnson, Robertson, and Tok rivers area supported 9 percent of the total hunters (54 hunters) and by 1972 this had increased to 24 percent (188 hunters).

Information gained during a department horn growth study revealed that within the ARE the fastest horn growth rates occur in the eastern portion of the range. If the rams harvested in this eastern portion are from the same age classes as those taken elsewhere in the ARE we would expect the average horn size of the rams taken to be larger. Average horn size of the rams taken in the Johnson, Robertson, Tok rivers area in 1972 was 35.6 inches. In the Wood River-Dry Creek area and the Delta Management Area average horn size was 32.1 and 31.8 inches, respectively.

The increased harvest in the eastern portion of the ARE held up the average horn size of the entire range to 33.1 inches. Without the shift in hunting pressure into the eastern end of the range (increased harvest of 20 rams) the average horn size would have been approximately 32.3 inches.

Table 2. Percent of total harvest reported in five areas that comprise the Alaska Range East, 1968-1972.

Year	Healy Cr., Moody Cr., Area	Wood R., Dry Cr., W. Fork Delta R. Area	E. Fork Delta R., Trident Glacier Area	Delta Mgmt. Area	Johnson, Robertson, Tok R. Area	ARE Unknown Drainages	Total Harvest
1968	21	33	2	23	8	13	192
1969	13	30	4	28	15	9	166
1970	11	33	1	31	14	10	211
1971	23	27	1	25	16	7	230
1972	22	23	1	20	26	7	234

Composition and Productivity

Lamb:ewe and yearling:ewe ratios for 1967-1972 in the central Alaska Range East (Dry Creek area) are presented in Table 3.

Table 3. Lamb:ewe and yearling:ewe ratios in the ARE, 1967-1972.

Year	Lamb:ewe	Yearling:ewe
1967	42:100	11:100
1968	63:100	13:100
1969	64:100	31:100
1970	55:100	31:100
1971	50:100	51:100
1972	35:100	19:100

Lamb production and yearling survival dropped considerably in 1972. Reasons for the reduced lamb production are unknown but the late arrival of warm weather and an eight-inch snowstorm on June 6 may have affected production adversely. Reasons for reduced yearling survival are also unknown but a ground survey in October of 1971 indicated that a substantial number of lambs born in June 1971 had already died. The lamb:ewe ratio in June of 1971 was 50:100 and by October this ratio decreased to 27:100.

The percentages of legal rams in the population in the central portion of the ARE for 1962, 1964, and 1967-1972 are shown in Table 4.

Table 4. The percentage of legal rams in the herd - Dry Creek study area 1962, 1964 and 1967-1972.

Year	Percent Legal Rams
1962	12.3 (n=1436)*
1964	12.5 (n=589)*
1967	9.0 (n=1580)*
1968	8.0 (n=590)*
1969	9.0 (n=220)*
1970	5.7 (n=1347)*
1971	3.0 (n=1031)*
1972	3.4 (n=1305)*

*n = number of sheep in sample.

As stated in the 1971 S & I report the variation in techniques used to gather the above figures decreases the reliability of comparison. Information in 1972 was gathered during ground observations at a mineral lick on Dry Creek during June and July and from an aerial survey in early December. Mineral lick observations indicated that 3.4 percent of the sheep population was legal rams. The aerial survey indicated a lower percentage of legal rams (2.0%) but the sample size of only 256 sheep may have biased this figure. It should be noted, however, that the harvest of rams during the hunting season occurred after the mineral lick observations and before the aerial survey in December and this might explain the lower percentage found during the aerial survey.

The percentage of legal rams has decreased steadily since 1964. The increase in the hunting harvest and lowered production of trophy rams has been primarily responsible for this reduction. The decreased production of trophy rams is the result of lowered yearling survival in three of the last six years (Table 3).

Management Summary and Recommendations

In recent years changes have occurred in sheep hunting in the Alaska Range East. Hunters from other areas in the state are exerting more

pressure in the ARE. In 1967 the ARE supported 11 percent of the statewide sheep hunters. By 1972 this percentage increased to 26 percent. The number of sheep hunters has increased from 310 to 744 during the same time period. As discussed earlier, average horn size in certain areas has decreased from approximately 35 inches in 1967 to 31 inches in 1972. The harvest of rams from some drainages has decreased as much as 70 percent. Statewide the length of the average hunt for the resident hunter has increased from 3.7 to 4.5 days. As reported earlier, the percentage of legal rams in the herd has decreased.

These changes all point to the need for more intensive management of the sheep resource if trophy hunting is to continue in this area. Through changes in the regulations we must decrease the harvest and the number of hunters in most areas. Changes will be proposed for the 1974 hunting seasons.

Despite problems with trophy management, the harvest of legal rams for the past five years from the ARE has averaged 204 rams. At best, this segment makes up only 10 percent of the total population. This leaves us then with 90 percent of the population that we are not utilizing. At the present time there is no biological justification for regulations that prohibit the harvesting of ewe sheep. Evidence available from Surprise Mountain on the Kenai Peninsula and other sheep ranges throughout this state and areas of Canada indicates that the supply of trophy rams will decrease if other segments of the population are not maintained below the carrying capacity of the range. If allowed to exceed this capacity, productivity of the female segment will decrease and the supply of young rams will thus be reduced.

Although productivity of the Alaska Range East sheep has generally been high in recent years, it is unlikely that this will continue. Survival to yearling age, perhaps the best indication of conditions, has been low in three of the last six years (Table 3).

Regulations should be considered that would allow the controlled harvest of ewe sheep and also increase hunting and recreational opportunity. Regulations providing for this harvest should not allow the harvest of all sex and age classes of sheep, but should be directed specifically at the ewe segment, thus protecting the younger rams. It is not known at this time if sufficient hunting pressure on the ewe segment could be generated to provide better adjustment of population to range conditions within a short time; however, any mortality on the ewe segment would augment natural mortality and help to restore the adult ram:female ratio. Regulations should also allow for the continued harvest of trophy rams.

Delta Management Area - Part of GMU 20

Seasons and Bag Limits

Unit 20	Aug. 10 - Sept. 20*	One ram with 3/4 curl or larger

*From 12:01 a.m., August 5 to 12:01 a.m., August 26 no motorized vehicles nor pack animals may be used to transport hunters, hunting gear or game within the Delta Management Area.

Harvest and Hunting Pressure

The reported sheep harvests, numbers of hunters, success percentages and mean horn lengths in inches for the Delta Management Area from 1968-1972 are given in Table 5.

Table 5. Delta Management Area sheep harvest 1968-1972.

Year	Sheep Harvest	Number of Hunters	Percent Success	Mean Horn Length (in.)
1968	45	201	22	35.2 (n=41)*
1969	49	195	24	34.8 (n=48)*
1970	67	201	32	33.8 (n=67)*
1971	59	241	24	33.0 (n=47)*
1972	49	239	21	31.8 (n=42)*

*n = number of sets of horns in sample.

A regulation prohibiting the use of vehicular transport methods during the first portion of the sheep season was adopted for the 1971 hunting season. The regulation was an attempt to set up a high quality hunting area for hunters willing to walk into the sheep mountains. The effects of this regulation can be seen in several of the above figures.

The number of hunters has not increased as rapidly in the Delta Management Area as they have in the ARE. Since 1970 there has been an increase of 18 percent in the number of hunters in DMA while hunters in the ARE have increased 46 percent overall.

The sheep harvest in the Delta Management Area has decreased by 26 percent (67 rams to 49 rams) since 1970 while in the Alaska Range East the harvest of sheep has increased by 10 percent (211 rams to 234 rams).

The average horn size in the DMA has continued to decrease and dropped to 31.8 inches in 1972.

The success ratio of DMA hunters also continued to decrease (32 percent in 1970 to 21 percent in 1972).

The percentages of hunters by transportation method used based on all reporting hunters are shown in Table 6.

Table 6. Percent of hunters by transport methods.

	Walk-in	Airplane	Off-Road Vehicle	Motorbike	Horse	Boat
1971	63	12	15	6	1	2
1972	61	12	13	3	3	8

The only noticeable change in transport methods was the number of hunters using a boat. The only location within this area where the use of boat is practical is crossing the Delta River. The hunters using this area harvested 11 rams from Black Rapids Glacier alone.

Fifty-four percent of the harvest within the DMA occurred during the walk-in portion of the hunting season while 46 percent occurred after August 26. This compares closely with 56 and 44 percent, respectively, for 1971.

Composition and Productivity

Information on composition and productivity of sheep in the Delta Management Area has not been gathered consistently in the past. During the summer of 1972 Carl McIlroy, assistant area biologist for the Delta area, observed a mineral lick on Granite Creek and classified 218 incoming sheep. A lamb:ewe ratio of 40:100 and a yearling:ewe ratio of 33:100 was observed. If these figures are representative of the population, production and survival are slightly higher in the DMA than in the central Alaska Range East.

Information on the percentage of legal rams in the herd was not gathered in 1972.

Management Summary and Recommendations

It is not likely that the objectives of the DMA will be met if present regulations are not altered. The trophy quality (average horn length) has steadily decreased despite the somewhat reduced harvest. The number of hunters decreased slightly in 1972, but since most of the walk-in hunters go afield during the first five days of the season, the problems of congestion and competition still exist. In addition, the vehicular hunters are still utilizing this area heavily and account for approximately 45 percent of the kill.

Regulations might be altered in several ways to better accomplish the objectives of this area, but any proposed changes will await an area management plan that is now being formulated.

At the present time there is no biological justification for regulations that prohibit the harvesting of ewe sheep. It is recommended that regulations be adopted that would give the hunters utilizing this area the opportunity to harvest a ewe sheep if they desire. Regulations providing for this harvest should not allow the harvest of all sex and age classes of sheep, but should be directed specifically at the ewe segment, thus protecting the younger rams.

Submitted by: Arthur C. Smith, Game Biologist II

SHEEP

SURVEY-INVENTORY PROGRESS REPORT - 1972

Parts of GMU's 9, 16, 17 and 19 - Alaska Range West of McKinley Park (ARW)

Seasons and Bag Limits

Units 9, 16, 17 and 19	Aug. 10 - Sept. 20	One ram with 3/4 curl or larger

Harvest and Hunting Pressure

The reported sheep harvests, hunter pressures, success percentages and horn lengths in inches for the Alaska Range West from 1967-1972 are given in Table 1.

Table 1. Harvest, hunters and horn size in the Alaska Range West 1967-1972.

Year	Sheep Harvest	Number of Hunters	Percent Success	Mean Horn Length (in.)
1967	65	97	67	--
1968	95	151	63	33.7 (n=52)*
1969	105	155	68	35.0 (n=95)*
1970	84	162	52	34.0 (n=81)*
1971	71	156	46	34.1 (n=66)*
1972	69	124	56	33.8 (n=67)*

*n = number of sets of horns in sample.

The number of sheep harvested and the number of sheep hunters in the Alaska Range West have not shown any marked trends in the last five years. Examination of the harvest information on a drainage basis indicated that there have been no major shifts in pressure within this range. A few areas support the major portion of the kill and many areas are lightly hunted.

Again in 1972 approximately 50 percent of the hunters were residents and they took almost 50 percent of the harvest.

Composition and Productivity

Information on herd composition and productivity was gathered during a general abundance and distribution flight completed during June 1972. The survey covered most of the South Fork of the Kuskokwim River, Big River, Swift River, and the west side of the Stony River. The Windy Fork and Sheep Creek were not surveyed. The survey took approximately 20 hours of count time in a Supercub 150. Weather conditions were not ideal during the survey. On many portions of this area patchy snow

remained making it difficult to sight sheep. Gusty winds made counts impossible for several days and at times made classification extremely difficult. Nonetheless, a good idea of relative abundance and late spring distribution was obtained. In the South Fork on the Kuskokwim, its secondary drainages and the Trimokish Hills a total of 875 sheep were observed. This does not represent a total count of the sheep in the area but considering weather conditions the number of sheep seen does indicate an abundant sheep population in the area. South of the Trimokish Hills along the Big River, sheep became very scarce and few were observed. South of Big River, along the Swift River and around to the west side of the Stony River, no sheep were observed. Most of the terrain in this area is too rugged for sheep and high annual precipitation levels probably preclude the possibility of sheep in this area.

Data from this survey indicated a low lamb:ewe ratio of 25:100. Due to counting conditions, however, this ratio may not be accurate. If the lamb:ewe ratio is in fact low the late spring and lower temperatures in early June might be contributing factors.

From the survey data it was also determined that legal rams make up approximately 9 percent of the total population. Again, however, this percentage may not be accurate.

Management Summary and Conclusions

At present harvest levels it is not likely that any major changes will occur in sheep populations in the Alaska Range West as a result of hunting. In localized areas trophy ram availability may decrease but on a mountain range basis these reductions will not be significant. Should pressure in these localized areas increase regulations limiting the harvest may be necessary.

Information on sheep composition and productivity should be gathered on an annual basis and it is recommended that a trend count area be established.

The greatest present use of this sheep population is as a source of trophy sheep. No changes in the regulations regarding trophy rams are recommended.

At the present time there is no biological justification for regulations that prohibit the harvesting of ewe sheep. Regulations should be considered that would allow the harvest of ewe sheep and increase the hunting and recreational opportunity. The sheep population in this area has probably not undergone the severe composition changes that have occurred on other ranges and management techniques should be initiated to prevent these undesirable changes. Regulations providing for this harvest should not allow the harvest of all sex and age classes of sheep, but should be directed specifically at the ewe segment, thus protecting the younger rams. Regulations should allow for the continued harvest of trophy rams.

Submitted by: Arthur C. Smith, Game Biologist II

SHEEP

SURVEY-INVENTORY PROGRESS REPORT - 1972

Parts of GMU's 20 and 25 - Tanana Hills - White Mountains

Seasons and Bag Limits

Unit 20*	Aug. 10 - Sept. 20	One ram with 3/4 curl or larger
Unit 25	Aug. 1 - Sept. 20	One ram with 3/4 curl or larger
*Unit 20-that portion known as Glacier Mountain Management Area	Aug. 10 - Sept. 20**	One ram with 3/4 curl or larger

**From 12:01 a.m., August 5 to 12:01 a.m., September 21 no motorized vehicle nor pack animals may be used to transport hunters, hunting gear, or game within the Glacier Mountain Management Area.[1]

[1]Due to a different management plan in the Glacier Mountain Management Area, the survey and inventory report for this area follows the Tanana Hills - White Mountains report.

Harvest and Hunting Pressure

The reported sheep harvests, hunter pressures, success percentages and horn lengths in inches for the Tanana Hills - White Mountains, are given in Table 1.

Table 1. Harvest, hunters and horn size in the Tanana Hills - White Mountains, 1967-1972.

Year	Sheep Harvest	Number of Hunters	Percent Success	Mean Horn Length (in.)
1967	8	23	35	--
1968	21	68	31	32.4 (n=19)*
1969	1	16	6	27.5 (n=1)*
1970	11	28	39	34.4 (n=11)*
1971	15	43	35	35.6 (n=15)*
1972	5	23	22	32.6 (n=5)*

*n = number of sets of horns in sample.

Harvest of sheep from the Tanana Hills - White Mountains has varied over the past six years. The reasons for the variation are unclear. The Charley River Drainage has always supported a large proportion of

the harvest and this year 80 percent of the take (4 rams) came from this area.

Composition and Productivity

No information was gathered on composition and productivity in this mountain range this year.

Management Summary and Recommendations

The sheep in the Tanana Hills - White Mountain complex are in small, widely-scattered groups and may be subject to harvest beyond trophy production in some years. Hunter success will decrease in localized areas (i.e. Charley River) if present harvest levels continue. Future regulations may be proposed to limit the harvest in these areas.

Information on composition and productivity should be gathered on an annual basis. A trend count area should be established in this mountain complex.

At the present time there is no biological justification for regulations that prohibit the harvesting of ewe sheep. It is recommended that consideration be given to regulations that would allow the harvesting of limited numbers of ewe sheep from accessible areas.

Glacier Mountain Management Area - Part of GMU 20

Seasons and Bag Limits

Unit 20	Aug. 10 - Sept. 20*	One ram with 3/4 curl or larger

*From 12:01 a.m., August 5 to 12:01 a.m., September 21 no motorized vehicle nor pack animals may be used to transport hunters, hunting gear or game within the Glacier Mountain Management Area.

Harvest and Hunting Pressure

The reported sheep harvests, hunter pressures, success percentages and horn lengths in inches for the Glacier Mountain Management Area are given in Table 2.

Table 2. Harvest, hunters, and horn size in the Glacier Mountain Management Area, 1968-1972.

Year	Sheep Harvest	Number of Hunters	Percent Success	Mean Horn Length (in.)
1968	1	1	100	34.0 (n=1)*
1969	1	3	33	37.5 (n=1)*
1970	1	1	100	39.5 (n=1)*
1971	2	6	33	33.8 (n=2)*
1972	0	1	0	--

*n = number of sets of horns in sample.

Neither the number of hunters nor the harvest of sheep from the Glacier Mountain Management Area has been significant in recent years.

Composition and Productivity

No information on composition and productivity was gathered during the report period.

A composition flight was attempted but due to stormy winds and low clouds, the flight had to be terminated. Before termination, however, several sheep were sighted. One of the sheep was a 3- or 4-year-old ram and resembled a Fannin sheep (Ovis fannini) as described by Sheldon in "Wilderness of the Upper Yukon" (1911). The head, most of the neck, the lower portion of the front legs, the rump and the posterior portion of the hind legs were white. The rest of the sheep was dark grey in color.

Although sheep with dark hair in the tails and along the back have been reported from this area in the past, I believe this is the first time that a sheep characteristic of the Fannin type has been seen.

Management Summary and Conclusion

At present harvest levels it is not likely that the trophy value of this area will decrease. The area will continue to support high quality hunting for a few hunters each year.

It is recommended that information on composition and productivity be gathered next year and on an annual basis thereafter.

No further changes in regulations regarding trophy rams are recommended.

At the present time there is no biological justification for regulations that prohibit the harvesting of ewe sheep. It is recommended that consideration be given to regulations that would allow the harvest of a limited number of ewe sheep. Regulations providing for this harvest should not allow the harvest of all sex and age classes of sheep, but should be directed specifically at the ewe segment, thus protecting the younger rams. Regulations should allow for the continued harvest of trophy rams.

Submitted by: Arthur C. Smith, Game Biologist II

SHEEP

SURVEY-INVENTORY PROGRESS REPORT - 1972

Parts of GMU's 23, 24, 25 and 26 - Brooks Range

Seasons and Bag Limits

Units 23, 24, 25 and 26	Aug. 1 - Sept. 20	One ram with 3/4 curl or larger

Harvest and Hunting Pressure

The reported sheep harvests, hunter pressures, success percentages and horn lengths in inches for the Brooks Range from 1967-1972 are given in Table 1.

Table 1. Harvest, hunters and horn size in the Brooks Range, 1967-1972.

Year	Sheep Harvest	Number of Hunters	Percent Success	Mean Horn Length (in.)
1967	105	156	67	--
1968	144	201	72	33.2 (n=64)*
1969	68	121	56	33.4 (n=62)*
1970	121	171	71	34.3 (n=119)*
1971	168	271	62	34.3 (n=163)*
1972	240	351	68	33.5 (n=221)*

* n = number of sets of horns in sample.

The harvest of sheep in the Brooks Range increased by 43 percent from 1971 to 1972 and has increased by almost 200 percent since 1969. The number of hunters has increased 30 percent from last hunting season and has increased by 190 percent since 1969. The trend toward increasing harvest and hunting pressure is definite.

Analysis of harvest data on a drainage basis shows that the major portion of the increase in harvest occurred in four areas. The harvest in the Killik River increased from 9 to 22 rams (144% increase) while the Chandler Lake area showed an increase from 16 to 24 rams (50% increase). In the Bettles River, Big Lake, Mathews River and Chandalar Lake area the harvest increased from 14 to 38 rams (170% increase) and the Noatak River harvest increased from 11 to 19 rams (73% increase). Other areas throughout the range showed slight increases, but major areas are still lightly hunted and no increases in pressure were significant.

The success ratio has not shown any definite trend, but if hunting pressure continues to increase, it is expected that this ratio will decrease.

Horn size showed a slight drop in 1972. This decrease is probably not significant.

Composition and Productivity

No information was gathered on composition and productivity during this report period.

No distribution and abundance surveys were conducted during this report period. It is likely that more abundance surveys will be conducted during the summer and fall of 1974.

Management Summary and Recommendations

In the past, hunting pressure has not had a significant affect on sheep population in the Brooks Range. In the future it is expected that hunting pressure both from residents and nonresidents will continue to increase in this area. Conflicts between residents and nonresident guided hunters will increase.

With an expected increase in hunting in the Brooks Range, it is recommended that trend count areas be established. Information on composition and productivity within this area should be gathered on an annual basis.

It is also recommended that distribution and abundance information be completed in this mountain range. Without this information it is impossible to analyze harvest information in relation to the total abundance of sheep in this area.

The greatest present use of sheep in this area is as a source of trophies and hunting opportunity. No changes in the regulations regarding trophy rams are recommended.

At the present time there is no biological justification for regulations that prohibit the harvesting of ewe sheep. It is recommended that consideration be given to regulations that would allow the harvest of ewe sheep. Regulations providing for this harvest should not allow the harvest of all sex and age classes of sheep but should be directed specifically at the ewe segment, thus protecting the younger rams. Regulations should allow for a continued harvest of trophy rams.

Submitted by: Arthur C. Smith, Game Biologist II

BISON

SURVEY-INVENTORY PROGRESS REPORT - 1972

Game Management Unit 11 - Wrangell Mountains-Chitina River (Copper River and Chitina River herds)

Seasons and Bag Limits

By Commissioner's announcement.

Harvest and Hunting Pressure

Copper River herd	No open season in 1972
Chitina River herd	No hunting allowed

Composition and Productivity

Copper River Herd: An aerial survey was conducted on July 17, 1972, when the animals were concentrated on the Dadina River. A total of 82 bison were observed, of which 14.5 percent (12) were calves of the year (Appendix I). The first calf of the year was seen on the bluffs overlooking the Copper River on May 7, 1972.

The winter of 1971-72 was severe with deep snow accumulation. Five winter-killed bison were found, four short yearlings and one adult bull.

Chitina River Herd: No survey of this herd was conducted in 1972. Historical data are presented in Appendix II.

Management Summary and Conclusions

Copper River Herd: Combined low calf production and severe winter weather have reduced this herd below the arbitrary maximum population level of 100 animals. Because of this, no hunting has been allowed the past two years. Range studies have not been conducted but biologists feel that suitable range is very limited and poor in quality. Should the herd not respond, given several mild winters, the Department should consider reducing our maximum population level figure and allow hunting for any animals in excess of a new figure.

Chitina River Herd: No hunting should be allowed due to the snall size of the herd.

Submitted by: Nicholas C. Steen, Game Biologist II

APPENDIX I

Population Data on Copper River Bison Herd - Unit 11

Date	Total Bison Observed	Percent Calves	Hunter Kill	Data Source
1950	17	-	Transplanted to Nabesna Road near Slana	
3/61	29	-	No season	Robert A. Rausch - ADF&G
7/62	74	21	No season	Robert A. Rausch - ADF&G
7/62	74	21	No season	Robert A. Rausch - ADF&G
1963	No data			
7/64	97	17.5	14	Loren Croxton - ADF&G
7/65	84	22.6	11	William Griffin - ADF&G
8/66	79	11.3	No season	William Griffin - ADF&G
8/67	51	27.5	No season	William Griffin - ADF&G
7/68	102	18.6	13	Julius Reynolds - ADF&G
7/69	100	18.0	16	Loyal Johnson - ADF&G
7/70	119	17.7	14	Loyal Johnson - ADF&G
7/9/71	87	12.6	No season	Loyal Johnson - ADF&G
7/30/71	76	11.8	No season	Loyal Johnson - ADF&G
7/17/72	82	14.5	No season	Nicholas Steen - ADF&G

Submitted by: Nicholas C. Steen, Game Biologist II

APPENDIX II

Historical Data for Chitina River Bison Herd - Unit 11

Year	Total Bison Observed[1]	Percent Calves	Source
1962	35 young bison (29 females, 6 males) transplanted to May Creek airstrip. Data not available to indicate whether present Chitina River herd from that transplant or egress from Copper River herd.		
1963	No data		
1964	12	42	Loren Croxton - ADF&G
1965	No data		
1966	9	0	William Griffin - ADF&G
1967	12	16.7	Jack Wilson - Bush pilot
1968	16	12.5	Julius Reynolds - ADF&G
1969	16[2]	6.3[3]	Loyal Johnson - ADF&G
1970	16	12.5	Loyal Johnson - ADF&G
1971	16	18.6	Lee Adler - BLM
1972	No data		

[1]Several observations made some years. Data given here represent greatest number of animals seen in any given year.

[2]See 1969 S & I Report.

[3]The calf observed in February 1970 makes a theoretical population of 16 in 1969.

Submitted by: Nicholas C. Steen, Game Biologist II

BISON

SURVEY-INVENTORY PROGRESS REPORT - 1972

Game Management Unit 19 - McGrath (Farewell herd)

Seasons and Bag Limits

Unit 19	10 permits authorized for an open season from September 21 through October 11, 1972

Harvest and Hunting Pressure

Names of ten hunters and five alternates were drawn to participate in the Farewell bison hunt beginning September 21 and ending on October 11, 1972. Hunters were assigned a weekly period in which to hunt in the order their names were drawn. These periods were from September 21 through September 27 (three hunters), September 28 through October 4 (three hunters), and October 5 through October 11 (four hunters). One hunter chose not to appear, so an alternate was allowed to hunt. Timing of the hunt seemed excellent since the weather proved cool enough to prevent meat spoilage. This is an important factor with such large animals. It is recommended that future hunts follow a like scheduling.

Hunters were requested to fill out a short questionnaire upon completing their hunt. This form was posted at the Farewell FAA Flight Service Building. In order to more adequately control future hunts it is suggested that some sort of check-in procedure be initiated. This difficulty was encountered when checking aircraft and not knowing if the occupants were participating hunters.

All hunters were successful on the hunt, taking nine bulls and one cow. One additional bull was shot and left by an unknown hunter. No meat was salvaged from this animal since it was gut shot and not found until the following day.

Hunters reported little difficulty in obtaining an animal. All but one bison were taken with the aid of an airplane. One hunter from McGrath was able to use a river boat in hunting the lower south fork. This hunter took a large cow which apparently was from the original transplant stock.

The most time-consuming task of the bison hunt was the transportation and handling of meat. This activity took most hunters from two to three days. Meat was flown by light aircraft to McGrath where it was transferred to commercial carriers for shipment to Anchorage or Fairbanks.

Herd Size, Composition and Productivity

Aerial counts of the Farewell bison herd are tabulated for late 1971 through fall of 1972 in Appendix I. Reproduction was poor in 1972

with only four calves produced. Two of these calves subsequently disappeared, leaving two calves in the herd. Despite severe winter conditions, herd survival appeared good in 1972.

Very little snow fell in the Farewell Lake area prior to spring of 1972. On December 2, 1971, only a few inches were present between Farewell and Rohn. Bison were largely restricted to feeding on the main south fork of the Kuskokwim, around Egypt Mountain, and grassy meadows adjacent to the south fork. High winds following snow storms cleared most of the snow accumulation out of the main feeding areas. This no doubt had much to do with the apparently good winter survival.

The December 2, 1971 count suggested good calf survival from the 1970 crop. At least 14 yearling-like bison were included in the adult segment of that count.

Management Summary and Recommendations

The Farewell bison herd was estimated at near 75 animals in the spring of 1972. A fall count of 58 (7 already removed by hunting) suggested that the remaining herd amounted to some 60 animals. With a relatively mild winter survival of these animals should be good in 1973.

No hunt is recommended for 1973 or until such time that calf production and survival are again satisfactory.

PREPARED BY:

Peter E. K. Shepherd
Game Biologist

SUBMITTED BY:

Oliver E. Burris
Regional Management Coordinator

APPENDIX I

Bison Observations, South Fork Kuskokwim River, 1971-1972

Date	Observer	Bison Seen				Remarks
		Adult	Calves	Total	% Calves	
12-2-71	Shepherd Reynolds	36	10	46	27	Incomplete count
5-6-72	Reynolds	56	4	60	7	Good count conditions
5-7-72	Reynolds	63	4	67	6	Good count conditions
5-8-72	Reynolds	54	0	54	-	Good count conditions
5-12-72	Shepherd	67	2	69	3	Good count conditions
9-18-72[1]	Shepherd	18	-	-	-	Reconnaissance-incomplete survey
9-21-72	Shepherd	71	2	73	3	Good count conditions
9-30-72	Shepherd	56	2	58	3	Good count conditions
10-6-72[2]	Shepherd	45	0	45	-	Fair count conditions

[1]Found this group 20 miles above Nikolai on the south fork of the Kuskokwim. Returned due to poor weather.

[2]Eleven adult bison (10 males and 1 female) removed by hunting.

BISON

SURVEY-INVENTORY PROGRESS REPORT - 1972

Game Management Unit 20 - Fairbanks, Central Tanana (Big Delta and Healy Lake herds)

Seasons and Bag Limits

Unit 20	To be announced	One bison every five regulatory years (a limited number of mature bison will be taken)

Harvest and Hunting Pressure

A total of 2470 people applied for the Delta bison hunt and 180 people applied for the Healy Lake hunt. Sixty-two percent were from the Fairbanks vicinity, 18 percent were from the Anchorage vicinity, 11 percent were from Delta and Ft. Greely, 8 percent were from the remainder of Alaska, and only 0.3 percent were nonresidents. Fifteen hunters were selected by public drawing for the Delta hunt and 15 bulls were killed. Five hunters drew permits for the unguided Healy Lake hunt, and two bulls were killed. As in the past, hunters drawn for the Delta hunt were escorted by Departmental personnel

Seasonal Distributions, Range Utilization and Condition

As a result of the bison bleaching project, we now suspect that the Healy Lake bison herd is only a separate wintering segment of the Delta herd. A description of the seasonal distribution of the Delta herd this past year follows.

The main bison summer range consisted of a grass-covered dry bar on the west bank of the Delta River, southwest of Donnelly Dome. At least 150 bison spent roughly two and one-half months on this 4.2-square mile summer range. The grass land appeared overgrazed and succession to trees is steadily reducing its area. Another group of about five bison were observed on Delta Creek. Historically, small groups of bison have been observed during past summers on drainages from the Johnson River to the Little Delta River. Bison began moving off their summer range during late July as grasses began heading out.

The late summer-fall range was mainly on the east side of the Delta River near Ft. Greely. The movement from summer to late summer-fall range fluctuated and extended from late July to mid-September. The main food items observed were *Astragulus umbullatus* (pea vine); *Salix bebbiana*, *S. alaxensis* and *S. arbusculoides* (willows); *Oxytropis campestris gracilis* (wooly loco); *Hedysarum alpinum americanum* (joint pod); and various grasses.

Possibly all of the bison herd was in the vicinity of the Clearwater farming area from mid-September until mid-December. All but one farmer had fenced their land or harvested their crops before the bison appeared this year. Barley straw and the single unharvested crop of Brome grass and oats served as the main food items for the most of the early winter.

The Healy Lake group of 24 bison separated from the Clearwater group during mid-December. A major migratory route was along the Haines pipeline to the Gerstle River. Part of the Healy Lake group was chased back to Delta Junction by hunters, but the remainder spent the rest of the winter on the Healy River. The main food there was sedges (*Carex* sp.) growing in wet meadows. An examination of some of these sedges in mid-March showed that a large proportion (perhaps one-fourth) was still green (like well-cured hay). The snow cover was granular and roughly nine inches in depth.

The Clearwater group of the Delta herd dispersed off the farming area during February. Although most of these bison moved to the wet meadows north of Donnelly Dome, other bands moved to potholes in Unit 20A between Delta Junction and the Richardson Roadhouse and to potholes in the Granite Mountain burn. The group near Donnelly Dome crossed the Delta River during May 1972 to their summer range where most calving occurred.

The Healy Lake group has historically moved down to the Tanana River by June. During mid-June of 1972, it was probably the Healy Lake group that was seen on the Haines pipeline midway between the Gerstle River and Delta Junction. At least four bison in the Healy Lake group were among those bleached on the Delta River during August 1972.

Herd Size

Sixty-nine different bison were bleached, with bulls, cows, and calves being differentially marked. I classified 493 bison into marked-unmarked, sex-age classes under good conditions from August 29 through September 17, 1972. The weighted mean of the totals calculated was 262 bison (range, 196-274 among the groups). However, four bison were not well marked and may have been frequently missed. Because not observing marked animals inflates the estimate of total number, I speculate that the 262 value is an upper limit to the probable total number of bison.

The maximum number of bison observed during aerial surveys was 214 bison seen on October 21, 1972. I speculate that I missed another group of 10 bison that was seen in a distant area the previous day. In addition, 15 bulls were harvested during the Delta bison hunt. The total number based on observations, therefore, is 229 and is probably a minimum value.

By compromise with the previous maximum and minimum estimates, I assume that the total number of bison during August 1972 was 250 ± 12.

Composition and Productivity

Seventy-one bison were classified in the corral. The classification procedure consisted of: (1) recording bison sex and age (calves, yearlings, subadults, and adults) while processing them at the corral, (2) photographing each bison, and (3) describing the incisor pattern present on bison believed to be yearlings and subadults. Later, the photographs of known-age bison (by tooth replacement) were compared to photographs of all bison to get improved age estimates. Classification results are given below.

Age-Sex Class	Percent of Total	
Calves	17	
Yearling Bulls	4	13
Yearling Cows	9	
2 Yr. + Bulls	29	
2 Yr. + Cows	41	

Results of aerial and ground surveys, for comparison to the corral classification are given below.

Date	Survey Method	Survey Conditions	Sample Size	Bulls in Herd	Cows in Herd	Calves in Herd
29-30 Aug 1972	Ground	Excellent	85	40%	40%	20%
13-17 Sept 1972	Aerial	Good	397[1]	-	-	23%

[1] Replicate counts were made, therefore sample size is greater than estimated herd size.

In addition, 178 bison were classified from the ground during the spring migration (23-24 May 1972) to obtain calf survival values. Fifteen percent of the herd was found to be yearlings.

The ratio of bulls per 100 cows has fluctuated over the years. Calculated values from the available data are given below.

Year	Bulls per 100 Cows	Sample Size	Method
1939	57	119	Ground
1948	85	252	Aerial
1960	42	94	Helicopter
1970	50	39	Ground
1971	36	61	Ground
1972	68	59	Ground

Laboratory determinations of the cementum layers of the harvested bison's

incisors were not available as this report was written. Based on tooth replacement in 15 of the 17 bison harvested, however, 60 percent appeared to be 4 years of age or younger. By comparison, 59 percent of 39 bulls harvested in 1961 were 4 years old or younger. Hunters generally select for the largest bull in the group they are observing.

Management Summary and Recommendations

The Healy Lake bison herd may not be a separate, manageable group of bison. A review of annual counts suggests a trend of decreasing numbers of bison wintering north of the Tanana River since the mid-1960's. This may be due to the attractiveness of crops in the farming area in recent years as compared to sedges in wet meadows. I recommend against public hunts directed toward the Healy Lake wintering group for the following reasons: (1) the Healy Lake segment may cause the Department fewer problems with farmers than the Clearwater segment because they may spend less time in agricultural areas; (2) we interrupted the movement of one bison group to Healy Lake this year by public hunting. Until additional information is obtained to the contrary, we should encourage the early and wide dispersal of the herd onto the winter ranges; (3) it is unlikely that winter ranges north of the Tanana River will be encroached upon by human developments in the foreseeable future; and (4) these same animals can be hunted earlier when they are combined with the Clearwater group near Delta Junction.

The Delta herd has been managed in the past on the basis of calf production and counts of adults on the summer range. Calf production counts have two serious drawbacks: (1) most natural mortality occurs on the calf segment during the first winter; therefore, calf production has a poor relationship to the annual increment; and (2) calf composition counts may not be comparable unless made during the same part of the month each year because some calves are born throughout the summer. Calf survival counts made during the spring are a better basis for setting harvest levels the following fall, because yearling recruitment is more equivalent to recruitment of adults into the herd. Calf survival counts made from the ground have been demonstrated to be both feasible and practical for the Delta herd.

The use of annual counts of adults to obtain trend counts of total bison numbers is feasible under certain conditions. These conditions are: (1) only adults should be counted for trend comparisons because calf numbers vary from month-to-month and year-to-year; (2) the Clearwater group should be counted during the spring while they are migrating up the Delta River and before leafing out of foliage. The Healy Lake group should be counted in the winter, and the two counts summed; and (3) repeated counts should be made when counting conditions are optimum to obtain the highest values. A minimum of 19 aerial counts of bison were made during 1972, and generally only about half of the total bison were seen during each survey. The probability of seeing a large portion of the total bison herd was reduced during the summer, fall and early winter because groups of bison were often in cover.

The 1972 bison harvest was based on an assumed herd size of 200

adults and subadults, the results of the calf survival classification during the spring (15 percent), and an assumed adult natural mortality of 8 percent. Natural mortality of adults this past year is believed to have been substantially less than 8 percent, but the 8 percent value may be reasonable when averaged over several years. Data accumulated this past year indicate that there is no reason to modify this formula for determining harvest levels.

Although observations of the mixing of bleached bison indicated that there was a rapid interchange of individual bison among the groups during August (a peak period of rutting), a comparison of classifications made during 1972 demonstrates that the two groups classified had dissimilar bull:cow ratios. As a check, bull:cow ratios were also derived by using marked:unmarked ratios to obtain total bull numbers. The calculated result was 60 bulls per 100 cows. This bull:cow ratio was higher than anticipated. All sex classifications made during 1972 occurred near the bison corral during a peak period of rutting. The unexpectedly high bull:cow ratio can be justified on the basis of an exceptionally well-mixed herd (old bulls, which are frequently solitary, were included among cow-young bull groups) or questioned on the basis of some sort of segregation of rutting animals or chance selections of unrepresentative groups.

Taking the data at face value, the past harvesting has not excessively lowered the bull:cow ratio. The percentage of harvested bulls during 1972 that were 4 years of age and younger (60 percent) was not substantially different from 1961 (59 percent). Bison are polygamous, and bulls are capable of breeding at 2 to 3 years of age. The data do not indicate any serious imbalance in the sex or age composition at this time.

I am accustomed to seeing grass-fat cattle from summer pasturages when the stocking rate is correct. The bison handled in the corral did not have that grass-fat sleekness. These observations, plus the observation of overgrazed summer range, leads to the conclusion that the summer pasturage may be limiting.

Winter forage under natural conditions (mainly sedge in wet meadows) does not appear to be limiting during normal winters. When combined with the past usage of farm crops, there is no reason to believe that winter forage has been limiting during the past several years.

Possibilities of rehabilitating bison summer range or preserving it from succession to trees should be investigated or reviewed. Various techniques may be applicable, however, periodic prescribed burning may be the most effective. Because most of the bison summer range is on military property controlled by Ft. Greely, a cooperative agreement which the U. S. Army at Ft. Greely covering bison range rehabilitation would be desirable. Discussions with some Ft. Greely personnel that would be involved indicate that such cooperative endeavors may be favored at this time.

PREPARED BY: Carl McIlroy, Game Biologist SUBMITTED BY: Oliver E. Burris, Regional Management Coordinator

ELK

SURVEY-INVENTORY PROGRESS REPORT - 1972

Game Management Unit 8 - Kodiak and Adjacent Islands

Seasons and Bag Limits

Unit 8, Raspberry Island and that portion of Afognak Island west of a straight line between the head of Malina Bay and the head of Muskomee Bay	No open season	
Remainder of Unit 8	Aug. 1 - Dec. 31	One elk, by permit only

Harvest and Hunting Pressure

Harvest statistics were obtained from hunter harvest reports. With 68 percent of the 642 permit holders reporting, a harvest of 18 animals was recorded in 1972. Nine males and nine females were killed. This is the lowest harvest recorded since the general season opened in 1955. Sixteen percent of the 112 permit holders who went in the field were successful. Hunting effort declined from the 190 hunters afield in 1971. The harvest was well distributed over Afognak Island. An average of 5.4 days was spent afield by successful hunters, an appreciable increase over the 3.2 days expended in 1971.

Composition and Productivity

The 355 animals recorded in the 1972 sex and age composition counts is a decrease somewhat from the 1971 count of 432 animals. The fact that neither the Kitoi nor Paramanoff Mountain herds were located in this year's survey may partially explain this difference, however. The calf/cow ratio increased slightly from 30:100 in 1971 to 37:100 in 1972. Total observed calf production was little changed, with 84 in 1971 and 88 in 1972. The Raspberry Island herd was largely responsible for the improved calf/cow ratio, with a crop of 18 calves (Appendix I). The Raspberry Island herd was the only one showing an appreciable increase from the 1971 count. The Raspberry Straits herd declined most seriously from 81 in 1971 to 45 in 1972. Heavy winter mortality in this herd was indicated by the finding of two dead calves and one mature bull in May. Overall winter mortality was apparently less severe than during the 1971 winter when a 50 percent population reduction was indicated. Climatic data for the past three winters indicated that the 1972 winter was somewhat less severe than the 1971 winter, although not as mild as the 1970 winter. One mature, pregnant cow was killed by a brown bear in Raspberry Straits. The cow's poor physical condition was a further indication of

the possible decimating effects of the winter. A single calf from the Tonki herd was recorded as a winter kill. The 28 bulls counted in 1972 is down considerably from the 71 counted the previous year. Although heavy winter loss could be responsible for this apparent decline, it is suspected that isolated bulls or small groups of bulls may have been missed in the survey.

Management Summary and Recommendations

The 1972 trend counts indicate a futher downward trend in the Afognak elk population. Hunter harvest was the lowest in recent years despite a liberal season. A sizeable increase in calf production in the Raspberry Island herd brought this herd up to a level equivalent to that recorded prior to two successive severe winters. Considering that hunter harvest continues to have minimum impact on population levels of elk in Unit 8, no changes in seasons or bag limits are recommended.

Submitted by: Roger B. Smith, Game Biologist III

APPENDIX I

Unit 8 Elk Composition Counts, 1972

Herd	Count Date	Bulls		Cows		Calves		Calves/ 100 Cows	Total No. Animals
		No.	%	No.	%	No.	%		
Malina	-	-	-	-	-	-	-	-	-
Raspberry Island	9/13	7	15.6	20	44.4	18	40.0	90/100	45
Raspberry Straits	9/13	2	4.4	32	71.1	11	24.4	34/100	45
Duck Mountain	8/19	0	-	30	66.6	15	33.3	50/100	45
Waterfall Lake	8/19	4	6.6	43	70.5	14	22.9	32/100	61
Paramanof Peninsula	9/13	7	14.0	33	66.0	10	20.0	30/100	50
Tonki Cape	8/19	8	7.3	81	74.3	20	18.3	25/100	109
Combined Herds		28	7.9	239	67.3	88	24.8	37/100	355

Submitted by: Roger B. Smith, Game Biologist III

APPENDIX II

Comparison of Temperature-Snowfall Phenomena for 1969-70, 1970-71 and 1971-72 Winters at Kitoi Bay, Afognak Island

Winter Period (October thru May)	Ave. Min. Temp. (°F)	Ave. Temp. (°F)	Total Snowfall (inches)	Three months with greatest snow depth on ground
1969-70	29.9	35.1	70.0	Dec. (4 in.) Jan. (15 in.) Feb. (21 in.)
1970-71	23.6	29.8	154.1	Feb. (12 in.) Mar. (29 in.) Apr. (33 in.)
1971-72	23.0	29.9	105.3	Feb. (22 in.) Mar. (22 in.) Apr. (21 in.)

Submitted by: Roger B. Smith, Game Biologist III

MUSKOXEN

SURVEY-INVENTORY PROGRESS REPORT - 1972

Game Management Unit 18 - Yukon-Kuskokwim Delta

Nunivak Herd

Composition, Productivity and Mortality

The spring census of muskoxen on Nunivak Island was accomplished April 13-16, 1972, by the U.S. Bureau of Sport Fisheries and Wildlife. A total of 483 animals were counted. Of these, 466 were on the periphery of the island, and 17 on interior portions. Some areas in the interior were not counted and a few additional animals could be present.

Spring Census Figures

The following table, furnished by the U.S. Bureau of Sport Fisheries and Wildlife, gives comparative data for spring counts 1966 through 1972.

Date of	4+ Years Old		3 Years Old		2 Years Old		Short	Not	
Survey	Male	Female	Male	Female	Male	Female	Yrlg.*	Classified	Total
March 1966	143	161	54	11	-	-	85	32	486
April 1968	209	150	44	52	63	45	110	-	673
Feb 1970	221	140	32	44	23	31	78	24	593
March 1971	252	83	13	26	5	5	32	75	491
April 1972	214	121	6	12	19	20	70	21	483

*Born in the spring of the previous year.

The above counts give population information prior to calving which normally occurs in May.

A severe imbalance of the sex ratio continues to exist in the Nunivak muskox herd. The percentages of males in the 2-year-old and older age group for the years 1966 through 1972 are given below.

Year	Age - 2 Years Old and Older		Percentage
	Males	Females	Males
1966	197	172	53
1968	316	297	52
1970	276	215	56
1971	270	114	70
1972	239	153	61

Mortality

During the spring muskox census 10 dead animals were found, with a high probability that others were missed*. According to the Quarterly Progress Report, Alaska Wildlife Research Unit, July to September 1972 by Donald Calkins, a graduate student at the University of Alaska, at least 30 muskox from the Nunivak population are known to have died in the winter of 1971-72 and summer of 1972. A complete description of this mortality will be postponed. Analysis of lipid content from femur marrow is currently underway. Preliminary results clearly suggest death by starvation in some cases.

Range Conditions

According to the report "Nunivak Island Muskox Studies" by J. S. Tener, "The summer range for muskoxen on Nunivak Island appears excellent. Winter range becomes extremely limited during times of deep snow and heavy ice. The population of muskox, in my view, has exceeded the winter carrying capacity for even an average winter and only disaster can result from an unusually hard winter". This study was made in 1968 and 1969. In 1968 the muskox population on Nunivak Island was about 750 animals.

The following are excerpts from the Journal of Wildlife Management Vol. 34, No. 1 January 1970, "The muskox of Nunivak Island, Alaska" by Spencer and Lensink:

> Muskox range over much of the island in summer but during the critical winter period, at least 45 percent of the muskox population forages in the dune habitat where beach rye grass (Elymus arenarus) is the principal plant species. Most other animals are found near cliffs on the western end of the island where sedges (Carex spp.) provide the principal forage... more than half of the 4,500 acres of dunes is unavailable for foraging because drifting sand or snow prevents or covers plant growth, or forage is inaccessible on steep, frozen slopes. The shallow snow area adjacent to cliffs that provide forage is probably less than 4,000 acres. Icing as a result of freezing rains or wet snow followed by extreme cold, conditions common to Nunivak, may reduce the availability of forage in even this limited area.

*Taken from a letter dated May 5, 1972 from Bob Hinman to Frank Jones information received from Lensink by telephone.

Detailed studies of the effect of muskox on winter range are not available, but the concentration of animals on such fragile vegetation as the dry tundra or cliff habitats or unstable dunes may be severely damaging.

Management Summary and Recommendations

From the available information it appears that the muskox population has exceeded the carrying capacity of the winter range. Range deterioration has been noted. Removal of animals by transplant has been heavily weighted to females adding to the severe imbalance of the sex ratio. Annual mortality occurs, obviously some of the mortality is caused by starvation.

The following is recommended:

1. Remove 200 adult males by public shooting or a slaughter controlled by federal or state authorities.

2. Stabilize the breeding herd at 300 to 350 muskox of breeding age.

3. Remove all calves and subadults in excess of those necessary to replace the natural mortality in the breeding herd.

4. Establish the winter range condition trend.

Nelson Island Herd

Herd Size, Composition, Productivity and Mortality

A total of 23 muskoxen were transplanted from Nunivak Island in 1967 and 1968. A sex and age breakdown of the released animals is given below.

	Age			
	Animals Less Than 1 Year Old		Yearling	
Year	Male	Female	Male	Total
1967	6	2		8
1968	5	9	1	15

In December 1972 at least 44 muskox were present on Nelson Island. At least six were less than 1 year old*.

*Census made by Griffin and Shepherd.

Range Conditions

No range studies have been made on Nelson Island. Since all animals originally released, except one, were calves and the sex ratio was 12 males and 11 females, and because the population has nearly doubled in five years, suitable range conditions evidently exist.

Management Summary and Recommendations

Survival and reproduction of the muskox transplanted to Nelson Island in 1967 and 1968 are good. Since no range studies have been made and since the possibility exists that this herd could increase beyond the carrying capacity of the winter range which could result in a die-off of animals and damage the range, the following is recommended:

1. Until the carrying capacity of the range is determined, limit the muskox population to no more than 75 to 100 animals.

2. Maintain a sex ratio of no more than five females per male.

3. Determine the carrying capacity of the range or the trend in range conditions.

4. Initiate necessary procedures, agreements, etc. to allow hunting or consumptive utilization in order to adjust the sex and age ratios and to stabilize the herd.

PREPARED BY:

William H. Griffin
Game Biologist

SUBMITTED BY:

Oliver E. Burris
Regional Management Coordinator

MUSKOXEN

SURVEY-INVENTORY PROGRESS REPORT - 1972

Game Management Unit 22 - Seward Peninsula

Seasons and Bag Limits:

Unit 22 No open season

One adult muskox was found dead and washed ashore near Tin City. Apparently, it either had fallen from the cliffs near Tin City or had wandered onto the ice and fell through and drowned.

Herd Size, Composition, Productivity and Mortality

A herd of three muskoxen (a 5-year-old cow and her 2-1/2-year-old calf plus a 3-1/2-year-old sex unknown) remained between Cape Douglas and Teller throughout the year. A group of 21 wintered on a hill near the mouth of the Nuluk River. This herd was composed of three males 4+-years-old; six males 3+-years-old; one female 4+-years-old; six females 3+-years-old; and five undetermined sex and age. This group split up in late April (possibly from harrassment by grizzly bears) and did not regroup throughout the year.

One calf was born in early June but it has not been resighted. One muskox was reported between Shishmaref and Deering and another one was near mile 65 of the Council Road.

In early 1973 two groups of muskoxen were reported near the Nuluk River. There were 11 in one bunch and seven or eight in the other. Three muskoxen were seen earlier in the general vicinity and it is not certain that they had joined one of the above two groups. Therefore, by the end of 1972 there were definite sightings of 23 to 27 muskoxen.

Management Summary and Recommendations

The muskoxen appear to be returning and wintering in the same general area for two consecutive winters. They should be monitored regularly and if the two larger groups do not regroup by themselves, efforts should be made to drive them together again. If the muskoxen continue to use the same area in the winter, future transplanted animals should be released at these sites.

PREPARED BY:

Robert E. Pegau
Game Biologist

SUBMITTED BY:

Oliver E. Burris
Regional Management Coordinator

MUSKOXEN

SURVEY-INVENTORY PROGRESS REPORT - 1972

Game Management Unit 23 - Kotzebue Sound

Seasons and Bag Limits

Unit 23 No open season

Herd Size, Composition, Productivity and Mortality

A male 4+-year-old, ear tag #10117, muskox was shot and killed near Kiana in September.

A group of 11 muskoxen was regularly sighted east of Point Hope throughout the year. One person reported three calves in this group but several other observers have seen these muskoxen and report no calves with the group. This is apparently the only significant group of muskoxen remaining from the original transplant. Other observations suggest that additional muskoxen may still exist in the general area between Cape Thompson and Cape Dyer.

Management Summary and Recommendations

The group of 11 muskoxen appears to have stabilized into a herd. They should be monitored to determine if they become productive and if they will remain within the area that they have used the last year. Future transplants to this area should not be undertaken until the stability and productivity of this herd can be determined.

PREPARED BY:

Robert E. Pegau
Game Biologist

SUBMITTED BY:

Oliver E. Burris
Regional Management Coordinator

MUSKOXEN

SURVEY-INVENTORY PROGRESS REPORT - 1972

Game Management Unit 26 - North Slope

Seasons and Bag Limits

Unit 26 No open season

Herd Size, Distribution, Composition, Productivity and Mortality

Biologists making studies of the Porcupine caribou herd flew hundreds of hours over the eastern North Slope in 1972. Between the Kavik River on the west and the Aichilik River on the east, a distance of approximately 96 miles, a total of 34 muskox observations were made. The first observation was made in March, exact date not recorded, and the last on September 20. These observations along with the number and the sex and age in a few instances are recorded on a map in the Fairbanks BGDIF file. Many of these are replicate observations.

From analyzing these observations it is apparent that at least 28 adults and seven calves were observed.

Repeated observations of the same group of animals at different times indicate that one calf was born in May, one calf born in June and four others born prior to July 10. One calf was observed in March.

Careful examination of the observations indicates that the muskoxen in the area where observations were made have segregated into three different groups. The groups consist of: 1) 8 adults and 2 calves; 2) 11 adults and 3 calves; 3) 9 adults and 2 calves.

Group 1. (11 total observations - 8 adults and 2 calves)

From April 11 to September 18 this group ranged a total distance of 42 1/2 miles. These animals remained within 11 miles of the Canning River during this period. On June 23 they were observed six miles south of the coast near the mouth of the Canning River and on August 17 they were 52 miles inland from the mouth of the Canning. Five observations placed this group on or near the Kavik River, which was within 11 miles of the Canning. Another observation placed this group approximately nine miles east of the Canning River.

Group 2. (14 total observations - 11 adults and 3 calves)

This group ranged a total distance of 39 miles between March and September 20. They remained within five miles of the Sadlerochit River most of this period. An observation in March and another in June placed these animals between the Hulahula River and the Sadlerochit River at a point about 11 miles south of the Sadlerochit and within five miles of the Hulahula River.

Group 3. (9 total observations - 9 adults and 2 calves)

This group ranged in an area 19 miles from north to south and 20 miles in an east to west direction. The farthest distance between observations was 24 miles. The most northerly observation was at Angun Point on the coast. This was also the most easterly point. This group of muskox remained between the Aichilik River and the Okerokovik River during the period April 11 through August 25.

No mortality was observed in Unit 26 in 1972.

Management Summary and Recommendations

A minimum of 35 different muskoxen were observed on the North Slope between the Kavik River on the west and the Aichilik River on the east. Seven of these were calves born between March and July 10. The animals have segregated into three different groups which remain together most of the time between March and September. These groups ranged in the following general areas (see Appendix I):

Group 1 Canning River drainage

Group 2 Sadlerochit River drainage

Group 3 Between the Aichilik River and the Okerokovik River

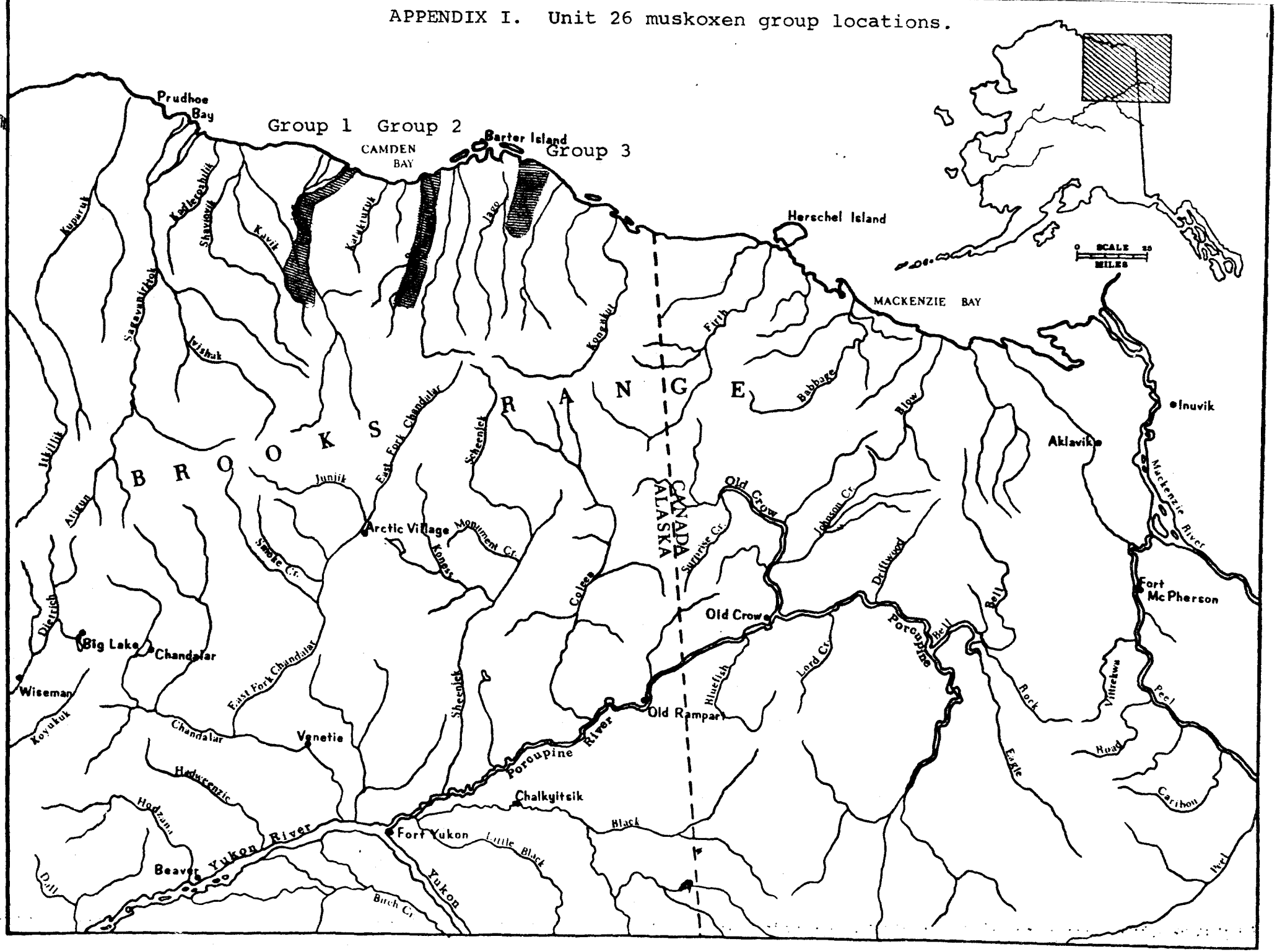
These animals should be censused between October and February to determine if they remain in the same general areas, as they do between March and September. Surveys during the remainder of the year should be continued.

PREPARED BY:

William H. Griffin Game B
Game Biologist

Oliver E. Burris
Regional Management Coordinator

APPENDIX I. Unit 26 muskoxen group locations.



MEMORANDUM OF TRANSMITTAL

January 1974

TO: James W. Brooks, Commissioner
Alaska Department of Fish and Game

FROM: Franklin F. Jones, Director
Division of Game
Alaska Department of Fish and Game
Juneau

SUBJECT: Annual Report of Survey-Inventory Activities

Surveys and inventories include all routine data collections directed toward assessment of the status of game populations and the determination of allowable annual game harvests. These reports, which are written primarily by Area Management Biologists, provide information on the current status of Alaska's game populations and include, when applicable, recommended hunting regulation changes. Reported harvest data for most species are obtained from computerized analyses of harvest tickets (Job 22.0), and continuing aerial surveys provide the basis for assessment of population trends for most populations.

Information in these reports is presented by game species and management units in most instances. A brief summary of statewide harvests and population trends is provided. A map showing Alaska Game Management Unit boundaries has been included for those unfamiliar with these units.

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