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JUNEAU, ALASKA

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ANNUAL REPORT OF SURVEY-INVENTORY ACTIVITIES PART IV. SHEEP, MOUNTAIN GOAT, BISON, MUSKOXEN, MARINE MAMMALS

Edited and compiled by
Robert A. Hinman, Deputy Director

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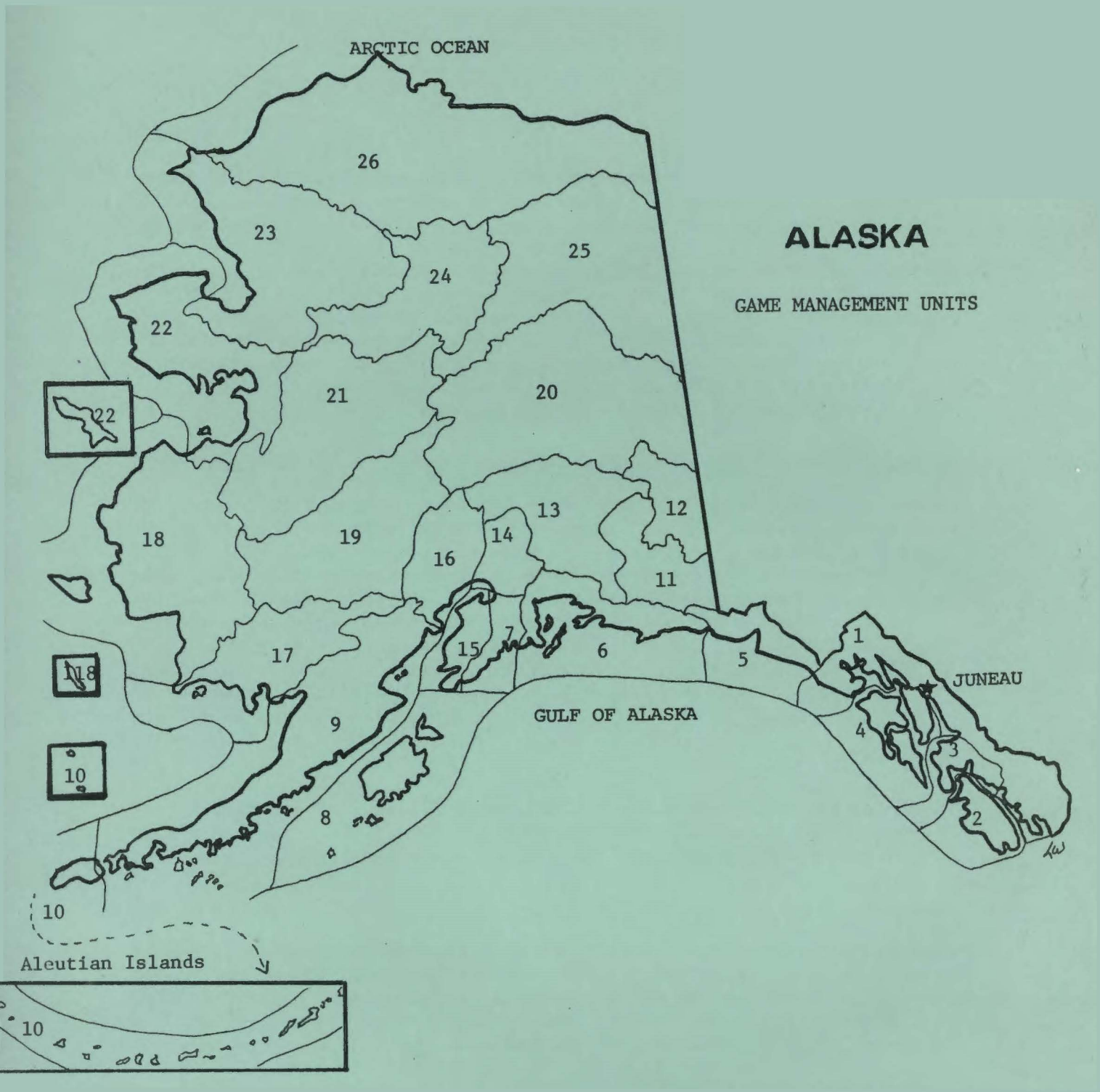
(Printed June 1979)



(From new map valid July 1, 1978)

STATEWIDE HARVESTS AND POPULATION STATUS

Sheep

In the 1977-78 hunting season, 1,090 sheep were harvested in Alaska. This was very similar to the 1976-77 harvest of 1,112 and the average for the last five years.

In most units sheep populations are in satisfactory condition. However, some concern has been raised regarding the legal ram segment in areas where the ram harvest has been excessive, like the Wiki Peak area of the Wrangell and Mentasta Mountains, the Tok Management Area and parts of Game Management Unit 14C near Anchorage. In particular the Delta Management Area was recommended for regulation by a strict permit system to allow recovery of the sheep population from past heavy harvests.

Mountain Goats

The harvest of Mountain Goats was again slightly lower than the previous year's with 382 animals taken. The largest harvest was once again from Unit 6 (109), Unit 15 (41) and Unit 7 (34), while 37 animals were also taken in Unit 1A. Goat populations seem to be on the increase in Southeast at this time, with a greater incidence of twinning in some areas perhaps because of recent mild winters. However more conservative regulations may be necessary, particularly in Unit 15, to protect populations from over harvest. This may be increasingly crucial if newly created National Monuments force additional hunting pressure onto areas not set aside.

Bison

The 1977-78 harvest was 122 bison, 66 percent higher than the previous year's harvest. All four herds seem healthy, with their populations increasing, and all herds are larger than management expectations.

Muskoxen

Muskoxen can only be taken legally on Nunivak Island, where the present population is the result of a successful transplant in 1930. During the 1977-78 hunting season, 56 animals were harvesteda satisfactory number--but the Department, in cooperation with the U.S. Fish and Wildlife Service, will now consider lowering the number of bulls to be taken.

Populations in Units 22, 23 and 26 are still establishing themselves; no hunting is allowed.

Marine Mammals

Since the Marine Mammal Protection Act of 1972 returned all management of marine mammals to the Federal government, studies on these species are minimal. The bulk of biological data gathered by the Department of Fish and Game are contained in separate reports.

TABLE OF CONTENTS

SHEEP

SURVEY-INVENTORY PROGRESS REPORT - 1977-78

Game Management Unit 7 - Seward

Seasons and Bag Limits

Unit 7, that portion bounded on the northwest by the Sterling Highway, on the northeast and east by the Anchorage-Seward Highway, on the south and southwest by Kenai Lake.	Aug. 10-Sept. 20	One ram with full curl (4/4 curl) horn or larger may be taken by permit only. 25 permits issued.
Remainder of Unit 7	Aug. 10-Sept. 20	One ram with 3/4 curl horn or larger.

Harvest and Hunting Pressure

Appendix I presents Unit 7 sheep harvest data from 1969 through 1977. No reminder letters were sent in 1977. Therefore, the harvest and number of hunters were extrapolated using the methodology described in the 1977 Unit 15 Sheep S&I Report. Excluding Crescent Mountain, seven hunters reported taking a sheep in Unit 7. This extrapolated to a harvest of eight sheep. Three additional hunters were successful in the Crescent Mountain permit hunt bringing the total Unit 7 harvest to 11. The extrapolated hunter participation for Unit 7 excluding Crescent Mountain was 89 hunters with a success ratio of 8.9 percent. Twenty-five individuals received permits for the Crescent Mountain permit hunt, of whom 21 hunted with a 14.3 percent success rate. The Kenai Mountains including Units 7 and 15 had the lowest hunter success ratio of any mountain range in Alaska.

Of the hunters for whom residency data is available, 70 (97%) were residents and two (3%) were nonresidents.

The mean reported horn length of four sheep taken from Unit 7 excluding Crescent Mountain was 32.8 inches. This is the largest mean horn length from Unit 7 since 1969, but may be biased by the small sample size.

Composition and Productivity

A total of 80 sheep were observed in the Crescent Lake Mountains count area in 1977 (Appendix II). This figure represents a major decline from 158 in 1976 and 153 in 1975. Major losses occurred in the ram and yearling categories, a pattern usually resulting from high winter mortality the previous winter. The winter of 1976-77 provided heavy, wet snowloads at higher elevations which froze over favored winter ranges, resulting in heavy sheep losses in many interior Kenai areas.

The Grant Lake Mountains experienced relatively little mortality through the winter of 1976-77. In this area sheep escape cover extends to lowland areas which were relatively icefree. Seventy sheep were counted, including 13 rams and nine lambs. This is comparable to the total of 76 sheep counted during surveys in 1976.

Management Summary and Conclusions

Hunter effort, harvest, and success rates are at very low levels in Unit 7 and the prognosis is poor for increased success rates. However, hunter effort and harvest may increase over the next several years depending on the resolution of pending d(2) legislation. Passage of this legislation is expected to greatly reduce the areas where sport hunting of sheep is allowed, thus displacing many hunters to the Kenai Peninsula. The Board of Game changed the 1978 mountain goat season opening date in the accessible portions of Unit 7 to September 10. This creates a 10-day overlap of sheep and goat seasons which should increase the sheep harvest in 1978.

Recommendations

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

PREPARED BY:

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Game Biologist III

SUBMITTED BY:

James B. Faro
Regional Management Coordinator

APPENDIX I. Sheep harvest, hunter success and average horn length - Kenai Mountains portion of Game Management Unit 7 excluding Crescent Mountain, Crescent Mountain, and the Chugach Mountains portion of Unit 7.

Year	Harvest: Legal Males	Harvest: Females and Subadult Males	Total Hunters	Percent Success	Av. Adult Male Horn Length in Inches (N)
Unit 7-Kenai Mts. exclu. Crescent Mt.					
1969[1]	30	-	201	14.9	33.5(28)
1970	21	-	149	14.1	31.0(18)
1971	9	-	116	7.8	31.2(6)
1972	18	-	102	17.6	31.2(18)
1973	24	-	147	16.3	30.6(20)
1974	17	-	120	14.2	32.2(17)
1975	12	-	87	13.8	31.6(10)
1976	8	-	105	7.6	31.2(8)
1977 Reported[2]	7	-	63	11.1	32.8(4)
1977 Extrapolated[2]	8	-	89	8.9	--
Crescent Mt. Permit Area					
1969[1]	12	-	67	17.9	29.9(8)
1970[3]	6	9	60	25.0	27.0(1)
1971		No Permit Hunt Held			
1972		No Permit Hunt Held			
1973	5	14[4]	75	29.0	29.5(1)
1974	3	35[4]	92	41.3	37.5(2)
1975		No Permit Hunt Held			
1976	6	0	21	29.0	35.3(3)
1977	3	0	21	14.3	37.0(3)
Unit 7-Chugach Mountains					
1969	0	-	18	0.0	--
1970	2	-	13	15.4	--
1971	0	-	13	0.0	-
1972	0	-	9	0.0	--
1973	1	-	19	5.3	36.0(1)
1974	0	-	11	0.0	--
1975	0	-	8	0.0	--
1976	0	-	6	0.0	--
1977	0	-	1	0.0	--

1 1969 was the last year of a general open season on Crescent Mountain.
2 Harvest reported without reminder letters. Extrapolated harvest determined by adding 13 percent to the reported harvest. Hunter participation determined by adding 42 percent to the reported number of hunters.
3 Does not include 27 sheep (2 males and 25 females) removed from herd as part of research project.
4 Includes 1 wounded and 1 lost sheep.

PREPARED BY: Don Cornelius, Game Biologist II

APPENDIX II. Sheep trend count data, portions of Unit 7 - Kenai Mountains.

Crescent Lake Mountains

Date	Rams	Ewes	Total Adults	Yearlings	Lambs	Total Sheep
6/56			101		35	136
6/68			228		68	296
7/70			243		44	287
6/71			208		20	228
6/72			194		35	229
6/73			218		50	268
6/74	73	99	221	24	29	250
6/75	48	66	130	16	23	153
6/76	64	48	131	19	27	158
6/77	29	37	71	5	9	80

Grant Lake Mountains

Date	Rams	Ewes	Total Adults	Lambs	Total Sheep
8/68			30	13	43
8/69			41	16	57
8/70			48	14	62
9/71			43	8	51
7/72			49	4	53
73			No Surveys		
6/74			19	2	21
8/75			--	--	48
8/76	9	--	--	--	76
/77	13	48	61	9	70

PREPARED BY: Ted H. Spraker, Game Biologist III

SHEEP

SURVEY-INVENTORY PROGRESS REPORT - FOR REGULATORY YEAR 1977-78

Game Management Unit 9 - Alaska Peninsula

Seasons and Bag Limits

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

Harvest and Hunting Pressure

Harvest reports from 17 hunters (14 residents, 2 nonresidents, and one unspecified) indicate three rams were taken during the 1977 season (Appendix I). Of the three successful hunters, two were nonresidents.

Composition and Productivity

No work was accomplished during this reporting period.

Management Summary and Conclusions

Game Management Unit 9 represents the southern limit of sheep range. Frequent heavy, wet snows make this area only marginal sheep habitat. Occasional reports are received of sheep in the mountains along the east shore of Lake Clark south to Lake Iliamna. Reports of sheep in this area are believed to be the result of seasonal movements. It is doubtful if they permanently occupy the area.

Recommendations

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

PREPARED BY:

Nick Steen
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SUBMITTED:

James B. Faro
Regional Management Coordinator

APPENDIX I

Reported Dall Sheep Ram Harvest for GMU 9, 1962 through 1977

Year	Harvest	Year	Harvest
1962	0	1970	2
1963	1	1971	2
1964	2	1972	3
1965	0	1973	3
1966	0	1974	8
1967	6	1975	13
1968	10	1976	13
1969	7	1977	3

Prepared by: Nick Steen, Game Biologist, King Salmon, Alaska.

SHEEP

SURVEY-INVENTORY PROGRESS REPORT - 1977-78

Game Management Units 9, 16, 17 and 19 - Alaska Range West (ARW)

Period Covered: July 1, 1977 - June 30, 1978

Seasons and Bag Limits

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

Harvest and Hunting Pressure

Sheep harvest statistics for the Alaska Range West of McKinley Park (ARW) are presented below for 1975 and 1976:

Year	Harvest	Hunters	Percent Success	Mean Horn Size (inches)	Percent Hunters Reporting		Percent Reported Harvest		Percent Success	
					Res	Non res	Res	Non res	Res	Non res
1975	99	190	52	33.7	65	35	44	56	35	81
1976	131	269	48	34.2	69	31	56	44	38	71
1977	138*	297*	47	33.8	59	40	42	57	42	84

The projected number of sheep hunters in the ARW in 1977 was the highest ever recorded, but harvest was not greatly increased from that of 1976. Hunter success was lower than in some years, but greater than during other past seasons. An upward trend in hunter numbers is apparent, and if it persists the harvest will increase as well. Horn size was down from the previous year, but has fluctuated, with no apparent trend, between 33.7 and 35.0 inches since 1969. This fluctuating horn size indicates that harvest has not yet reached a level sufficient to depress mean horn length. Chronic high harvests which have depleted standing crops of rams greater than the legal minimum typically result in decreasing trends in horn length.

Composition and Productivity

Composition and productivity information based on observations at mineral licks within the ARW has not been reported on an annual basis. Consequently, little is known about survival to yearling age. Productivity is estimated from aerial surveys. Two surveys during July 1977 showed lamb:"ewe" ratios of 48 lambs per 100 ewes (n=678, flight time=5 hours).

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* In 1977 reminder letters were not sent to hunters who did not return their hunter reports. Typically the reminder letter increased the reported harvest by 13 percent and the reported participation by 42 percent.

Since aerial surveys include in the "ewe" category both yearlings and some young rams, it appears likely that initial production in the Unit 19 portion of the ARW was unusually high. Unusually high production was typical throughout the Alaska Range in 1978.

Management Summary and Recommendations

With the increasing trend in hunters utilizing the ARW, the number of legal rams in most areas will decrease. The present data on horn length indicate fairly good standing stocks of legal rams in the ARW.

Information on sheep composition and productivity should be augmented by ground counts which differentiate yearlings and young rams from adult ewes. These counts should be conducted annually.

Currently, the greatest use of these sheep populations is recreational hunting. No changes in the regulations regarding trophy rams are recommended at this time.

PREPARED BY:

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SUBMITTED BY:

Oliver E. Burris
Regional Management Coordinator

SHEEP

SURVEY-INVENTORY PROGRESS REPORT - 1977-78

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

Unit 11	Aug. 10 - Sept. 20	One ram with 3/4 curl horn or larger.

Harvest and Hunting Pressure

Statewide and Unit 11 ram harvests since 1962 are presented in Appendix I. Kill data for 1977 were adjusted by extrapolation using the methodology described in the 1977-78 Unit 15 sheep S&I report. Because sheep reminder letters were not sent in 1977, extrapolations were necessary to make these data comparable with previous years. From 1962 through 1973 harvests from Unit 11 have fluctuated in parallel with statewide harvests, with approximately 16 percent of statewide harvest coming from Unit 11. From 1974 through 1977 the harvest declined to approximately 13 percent of the statewide total.

A 4-year comparison of sheep hunter success statewide and in the Wrangell-Mentasta-Nutozotin (WMN) Mountains is presented in Appendix II. The percent of hunter success in both areas has declined since 1975. Nonresident hunters comprised 22 percent of the total number of hunters in the WMN Mountains. The success ratio of these guided nonresident hunters (85%) was twice that of resident hunters (43%).

Aircraft was the most popular transportation used by successful hunters (67%). Horses and highway vehicles were each used by 14 percent of the successful hunters.

Harvest and hunting pressure data for the two mountain ranges within Unit 11 are presented in Appendix III. Hunting pressure in the eastern Chugach Mountains is generally low and accounts for annual fluctuation of kill data. The mean horn length of rams harvested from the Chugach Mountains has been surprisingly small considering the low harvests in that area.

Composition and Productivity

Composition data obtained from surveys conducted on MacColl Ridge in the southern Wrangell Mountains is shown in Appendix IV. The number of legal rams observed in 1977 was 43 percent below the average number observed from 1970 through 1975. The number of lambs (41) was one less than the average number observed from 1970 through 1975. However, the

number of lambs and total sheep counted has steadily increased since 1974.

Management Summary and Conclusions

The success rate of Wrangell Mountain sheep hunters was higher and participation by nonresident hunters was greater than in the statewide data. Nonresident sheep hunters were twice as successful as resident hunters. Nonresidents killed 36 percent of the sheep taken in Unit 11 although they comprised only 22 percent of the hunters. Aircraft continued to be the most common means of transportation for successful hunters despite a 17 percent drop (84% in 1976 to 67% in 1977) in use. Horses and highway vehicles both increased in use, showing gains of 5 percent and 7 percent, respectively. Composition data from MacColl Ridge, in the southern Wrangell Mountains, indicate that the percentage of legal rams has declined. A 20 percent increase in the total number of hunters was noted in the WMN in 1977, compared to an 8 percent increase during the previous year. Although hunter success is high in Unit 11, the decreased number of rams on the survey area and increased hunting pressure demand close monitoring of the sheep population.

Recommendations

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

2. Composition counts to obtain lamb and yearling survival should be made annually in selected areas. The percentage of legal rams should be monitored.

3. Plans for more intensive management of selected areas should be delayed until the National Park proposals are settled and game management authority delegated.

PREPARED BY:

Robert Tobey
Game Biologist II

SUBMITTED BY:

James B. Faro
Regional Management Coordinator

APPENDIX I. Unit 11 and Statewide Annual Ram Harvests, 1962-77.

Year	Ram Harvests Statewide	Unit 11	Percent	Year	Ram Harvests Statewide	Unit 11	Percent
1962*	667	117	17.5	1970	998	171	17.1
1963	970	131	13.5	1971	1,079	178	16.5
1964	919	151	16.4	1972	1,170	173	14.8
1965	885	131	14.8	1973	1,119	194	17.3
1966	955	125	13.1	1974	1,243	173	13.9
1967**	992	149	16.2	1975	1,071	134	12.5
1968	1,122	215	19.2	1976	1,112	137	12.3
1969	995	157	16.4	1977***	1,272	175	13.7

* 1962 was the first year for harvest ticket reports, coverage may have been incomplete.

** Reported kill by 15 January, 1968.

*** No reminder letters were sent in 1977. Extrapolated harvest was determined by adding 13% to the reported harvest.

PREPARED BY: Robert Toby, Game Biologist II

APPENDIX II. Hunter success statewide and in the Wrangell-Mentasta-Nutzotin Mountains, 1974 through 1977.

	Statewide				Wrangell-Mentasta-Nutzotin Mountains			
	1974	1975	1976	1977	1974	1975	1976	1977
Percent Hunter Success:*	42%	37%	34%	35%**	55%	44%	43%	42%**
Total Successful Hunters:	1243	1071	1112	1272	352	310	322	379
Total Hunters:	2949	2881	3236	3683	644	697	754	907
Percent Success Among Residents:	32%	29%	28%	36%***	40%	33%	32%	43%***
Successful Residents:	713	660	736	764	160	157	176	209
Total Resident Hunters:	2215	2288	2667	2115	401	482	551	482
Percent Success Among Nonresidents:	77%	75%	70%	82%***	83%	74%	75%	85%***
Successful Nonresidents:	484	379	348	321	182	146	136	117
Total Nonresident Hunters:	626	507	497	390	220	197	182	138
Ratio Nonresident/Resident Success:	2.4/1	2.6/1	2.5/1	2.3/1	2.1/1	2.2/1	2.3/1	2.0/1
Percent of Nonresidents Among Known Residency Hunters:	22%	18%	16%	16%***	35%	29%	25%	22%***
Total Nonresidents:	626	507	497	390	220	197	182	138
Total Residents & Nonresidents:	2841	2795	3164	2505	621	679	733	620
Percent of Sheep Killed by Nonresidents:	40%	36%	32%	30%***	53%	48%	44%	36%***
Nonresident Kill:	484	379	348	321	182	146	136	117
Resident & Nonresident Kill:	1197	1039	1084	1085	342	303	312	326

* Includes hunters not noting residency.
** Extrapolated harvest determined by adding 13% to kill numbers and 42% to hunters.
*** Not extrapolated--based on actual harvest ticket returns.

PREPARED BY: Robert Tobey, Game Biologist II

APPENDIX III. Annual Harvests from Portions of Mountain Ranges within Unit 11.

	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977
Unit 11-Portion of Eastern Chugach Range											
Ram Harvest*:	0	8	7	10	4	1	9	19	10	14	16**
Number of Resident and Non-resident Hunters:	0	12	12	22	7	3	22	27	21	19	23
Percent Hunter Success:	-	67%	58%	45%	57%	33%	41%	70%	48%	74%	70%
Percent of All Hunters that were Residents:	-	66%	42%	52%	29%	33%	28%	42%	62%	37%	56%
Mean Horn Length, Inches**:	-	31.6	37.4	33.9	30.9	30.0	34.8	33.7	36.2	34.2	33.4
Unit 11-Portion of Wrangell Mountains											
Ram Harvest*:	149	199	150	161	174	171	185	154	123	123	139**
Number of Resident and Non-resident Hunters:	246	303	329	308	376	344	418	319	343	356	285
Percent Hunter Success:	61%	66%	46%	52%	46%	50%	44%	48%	36%	35%	49%
Percent of All Hunters who were Residents:	63%	69%	71%	75%	69%	64%	65%	65%	68%	76%	77%
Mean Horn Length, Inches**:	34.6	34.1	34.6	35.1	35.1	35.3	34.9	33.7	34.5	34.4	33.2

* The total ram harvest from the eastern Chugach Range and the Wrangell Mountains does not equal the Unit 11 total harvest because of rams not included in this table when specific kill location is not known.

** Mean horn length from 1967 harvest is based on rams harvested by resident hunters only. Mean horn length data during subsequent years is based on rams harvested by both resident and nonresident hunters.

PREPARED BY: Robert Tobey, Game Biologist II

APPENDIX IV. Sheep Composition Data from MacColl Ridge Trend Area, Unit 11.

Year	Legal Rams	Lambs	Unid.	Total	Percent Legal Rams	Percent Lambs
1970	26	60	134	220	11.8	27.3
1973	28	45	171	244	11.5	18.4
1974	25	31	124	180	13.9	17.2
1975	27	33	145	205	13.2	16.1
1976	12	38	161	211	5.7	18.0
1977	15	41	174	230	6.5	17.8

PREPARED BY: Robert Tobey, Game Biologist II

SHEEP

SURVEY-INVENTORY PROGRESS REPORT - 1977-78

Portions of Game Management Units 12, 13 and 20 - Tok Management Area

Period Covered: July 1, 1977 - June 30, 1978

Seasons and Bag Limits

Units 12, 13 and 20, that portion known as the Tok Management Area (see 81.229 Controlled Use Areas).	Aug. 10 - Sept. 20	One ram with full (4/4) curl horn or larger by permit only. 120 permits will be issued. See 5 AAC 81.055 and separate permit hunt supplement.
Units 12, 13 and 20, that portion known as the Tok Management Area (see 81.229 Controlled Use Areas).	Sept. 1 - Oct. 30	One ewe sheep by permit only; 30 ewe sheep may be taken. Conditions of the permit to be described by commissioner's announcement. See 5 AAC 81.055 and separate permit hunt supplement.

Harvest and Hunting Pressure

Questionnaires completed by Tok Management Area (TMA) permittees during mandatory post-hunt check-out indicated that 44 rams were harvested by 98 hunters, the largest harvest since the TMA was created in 1974. The success rate was 45 percent, compared with 43 percent in 1975 and 36 percent in 1976. Mean horn length was 35.5 inches, a slight decrease from 1975 and 1976 averages, but well above the statewide average of 33.2 inches.

Analysis of harvest data revealed that 19 rams were taken from the Robertson River drainage, 18 from the Tok River drainage and 4 from the Johnson River drainage. The remaining three animals were harvested from Sheep and Yerrick Creeks.

Fifty percent (22) of the successful hunters utilized aircraft for transportation to the hunting area; 14 percent (6) used off-road vehicles; 27 percent (12) used highway vehicles; and horses were used by one hunter. Mean hunt length was 5 days for successful hunters.

The registration ewe hunt began on September 1, and the season was closed on September 16 when meeting the harvest quota of 30 ewes appeared imminent. One hundred and twenty ewe permits were issued, but only 59 permittees actually hunted. Twenty-six ewes were harvested during the 1977 ewe season. Success among ewe hunters was 44 percent.

Several factors were responsible for the increased harvest during the 1977 season. Increased effort by air taxi operators provided access into formerly inaccessible sheep range. The $5 permit application fee apparently resulted in application by more serious sheep hunters. Generally favorable weather conditions during most of August and September encouraged hunting throughout the sheep season. Except for unusually favorable weather conditions, these factors are likely to continue in the future. Without a reduction in the number of ram permits issued, harvests in excess of our harvest goals can be expected. This will result in decreasing horn size, which is contrary to our stated goals.

Composition and Productivity

Composition and productivity data were gathered from the Sheep Creek lick during June and July in 1977 and 1978. Lamb/ewe ratios were good during both years (52 and 57, respectively). Survival to yearling age was also high in 1977 and 1978 (61% and 67%, respectively). Sample sizes were 323 in 1977 and 757 in 1978. I believe the figures are representative of the population near Sheep Creek, but may not be indicative of the entire TMA.

Management Summary and Recommendations

The harvest of 44 rams from the TMA is excessive. Sheep populations in the area are calculated to produce a sustainable harvest of 30 to 35 full-curl rams annually. While an overharvest of this magnitude during a single year may not be seriously detrimental to the TMA goal, future harvests are likely to exceed desired levels if the number of permits issued remains unchanged. Therefore, the number of permits should be reduced from 120 to 90. Efforts should be directed toward gathering additional productivity and survival data from other licks in the TMA to refine estimates of ram recruitment and population trends.

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SUBMITTED BY:

Oliver E. Burris
Regional Management Coordinator

SHEEP

SURVEY-INVENTORY PROGRESS REPORT - 1977-78

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

Period Covered: July 1, 1977 - June 30, 1978

Seasons and Bag Limits

Units 12, 13 and 20 (except that portion known as the Delta Management Area, the Tok Management Area and the Glacier Mountain Management Area)	Aug. 10 - Sept. 20	One ram with 3/4-curl horn or larger

Harvest and Hunting Pressure

Returned harvest ticket reports indicated that 196 sheep were harvested by 354 hunters in the Mentasta-north slope Wrangell Mountains during the 1977 season for a success rate of 55.4 percent. This extrapolates to a harvest of 221.* The 1975 and 1976 harvests were 186 and 199, respectively, while the average annual harvest between 1968-1974 was 154. Mean horn length was down slightly to 33.2 inches, the lowest ever recorded.

Residents harvested 115 sheep (44% success rate) while nonresidents took 76 (92% success rate). Mean horn length for sheep taken by resident hunters was 32.4 inches, and that for nonresidents averaged 34.5 inches. Nonresident hunters traditionally have higher success than residents and also take sheep with longer horns.

Analysis of harvest by location showed that the Nabesna drainage provided the largest harvest, where 135 hunters took 73 sheep. The Nabesna drainage usually supports a larger harvest than any other drainage in the Mentasta-north slope Wrangells because of its large geographical size and large sheep population.

The ram take in the harvest code area which includes the Wiki Peak-Ptarmigan Lake area declined from 49 animals in 1976 (5-year average of 37) to 28 in 1977. Hunter success and mean horn length also declined, indicating that legal rams are being harvested at a greater rate than they are being recruited. Aerial surveys confirmed that the number of legal rams in the Wiki Peak population has declined from past years.

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* In 1977 reminder letters were not sent to hunters who did not return their hunter reports. Typically the reminder letter increased the reported harvest by 13 percent and the reported participation by 42 percent.

Other areas supporting larger than average harvests include the White River and Snag Creek with harvests of 12 and 13, respectively.

Except for the decline in the Wiki Peak-Ptarmigan Lake area, the harvest data revealed no obvious trends.

Composition and Productivity

Aerial surveys conducted in the Wiki Peak area during mid-July 1977 revealed a 31 percent decline in 3/4 curl and larger rams since 1975, when the last survey was conducted. Total numbers of sheep observed also declined, but whether this was due to a population shift to different range out of the count area, a decline in the population, or merely to not observing some sheep during the survey is not known. The area should be surveyed during 1978. As the survey indicated, reduction in hunter success during the 1977 season suggests that fewer legal rams are available in the population. Lamb production and initial survival appeared to be good, with an observed ratio of 43 lambs per 100 ewes.

No on-the-ground composition or lick counts were conducted during 1977, nor were any other aerial surveys made.

Management Summary and Recommendations

Although the sheep harvest in the Wrangell and Mentasta Mountains has increased in recent years, only the Wiki Peak-Ptarmigan Lake area shows indications of probable overharvest. Since the harvest and hunter success rates have declined, along with the average horn size (to 31.9 inches), and aerial surveys indicate a declining number of legal rams in the population, we can only conclude that rams in the Wiki Peak area are being harvested at a greater rate than they are being recruited.

Harvests and horn length data from other portions of the Mentasta and Wrangell Mountains show no obvious trends, although it is possible that higher than desirable localized harvests may have occurred.

The ram harvest in the Wiki Peak area could be reduced. However, proposed management plans for this area call for providing the greatest opportunity to participate in hunting sheep and maintaining minimal restrictions on hunters. To meet this goal while assuring normal reproductive behavior, consideration should be given to changing the bag limit to exclude younger (near 3/4 curl) rams from the harvest.

PREPARED BY:

Larry B. Jennings
Game Biologist III

SUBMITTED BY:

Oliver E. Burris
Regional Management Coordinator

SHEEP

SURVEY-INVENTORY PROGRESS REPORT FOR REGULATORY YEAR 1977-78

Game Management Unit 13 - Central and eastern portion of the Chugach Mountains, eastern portion of the Talkeetna Mountains and southern portion of the eastern Alaska Range.

Seasons and Bag Limits

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

Harvests and Hunting Pressure

An extrapolated harvest of 134 rams was reported for Unit 13 this year by 404 hunters. This is two animals less than the 1976 harvest.

Analysis of sheep harvest data reveals different trends in hunting pressure and sheep harvests for the Talkeetna Mountains when compared with the Chugach Range portions of Unit 13. The sheep harvest and hunting pressure continue to decline in the Talkeetna Mountains while they have been increasing in the Chugach Range.

Hunting pressure and harvest in the Alaska Range portion of Unit 13 are also increasing. Within the total unit, both hunting pressure and harvest have remained fairly stable (Appendix I) but horn length as reported by hunters decreased (Appendix II).

Composition and Productivity

The results of trend counts conducted in the Boulder Creek, Watana Creek Hills portion of the Talkeetna Mountains and the Unit 13 portion of the Chugach Range are shown in Appendix III. These counts indicate that total numbers of sheep have increased since 1969 in the Chugach Range, although the percentage of lambs has decreased. Total sheep numbers have apparently fluctuated in the Boulder Creek and Watana Hills areas with both being at moderate levels at the present time. The percentage of lambs in the herd are similar to past years' in both areas.

An inventory of nearly all the sheep habitat in the Talkeetna Mountain Range in Unit 13 resulted in a total of 1,602 sheep observed. Percent legal rams has fluctuated between 5 and 9 percent in Boulder Creek and 3 and 6 percent in the Watana Creek Hills since data have been available.

In the Tazlina-Klutina trend count area reliable records are available for 3 years. These records indicate an increasing sheep population

with lamb crops varying between 13 and 20 percent. Legal rams in the Tazlina-Klutina have fluctuated between 7 and 12 percent of the population.

Management Summary and Conclusions

Sheep population indices suggest that changes in total numbers are occurring because of natural causes. Hunter harvest fluctuates around the availability of legal rams which is a function of survival of the young. Present seasons and bag limits allow for utilization of those males larger than three-quarter curl, which influences the availability of large trophy size rams but probably does not influence lamb survival or total sheep numbers.

Sheep management in Unit 13 has consisted of regulating utilization by establishing areas closed to sheep hunting for wildlife viewing and photography, setting liberal seasons on 3/4 curl or larger rams and controlling access in some areas to prevent competition between hunters using different types of access. Total ram harvest is fairly stable in recent years but average horn length has declined.

Management Recommendations

1. Controlled use areas should be evaluated to determine if they are a useful tool in meeting management objectives.
2. Trend count areas and mountain range inventories should continue.
3. Proposed management objectives should be implemented and appropriate steps taken to meet the stated objectives.

PREPARED BY:

Sterling Eide
Game Biologist III

SUBMITTED BY:

James B. Faro
Regional Management Coordinator

Appendix I. A comparision of Unit 13 and statewide annual ram harvest and the percentage of statewide ram harvests from Unit 13.

Ram Harvests				Ram Harvests			
Year	Statewide	Unit 13	Percent	Year	Statewide	Unit 13	Percent
1962*	667	107	16.0	1970	998	134	13.4
1963	970	132	13.6	1971	1079	139	12.9
1964	919	156	17.0	1972	1170	125	10.7
1965	885	143	16.2	1973	1119	101	9.0
1966	955	154	16.1	1974	1243	176	14.2
1967	922	152	16.5	1975	1071	170	15.9
1968	1122	159	14.2	1976	1112	136	12.2
1969	955	155	16.2	1977	1272**	134**	10.4

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

** 1977 harvest estimated by adding 13% to prereminder letter reported harvest.

PREPARED BY: Sterling Eide, Game Biologist III

Appendix II. A comparision of harvest data from the major mountain ranges within Unit 13.

Unit 13 Portion of the Eastern Talkeetna Mountains	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977**
Ram Harvest:	71	87	95	91	71	64	52	93	95	58	49
Number of Hunters:	218	221	267	229	193	248	217	237	241	239	172
Percent Hunter Success:	33%	39%	36%	40%	37%	26%	24%	39%	39%	24%	28%
Percent Resident Hunters:	83%	77%	77%	72%	74%	84%	88%	90%	81%	91%	90%
Mean Horn Length, Inches*:	31.1	31.9	31.5	32.3	31.4	30.2	31.0	29.9	30.1	31.6	30.5
Unit 13 Portion of the Central Chugach Range											
Ram Harvest:	60	58	60	41	60	54	45	79	56	63	66
Number of Hunters:	121	112	158	124	156	128	163	179	192	212	182
Percent Hunter Success:	50%	52%	39%	33%	38%	42%	28%	44%	29%	30%	36%
Percent Resident Hunters:	64%	74%	79%	81%	74%	78%	79%	75%	81%	89%	87%
Mean Horn Length, Inches*:	33.1	35.5	36.2	34.1	35.1	33.8	33.8	34.1	34.2	33.6	33.6
Unit 13 Portion of the Alaska Range											
Ram Harvest:	1	1	0	2	8	2	4	4	12	14	19
Number of Hunters:	15	5	3	6	33	30	21	44	47	61	50
Percent Hunter Success:	7%	20%	0	33%	24%	7%	19%	9%	26%	23%	38%
Percent Resident Hunters:	100%	100%	-	67%	100%	83%	90%	93%	88%	23%	88%
Mean Horn Length, Inches*:	-	32.0	_	34.8	35.5	32.5	38.3	33.5	31.9	32.7	31.2

* Mean horn length for the 1967 harvest is based on rams harvested by resident hunters only. Mean horn length data during subsequent years is based on rams harvested by both resident and nonresident hunters.

** 1977 harvest estimated by adding 13% to reported harvest; no reminder letters sent.

PREPARED BY: Sterling Eide, Game Biologist III

Appendix III. A comparison of sheep composition data for selected areas in Unit 13.

Trend Count Area		Legal Rams	Lambs	Total
Boulder Creek Drainages:				
	1949	--	--	45
	1951	--	--	115
Sept.	1967	--	--	430
July	1968	--	--	460
June	1974	8%	16%	287
June	1976	5%	20%	361
July	1977	9%	17%	326
Watana Hills Vicinity:				
	1950	--	--	0
Sept.	1967	--	--	220
Aug.	1968	--	18%	183
Aug.	1973	6%	23%	176
June	1976	--	24%	--
Aug.	1976	4%	23%	130
July	1977	3%	22%	152
Tazlina - Klutina Count Area 3:				
Aug.	1969	--	--	247
July	1976	8%	20%	268
July	1977	12%	13%	408
Total Talkeetna Mountains:				
July	1977	7%	17%	1602

Prepared By: Sterling Eide, Game Biologist III

SHEEP

SURVEY-INVENTORY PROGRESS REPORT FOR REGULATORY YEAR 1977-1978

Game Management Subunits 14A and B - Upper Cook Inlet

Seasons and Bag Limits

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

Harvest and Hunting Pressure

The total harvest in subunits 14A and B during 1977 was 51 rams, 44 of which came from subunits 14A and seven from 14B (Appendix I). This exceeded the previous 8-year average harvest of 30.4 for these areas.

In comparison, the total Unit 14 harvest in 1977, including subunit 14C was 59 rams (Appendix II). This was somewhat lower than the previous 11 year average of 65.4 rams for the entire unit.

In Chugach Mountains portion of subunit 14A, the take of 39 rams was more than twice the 1967-1976 average of 14.5 rams per year. In the subunit 14B portion of the Talkeetna Mountains the harvest of seven rams exceeded the previous 8-year average of 5.4 rams per year. In the subunit 14A portion of the Talkeetna Mountains, the reported take of five rams was below the 1967-1976 average of 10.5 sheep per year.

The Chugach Mountain data include portions of the mountain range in Units 7, 11, 13 and 14A, B and C. In the entire Chugach Range an extrapolated estimate of 500 hunters took 129 sheep for a 26 percent success rate (Appendix III). This is the fourth highest success rate recorded; success rates between 1967 and 1976 have varied from 19 percent to 34 percent and the number of hunters have ranged from 403 to 655 per year. Without reminder letters 28 percent of 313 resident hunters reporting and 82 percent of 33 nonresident hunters reporting were successful in 1977.

In the Talkeetna Mountains, including the Chulitna Mountains and the Watana Creek Hills, the sheep range includes portions of Units 13, 14A and 14B. An extrapolated estimate of 288 hunters harvested 62 sheep for a 22 percent hunting success rate (Appendix IV). Success rates between 1967 and 1976 varied between 22 and 39 percent while the number of hunters varied from 240 to 343. With reminder letters success rated for resident hunters (22%) are similar to the previous 9-year average for this area. Nonresident hunters reached an all time high success rate of 82 percent in 1977 in the Talkeetna Mountains, but this may be due to the fact that no reminder letters were sent this year.

The largest horn length on a sheep taken in the Chugach Mountain Range was between 45 and 46 inches while in the Talkeetna Range, the largest horn of a sheep harvested in 1977 was between 39 and 40 inches. Three sheep harvested in the Chugach Range measured 40 inches or more.

Composition and Productivity

No sex and age composition counts were conducted in subunits 14A and 14B in 1977.

Management Summary and Conclusions

Sheep harvests in subunits 14A and 14B were depressed during the early 1970's. Harvests from subunits 14A and 14B in recent years are at a higher level than existed during the late 1960's. Hunting pressure and hunting success also declined during the early 1970's, but have been steadily climbing in the late 1970's. Composition counts in 1973 and 1976 show relatively large percentages of legal rams and suggest an increase in population size during this time interval. The mean horn size from sheep harvested in the Talkeetna Mountains is relatively small. This suggests hunters are taking young rams although it is also possible these rams are genetically smaller. However, a large winter kill of sheep during the early 1970's would fit the known weather data and would fit the inferences drawn from these harvest and population data.

From the data gained in the 1973 and 1976 sex and age composition counts, sheep populations in 14A between the Knik and Matanuska Rivers appear to be in good condition. This population could be utilized by more hunters than presently use the area, but access is poor and the terrain very rugged.

Recommendations

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

PREPARED BY:

Jack C. Didrickson
Game Biologist III

SUBMITTED BY:

James B. Faro
Regional Management Coordinator

Appendix I. Reported Harvest of Dall Sheep Rams in Portions of the Two Mountain Ranges in Alaska's Game Management Unit 14 for the Years 1969 through 1977.

	1969	1970	1971	1972	1973	1974	1975	1976	Average 1969-1976	1977
Chugach Mts. Portion in GMU 14A (between Knik R. Glacier and Matanuska R.)	11	9	8	14	10	13	24	27	14.5	39
Talkeetna Mts. Portion in GMU 14A (South-East slope of Talkeetna Mts.)	22	3	11	13	5	13	9	8	10.5	5
Talkeetna Mts. Portion in GMU 14B (Western slope of Talkeetna Mts.)	1	5	3	7	3	8	5	11	5.4	7
Total reported sheep harvest for GMU Subunits 14A and B	34	17	22	34	18	34	38	46	30.4	51
GMU 14, Matanuska River drainage or Chugach Mts., unknown specific locality-could be Subunit 14A or C.	20	2	3	8	3	4	0	3	5.4	1

PREPARED BY: Jack C. Didrickson, Game Biologist III

Appendix II. Reported Harvest of Dall Sheep Rams in Alaska's Game Management Unit 14 for the Years 1966 through 1977*.

1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	Average 1966-1976	1977
49	72	76	94	63	59	77	32	60	63	74	65.4	59

* 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.

PREPARED BY: Jack C. Didrickson, Game Biologist III

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 1977.

	All Hunters*			Residents			Nonresidents		
Year	Kill No.	Hunters	Success	Kill No.	Hunters	Success	Kill No.	Hunters	Success
1967	115	521	22%	67	455	15%	48	66	73%
1968	133	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	618	14%	35	53	66%
1972	112	470	24%	79	378	21%	25	43	58%
1973	81	426	19%	49	362	14%	26	50	52%
1974	137	403	34%	89	333	27%	45	61	74%
1975	122	415	29%	84	352	24%	30	46	65%
1976	132	473	28%	102	417	24%	27	46	59%
1977**	114	352	32%	87	313	28%	27	33	82%
1977***	129	500	26%						

* In some cases all hunters category is higher than resident plus nonresident categories combined. This is due to the inclusion of reports from hunters who did not note residency.

** Reported harvest without reminder letters in 1977.

*** Estimated 1977 harvest determined by adding 13% to kill number and 42% to hunters.

PREPARED BY: Jack C. Didrickson, Game Biologist III

Appendix IV. Reported Kill of Dall Sheep Rams, Numbers of Hunters, and Success of Hunters for Alaska's Talkeetna Chugach Mountain Chulitna Mountains, and Watana Creek Hills, 1967 through 1977.

Year	All Hunters*			Residents			Nonresidents		
	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%
1973	61	277	22%	39	232	17%	21	31	68%
1974	114	312	37%	83	259	32%	26	40	65%
1975	109	281	39%	75	231	32%	30	40	75%
1976	77	300	26%	55	267	21%	20	40	75%
1977**	55	203	27%	40	182	22%	14	17	82%
1977***	62	288	22%						

* In some cases all hunters category is higher than resident plus nonresident categories combined. This is due to the inclusion of reports from hunters who did not note residency.

** Reported harvest without reminder letters in 1977.

*** Estimated 1977 harvest determined by adding 13% to kill number and 42% to hunters.

PREPARED BY: Jack C. Didrickson, Game Biologist III

SHEEP

SURVEY-INVENTORY PROGRESS REPORT - FOR REGULATORY YEAR 1977-78

Game Management Subunit 14C - Anchorage and vicinity

Seasons and Bag Limits

Unit 14(C)	Day after Labor Day-Sept. 20	One ram with 3/4 curl horn or larger

Harvest and Hunting Pressure

During 1977, 27 rams were reported taken in Subunit 14C (Appendix I). This represents an increase of three rams over the 1974-76 mean harvest of 24. Hunter reminder letters were not sent, so the actual harvest may have been somewhat higher. The majority of sheep harvested (85%) came from the drainages north of Eagle River, including Peters Creek (12), the East Fork of Eklutna River (6), and Goat Creek (4). Twenty-four percent (27 of 112) of all sheep hunters were successful. The only nonresident hunter who reported hunting was unsuccessful. The 1977 mean horn size was 32.1 inches (Appendix II). This was nearly identical to the 1976 mean size of 32.3 inches, and substantially higher than the 1971-75 average of 30.8 inches.

Composition and Productivity

Two aerial surveys were conducted during late July of 1977. All drainages with the exception of the East Fork of Eklutna and Campbell Creek were flown. A total of 655 sheep was tallied (Appendix III). Excessive sun glare precluded accurate counts in the Eagle River and Peters Creek drainages. However, available data indicate that 14C sheep population levels may be 10-20 percent below 1976 levels. This may be a consequence of last winter's heavy snow accumulation at higher elevations. Throughout the survey particular effort was made to tally legal rams. A total of 73 were observed, a figure comparable to 1976 survey findings. Lamb numbers appeared extremely low at 7.6 per 100 adults. This is probably a result of poor survey conditions, coupled with poor lamb production. A complete count of sublegal rams was not attempted, although observations in certain areas found fewer than in former years.

Management Summary and Conclusions

The 14C sheep population most likely experienced a 10-20 percent population decline over the winter of 1976-77. Most of the decline appears to have occurred among young animals. Numbers of legal rams remain at relatively high levels within every drainage. However, the overwinter loss of younger age cohorts, and poor lamb production during the spring of 1977, could result in a decreased abundance of mature rams

in the future. Harvests and hunting pressure have remained fairly stable at desired levels over the past 4 years. However, harvests during recent years have been moderated by extremely poor weather throughout much of the season. Should good weather prevail during a significant portion of future seasons, harvests could reach 40 or more rams. This number would be excessive and would likely precipitate a marked decline in average horn size.

Recommendations

The West Chugach Sheep Management plan should be approved by the Game Board and be implemented. Permit-only sheep hunting would reduce the possibility of overharvest, as a result of favorable weather conditions during the hunting season or reduced availability of rams due to population declines.

PREPARED BY:

David Harkness
Game Biologist III

SUBMITTED BY:

James B. Faro
Regional Management Coordinator

Appendix I. Dall sheep harvest and hunter success 1968-1977: Game Management Subunit 14C.

Year	Harvest	Hunters	Percent Success
1968	31	282	11
1969	40	380	11
1970	44	244	18
1971	34	330	10
1972	35	256	14
1973	11	135	8
1974	22	112	20
1975	29	109	27
1976	22	106	21
1977*	27	112	24

* No reminder letters were sent in 1977.

Appendix II. Dall sheep average horn size in inches for 14C 1971-1977. Resident hunters only.

	Sample size
30.9	(29)
31.7	(25)
28.9	(10)
30.3	(20)
30.9	(23)
32.3	(22)
32.1	(27)

PREPARED BY: David Harkness, Game Biologist III

Appendix III. Sheep numbers by drainage in Alaska's G.M.U. 14C. 1977 survey data.

Drainage	No. legal rams 3/4 curl+	No. young rams 1/2-3/4 curl	No. lambs	Unidentified	Total sheep
Lake George	14	15	-	110	29
Hunter Creek	16	24	-	55	95
Goat Creek	5	14	-	70	89
Eklutna River	3	26	6	117	152
Thunderbird Creek	0	0	0	0	0
Peters Creek	7	9	5	46	67
Eagle River	12	8	6	49	75
Ship Creek	13	5	4	80	102
Cambell to Rainbow	-	-	-	-	-
Indian Cr.-Falls Cr.	-	-	-	31	31
Bird Creek	3	-	-	12	15
Total 14C	73	101	21	460	655

PREPARED BY: David Harkness, Game Biologist III

SHEEP

SURVEY-INVENTORY PROGRESS REPORT - 1977-78

Game Management Unit 15 - Kenai Mountains

Seasons and Bag Limits

Unit 15	Aug. 10 - Sept. 20	One ram with 3/4 curl horn or larger

Harvest and Hunting Pressure

Harvest report returns indicate 24 of 124 hunters successfully hunted sheep in Unit 15 during the 1977 season (Appendix I). Because harvest report reminder letters were not sent in 1977, these data were corrected by the technique described below. The extrapolated data indicate 27 sheep would have been reported harvested by 169 hunters had harvest report reminder letters been sent.

Based on the extrapolated data, the number of sheep hunters in 1977 increased 20 percent when compared to the 1976 level of 141 and was slightly below the record high of 174 in 1975. The hunter success ratio has continued to decline from 33 percent in 1974, 27 percent in 1975, 21 percent in 1976, and 20 percent in 1977. The mean horn length of 29.3 inches is the lowest recorded in 5 years. The trend since 1973 has been towards a slow decline in average horn size.

Methodology of Sheep Harvest and Hunter Participation Extrapolations, Statewide

All hunters are required to have a harvest ticket to hunt sheep. This harvest ticket has a self-addressed report form attached for the hunter to report his participation and success. Traditionally, reminder letters have been sent to hunters who did not voluntarily return their reports, but reminder letters were not sent for the 1977-78 regulatory year. As a result only 56.3 percent of the sheep harvest reports were returned for the 1977 season. Extrapolations were therefore necessary to make these data directly comparable with harvest data from previous years. These extrapolations were made by Game Biologist Wayne Heimer.

Harvest data from hunter reports returned before reminder letters were sent out were not available for years prior to 1977. Therefore, a preliminary run on harvest tickets returned before reminder letters were mailed was printed for 1975. The year 1975 was selected because harvest tickets from 1976 were not available.

It was determined that after reminder letters were sent, an additional 13 percent of the statewide hunters reported killing a sheep during the 1975 season. There was small deviation around this mean for individual mountain ranges. The percent harvest increase varied from 20 percent in the Wrangell Mountains to 12 percent in the western Alaska Range.

Total hunter effort reported, after the mailing of reminder letters, increased by 42 percent statewide.

Implicit in these extrapolations is the assumption that the pattern of hunter reporting in 1977 is equivalent to the pattern in 1975. The assumption is most valid for 1977 because hunters did not "know" that reminder letters were not being sent. This assumption will become increasingly less valid in subsequent years as reporting compliance declines in the absence of prodding with reminder letters.

Extrapolated harvests and hunting pressure become increasingly less predictable for smaller segments of the statewide total. Therefore, data for individual units and mountain ranges are less reliable than the statewide extrapolation.

Composition and Productivity

A survey of the area between Skilak Glacier and Killey River revealed 86 sheep (Appendix II). This is the largest number of sheep observed in the area since surveys were initiated in 1968. Previous surveys in 1974 and 1975 produced counts of 43 and 59 sheep respectively. Only three lambs were observed during the 1977 surveys. This is the lowest number of lambs on record for this area.

A total of 269 sheep observed in the area between Killey River and Tustumena Glacier was the lowest recorded since surveys were initiated in 1962 (Appendix II). The lamb cohort of 14 percent compares favorably to 12 percent and 10 percent recorded in 1974 and 1975, but still constitutes a low rate of productivity. Despite the large drop in sheep numbers, which could be expected to ease population pressure on what appears to be depleted range, productivity has not increased significantly.

Management Summary and Conclusions

The number of sheep harvested declined slightly during the 1977 season, while the number of hunters increased. Mean horn length decreased slightly when compared to the previous 4 years. The impact of reduced lamb ratios in 1974-75 and 1977 may result in low numbers of harvestable rams for several years.

Recommendations

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

PREPARED BY:

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Game Biologist III

SUBMITTED BY:

James B. Faro
Regional Management Coordinator

APPENDIX I

Sheep harvest and hunting pressure, Unit 15 - Kenai Mountains

Year	Number Successful	Percent Successful	Number Unsuccessful	Percent Nonresident Hunters	Total Hunters[1]	Average Horn Length
1969	31	72	84	3	115	
1970	42	32	91	5	133	
1971	25	16	131	7	156	
1972	18	15	99	9	117	
1973	34	25	103	7	137	30.8
1974	50	33	102	11	152	30.5
1975	47	27	127	2	174	30.5
1976	29	21	112	2	141	30.0
1977	27[2]	16	142[2]	3	169[2]	29.3

1/ Does not include hunters who did not give zip code (less than 1 percent).
2/ Extrapolated figure since reminder letters were not sent in 1977.

PREPARED BY: Ted Spraker, Game Biologist III

APPENDIX II

Sheep trend count data: Unit 15

Skilak Glacier to Killey River

Date	Adults	Lambs	% Lambs	Total Sheep
7/16/68	46	9	16%	55
8/08/72	66	10	13%	76
6/06/74	39	4	9%	43
7/10/75	54	5	8%	59
7/28/77	83	3	3%	86

Killey River to Tustumena Glacier

Date	Adults	Lambs	% Lambs	Total Sheep
1950	-	-	-	123
1951	-	-	-	157
1962	251	38	13%	289
1966	426	100	19%	526
7/68	594	162	21%	756
8/7-8/72	444	127	21%	597*
6/06/74	412	58	12%	470
7/9-10/75	468	52	10%	520
7/29/77	232	37	14%	269

* Includes 26 unclassified sheep.

PREPARED BY: Dave Hardy, Game Biologist II

SHEEP

SURVEY-INVENTORY PROGRESS REPORT - FOR REGULATORY YEAR 1977-78

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 report returns, the harvest of rams from 1966 through 1977 is presented below:

1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977**
6	4	9	14	11	8	11	29	21	12	23	24

** Harvest report reminder letters discontinued. Total harvest and total hunting pressure figure extrapolated on basis of previous reminder letter effectiveness.

An estimated 38 hunters hunted sheep in Unit 16 during the 1977 season, a decrease of 28 percent from 1976. Harvest in the Rainy Pass area increased 33 percent over 1976 (Appendix I). All other areas decreased or remained the same. The Yentna River showed the most dramatic decrease as the harvest of five rams in 1977 was less than half what it was in 1976. The Rainy Pass area supported more (35 %) of the nonresident hunting pressure than any of the other areas in Unit 16.

Appendix II reveals hunting pressure trends in the Alaska Range west of the Mt. McKinley Park. Portions of Game Management Units 9, 16, 17 and 19 are included in this area. An average of 184 hunters utilized this area annually from 1967 to 1976. The 1977 extrapolated total of 297 hunters is the highest recorded for the western Alaska Range and is a 10 percent increase over last year. The 1977 extrapolated harvest of 138 sheep is slightly above the 1976 total of 131 and is the highest harvest recorded for the area. Nonresident hunter participation was higher than it has been since 1974. Hunter success was 46 percent for 1977, the lowest success rate ever recorded for this area. The average number of days spent hunting was 4.8, slightly above the average for the previous seven years of 4.5.

Composition and Productivity

The Unit 16 portion of the western Alaska Range was intensively surveyed for the first time on 5 and 6 August 1977. A total of 152 sheep were observed in 10 hours of survey time. Of these 152 sheep, 22 were legal rams and at least 14 were lambs. No effort was made to distinguish sublegal rams and yearlings from ewes.

Management, Summary and Conclusions

The 1977 extrapolated sheep harvest of 24 rams in Game Management Unit 16 is the second highest recorded since these data became available in 1962 and is 78 percent above the average harvest for the previous 13 years. Hunting pressure has shifted from the Yentna River area back to the Rainy Pass area which has traditionally sustained a major portion of the harvest. Both harvest and hunting pressure are continuing to increase in Unit 16. The average horn length of rams taken in the western Alaska Range was 33.8 inches, slightly below the average for the previous seven years of 34.1 inches.

Surveys conducted in the Unit 16 portion of the Alaska Range revealed a sparse population of dall sheep along the Skwentna River, Kichatna River and Fourth of July Creek drainages. Densities are low to moderate in the Happy River area and the headwaters of the Yentna River. It is probable that a major portion of the rams available to hunters on the Unit 16 side of the range during the season move over the divide from Unit 19 as hunter densities increase there.

Recommendations

The Unit 16 Dall sheep population should be managed as a subpopulation of Unit 19 and seasons and bag limits should be set accordingly.

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SUBMITTED BY:

James B. Faro
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Appendix I. Sheep Harvest by Area in Alaska's Game Management Unit 16, 1968 through 1977.

Area	Year									
	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977
Yentna River to 4th of July Creek	2	1	3	4	3	8	4	1	11	5
Skwentna River	0	0	0	0	0	1	10	1	3	1
Kichatna River	0	0	0	0	0	3	1	2	2	2
Rainy Pass, Rainy Pass Lodge Area	7	12	8	4	8	13	5	8	6	9
Alaska Range West within unit 16	0	0	0	0	0	4	1	0	1	4
TOTALS	9	13	11	8	11	29	21	12	23	21*

* No reminder letters sent--extrapolation would indicate 24 animals taken.

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Appendix II. Reported Kill of Dall Sheep Rams, Number of Hunters, and Success of Hunters for the Alaska Range West of McKinley Park, 1967 through 1977, as derived from Harvest Reports.

Year	All Hunters*			Residents			Non-residents		
	Kill No.	Hunters	Success	Kill No.	Hunters	Success	Kill No.	Hunters	Success
1967	65	97	67%	27	47	57%	38	50	76%
1968	95	151	63%	52	99	53%	43	52	83%
1969	104	154	68%	53	93	57%	45	55	82%
1970	84	162	52%	34	80	43%	26	38	68%
1971	71	156	46%	28	80	35%	39	69	57%
1972	71	124	57%	32	68	47%	34	50	68%
1973	119	211	56%	53	112	47%	63	94	67%
1974	119	213	56%	43	110	39%	70	93	75%
1975	99	190	52%	43	122	35%	53	65	82%
1976	131	269	49%	72	185	39%	55	77	71%
1977**	138	297	46%	51	123	41%	70	83	84%

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

** 1977 All Hunter category extrapolated since no reminder letters sent.

SHEEP

SURVEY-INVENTORY PROGRESS REPORT - 1977-78

Portions of Game Management Unit 20 and Unit 13 - Delta Management Area*

Period Covered: July 1, 1977 - June 30, 1978

Seasons and Bag Limits

Units 20 and 13, that portion known as the Delta Management Area (see 81.221 Controlled Use Areas)	Aug. 10 - Aug. 25**	One ram with 3/4-curl horn or larger

* The area described as the Delta Management Area includes the drainages of the Delta River from McGinnis Creek south to Castner Glacier, the drainages of the Tanana River flowing into its south bank from the Delta River upstream to the west bank of the Johnson River.

**From 12:01 a.m., August 5 to 12:01 a.m., August 26, no motorized vehicles or pack animals may be used to transport sheep hunters, sheep hunting gear or sheep within the Delta Management Area.

Harvest and Hunting Pressure

The harvest during a short, 16-day walk-in season exceeded the desired harvest of 40 rams for the third consecutive year. Hunting pressure and harvest continued to increase. During the past 3 years hunting pressure has increased from 163 hunters in 1975 to 202 hunters in 1976 and 240 hunters in 1977. Harvest for those 3 years was 50, 53 and 78, respectively. Horn size in 1977 equaled the all-time low of 31.3 inches of 1975. Harvests exceeding the desired level since establishment of the Delta Management Area (DMA) have led to the exploitation of younger and younger rams and consequently to declines in age and horn size among sheep harvested.

Sheep harvest statistics for the DMA are presented below for the 1975 through 1977 seasons.

Table 1. Hunter pressure, harvest, success and horn size from the Delta Management Area, 1975 through 1977.

Year	Harvest	Hunters	Percent success	Mean horn size (inches)
1975	50	163	31	31.3
1976	54	202	27	32.3
1977	78	240	33	31.3

Analysis of harvest ticket returns for the 1977 season showed 24 percent of the harvest occurred in the more inaccessible areas such as the headwaters of the Johnson and Gerstle Rivers. The easily accessible areas of the Granite Mountains and the mountains near the Richardson Highway and Isabel Pass supported the majority of the harvest (76%).

Composition and Productivity

Data on production and survival were gathered at two mineral licks in the DMA during 1977. Composition counts at the Granite Creek lick date back to 1972 and at Gold Creek to 1974. Lamb production in the DMA varied from 42 lambs per 100 ewes at Granite Creek to 52 lambs per 100 ewes at Gold Creek. Average for the two is 44 lambs and 38 yearlings per 100 ewes (n=361). This production and survival is considered average to high.

Management Summary and Recommendations

Rams in the DMA are subjected to excessive hunting pressure. Despite increasingly restrictive hunting regulations, the harvest has averaged 56 per year since 1968. This average is 16 rams in excess of the level calculated to maintain horn size above the 3/4-curl length (40 rams). The results of this excessive harvest are reduced trophy size, a harvest comprised of younger rams and a great deal of hunter competition for the available rams.

Past management practices have not resulted in irreparable changes in the sheep population within the area. If older ages in the ram population are desired, the kill must be reduced by reducing hunting pressure or success. It may be possible to maintain the harvest at the present average of about 55 rams per year; however, the average age of rams and horn size will continue to approach the size and age of minimal 3/4-curl rams. Fifty-five rams per year is quite close to the annual yearly ram recruitment.

The DMA could produce 35 to 40 large rams each year if allowed to recover from the heavy harvests of the early 1970's. Extending the season and reducing the number of hunters by permit would reduce crowded hunting conditions and would lower the harvest, allowing horn size to increase. Shortening the season and prohibiting all hunting by motorized vehicles and pack animals have failed to reduce the harvest. There are no other viable alternatives to reduce success. A permit system limiting participation seems the best course to follow.

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SHEEP

SURVEY-INVENTORY PROGRESS REPORT - 1977-78

Game Management Unit 20 - Central Alaska Range East

Period Covered: July 1, 1977 - June 30, 1978

Seasons and Bag Limits

Remainder of Units 12, 13 and 20 (except that portion known as the Delta Management Area and the Tanana Hills-White Mountains)	Aug. 10 - Sept. 20	One ram with 3/4-curl horn or larger

Harvest and Hunting Pressure

According to harvest ticket returns, 103 sheep were harvested from the central Alaska Range East during the 1977 hunting season. This extrapolates to a probable take of 116 rams.* Mean horn length was 31.78 inches, down slightly from the 1975 and 1976 averages of 32.3 inches. Other pertinent data are as follows:**

Reported no. hunters	Percent success	Percent hunters		Percent harvest		Percent success	
		Res.	Nonres.	Res.	Nonres.	Res.	Nonres.
233	44	96	3	85	10	41	66

** Percentages do not equal 100 percent because the residence status of some hunters could not be determined. These hunters are not included in these figures.

Composition and Productivity

Composition and productivity data were obtained at several mineral lick sites throughout the central Alaska Range East during 1977 and 1978. These data are presented below:

Area	Lambs/100 ewes		Yearlings/100 ewes		Total sheep	
	1977	1978	1977	1978	1977	1978
Mt. McKinley	50	56	20	24	223	212
Louis Creek	50	not	33	not	11	not
Edgar Creek	53	counted	12	counted	68	counted
Mystic Mountain	72	41	19	28	267	420
Healy Creek	52	31	7	10	279	96
Dry Creek	58	41	17	25	554	977
Total	51	42	16	24	1254	1413

* In 1977 reminder letters were not sent to hunters who did not return their hunter reports. Typically the reminder letter increased the reported harvest by 13 percent and the reported participation by 42 percent.

Lamb production improved from that in 1975 and 1976. Survival to yearling age remained variable, averaging about 50 percent. It is unlikely that these populations are expanding significantly.

Management Summary and Recommendations

No significant changes in harvest statistics occurred within the central Alaska Range East during 1977. Productivity was unusually high in 1977 and above average during 1978. Average horn size continued a slow decline, productivity was high, and harvest and mortality from all other sources appeared normal. Total numbers of sheep are probably slowly increasing from previous lower levels.

No changes in seasons or bag limits are recommended.

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SHEEP

SURVEY-INVENTORY PROGRESS REPORT - 1977-78

Game Management Unit 20 - Tanana Hills and White Mountains

Period Covered: July 1, 1977 - June 30, 1978

Seasons and Bag Limits

Unit 20 (except that portion known as the Delta Management Area, and the Alaska Range East)	Aug. 10 - Sept. 20	One ram with 3/4-curl horn or larger

Harvest and Hunting Pressure

Harvest statistics for the 1976 and 1977 sheep seasons in the Tanana Hills-White Mountains are summarized below:

Year	Harvest	Hunters	Percent success	Mean horn size (inches)	Percent hunters		Percent harvest		Percent success	
					Res	Non res	Res	Non res	Res	Non res
1976	8	35	23	31.0	97	3	88	12	21	100
1977	8	33	24	33.6	100	0	100	0	24	-

As mentioned in the 1976 report, the number of hunters and the harvest of sheep from the Tanana Hills-White Mountains have varied considerably since 1967. During the last 3 years, however, harvest statistics have varied little with 6-8 sheep harvested annually by 28-35 hunters. Resident hunters were responsible for all hunting pressure in 1977 and experienced a 24 percent success rate.

Composition and Productivity

A distribution and abundance survey was conducted in the White Mountains west of the Steese Highway on August 5, 1977. This was the first survey conducted in this area since 1970. A survey of the Charley River, Mt. Sorenson and Twin Mountain in the Tanana Hills east of the highway was also conducted during 1977. The data from both the 1970 and 1977 aerial surveys of both areas are summarized below:

Area	Year	Sublegal rams	Legal rams	Total rams	Ewes	Lambs	Unid	Total sheep	Count time (hrs)
White Mtns.	1970	25	19	44	171	70	0	285	5.9
	1977	25	13	38	66	20	0	124	6.5
Tanana Hills	1970	9	42	51	45	21	8	125	-
	1977	7	11	18	15	7	0	40	-

Both the 1970 and 1977 White Mountains surveys were conducted by the same biologist under comparable conditions with the exception that more effort may have been made during the last survey. The total number of sheep counted in the White Mountains survey during 1977 was 56 percent of the 1970 count. The decrease was primarily in the ewe segment of the population. These results indicate a decrease of 58 percent with major changes in the legal ram and ewe categories.

Although the specific reasons for this apparent 50 percent decline in sheep numbers are not known, these sheep populations have experienced an overall increase in wolf densities throughout the area. The winters of 1970-1971 and 1971-1972 were winters of unusually heavy snow, but since 1972 winters have been considered mild in interior Alaska. Weather may have caused the initial decrease, but is not thought to have suppressed sheep numbers for the last 5 years.

Management Summary and Recommendations

Sheep habitat in the White Mountains and Tanana Hills is not typical because it occurs in small, widely scattered patches separated by stands of black spruce forest. Such marginal habitat could predispose these residual sheep populations to excessive mortality due to severe winters, habitat degradation, predation or a combination of these factors. It could also cause variability in aerial surveys to be quite high.

Information on productivity and survival should be gathered annually. Additional distribution and abundance surveys should be conducted in the near future to assess the accuracy of the 1977 surveys.

Because sheep hunting interest in the White Mountains-Tanana Hills area is low with a correspondingly low harvest, it is recommended that no immediate changes in season, bag limit or special regulations be made at this time. Should pending Federal legislation be passed causing loss of sheep hunting opportunities statewide, additional restrictions on sheep hunting may become necessary to ensure the viability of sheep populations in this area.

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SHEEP

SURVEY-INVENTORY PROGRESS REPORT - 1977-78

Game Management Units 23, 24, 25 and 26 - Brooks Range

Period Covered: July 1, 1977 - June 30, 1978

Seasons and Bag Limits

Units 23, 24, 25 and 26	Aug. 10 - Sept. 20	One ram with 3/4-curl horn or larger

Harvest and Hunting Pressure

Harvest statistics for the 1977 sheep season in the Brooks Range are summarized below.

Year	Harvest	Hunters	Percent success	Mean horn size	Average age	Percent hunters		Percent harvest		Percent success	
						Res	Non res	Res	Non res	Res	Non res
1977	240-271*	372-528*	49	34.2	8.0	76	24	67	33	58	85

The previous high harvest and hunter pressure recorded in the Brooks Range occurred in 1973. During that year 405 hunters took 240 rams. In 1974 the season was shortened by 10 days and remained the same through the 1977 hunting season. The projected harvest of 260 rams* in the Brooks Range for 1977 is the highest ever, and the projected number of hunters* is also a record high. It should be noted that the percent success, 49 percent, is the lowest ever recorded. Percent success has been declining since 1974 from a high of 62 percent to 49 percent this year. This decline has accompanied and probably resulted from an increase in the percentage of resident hunters using the Brooks Range. Residents have a characteristically lower success ratio than nonresidents (presumably because nonresidents are required to have a guide). It should also be emphasized that the success ratio of 49 percent is still somewhat above the statewide average. Residents had a projected 43 percent success, and nonresidents had a projected success ratio of 89 percent, the highest since 1972.

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* In 1977 reminder letters were not sent to hunters who did not return their hunter reports. The figure, 240, is a minimum for 1977 since it was the reported harvest. Typically the reminder letter increased the reported harvest by 13 percent and the reported participation by 42 percent. Also, the figure for hunters, 372, is a minimum figure and should be adjusted to make data comparable to earlier years. All ratios of success and participation are made using adjusted figures.

Average horn size of the harvested rams remained stable at approximately 34.0 inches. Mean horn size of sheep harvested in the Brooks Range is greater than that computed for all other Alaska mountain ranges. As reported previously, this is significant because horn growth rates in this area are slow. Therefore, it is concluded that the Brooks Range harvest is from a relatively old, mature and lightly exploited population. The high mean age of rams comprising the harvest, 8 years, supports this statement. It is expected that the average horn size and average age of rams harvested in the Brooks Range will begin to decrease in the future.

Analysis of harvest data from the Brooks Range by game management unit revealed a shift in hunting pressure from past years. About 14 percent, 21 percent, 20 percent and 45 percent of the harvest was taken from Units 23, 24, 25 and 26, respectively. The annual mean percent of harvest between 1974-1977 was: Unit 23, 10 percent; Unit 24, 23 percent; Unit 25, 22 percent; and Unit 26, 45 percent. Hunter use throughout the Brooks Range has increased in general and is relatively higher in the western Brooks Range (Unit 23). The harvest in the western Brooks Range has increased 2 percent per year from 1974. This translates into an actual increase in harvest from 18 rams in 1975 (about equal to the pre-1975 average) to 36 rams in 1977. Surveys in this portion of the Brooks Range indicate a population of about 1,800 sheep (see below). The 1977 harvest was about 2 percent of the total population which is sharply increased over earlier years, but well within the trophy-producing ability of most sheep populations. No decrease in average horn size is anticipated at this level of harvest. The mean horn length for Unit 23 of 34.9 inches supports this conclusion.

Composition and Productivity

Composition and productivity information is not gathered on a regular basis in the Brooks Range; however, some data are available from aerial surveys of sheep abundance. In 1977, 40 hours of aerial survey in the Delong Mountains revealed 44 lambs per 100 ewes (n=400 sheep). In the eastern Brooks Range, Want (ADF&G files, Fairbanks, 1977) reported a production of 23 lambs per 100 ewes on the Sheenjek River (n=124). Want also reported 30 yearlings per 100 ewes, a survival of 73 percent for lambs from 1976 (n=156) to 1977. Based on these figures, production in the western Brooks Range was quite high and that in the eastern Brooks Range was normal to low.

Abundance of Dall sheep in the Noatak drainage (the majority of sheep in Unit 23) was estimated as follows:

1. On the north side of the Noatak between the Wulik Peaks and the Nimiuktuk River, Smith (ADF&G files, Fairbanks, 1977) counted 401 sheep. Assuming a sightability of 0.8, this calculates to an estimated 500 sheep in this survey area.

2. On the north side of the Noatak from Papik Mountain up to the headwaters, Pegau (ADF&G files, Fairbanks, 1973) counted 65 sheep; using

a sightability of 0.7, this calculates to an estimated 100 sheep in this area.

3. Between these two areas on the north side of the Noatak, I estimate from densities on each end and available map habitat a population of 150 sheep. Hunters have reported few kills from this area which also reinforces my low estimate.

4. On the south side of the Noatak below Akikukchiak Creek, Johnson (ADF&G files, Fairbanks, 1978) counted 258 sheep. Assuming a sightability of 0.7, this calculates to an estimated 350 sheep.

5. On the southern drainages of the upper Noatak from the headwaters down to Igning Creek, Grauvogel (ADF&G files, Fairbanks, 1975) counted 397 sheep. Since this is by far the highest number ever counted in this area and Grauvogel had surveyed the area in 1974 as well, I have assigned a sightability of 0.85 to this survey. This calculates to an estimated 450 sheep.

6. On the south side of the Noatak between Igning Creek and upper Imelyak Creek, Matthews (ADF&G files, Fairbanks, 1976) counted 118 sheep. Since it was one of his earlier surveys and he also reported seeing many other animals and birds in addition to sheep, I assigned this flight a low sightability of 0.6. This calculates to an estimated 200 sheep in the area.

7. Between Akikukchiak Creek where Johnson stopped on the lower Noatak and upper Imelyuk Creek where Matthews stopped on the upper Noatak, I estimate from densities in each surveyed area and from probable habitat reflected on topographic maps (as well as hunter reports) there may be another 200 sheep.

The total of these figures is an estimated 1,850 sheep. I am confident the number is between 1,500 and 1,850 sheep. The number of sheep actually seen is 1,238.

Management Recommendations

Knowledge of the Dall sheep resource in the Brooks Range, although expanding, is still limited. I recommend that distribution and abundance surveys continue on an annual basis until all sheep habitat within the Brooks Range has been covered in a systematic manner. Area biologists should limit their aerial surveys to abundance gathering information and gather composition and productivity data on the ground where classifications are certain. Trend counts should be flown only every 3 to 5 years and not annually.

No changes in seasons or bag limits are recommended.

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MOUNTAIN GOAT

SURVEY-INVENTORY PROGRESS REPORT
FOR REGULATORY YEAR 1977-78

Game Management Subunit 1A - Ketchikan

Season and Bag Limit

Unit 1A August 31 - December 31 One goat

Harvest and Hunting Pressure

Goat harvest ticket returns for the 1977 season showed that 80 reporting hunters took 37 goats (46% females) in Subunit 1A. The 1977 Subunit 1A harvest was up 147 percent from the 1976 harvest and 118 percent from the 1975 harvest. Data from the harvest ticket program for the 1972-1977 seasons are summarized below:

Season	Goat Harvest				Hunters Taking 2 Goats	Percent Harvest By Non-res.	Number Successful Hunters	Total # Hunters	Percent Hunter Success
	MM	FF	Unk.	Total					
1972	23	23	2	48	6	-	42	117	36
1973	36	20	4	60	10	22	50	133	38
1974	26	19	2	47	10	13	37	109	34
1975	8	9	-	17	0*	24	17	93	18
1976	10	5	-	15	0*	0	15	55	27
1977	19	16	2	37	0*	14	37	80	46

*Bag limit reduced from 2 to 1 in 1975

The subunit 1A kill represented 28 percent of the total Unit 1 harvest for 1977. In 1976, Subunit 1A accounted for 15 percent of the Unit 1 harvest and in 1975, it was 13 percent.

Only 13 of the 37 successful goat hunters reported date of kill. Of those reporting, 54 percent killed their goats between September 26 and October 3. This is about a month earlier than the peak of harvest in 1976. Thirty-one percent of the remaining goats for which a kill date was reported were taken in August. No goats were taken in December.

The harvest was again centered around the Chickamin River and Walker Cove-Rudyerd Bay area, with 38 percent of the 1977 harvest reported from these areas. Only three goats (8%) were taken south of Smeaton Bay. Twenty-four percent of the goats were taken in the Yes Bay to Faily Bay area. This area last year produced 40 percent of the 1976 harvest.

For all reporting hunters in Unit 1A, 69 percent used aircraft for transportation and the remainder used boats. There was no real difference in use of aircraft or boats between successful and unsuccessful hunters.

Successful hunters averaged 3.4 days in the field while unsuccessful hunters averaged 3.8 days hunting. The maximum length hunt recorded was eight days.

Composition and Productivity

Five survey areas were covered in 1977, and all had been flown the previous year. Past survey results and maps of the routes have been included in previous reports (Wood 1974 and Wood 1975).

All survey areas showed an increase in goats observed per hour of survey time and also in the ratio of kids to adults (Appendix I). In addition, the incidence of twin kids was much higher than that observed in past years. The apparent increase in reproductive success is undoutedly a result of the extremely mild and snowless winter that occurred in 1976-1977.

The survey area with the highest density of goats in 1977 was between the Chickamin River and Walker Cove. This area was also the highest of the 1976 surveys.

All surveys were flown between August 31 and September 6 in a Piper PA-12, generally late evening (between 7:00 and 9:00 P.M.) and in the upper half of the alpine area. Contours were followed as closely as possible. Both the observer's and pilot's observations were recorded, and the same pilot and plane have been used for virtually all surveys conducted since 1968.

Management Summary and Conclusions

The harvest in 1977 increased 147 percent over last year while the total number of goat hunters increased only 45 percent, resulting in an increase in hunter success from 27 percent in 1976 to 46 percent in 1977.

Both the harvest and population increases as shown by surveys indicate an increase in the general goat population for Unit 1A over last year's population. Many variables can affect both the harvest and survey

results but it does appear that the declining trend in the goat herd in this area may have been reversed.

The 1977-78 winter, while not as mild as the preceding winter, was still considerably more open and less severe than the average winter and, hopefully, the 1978 surveys and hunting seasons will indicate further increases in goat numbers. Season and bag limits should remain unchanged.

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APPENDIX I. MOUNTAIN GOAT-SUBUNIT 1A-KETCHIKAN AREA.

Goat Composition Surveys, Subunit 1A, 1968 through 1977.

Area K-3 (Rudyerd Bay to Smeaton Bay)

Year	Survey Date	Adults	Kids	Unknown	Total	Kids Per 100 Adults	Survey Time	Goats/ Hour
1968	Aug. 20	62	17	---	79	27	100 Min.	47
1971	Sept. 15	69	21	4	94	30	80 Min.	71
1973	No Survey							
1974	No Survey							
1975	No Survey							
1976	Sept. 11	26	8	---	34	31	77 Min.	27
1977	No Survey							

Area K-4 (Wilson Arm to Boca de Quadra)

Year	Survey Date	Adults	Kids	Unknown	Total	Kids Per 100 Adults	Survey Time	Goats/ Hour
1968	Sept. 17	193	72	---	265	37	80 Min.	199
1971	Sept. 15	155	56	9	220	36	70 Min.	189
1973	Aug. 16	90	13	---	103	14	65 Min.	95
1974	Aug. 27	26*	8*	---	34*	31	36 Min.*	57
1975	Aug. 12	15	3	---	18	20	47 Min.	23
1976	Sept. 1	18	7	---	25	39	57 Min.	26
1977	Sept. 6	39	19	---	58	49	56 Min.	62

*Incomplete Survey

Area K-5 (Marten Arm to Portland Canal)

Year	Survey Date	Adults	Kids	Unknown	Total	Kids Per 100 Adults	Survey Time	Goats/ Hour
1968	Sept. 18	298	73	---	371	24	115 Min.	194
1971	Sept. 16	133	34	1	168	26	83 Min.	121

Area K-5 (Marten Arm to Portland Canal) continued.

Year	Survey Date	Adults	Kids	Unknown	Total	Kids Per 100 Adults	Survey Time	Goats/ Hour
1973	Aug. 20	59	22	---	81	37	85 Min.	57
1974	Sept. 21	24	6	---	30	25	74 Min.	24
1975	Aug. 13	21	7	1	29	33	87 Min.	20
	Sept. 11	40	17	0	57	43	78 Min.	44
1976	Sept. 7	40	7	---	47	18	99 Min.	29
1977	Aug. 31	83	41	---	124	49	101 Min.	74

Area K-6 (Cleveland Peninsula - Caamano Pt. to Vixen Inlet)

Year	Survey Date	Adults	Kids	Unknown	Total	Kids Per 100 Adults	Survey Time	Goats/ Hour
1975	August 7	7	3	---	10	43	76 Min.	8
1976	No Survey							

Area K-7 (Yes Bay to Eagle River)

Year	Survey Date	Adults	Kids	Unknown	Total	Kids Per 100 Adults	Survey Time	Goats/ Hour
1975	August 22	37	11	0	48	30	111 Min.	26
1976	No Survey							

Area K-8 (Grant Creek along Unuk River)

Year	Survey Date	Adults	Kids	Unknown	Total	Kids Per 100 Adults	Survey Time	Goats/ Hour
1975	August 23	34	6	0	40	18	64 Min.	38
1976	Sept. 11	45	6	0	51	13	80 Min.	38

Area K-9 (Klahini River to Chickamin River)

Year	Survey Date	Adults	Kids	Unknown	Total	Kids Per 100 Adults	Survey Time	Goats/ Hour
1975	August 28	52	11	0	63	21	79 Min.	48
1976	Sept. 10	73	20	0	93	27	92 Min.	61
1977	Sept. 1	104	44	0	148	42	122 Min.	73

Area K-10 (Chickamin River to Walker Cove)

Year	Survey Date	Adults	Kids	Unknown	Total	Kids Per 100 Adults	Survey Time	Goats/ Hour
1975	Sept. 10	74	31	0	105	42	65 Min.	97
1976	Sept. 9	65	20	0	85	31	59 Min.	86
1977	Sept. 2	113	55	0	168	49	86 Min.	117

Area K-11 (Walker Cove to Rudyerd Bay

Year	Survey Date	Adults	Kids	Unknown	Total	Kids Per 100 Adults	Survey Time	Goats/ Hour
1975	Sept. 10	18	5	0	23	28	14 Min.	99
1976	Sept. 9	16	5	0	21	31	17 Min.	74
1977	Sept. 6	15	6	0	21	40	15 Min.	84

MOUNTAIN GOAT

SURVEY-INVENTORY PROGRESS REPORT
FOR REGULATORY YEAR 1977

Game Management Unit 1C - Juneau

Seasons and Bag Limits

Unit 1C, that portion draining into Lynn Canal, Stevens Passage and Taku Inlet between Antler River and Taku Glacier.	Oct. 1 - Nov. 30	One goat
Remainder of Unit 1C	Aug. 1 - Dec. 31	One goat

Harvest and Hunting Pressure

The harvest ticket data for the 1977 season showed that 30 goats were taken in Unit 1C. The kill was comprised of 19 males, nine females, and two unknowns. Twenty-seven residents took 90 percent of the goats and nonresidents accounted for three animals. The summary of statistics is in Appendix I.

The 1977 kill represents a 27 percent decrease, from 41 goats in 1976 to 30 this year. The lower kill was due to a reduction in hunting pressure. Hunter numbers declined from 107 in 1976 to 72 in 1977 but success rate rose slightly from 38 percent to 42 percent.

Hunting effort in Unit 1C is directed to three broad areas. The greatest pressure is concentrated in the Stevens Passage area (Taku River to Cape Fanshaw). The kill here declined 41 percent from 1976 (from 47 to 17). Harvest in the Juneau area (Taku River to Berners Bay) remained about the same (10 goats in 1977 and 12 in 1976) while the Chilkat Range (Excursion Inlet to Eldred Rock) saw a slight increase from one goat in 1976 to three in 1977.

Composition and Productivity

Aerial surveys were conducted but were incomplete due to weather. See Appendix II for summary and comparisons.

Management Summary and Recommendations

Goat harvest in Unit 1C continued to decline for the fourth consecutive year. Reduced hunting pressure apppears to be the cause as

surveys and visual observations show no great decline in populations. The one exception is in the Chilkat Range, where the population is low even though hunting pressure is light. No changes in seasons or bag limits are recommended.

PREPARED BY:

David L. Beaudin
Game Biologist I

SUBMITTED BY:

N. P. Johnson
Regional Research/Management Coordinator

MOUNTAIN GOAT

SURVEY-INVENTORY PROGRESS REPORT
FOR FISCAL YEAR 1977

Game Management Unit 1D - Haines/Skagway

Seasons and Bag Limits

Unit 1D, that portion lying east of Taiya Inlet and River between Chilkoot Trail and White Pass and Yukon Railroad.	No open season	
Unit 1D, that portion lying between Chilkoot Inlet and Katzehin River on the east, and Chilkat Inlet and River and Klehini River on the west.	Sept. 15 - Nov. 30	One goat
Remainder of Unit 1D	Aug. 1 - Dec. 31	One goat

Harvest and Hunting Pressure

The goat harvest in Unit 1D for 1977 increased 32 percent over the 1976 harvest (Appendix I). The kill was 25 goats of which 15 were males, nine females and one unknown. Sixty-nine hunters pursued goats for a success rate of 36 percent. Residents accounted for 22 of the 25 goats taken.

Hunting pressure was dispersed over the sub-unit with the areas along Lynn Canal and the Chilkat River receiving the most concentrated effort.

Composition and Productivity

Aerial surveys were conducted in 1977. Data are insufficient to draw conclusions on productivity. Summary and comparisons are listed in Appendix II.

Management Summary and Conclusions

Hunting pressure remained low in 1977 compared to previous years. Present harvest levels do not appear to be adversely affecting the

population. No changes in seasons or bag limits are recommended.

PREPARED BY:

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SUBMITTED BY:

N. P. Johnson
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APPENDIX I.

Unit 1D Goat Harvest Statistics for 1972-1977 Seasons Derived From Hunter Report Cards.

	Chronology of Harvest								Sex Composition				No. of	Hunter
Year	A	S	O	N	D	J	Unk	Tot	M	F	Unk	%Male	Hunters	Success
1972	8	13	3	4	4	4	7	43	24	16	3	60.0	102	33.3
1973	25	27	13	6	14	NA	3	88	45	40	3	52.9	109	62.4
1974	26	8	7	2	10	NA	0	53	26	27	0	49.6	90	52.2
1975	13	4	10	7	0	NA	1	35	22	12	1	64.7	77	45.5
1976	2	1	8	1	0	NA	5	17	8	9	0	47.0	65	26.1
1977	6	1	9	7	0	NA	2	25	15	9	1	62.5	69	36.2

APPENDIX II

Goat numbers and age ratios from fixed-wing aircraft surveys, 1973-1977.

	1973				1974				1975				1976				1977			
Survey Area	Ad	Kid	Kid/100 Ad Ratio	Goat/ Hour	Ad	Kid	Kid/100 Ad Ratio	Goat/ Hour	Ad	Kid	Kid/100 Ad Ratio	Goat/ Hour	Ad	Kid	Kid/100 Ad Ratio	Goat/ Hour	Ad	Kid	Kid/100 Ad Ratio	Goat/ Hour
Sinclair Mtn. to Katzehin River					17	0	0	13					28	7	39	30				
Mt. Villard to Mt. Cleveland					17	0	0	13	45	1	2	46	20	4	20	30	35	10	28	18
Mt. Yeatman to Takshanuk Mtns	38	4	11	60	9	2	22	0.4	80	9	11	28					55	7	13	55
Takhin Ridge to Sullivan Mtn	176	47	27	98	98	18	18	46	108	9	8	27	9	1	11	14	9	3	33	16

GOAT

SURVEY-INVENTORY PROGRESS REPORT - 1977-78

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

Seasons and Bag Limits

Aug. 1-Dec. 31	One goat by permit only Conditions of permit shall be described by commissioner's announcement.

Harvest and Hunting Pressure

The 1977 Unit 4 goat hunt was again regulated by a registration hunt. One hundred eighty-eight permits were issued on a first come, first served basis. Of the permittees, 178 were Alaskan residents, and 10 were nonresidents. Eighty-seven permittees (46%) did not hunt. Only four persons failed to voluntarily return their permits as required. Compliance with these was obtained through a good cooperative effort with Officer Richard Graham of the Division of Fish and Wildlife Protection.

Analysis of the permits shows the Unit 4 kill in 1977 to have been 40 animals, 22 males and 18 females. Chronologically, 12 were taken in August, 26 in September, and two in October. Residents of Sitka and Mt. Edgecumbe took 30 animals, residents of other Alaskan communities took four animals, and nonresidents, one of whom lived in Sitka but had not yet established Alaskan residency, took six goats. Aircraft was used for transportation by 27 of the successful hunters, while 13 walked from the road system, or after boating from Sitka. Thirty-eight of the goats were taken from that portion of Baranof Island north of the drainage into the head of Silver Bay (Vodopad River). Among the unsuccessful hunters, 21 used aircraft for transportation, 33 hiked and/or boated, and seven even gave no means of transportation. Five unsuccessful permittees hunted south of the Vodopad River. All permittees who actually hunted, expended 248 days hunting effort or 2.5 days per hunter.

The 40 goats killed represent a substantial increase over previously reported harvests. It is suspected that the permit system and the considerable publicity in the form of news releases naming delinquent or noncomplying permittees, and considerable contact with goat hunters by both Department of Fish and Game, and Fish and Wildlife Protection personnel, may create a greater degree of compliance in reporting harvests. If true, the reported kill of 40 animals in 1977 may be quite close to the actual kill and previous years reported kills were less than actual.

Composition and Productivity

An extensive survey was conducted over all areas known to be inhabited by goats on August 18, 19, and October 1, 1977. A Hughes 500 helicopter was used. A total of 541 goats were counted, 393 adults and 148 kids.

This survey was conducted in 7.4 hours counting time. All indices observed were considerably greater than during any previous survey. Much of this change can undoubtedly be attributed to the excellence of the Hughes 500 helicopter as a survey vehicle. The siting of a number of apparent twins suggests that the mild winter of 1976-77 created a condition favorable to excellent production and survival. This condition was observed north and south of the Vodopad River. The kid/100 adult ratio was slightly higher north of the Vodopad River (39.5),than south of the river (32.7).

Age structure of the harvest

Horns of 27 of the goats taken in 1977 were made available for aging. Sixteen males showed a mean age of 4 years while 11 females showed a mean age of 7 years.

Management Summary and Conclusion

The mountain goat population on Baranof Island appears to be in a healthy condition. The 1977 survey suggests the herd condition to be even better than had been previously thought. Known harvests have not exceeded 10 percent of the observed population on the northern portion of Baranof. Hunting pressure is nearly nonexistent on the southern half of the island, due to a lack of access. The permit system now in effect can adequately regulate the kill.

Recommendations

None at this time.

Note: Two corrections should be made on last year's report. That report is for Fiscal Year 1976, not 1977. Two harvests are shown in Appendix II for 1970, 16 and 20. The 20 kills is actually the figure for 1971.

PREPARED BY:

Loyal J. Johnson
Game Biologist III

SUBMITTED BY:

Nathan Johnson
Regional Research/Management Coordinator

Appendix I. Mountain goat survey and harvest data. Game Management Unit 4.

Survey Data							Harvest Data				
Date	Total Goats	Goats/ Hour	Number Kids	Number Adults	Kids/100 Adults	Data Source (Aircraft Type)	Total Kill	Males	Females	Total Number Hunters	Data Source
1954	263	--	41	222	18.5	USF&WS (------)	----------				
9/1/1960	116	38.4	26	90	28.9	Merriam-ADF&G (------)			ZERO DATA		
9/11/1961	118	--	20	98	20.4	Merriam-ADF&G (------)	----------				
9/3/1970*	154	--	15	139	10.8	Courtright-ADF&G	16			48	Hunter Interview
9/29/1970	121	--	13	108	12.0	Courtright-ADF&G (Helio Courier)				75	Hunter Interview
1971	--	--	--	--	--	--	20				
1972	--	--	--	--	--	--	10	5	5	50	Harvest Ticket
9/12-13/1973	253	36.1	50	203	24.6	Johnson-ADF&G (Piper PA-18)	24	11	13	45	Harvest Ticket
1974	--	--	--	--	--	--	10	7	3	39	Harvest Ticket
8/24-25/1976**	242	62.0	47	195	24.1	Johnson-ADF&G (Piper PA-18)	28	18	10	107	Harvest Ticket/ Registration Permit
1977	541	73.1	148	393	37.7	Johnson-ADF&G (Hughes 500 Helicopter)	40	22	18	101	Registration Permit

*Incomplete coverage
**North of Vodopad River only.

MOUNTAIN GOAT

SURVEY-INVENTORY PROGRESS REPORT
FOR FISCAL YEAR 1977-78

Game Management Unit 5 - Yakutat

Seasons and Bag Limits

Aug. 1 - Dec. 31 — One goat

Harvest and Hunting Pressure

Based on harvest ticket returns, six of 17 hunters (35%) were successful during the 1977-78 goat season in Unit 5. Harvest composition was 66.7 percent male and 33.3 percent female. Nonresidents, making up 35.5 percent of the hunters, harvested 66.7 percent (4) of the goats killed. The chronology of the harvest was spread out with one goat taken in August, two in October, one in November, one during December and one with no date reported.

Composition and Productivity

During aerial surveys conducted in July and August with a Cessna 180, 132 goats were counted. The age structure observed was 33 kids to 99 adults.

Management Summary and Recommendations

Since hunter harvest is not a significant mortality factor at this time, no changes in season or bag limits are recommended.

PREPARED BY:

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SUBMITTED BY:

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MOUNTAIN GOAT

SURVEY-INVENTORY PROGRESS REPORT FOR REGULATORY YEAR 1977-78

Game Management Unit 6

Seasons and Bag Limits

Unit 6	Augsust 1-December 31	One goat

Harvest and Hunting Pressure

During the 1977 mountain goat season 109 goats were taken in Unit 6. Of these, 66 (61%) were males, 41 (38%) were females and 2 (2%) were of unknown sex. The 1977 harvest was considerably smaller than the preceeding 2 years but the composition of males and females taken has been consistent (Appendix I).

The eastern side of Prince William Sound from Valdez Arm to the Copper River produced the most goats (Appendix II) and was the most heavily hunted (Appendix III). Nearly half of the harvest (50 goats) and hunting pressure (114 hunters) occurred within this area. The vast area east of Copper River was lightly hunted (39 hunters) and yielded only 23 goats. Overall hunter success was 44 percent. Resident hunters took 72 percent of the harvest.

Chronology of the harvest (Appendix IV) revealed that 84 percent of the harvest occurred in August, September and October.

Composition and Productivity

Four areas were surveyed for goat abundance, distribution and composition during 1977 (Appendix V). Excellent goat populations were observed in the Bering Glacier to Icy Bay area (nearly 1,000 goats) and the Rude River to Gravina area (192 goats). In the Goat Mountain Goat Observation Area which has been closed to goat hunting since 1975 an August 1977 survey revealed 12 goats. This was considered less than the 67 goats observed during an August 1972 survey.

Management Summary and Conclusions

The 1977 harvest of 109 goats was a moderate harvest for Unit 6. The percent of males in the harvest, hunting pressure, percent hunter success and distribution of the harvest are all comparable to previous years (Appendix VI). Hunting pressure does not appear to be adversely affecting Unit 6 goat populations.

A survey flown in 1977 revealed excellent goat populations east of Bering Glacier and west of Rude River. The area from Rude River to

Copper River has an adequate population. The Goat Mt. Goat Observation Area which has been closed to hunting since 1975 appears to have a declining goat population. The reason for this decline is not known, but predation by wolves is suspected to be the major factor.

Wolf predation on Unit 6 goat populations has been negligible until recent years. Prior to the introduction of moose to the Copper River Delta during the 1950's, wolves were few in number and considered transitory. As the moose population increased and expanded, wolf packs became established and are now increasing in size. Predation on goat populations is more apparent than on adjacent moose herds. This may be because goats are easier for wolves to take and therefore are taken more frequently.

Additional surveys are needed to assess the status of goats in the Copper River to Bering Glacier area. Goat populations in this area are thought to be declining as wolf numbers increase. Hunting does not appear to be a problem because of the small annual harvests.

Recommendations

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

PREPARED BY:

Julius Reynolds
Game Biologist III

SUBMITTED BY:

James B. Faro
Regional Management Coordinator

APPENDIX I

Unit 6

Mt. Goat Harvest by Year and Sex

	MALE		FEMALE		UNKNOWN		TOTAL	
	No.	Percent	No.	Percent	No.	Percent	No.	Percent
1972	49	63.6	27	35.1	1	1.3	77	100.0
1973	93	67.4	43	31.2	2	1.4	138	100.0
1974	88	70.4	35	28.0	2	1.6	125	100.0
1975	99	60.4	62	37.8	3	1.8	164	100.0
1976	74	60.2	49	39.8	0	0.0	123	100.0
1977	66	60.6	41	37.6	2	1.8	109	100.0

Prepared by: Julius Reynolds, Game Biologist III

APPENDIX II

Unit 6

1977 Mt. Goat Harvest by Subunit & Sex

Unit/ Subunit	Area	Male	Female	Unk.	Total	Percent
6-01	East of Suckling Hills to Icy Bay	2	4	0	6	5.5
6-02	Bering Lake - Burg Lake Area	2	4	1	7	6.4
6-03	Suckling Hills	2	1	0	3	2.8
6-04	Ragged Mountain	4	3	0	7	6.4
6-05*	Goat Mountain	-	-	-	-	-
6-06	Rude River to Copper River	7	3	0	10	9.2
6-07	Valdez Arm to Rude River	17	12	1	30	27.5
6-08	Valdez Area	7	3	0	10	9.2
6-09	Port Wells to Columbia Glacier	6	3	0	9	8.3
6-10	Unit 6 - Unknown	3	2	0	5	4.6
6-11	Whittier-Port Wells	0	0	0	0	0.0
6-12	Kings Bay to Cape Fairfield	8	6	0	14	12.8
6-13	Prince William Sound - Unknown	8	0	0	8	7.3
Unit 6 Total		66	41	2	109	100.0

* Not open to hunting.

Prepared By: Julius Reynolds, Game Biologist III

APPENDIX III

Unit 6

1977 Mt. Goat Hunting Pressure by Subunit & Class of Hunter

Unit/ Subunit	Area	Successful Hunters	Unsuccess-ful hunter	Total Hunters	Percent Success
6-01	East of Suckling Hills to Icy Bay	6	4	10	60.0
6-02	Bering Lake - Burg Lake Area	7	2	9	77.8
6-03	Suckling Hills	3	0	3	100.0
6-04	Ragged Mountain	7	10	17	41.2
6-05*	Goat Mountain	-	-	-	-
6-06	Rude River to Copper River	10	29	39	25.6
6-07	Valdez Arm to Rude River	30	13	43	69.8
6-08	Valdez Area	10	22	32	31.3
6-09	Port Wells to Columbia Glacier	9	9	18	50.0
6-10	Unit 6 - Unknown	5	16	21	23.8
6-11	Whittier - Port Wells	0	11	11	0.0
6-12	Kings Bay to Cape Fairfield	14	13	27	51.9
6-13	Prince William Sound - Unknown	8	12	20	40.0
Unit 6 Totals		109	141	250	

* Not open to hunting.

Prepared by: Julius Reynolds, Game Biologist III

APPENDIX IV

Unit 6

Chronology of 1977 Mt. Goat Harvest*

Month	Number	Percent
August	28	25.7
September	32	29.4
October	31	28.4
November	12	11.0
December	4	3.7
Unknown	2	1.8
Total	109	100.0

* Hand compiled.

APPENDIX V

Unit 6

1977 Mt. Goat Composition & Productivity Surveys

Area	Date	Adults	Kids	Unk.	Total	Kids/100 Adults	% Kids in Total Population
Bering Glacier - Icy Bay*	8/3,4,28	669	176	143-155	988-1000	26.3	20.8
Goat Mt. Goat Observation Area	8/19	10	2	0	12	20.0	16.7
Copper River - Eyak Lake	9/13	94	9	0	103	9.8	8.7
Rude River - Gravina	9/2	176	16	0	192	9.1	8.3

* Survey flown in Cessna 180.

Prepared by: Julius Reynolds, Game Biologist III

APPENDIX VI

Unit 6

Mt. Goat IBM Harvest Ticket Data

	ITEM	1973-74	1974-75*	1975-76*	1976	1977
1.	Total Harvest	138	125	164	123	109
2.	Percent Males in Harvest	67.4	70.4	60.4	60.2	60.6
3.	Total Hunters	280	238	251	270	250
4.	Percent Hunter Success	41.1	46.2	55.0	45.6	43.6
5.	Percent Hunters taking 2 goats	8.2	6.3	10.4	---**	---
6.	Percent harvest: August, September, October	68.2	72.8	71.4	93.5***	83.5
7.	Valdez Arm to Copper River					
	Percent Harvest	42.8	39.2	48.8	30.9	45.9
	Percent Hunters	38.6	34.8	43.3	33.3	45.6

* Harvest ticket data compiled by hand.

** Bag limit reduced to one goat.

*** Season reduced by one month (January).

Prepared By: Julius Reynolds, Game Biologist III

MOUNTAIN GOAT

SURVEY-INVENTORY PROGRESS REPORT - 1977-78

Game Management Unit 7 - Seward

Seasons and Bag Limits

Unit 7, that portion south and east of Ellsworth Glacier and the stream flowing from Ellsworth Glacier into Day Harbor and that portion south and west of Bear Glacier.	Aug. 10-Dec. 31	One goat by permit only. See 5 AAC 81.055 and separate permit hunt supplement.
Unit 7, that portion west of a line along Sixmile Creek from its mouth near Hope to the Seward Highway to Ptarmigan Creek; north of a straight line from Ptarmigan Creek bridge to Porcupine Island in Kenai Lake, then a straight line from Porcupine Island to the head of Upper Russian Lake; east of the Russian River from Upper Russian Lake to Kenai River and north of the Kenai River from the confluence of Russian River to the Unit 15 boundary.	No open season	
Remainder of Unit 7	Sept. 20-Oct. 10	One goat by permit only. See 5 AAC 81.055 and separate permit hunt supplement.

Harvest and Hunting Pressure

Thirty-four goats were harvested in Unit 7 during the 1977 season (Appendix I). The harvest was comprised of 22 males (65%) and 12 females (35%).

The percentage of males in the harvest (65%) was the highest recorded during the past 6 years. Appendix II shows that the reported harvest of 34 goats was four percent of the total observed during the latest surveys. Only one of the eight hunt areas reached the maximum desired level (10%) of harvest.

Composition and Productivity

Count areas 2, 8, 10, 17 and 30 were surveyed during 1977. A total of 555 goats (446 adults and 109 kids) were observed.

Management Summary and Conclusion

The high percentage of males (65%) in the harvest suggests that the goat population is not being heavily exploited by sport hunters. At this time the unlimited registration permit system appears adequate to regulate the goat harvest.

Recommendations

No changes are recommended at this time.

PREPARED BY:

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SUBMITTED BY:

James B. Faro
Regional Management Coordinator

Mountain Goat - GMU 7 - Seward

Appendix I

Goat Harvest by Sex and Percentage of Successful Hunters in Unit 7 from 1969 to 1977.

Year	Males	%	Females	%	Unk.	%	Total	Hunters	Percent Success
1969[1]	52	67	24	31	2	2	78	-	-
1972[2]	68	54	57	45	2	2	127	305	44
1973	93	56	71	43	2	1	166	501	33
1974	36	56	25	39	3	5	64	256	25
1975	37	42	44	53	2	2	83	236	35
1976	41	59	29	41	0	0	70	341	21
1977	22	65	12	35	0	0	34	No Data	No Data

[1] Based upon multi-species questionnaire on harvest report packet; believed to be low total.

[2] Harvest tickets and reports for goats were initiated July 1, 1972. Harvest questionnaires were discontinued in 1971 and hunter response was so poor in 1970 data were not tabulated.

Mountain Goat - GMU 7 - Seward

Appendix II

Reported Harvest by Hunt Area, Results of Last Survey and Harvest Level for 1977.

Hunt Area	(Count Area)	Harvest	Goats Observed Adults	Goats Observed Kids	Survey Date	Reported Harvest Level (Percent)
7- 7	(4)	1	71	16	1975	1
7- 9	(5)	4	115	39	1976	3
7-10	(28)	2	23	3	1973	8
7-14	(7)	4	54	19	1973	5
7-15	(17)	12	99	25	1977	10
7-16	(8)	4	176	33	1977	2
7-22	(30)	5	100	35	1977	4
7-23	(33)	1	No Data		-	-
Unknown		1	-	-	-	-
Total		34	638	170		

Prepared by: Ted H. Spraker, Game Biologist III

MOUNTAIN GOAT

SURVEY-INVENTORY PROGRESS REPORT - 1977-78

Game Management Unit 8 - Kodiak and Adjacent Islands

Seasons and Bag Limits

Unit 8	Sept. 1-Oct. 30	One goat, up to 15 goats by permit only. See 5 AAC 81.055 and separate permit hunt supplement.

Harvest and Hunting Pressure

Twenty-eight permits were issued to Unit 8 goat hunters in 1977 (Appendix I). Fifteen of the 24 permittees who hunted (63%) killed a goat.

The harvest was comprised of six males (40%) and nine females (60%). Two of the 15 goats (a male and a female) were kids. The remaining eight females ranged from 3 to 8 years old and averaged 5.1 years. The five adult males ranged from 4 to 10 years old and averaged 5.4 years.

Eight animals were taken east of Terror Lake near the summit of Kizhuyak and Hidden Basin drainages. Five animals were taken east of Wild Creek and near Center Mountain in the Kizhuyak drainage. Two animals, both males, were killed near the south arm of Ugak Bay.

Unusually mild weather favored hunting efforts in 1977. Nine goats were taken during the first four days of the season and 15 goats were tallied by September 24. The season was closed by field announcement on September 28.

Composition and Productivity

One hundred-sixteen goats were tallied (Appendix II) during 7.2 hours of composition surveys flown on August 23, 28 and 29, 1977. Twenty-four sightings of one or more goats were made. This is the highest total count since the introduction of goats on Kodiak Island in 1952-53. Most of the known or suspected goat range was flown in 1977; more time was spent surveying than during previous years. Only 11 goats were observed during the August 29 survey. This 3.2 hour survey covered the Uganik drainage west and south of Mount Glottof and west of Koniag Peak. No kids were observed during this survey which further indicates that reproductive herds have not become established in this area, although it appears to have potential for supporting more goats. Most of the goats were sighted in the upper reaches of the Ugak Bay, Terror River, Kizhuyak Bay and Kiliuda Bay.

Twenty kids and 96 adults were classified. The kid to adult ratio of 20.8/100 was below average. More extensive surveys in 1977 resulted in more isolated animals being tallied which affected this ratio. Six fewer kids were observed in 1977 than during the 1976 surveys.

Thirty-eight goats, including eight kids, were observed on Crown Mountain which has been closed to hunting since 1976. Only two of the 23 goats seen there during the 1976 survey were kids.

Management Summary and Conclusions

Aerial surveys in 1977 seem to confirm that Kodiak's goat population has stabilized. Although isolated animals were seen as far south and west as Uyak Bay, most of the population occupied an area within 15 miles of the original transplant site in Hidden Basin. Since no mortality other than hunter kills were recorded, the reasons for the possible decline in kid production are unknown. Differential observability of kids or failure to observe one or more family groups could explain annual difference in the number of kids counted.

Harvest of females continued to exceed that of males. During the 1972-77 period 37 females (54%), 28 males (40%) and four animals of unknown sex (6%) were killed. Eight of the nine females taken in 1977 were 3 years old or older and presumably productive animals. This may be too high a rate of harvest on females unless evenly distributed through all the family groups. Excessive harvest of females may have reduced productivity in the Crown Mountain group in previous years. Six adult females were taken in 1977 from the group which occupies the ridge east of Terror Lake and west of Crown Mountain.

Resident hunters know the locations of the major groups of goats. With no limit on the numbers of permits issued, hunters can take several females from a family group in one season. Although movement information is insufficient to determine herd identities, the location of the major groups of goats during the September-October hunting season are predictable.

Recommendations

Kodiak Island should be divided into several hunting areas which conform to the fall ranges of the major groups of goats. A specified number of goat permits should be assigned to each area proportional to the estimated harvestable surplus of goats in an area. Marginal range where goats have not yet become well established should remain closed until a harvestable surplus can be documented.

PREPARED BY:

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SUBMITTED BY:

James B. Faro
Regional Management Coordinator

APPENDIX I

Unit 8 - Mountain Goat Harvest Statistics, 1968-1977

Date	Season Dates	Number Permits Issued	Number Hunters Afield	Percent Hunter Success	Number Goats Harvested	Conditions of the Hunt
1968	Sept.1-30	10*	9	67%	6 (3M, 3F)	10 goats by permit; public drawing
1969	Sept.1-30	10*	11	55%	6 (5M, 1F)	10 goats by permit; public drawing
1970	Sept.1-30	15	8	63%	5 (4F, 1UKN)	15 goats by permit; public drawing
1971	Sept.1-Oct.30	25	8	50%	4 (1M, 3F)	15 goats by permit; public drawing
1972	Sept.1-Oct.30	40	21	48%	10 (3M, 4F, 3UKN)	15 goats by permit; To be closed by field announcement
1973	Sept.1-Oct.30	32	26	58%	15 (7M, 8F)	15 goats by permit; To be closed by field announcement
1974	Sept.1-Oct.30	58	28	57%	16 (5M, 10F, 1UKN)	15 goats by permit; To be closed by field announcement
1975	Sept.1-Oct.30	66	36	28%	10 (5M, 5F)**	15 goats by permit; To be closed by field announcement
1976	Sept.1-Oct.30	48	26	12%	3 (2M, 1F)	15 goats by permit; To be closed by field announcement
1977***	Sept.1-Oct.30	28	24	63%	15 (6M, 9F)	15 goats by permit; To be closed by field announcement

* Additional alternate permits issued
** One additional male killed by hunter without permit
*** Season closed by Emergency Order September 28, 1977

PREPARED BY: Roger B. Smith, Game Biologist III

APPENDIX II

Unit 8 - Mountain Goat Sex and Age Composition Counts, 1952-1977

Date	Adult (may include sub-adults)	Kid	Total	Kid/100 Adult	% Kids in Total Count	Observer	Flight Time (Hrs.)
1952-1953	7 males and 11 females, total 18 animals transplanted to Crown Mountain						
1954			Zero Data				
1955			Zero Data				
1956			5			Unsigned, undated report	
1957	2	2	4	100.0	50.0	"	"
1958	4	2	6	50.0	33.3	"	"
9-19-1959	5	2	7	40.0	28.6	Will Troyer	--
1960			Zero Data				
1961			Zero Data				
1962	14	8	22	57.1	36.3	Will Troyer	--
1963	18	8	26	44.4	30.7	Will Troyer	--
1964	13	13	26	100.0	50.0	Will Troyer	--
1965	22	13	35	59.0	37.1	Will Troyer	--
9-20-1966	38	16	54	42.1	29.6	B. Ballenger	--
9-05-1967	39	19	58	48.8	32.7	B. Ballenger	--
12-20-1968	57	14	71	24.5	19.7	B. Ballenger	2.2
8-05-1969	73	15	88	20.5	17.0	B. Ballenger	2.4
8-22-1970	61	20	81*	32.7	24.7	B. Ballenger	
1971			Zero Data*				
7-27-1972	64	27	91	42.1	29.7	B. Ballenger	2.3
9-18-73	88	24	112	27.3	21.4	R.B. Smith	1.9
8-18/19-1974	37	12	49	32.4	24.5	R.B. Smith	5.3
8-18/19-1975	41	6	47	14.6	12.8	R.B. Smith	Foot Survey
8-12/9-5-76	68	26	94	38.2	27.6	R.B. Smith	6.7
8-23, 8-28, 8-29, 1977	96	20	116	20.8	17.2	R.B. Smith/Ballenger	7.2

* "Much snow cover on high elevations, goats hard to spot." - B. Ballenger

PREPARED BY: Roger B. Smith, Game Biologist III

MOUNTAIN GOAT

SURVEY-INVENTORY PROGRESS REPORT - 1977-78

Game Management Unit 11 - South side of Wrangell Mountains and eastern portion of Chugach Mountains

Seasons and Bag Limits

Unit 11	Sept. 1 - Dec. 31	One goat

Harvest and Hunting Pressure

Sixty-three hunters harvested 32 mountain goats (19 males - 63%, 11 females - 37% and 2 unknown sex) during the 1977 season (Appendix I). The 1977 mountain goat harvest was five (19%) above the 1976 level. The 1977 harvest continued to increase after a marked drop in 1975 when the season opening was changed from 10 August to 1 September and the bag limit changed from two goats to one.

The average number of days hunted by successful goat hunters increased from 3.8 in 1976 to 5.0 in 1977. The average number of days hunted by unsuccessful hunters was 3.8 in 1977. Chronology of harvest data for 1976 and 1977 is difficult to compare with previous years because 81 and 66 percent of the hunters respectively failed to report date of kill (App. II).

Composition and Productivity

Presented in Appendix III are mountain goat composition data obtained from the MacColl Ridge trend count area. During the 1977 survey a total of 53 goats including 14 kids (26.4%) were tallied. This was the largest number of goats and the highest percent of kids on record for this area.

Management Summary and Conclusions

The harvest of 32 goats in 1977 shows an increase over the last 2 years. The drop noted in the 1975 harvest, after a season date and bag limit change suggest that most mountain goats were taken as an alternate species by sheep hunters. However, the trend is again toward an increased harvest, showing more interest in goats as the primary species hunted.

One inherent problem with sport harvest data on goats is the unrecorded kill by cripple-loss and irretrievable animals which may constitute a significant addition to known harvest mortality.

Recommendations

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

2. Aerial surveys should be continued for the MacColl Ridge trend area.

PREPARED BY:

Robert Tobey
Game Biologist II

SUBMITTED BY:

James B. Faro
Regional Management Coordinator

APPENDIX I. A comparison of mountain goat harvest data for Unit 11 from 1972 through 1977.

	1972	1973	1974
Total Hunters:	64	94	105
Number Successful Hunters (%):	32(50%)	55(60%)	44(42%)
Mean Number Days Hunted,			
Successful (sample size):	3.2(32)	4.5(49)	3.7(41)
Unsuccessful (sample size):	5.2(32)	5.8(38)	6.7(47)
Number Goats Killed:	37	59	52
Male Goats Harvested (%):*	13(35%)**	36(61%)	27(53%)
No. Hunters Killing 2 Goats			
(% of successful):	5(16%)	4(7%)	8(18%)
Unknown Sex (%):	0	0	1(2%)

	1975	1976	1977
Total Hunters:	49	65	63
Number Successful Hunters (%):	17(35%)	27(42%)	32(51%)
Mean Number Days Hunted,			
Successful (sample size):	6.5(15)	3.8(26)	5.0(29)
Unsuccessful (sample size):	7.3(6)	4.3(34)	3.8(30)
Number Goats Killed:	17	27	32
Male Goats Harvested (%):*	11(65%)	16(62%)	19(63%)
No. Hunters Killing 2 Goats			
(% of successful):	0***	0***	0***
Unknown Sex (%):	0	1(4%)	2(6%)

* Percentage male goats = (MM/MM+FF) x 100.
** 24 goats taken in 1972 were listed as unknown sex in the computer printout.
*** Bag limit reduced to one beginning with 1975 season.

PREPARED BY: Robert Tobey, Game Biologist II.

APPENDIX II. A comparison of the chronologies of the Unit 11 mountain goat harvests from 1972 through 1977 when specified on harvest report.

Period	1972 Harvest No.	1972 Harvest Percent	1973 Harvest No.	1973 Harvest Percent
Aug. 10-20	13	35%	7	12%
Aug. 21-31	10	27%	9	15%
Sept. 1-10	8	22%	16	27%
Sept. 11-20	4	11%	11	19%
Sept. 21-30	0	0%	9	15%
After Sept. 30	2	5%	3	5%
Date Unknown	0	0%	4	7%
Total	37		59	

Period*	1974 Harvest No.	1974 Harvest Percent	1975 Harvest** No.	1975 Harvest** Percent
Aug. 8-21	12	23%	0	0%
Aug. 22-Sept. 4	3	6%	1	6%
Sept. 5-18	13	25%	5	29%
Sept. 19-Oct. 2	9	17%	5	29%
After Oct. 2	14	27%	4	24%
Date Unknown	1	2%	2	12%
Total	52		17	

Period	1976 Harvest No.	1976 Harvest Percent	1977 Harvest No.	1977 Harvest Percent
Aug. 8-21	0	0%	2	6%
Aug. 22-Sept. 4	1	4%	0	0%
Sept. 5-18	0	0%	0	0%
Sept. 19-Oct. 2	0	0%	0	0%
After Oct. 2	4	15%	9	28%
Date Unknown	22	81%	21	66%
Total	27		32	

* Recording periods were changed to follow the recording system of computer printout in 1974.

** Opening date was changed to September 1.

PREPARED BY: Robert Tobey, Game Biologist II

Appendix III. Mountain goat survey data for MacColl Ridge in Game Management Unit 11, 1970 through 1977.

Survey Date	Adults	Kids	Goats	Kids/ 100 Adults	% Kids	Survey Time	Goats/Hour
1970	--	--	28	--	--	--	--
1973	33	10	43	30.3	23.2%	--	--
4/19/74	41	3	44	7.3	6.8%	--	--
1975	NO DATA						
6/29/76*	12	1	13	8.3	7.7%	3.1 hrs	4.2
8/3/77	39	14	53	35.9	26.4%	1.7 hrs	31.2

* Incidental to Sheep Survey

PREPARED BY: Robert Tobey, Game Biologist II

MOUNTAIN GOAT

SURVEY-INVENTORY PROGRESS REPORT - 1977-78

Game Management Unit 13 - Upper Susitna, Matanuska, Nenana, Delta and western half of the upper Copper River drainages.

Seasons and Bag Limits

Unit 13	Aug. 10 - Dec. 31	One goat

Harvest and Hunting Pressure

The 1977 Unit 13 goat harvest and hunter success decreased from previous years (Appendix II). The goat harvest by specific locality is presented in Appendix II.

Composition and Productivity

Surveys were conducted in the Talkeetna Mountains portion of Unit 13. No goats were observed. A trend area was also flown in the Tazlina-Klutina portion of the Chugach Mountains; four goats were counted. Fifty-four goats were counted in the same area during a survey in 1969.

Management Summary and Conclusions

Present data indicate a reduction in harvest and in total goat numbers in Unit 13.

Recommendations

1. Goat trend counts should continue in the Tazlina-Klutina area.
2. Goat hunting in Unit 13 should be terminated until such time as the Tazlina-Klutina area has sufficient numbers to support a limited hunt.

PREPARED BY:

Sterling Eide
Game Biologist III

SUBMITTED BY:

James B. Faro
Regional Management Coordinator

Appendix I. Unit 13 Goat Harvest Data, 1972-77.

Year	Total Harvest	No. Hunters	Hunter Success	Males (%)
1972	19	43	44%	13(68%)
1973	12	34	35%	9(75%)
1974	16	62	26%	9(56%)
1975	24	67	36%	14(58%)
1976	12	52	23%	7(58%)
1977	10	56	18%	5(50%)

PREPARED BY: Sterling Eide, Game Biologist III

APPENDIX II. Harvest Location (When Specified) of Mountain Goats in Unit 13

	1972 Harvest		1973 Harvest	
	Number	Percent	Number	Percent
Chugach Mountains,				
Tiekel River-Kimball Pass:	2	11%	0	0%
Klutina-Tonsina:	2	11%	0	0%
Tazlina-Nelchina:	6	32%	4	33%
S. Fork Matanuska-Coal Cr.:	6	32%	1	8%
Talkeetna Mountains:	0	0%	0	0%
Chulitna Hills:	0	0%	1	8%
Unknown Kill Location:	3	16%	6	50%
Totals	19		12	

	1974 Harvest		1975 Harvest	
	Number	Percent	Number	Percent
Chugach Mountains,				
Tiekel River-Kimball Pass:	1	6%	0	0%
Klutina-Tonsina:	8	50%	8	33%
Tazlina-Nelchina:	0	0%	2	8%
S. Fork Matanuska-Coal Cr.:	5	31%	8	33%
Talkeetna Mountains:	0	0%	0	0%
Chulitna Hills:	0	0%	0	0%
Unknown Kill Location:	2	12%	6	25%
Totals	16		24	

	1976 Harvest		1977 Harvest	
	Number	Percent	Number	Percent
Chugach Mountains,				
Tiekel River-Kimball Pass:	1	8%	2	20%
Klutina-Tonsina:	0	0%	0	0%
Tazlina-Nelchina:	2	17%	2	20%
S. Fork Matanuska-Coal Cr.:	6	50%	2	20%
Talkeetna Mountains:	2	17%	0	0%
Chulitna Hills:	0	0%	0	0%
Unknown Kill Location:	1	8%	4	40%
Totals	12		10	

Prepared by: Sterling Eide, Game Biologist III

MOUNTAIN GOAT

SURVEY-INVENTORY PROGRESS REPORT FOR REGULATORY YEAR 1977-78

Game Management Subunits 14A and 14B

Seasons and Bag Limits

14A - north of the Matanuska River	No Open Season	
Remainder of 14A	Sept. 21-Nov. 15	One goat by permit only. Conditions of the permit to be described by Commissioner's Announcement.
14B	Aug. 10-Nov. 15	One goat

Harvest and Hunting Pressure

Mountain goat harvest data for Subunits 14A and 14B from 1972 through 1977 are given in Appendix I. The harvest for Subunit 14A has been declining since 1972 and, in 1977, no goats were taken in either subunit. Hunting pressure in 14A decreased over 70 percent since 1976. Hunting pressure in Subunit 14B has been minimal since 1972 and, in 1977, no hunters reported hunting in the Subunit.

Composition and Productivity

No goat surveys were completed during the report period.

Management Summary and Conclusions

From 1967 through 1972, the season in Unit 14 was August 10 through November 15, with a bag limit of one goat. In 1975, that portion of 14A north of the Matanuska River was closed to goat hunting and has remained closed to the present. In 1976 and 1977, the season in the portion of Subunit 14A south of the Matanuska River, was shortened 18 days by changing the opening date from September 3 to September 21.

Goat harvests in Subunit 14A have been steadily declining since 1972. A reduction in season length in the Subunit began in 1976 and may have had some effect on the goat harvest in this area. The goat population, however, is in an inaccessible portion of the subunit and therefore a change in hunting patterns or goat distribution may have affected the harvests. Hunting pressure in 1977 was the lowest on record. The present low hunter pressure and harvest is acceptable, but the goat population must be continually monitored due to the large human population in Unit 14.

At the present time goat hunting pressure and harvests in Subunit 14B are negligible.

Recommendations

No changes in seasons or bag limits are recommended. A goat survey should be flown in Subunit 14A in 1979.

PREPARED BY:

Jack C. Didrickson
Game Biologist III

SUBMITTED BY:

James B. Faro
Regional Management Coordinator

Appendix I. Mountain Goat Harvest and Hunting Pressure for Game Management Subunits 14A and B, 1972 through 1977.

Subunit 14A

	1972	1973	1974	1975	1976*	1977**
Total Hunters	13	12	13	11	17	5
Total Goats Harvested	4	5	2	1	1	0
Percent Successful Hunters	31%	42%	15%	9%	6%	0%
Male Goats Harvested	2	2	1	1	1	0
Percent Male Goats in Harvest	50%	40%	50%	100%	100%	0%

Subunit 14B

	1972	1973	1974	1975	1976	1977
Total Hunters	5	0	2	2	3	0
Total Goats Harvested	1	0	0	0	1	0
Percent Successful Hunters	20%	-	0%	0%	33%	-
Male Goats Harvested	1	0	0	0	1	0
Percent Male Goats in Harvest	100%	-	0%	0%	100%	-

Unit 14 Unknown Subunit (may include some Subunit 14C hunters)

	1972	1973	1974	1975	1976*	1977
Total Hunters	16	8	11	4	1	1
Total Goats Harvested	0	0	0	0	0	0
Percent Successful Hunters	0%	0%	0%	0%	0%	0%
Male Goats Harvested	0	0	0	0	0	0
Percent Male Goats in Harvest	0%	0%	0%	0%	0%	0%

* 1976 was the first year goat hunters in Subunit 14A were required to obtain a permit. The number of hunters who reported hunting in Subunit 14A on their harvest ticket report (17) exceeded the number who reporting hunting in Subunit 14A on their permit report (14). Thus the higher figure was used.

** 1977 harvest data from Subunit 14A based on permit reports.

MOUNTAIN GOAT

SURVEY-INVENTORY PROGRESS REPORT FOR REGULATORY YEAR 1977-78

Game Management Subunit 14C - Anchorage and vicinity

Seasons and Bag Limits

Unit 14(C) within Chugach State Park		No open season
Remainder of Unit 14(C)	Sept. 5-Nov. 15	One goat by permit only.

Harvest and Hunting Pressure

During 1977 three goats were harvested within Game Management Subunit 14C. The harvest was composed of one male and two females (Appendix I). Presented in Appendix I is information on goat harvest and hunting pressure that has been collected since 1972.

Composition and Productivity

Aerial surveys were not flown in 14C during 1977. Surveys were last flown during June of 1976. At that time 230 goats were tallied within the entire subunit. Of these, 114 were seen in the Twentymile drainage, 86 in the Lake George Area, and 30 in the Hunter Creek-Eklutna drainages. Kids comprised 27 percent of all goats observed.

Management Summary and Conclusions

Present harvest levels will not effect the 14C goat population as most goats are found in extremely inaccessible areas that receive little hunting pressure. Present population levels are most likely comparable to numbers seen in 1976.

Recommendations

Aerial surveys should be flown throughout all areas of major goat concentrations during the spring of 1979. Particular attention should be given the Glacier and Hunter Creek drainages where most hunting pressure occurs.

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

PREPARED BY: David B. Harkness
Game Biologist III

SUBMITTED BY: James B. Faro
Regional Management Coordinator

Appendix I. 14C Goat Harvest and Hunting Pressure - 1972-1977.

Year	Harvest MM	FF	Unk.	Total	Unsuccessful Hunters
1972	3	0	0	3	21
1973	2	4	0	6	21
1974	1	0	0	1	9
1975	1	0	0	1	5
1976	3	0	0	3	14
1977	1	2	0	3	17

SUBMITTED BY: Dave Harkness, Game Biologist III

MOUNTAIN GOAT

SURVEY-INVENTORY PROGRESS REPORT - 1977-78

Game Management Unit 15 - Western Kenai Peninsula

Seasons and Bag Limits

Unit 15	Sept. 10-Oct. 31	One goat by permit only. See 5 AAC 81.055 and separate permit hunt supplement.

Harvest and Hunting Pressure

Forty-one goats were harvested in Unit 15 during the 1977 season. The harvest was comprised of 24 males (59%) and 17 females (41%) (Appendix I). The percent of males in the harvest was only slightly below the highest (61%) recorded in 1976.

Appendix II shows that the reported harvest of 41 goats was 11 percent of the total observed during the latest surveys. Harvests in four of the seven open hunt areas (15-5, 15-6, 15-7 and 15-11) exceeded the desired level of 10 percent with respect to recent surveys.

Composition and Productivity

A total of 310 goats (236 adults and 74 kids) were observed in count areas 21, 23a, 23c, 24, 24a, 29a and 29b during 1977.

Management Summary and Conclusions

Analysis of harvest and survey data suggest that four of the seven hunt areas in Unit 15 may have been overharvested during the 1977 season. This possible overharvest indicates that the present system of unlimited permits on a unit-wide basis is inadequate to control the distribution of goat harvest.

Additionally, surveys have been conducted by both State and Federal agencies utilizing different techniques, which has made trend data difficult to analyze.

Recommendations

Hunting for mountain goats in Unit 15 should be by a registration permit system which allows hunters to register for a single hunt area within the Unit. This type of registration system would better distribute the goat harvest.

PREPARED BY:

Ted H. Spraker
Game Biologist III

SUBMITTED BY:

James B. Faro
Regional Management Coordinator

Appendix I. Goat Harvest by Sex and Percentage of Successful Hunters in Unit 7 from 1969 and 1972 to 1977.

Year	Males	%	Females	%	Unk.	%	Total[1]	Hunters	Percent Successful
1969	31	45	38	55	0	-	69	---[2]	--[2]
1972	52	54	44	46	0	-	96	160[3]	50
1973	46	59	31	40	1	1	78	144[4]	46
1974	56	57	41	41	2	2	99	222	44
1975	48	56	37	44	0	-	85	198	43
1976	41	61	26	39	0	-	67	178	38
1977	24	59	17	41	0	-	41	---[2]	--[2]

1 Includes animals of unknown sex.
2 Data not available.
3 Sixteen hunters reported taking two goats each.
4 Twelve hunters reported taking two goats each.

PREPARED BY: Ted H. Spraker, Game Biologist III

Appendix II. Reported Harvest by Hunt Area, Results of Most Recent Survey and Harvest Level for 1977.

Hunt Area	(Count Area)	Harvest	Goats Observed		Survey Date	Reported Harvest Level (Percent)
			Adults	Kids		
15-5	(23a)	6	16	5	1977	29
15-6	(23b)	11	46	14	1975	18
15-7	(23c)	7	49	13	1977	11
15-8	(24)	4	58	25	1977	5
15-9	(24a)	2	43	10	1977	4
15-10	(29a)	2	26	7	1977	6
15-11	(29b)	9	42	14	1977	16
Unknown		0	--	--	----	
Total		41	280	88		

PREPARED BY: Ted H. Spraker, Game Biologist III

BISON

SURVEY-INVENTORY PROGRESS REPORT 1977-78

Game Management Unit 11 - Copper River Herd

Seasons and Bag Limits

Unit 11	To be announced	One bison every five regulatory years by permit only

Abundance and Composition

Maximum numbers of bison observed annually for the Copper River herd for 1950 and 1961-1977 are shown in Appendix I. The 1977 aerial census revealed 90 bison (72 adults and 18 calves). This is 12 animals more than were seen in the 1976 count.

Composition data from the 1977 count are as follows: 54 cows and small bulls, 18 bulls (2 years and older), and 18 calves. Attempts to obtain a count of yearling bison were unsuccessful.

Harvest and Hunting Pressure

Harvest data for the Copper River herd are shown in Appendix II. Hunter participation (149) set a new high for this hunt. The previous high number of hunters was in 1973 when 101 hunters harvested 16 bison during a four-day hunt (Oct. 16-19).

Six bison were harvested during the 30-day 1977 season. Only one bison was killed on opening day (Sept. 21); the last bison was killed on October 9. As in the past, the bison responded to hunting pressure by moving into timbered areas, which serves to reduce the harvest.

Data on hunter residency and transportation means used since 1973 are shown in Appendix III. All six bison harvested in 1977 were taken by resident hunters. Only one nonresident participated in the 1977 hunt. Three of the successful hunters used river boats and three used aircraft.

This is the only registration hunt for bison; all other bison hunts in the state are by limited drawing. Mechanized vehicles are restricted to certain areas until October 5 due to the large number of hunters early in the season.

Management Summary

The number of hunters afield was the highest on record, while the total kill was the lowest on record. No single factor, such as severe weather, caused this situation. The bison become increasingly wary upon their initial contact with hunters and are difficult to hunt in heavy timber.

The 90 bison counted is very close to the total recorded in four out of the last six surveys. The calf crop of 18 was only three below the high count of 1970. No evidence has been collected to indicate there is any interchange between the Copper River and Chitina herds, so each should be managed separately. The 1977 harvest of six animals was less than desired to achieve the management goal of an overwintering population of 60 adults.

Recommendations

1. Maintain a September 21 - October 20 season subject to emergency closure if the desired harvest is reached.

2. Maintain a check station only at the Glennallen office.

3. Maintain provisions allowing mechanized hunters to use only designated corridors, landing strips, and lakes until October 5.

4. Re-evaluate the optimum overwintering herd size by increased habitat studies.

PREPARED BY:

Robert Tobey
Game Biologist II

SUBMITTED BY:

James B. Faro
Regional Management Coordinator

APPENDIX I. Maximum number of calves and adults observed during aerial surveys of the Copper River bison herd.

Year	Total	Calves	Adults[a.]
1950[b.]	17	0	17
1961	29	--	--
1962	74	13	61
1963		No Data	
1964	97	17	80
1965	84	19	65
1966	79	7	72
1967	51	14	37
1968	102	19	83
1969	100	18	82
1970	119	21	98
1971	87	11	76
1972	82	12	70
1973	97	18	79
1974	111	14	97
1975	89	13	76[c.]
1976	78	14	64
1977	90	18	72

a. The adult category includes yearling and older bison.

b. The Copper River herd resulted from a transplant of 17 bison from the Nabesna Road vicinity during 1950. By 1961, they had become established at their present home range.

c. An additional group of about 20 adults was reported at a different location by another observer.

Prepared by: Robert Tobey, Game Biologist II

APPENDIX II. Harvest data for the Copper River bison herd.

Regulatory Year	Number of Registered Hunters	Harvest Total	Harvest Males	Percent Males In Harvest	Number (percent) Bison through 4 Years of Age[a]. Males	Females	Sample
1964-65	43	14	10	71%			
1965-66	42	11	9	82%			
1966-67	No Season						
1967-68	No Season						
1968-69	74	13	6	46%	1(8%)	4(33%)	12
1969-70	74	16	7	44%	4(27%)	4(27%)	15
1970-71	96	13	6	46%	1(8%)	5(38%)	13
1971-72	No Season						
1972-73	No Season						
1973-74	101	16	7	44%	1(6%)	3(19%)	16
1974-75	94	22	11	50%	7(30%)	5(20%)	22
1975-76	56	8	4	50%	3(38%)	1(13%)	8
1976-77	100	9	5	56%	2(22%)	3(33%)	9
1977-78	149	6	6	100%	2(33%)		6

a. Bison ages were determined by tooth replacement (Fuller, 1959).* Age data for several hunts are not available.

*Fuller, W. A. 1959. The horns and teeth as indicators of age in bison. J. Wildl. Mgmt. 23:342-344.

APPENDIX III. Residence and transportation means used by all hunters during the 1973 through 1977 Copper River bison hunts.

	1973		1974		1975	
	No.	%	No.	%	No.	%
Residence,						
Anchorage vicinity:	68	(67%)	39	(41%)	23	(41%)
Fairbanks vicinity:	8	(8%)	8	(9%)	0	(-)
Copper River Valley:	19	(19%)	27	(29%)	33	(59%)
Other Locations:	6	(6%)	20	(21%)	0	(-)
Unknown:	0	(-)	0	(-)	0	(-)
Transportation Means, [a.]						
Aircraft:	52	(55%)	52	(55%)	28	(56%)
Boat:	40	(42%)	39	(41%)	22	(44%)
Off-Road Vehicle:	3	(3%)	0	(-)	0	(-)
Horses:	0	(-)	3	(3%)	0	(-)
Unknown:	7	(-)	0	(-)	6	(-)

	1976		1977	
	No.	%	No.	%
Residence,				
Anchorage vicinity:	34	(35%)	59	(40%)
Fairbanks vicinity:	0	(-)	5	(3%)
Copper River Valley:	56	(58%)	76	(51%)
Other Locations:	7	(7%)	4	(3%)
Unknown:	3	(-)	4	(3%)
Nonres.:			1	(-)
Transportation Means, [a.]				
Aircraft:	33	(38%)	52	(35%)
Boat:	48	(56%)	62	(42%)
Off-Road Vehicle:	4	(5%)	2	(1%)
Horses:	1	(1%)	2	(1%)
Unknown:	14	(-)	31	(21%)

a. Some hunters use more than one transportation means. Percentages are based on the total excluding the "unknown" category.

Prepared by: Robert Tobey, Game Biologist II

BISON

SURVEY-INVENTORY PROGRESS REPORT YEAR 1977-78

Game Management Unit 11 - Chitina River Herd

Seasons and Bag Limits

Unit 11	To be announced.	One bison every five regulatory years by permit only.

Harvest and Hunting Pressure

The first legal hunt on the Chitina River bison was held during September of 1976 with eight permits issued and nine bison killed (Appendix I). Nine permits were issued in 1977 and seven bison were killed during the season of September 1 - October 1. Three of the seven bison harvested were bulls.

One nonresident hunted and was successful.

Composition and Productivity

The Chitina River bison herd, relatively stable from 1964 to 1972, has increased during the period from 1973 to 1976. Maximum numbers of bison observed during aerial counts from 1962 to 1977 are shown in Appendix II.

The highest number of bison recorded was 52 (including calves), recorded on August 31, 1976. The August 31, 1977 survey count was 49 bison. The composition was 29 small bulls, yearlings and cows, 7 bulls and 13 calves. The percent calves in the herd was 26.5.

Management Summary and Conclusions

Seven of the 49 observed Chitina River bison were removed from the herd during the 1977 permit hunt. The total harvest to date is 16 bison. The latest survey of 49 bison is only three less than the record 1976 count of 52.

Good calf survival and annual recruitment probably accounts for the greater herd size in recent years.

Recommendations

1. Continue hunting under a permit system to maintain low hunter density and desired harvest.

2. Maintain a check station at Glennallen office only.

3. Re-evaluate optimum overwintering herd size by habitat studies.

PREPARED BY:

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SUBMITTED BY:

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Regional Management Coordinator

APPENDIX I. Harvest data for the Chitina River bison herd, Game Management Unit 11.

Regulatory Year	No. of Permits Issued	Harvest Total	Harvest Males	Percent Males In Harvest	Number (percent) Bison through 4 Years of Age[c.] Males	Females	Sample
1976-1977[a.]	8	9[b.]	6	67%	4(67%)	3(100%)	9
1977-78	9	7	3	43%	2(67%)	3(75%)	7

a. First year the Chitina River bison were legally hunted (season Sept. 1 - Oct. 1, 1976).

b. One wounded bison was found dead after the season.

c. Bison ages were determined by tooth eruption and wear according to Fuller, 1959.*

*Fuller, W. A. 1959. The horns and teeth as indicators of age in bison. J. Wildl. Mgmt. 23:342-344.

APPENDIX II. Maximum numbers of bison observed during aerial surveys of the Chitina River bison herd, Game Management Unit 11.

Year	Total	Calves	Adults
1962	35[a.]	0	35
1963	28	--	--
1964	12	5	7
1965	No Data	--	--
1966	9	--	9
1967	12	2	10
1968	16	2	14
1965	15	--	--
1970	16	2	14
1971	16	3	13
1972	16	--	16
1973	23[b.]	4	19
1974	32	6	26
1975	35	--	--
1976	52	9	43
1977	49	13	36

a. Original transplant from the National Bison Range in Moiese, Montana to Delta in 1928; in 1962, 29 cows and six bulls were transplanted from Delta to May Creek.

b. One large bull was found dead during this year.

Prepared by: Robert Tobey, Game Biologist II

BISON

SURVEY-INVENTORY PROGRESS REPORT - 1977-78

Game Management Unit 19 - Farewell Herd (McGrath)

Period Covered: July 1, 1977 - June 30, 1978

Seasons and Bag Limits

Unit 19	Aug. 10 - Oct. 10	One bison by permit only. 30 permits will be issued. See 5 AAC 81.055 and separate permit hunt supplement.

Harvest and Hunting Pressure

The 1977 Farewell bison hunt opened August 10 and closed October 10. Thirty hunters and 15 alternates were drawn for the hunt. Thirty-one hunters checked in for the hunt, including 3 alternates who were notified when other hunters canceled. Sixteen bison (8 females and 8 males) were taken during the 60-day hunt. Two of these bison were from the original transplant stock (No. 7627 and 7610-7611).

Hunters were plagued by poor weather and heavy smoke from the Bear Creek fire throughout the hunt. In addition, the no hunting same-day airborne rule created a hardship on hunters and reduced the success of the herd reduction program. Hunters were continually frustrated by the continual movement of the bison along the South Fork. One can rarely camp near bison and expect them to be within walking distance the next day. A few hunters resorted to using rafts in an attempt to intercept bison on river bars. This technique had limited success, particularly during the early weeks of the hunt. Almost as soon as the hunt began, bison moved to side drainages or into the forested section of the river valley. Most hunters were reluctant to pursue bison far from the main river.

Herd Size, Composition and Productivity

Aerial surveys of the Farewell Herd were conducted on June 10, 1978. These counts suggested a minimum overwintering population (minus the 16 animals harvested in 1977) of 96 adults and yearlings. In addition, 18 calves were born in the herd, bringing the total to 114 bison. The decrease in calf production may have resulted from removal of eight mature cows during the last two hunts, or it may reflect decreased productivity associated with the previous increases in herd size. The herd showed a net gain of about 10 percent between 1977 and 1978.

Range and Habitat

Range conditions continued to be good throughout winter 1977-1978. Weather was generally mild and snow depths were low.

Management Summary and Recommendations

Harvests continue to be insufficient to reduce the Farewell Herd to the desired level of 80 adult animals. There are still more than 100 bison in this herd. Continued herd increases will keep the bison well above the desired population size. At least 30 bison should be removed by permit during the 1978 season. The Board of Game should be requested to remove the same-day airborne restriction with regard to the Farewell Bison Herd.

PREPARED BY:

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Game Biologist III

SUBMITTED BY:

Oliver E. Burris
Regional Management Coordinator

BISON

SURVEY-INVENTORY PROGRESS REPORT - 1977-78

Game Management Units 20A and 20D - Delta Junction

Period Covered: July 1, 1977 - June 30, 1978

Seasons and Bag Limits

Units 20(A) and 20(D)

For seasons and bag limits see 1977-1978 Regulation Booklet and 1977-1978 Permit Hunt Supplement.

Harvest and Hunting Pressure

Seventy hunters were drawn for the Delta bison hunts from 2,121 applicants. The total kill was 75 bison (36 bulls and 39 cows) during the 1977 season (Table 1). Fifty-four bison (26 bulls and 28 cows) were taken during the accompanied hunt September 12-30. This harvest included three wounded cows that were lost and one wounded bull killed by Department personnel when it was found crippled.

Table 1. Known bison mortality, 1977.

	Bull		Cow					
	2-3 yr.	adult	yrlg.	2-3 yr.	adult	Calf	Unclass.	Total
Accompanied hunt	14	11	1	12	12			50
Unaccompanied hunt	1	9	1	1	8			20
Wounding loss		1		1	3			5
Other mortality		2			8	2	4	16
Subtotal	15	23	2	14	31	2	4	
Total	38			47		6		91

The 20 hunters who drew permits for the unaccompanied hunt were divided into four groups, 5 hunters each. Each group had a 1-week period in which to take a bison. Twenty-one bison (10 bulls and 11 cows) were killed during the unaccompanied hunt between October 3-30. This included a cow that was wounded and lost.

Composition, Productivity and Herd Size

Herd composition counts were conducted during late October 1977 after 75 bison (36 bulls and 39 cows) were removed from the population during the hunting season. Two hundred eighty-six bison were classified, which accounted for approximately 90 percent of the estimated population. The composition of bison observed during the count was as follows: 76 adult cows, 46 adult bulls (60 adult bulls per 100 adult cows), 39

yearling cows, 41 yearling bulls and 84 calves (110 calves per 100 adult cows, 105 yearlings per 100 adult cows).

The known pre-hunt population in 1977 was 361, but the herd was estimated at 397 bison. Prior to hunting the herd composition was as follows: 73 calves per 100 cows, 73 bulls per 100 cows and 73 yearlings per 100 cows. In spring 1978, prior to calving, 78 percent (251) of the herd was in the 1 to 3-year age class.

Non-Hunting Mortality

Known mortality, other than hunting, during the report period totaled 16 bison (8 cows, 2 bulls, 2 calves and 4 unclassified adults). Six were confirmed road kills, two were suspected road kills, five were known illegal kills, one was a wolf-killed calf, one was an adult cow taken for the Delta Bison Barbecue and one was a drowning loss during breakup.

Seasonal Distribution, Range Utilization and Conditions

The salting operation continued in 1977. Beginning in June and continuing through August, a total of 1,400 pounds of salt was used to delay the bison migration from the Delta River drainage to the Clearwater farming area. In past years bison had usually crossed the Delta River by the first week of August and arrived in the farming area during the peak of grain harvest. Since the salting program was initiated bison have generally remained away from the farming area until the last week of August. Fifty-pound trace element salt blocks were dropped from low-flying aircraft to evenly distribute forage utilization throughout the Delta River bar.

The high-quality winter feed was not as available in the Clearwater farming area during winter 1977-1978 as during the preceding 5 years. Consequently, bison moved from the Clearwater farms to feed on sedge meadows and ponds in the surrounding area during mid-January, at least a month earlier than in the past.

Management Summary and Recommendations

The Delta Bison Herd appeared in good physical condition during spring 1978, but numbers were lower than during spring 1977.

The management plan for the Delta Herd is to maintain a pre-calving population of 275 to 300 animals; a bull:cow ratio of 40:100; an average age of 8 years among the bulls and 7 years among the cows; and a minimum harvest of 50 animals annually. In view of the excellent production and survival rates it will be necessary to take 50 bison (30 bulls and 20 cows) during the 1978 season. To accomplish this harvest and to further the practice of unaccompanied hunting, a split season is recommended in which 35 bison are taken during an accompanied hunt and 15 bison are taken during an unaccompanied hunt. The accompanied hunt should occur

during the last 3 weeks of September. The unaccompanied hunt should commence on October 1 and provide for a take of five animals per 2-week period.

Bison harvests at this time should be directed toward the young age class of males (2 to 3-year-olds) and a random selection of female age classes. The accompanied hunt is very expensive and should be gradually replaced by unaccompanied hunting.

The free-ranging bison herd in the Delta farming area has created problems. Agricultural practices have increased the amount of bison range, and, if a large amount of acreage were not planted, or fields were fenced, bison will face a food shortage. The Department is in the process of establishing a bison range in the Delta area which will serve to stabilize the amount of winter range. Benefits will also accrue to other game species, especially moose, which use the area.

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MUSKOXEN

SURVEY-INVENTORY PROGRESS REPORT

Game Management Unit 18 - Yukon-Kuskokwim Delta

Period covered July 1, 1977 - June 30, 1978

Seasons and Bag Limits

Unit 18, except Nunivak Island		No open season
Nunivak Island	Aug. 1-Sept. 30	30 bulls by permit only: 5 cows may be included at the discretion of the Commissioner
	Feb. 15-Mar. 30	40 bulls by permit only: 5 cows may be included at the discretion of the Commissioner

Harvest and Hunting Pressure

Twenty-six applicants applied for 30 bull permits available for the fall of 1977. There was no interest shown in the five available cow permits. Nineteen bulls were killed, 13 by resident hunters and six by nonresident hunters. The remaining seven hunters did not hunt.

One muskox was taken without the assistance of a guide or transporter, the remaining 18 hunters used residents of Mekoryuk for these services. The hunters were generally pleased, although four hunters were dissatisfied with the quality of their experience.

Fifty-eight people, 24 nonresidents and 34 residents, applied for the 40 bull permits for the spring 1978 hunt. Eleven alternates were contacted and a total of 37 people actually hunted and killed bull muskoxen; 17 by residents and 20 by nonresidents. One resident applied for one of the five available cow permits but he did not hunt.

Two muskoxen were taken without the assistance of a guide or transporter. Sixteen hunters used residents of Mekoryuk for guiding and transporting services. Seventeen hunters used a registered guide from the Fairbanks area as the primary guide with some assistance from several local residents. As a whole the hunters felt that the number of available permits should be reduced. Most of the hunters reported an enjoyable and aesthetically pleasing hunting experience. They did express some dissatisfaction with the pressure the Mekoryuk residents put on them following the drawing in their attempts to sell their services.

Incisors were collected from 31 of the bulls taken for age analysis. Some work was done with these samples in May 1978 but no conclusions were reached at that time. Twenty-two blood serum samples were also collected to be analyzed for contagious ecthyma of which 17 gave a positive reaction.

Composition, Productivity, Transplants, and Mortality

Nunivak Island Herd: An aerial survey was conducted in August 1977, where 542 muskoxen were counted. Sixteen percent of the animals counted were classified as calves.

Composition surveys were made using snow machines on February 21-28, 1978 with a total of 490 muskoxen counted. Eighty-eight adult males, 145 adult females, 35 subadult males, 90 subadult females, 19 2-year-old males, 19 2-year-old females, and 94 short yearlings were classified. The conditions were mild with low average snow depth with icing only on the southwestern coast. The temperature was between 10 to 30 degrees throughout the survey and the survey was felt to be reliable. At the time the survey was conducted, eight adult bulls had already been removed from the herd by hunters. Using these figures, at the end of March 1978, 59 adult bull muskoxen remained in the Nunivak herd. With a potential recruitment of 35 subadult males and 19 2-year-old males we are beginning to see a need to reduce the number of bulls removed from the herd by hunters each year. For the next couple of years we can expect a reduction in the number of adults. The present population status appears to be a function of the number of animals removed both by the hunt and particularily by recent transplants which remove predominately 2-year-old and yearling animals.

Nelson Island Herd: During an aerial survey flown in August 1977, 77 muskoxen were counted, 13 of which were calves. There were 20 adult bulls, two adult females, eight unknown adults, four subadult males, three unknown subadults, 26 unclassified animals, and one yearling.

An aerial survey on March 9, 1978 revealed 112 muskoxen. Due to high wind conditions these animals were not classified.

April 10, 1978 another aerial survey was flown showing 107 muskoxen; nine adult males, four adult females, seven unknown adults, eight subadult males, eight unknown subadult, nine yearlings, and 62 unclassified muskoxen. No winter mortality was observed.

Management Summary and Recommendation

Nunivak Island Herd: In the 1974 S & I report it was recommended that the number of breeding animals in the Nunivak Island herd should be stabilized at 300 to 350 muskoxen. If the 2-year-old and yearling age classes are excluded, there are presently 358 animals of breeding age based on the spring survey. The 2-year-old recruitment class for both cows and bulls is quite low, 19 animals each, and the yearlings will not be of trophy value for at least 3 more years. Currently there are a possible 123 adult and subadult bulls that are available. At the present rate of removal (70 bulls a year) and considering the upcoming recruitment to the herd. A decrease in the number of available permits was adopted for the 1978-79 season.

A reliable aging technique is needed. This should be perfected to supply information that would assist in externally aging muskoxen in the field as well as in the lab. In May 1978 several techniques were tried including the Hematoxylin staining technique and sectioning for use with the flourescent scope. We had very poor success with the Hematoxylin staining since the teeth appear to lay the cementum lines so close together and do not take this stain well. The sectioning for the flourescent scope was more successful however, and with more time may prove to be a reliable technique.

A plan for transplants, as suggested in the 1977 S & I report, still needs to be developed.

Nelson Island Herd: Recommended carrying capacity for Nelson Island remains at approximately 100 to 150 muskoxen. The April aerial survey was particularily reliable since survey conditions were fairly good and the aerial count was supported with aerial photographs. This survey was made prior to spring calving, so the present population can be expected to be greater than the 107 animals counted at that time. At its present rate of growth, the population will require population management through regulated hunting and transplanting within the next year.

The substantially lower count obtained in August 1977 appears to reflect a combination of factors, including the time of year, vegetation, and the section of Nelson Island that was surveyed.

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MUSKOXEN

SURVEY-INVENTORY PROGRESS REPORT

Game Management Unit 22 - Seward Peninsula

Period Covered: January 1, 1977 - June 30, 1978

Seasons and Bag Limits

No open season

Herd Size, Composition, Productivity and Mortality

Thirty-six muskoxen from Nunivak Island were introduced into Unit 22 during 1970. Most of the animals released were yearlings. The success of this transplant was marginal because the release site at Feather River (40 miles N.W. of Nome) contained no prominent natural barriers. Lacking dominant adults to maintain herd integrity, many of the animals scattered widely throughout the Seward Peninsula. Harrassment from interested spectators on snow machines also contributed to dispersal. Individual muskoxen were sighted as far away as 300 miles to the east of the release site. Eventually two small groups became established in the York Mountains on the western end of the Seward Peninsula.

Since 1973 one of these groups has remained in the general vicinity of Black Mountain, an area of rolling hills and wind swept ridges approximately 12 miles northwest of Brevig Mission. An aerial survey on May 5, 1978 revealed 22 muskoxen including subadults, and at least one newborn calf. The herd's tendency to "bunch-up" when disturbed coupled with the windy mountainous terrain made it impossible to accurately classify the animals as to sex or age, but it appeared there were at least five mature bulls in the group. An aerial survey 5 days later, on May 10, revealed this group in the same location. A recount confirmed 22 muskoxen older than calves and two or three newborn calves.

A subsequent aerial survey on June 9 indicated the herd had vacated the Black Mountain area. During late June residents from Brevig Mission reported seeing "several" muskoxen in the tundra "flats" south of Black Mountain a few miles inland from the coast. Apparently, this group abandoned the higher terrain of their wintering area in early June, possibly in preference for green vegetation which was more abundant at lower elevations.

For the last 4 years a second group of muskoxen exhibited a preference for a 400 square mile area of marshy plains and tundra foothills between Ear Mountain and the drainages of the Pinguk River (north of Black Mountain). This herd was not located on any of the spring aerial surveys. However, the area they were known to frequent contained an array of diversified topography, and it was easy to miss a small group of animals, even under ideal survey conditions. During the summer Shishmaref residents reported sighting a small group of muskoxen near the Artic River, and an airline pilot saw five adults and three calves near the mouth of the Pinguk River. One year before, Shishmaref residents reported seeing one

homogeneous group of 18 adults and six calves in this same general area. Since the two summer sightings mentioned previously were over 30 miles apart it was possible the Ear Mountain herd split into two or more "sub-groups".

Throughout the western Seward Peninsula it appeared there were about 45 muskoxen in two or more "herds". For the past 5 years these groups have collectively produced at least four or more calves every spring. However, absolute herd numbers have not appeared to increase in proportion to the observed productivity. Two factors may account for this difference: a rather high calf mortality (perhaps associated with grizzly bear predation) and/or emigration from the herd. The latter cause appeared to be a significant factor because single muskoxen were seen at many locations throughout the Seward Peninsula. During the report period there were sightings in the vicinity of Nome, Council, Deering and Taylor. From these data it appeared there was a tendency for adults, especially bulls, to leave the nucleus herd, and wander at random. One bull was observed to travel in excess of 30 miles during a 24 hour period. There was speculation this behavior was related to a response for food, specifically green vegetation. It was unlikely that any "strays" rejoined their main herds. This may have been a significant source of herd attrition. No mortalities were documented during the report period.

Management Summary and Recommendations

Despite the fact that muskoxen numbers have not increased in Unit 22 as rapidly as desired, calf production during the last 4 years has been encouraging. If annual recruitment remains high (relative to the number of breeding adults) the herds that have established "residency" appear to have the capability to increase substantially in the next few years, assuming they receive maximum protection from human harrassment and human caused mortality. At the present time no single group is large enough to warrant a hunting season. Further herd growth should be monitored closely.

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MUSKOXEN

SURVEY-INVENTORY PROGRESS REPORT

Game Management Unit 23 - Kotzebue Sound

Period Covered: July 1, 1977 - June 30, 1978

Seasons and Bag Limits

None

Mortality and Natality

No information

Distribution

No surveys were conducted this year. However, incidental observations were recorded from observations made by local pilots and during official caribou and moose surveys. The following are those observations: September 29, 1977, one yearling near the village of Kivalina, October 10, 1977, two adults and one yearling on the southern portion of the Mulgrave Hills near Jade Creek, January 8, 1978, three adults and two calves near Sukpik Mountain on the Kukpuk drainage, and March 4, 1978 one adult near the middle portion of the Agashashuk drainage.

Recommendations

Aerial surveys should be conducted to determine the population status. The major survey effort should be concentrated in that area between the Noatak River and Cape Lisburne.

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MUSKOXEN

SURVEY-INVENTORY PROGRESS REPORT

Game Management Unit 26 - Arctic Slope

Period Covered: July 1, 1977 - June 30, 1978

Seasons and Bag Limits

No open season

Population Size and Distribution

During July and August, 1977 several observers reported seeing groups of muskoxen. Groups ranging in size from one to 33 animals were seen on the Tamayariat and Sadlerochit Rivers in Subunit 26(C). Another group of five (subadults ?) were observed near Singaruak Creek (on coast about 18 miles SW of Barrow) on July 19, 1977. In addition, single muskoxen were seen in Subunits (A) and (B) and just south of the Brooks Range divide in Unit 24, as follows:

Observation	Date	Location	Sex/Age
1	8/9/77	Headwaters, Sagavanirktok R.	1 muskox
2	8/10/77	Headwaters, Your Creek	1 adult male
3	8/10/77	Headwaters, Sagavanirktok R.	1 adult male
4	8/31/77	Kutuk Pass	1 adult male
5	9/5/77	Elusive L., Ribdon R.	1 muskox

Since these were casual observations made over a one month period, some of the same animals or groups may have been seen by more than one person or at different places on different dates.

A total of 86 muskoxen were observed within Subunit 26(C), the Arctic National Wildlife Range, by U.S. Fish and Wildlife Service biologists during a muskox survey made on 20-22 March, 1978 (Don Ross Memorandum dated August 15, 1978 to Refuge Manager). These muskoxen occurred in five groups as follows: Canning River (32 animals); Sadlerochit Springs (33 animals); Jago/Okerokovik Rivers (14 animals); Sadlerochit River (3 animals); and Egaksrak River (4 animals).

Combining the animals seen in GMU 26(C) during March, 1978 (86) with animals seen in GMU 26(A) & 26(B) the previous July and August (8) gives a minimum total population of 94 muskoxen in Game Management Unit 26 at the beginning of the reporting period.

Composition and Productivity

The sex and age composition of muskoxen groups in Game Management Unit 26(C) was determined during the Fish & Wildlife Service survey in March, 1978. Based on these data, bull:cow ratios were: Adults, 69:100; Subadults (35 month), 40:100; two-year-olds, 280:100. Yearlings represented 21 percent of the total population. Six animals were unclassified.

Mortality

Known mortality for the reporting period is five animals, three subadults shot "in defense of life and property" at Singaruak Creek on July 19, 1977; one medium-sized bull near Barter Island shot "in defense of life and property" on February 23, 1978; and one animal found dead this spring (1978) near the Sadlerochit River. This animal may have died of natural causes as it was reported that no signs of gunshot wounds were present.

Management Recommendations

It is difficult to enumerate a small number of animals in an area as large as Unit 26, however, recording animals seen should be carried out by all department personnel while they are on duty within the unit. In addition, the present program of informing local residents about the department's attempt to reestablish muskoxen in Unit 26 should continue. In particular, the importance of leaving the animals alone rather than approaching too closely, thus causing a defensive response by the muskoxen, needs to be stressed. Hopefully such an educational program will reduce mortality due to shooting "in defense of life and property."

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SEALS

SURVEY-INVENTORY PROGRESS REPORT

Game Management Units: 18, 22, 23 and 26 Marine Waters

Period Covered: 1 January, 1977 through 30 June, 1978

Season and Bag Limits

Closed, except that Alaskan Natives may harvest seals without limit under provisions of the Marine Mammal Protection Act.

Harvest and Hunting Pressure

The past five year's annual harvest figures for these units were derived from samples obtained from selected villages. In 1977, and the first six months of 1978, Hooper Bay, Gambell, Savoonga and Shishmaref were used as data collection points. In all villages except Shishmaref a local hunter was hired to report monthly harvest throughout the year. Department collectors visited Shishmaref during the peak hunting periods and obtained similar data. Additionally, Scammon Bay, Mekoryuk, Emmonak, Alukanuk, Point Hope and Kivalina were surveyed in the spring by a Department representative to assess the annual harvest.

Data gathered from these sources has been estimated to be 30 percent of the total harvest (Appendix I). Using the observed species composition from the sample villages, a total of 9,299 ringed seals, 3,692 spotted seals, 6,308 bearded seals and 110 ribbon seals for a total of 19,409 seals were estimated to have been taken during the reporting period.

The harvest for the 1977 segment of this report was 13,985 seals (Appendix I). Hunting pressure thus appears to have decreased in comparison to the late 50's and early 60's when bounty incentives caused considerable hunting effort.

Compositions and Productivity

No clear-cut trend was obvious in the sex composition of the harvest. Any trends in the harvest are principally a function of distribution and behavioral differences between sexes.

No data was available on the productivity of any of the seal species.

Management Summary and Recommendations

At the present rate of harvest, ringed, bearded and spotted seals are in no immediate danger of overharvest. If additional incentives arise, such as allowing sale of raw skins, a rapid increase in the harvest could result.

If management of seals is returned to the State, a hunting season open to residents and nonresidents should be implemented. Assuming present harvest levels remain constant, a season open throughout the year is recommended. Based on present levels of harvest there is no justification for placing restrictions on the harvest.

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APPENDIX I

Estimated Total Harvest of seals by Game Management Unit during 1 January, 1977 through 31 December, 1977

GMU	Spotted Seal (% Unit total)	Ringed Seal (% Unit total)	Bearded Seal (% Unit total)	Ribbon Seal (% Unit total)	TOTAL (% Unit Grand total)
18	1373 (27.8)	1850 (37.5)	1680 (34.0)	35 (0.7)	4938 (35.3)
22	907 (15.7)	3083 (53.5)	1753 (30.4)	25 (0.4)	5768 (41.3)
23	160 (6.9)	1340 (57.6)	827 (35.5)	0 (0.0)	2327 (16.6)
26	17 (1.8)	485 (50.9)	450 (47.3)	0 (0.0)	952 (6.8)
Total	2457 (17.6)	6758 (48.3)	47.0 (33.7)	60 (0.4)	13985

Estimated Total Harvest of seals by Game Management Unit during 1 January, 1978 through 30 June, 1978

GMU	Spotted Seal (% Unit total)	Ringed Seal (% Unit total)	Bearded Seal (% Unit total)	Ribbon Seal (% Unit total)	TOTAL (% Unit Grand total)
18	650 (34.8)	933 (50.0)	283 (15.2)	0	1866 (34.4)
22	457 (17.6)	1130 (43.6)	953 (36.8)	50 (2.0)	2590 (47.7)
23	120 (24.3)	236 (47.9)	137 (27.8)	0	493 (9.1)
26*	8 (1.7)	242 (51.0)	225 (47.3)	0	476(8.8)
Total	1235 (22.8)	2541 (46.8)	1598 (29.5)	50 (.9)	5424

* no reporting figures for Unit 26, harvest estimated

APPENDIX II

Combined Estimated Harvest By Game Management Unit by Species
for reporting period 1 January, 1977 through 30 June, 1978

GMU	Spotted Seal (% Unit total)	Ringed Seal (% Unit total)	Bearded Seal (% Unit total)	Ribbon Seal (% Unit total)	TOTAL (% Unit Grand total)
18	2023	2783	1963	35	6804 (35.0)
22	1364	4213	2706	75	8358 (43.1)
23	280	1576	964	0	2820 (14.5)
26	25	727	675	0	1427 (7.4)
Total	3692 (19.0)	9299 (47.9)	6308 (32.5)	110 (.6)	19409

WALRUS

SURVEY-INVENTORY PROGRESS REPORT - 1977-78

Game Management Unit 17 - Bristol Bay

Seasons and Bag Limits

Unit 17, except for that portion in the Walrus Islands State Game Sanctuary (including all waters within 1/2 mile of Round Island).	Resident: Oct.20-Dec. 1 Mar. 1-Apr.30 Nonresident: No open season	One walrus for food, by permit only. A total of 50 permits will be issued to applicants who appear in person at the villages of Togiak, Manokotak, Twin Hills and Clarks Point, on a first-come, first-served basis.

Harvest and Hunting Pressure

Of the total 50 available permits only 28 were validated and issued to residents of coastal villages. Although the remaining 22 permits were applied for by residents, these individuals failed to purchase hunting licenses, so the permits were not validated. Apparently demand and/or motivation for walrus hunting is limited in Bristol Bay.

Of the 28 permittees, none returned the hunter report as required under permit conditions, so each was mailed a follow-up questionnaire. Thirteen questionnaires were subsequently returned; all indicating that the permittee did not hunt walrus in 1977-78. Thus, there is no evidence to indicate that any legal harvest occurred in this regulatory year.

Composition and Productivity

The Bristol Bay walrus population consists almost entirely of males except during mid-winter months when the pack ice front may move south of Cape Newenham. Males "haul out" in limited numbers on several islands in the Walrus Islands State Game Sanctuary and in numbers exceeding 10,000 on Round Island during the months of May through October.

Management Summary and Conclusions

Walrus Islands State Game Sanctuary was established in 1960 to protect the hauling areas used by male walrus in Bristol Bay. This protection was necessary since virtually all of the areas used prior to initiation of commercial exploitation beginning in the 1890's had been abandoned due to frequent human harassment. In 1958, an estimated 600-1000 walrus were utilizing Round Island. By 1975 numbers increased to about 6000 and current estimates are in the 10,000 animal range.

At the present time, the Department and the U.S. Fish and Wildlife Service are involved in a major research program on Round Island. The primary objectives are to determine patterns of use on the hauling grounds, the ecological importance of these areas to the species, the number of walrus using Bristol Bay during the summer, the nature of walrus behavior and social interactions on the hauling grounds, and the impact of human disturbance on the animals' behavior and distribution. The project is being conducted by two biologists stationed on the island from May through September. Preliminary results of the first season's work in 1977 helped define data needs and potential methodologies. A pilot radio-telemetry project was initiated in 1978. Final results of the study will be discussed in future reports.

In order to control human disturbance of walrus on Round Island, all access within 1/2 mile of the island is by permit only. In recent years, awareness of the sanctuary has been increasing and more photographers and naturalists have been requesting permits. In 1977, 29 permits were issued to a total of 324 persons. Of these, three permits were issued for 245 members of LINDBLAD EXPLORER cruises which stopped by the island for a 1/2 day each. Of the remaining 26 permits for 79 visitors, eight parties with a total of 25 persons actually visited the island. A total of 102 visitor days were recorded. Many of the remaining permittees were unable to reach the island due to weather constraints.

The permit hunt initiated in Unit 17 in 1977-78 is the result of requests by coastal village residents for a harvest to meet "subsistance needs." The Round Island closure and number of permits were selected in view of the need to minimize disturbance to animals on the hauling ground and very limited historic use of walrus in Bristol Bay. Archeological evidence indicates that this species has probably not contributed a significant volume to the diet of local people and documented recent use has been almost exclusively hunting ivory. The failure of the residents to obtain all available permits, and the apparent lack of use of the opportunity to hunt by those individuals who did obtain permits, indicates that the "need" for walrus is likely more apparent than real.

Recommendations

No change in season or bag limits is recommended.

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BELUKHAS

SURVEY - INVENTORY PROGRESS REPORT

Game Management Units 18, 22, 23 and 26 marine waters

Period Covered 1 July, 1977 through 30 June, 1978

Seasons and Bag Limits Closed except Alaskan Natives may harvest belukhas without limit under provisions of the Marine Mammal Protection Act.

Harvest and Hunting Pressure

A total of 115 belukhas were known to have been taken during the reporting period, the bulk of these (88) being taken near Elephant Point in Kotzebue Sound. An additional 17 were taken at Point Hope, 6 at Flat Island and at least 3 in Norton Sound (Appendix I). Based on this data the annual harvest was estimated to be 150-200.

Hunting was done from small boats primarily in lagoons and shallow estuaries where belukhas rest or calve. At Point Hope belukhas were taken from the shore ice along open leads. The whales were generally shot with a center fire rifle and snagged with a sinking hook. In some areas belukas were driven into shallow water and killed where they could be easily retreived.

As in the past most hunters took belukhas in the immediate vicinity of their village, and hunting pressure appeared to be relatively constant, however some hunters shifted from the Noatak-Sheshalik area to Elephant Point. The increased competition and high power outboards ranging up to 235 horsepower lead to an "everyman for himself" attitude which has resulted in unnecessary waste. The eagerness of young inexperienced hunters to join the hunt and "captain" a crew also added to the high loss rates observed in some areas, specifically at Point Hope and Elephant Point. Loss rates ranged from 15 to 50 percent and probably average 25 to 30 percent overall.

Abundance and Distribution

Reports from villages in Bristol Bay and along the coast to Barter Island indicate that belukhas are both abundant and wide spread. Certain portions of the belukha population follow the ice movements in the Bering and Chukchi seas and are commonly found in open leads during the winter. Other segments of the population appear to remain in the southern Bering Sea all year round.

Management Summary and Recommendation

Utmost on any list of management priorities should be the gathering of more detailed population data. Presently our knowledge of belukhas is very limited. Under present federal jurisdiction intensive management efforts are not expected. Under complete State management without numerous Federal prerequisites effective and responsive management could occur. Under State management, guidelines could be established to reduce the loss rates and cut down on waste.

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APPENDIX I

Known Belukha Whale Harvest in Game Management Units 18, 22, 23 and 26 by village, 1 July 1977 to 30 June, 1978.

GMU	Village	Males	Females	Unknown	Total
18	Yukon Delta	0	0	6	6
22	Norton Sound	2	1	0	3
23	Elephant Point	33	37	18	88
	Kotzebue	0	0	1	1
	Point Hope	12	5	0	17
Total		47	43	25	115