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JUNEAU, ALASKA

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ANNUAL REPORT OF SURVEY-INVENTORY ACTIVITIES  
PART I. DEER, SHEEP, BISON, MOUNTAIN GOAT,  
ELK AND MUSKOXEN

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Volume VI  
Federal Aid in Wildlife Restoration  
Project W-17-7, Jobs No. 2, 6, 9, 12, 13, 16 and 22

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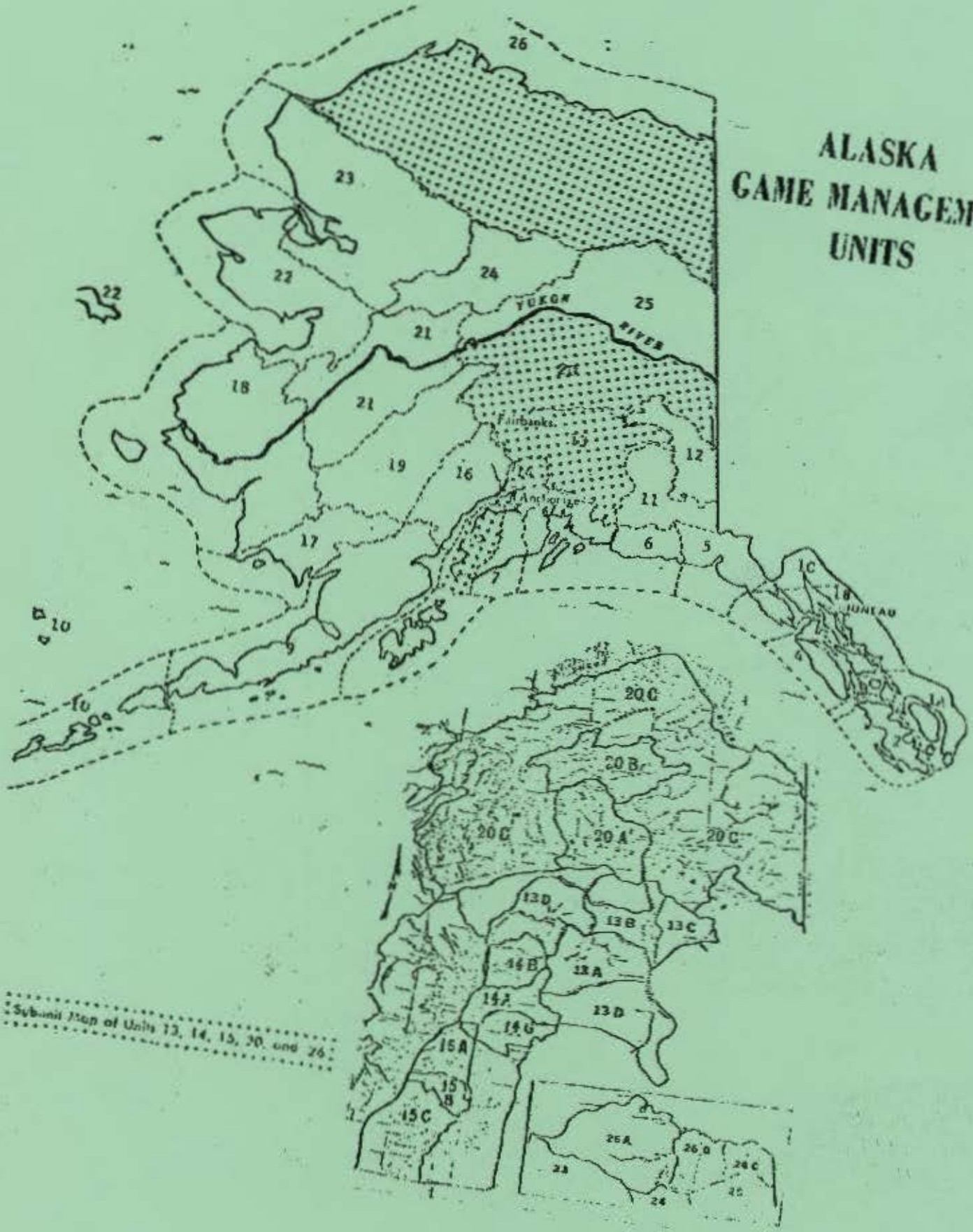
(Printed February 1976)

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# ALASKA GAME MANAGEMENT UNITS





## STATEWIDE HARVESTS AND POPULATION STATUS

### Sitka Black-tailed Deer

The 1974 deer harvest in Alaska, as estimated by various methods, was approximately 11,000 animals. As in 1972 and 1973, over half of the statewide harvest came from Game Management Unit 4 (Admiralty, Baranof and Chichagof Islands). Although harvests showed considerable increase in most areas, moderate deer populations, favorable hunting weather and low hunting effort in parts of the state resulted in an annual harvest considerably lower than the long-term average.

Relatively mild winters since 1972 have resulted in major increases in deer herds on Kodiak Island in portions of Southeastern Alaska. Deer populations in Game Management Unit 3 (Petersburg-Wrangell area) remained at extremely low levels.

### Dall Sheep

The 1974 reported harvest of 1,243 Dall sheep was the largest harvest ever for Alaska. Overall hunting success was 42 percent (the highest since 1967), with 32 percent of resident hunters taking sheep and 77 percent of guided nonresidents being successful. Nonresident hunters took 484 sheep or 39 percent of the total harvest. The 1974 harvest in the Brooks Range was 236 sheep, a level approximating harvests in 1972 and 1973. The Alaska Range west of McKinley Park (119 sheep), Chugach Range (137 sheep) and Talkeetna-Chulitna Mountains (114 sheep) all produced harvests approximating record highs.

Statewide Dall sheep populations remained stable through 1974.

### Bison

Three of Alaska's bison herds were hunted in 1974 with a resulting harvest of 64 animals. Thirty-five of 3,600 applicants for the Delta herd hunt were successful in drawing permits. These hunters harvested 35 bison, 20 bulls and 15 cows. A total of 94 registered hunters took 22 bison (11 bull and 11 cows) from the Copper River herd, and 7 registered hunters took 7 bison from the Farewell herd.

The Delta herd continued to grow during 1974 with the pre-hunt population estimated to consist of 340 bison. Farewell and Copper River herds also appeared to be exhibiting moderate productivity and good winter survival.

### Mountain Goat

A harvest of 619 mountain goats was reported by 1,521 goat hunters during the 1974-75 season. Most of these animals were taken along the Southeastern Alaska coast (Units 1 and 5 - 233 goats) and the Prince William Sound area (Unit 6 - 125 goats).



Goat populations throughout Southeastern Alaska remain somewhat depressed as a result of successive severe winters in the early 1970's. Increased hunting pressure in easily accessible areas has necessitated restricted seasons in several of these areas. Bag limits were reduced from 2 to 1 animals in most units during this period.

#### Elk

The 1974 reported elk harvest of 30 animals was nearly twice the magnitude of harvests in 1972 and 1973 and approximated the 1971 harvest.

Calf production and overwinter survival were good in most herds and an upward trend in elk numbers continued.

#### Muskoxen

Observations on the North Slope during 1974 indicated a minimum population of 40 muskoxen (including 12 calves).

Herds at Cape Dyer (about 19 animals including 3 calves) and on the western Seward Peninsula seem to be relatively well established and productive.

In spring 1975 a total of 40 muskoxen (9, 2-year-olds and 31 yearlings) were transplanted from the Nunivak herd to Russia. The Nelson Island herd numbered some 66 animals including 4 newborn calves in May 1975.



REPORTED KILL OF DALL SHEEP RAMS, NUMBERS OF HUNTERS AND SUCCESS OF HUNTERS FOR EIGHT MOUNTAIN AREAS IN ALASKA, 1971 THROUGH 1974, AS DERIVED FROM HARVEST REPORTS.

"All Hunters" category is higher than resident/nonresident added due to inclusion of reports from those who did not note residency.

AREA	YEAR	ALL HUNTERS			RESIDENTS			NONRESIDENTS		
		Kill No.	Hunters	Success	Kill No.	Hunters	Success	Kill No.	Hunters	Success
Alaska Range E of McKinley Park (ARE)	1972	241	800	30%	155	638	24%	77	132	58%
	1973	187	622	30%	121	498	24%	64	100	64%
	1974	194	532	37%	129	434	30%	50	65	77%
Alaska Range W of McKinley Park (ARW)	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%
Brooks Range (BRR)	1972	236	347	68%	111	205	54%	114	127	90%
	1973	242	405	60%	135	258	52%	102	135	76%
	1974	236	378	62%	137	258	53%	95	116	82%
Chugach Range (CRR)	1972	112	470	24%	79	378	21%	25	43	58%
	1973	81	426	19%	49	362	13%	26	50	52%
	1974	137	403	34%	89	333	27%	45	61	74%
Kenai Mountains (KMR)	1972	36	221	16%	31	192	16%	5	15	33%
	1973	59	292	20%	52	268	19%	3	12	25%
	1974	73	290	25%	59	266	22%	11	17	65%
Talkeetna-Chulitna Mtns.	1972	81	304	27%	41	227	18%	34	61	56%
Watana Creek Hills (TCW)	1973	61	277	27%	39	232	17%	21	31	68%
	1974	114	312	37%	83	259	32%	26	40	65%
Tanana Hills-White Mtns. (THW)	1972	5	23	22%	4	20	20%	0	2	0
	1973	3	33	9%	3	29	10%	0	3	0
	1974	13	30	43%	11	26	42%	2	3	67%
Wrangell-Mentasta-Nutzotin Mtns. (WMN)	1972	350	684	51%	170	445	38%	162	198	82%
	1973	363	840	43%	175	569	31%	182	240	76%
	1974	352	644	55%	160	401	40%	182	220	83%
Unknown	1972	3	103	3%	0	81	0	1	15	6%
	1973	4	66	6%	1	50	2%	3	8	38%
	1974	5	147	3%	2	128	2%	3	11	27%
All of Alaska (Total)	1972	1,170	3,125	37%	641	2,284	28%	468	660	71%
	1973	1,119	3,172	35%	628	2,378	26%	464	675	69%
	1974	1,243	2,949	42%	713	2,215	32%	484	626	77%
Percent Return	1972	75%*	*These figures would be higher if the cut-off date for receipt of reminder letters was extended; such action is not warranted since successful sheep hunters tend to report early.							
	1973	76%*								
	1974	73%*								



## MOUNTAIN GOAT HARVEST -- BY UNIT, SUBUNIT AND SEX: 1974-75

<u>Unit</u>	<u>Male(%)</u>	<u>Female(%)</u>	<u>Unspecified(%)</u>	<u>Total</u>
1A	26(55.3)	19(40.4)	2(4.3)	47
1B	9(50.0)	9(50.0)		18
1C	41(43.6)	50(53.2)	3(3.2)	94
1D	25(46.3)	29(53.7)		54
1 Unk	<u>1(100)</u>			<u>1</u>
Total 1	102(47.7)	107(50.0)	5(2.3)	214
Total 4	7(70.0)	3(30.0)		10
Total 5	14(73.7)	5(26.3)		19
Total 6	88(70.4)	35(28.0)	2(1.6)	125
Total 7	36(56.3)	25(39.1)	3(4.7)	64
Total 8	4(26.7)	11(73.3)		15
Total 11	27(51.9)	24(46.2)	1(1.9)	52
Total 13	8(50.0)	7(43.8)	1(6.3)	16
14A	1(50.0)	1(50.0)		2
14C	<u>1(100)</u>			<u>1</u>
Total 14	2(66.7)	1(33.3)		3
15B	3(33.3)	5(55.6)	1(11.1)	9
15C	47(56.6)	35(42.2)	1(1.2)	83
15 Unk	5(83.3)	1(16.7)		6
Kenai Unk	<u>1(100)</u>			<u>1</u>
Total 15	56(56.6)	41(41.4)	2(2.0)	99
Unk Unit	1(50.0)	1(50.0)		2
TOTAL	346(55.9)	260(42.0)	13(2.1)	619

## DEER

### SURVEY-INVENTORY PROGRESS REPORT - 1974

Game Management Units 1A and 2 - Ketchikan and Prince of Wales Island

#### Seasons and Bag Limits

Aug. 1 - Nov. 30

Three deer, provided that only one deer may be antlerless and that antlerless deer may be taken only from Nov. 1 - Nov. 30.

#### Harvest and Hunting Pressure

Hunter and harvest data were obtained from a personal hunter survey of 10 percent of the hunting license holders in Ketchikan. This survey was conducted in April this year, compared to the normal period of January. None of the 202 license holders contacted had killed a deer in Unit 2.

Sixty-nine percent of the license holders contacted reported they had hunted deer in 1974 and 25 percent indicated they had killed one or more deer. Both figures are down slightly from the 1973 season. The Subunit 1A harvest was calculated to be 517 deer, down 38 percent from 1973. The average number of deer taken per hunter was 0.36, down from the 0.46 reported in 1973.

Sex ratio of the kill was 43 percent does, compared to 28 percent for the 1973 season.

License sales in Ketchikan totaled 2,089 (including 85 of the 25¢ licenses) down slightly from the 2,103 sold in 1973. Hunter days required to bag a deer this year rose to 10.4 compared to 6.8 for 1973.

Distribution of the harvest by month shows 8 percent killed in August, 14 percent in September, 4 percent in October and 74 percent in November (the month antlerless hunting was permitted).

#### Composition and Productivity

All harvest indications point to a lower deer population in 1974 compared to 1973 but much of the apparent decline could be attributed to the complete absence of snow during this hunting season. The 1973 season experienced a heavy snowfall during the last half of November and this undoubtedly contributed to the higher kill during that year.

Eighty-two hunters responded to a question of better, same or worse deer populations this year compared to last and 72 percent indicated populations this year were the same or better compared to 1973.



## Management Summary and Recommendations

Seventeen of the 25 deer winter mortality transects in Units 1A and 2 were walked in May and no dead deer were found. The winter of 1974-75 must be considered very mild and winter ranges were in excellent condition.

While hunter success was low compared to 1973, it is unlikely that the population is any lower this year than last. However, there are no obvious indications that it is much higher than the past two years either. This has been the third mild winter in succession, however, the anticipated increase in deer numbers has not materialized.

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## DEER

### SURVEY-INVENTORY PROGRESS REPORT - 1974

Game Management Units 1C and 5 - Southeast mainland south from Cape Fairweather to Cape Fanshaw and Yakutat

#### Seasons and Bag Limits

Aug. 1 - Dec. 31

Four deer; provided that antlerless deer may be taken only from Sept. 15 to Dec. 31.

#### Harvest and Hunting Pressure

Harvest data were obtained from post-season personal interviews of 6.7 percent of Juneau hunting license holders. Summaries of harvest statistics for all of the Southeastern Alaska communities where the interviews were conducted are contained in Appendices I through IV.

The 1974 Juneau survey revealed that of 249 license holders, 133 (53.4%) actually hunted for deer with 41 (30.8%) hunters bagging 82 deer (Appendix I). Extrapolated to total Juneau license sales these figures indicate 1,969 hunters harvested 1,201 deer. Subunit 1C accounted for 3 percent of the total Southeastern harvest (Appendix II).

Juneau hunters indicated that the 1974 deer populations were as high or higher than in 1973. This is not reflected in Appendix III because the opinion survey asked to compare the 1974 hunting season with previous seasons, not the relative size of the deer populations. Most hunters complained that there were plenty of deer but due to lack of snow the deer remained at higher elevations and were unavailable to the average hunter.

Previous chronology data have indicated that harvest dates are partially dependent upon late season snows which tend to concentrate deer at lower elevations. Even with the erratic snow conditions during the 1974-75 season the chronology of the harvest was essentially the same as in previous seasons.

Harvest ticket returns for Unit 5 indicated there were eight hunters bagging three deer.

#### Natural Mortality

An indication of deer winter mortality for Southeastern Alaska is obtained annually by searching a large number of one-mile beach transects for dead deer. Subunit 1C contains one such transect and although it represents an extremely small sample, it probably does indicate trends. Beach counts of dead deer for the past three springs were as follows: 1973 - 1, 1974 - 2 and 1975 - 1. Examination of the carcasses indicated that the animals were old (6+ age class) but in fair physical condition.



These data indicate that mortality has been relatively mild and deer populations should increase or at least remain stable for the 1975 season.

#### Management Summary and Recommendations

Deer populations in Southeastern Alaska are regulated primarily by weather. Hunting, except in local areas, does not appear to be an important factor. Harvest figures indicate a lower harvest in 1974 than in 1973, however, this may have been due to poor hunting weather rather than lower deer populations. Since deer populations fluctuate with weather, seasons and bag limits should be as liberal as is biologically feasible.

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# APPENDIX I

1974 S.E. Alaska Deer Hunter Harvest Statistics derived  
from hunter interviews, Units 1 through 4.

Town	Juneau	Ketchikan	Petersburg	Wrangell	Sitka	Other <u>1/</u>	Total or Mean
Sample Size	249	202	80	63	136		730
% Hunter Success	30.8	25.2	41.9	27.6	70.43		39.2
Deer/Hunter	.61	.36	.88	.62	1.91	.82	.82
Days/Deer	8.69	10.36	5.61	7.44	3.69		7.16
% Kill ♀	40.7	42.9	44.7	33.3	44.7		41.2
License Sales	3,687	2,089	709	581	1265	1602	9933
% who hunted	53.4	69.5	53.8	46.0	84.6	59.5	61.4
Projected No. Hunters	1969	1,451	381	267	1070	953	6077
Total Projected Kill	1201	522	335	166	2044	781	5049

1/ Other than license sales, figures are based on average from the five principal communities.

Prepared by: Warren Ballard, Game Biologist II and David Johnson, Game Biologist III.

# APPENDIX II

Location of 1974 Deer Kills by Game Management Unit,  
Unit 1-4, as derived from hunter interviews.

Town	Unit 1	2	3	4	Total
Juneau	14 <u>1/</u>	--	--	68	82
Ketchikan	46 <u>2/</u>			4	50
Petersburg	--	--	2	36	38
Wrangell	--	--	3	15	18
Sitka	--	--	--	220	220
Total	58	--	5	343	408
% of harvest	14.3	--	1.2	84.5	100.0

1/ Subunit 1C

2/ Subunit 1A

Prepared by: Warren Ballard Game Biologist II and David Johnson Game Biologist III



# APPENDIX III

Deer hunter opinion on 1974 season in comparison to previous seasons  
as derived from hunter interviews, Units 1-4.

Town	Hunter Class	Opinion - Better	Worse	Same	NA	Total
Juneau	Successful	12	8	15	5	40
	Unsuccessful	4	22	24	164	214
Ketchikan	Successful	3	1	17	10	31
	Unsuccessful	11	22	28	23	84
Petersburg	Successful	2	6	4	6	18
	Unsuccessful	2	12	5	43	62
Wrangell	Successful	0	2	3	3	8
	Unsuccessful	2	3	7	9	21
Sitka	Successful	32	16	22	10	80
	Unsuccessful	6	10	5	18	39
Totals	Successful	49	33	61	34	177
	Unsuccessful	25	69	69	257	420
% of Total		12.4	17.1	21.8	48.7	100.0

Prepared by: Warren Ballard, Game Biologist II and David Johnson, Game Biologist III.

# APPENDIX IV

Chronology of 1974 Deer Harvest as derived from hunter interviews, Units 1 through 4.

Town	Aug	Sept	Oct	Nov	Dec	Unk	Totals
Juneau	2	4	7	35	12	22	82
Ketchikan	4	7	2	37	--	--	50
Petersburg	0	2	2	33	1	0	38
Wrangell	0	0	1	13	4	0	18
Sitka	26	21	29	91	53	0	220
Totals	32	34	41	209	70	22	408
% of harvest	7.8	8.3	10.1	51.2	17.2	5.4	100.0

Prepared by: Warren Ballard, Game Biologist II and David Johnson, Game Biologist III.



## DEER

### SURVEY-INVENTORY PROGRESS REPORT - 1974

Game Management Unit 4 - Admiralty, Baranof, Chichagof and adjacent islands

#### Seasons and Bag Limits

That portion of Admiralty Island including all drainages into Frederick Sound and Stephens Passage on southeast Admiralty Island between Pleasant Bay and Point Gardner	Aug. 1 - Nov. 30	Four deer; provided that antlerless deer may be taken only from Nov. 1 - Nov. 30
Remainder of Unit 4	Aug. 1 - Dec. 31	Four deer; provided that antlerless deer may be taken only from Sept. 15 - Dec. 31

#### Harvest and Hunting Pressure

Harvest ticket analyses have not been made since 1972. Therefore, no harvest ticket data were available for this report.

Post-season hunter interviews, as described in the 1972 S&I report, showed that hunters seeking deer in Unit 4 again had excellent success in 1974. While conducting interviews with Sitka hunters, I stressed that my concern was to arrive at the most accurate harvest data possible. As a result 13 (10%) of the hunters interviewed reported having exceeded the bag limit. These figures were included in the harvest calculations.

The 1974 hunter interview sampled 136 (10.8%) of the 1,265 hunting license holders from Sitka. Based on the interviews, 84.6 percent of the licensees actually hunted and took an estimated 2,428 deer. The average hunter took 2.27 deer and expended 3.1 days effort for each deer harvested. Hunter success was 70.4 percent. Bucks comprised 55.6 percent of the harvest. Chronologically, 10 percent of the harvest was taken in August, 11 percent in September, 13 percent in October, 40 percent in November and 27 percent in December. By area, 17 percent of the harvest came from Kruzof Island, 17 percent from the west side of Baranof Island south of Sitka, 53 percent from Baranof Island north of Sitka and 10 percent from the west side of Chichagof Island. These figures indicate the 1974 harvest was one of the most successful in recent years.

Most hunters, (61%) offered the opinion that hunting was as good or better than in 1973 while only 26 percent felt it was not as good. Sixteen percent offered no opinion. Many hunters reported that the inclement weather which prevailed during the productive hunting months of October, November and December prevented them from taking an even greater harvest. An interesting statistic revealed that each successful hunter spent an average of 10.1 days afield whereas each unsuccessful hunter spent 4.6 days afield.

On a regionwide basis Unit 4 contributed 85 percent of the Region I deer harvest. Hunter interviews in Juneau, Petersburg, Wrangell and Ketchikan indicated that hunters from these communities took about 2,200 animals with approximately 1,500 taken from Unit 4.

Lack of time and money precluded interviews in Kake, Angoon, Hoonah, Pelican, Tenakee, Elfin Cove, Excursion Inlet, Gustavus, Hawk Inlet or the 14 active logging and mining camps and canneries. However, data from previous years and local informants suggest these communities look upon the deer resource as a significant contribution to their subsistence needs. It is estimated that the harvest for these communities, all taken from Unit 4, was about 2,000 deer. Combining hunter interview data and estimates as noted above, the harvest from Unit 4 in 1974 was calculated to be 7,118 deer. This represents a small increase over 1973 kill estimates but does not suggest an increase in overall hunter numbers, merely a shift of hunter effort from those areas of Southeastern Alaska where deer numbers are currently low to more productive hunting areas of Unit 4. Historic harvest data from hunter interviews are given in Appendix I. Data for 1974, by community, are presented in Appendix II.

#### Composition and Productivity

No data have been collected which would reflect the composition and productivity of the deer populations in Unit 4. Judging by the high degree of hunter success the population must be considered to be reasonably high, perhaps approaching some of the highs seen in the past. It is also assumed that the populations are increasing, three consecutive mild and relatively snow free winters would be conducive to expanding populations. Two observations were made which further tend to support a high and expanding population. First, I examined a yearling age class doe shot by a hunter on Kruzof Island on September 21, 1974. The doe was accompanied by a fawn-of-the-year and was lactating, so she had bred as a fawn. This is the first instance I have observed, in eight years of Sitka black-tailed deer management experience, of breeding by a fawn. Second, while extensive jaw collection efforts were not made, 40 deer were examined for aging purposes. Excluding fawns (6), 61.8 percent of the remaining 34 deer were yearlings. These were hunter-killed deer, taken at random with little attempt at selectivity. Even though the sample was small it is probably fairly representative.

Winter mortality, which has appeared to be an annual phenomenon in the past in Unit 4, was not significant during the winter of 1974-75.

During April and May 1975, 22 transects were walked searching for winter-killed deer. Unlike past years, Admiralty Island showed the least mortality, with only one carcass found in 11 miles of beach. Baranof Island showed the highest mortality with four carcasses in three miles of beach. Four carcasses were found on eight transects on Chichagof. Overall, nine carcasses were found on 22 one-mile transects for 0.41 deaths per mile. Historic winter mortality data are presented in Appendix III.



The low winter mortality was predictable as there was virtually no snowfall at lower elevations during the entire winter. There was a higher than usual snowpack at higher elevations which caused deer to remain on their winter and intermediate ranges until later than normal in the spring. The winter ranges, which appeared to be in fairly poor condition (see 1974 report) were therefore subjected to a longer period of use. It is my opinion that the combination of high deer populations on chronically, heavily used ranges in poor condition will result in extensive winter losses during a moderate to severe winter.

Non-hunting mortality (excluding winter mortality), although not a serious demand on Unit 4 deer resources, created several management problems. Foremost among these were deer killed by free-ranging dogs in the immediate Sitka area. No fewer than 15 instances of dog/deer confrontations were investigated during the 1974-75 winter. Five deer which died of exposure from either being harassed into the water by dogs or trying to swim from one island to another were examined. Approximately 10 deer were struck by automobiles.

I performed autopsies on as many of these deer as possible. These autopsies revealed two cases of lung worm (*Dictyocaulus* sp.), two cases of caecal worm (*Oesophagostomum* sp.), 100 percent infections with *Taenia* cysts and 100 percent infections with an as yet unidentified nematode in the abomasum. One yearling buck in a state of advanced malnutrition was brought in during April, it was nursed back to health and is now at the Alaska Children's Zoo in Anchorage. That deer yielded one specimen of louse tentatively identified as a member of the *Tridactylidae* family. This is the first authentic record known to me of an ectoparasite from an Alaskan deer.

In regard to *Taenia* cyst infestations, it is interesting to note that the local dog population has apparently replaced wild canines as the primary host for this species. Unsuccessful efforts have been made to identify this *Taenia* by infecting a dog known to be free of the parasite. The dog did become infected but we have not been successful in obtaining a scolex for identification.

#### Management Summary and Conclusions

No management problems of major significance are present in Unit 4. The populations are continuing to rebuild following significant losses during the severe winters of 1968-69 and 1971-72.

The Department should continue to support the liberal seasons and bag limits in existence. There is no known biological reason why southern Admiralty Island should have a different season than the remainder of Unit 4.

From a public relations standpoint a close watch should be maintained during November and December should a heavy snowfall force deer to the beaches in large numbers. In spite of the fact that most of the public

recognizes winter mortality is the most significant control on deer numbers, extreme criticism has been, and will be, leveled at the responsiveness of the Department, in view of the deer situation over the remainder of Southeastern Alaska, should extensive beach kills be allowed. It is well recognized that no matter how intensive the pressure exerted by hunters, deer will continue to respond to climatic conditions; yet public criticism could further erode our management jurisdiction should we favor and encourage heavy kills during extreme snow accumulation.

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# APPENDIX I

## Historic Harvest Data

### Game Management Unit 4. Sitka Hunters Only

#### Data From Post Season Hunter Interviews

Calendar Year	Kill	License Sales	Interview Sample Size	Total No. Deer Per of Hunters Hunter	
1974	2,428	1,265	136	1,070	2.3
1973	2,489	1,206	126	1,091	2.5
1972	1,058	879	125	752	1.4
1971	1,411	1,025	151	830	1.7
1970	1,720	1,080	150	820	2.1
1969	490	810	100	610	0.8
1968	2,540	1,200	100	940	2.7
1967	1,750	1,200	100	970	1.8
1966	1,740	1,200	100	870	2.0
1965	1,400	1,030	100	880	1.6
1964	1,980	1,100	100	990	2.0
1963	2,090	1,500	110	1,100	1.9
1962	1,940	1,111	105	970	2.0
1961	1,609	1,022	97	894	1.8
1960	2,050	1,051	100	861	2.3

## APPENDIX II

### Estimated Deer Harvest

From Game Management Unit 4 - 1974

Community	Deer Kill	Source
Sitka	2,428	Hunter Interview (10.8)
Angoon	500	Local Source
Hoonah	400	Estimate
Pelican	400	Estimate
Tenekee	250	Estimate
Other S.E. Communities	500	Estimate
Logging & Mining Camps and Canneries (14)	1,000	Estimate
Petersburg	320	Hunter Interview (11.3)
Ketchikan	50	Hunter Interview (9.7)
Wrangell	100	Hunter Interview (10.8)
Juneau	1,020	Hunter Interview (6.8)
Other	<u>150</u>	Estimate
Total	7,118	

# APPENDIX III

## WINTER MORTALITY DATA, GAME MANAGEMENT UNIT 4

Year	Admiralty			Baranof			Chichagof			Kruzof			Unit Total		
	No. Trans	Tot Mort	Per/ Mile	No. Trans	Tot Mort	Per/ Mile	No. Trans	Tot Mort	Per/ Mile	No. Trans	Tot Mort	Per/ Mile	No. Trans	Tot Mort	Per/ Mile
1974-75	11	1	0.09	3	4	1.33	8	4	.50	-	-	-	22	9	.41
1973-74	11	11	1.00	3	2	.67	8	5	.63	1	0	0	23	18	.78
1972-73	11	8	.72	3	0	0	7	5	.71	1	1	1.0	22	14	.64
1971-72 <sup>1/</sup>	11	13	1.18	-	-	-	7	7	1.00	-	-	-	18	20	1.11
1970-71 <sup>2/</sup>	11	12	1.09	4	4	1.00	7	21	3.00	1	0	0	23	37	1.61
1969-70	10	0	0	4	0	0	5	0	0	-	-	-	19	0	0
1968-69	11	49	8.90	4	19	9.50	6	13	4.34	1	4	8.0	22	85	7.72
1967-68	11	2	.36	4	3	1.50	5	1	.40	1	0	0	21	6	.58
1966-67	11	0	0	4	1	.50	6	0	0	1	0	0	22	1	.10
1965-66	11	12	2.18	4	3	1.50	6	4	1.34	1	0	0	22	19	1.72
1964-65	11	24	4.36	4	2	1.00	6	3	1.00	1	0	0	22	29	2.64
1963-64	11	6	1.08	4	10	5.00	6	2	.66	1	0	0	22	18	1.64
1962-63	11	1	.18	4	0	0	6	2	.66	1	0	0	22	3	.28

<sup>1/</sup> Data known to be of questionable veracity.

<sup>2/</sup> All transects prior to 1970-71 were 1/2 mile in length. Figures are expanded to represent mortality/mile. After 1971 all transects have been 1 mile long.

## DEER

### SURVEY-INVENTORY PROGRESS REPORT - 1974

Game Management Unit 6 - Prince William Sound

#### Season and Bag Limits

August 1 - December 31

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

#### Harvest and Hunting Pressure

Harvest data for Cordova deer hunters were obtained by interviewing 100 license holders. These data revealed a modest harvest of 414 deer by Cordova hunters (Appendix I).

Although deer harvest tickets were required, an IBM run was not compiled.

#### Composition and Productivity

The following age data were obtained from 116 deer jaws taken by local hunters.

	<u>Fawn</u>	<u>Yrlg.</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5+</u>	<u>Total</u>
Number	40	31	2	6	9	28	116
Percent	34	27	2	5	8	24	100
Born in Spring of	1974	1973	1972	1971	1970	1969	
First winter	74-75	73-74	72-73	71-72	70-71	69-70	

#### Management Summary and Conclusions

Adequate hunter harvest data are not available for Unit 6. Realistically the only indicator of the Prince William Sound deer population is obtained from the collection of hunter harvested deer jaws. These data reveal the lack of two- and three-year-old deer in the herd which is a reflection of winter severity during their first winter rather than over utilization by hunters.

#### Recommendations

Retain the present deer season and bag limit.

PREPARED BY:

Julius Reynolds  
Game Biologist III

SUBMITTED BY:

John Vania  
Regional Management Coordinator



Appendix I. Cordova Hunter Harvest Data\*

	<u>1974</u>	<u>1973**</u>	<u>1972</u>	<u>1971</u>	<u>1970</u>
1. Number hunters afield	354	456	294	354	444
2. Number deer harvested	414	720	180	450	744
3. Deer per hunter afield	1.2	1.6	0.6	1.3	1.7
4. Percent hunter success	53	66	33	56	73
5. Days per deer	4.2	4.0	5.2	2.9	2.5

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\* Data obtained from random interviews of 100 Cordova hunters; projected figures obtained by multiplying sample figures by ratio of license buyers to hunter interviews.

\*\* Season closed December 16, 1973 due to vulnerability of deer caused by deep snow. All other seasons ran from August 1 - December 31.

PREPARED BY: Julius Reynolds, Game Biologist III

## DEER

### SURVEY-INVENTORY PROGRESS REPORT - 1974

#### Game Management Unit 8 - Kodiak and Adjacent Islands.

##### Seasons and Bag Limits

Unit 8, that portion of Kodiak Island which lies east of a line from the mouth of Saltery Creek to Craig Point.	Aug. 1 - Nov. 1	One deer; provided that antlerless deer may be taken only from Oct. 1 - Nov. 1.
Remainder of Unit 8	Aug. 1 - Dec. 31	Four deer; provided that antlerless deer may be taken only from Sept. 15 - Dec. 31.

##### Harvest and Hunting Pressure

Harvest information was obtained by telephone and personal interviews with 11.6 percent of the 2,022 Kodiak hunting license purchasers. Extrapolated results of this survey indicate that 1,141 hunters took 1,754 deer in 1974 (Appendix I). This was the highest harvest recorded since 1968 (Appendix II). Hunter success was 61 percent, a substantial improvement over the 47 percent success recorded in 1973. Thirty-five percent of the successful hunters took the full bag limit of four deer. Males comprised 62 percent of the harvest.

Nearly two-thirds of the harvest occurred during October and November (Appendix III). Fifty-six percent of the harvest was taken by boat hunters (Appendix IV). Distribution of the harvest over Unit 8 is indicated in Appendix V. Subunit 4, which includes Whale Island and Sharatin, Kizhuyak and Viekoda Bays, supported 23 percent of the indicated harvest. Approximately 20 percent of the indicated harvest was taken from Raspberry and Afognak Islands. Only 9 percent of the harvest was taken in subunits accessible from the Kodiak Island road system.

##### Composition and Productivity

No sex or age composition data were collected in 1974.

Winter mortality from malnutrition during the 1973-74 winter was generally light. No deer carcasses were found in walking 15 1/4 miles of beachline in Ugak and Chiniak Bay areas during April and May 1974. One yearling male which apparently died from malnutrition was found near

Woman's Bay in March. Two dead fawns found near Kitoi Bay, Afognak Island, apparently were starvation victims. Flights made during February and March revealed nearly total snow cover to sea level over most of Afognak Island and the northeastern portion of Kodiak Island. Over much of the rest of Kodiak Island snow conditions permitted deer to range to 300-500 ft. elevation during most of the winter. April rains rapidly reduced the snow cover and removed the threat of heavy winter losses.

Other mortality included two males which died of exposure and exhaustion after being chased by dogs when snow cover was heaviest in February and March. At least four deer were taken during the closed hunting season on the road system.

#### Management Summary and Recommendations

Light winter mortality allowed a general upward trend in Unit 8's deer population to continue. Improved hunter success and increased harvest further substantiated the upward trend. Hunter harvest heavily favored males and hunting continues to have light impact on populations.

No changes in seasons or bag limits are recommended.

PREPARED BY:

Roger B. Smith  
Game Biologist III

SUBMITTED BY:

John S. Vania  
Regional Management Coordinator

# APPENDIX I

## Unit 8 - Deer Harvest Statistics, 1974\*

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	<u>No.</u>	<u>Percent</u>
License Buyers	2,022	
*Licensee Interviews	234	11.6%
License Buyers Not Hunting	881	44%
Hunters Afield	1,141	56%
Females Harvested	665	38%
Males Harvested	1,089	62%
Total Deer Harvested	1,754	
Successful Hunters	700	61%
Days Hunted Per Deer	3.7 days	
Deer Per Hunter Afield	1.54 deer	
Deer Per Successful Hunter	2.51 deer	
Total Days Hunted	6,506	
Number and Percent Hunters Taking:		
One deer	216	31%
Two deer	156	22%
Three deer	86	12%
Four deer	<u>242</u>	<u>35%</u>
Total	700	100%

\* From telephone hunter interview; harvest figures extrapolated from 11.6 percent sample of license buyers. Survey conducted by Roger Smith and Ben Ballenger.

PREPARED BY: Roger B. Smith, Game Biologist III



# APPENDIX II

## Unit 8 - Deer Harvest Statistics, 1966 - 1974

	1967	1968	1969	1970	1971	1972	1973	1974
Number of Hunters:	1,800	2,300	1,441	658	925	689	1,127	1,141
Number of Deer Harvested:	1,500	2,100	1,420	870	915	587	1,166	1,754
% Hunter Success:	48	74	43	55	45	46	47	61
Number of Deer per Hunter:	.8	.9	1.0	1.3	1.0	.85	1.0	1.5
Number of Hunting Days per Deer:	5.7	5.0	6.3	2.4	4.5	5.2	5.0	3.7

PREPARED BY: Roger B. Smith, Game Biologist III

### APPENDIX III

#### Unit 8 - Chronological Distribution of Deer Harvest, 1974\*

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	<u>AUG.</u>	<u>SEPT.</u>	<u>OCT.</u>	<u>NOV.</u>	<u>DEC.</u>	<u>TOTAL</u>
Number	78	86	458	691	441	1,754
Percent	4.4%	4.9%	26.1%	39.4%	25.1%	99.9%

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### APPENDIX IV

#### Unit 8 - Distribution of Deer Harvest by Transportation Means, 1974\*

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	<u>BOAT</u>	<u>PRIVATE AIR</u>	<u>AIR TAXI</u>	<u>AUTO</u>
Percent	56%	6%	21%	17%
Number	527	52	199	164

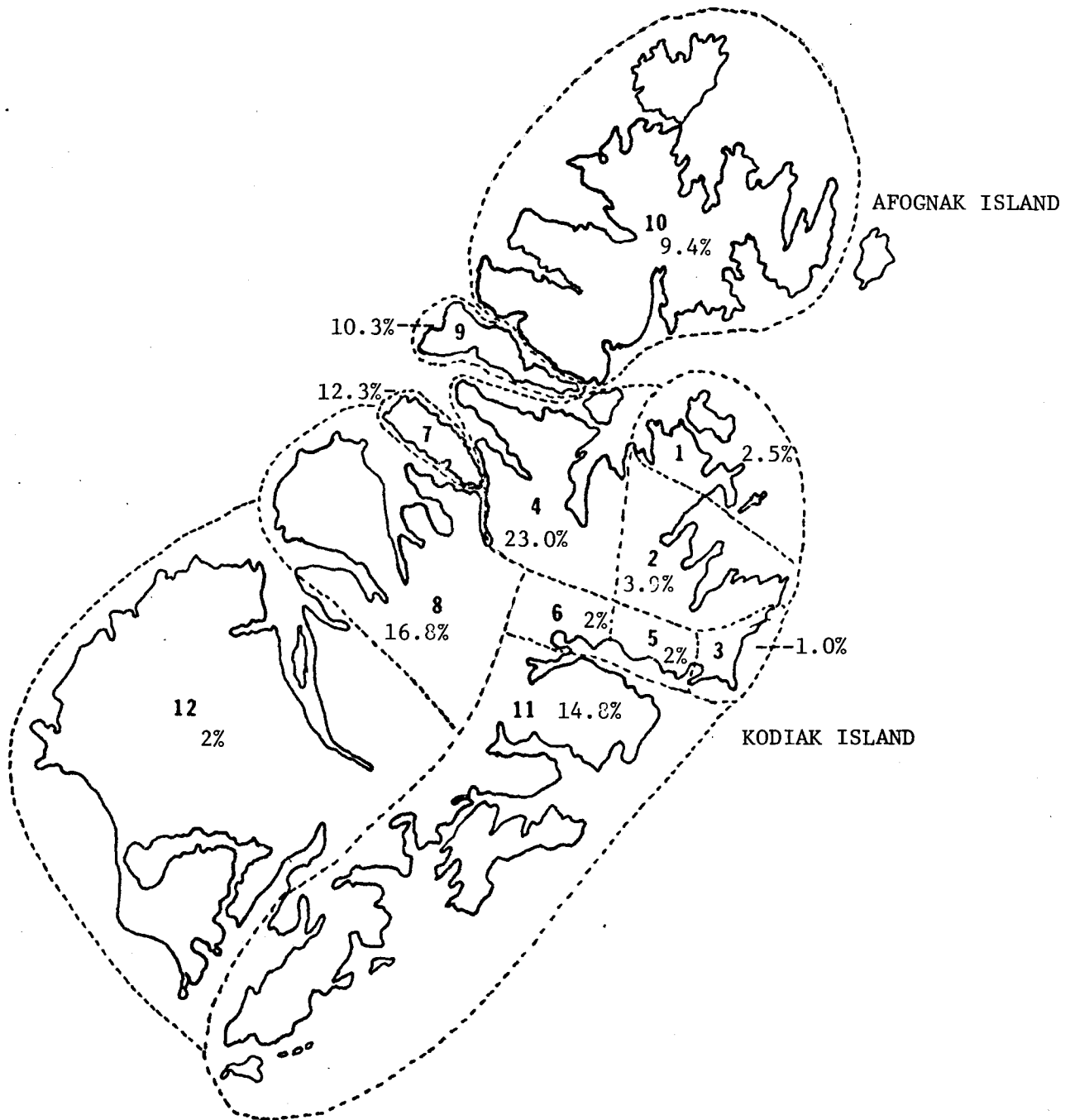
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\* From telephone hunter interview; harvest figures extrapolated from 11.6 percent sample of Kodiak license buyers. Survey conducted by Roger Smith and Ben Ballenger.

PREPARED BY: Roger B. Smith, Game Biologist III

APPENDIX V

Unit 8 - Distribution of Deer Harvest by Subunit, 1974



PREPARED BY: Roger B. Smith, Game Biologist III

## SHEEP

### SURVEY-INVENTORY PROGRESS REPORT - 1974

#### Game Management Unit 7 - Seward - Kenai Mountains

##### 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.	To be announced	Closed except that one sheep with 1/2 curl horn or less, or one ram with full curl (4/4 curl) horn or larger may be taken by permit only. Dates and conditions of the hunt to be described by Commissioner's announcement.
Remainder of Unit 7.	August 10 - September 20	One ram with 3/4 curl horn or larger.

##### Harvest and Hunting Pressure

The harvest of rams in GMU 7 since 1962, obtained from harvest report returns, has been as follows:

1962 - 15*	1968 - 52
1963 - 25	1969 - 42
1964 - 8	1970 - 25
1965 - 22	1971 - 9
1966 - 18	1972 - 18
1967 - 21	1973 - 26
	1974 - 18**

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

\*\* Does not include rams taken on the special Crescent Mountain hunt.

One hundred and thirty-nine hunters reported hunting sheep in Unit 7 during the general hunting season. Eighteen resident hunters (12.9 percent) were successful. The number of hunters afield declined by 20.1 percent, the harvest declined by 30.8 percent and hunter success was down 2 percent from 1973 to 1974.

Average horn length for the 18 rams harvested was 32.2 inches. This represents a 1.6 inch increase over the average horn size for 1973.

A special two part hunt was held on the Crescent Lake Mountains in conjunction with a research project. Twenty-five of 30 hunters who drew



permits participated in the first part of the hunt that was open August 10-19. These hunters were permitted to take either a full curl or larger ram or a sheep with horns 1/2 curl or less. Eighteen hunters (72 percent) were successful in taking a sheep (Appendix II). The harvest was composed of 3 full curl or larger rams; nine 1/2 curl or less rams and 6 ewes. One of the 3 full curl or larger rams was not retrieved.

Seventy-seven hunters participated in the second part of the hunt, a check-in check-out hunt held August 21-31 for sheep with 1/2 curl or less. Twenty-one hunters took sheep for a success rate of 27.3 percent. The harvest was composed of 8 rams (including one lamb) and 13 ewes.

Ages and horn lengths of rams harvested are presented in Appendix III.

### Composition and Productivity

Seventy-six sheep were observed on Cooper Mountain in 1974, down 12.6 percent from 1973 (Appendix III). This decline indicates that the 6.1 percent increase observed between 1972 and 1973 was not a reversal of the general downward trend that began after 1968.

On Crescent Lake Mountains no significant change in sheep numbers occurred between 1973 and 1974 (Appendix II). The difference between the 268 sheep observed in 1973 and the 250 observed in 1974 is accounted for by the harvest of 17 sheep after the 1973 survey.

Sheep numbers in the Grant Lake Mountain count area have fluctuated without any evident trend. The twenty-one sheep counted in this area in 1974 was the lowest number observed since surveys started in 1968. It is highly probable that there is an exchange of sheep between this count area and surrounding areas which accounts in part for the observed fluctuation in numbers.

### Management Summary and Conclusions

Hunting effort in Unit 7 declined by 20.1 percent between 1973 and 1974. Hunter success declined in the same period from 14.9 to 12.9 percent.

Survey information indicates that sheep populations in Unit 7 increased from the early 1950's through 1968. Most sheep populations have remained essentially stable since 1968. The Cooper Mountain population has declined significantly.

### Recommendations

The Crescent Mountain experimental harvest study should be continued to verify tentative conclusions.

No changes in regulations are proposed at this time.

PREPARED BY:

Paul A. LeRoux  
Game Biologist III

SUBMITTED BY:

John S. Vania  
Regional Management Coordinator

# APPENDIX I

## Harvest and Hunter Success, Unit 7 - Kenai Mountains

<u>Year</u>	<u>Mountain Range</u>	<u>Number Successful</u>	<u>Percent Successful</u>	<u>Number Unsuccessful</u>	<u>Percent Unsuccessful</u>	<u>Total Sample</u>	<u>Ave. Horn Length (N)</u>
1969	Kenai	42	15.7	226	84.3	268	32.7 (36)
	Chugach	0	0	18	100.0	18	
1970	Kenai	23	13.8	143	86.1	166	31.1 (20)
	Chugach	2	15.4	11	84.6	13	
1971	Kenai	9	7.8	107	92.2	116	31.2 (6)
	Chugach	0	0	13	100.0	13	
1972	Kenai	18	17.3	86	82.6	104	31.2
	Chugach	0	0	9	100.0	9	
1973	Kenai	25	16.1	130	83.9	155	30.6
	Chugach	1	5.3	18	94.7	19	
1974	Kenai	18	14.1	110	85.9	128	32.2
	Chugach	0	0.0	11	100.0	11	

PREPARED BY: Paul A. LeRoux, Game Biologist III

## APPENDIX II

### Sheep trend count data, portions of Unit 7 - Kenai Mountains

#### COOPER MOUNTAIN

<u>Date</u>	<u>Total Adults</u>	<u>Lambs</u>	<u>Total Sheep</u>
7/56	39	11	50
6/63	47	10	57
5/68	97	20	117
9/72	70	12	82
7/73	--	--	87
6/74	65	11	76

#### CRESCENT LAKE MOUNTAINS

<u>Date</u>	<u>Total Adults</u>	<u>Lambs</u>	<u>Total Sheep</u>
6/56	101	35	136
6/68	228	68	296
7/70	243	44	287
6/71	208	20	228
6/72	194	30	224
6/73	218	50	268
6/74	221	29	250

#### GRANT LAKE MOUNTAINS

<u>Date</u>	<u>Total Adults</u>	<u>Lambs</u>	<u>Total Sheep</u>
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 Survey Conducted		
6/74	19	2	21

PREPARED BY: Paul A. LeRoux, Game Biologist III



### Appendix III

Horn lengths and age of rams from the 1974 Crescent Mountain Sheep Hunt.

<u>Age</u>	<u>Left Horn Length</u> <sup>1</sup>	<u>Right Horn Length</u>	<u>Average Length of both horns</u>
Yrlg	6.0	6	6
2	10.75	10.5	10.625
2	11.5	11.5	11.5
2	8.5	8.75	8.625
3	14.25	14.0	14.125
4	21.25	21.25	21.25
4	23.5	24.0	23.75
5	24.5	24.0	24.25
5	20.0	21.0	20.5
5	22.5	21.5	22.0
8	37.75	38.0	37.875
8	37.0	37.0	37.0

Average horn length by age class - Rams only.

<u>Age Class</u>	<u>Average horn length</u>	<u>Sample Size</u>
Yrlg	6	1
2	10.25	3
3	14.13	1
4	22.5	2
5	22.08	3
8	37.44	2

<sup>1</sup> Measurements in inches.

PREPARED BY: Paul A. LeRoux, Game Biologist III

## SHEEP

### SURVEY-INVENTORY PROGRESS REPORT - 1974

#### Game Management Unit 9 - Alaska Peninsula

##### Season and Bag Limits

August 10 - September 20

One ram with 3/4 curl  
horn or larger.

##### Harvest and Hunting Pressure

The reported sheep harvest in 1974 for Unit 9 was eight rams. The historic harvest for the unit, as reported by the harvest report program, is presented below:

<u>Year</u>	<u>Kill</u>	<u>Year</u>	<u>Kill</u>
1962	0	1968	10
1963	1	1969	7
1964	2	1970	2
1965	0	1971	2
1966	0	1972	3
1967	6	1973	3
		1974	8

##### Composition and Productivity

No data are available.

##### Management Summary and Conclusions

Sheep in Game Management Unit 9 are restricted to that portion of the Alaska Range east of Lake Clark. Hunting pressure in Game Management Unit 9 for sheep is believed to be light. The harvest report program indicated that 12 individuals hunted sheep in Unit 9.

##### Recommendations

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

PREPARED BY:

James B. Faro  
Game Biologist III

SUBMITTED BY:

John S. Vania  
Regional Management Coordinator

# SHEEP

## SURVEY-INVENTORY PROGRESS REPORT - 1974

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

### Seasons and Bag Limits

Aug. 10 - Sept. 20

One ram with 3/4  
curl horn or larger

### Harvest and Hunting Pressure

The reported harvest, number of hunters, success percentages, average horn size and resident-nonresident breakdown by hunters, harvest and success are given in Table 1.

Table 1. Harvest Statistics, Alaska Range West, 1967-1974.

Year	Harvest	Hunters	Percent Success	Average Horn Size (inches)	Percent Hunters		Percent Harvest		Percent Success	
					Resident	Nonresident	Resident	Nonresident	Resident	Nonresident
1967	65	97	67	-	48	52	42	58	52	76
1968	95	151	63	34.7	66	34	55	45	53	83
1969	104	154	68	35.0	60	40	51	49	57	82
1970	84	162	52	34.0	49	51	40	60	43	68
1971	71	156	46	34.1	51	49	39	61	35	57
1972	69	124	56	33.8	55	45	45	55	47	68
1973	119	211	56	34.4	53	47	45	55	47	67
1974	119	213	56	34.4	54	46	39	61	41	76

The number of sheep harvested and the number of sheep hunters in the Alaska Range west of Mt. McKinley Park did not show any marked trends during 1967-1972. In 1973 there was a substantial increase in the numbers of hunters and rams harvested. Numbers of hunters and rams harvested in 1974 matched almost to the number the figures from 1973.

The only change in the harvest statistics worthy of note would be the slight increase in the percentage of the rams taken by nonresident hunters (55% in 1973, 61% in 1974). This increase was not due to a higher number of nonresident hunters but rather more successful nonresident hunters. Whether guides were more effective in the old hunting areas or whether they were hunting in new areas is unknown.

Examination of the harvest information on a drainage basis indicates no major shifts of pressure within the range. A few areas continue to support a major portion of the harvest and many areas are lightly hunted.

## Composition and Productivity

During June and July 1974 distribution and abundance surveys were flown by area biologist Pete Shepherd in the Tonsona River, Big River, Swift River and Middle Fork drainages. A total of 915 sheep were observed including 81 rams (47 legal), 634 ewes, 176 lambs and 24 unidentified sheep. The low calculated lamb:ewe ratio of 28:100 is probably due to the inclusion of young rams and yearlings in the ewe category and lambs not being observed during the aerial survey.

Including this 1974 survey all major portions of the Alaska Range West have now been surveyed. A total of 2,125 sheep have been observed in the area. Considering the rugged nature of this mountain range and that survey conditions are often less than ideal in the area I think it is doubtful that observers see more than 65-70 percent of the sheep present on the range during a low level intensive survey. Assuming an observed percentage of 65 percent I estimate there are at least 3,200 sheep within the Alaska Range West.

## Management Summary and Conclusions

With present harvest levels it is not likely that any major changes will occur in sheep populations in the ARW as a result of hunting. If hunting pressure increases the number of legal rams in most areas will decrease and regulations limiting harvests may be necessary.

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

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

At present there is no biological justification for regulations that prohibit the harvesting of ewe sheep. Regulations should be considered that would allow the harvest of ewe sheep and thereby increase hunting and recreational opportunities. Sheep population levels and trends should be determined and monitored closely. To prevent serious biological repercussions the population should not be allowed to increase until it can be established that the range can support a larger population.

PREPARED BY:

Arthur C. Smith  
Game Biologist II

SUBMITTED BY:

Oliver E. Burris  
Regional Management Coordinator

## SHEEP

### SURVEY-INVENTORY PROGRESS REPORT - 1973

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

August 10 - September 20

One ram with 3/4 curl  
horns or larger

#### Harvest and Hunting Pressure

Ram harvests from Unit 11, statewide ram harvests and the percentage of statewide harvests from Unit 11 are given in Appendix I. These data illustrate generally higher harvests since 1968 as compared to the years prior to 1968. The percentage of the statewide harvest from Unit 11 has fluctuated around 16 percent without apparent trend.

A comparison of hunter success between statewide hunters and hunters within the Wrangell-Mentasta-Nutzotin (WMN) Mountains during 1974 is made in Appendix II. In the WMN Mountains, both resident and nonresident hunters were more successful than resident and nonresident statewide hunters. There was also a larger percentage of nonresidents among WMN hunters. Although only 35 percent of the hunters were nonresidents in the WMN Mountains, they killed 53 percent of the sheep. The success ratio of guided nonresidents was more than twice that of resident hunters.

A comparison of transportation means used by successful hunters showed that aircraft were the most popular transportation means and were used by 81 percent of the successful hunters. Next in popularity were horses (used by 10 percent of the successful hunters), highway vehicles (5 percent) and off-road vehicles (4 percent).

Harvest and hunting pressure data are presented in Appendix III for the two mountain ranges within Unit 11. Sample sizes for the eastern Chugach Range are small, and this accounts for much of the fluctuation seen in the annual harvest data. Harvests, hunting pressure and percentage of resident hunters were generally low in the eastern Chugach Mountains. The mean horn lengths of harvested rams has been surprisingly low considering the low harvests from that area. Ram harvests and numbers of hunters from the Wrangell Mountains have generally increased from 1967 through 1973. The 1974 hunting season was warm, and an early snowfall did not occur. The reduction in the 1974 harvest was apparently due to an unexplained reduction in hunting pressure. Hunter success has fluctuated without apparent trend. Changes in harvest data of this nature may be expected: (1) where the annual production of legal rams equals or exceeds



the losses, (2) where hunters continually move into local areas previously unexploited, or (3) where both factors are occurring. The gradual increase and then decrease of mean horn length of harvested rams suggests that shifts of hunting pressure have occurred.

A subgrouping of harvest data to isolate selected areas in the Unit 11 portion of the Wrangell Mountains reveals a changing pattern of hunting pressure (Appendix IV). In the Chitistone Canyon-Chitina Glacier vicinity, ram harvests and numbers of hunters have generally increased from 1968 through 1974, and these increases were accompanied by gradual reductions in the mean horn lengths of harvested rams. Hunter success has fluctuated without trend, although there have been decreasing percentages of resident hunters (and, therefore, increasing percentages of guided nonresidents who are usually more successful than resident hunters) during recent years. Harvest data from the remainder of the Unit 11 portion of the Wrangell Mountains fluctuated without apparent trends until 1973 and 1974 when there was an increase in harvest and hunting pressure. This picture of a relative increase of hunting pressure in the eastern end of the Chitina Valley with a consequent reduction in trophy rams is complicated by a decreasing trend apparent in harvest and hunting pressure from the location unknown category. It seems probable that much of the reported increase in harvests from specified drainages was due to increased precision in reporting and coding locations of hunting. The annual harvests from unspecified locations were allocated by calculation to the Chitistone Canyon-Chitina Glacier vicinity and to the remainder of the Unit 11 portion of the Wrangell Mountains proportionately to each known annual harvest distribution (calculations are not shown), and the results suggested almost a doubling of harvests in the eastern end of the Chitina Valley concurrent with a reduction in harvests from the remainder of Unit 11 during the past 7-year period. Two of the more active guides hunting in the eastern end of the Chitina Valley reported that ram harvests and hunting pressure have greatly increased since 1970 (Ken Bunch and Dennis Harms, personal communications).

#### Composition and Productivity

Composition data obtained from various areas in the southern Wrangell Mountains by Department of Fish and Game personnel are provided in Appendix V. These data illustrate stable or increasing percentages of legal rams found within specified areas during sequential counts. Where boundaries of specific areas were the same during sequential counts, sample sizes have fluctuated without apparent upward or downward trend. In some cases, however, larger counts were possibly due to variable counting conditions.

#### Management Summary and Conclusions

Harvest data from Unit 11, primarily obtained from the southern Wrangell Mountain sheep populations, describe a top quality hunting area. Although ram harvests and hunting pressure have been increasing, the rate of increase of harvests is comparable to the increase statewide.

Sheep hunters in the Wrangell Mountains had a higher success ratio than statewide hunters, and in addition, a larger percentage of hunters in the Wrangell Mountains were nonresidents. Individually, nonresidents had a 2.1 times greater probability of killing a sheep than resident hunters, and collectively, they killed 53 percent of the sheep although they comprised only 35 percent of the hunters. Aircraft were the main transportation means used, and all other types of transportation combined were used by less than 20 percent of the hunters. Harvest data and reports by guides suggest an increase in hunting pressure in the eastern end of the Chitina Valley with a consequent reduction in trophy ram size. Composition data covering various areas in the southern Wrangell Mountains, however, suggest that the percentage of legal rams is stable or increasing. The combined information indicates that hunting pressure is shifting to reduce differences in trophy quality presently found in the Wrangell Mountains, although production of legal rams in most areas equals or exceeds losses.

#### Recommendations

Plans should be prepared in the near future to preserve and enhance trophy quality and quality hunting in selected areas of the Wrangell Mountains. The eastern portion of the Chitina Valley is a potential area for selection.

Composition counts to obtain lamb and yearling survival should be made annually in selected areas. Harvest data coupled with field reports and annual composition counts in selected areas are minimal sources of information necessary to formulate management plans and manage populations.

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

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SUBMITTED BY:

John S. Vania  
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# APPENDIX I

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

<u>Ram Harvests</u>				<u>Ram Harvests</u>			
<u>Year</u>	<u>Statewide</u>	<u>Unit 11</u>	<u>Percent</u>	<u>Year</u>	<u>Statewide</u>	<u>Unit 11</u>	<u>Percent</u>
1962*	667	117	17.5	1968	1122	215	19.2
1963	970	131	13.5	1969	955	157	16.4
1964	919	151	16.4	1970	998	171	17.1
1965	885	131	14.8	1971	1079	178	16.5
1966	955	125	13.1	1972	1170	173	14.8
1967**	922	149	16.2	1973	1119	194	17.3
				1974	1243	173	13.9

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

\*\* Reported kill by 15 January 1968.

Prepared by: Carl W. McIlroy, Game Biologist III

## APPENDIX II

### A Comparison of Hunter Success between Statewide Hunters and Hunters in the Wrangell- Mentasta - Nutzotin Mountains during 1973.

	<u>Statewide</u>	<u>Wrangell- Mentasta - Nutzotin Mountains</u>
Percent Hunter Success:	<u>42%</u>	<u>55%</u>
Total Successful Hunters:	1243	352
Total Hunters:	2949	644
Percent Success Among Residents:	<u>32%</u>	<u>40%</u>
Successful Residents:	713	160
Total Residents:	2215	401
Percent Success Among Nonresidents:	<u>77%</u>	<u>83%</u>
Successful Nonresidents:	484	182
Total Nonresidents:	626	220
Ratio Nonresident/Resident Success	2.4/1	2.1/1
Percent of Nonresidents Among All Hunters:	<u>22%</u>	<u>35%</u>
Total Nonresidents	626	220
Total Residents & Nonresidents:	2841	621
Percent of Sheep Killed by Nonresidents:	<u>40%</u>	<u>53%</u>
Nonresident Kill:	484	182
Resident & Nonresident Kill:	1197	342

Prepared by: Carl W. McIlroy, Game Biologist III

# APPENDIX III

## A Comparison of Annual Harvest Data from Portions of Mountain Ranges within Unit 11.

	<u>1967</u>	<u>1968</u>	<u>1969</u>	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>
<u>Unit 11 Portion of Eastern Chugach Range</u>								
Ram Harvest*:	0	8	7	10	4	1	9	19
Number of Resident and Non-resident Hunters:	0	12	12	22	7	3	22	27
Percent Hunter Success:	-	67%	58%	45%	57%	33%	41%	70%
Percent of All Hunters that Were Residents:	-	66%	42%	52%	29%	33%	28%	42%
Mean Horn Length, inches**:	-	31.6	37.4	33.9	30.9	30.0	34.8	33.7

## Unit 11 Portion of Wrangell Mountains

Ram Harvest*:	149	199	150	161	174	171	185	154
Number of Resident and Non-resident Hunters:	246	303	329	308	376	344	418	319
Percent Hunter Success:	61%	66%	46%	52%	46%	50%	44%	48%
Percent of All Hunters that Were Residents:	63%	69%	71%	75%	69%	64%	65%	65%
Mean Horn Length, Inches**:	34.6	34.1	34.6	35.1	35.1	35.3	34.9	33.7

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

\*\* Mean horn length from 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.

Prepared by: Carl W. McIlroy, Game Biologist III

# APPENDIX IV

## A Comparison of Annual Harvest Data from Selected Areas in the Unit 11 Portion of the Wrangell Mountains.

	<u>1968</u>	<u>1969</u>	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>
<u>Chitistone Canyon-Chitina Glacier Vicinity</u>							
Ram Harvest:	20	18	26	44	48	85	54
Number of Hunters:	35	34	62	86	97	154	98
Percent Hunter Success:	57%	53%	42%	51%	49%	55%	55%
Percent Resident Hunters	89%	72%	91%	82%	74%	59%	66%
Mean Horn Length, Inches*:	37.7	36.7	36.2	36.5	36.2	35.8	35.1

### Remainder of Unit 11 Portion of Wrangell Mtns.

Ram Harvest:	64	57	69	66	55	78	76
Number of Hunters:	83	107	99	122	108	177	160
Percent Hunter Success:	77%	53%	70%	54%	51%	44%	48%
Percent Resident Hunters:	67%	74%	66%	58%	59%	73%	79%
Mean Horn Length, inches*:	33.2	34.5	33.8	35.2	34.8	33.5	32.8

### Unknown Drainages within the Wrangell Mountains.\*\*

Ram Harvest:	122	71	55	47	65	31	45
Number of Hunters:	253	174	122	137	122	131	87
Percent Hunter Success:	48%	41%	45%	34%	53%	24%	52%
Percent Resident Hunters:	66%	66%	71%	75%	60%	65%	50%
Mean Horn Length, inches*:	33.9	34.0	35.3	34.9	35.6	35.3	34.8

\* Mean Horn Length data is based on rams harvested by both resident and non-resident hunters.

\*\* Includes IBM coding units 1128, 1133, and 1218.

Prepared by: Carl W. McIlroy, Game Biologist III

# APPENDIX V

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

<u>Year</u>	<u>Area</u>	<u>Legal Rams</u>	<u>Lambs</u>	<u>Unid.</u>	<u>Total</u>	<u>Percent Rams</u>	<u>Percent Lambs</u>
1962	Nadina River to Kennicott Glacier	87	109	445	641	13.6	17.0
1963	Nadina River to Kennicott Glacier	91	149	527	767	11.9	19.4
1967	Nadina River to Kennicott Glacier	62	127	469	658	9.4	19.3
1973	Dadina River to Kennicott Glacier	141	160	756	1057	13.3	15.1
1967	Dadina River to Kluvesna River	48	---	254	302	15.8	----
1973	Dadina River to Cheshnina River	35	23	150	208	16.8	11.1
1970	MacColl Ridge	26	60	134	220	11.8	27.3
1973	MacColl Ridge	28	45	171	244	11.5	18.4
1974	MacColl Ridge	25	31	124	180	13.9	17.2
1970	Chitistone River to Canyon Creek	14	35	94	143	9.8	24.5
1973	Chitistone River to Canyon Creek	17	28	105	150	11.3	18.7

\* The following data are grouped into areas with the same or similar boundaries. Counting conditions were dissimilar between surveys, and comparisons of data obtained from these surveys, as shown, should be made with caution.

Prepared by: Carl W. McIlroy, Game Biologist III

# SHEEP

## SURVEY-INVENTORY PROGRESS REPORT - 1974

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

### Seasons and Bag Limits

Aug. 10 - Sept. 20

One ram with 3/4  
curl horn or larger

### Harvest and Hunting Pressure

The reported harvest, number of hunters, success percentage, average horn size and resident-nonresident breakdown by hunters, harvest and success are given in Table 1.

Table 1. Harvest Statistics, Unit 12, 1968-1974.

Year	Harvest	Hunters	Percent Success	Average Horn Size (inches)	Percent Hunters		Percent Harvest		Percent Success	
					Resident	Nonresident	Resident	Nonresident	Resident	Nonresident
1968	107	246	43	34.5	68	32	49	51	31	70
1969	122	235	52	33.6	69	31	46	54	34	87
1970	124	247	50	34.4	78	22	66	34	43	79
1971	182	341	53	35.6	78	22	63	37	42	88
1972	199	402	49	34.6	79	21	60	40	27	73
1973	170	376	45	34.1	70	30	51	49	33	73
1974	177	298	59	32.9	65	35	47	53	40	83

No major changes are evident in the 1974 harvest of Dall rams from the Mentasta Mountains and portions of Unit 12 in the Wrangell Mountains. Several minor changes will be discussed briefly.

Hunter success in Unit 12 (WMR) increased substantially from 45 to 59 percent. One factor that may have contributed to the higher success was the slight increase in the percentage of nonresident hunters (30% in 1973 to 35% in 1974). Nonresident hunters are more successful than resident hunters.

A trend that continued in 1974 was one of decreasing horn size. Since 1971 when horn size reached a peak of 35.6 inches, the average horn size has decreased annually and in 1974 reached a low of 32.9



inches. I believe the decreasing horn size indicates a harvest in excess of the maximum allowable if we intend to maintain trophy quality.

An analysis of the harvest and hunter information on a drainage basis does not show any major changes in recent years. The Rock Lake-Ptarmigan Lake-White River area and the Nabesna River drainage continue to support the majority of the harvest (24% and 46% of the harvest, respectively).

#### Composition and Productivity

Aerial sheep surveys were conducted throughout the report area during summer 1973 and 1974. The observed sheep totals are given in Table 2.

Table 2. Unit 12 sheep surveys, 1973 and 1974.

	<u>Date</u>	<u>Total sheep observed</u>	<u>Lamb:ewe ratio</u>	<u>% legal rams in herd</u>
Mentasta Mountains	1973	1002	8:100	14
Nabesna River drainage	1973	1887	33:100	15
Chisana & Snag River drainage	1974	1107	20:100	11
Rock Lake-Ptarmigan Lake area	1974	<u>765</u>	--	8
Total		4761		

Some 4,761 sheep have been observed in Unit 12 during distribution and abundance surveys. Assuming that observers saw a maximum of 85 percent of the sheep present on the range there are then a minimum of 5,600 sheep in the report area.

Productivity of these sheep has varied between areas and between years. Productivity will always be higher than indicated in aerial surveys for several reasons. Lambs are most easily missed and some younger rams and yearling sheep are indicated in the "ewe" category thus depressing the "observed" lamb:ewe ratio.

Considering these factors the surveys indicate good but not high productivity for sheep of this area.

Mineral lick observations at Lost Creek in the Mentasta Mountains during June 1974 showed a lamb:ewe ratio of 53:100 and yearling:ewe ratio of 15:100. These figures should only be used as indicators of productivity from the immediate area and should not be expanded to the entire report area.

The low yearling:ewe ratio of 15:100 was expected due to the low lamb crop of 1973 (11:100). In fact, figures indicate survival of the low 1973 lamb crop was excellent.

## Management Summary and Recommendations

Sheep numbers in Unit 12 are high. Populations are dense in terms of sheep per square mile and vary greatly in productivity and percent legal rams in the herd. Whether these populations are increasing or decreasing is unknown but it is unlikely that the sheep habitat in most areas can support present numbers indefinitely. Populations are not expected to increase. The percent of legal rams in the herd is expected to decrease in most areas.

No changes in regulations regarding trophy rams are recommended.

It is recommended that both the Mentasta Mountains and the Rock Lake-Ptarmigan Lake area be considered trend count areas and that composition and productivity information be gathered there annually.

It is further recommended that consideration be given to regulations that would allow the harvest of a limited number of ewe sheep. Regulations providing for a harvest of ewes should be specifically directed at the ewe segment, thus protecting the younger rams.

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## SHEEP

### SURVEY-INVENTORY PROGRESS REPORT - 1974

Game Management Units 12 and 20 - Alaska Range east of McKinley Park\*

#### Seasons and Bag Limits

Unit 20 in ARE except Delta Management Area and Tok Management Area	Aug. 10 - Sept. 20	One ram with 3/4 curl horn or larger
Unit 20, that portion known as the Delta Management Area	Aug. 10 - Sept. 20**	One ram with 3/4 curl horn or larger
Units 12 and 20, that portion known as the Tok Management Area	Aug. 10 - Oct. 20	One sheep; hunting by permit only; 60 permits will be issued for full curl rams for the period Aug. 10 - Sept. 20 and 60 permits will be issued for ewes for the period Sept. 21- Oct. 20. Other conditions of the hunt will be described by Commissioner's announce- ment. Persons obtaining a ram permit will not be permitted to apply again for four years.

\*Due to complex regulation changes in 1974 the Alaska Range east of Mt. McKinley was divided into three management areas (CAR - that area east of the Nenana River east to but not including McGinnis Creek; DMA - that area described as the Delta Management Area including 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; and TMA - that area described as the Tok Management Area including the drainages of the Tanana River flowing into its south bank upstream from the east bank of the Johnson River east to the Tok-Slana Highway). Each area will be reported separately. Significant rangewide changes will be reported following the three area reports.

\*\*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 hunters, hunting gear, or game within the Delta Management Area.

#### Harvest and Hunting Pressure

The reported harvest, number of hunters, success percentages, average horn sizes, average ages and resident-nonresident breakdown by area for the CAR, DMA and TMA, 1968-1974 are given in Table 1.

Table 1. Harvest Statistics, 1968-1974.

Year	Harvest	Hunters	Percent Success	x horn size	% hunters		% harvest		% success	
					res.	nonres.	res.	nonres.	res.	nonres.
Central Alaska Range (CAR)										
1968	138	366	37	33.1(n=85)	78	22	67	33	32	58
1969	92	165	56	32.9(n=84)	81	19	69	31	26	51
1970	119	269	44	33.6(n=113)	79	21	68	32	36	58
1971	133	376	35	33.8(n=129)	70	30	46	54	23	71
1972	120	359	33	32.5(n=96)	74	26	55	45	25	58
1973	78	246	32	31.3(n=71)	71	29	48	52	24	64
1974	101	232	44	31.8(n=93)	78	22	60	40	33	80
Delta Management Area (DMA)										
1968	41	165	35	35.2(n=41)	95	5	90	10	24	50
1969	47	155	30	34.8(n=47)	94	6	94	6	29	40
1970	64	176	36	33.8(n=67)	98	2	98	2	34	33
1971	54	237	23	33.0(n=47)	94	6	87	13	22	54
1972	48	249	20	31.8(n=42)	94	6	88	12	19	38
1973	35	179	20	33.0(n=34)	97	3	91	9	18	60
1974	78	227	34	31.7(n=70)	94	6	87	13	33	66
Tok Management Area (TMA)										
1968	15	49	31	34.5(n=14)	71	29	80	20	34	21
1969	26	62	42	33.7(n=26)	90	10	88	12	35	50
1970	29	60	48	36.4(n=28)	78	22	79	21	54	50
1971	42	101	41	35.7(n=40)	77	23	56	44	31	67
1972	61	138	44	35.5(n=61)	71	29	64	36	36	63
1973	72	187	39	35.9(n=67)	82	18	68	32	33	72
1974	5	34	14	38.5(n=5)	97	3	80	20	15	100

Central Alaska Range (CAR)

The harvest and hunting pressure, as reported on hunter harvest tickets for the CAR, have shown a slight decrease since 1971. This decrease was accompanied by an increase in the success percentage but horn size remained low at 31.8 inches (n=93).

The Sugarloaf Mountain area was opened to hunting in 1974 after being closed to hunting for the 1972 and 1973 hunting seasons. This opening undoubtedly caused an increase in hunting pressure in the eastern-most drainages but the actual harvest from this area is unknown due to overlapping harvest code areas.

### Delta Management Area (DMA)

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

In 1973 the harvest of 35 rams was slightly below the calculated sustainable harvest for the area. This decrease was expected and corresponded with the 26 percent decrease in the number of hunters utilizing the area.

In 1974, however, hunter numbers increased substantially and the harvest was almost twice the calculated sustainable level. This increase in pressure was, in part, brought on by the establishment of a permit hunting system just to the east of the DMA in the Tok Management Area. Hunters displaced from the TMA by this permit system shifted their attention to the DMA. The significant increase in the harvest within the DMA cannot be attributed simply to the increase in hunters. The success percentage of the 1974 hunters was up from 20 to 34 and this accounted for an additional 30 rams being harvested.

The increase in the harvest did not result in larger rams being harvested. Average horn length for this area dropped to a new low of 31.7 inches.

### Tok Management Area (TMA)

In spring 1974 the Board of Fish and Game passed a regulation proposal setting up the Tok Management Area. The objectives of this management area were to provide an area where a sheep hunter stood a good chance of finding a large trophy ram and a minimum chance of being interrupted by the presence of other hunters.

The Tok area was chosen for this management concept because of the healthy sheep population in the area, the accessibility of the area, the horn growth rate of the rams in the area and the low number of commercial interests.

The results of the 1974 TMA hunt can be seen in Table 2.

Table 2. Tok Management Area 1974.

	<u>Number of applications</u>	<u>Number of permits</u>	<u>Number of permittees who hunted</u>	<u>Number of successful hunters</u>	<u>Percent success</u>	<u>Average age</u>	<u>Average length of horn</u>
Rams	630	60	34	5	15	8.4	38.5 ins.
Ewes	250	60	27	9	33	8.1	11.0 ins.

Only 57 percent and 45 percent of the hunters issued ram and ewe permits, respectively, utilized their permits and went afield. This low percentage was not expected and resulted in few rams and ewes being harvested. The attention drawn to this area and to the proposal for the permit system in order to gain passage by the Board may have attracted applications from inexperienced sheep hunters.

For those permit holders who did hunt and were unsuccessful, little explanation can be offered. Bad weather early in the season throughout most of the area may have contributed to the low success. Inexperience with sheep as mentioned above might also have played a part.

The objective of providing minimum competition between hunters was certainly realized for those ram hunters who went afield. None of the hunters pursuing rams saw any other hunters and at least one hunter was in the area for 16 days.

Ewe hunters did not distribute themselves throughout the area as well as the ram hunters and several ewe hunters saw other hunters while afield.

All hunters were questioned following their hunts in the TMA to obtain their feeling as to the value of such an area. Most hunters questioned responded in favor of such an area. The most important item being the lack of other hunters. Four of the ram hunters and three of the ewe hunters reported not being satisfied with the hunt. All others reported satisfaction.

#### Alaska Range East (ARE)

On a rangewide basis there were no unexpected changes in the 1974 harvest of sheep from the Alaska Range east of Mt. McKinley National Park. Harvest statistics are shown in Table 3.

Table 3. Alaska Range East (Mt. McKinley to the Tok-Slana Cutoff)  
harvest statistics.

Year	Harvest	<u>All Hunters</u>				<u>Percent Hunters</u>		<u>Percent Harvest</u>		<u>Percent Success</u>	
		Hunters	Percent Success	Horn Size	Ave. Age	Resident	Nonresident	Resident	Nonresident	Resident	Nonresident
1967	120	310	39	33.4	-	73	27	60	40	32	59
1968	195	578	34	33.9	7.4	82	18	73	27	30	52
1969	163	478	34	33.6	6.8	81	19	68	32	26	52
1970	211	515	41	33.9	7.9	85	18	78	22	36	56
1971	230	712	32	33.9	7.5	81	19	69	41	24	70
1972	241	800	30	33.2	7.3	83	17	67	33	24	58
1973	187	622	30	33.3	7.2	83	17	65	35	24	64
1974	193	531	36	32.2	6.8	87	13	72	28	31	79

The decrease in the total number of hunters was expected due to the permit system established in the Tok Management Area. It was not expected that the overall harvest would have increased but the opening of Sugarloaf Mountain in the CAR and the increased success ratios of the DMA hunters contributed. Additionally, the success ratio of nonresidents reached a record high of 79 percent.

The ARE supported an increasing percentage of resident hunters. Establishment of the TMA certainly contributed to the decrease in non-resident hunters and guided hunts within the ARE but, in general, I feel guides are finding it difficult to offer nonresident clients quality sheep hunts in an area so readily accessible to resident hunters. I do not expect the percentage of nonresident hunters in the ARE to increase significantly in the future.

Average horn size and average age of rams harvested continued to decline in 1974. This decline is expected to bottom out within the next few years.

### Composition and Productivity

#### Central Alaska Range (CAR)

Information on productivity and survival was gathered at several mineral licks in the CAR during June and July 1974. At most locations this was the first year for data gathering. At Dry Creek in the central portion of this unit lamb:ewe ratios and yearling:ewe ratios have been gathered consistently since 1967. These ratios are presented in Table 4.

Table 4. Lamb:ewe and yearling:ewe ratios, Dry Creek area, CAR.

<u>Year</u>	<u>Lamb:100 ewe</u>	<u>Yearling:100 ewe</u>
1967	42	11
1968	63	13
1969	64	31
1970	55	31
1971	50	51
1972	35	19
1973	34	13
1974	28	25

The production of lambs continued to decrease slightly in 1974 and continues to be well below the 5-year average of 55 lambs:100 ewes prior to 1972. Lamb survival to yearling age almost reached the 5-year average of 27 yearlings:100 ewes for the same time period.

Production information gathered elsewhere in CAR is presented in Table 5. Despite variation in the 1974 lamb crop from 10 to 45 lambs:100 ewes between areas it appears that survival of the 1973 lamb crop to yearling age was good. The yearling:ewe ratios equal to or higher than

lamb:ewe ratios in some areas might indicate poor weather during lambing season and thus lowered lamb:ewe ratios. The causes of lamb mortality are speculative because of the lack of local weather data and information on other possible mortality causes.

Table 5. Central Alaska Range (CAR) lamb production and survival 1974.

	<u>Lamb:100 ewe ratios</u>	<u>Yearling:100 ewe ratios</u>	<u>No. sheep observed</u>
Ewe Creek			
(Mt. McKinley)	30	32	137
Carlo Creek	27	17	157
Edgar Creek	45	52	86
Louis Creek	20	26	64
Healy Creek	40	49	143
Mystic Creek	18	15	88
Dry Creek	28	25	624
Whistler Creek	35	50	30

The above data indicate low to fair production of lambs throughout the CAR and generally good survival of the 1973 lamb crop.

#### Delta Management Area (DMA)

Information on productivity and survival was gathered at several mineral licks in the DMA during June and July 1974. Department biologists gathered composition information at the Granite Creek lick in 1972, 1973 and 1974 while observations at Gold Creek, July Creek, Castner Glacier and Pegmatite Creek were only conducted in 1974. DMA productivity and survival information is given in Table 6.

Table 6. Delta Management Area (DMA) productivity and survival information 1974.

	<u>Lamb:100 ewe</u>	<u>Yearling:100 ewe</u>	<u>Number in Sample</u>
Granite Creek	29	26	357
Gold Creek	50	73	109
July Creek	39	14	48
Castner Glacier	68	52	42
Pegmatite Creek	47	25	70

Productivity within the DMA varied from 29 lambs:100 ewes at Granite Creek to 68 lambs:100 ewes at Castner Glacier. A lamb:ewe ratio of 29:100 is the lowest lamb ratio we have recorded at the Granite Creek mineral lick. It appears, however, that lamb production was higher throughout the DMA than in most areas to the east within the CAR.

Yearling survival of the 1973 lamb crop was fair to excellent in different areas of the DMA. Assuming the gathered data accurately represent population composition this variation in yearling survival is difficult to explain without additional data.

Table 7 presents the data gathered to date at the Granite Creek mineral lick.



Table 7. Productivity and survival information, Granite Creek, DMA, 1972-74.

<u>Year</u>	<u>Lamb:100 ewe</u>	<u>Yearling:100 ewe</u>	<u>Number in sample</u>
1972	40	33	218
1973	47	43	518
1974	29	26	357

#### Distribution and Abundance

##### Delta Management Area (DMA)

Two intensive low level aerial surveys were flown within the DMA during 1971 and 1974. The results of these surveys are shown in Table 8.

Table 8. DMA aerial sheep survey 1971 and 1974.

<u>Year</u>	<u>Observer</u>	<u>Hours flown</u>	<u>Sheep/hr.</u>	<u>Total sheep</u>	<u>% legal rams</u>
1971	A.C. Smith	8.9	161	1437	7
1974	R.W. Larson	8.0	171	1370	14.5

The only significant difference between the two surveys is the percent of legal rams. In 1971 Smith observed 7 percent legal rams while in 1974 Larson observed 14.5 percent legal rams. This may be the result of restrictive regulations enacted within this area in 1971. It should be noted that following the 1974 survey the DMA supported the heaviest reported harvest to date for the DMA when 78 rams were reported taken out of the area. This harvest most likely severely lowered the percent legal ram figure within the DMA.

##### Tok Management Area (TMA)

Information on productivity and survival was gathered at the Sheep Creek mineral lick during July 1974. A total of 116 sheep were observed with a lamb:ewe ratio of 56:100 and a yearling:ewe ratio of 31:100. These ratios indicate a productive sheep herd in this area with a relatively high yearling survival rate.

It is unknown whether similar ratios occur throughout the entire TMA.

#### Management Summary and Recommendations

##### Central Alaska Range (CAR)

Continuous and substantial hunting pressure has been directed at the sheep populations of the CAR lowering the percentage of legal rams in the herd and reducing average horn size of the trophies harvested.

Production of lambs in the Dry Creek-Wood River area has decreased for the past six years and yearling survival on the average has only been fair.

It is likely that mortality from all sources has exceeded recruitment and the total number of sheep on the range has decreased in recent years.

Research on range and predation and other mortality factors is needed to better explain the current status of the sheep population in this area.

Consideration of a regulation that would allow utilization of the ewe segment of this population is recommended. No recommendations for changes in the ram hunting regulations are given at this time but if trends do not change, restrictive regulations will be proposed next year.

#### Delta Management Area (DMA)

Hunting pressure in the DMA increased slightly in 1974 due to the establishment of the Tok Management Area to the east. Those hunters using the area were considerably more successful in 1974 than in past years. The present harvest level of 3/4 curl rams is well above the calculated sustainable harvest level for the area. Because the management goal for the DMA is to provide an area for walk-in sheep hunters it is recommended that the vehicle portion of the sheep season in the DMA be reduced or eliminated.

Considering the high survival and recruitment to this population observed from 1972 through 1974 and the fact that there was little difference in total sheep numbers seen in 1971 and 1974 it is apparent there has either been a high loss of sheep from the population (15% per year) or survey techniques are inaccurate.

Research is needed to better explain the current sheep situation in this area.

Consideration of a regulation that would allow utilization of the ewe segment of this population is recommended.

#### Tok Management Area (TMA)

The Tok Management trophy sheep hunting area was established in 1974. Just slightly more than 50 percent of the permitted hunters utilized their permits. A low success ratio resulted in only five rams being harvested.

It was recommended to the Board that the number of permits issued for full curl rams be increased to 120 in 1975.

Winter surveys should be initiated to determine the number and percent of legal (full curl) rams in the herd. Summer surveys do not accurately measure the number or percentage of large rams in the herd.

To refine the management program in the TMA more must be known about sheep-range relationships and mortality other than hunting. Plans have been made to obtain data on production and survival.

PREPARED BY:

Arthur C. Smith  
Game Biologist II

SUBMITTED BY:

Oliver E. Burris  
Regional Management Coordinator

## SHEEP

### SURVEY-INVENTORY PROGRESS REPORT - 1974

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

#### Seasons and Bag Limits

Aug. 10 - Sept. 20

One ram with 3/4  
curl horns or larger

#### Harvest and Hunting Pressure

Ram harvests from Unit 13, ram harvests statewide and the percentages of statewide harvests from Unit 13 are tabulated in Appendix I. Harvests from Unit 13 reached peak levels in the mid-to-late 1960's but declined during the 1970's. The 1974 harvest broke the pattern and was unexpectedly high. By contrast, statewide ram harvests have increased since the mid-1960's. These relative changes are reflected by the decreasing percentages of statewide harvests from Unit 13, prior to 1974.

Harvest data for two mountain ranges in Unit 13 are illustrated in Appendix II. Ram harvests from the Unit 13 portion of the Talkeetna Mountains reached a peak during 1968 through 1970, declined from 1971 through 1973, then regained former levels during 1974. Numbers of hunters fluctuated without apparent trend, and hunter success declined during 1972 and 1973, then increased to former levels in 1974. These changes show no correlation with the percentage of residents among hunters. Mean horn length of harvested rams has not changed substantially, suggesting that mean horn lengths have approached minimum values for legal rams. These data suggest a scarcity of legal rams from 1971 through 1973.

Harvest data for each year and for each reporting unit in the Talkeetna Mountains were tabulated and grouped to emphasize any patterns that would give clues to the cause of the harvest fluctuations (tabulations not shown). In general, most areas in the Talkeetna Mountains indicate a relative scarcity of legal rams during 1973 with some areas showing effects of scarce rams as early as 1969. Superimposed was a shift in distribution of the harvest from Caribou Creek to Boulder Creek and the Chickaloon River (a shift in distribution of sheep herds in this area was also reported by Eldon Reese, a local guide), as well as other pressure from year-to-year. Conversations with local guides and hunters who participated in the 1973 harvest indicated that they generally saw many sheep, few legal rams, but many young rams.

Ram harvests, hunting pressure, hunter success, percentage of resident hunters, and mean horn length in the central Chugach Range (Appendix II) have fluctuated without apparent trend, except that harvests and hunter success decreased in 1973 and increased in 1974 in parallel with data from the Talkeetna Mountains.

## Composition and Productivity

Sheep composition data for trend count areas in Unit 13 are given in Appendix III. Data from these count areas suggest that sheep numbers increased rapidly during the early 1950's (as they did in McKinley Park) to reach high levels in the late 1960's. These data suggest a decline in sheep numbers since the late 1960's, again in parallel with McKinley Park sheep data. April surveys are mainly of value for yearling recruitment; June surveys are of value for total numbers and initial lamb production. Percentages of legal rams suggest moderate hunting pressure.

Results of a June 1974 survey of the southern Talkeetna Mountains in Unit 13 are given in Appendix IV. These data have been collated by sheep management unit for future trend evaluations, but any comparisons between drainages should be made with consideration that differences may be largely due to differential sheep distribution. The percentage of legal rams on Sheep Mountain (20 percent) is higher than that found in McKinley Park (12-14 percent). Boulder Creek, as a trend count area, appears to be representative of the southern Talkeetna Mountains.

## Management Summary and Conclusions

The harvest data indicate that fewer rams have been available for harvesting from Unit 13 during the early 1970's. This is suggested by the combination of declining harvests, declining hunter success, and small or declining horn size of harvested rams. However, a recovery has become evident during the past two years. The cause(s) of the reduced availability of rams is unknown. Poor lamb survival several years ago resulting in small cohorts entering the legal ram age classes or poor ram survival during the 1970's are possibilities. The poor lamb crops seen in recent years are cause for concern.

Harvest data coupled with guide and hunter interviews indicate that changes have been occurring in Unit 13 sheep populations. However, our knowledge of the nature and magnitude of these changes is imprecise because we have not been using population monitoring techniques for Unit 13 sheep during recent years. It will become necessary in the future to monitor sheep population and harvest data if we hope to realistically specify management plans.

## Recommendations

Trend count areas such as the Watana Creek Hills and Boulder Creek drainages should be surveyed annually for trend information on sheep abundance and composition. April surveys should be discontinued in lieu of a combination of sheep lick observations (for lamb:ewe and yearling:ewe ratios) coupled with summer aerial surveys (for total number, lamb:ewe, and ram:ewe ratios).

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

PREPARED BY:

Carl W. McIlroy  
Game Biologist III

SUBMITTED BY:

John S. Vania  
Regional Management Coordinator

# APPENDIX I

## A Comparison of Unit 13 and Statewide Annual Ram Harvest and the Percentage of Statewide Ram Harvests from Unit 13.

<u>Ram Harvests</u>				<u>Ram Harvests</u>			
<u>Year</u>	<u>Statewide</u>	<u>Unit 13</u>	<u>Percent</u>	<u>Year</u>	<u>Statewide</u>	<u>Unit 13</u>	<u>Percent</u>
1962*	667	107	16.0	1968	1122	159	14.2
1963	970	132	13.6	1969	955	155	16.2
1964	919	156	17.0	1970	998	134	13.4
1965	885	143	16.2	1971	1079	139	12.9
1966	955	154	16.1	1972	1170	125	10.7
1967	922	152	16.5	1973	1119	101	9.0
				1974	1243	176	14.2

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

Prepared by: Carl W. McIlroy, Game Biologist III

## APPENDIX II

A Comparison Of Harvest Data from Portions of Mountain Ranges within Unit 13.

<u>Unit 13 Portion of the Eastern Talkeetna Mountains</u>	<u>1967</u>	<u>1968</u>	<u>1969</u>	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>
Ram Harvest*:	71	87	95	91	71	64	52	93
Number of Hunters:	218	221	267	229	193	248	217	237
Percent Hunter Success:	33%	39%	36%	40%	37%	26%	24%	39%
Percent Resident Hunters:	83%	77%	77%	72%	74%	84%	88%	90%
Mean Horn Length, inches**:	31.1	31.9	31.5	32.3	31.4	30.2	31.0	29.9

### Unit 13 Portion of the Central Chugach Range

Ram Harvest*:	60	58	60	41	60	54	45	79
Number of Hunters	121	112	158	124	156	128	163	179
Percent Hunter Success:	50%	52%	38%	33%	38%	42%	28%	44%
Percent Resident Hunters:	64%	74%	79%	81%	74%	78%	79%	75%
Mean Horn Length, inches**:	33.1	35.5	36.2	34.1	35.1	33.8	33.8	34.1

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

\*\* 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.

Prepared by: Carl W. McIlroy, Game Biologist III

# APPENDIX III

## A Comparison of Sheep Composition Data for Selected Areas in Unit 13.

<u>Trend Count Area</u>		<u>Legal Rams</u>	<u>Lambs</u>	<u>Total</u>
Boulder Creek drainages:	1949	--	--	45
	1951	--	--	115
	Sept. 1967	--	--	430
	May/June 1968	6%	10%	404
	July 1968	--	--	460
	April 1974	8%	18%	112
	June 1974	8%	16%	287
Watana Hills vicinity:	1950	--	--	0
	Sept. 1967	--	--	220
	Aug. 1968	--	18%	183
	Aug. 1973	6%	23%	176
	April 1974	8%	24%	76

Prepared by: Carl W. McIlroy, Game Biologist III



# APPENDIX IV

Results of a June, 1974 Sheep Composition Survey in the Southern Portion of the Talkeetna Mountains, Unit 13.

Sheep Mgmt. Area	Key Terrain Feature	Number					Percent	
		Legal Rams	Lambs	Ewes <sup>a.</sup>	Unk. <sup>b.</sup>	Total	Legal Rams	Lambs
1307	Tsitsi Cr.	1	0	1	0	2	---	---
1308	Kosina Cr.	0	0	0	0	0	---	---
1309	Black R.	0	0	0	0	0	---	---
1311	Oshetna R.	10	6	9	0	25	40%	24%
1312	Little Oshetna R.	7	15	54	0	76	9%	20%
1314	Horn Mtn.	2	39	207	0	248	1%	16%
1315	Caribou Cr.	19	46	239	0	304	6%	15%
1316	Pinochle Cr.	0	19	83	0	102	---	7%
1317	Hicks Cr.	11	29	145	0	185	4%	10%
1318	Boulder Cr.	24	47	216	0	287	8%	16%
1319	Chickaloon R., Unit 13	14	27	215	7	256	5%	11%
1320	Talkeetna R., Unit 13	4	15	47	0	66	6%	22%
1350	Sheep Mtn.	40	20	141	1	201	20%	10%
		132	263	1357	8	1752	7.5%	15.0%

a. The "Ewe" category includes all sheep other than legal rams and lambs.

b. The "Unknown" category includes those who could not be seen clearly enough to classify. The "Unknown" category was not included in the "Total".

PREPARED BY: Carl McIlroy, Game Biologist

## SHEEP

### SURVEY-INVENTORY PROGRESS REPORT - 1974

Game Management Subunits 14A and B - Upper Cook Inlet

#### Seasons and Bag Limits

August 10 September 20

One ram with 3/4 curl horn  
or larger.

#### Harvest and Hunting Pressure

This is the first year in which sheep harvest data from Subunit 14C are not presented with those from 14A and 14B. The total Unit 14 harvest was 60 rams in 1974 (Appendix I). This is slightly below the previous 10-year average of 65 sheep. Thirty-four rams were harvested from Subunits 14A and 14B, 26 from Subunit 14A and 8 from 14B (Appendix II). An additional 4 sheep were taken from unspecified areas in Unit 14. The harvest in Subunits 14A and 14B was 24 percent higher than the 1968-1973 6-year average of 26 rams.

In each of three distinct areas of Subunits 14A and B, the Chugach Mountains between the Knik and Matanuska Rivers, the southeast slope of the Talkeetna Mountains and the western slope of the Talkeetna Mountains, harvests were above the previous 6-year averages.

To obtain an index of hunter success, data for the entire Chugach Mountain Range and the entire Talkeetna Mountain Range have been utilized. This is necessary because of the IBM harvest program design.

The Chugach Mountain Range data include portions of the mountain range in Units 7, 11, 13 and 14A, B and C. In the entire Chugach Range 403 hunters, which was the lowest hunter pressure since these data were recorded, took 137 sheep for a 34 percent success ratio (Appendix III). Success ratios during the period 1967 through 1973 have varied from 19 percent to 24 percent with numbers of hunters ranging from 426 to 655. The 1974 resident hunter numbers were the lowest ever recorded with a success ratio of 27 percent and the nonresident hunters, whose numbers were also the lowest ever recorded, revealed a success ratio of 74 percent in the Chugach Mountains, the highest recorded since these data became available.

In the Talkeetna Mountains, including the Chulitna Mountains and the Watana Creek Hills, the sheep range includes portions of Units 13 and 14A and B. Three hundred and twelve hunters harvested 114 sheep for a 37 percent success ratio (Appendix IV). Success ratios during the 1967 through 1973 period have varied between 27 percent and 37 percent while the number of hunters has varied from 240 to 343. Success ratios of resident

hunters reached the highest level (32 percent) since these data have been recorded. The number (40) of nonresident hunters who reported hunting sheep in the Talkeetna Mountains was at a low level for the second year in a row. The success ratio of nonresident hunters (65 percent) was two percentage points below the previous 7-year average of 67 percent.

#### Composition and Productivity

The first sheep survey on record was flown on June 24 and 25, 1974 in that portion of the Talkeetna Mountains between the Matanuska and Talkeetna Rivers (Appendix V). A total of 423 sheep were seen in the area; 222 were in the 14A portion of the mountains and 201 in 14B. Legal rams comprised 14.0 percent of the sheep in Subunit 14A and 19.4 percent in 14B. Lambs comprised 9.9 percent of the population in that portion of 14A north of the Matanuska River and 20.4 percent in 14B. The remainder of sheep habitat located in Subunit 14A was surveyed in 1973 and the data may be found in the 1973 Survey-Inventory Progress Report.

#### Management Summary and Conclusions

Sheep harvests in all areas of Subunits 14A and B were at higher than average levels in 1974. The contrast between the 1973 and 1974 harvests in these areas is pronounced because 1973 was a year of relatively low harvests.

Sheep hunter success ratios were at high levels in both the Talkeetna and Chugach Mountain Ranges. For the second year in succession the Talkeetna Mountains received lighter hunting pressure than usual from nonresident hunters.

Survey data for the Talkeetna Mountains portion of Unit 14 indicated that a minimum of 70 legal rams were present on this range in June 1974. Harvest report data indicate a minimum of 21 rams were harvested from this same area the following fall. Migration patterns of sheep between Units 13 and 14 are unknown.

The 1974 lamb crop (9.9 percent of the population) in the 14A portion of the Talkeetna Mountains (southeast slope of the range) was very low. A better lamb crop, 20.4 percent of the population, was noted in the Subunit 14B portion of the range.

In June 1974 sheep in the Talkeetna Mountains portion of Subunits 14A and B were widely dispersed except in localized areas of the eastern portion. No sheep were observed west of Moose Creek and the Kashwitna River and sheep were very scarce between the Kashwitna and Sheep Rivers.

Recommendations

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

PREPARED BY:

Jack C. Didrickson and Don Cornelius  
Game Biologist III and Game Biologist II

SUBMITTED BY:

John S. Vania  
Regional Management Coordinator

Appendix I. Reported Harvest of Dall Sheep Rams in Alaska's Game Management Unit 14 for the Years 1964 through 1974\*.

<u>1964</u>	<u>1965</u>	<u>1966</u>	<u>1967<sup>1</sup></u>	<u>1968</u>	<u>1969</u>	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	Average <u>1964-1973</u>
67	62	49	72	76	94	63	59	77	32	60	65

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

1 Reported kill as of January 15, 1968.

PREPARED BY: Jack C. Didrickson, Game Biologist III  
Don Cornelius, Game Biologist II

Appendix II. Reported Harvest of Dall Sheep Rams in Portions of the Two Mountain Ranges in Alaska's Game Management Unit 14 for the Years 1968 through 1974.

	<u>1968</u>	<u>1969</u>	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>Average 1968-1973</u>
Chugach Mtns. Portion in GMU 14A (between Knik R. Glacier and Matanuska R.)	16	11	9	8	14	10	13	11
Talkeetna Mtns. Portion in GMU 14A (South-East slope of Talkeetna Mtns.)	13	22	3	11	13	5	13	11
Talkeetna Mtns. Portion in GMU 14B (Western slope of Talkeetna Mtns.)	3	1	5	3	7	3	8	4
Total reported sheep harvest for Subunits 14A and B	32	34	17	22	34	18	34	26
GMU 14, Matanuska River drainage or Chugach Mtns., unknown specific locality-could be Subunit 14A or C.	13	20	2	3	8	3	4	8

PREPARED BY: Jack C. Didrickson, Game Biologist III  
Don Cornelius, Game Biologist II

Appendix III. Reported Harvest of Dall Sheep Rams, Numbers of Hunters, and Success of Hunters for Alaska's Chugach Mountain Range, in Game Management Units 7, 11, 13 and 14, 1967 through 1974.

Year	All Hunters*			Residents			Non-residents		
	Kill No.	Hunters	Success	Kill No.	Hunters	Success	Kill No.	Hunters	Success
1967	115	521	22%	67	455	15%	48	66	73%
1968	113	630	18%	99	570	17%	34	60	57%
1969	138	655	21%	102	593	17%	33	51	65%
1970	108	503	21%	67	404	17%	22	37	59%
1971	109	586	19%	70	518	14%	35	53	66%
1972	112	470	24%	79	378	21%	25	43	58%
1973	81	426	19%	49	362	14%	26	50	52%
1974	137	403	34%	89	333	27%	45	61	74%

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

PREPARED BY: Jack C. Didrickson, Game Biologist III  
Don Cornelius, Game Biologist II

Appendix IV. Reported Kill of Dall Sheep Rams, Numbers of Hunters, and Success of Hunters for Alaska's Talkeetna Mountain Range, Chulitna Mountains, and Watana Creek Hills, 1967 through 1974.

Year	All Hunters*			Residents			Non-residents		
	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%

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

PREPARED BY: Jack C. Didrickson, Game Biologist III  
Don Cornelius, Game Biologist II



Appendix V. Number of Sheep Observed in Alaska's Game Management Subunit 14B and in that Portion of Subunit 14A north of the Matanuska River, June 24 and 25, 1974.

<u>Area</u>	<u>Legal Males</u>	<u>Mixed</u>	<u>Lambs</u>	<u>Total</u>	<u>Legal Male % in Herd</u>	<u>Lamb % in Herd</u>
		<u>Females and Sublegal Males</u>				
Subunit 14A north of the Matanuska River	31	169	22	222	14.0%	9.9%
Subunit 14B	39	121	41	201	19.4%	20.4%

PREPARED BY: Jack C. Didrickson, Game Biologist III  
Don Cornelius, Game Biologist II

## SHEEP

### SURVEY-INVENTORY PROGRESS REPORT - 1974

Game Management Unit 14C - Anchorage and Vicinity

#### Seasons and Bag Limits

Sept. 4 - Sept. 20

One ram with 3/4  
curl or larger

In Game Management Subunit 14C the entire Eklutna drainage, except for Thunderbird Creek, was closed to hunting according to regulations promulgated by the Alaska board of Fish and Game.

#### Harvest and Hunting Pressure

The 1974 reported harvest for 14C was 22 rams. This is an increase over the 1973 harvest of 11 (Appendix I). Two additional rams were taken by nonresidents without a license, harvest ticket or guide bringing the total known harvest to 24 rams. The reported 1973 harvest may be low, according to a recent report from the lodge owner at the end of the Eagle River road. He reported 55 sheep coming out of Eagle River in 1973. Hunting pressure in 14C is by resident hunters. No nonresidents reported using 14C for sheep hunting. Ninety hunters were unsuccessful for a 19.6 percent success ratio. This reflects, I believe, the "no motorized vehicle" regulation since the rest of the state has a higher success ratio.

#### Composition and Productivity

No sheep counts were conducted in 14C during 1974.

#### Management Summary and Conclusions

The reported harvest of 22 rams was up 100 percent from last year's reported low of 11. The 1974 season was highlighted by very good weather right up to the end of the season which may account for the higher kill. The same restrictions (late season and Eklutna drainage closure) were in effect during both the 1973 and 1974 seasons.

#### Recommendations

During the 1975 season attempts should be made to check the kill from Eagle River drainage with cross checking of the harvest report.

Sheep composition counts should be flown to update our management information.

No changes in season or bag limits are recommended at this time but a permit system should be devised for future use.

PREPARED BY:

Chuck Irvine  
Game Biologist II

SUBMITTED BY:

John S. Vania  
Regional Management Coordinator

Appendix I - Reported harvest of dall sheep rams, number of hunters, and success of hunters for 14C-1968 through 1974.

<u>Year</u>	<u>Kill No.</u>	<u>Hunters</u>	<u>Success</u>
1968	31	282	10.9 percent
1969	40	380	10.5 percent
1970	44	244	18.0 percent
1971	34	330	10.3 percent
1972	35	256	13.7 percent
1973	11	135	8.1 percent
1974	22	112	19.6 percent

1968-74 Average: 31

PREPARED BY: Charles Irvine, Game Biologist II

## SHEEP

### SURVEY-INVENTORY PROGRESS REPORT - 1974

#### Game Management Unit 15 - Kenai Mountains

##### Seasons and Bag Limits

August 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 since 1962 has been as follows:

1962 - 35*	1968 52
1963 43	1969 31
1964 - 26	1970 - 42
1965 - 35	1971 - 25
1966 - 48	1972 - 18
1967 - 47	1973 - 34
	1974 - 50

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

One hundred and fifty-two hunters reported hunting sheep in Unit 15 during the 1974 season. Fifty hunters (36 resident, 11 nonresident and 3 unspecified) were successful for a success rate of 33 percent (Appendix I). Hunters afield increased (11 percent more than 1973) for the third year in a row. The 152 hunters afield was near the 6-year record of 156 in 1971.

Hunter success also increased (32% higher than in 1973) for the third year in a row. The 50 sheep reported was the highest harvest in 6 years. The average horn length of sheep taken was 30.5 inches, virtually unchanged from 1973.

The number of hunters afield over the past six seasons has varied from 115 to 156 while hunter success has varied from 15 percent to a high of 33 percent in 1974 (Appendix I).

##### Composition and Productivity

The area between Skilak Glacier and Tustumena Glacier was surveyed in 1974. The number of sheep observed between Skilak Glacier and Killey River (count area #21) had decreased 40 percent since 1972 (Appendix II). The percentage of lambs in the populations observed between the two years was not significantly different. The 470 sheep observed in 1974 between Killey River and Tustumena Glacier (count area #22) was significantly lower than

the 597 observed in 1972 (Appendix II). Most of this difference may be attributed to the very low number of lambs present in 1974.

#### Management Summary and Conclusions

The ram harvest from Unit 15 over the past 10 years has fluctuated without trend. There are very few rams over full curl in the population and therefore very few living long enough to succumb to old age. Rams are probably being harvested at about the same rate as they are recruited into the population.

It appears that the annual harvest is largely dependent upon the strength of the 3/4 curl ram class in the population and weather conditions during the hunting season.

Sheep numbers in survey area 22 have been on a downward trend since 1968. The decline in numbers of adults between 1972 and 1974 was slight (6.8 percent). The 46 percent decrease in the number of lambs is of concern.

The declining trend and low lamb percent in the population in survey area 22 indicate that problems may exist there.

#### Recommendations

Upon completion of the present sheep research program, information gained should be utilized to establish an intensive management plan for sheep in Unit 15.

PREPARED BY:

Paul A. LeRoux and Spencer Linderman  
Game Biologist III and Game Biologist II

SUBMITTED BY:

John S. Vania  
Regional Management Coordinator

# Appendix I

## Sheep harvest and hunting pressure, Unit 15 - Kenai Mountains

<u>Year</u>	<u>Mountain Range</u>	<u>Number Successful</u>	<u>Percent Successful</u>	<u>Number Unsuccessful</u>	<u>Percent non-resident hunters</u>	<u>Total Hunters<sup>1/</sup></u>	<u>Average Horn Length</u>
1969	Kenai	31	27	84	3	115	
1970	Kenai	42	32	91	5	133	
1971	Kenai	25	16	131	7	156	
1972	Kenai	18	15	99	9	117	
1973	Kenai	34	25	103	7	137	30.8
1974	Kenai	50	33	102	11	152	30.5

<sup>1/</sup> Does not include hunters who did not give zip code (less than 1 percent).

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## Appendix II

### Sheep trend count data Unit 15, 1950-1972

Date	Area	Total Adults	Lambs	Total Sheep
6/19/68	Surprise Mountain	207	68	275
6/13/72	Surprise Mountain	156	45	201
6/ /73	Surprise Mountain	167	46	213
7/16/68	Skilak Glacier to Killey River	46	9	55
8/8/72	Skilak Glacier to Killey River	66	10	76
6/6/74	Skilak Glacier to Killey River	39	4	43
1950	Killey River to Tustumena Glacier			123
1951	Killey River to Tustumena Glacier			157
1962	Killey River to Tustumena Glacier	251	38	289
1966	Killey River to Tustumena Glacier	426	100	526
7/68	Killey River to Tustumena Glacier	594	162	756
8/7-8/72	Killey River to Tustumena Glacier	444	127	597*
6/6/74	Killey River to Tustumena Glacier	412	58	470
7/17-18/68	Tustumena Glacier to Bradley Lake	158	22	180
7/26-27/72	Tustumena Glacier to Bradley Lake	126	17	143
7/18/68	Bradley Lake South	1	0	1
7/28/72	Bradley Lake South	0	0	0
1968	All of Unit 15 except Round Mtn.	1006	261	1267
1972	All of Unit 15 except Round Mtn.	792	199	1017*

\* Includes 26 unclassified sheep.

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## SHEEP

### SURVEY-INVENTORY PROGRESS REPORT - 1974

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 1964 through 1974 is presented below:

<u>1964</u>	<u>1965</u>	<u>1966</u>	<u>1967*</u>	<u>1968</u>	<u>1969</u>	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>
20	16	6	4	9	14	11	8	11	29	21

\* Reported kill by January 16, 1968.

The take of 21 rams in 1974 was the second largest harvest on record for Unit 16. In the Rainy Pass area a reported take of 5 rams is below the previous 6-year average of 9 rams (Appendix I). In the IBM coded area for the Skwentna River the reported take was 10 rams. This is of interest because 1973 was the first year any sheep were reported taken from that area. That harvest was 1 ram. Nine of the 10 sheep harvested from the Skwentna River area were taken by resident hunters.

Appendix II reveals hunting pressure trends in the Alaska Range west of McKinley Park. Portions of Game Management Units 9, 16, 17 and 19 are included in this area. From 1967 through 1973 an average of 151 hunters utilized this area annually. In 1974 a record 213 hunters reported hunting sheep in the Alaska Range west of McKinley Park. This is an increase of two hunters over the 1973 level. The 1974 harvest of 119 sheep equalled the 1973 harvest. Overall success ratios for the last three years have been 57 to 56 percent.

#### Composition and Productivity

No sheep population composition data were collected in Unit 16 during 1974.

#### Management Summary and Conclusions

The 1974 sheep harvest in Game Management Unit 16 was the second highest recorded since these data became available in 1962. A below average harvest was realized in the Rainy Pass area, which prior to 1973, produced 50 or more percent of the harvest from Unit 16. In 1974 this area produced 31 percent of the harvest. Another area, Skwentna

River, which only produced one sheep during the years 1968 through 1973 received a reported harvest of 10 sheep during 1974. These data indicate that there was a slight shift in hunting patterns or sheep distribution in Unit 16. Increased competition among hunters could be causing people to move into formerly unhunted areas, weather or hunting pressure could have influenced sheep distribution or the phenomenon could be the result of unsound data.

Hunter success data from that portion of the Alaska Range west of McKinley Park indicate that both pressure and harvests were at an increased level for the second year in a row. Overall hunter success ratios were slightly below the previous 7-year average. While resident hunter success ratios were below the previous 7-year average, nonresidents experienced an above average success ratio.

#### Recommendations

Recent increased utilization of the sheep resource in Game Management Unit 16 requires that more basic background information be obtained. An aerial survey should be conducted on that portion of Unit 16 which may sustain sheep populations.

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Appendix I. Sheep Harvest by IBM Coded Area in Alaska's Game Management Unit 16, 1968 through 1974.

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

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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 1974, 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%

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

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## SHEEP

### SURVEY-INVENTORY PROGRESS REPORT - 1974

Game Management Unit 17 - Bristol Bay

#### Season and Bag Limits

August 10 - September 20

One ram with 3/4 curl  
horn or larger.

#### Harvest and Hunting Pressure

The reported sheep harvest for Unit 17 in 1974 was four rams. The historic harvest for the unit, as reported in the harvest report program, is presented below:

<u>Year</u>	<u>Harvest</u>	<u>Year</u>	<u>Harvest</u>
1962	9	1969	9
1963	1	1970	6
1964	12	1971	6
1965	11	1972	2
1966	9	1973	5
1967	7	1974	4
1968	17		

#### Composition and Productivity

No data are available.

#### Management Summary and Conclusions

Sheep in Game Management Unit 17 are restricted to the Alaska Range along the eastern edge of the unit. Hunting pressure in Game Management Unit 17 for sheep is believed to be light. The harvest report program indicated 17 individuals hunted sheep in Unit 17.

#### Recommendations

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

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# SHEEP

## SURVEY-INVENTORY PROGRESS REPORT - 1974

Game Management Units 20 and 25 - Tanana Hills-White Mountains

### Seasons and Bag Limits

Aug. 10 - Sept. 20\*

One ram with 3/4  
curl horn or larger

\*From 12:01 a.m., August 5 to 12:01 a.m., September 21, no motorized vehicles nor pack animals may be used to transport hunters, hunting gear or game within the Glacier Mountain Management Area (Unit 20).

### Harvest and Hunting Pressure

The reported sheep harvest, number of hunters, success percentage, average horn size, resident-nonresident breakdown by hunters, harvest and success are given in Table 1.

Table 1. Harvest Statistics, Tanana Hills-White Mountains, 1968-1974.

Year	Harvest	Hunters	Percent Success	Average Horn Size (inches)	Percent Hunters		Percent Harvest		Percent Success	
					Resident	Nonresident	Resident	Nonresident	Resident	Nonresident
1968	21	68	31	32.4	92	8	97	3	35	25
1969	1	16	6	27.5	83	17	100	0	7	0
1970	11	28	39	34.4	95	5	100	0	47	0
1971	15	43	35	35.6	87	13	93	7	36	25
1972	5	23	22	32.6	91	9	100	0	24	0
1973	7	48	15	28.6	94	6	100	0	15	0
1974	13	30	43	33.2	90	10	85	15	44	66

The number of hunters and the harvest of sheep from the Tanana Hills-White Mountains have varied significantly in recent years. No trend is apparent. The percent success had decreased for the four hunting seasons prior to 1974 but bounced back to 43 percent in 1974. Average horn size shows no apparent trend. The majority of the hunters have traditionally been residents and 90-100 percent of the harvest is taken by residents.

In 1971 the Board of Fish and Game set up a walk-in hunting area defined as the Glacier Mountain Management Area within the Tanana Hills-White Mountains. Traditionally this area supports only a few sheep hunters each year and in 1974 seven resident hunters reported using the area, five were successful.

#### Composition and Productivity

Composition and productivity information has been gathered at the Jefferson Creek, Mt. Schwatka mineral lick during 1973 and 1974 (Table 2). This area does not contain a large sheep population and ratios observed are representative for that population despite small sample sizes. These ratios may not be indicative of ratios throughout this range.

Table 2. Lamb:ewe and yearling:ewe ratios, Mt. Schwatka, 1973 and 1974.

<u>Year</u>	<u>Lamb:100 ewe ratio</u>	<u>Yearling:100 ewe ratio</u>	<u>Total sheep observed</u>
1973	33	8	65
1974	23	30	90

The low lamb:100 ewe ratio of 23 in 1974 is difficult to explain particularly when considered in light of the excellent survival of the 1973 lamb crop through the winter. Poor weather conditions during the lambing period may have been a factor.

#### Management Summary and Recommendations

The sheep in the Tanana Hills-White Mountains complex are in small, widely scattered groups throughout the range. Specific information on movement patterns is lacking, however, available evidence indicates that movements may occur over long distances and sheep may not remain in a particular range on an annual basis. This possibility may explain some of the variations observed in the harvest and hunter success ratios.

Hunting pressure in localized areas has reduced the percent of legal rams in the herd. On specific mountains (i.e. Twin Mountain) most legal rams have been harvested.

Production of lambs in the Mt. Schwatka area, at least, was low. Information on productivity throughout the range is not available and should be gathered on an annual basis.

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

No further changes in regulations regarding trophy rams are recommended.

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SUBMITTED BY:

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# SHEEP

## SURVEY-INVENTORY PROGRESS REPORT - 1974

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

### Seasons and Bag Limits

Aug. 10 - Sept. 20

One ram with 3/4  
curl horn or larger

### Harvest and Hunting Pressure

The reported harvest, number of hunters, success percentage, average horn size, average age and resident-nonresident breakdown by hunters, harvest and success are given in Table 1.

Table 1. Harvest Statistics, Brooks Range, 1968-1974.

Year	Harvest	Hunters	Percent Success	Average Horn Size (inches)	Mean Age (yrs)	Percent Hunters		Percent Harvest		Percent Success	
						Resident	Nonresident	Resident	Nonresident	Resident	Nonresident
1968	144	201	72	32.6	-	56	44	44	56	57	90
1969	68	121	56	33.4	8.9	50	50	44	56	50	62
1970	121	171	71	34.2	8.5	52	48	39	61	53	95
1971	168	275	61	34.2	8.7	60	40	50	50	51	76
1972	236	347	68	33.4	9.6	59	41	47	53	54	90
1973	242	405	60	34.0	9.1	64	36	56	44	52	76
1974	236	378	62	34.1	8.9	70	30	60	40	54	82

In 1974 the harvest of sheep and the numbers of hunters in the Brooks Range decreased slightly. The 1974 hunting season in the Brooks Range was 10 days shorter than previous seasons and this certainly accounted for some of the decrease.

Average horn size and average age did not change significantly in 1974. This is interesting in view of the significant pressure that has been exerted on this sheep population, and particularly considering that the percentage of all hunters represented by resident hunters has risen steadily from 50 to 70 percent during the past six years. A decrease in hunter success and the average horn size would be expected with this increase in resident hunters. This decrease has not materialized; perhaps indicating that the hunting pressure is consistently pushing into new areas or that the resource base is significantly larger than it is presently thought to be.



Analysis of the harvest data on a unit basis showed a shift in pressure from Unit 24 into Unit 26. The percent of harvest by unit is presented in Table 2.

Table 2. Percent of Brooks Range harvest by Unit.

	<u>Unit 23</u>	<u>Unit 24</u>	<u>Unit 25</u>	<u>Unit 26</u>	<u>Total Harvest</u>
1968	10	23	10	57	144
1969	3	31	12	54	68
1970	14	36	11	39	121
1971	9	38	19	33	168
1972	11	35	19	36	236
1973	5	35	23	37	242
1974	8	22	20	50	236

Analysis of the harvest on a drainage basis showed a continuing increase in pressure on the eastern drainages of Unit 26. The Canning and Hulahula Rivers received 18 percent of all hunting pressure in the Brooks Range during 1974. These same drainages received only 10 percent during 1973 and 1 percent in 1972. Activity connected with the proposed El Paso Gas Co. pipeline through the Brooks Range in this area has contributed to this increase. Hunting and harvest also increased in the drainages immediately west of the closed area (Alyeska pipeline route). The Wild, Tinayguk and Glacier River drainages supported a harvest of eight rams in 1974. None were reported killed in this area in 1973.

#### Composition and Productivity

Composition and productivity information is not gathered on a regular basis in the Brooks Range. Surveys to determine sheep abundance and distribution were flown in several major drainages during 1974. The composition and the total number of sheep observed during these surveys are listed in Table 3.

Table 3. Composition and total sheep observed in drainages of the Brooks Range.

	<u>Legal M</u>	<u>Sublegal M</u>	<u>Unclass M</u>	<u>Ewe</u>	<u>Lamb</u>	<u>Unid</u>	<u>Total</u>
John River	68	43	0	274	84	4	473
North Fork	147	107	16	692	214	0	1176
Upper Noatak River	39	46	0	193	63	13	354

These surveys yielded ewe:lamb ratios of 31:100, 31:100 and 33:100 for the North Fork Koyukuk, John and Upper Noatak Rivers, respectively. These ratios are low since young rams and yearlings are often included in the ewe classification and some lambs are definitely missed during aerial surveys. The ratios, although low, are not significantly different from ratios obtained in other areas of the Brooks Range during aerial surveys.

### Management Summary and Conclusions

The number of hunters and the harvest of sheep from the Brooks Range have decreased slightly since 1973. The shortened season contributed to this decrease.

Knowledge of the Dall sheep resource in the Brooks Range is extremely limited. It may well be that the sheep populations can easily support present harvest levels. However, until there is more information I recommend that we attempt to hold the harvest at or below that of 1973.

Plans are to continue the distribution and abundance surveys of the sheep population in the Brooks Range during summer 1975.

In addition to abundance and distribution surveys, it is recommended that trend count areas be established and data on composition and productivity be gathered on an annual basis.

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## BISON

### SURVEY-INVENTORY PROGRESS REPORT - 1974

#### Game Management Unit 11 - Copper River Herd

##### Seasons and Bag Limits

To be announced

One bison every five regulatory years by permit only.

##### Abundance and Productivity

Experience accumulated over the past three years has shown that seldom are all of the bison seen on any one aerial survey. The annual census technique used for this herd is to make a minimum of three survey flights during the bison's spring migration up the Dadina River when sighting conditions are optimum. The largest count is assumed to approach total bison numbers. Maximum bison numbers observed for the Copper River herd are given in Appendix I. This herd has apparently been stabilized in abundance since the mid-1960's.

Classifications from the ground have been made since 1973 to obtain yearling recruitment. Research on Canadian bison herds has shown that calf survival to yearling age is essentially equivalent to adult recruitment. Classification data are given in Appendix II. Yearling survival during the past two mild winters is considered to be normal. Counts of calves-of-the-year are considered to be nearly without value because bison calves are born throughout the summer and because most calf mortality occurs during the winter.

##### Harvest and Hunting Pressure

Harvest data for the Copper River herd are given in Appendix III. Hunting pressure has gradually increased since the mid-1960's, although the harvest level has been predetermined and the season closed by Field Announcement when the actual harvest approached the desired harvest. Hunting has probably been the major factor responsible for stabilizing the abundance of this herd since the mid-1960's. Excluding the improbably low 1967 census data, the mean of seven annual harvests (15 bison) has been 19 percent of the mean number of adults censused (80 bison) since 1964. The male:female ratio of the harvest has been roughly equal, suggesting that bulls visibly larger than cows have not been available in quantity for preferred selection by hunters. The percentage of young bulls has fluctuated markedly, but the percentage of bulls and cows in the one-to-four-year age bracket has ranged around 1/3 to 1/2 of the harvest. These data suggest that hunters select for adults in preference to calves, but there is apparently minimal opportunity for selection among adults. If these harvest data are representative of the herd, the herd is relatively young with a high turnover rate.

Data on hunting pressure are given in Appendix IV. The percentage of the total hunters from the Copper River valley is high considering the relatively small number of local hunters. Aircraft and boats were the most popularly used transportation means.

### Range Studies

Range studies of the Copper River herd have been conducted jointly with Bureau of Land Management personnel (Lee Adler, wildlife biologist) during the past two years. Of primary concern is the eastern Copper River bluffs between the Dadina River and Lower Tonsina. A review of reported winter distributions of bison since the late 1960's has shown that bison were found on pond and bog margins as well as on the Copper River bluffs during winters with low snowfall, but the bluff habitat apparently became more important during winters with deep snowfall. Marked terracing of the bluff habitat due to almost contiguous and parallel bison trails has been noted by biologists for several years. There has been concern that the range was deteriorating due to overutilization and trampling.

Initial ground reconnaissance of the bluff habitat began in 1973 and it has been investigated more thoroughly since. A portion of the bluff habitat below the Dadina River showing characteristic trailing as well as evidence of heavy grazing was chosen as the grazed site study area. Another portion of bluff habitat immediately north of the Nadina River showing similar aspect, slope, and other features except for grazing was selected as the control ungrazed site. Although bison do range south of the Nadina River, on only one occasion are they known to have foraged north of the Nadina River, on either bluff habitat or pond and bog margins. Therefore, it is surmised without proof that vegetation on both sites would be similar except for grazing. The sites were bisected by coordinate axes, sketched roughly to scale on graph paper, and the quadrat coordinates were selected from a table of random numbers. Thirty quadrats were described on each site. For descriptions of the sites, a meter-square marker was placed at the station, and the vegetation and related information described within it. Grass production was obtained by clipping and estimating (weighing occasionally to check estimates) the weight of each forage species greater than one-half inch above ground level, that was contained within a wire hoop of 0.96 sq. ft. area centered within the meter-square plot.

An initial objective was to compare plant frequency, density and foliar cover on grazed and ungrazed portions of bluff habitat to assess the influence of grazing on vegetation (Appendix V). For most plant species, frequency, density and cover were reduced on the grazed site. Exceptions (*Artemesia frigida*, *Pulsatilla patens* and *Arabis Holboelli*) are perennial plants with large, woody rootstalks.

Utilization studies were conducted during June 1975 to see which of these plant species were important food species for bison. The technique using coordinate axes and randomly selected coordinates was used to obtain starting points. The closest neighbor to the starting point for each species was used to select individuals to assess utilization, estimated

by volume (or percentage of stems) missing. The results are shown in Appendix VI. Grasses (*Agropyron* spp., *Calamagrostis purpurascens* and *Poa glauca*) were the major forage species. The 1974-75 winter was mild with snowfall not exceeding two feet deep, and most bison were dispersed inland along bog margins (where *Carex* is the dominant ground cover and probably the major forage species). This is the explanation for the fact that only 37 percent of the grasses were utilized (29 percent by volume).

Data from grazed and ungrazed sites were analyzed and compared in Appendix VII. Sixty-one percent of the area of the grazed site showed signs of bison trampling (hoofprint or dirt displaced by hoofprint) whereas only one moose track crossed the ungrazed site. The grazed site had more bare ground, a lower plant density and a lower density of all grasses -these differences were statistically highly significant. The assumption that grass production was depressed on the grazed site had a statistical probability between 0.1 and 0.05 of being incorrect. The apparent increase in density of *Artemisia frigida* was not statistically significant. Plant diversity was assessed using Simpson's Index, and values on grazed and ungrazed sites were closely similar. This supports the concept of a general thinning of most species on the grazed site.

#### Management Summary and Conclusions

The Copper River bison herd has stabilized in abundance during the past 10 years primarily due to substantial hunting mortality. For seven of the past ten years, hunting mortality has approached values for yearling recruitment seen during the past two years. Data on harvested bison suggest that the herd is young and has, therefore, a high turnover rate. This bison hunt has been popular among local Copper River Basin hunters.

Range studies were conducted to provide information on suspected range damage due to overutilization and trampling. These studies were considered necessary to obtain public acceptance of any reductions in bison numbers that may be necessary. They have shown that trampling and soil displacement leading to an overall thinning of plant density has been the predominant form of range damage. Grasses, especially *Agropyron* spp., are the main forage crop on bluff habitat, and grass was approximately one-third as dense on a heavily grazed site as compared to a similar ungrazed site. Grass production (as measured by clipping studies) was depressed, but this measurement did not have as high a statistical validity. The only plants withstanding this trampling damage are perennial forbs with large woody rootstalks, although the relative changes in plant diversity are not yet measurable using Simpson's Index.

A management worksheet is being utilized for the Copper River bison herd (Appendix II). Harvests during the two previous years were designed to stabilize this herd until range studies were completed. Sufficient evidence is available to suggest that a modest reduction in bison numbers is advisable. Reduction of herd size to 60 adults carried overwinter is now the management goal. After possibly three years at this level the heavily grazed site will be re-evaluated to see what changes have occurred.

Three alternative management goals will be briefly considered. With no hunting, these bison will probably increase above their current numerical level and fluctuate at a higher level with starvation during years of above-normal snowfall taking the place of hunting mortality. With hunting sufficient to hold the herd at its current level, these bison will probably survive normal winters with some starvation occurring during years of deep snowfall. Over a period of several years (or decades), the Copper River bluffs may be somewhat revegetated with perennial forbs that can withstand trampling damage. A further reduction of carrying capacity will then have occurred. With hunting sufficient to lower bison numbers until grass density on grazed and ungrazed sites are not statistically dissimilar, bluff habitat may retain or even improve its carrying capacity for bison over a period of decades. The latter management alternative provides small annual harvests of bison as a trophy animal for hunters and provides for long-term severe-winter habitat for bison.

### Recommendations

Based on annual inventory data, adjust annual harvests to maintain an overwinter herd size of approximately 60 adult bison.

Repeat range studies on the grazed site after three years to monitor any changes that may have occurred in the bluff habitat plant community.

Monitor bison distributions in relation to snowfall to more precisely describe the relationship between winter snowfall, bluff habitat usage and overwinter bison survival.

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# APPENDIX I

## Maximum Number of Yearling and Older Bison Observed During Aerial Surveys of the Copper River Bison Herd.

<u>Year</u>	<u>Total</u>	<u>Calves</u>	<u>Adults</u> <sup>a.</sup>
1950 <sup>b.</sup>	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

a. The adult category includes yearling and older bison.

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

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## APPENDIX II

### Management Summary - Productivity and Mortality Estimates of the Copper River Bison Herd.

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	<u>1972</u>	<u>1973</u>	<u>1974</u>
Spring Composition, <sup>a.</sup>			
Yearlings:	--	15	12
Adults:	--	44	46
Percent Yearlings:	--	25%	21%
Total Yearlings plus Adults,			
Largest Count during Spring:	70	79	97
Estimated: <sup>b.</sup>	--	93	97
Calculated Number of yearlings:	--	23	20
No. Adults Wanted to Overwinter:	--	70	70
Harvestable Surplus:	--	23	27
Actual Harvest:	0	16	22
Adults Entering Winter:	--	77	75
Known Adult Winter Mortality:	--	0	0

- a. Spring composition counts are based on ground classifications using a spotting scope.
- b. Estimated total adults are based on nonduplicating bison and tracks and on calculations from other year's observations.

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# APPENDIX III

## Harvest Data for the Copper River Bison Herd.

<u>Regulatory Year</u>	<u>Number of Registered Hunters</u>	<u>Harvest</u>		<u>Percent Males in Harvest</u>	<u>Number (percent) Bison 1 through 4 Years Old<sup>a</sup>.</u>		
		<u>Total</u>	<u>Males</u>		<u>Males</u>	<u>Females</u>	<u>Sample</u>
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%	6(30%)	4(20%)	20 <sup>b</sup>

a. Bison ages were determined by tooth replacement  
Age data for several hunts are not available.

b. Two harvested bison were calves, and are excluded from the total.

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# APPENDIX IV

## Residence and Transportation Means Used by All Hunters during the 1973 and 1974 Copper River Bison Hunts.

	1973		1974	
	<u>Number</u>	<u>Percent</u>	<u>Number</u>	<u>Percent</u>
Residence,				
Anchorage vicinity:	68	67%	39	41%
Fairbanks vicinity:	8	8%	8	9%
Copper River Valley:	19	19%	27	29%
Other Locations:	6	6%	20	21%
Transportation Means, <sup>a</sup> .				
Aircraft:	52	55%	52	55%
Boat:	40	42%	39	41%
Off-Road Vehicle:	3	3%	0	--
Horses:	0	0	3	3%
Unknown:	7	--	0	--

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

PREPARED BY: Carl McIlroy, Game Biologist III

# APPENDIX V

A Comparison of the Frequency, Density, and Foliar Cover of Plant Species on Grazed and Ungrazed Sites Along the Copper River Bluffs.<sup>a.</sup>

Species <sup>b.</sup>	Ungrazed			Grazed		
	Freq.	Dens.	Cover	Freq.	Dens.	Cover
<u>Agropyron pauciflorum</u>	87%	32/sq.m.	12%	77%	16/sq.m.	11%
<u>Agropyron violaceum</u>	87%	7/sq.m.	11%	100%	8/sq.m.	17%
<u>Artemesia frigida</u>	37%	4/sq.m.	5%	27%	2/sq.m.	4%
<u>Poa glauca</u>	33%	3/sq.m.	3%	7%	0.2/sq.m.	0.4%
<u>Hierochloe odorata</u>	10%	7/sq.m.	3%	0	--	--
<u>Bromus Pumpellianus</u>	10%	2/sq.m.	1.3%	3%	0.2/sq.m.	0.7%
<u>Pulsatilla patens</u>	10%	0.7/sq.m.	0.8%	13%	0.5/sq.m.	1.3%
<u>Potentilla pennsylvanica</u>	3%	0.3/sq.m.	0.8%	0	--	--
<u>Oxytropis campestris</u>	10%	0.2/sq.m.	0.8%	7%	0.1/sq.m.	0.2%
<u>Polymonium pulcherrimum</u>	17%	0.6/sq.m.	0.4%	0	--	--
<u>Calamagrostis purpurascens</u>	7%	0.3/sq.m.	0.4%	0	--	--
<u>Solidago decumbens</u>	3%	0.2/sq.m.	0.3%	0	--	--
<u>Galium boreale</u>	7%	0.2/sq.m.	0.2%	7%	0.2/sq.m.	0.2%
<u>Epilobium augustifolium</u>	3%	0.3/sq.m.	0.1%	0	--	--
<u>Amelanchier alnifolia</u>	3%	0.1/sq.m.	0.1%	0	--	--
<u>Arabis Holboellii</u>	0	--	--	7%	0.2/sq.m.	0.2%
<u>Plantago canescens</u>	0	--	--	3%	.03/sq.m.	0.1%
<u>Achillea borealis</u>	0	--	--	0	--	--
<u>Eleagnus commutata</u>	0	--	--	0	--	--
<u>Juniperus horizontalis</u>	0	--	--	0	--	--
<u>Linum perenne</u>	0	--	--	0	--	--
<u>Populus tremuloides</u>	0	--	--	0	--	--
<u>Shepherdia canadensis</u>	0	--	--	0	--	--

a. Frequency is the percentage of meter-square quadrats containing individuals of the species. Density is the mean number of individual plants or clumps per quadrat (30 quadrats in the grazed and 30 quadrats in the ungrazed sites). Cover is the estimated percentage of ground area covered by foliage (made in 10 percent increments).

b. Plant species were identified from voucher specimens collected from the Copper River bluffs. Each species was identified by key but was not compared to herbarium specimens nor confirmed by a plant taxonomist. Plant nomenclature follows Hulten (1968). Several species of lesser abundance were not present in the randomly placed sampling quadrats.

PREPARED BY: Carl McIlroy, Game Biologist III

# APPENDIX VI

## Over-winter Utilization of Plants by Bison on the Copper River Bluffs below the Dadina River.

Species	Number Sampled	Frequency of Utilization	Mean Volume Utilized
<u>Agropyron</u> spp.:	144	35%	26%
<u>Artemesia frigida</u> :	118	2%	0.2%
<u>Calamagrostis purpurascens</u> :	16	50%	48%
<u>Juniperus horizontalis</u> :	5	0%	--
<u>Poa glauca</u> :	1	100%	100%
<u>Potentilla pennsylvanica</u> :	5	20%	0.4%
<u>Polymonium pulcherrimum</u> :	4	0%	--
<u>Populus tremuloides</u> :	12	0%	--
<u>Pulsatilla patens</u> :	22	0%	--
<u>Rosa acicularis</u> :	21	5%	2.0%
<u>Solidago decumbens</u> :	1	0%	--
<u>Plantago canescens</u> :	1	0%	--
<u>Arabis Holboellii</u> :	5	20%	20%
All Grasses Combined :	161	37%	29%

PREPARED BY: Carl McIlroy, Game Biologist III

# APPENDIX VII

## Evaluation of Data from Grazed and Ungrazed Sites on the Copper River Bluffs.<sup>a.</sup>

Site Characteristic and Statistic	Ungrazed Site	Grazed Site
<u>Area Trampled</u> , <sup>b.</sup> mean:	0%	61%
<u>Bare Ground</u> , <sup>c.</sup> mean:	55.0%	73.0%
std. dev.:	21.3	12.4
t-test:	_____ 4.01**, d.f.=58 _____	
significance:	p(t>4.01)<.001	
<u>Plant Density</u> , mean:	58.0/sq.m.	27.9/sq.m.
std. dev.:	33.4	17.8
t-test:	_____ 4.36** d.f.=58 _____	
significance:	p(t>4.36)<.001	
<u>Plant Diversity</u> , (Simpson's Index <sup>d.</sup> ):	38.5	37.0
<u>Density All Grasses</u> , mean:	44.4/sq.m.	16.5/sq.m.
std. dev.:	33.9	17.6
t-test:	_____ 4.00** d.f.=58 _____	
significance:	p(t>4.00)<.001	
<u>Grass Production</u> , <sup>d.</sup> mean:	40.3	26.9
std. dev.:	24.7	33.6
t-test:	_____ 1.76, d.f.=58 _____	
significance:	0.1 p(t>1.76)<.05	
<u>Density, <i>Artemesia frigida</i></u> , mean:	7.13/sq.m.	8.23/sq.m.
std. dev.:	5.82	3.87
t-test:	_____ 0.86, d.f.=58 _____	
significance:	0.4 p(t>0.86)<0.3	

- a. Abbreviations of statistical terms used below: mean, average value of 30 quadrats on each site; std. dev., standard deviation of the mean; t-test, comparison of two means by the student's t-test; and significance, probability that the two means are similar.
- b. Area disturbed by a bison hoofprint, or soil dislodged from the hoofprint depression (estimated in 10 percent increments).
- c. Ground without foliar coverage (estimated in 10 percent increments).

## BISON

### SURVEY-INVENTORY PROGRESS REPORT - 1974

#### Game Management Unit 11 - Chitina River Herd

##### Seasons and Bag Limits

To be announced.

One bison every five regulatory years by permit only.

##### Abundance and Distribution

Maximum numbers of the Chitina bison herd seen during annual surveys are given in Appendix I. The previous belief was that this herd resulted from a transplant of 35 bison during 1962. However, most or all of that transplant died during the winters of 1963-64 and 1964-65. The transplanted animals wintered on Dan Creek, May Creek and possibly Young Creek. Jack Wilson (air taxi operator) has stated that the Chitina herd was already established in its current home range on the Chitina River by wandering bison from the Copper River herd at the time of the transplant and that all of the transplanted bison died. Wilson has seen and tracked individuals as they progressed up the Chitina River. Jones and Snyder observed one bison near the Kotsina River during 1964 that they believed was headed up the Chitina River. In the absence of contrary information, Jack Wilson's view of the origins of the Chitina herd may be considered as probable historical fact.

From 1965 (5 adults) to 1974 (26 adults), this herd had an observed annual rate of increase of 0.18 as compared to the Delta herd from 1929 to 1940 ( $r=.22$ ) and the Copper River herd from 1950 to 1964 ( $r=.11$ ). Reported observations of most of the herd during all seasons have been in the vicinity of Bear Island. Winter-kills at May Creek and the limited distribution of the present herd suggest that the potential bison range on the Chitina River may be limited.

##### Harvest and Hunting Pressure

No public hunts have been held for this herd.

##### Range Studies

Range studies have recently been initiated on this herd in cooperation with Bureau of Land Management personnel (Lee Adler, wildlife biologist) because of its rapid growth rate and obviously limited range. A preliminary ground reconnaissance near Bear Island showed at least two different community types. Strips of browse along old washes had a shrub overstory

composed roughly of 85 percent *Eleagnus commutata* foliar cover, 20 percent *Salix niphoclada* and *Salix glauca*, and 30 percent *Populus balsamifera*. A forb understory contained *Hedysarum Mackenzii*, *Populus* saplings, and scattered unidentified grasses. Gravel flats between the washes had vegetative cover varying from nearly pure stands of *Eleagnus commutata* on wetter sites to only a forb layer containing mainly *Oxytropis* sp. and unidentified grasses on drier sites.

Ground observations indicated that the forb layer, especially *Oxytropis* sp., was serving as summer pasturage, but that the shrub overstory had served as winter forage. Utilization transects were run on the shrub overstory using systematic sampling to locate stations, and then assessing utilization of the closest neighbor to the station point. Utilization was assessed as the percentage of twigs cropped, cumulatively over years, where there was no regrowth. *Eleagnus* did not appear to recover quickly from browsing, and hedging appeared to take several years to occur. Utilization of *Eleagnus commutata* was 44 percent (std. dev. of 38.9) and of *Populus balsamifera* was 22 percent (std. dev. of 25.8). Utilization of *Salix* spp. was not determined, but it was assessed as roughly 5 percent. Moose pellets were common in some *Eleagnus* stands, and a substantial portion of the observed utilization was probably due to moose.

Of great concern to both observers was the assessment that approximately 60 percent of the total *Eleagnus* shrubs appeared to be dead or dying. Although many of these shrubs were hedged and heavily utilized, some dead shrubs showed little or no utilization. Rather, the health of these shrubs appeared to relate to microelevations, with shrubs on or near washes being healthy and shrubs on gravelly sites between washes being totally or partially dead.

A brief ground reconnaissance of the horse grazing lease site below Bear Island was made. Horses have been wintered on this area for several years with a substantial number of these horses starving during the winters of 1970-71, 1971-72, and 1974-75. *Eleagnus commutata* and *Salix* spp. were very heavily utilized; it appeared that the horses were destroying this area as bison range by overgrazing *Eleagnus commutata*. It is clear that horses and bison are competitive for similar forage species, and that a possible reason for bison not being observed in this area during previous winters is that there was little left for them to eat.

#### Management Summary and Conclusions

Based partially on Jack Wilson's observations, it appears that the transplant of 35 bison to May Creek may have been a total failure and that the present Chitina bison herd is a result of wandering bison from the Copper River herd. From only 5 adults observed during 1965, this herd has increased rapidly at a rate approaching the maximum observed in bison in Alaska. The annual distributions of the present bison herd have been mainly limited to the vicinity of Bear Island, suggesting that the area of suitable bison range is small. Preliminary range studies at

Bear Island have shown that shrubs, especially *Eleagnus commutata*, were heavily utilized in winter. The availability of the forb layer is probably determined by snow depth. Approximately 60 percent of *E. commutata* appears to be dead or dying, possibly due to changing moisture conditions and possibly aggravated by heavy utilization. The potential bison range south of Bear Island has been overutilized by starving horses, and this area has not been available as an alternate range for Chitina bison because of competitive exclusion.

#### Recommendations

Stabilize bison numbers, of those animals wintering near Bear Island, at 15 adult bison by issuing five permits annually until the desired abundance level is reached.

Investigate bison range on the Chitina River more thoroughly during the next two years to determine the key forage species and assess their trend.

Work with the Bureau of Land Management to obtain a new assessment of the best use of that land south of Bear Island now serving as a horse grazing lease, perhaps to exclude overwintering of horses on that area and provide for an alternate winter range for the Chitina Bison herd.

PREPARED BY:

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Game Biologist III

SUBMITTED BY:

John S. Vania  
Regional Management Coordinator



# APPENDIX I

## Maximum Number of Bison Observed During Aerial Surveys of the Chitina Bison Herd.

<u>Year</u>	<u>Chitina Bison Herd</u>			<sup>a.</sup>
	<u>Total</u>	<u>Calves</u>	<u>Adults</u>	
1962 <sup>b.</sup>	35	0	35	
1963	28	--	--	
1964	12	5	7	
1965	6	1	5	
1966	9	0	9	
1967	12	2	10	
1968	16	2	14	
1969	15	0	15	
1970	16	2	14	
1971	16	3	13	
1972	_____ No Data _____			
1973	23	4	19	
1974	32	6	26	

a. The adult category includes yearling and older bison.

b. The Chitina Bison Herd may have resulted from a transplant of 35 animals during 1962.

PREPARED BY: Carl McIlroy, Game Biologist III

## BISON

### SURVEY-INVENTORY PROGRESS REPORT - 1974

Game Management Unit 19 - McGrath (Farewell Herd)

#### Seasons and Bag Limits

10 permits authorized for an open season from Sept. 21-30, 1974

#### Harvest and Hunting Pressure

Names of 10 hunters and 5 alternates were drawn to participate in the Farewell bison hunt beginning September 21 and ending September 30, 1974. Hunters were assigned two three-day periods beginning September 21 and 24. During each period three hunters were in the field at a time. Four hunters were assigned to the last period of four days from September 27 through September 30. Several hunters failed to appear and three alternates contacted did not wish to participate in the hunt. All seven hunters who actually participated in the hunt were successful and took five bulls and two cows.

Hunters were requested to check in and out of either Farewell FAA station or the McGrath Fish and Game office. Some problems were encountered when both offices were vacant at the same time. This will be alleviated in the future by having a temporary person assigned to this task during future hunts. Some hunters complained that they would have liked more time in which to pursue a suitable animal. Future hunts should be designed to allow more time for hunter participation.

#### Herd Size, Composition and Productivity

Only one complete count of the Farewell herd was accomplished in 1974. This survey was made on June 4, 1974. A total of 67 adult bison (approximately 12 yearlings) and 14 calves was tallied on this count. Spencer Linderman's (BGDIF) observations while on grizzly hunter surveys suggested as many as 15 yearling bison may have survived the winter. Because several more lone adult bulls are known to frequent the upper South Fork, the estimate of the herd size at this date was 85 animals.

Snowfall was slight and wintering conditions were good during the winter of 1973-74 on the South Fork range. These conditions led to good yearling survival and better than average calf production in the summer of 1974.

#### Management Summary and Conclusions

The Farewell bison herd was estimated at 85 animals in the early spring of 1974. Good productivity and survival in this herd suggested a permit hunt during the fall of 1974 was in order. Ten permits were authorized and 7 animals removed from the herd.

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SUBMITTED BY:

Oliver E. Burris  
Regional Management Coordinator

## BISON

### SURVEY-INVENTORY PROGRESS REPORT - 1974

Game Management Unit 20 - Fairbanks, Central Tanana (Big Delta Herd)

#### Seasons and Bag Limits

Sept. 23-29

One bison every 5  
regulatory years by  
permit only

#### Harvest and Hunting Pressure

Thirty-five hunters drew permits for the Delta bison hunt from a total of 3,600 applicants. Thirty-five mature bison (20 bulls and 15 cows) were taken during the managed hunt. Additional known mortality totaled 10 adult animals; 5 road-killed cows, 2 illegally taken bulls plus 2 bulls shot due to serious injury and a bull taken for the Delta Chamber of Commerce barbeque.

Total known mortality for 1974 was 20 cows and 25 bulls.

#### Composition and Productivity

Aerial counts of the primary calving grounds of the Delta bison herd July 25, showed 61 (23%) calves. Average for the past 5 years has been 22 percent calves.

Bison classification counts during November indicated 60 bulls per 100 cows and 17 yearlings per 100 cows.

The Delta herd shows an upward population trend. In 1970 the herd was estimated at 250 animals. The 1974 pre-hunt population estimate was 340 animals before any known mortality and the pre-calving population was estimated at 275 animals.

#### Seasonal Distribution, Range Utilization and Conditions

Range enclosures on the bison summer range showed average range utilization of 49 percent or 265 pounds of forage per acre removed by grazing. I would rate use of the summer range as moderate to heavy. The overall aspect of the range appears good. However, natural succession continues to reduce the summer range over the long term.

Commercial fertilizers with various application rates boosted forage production an average of 195 percent to 1005 pounds per acre.

In an effort to delay the bison migration from the Delta River to the Clearwater farm area, salt licks were established in three locations on the summer range. The salt operation was initiated in June and

continued through August. A total of 1500 pounds of salt was used. In the past the bison usually crossed the Delta River the first week of August. This year they crossed August 23 and arrived at the farm fields September 1. It appears the salt may have extended the time spent on the Delta by at least two weeks.

#### Management Summary and Recommendations

Conflicts with political, agricultural and other human interests must be considered in maintaining a wild, free-ranging, huntable bison population. The bison should be encouraged to remain along and near the Delta River as long as possible during the summer and fall. This can be accomplished with salt licks, improved summer range and the hunting season timed with their arrival at the Clearwater farms.

A reduction of the herd to a pre-calving population of 250 is recommended. To accomplish this the harvest must be increased to at least 75 animals per year. The best way to conduct a harvest of this magnitude is by both accompanied and unaccompanied hunts. The unaccompanied hunt should be tried during the next year to determine feasibility. If all goes well this portion of the bison season can be expanded in future years.

Agricultural development has created a temporary increase in bison winter range. A decreasing winter range situation will occur with increased cultivation and fencing. Development projections for the Delta area indicate 230,000 acres will be under cultivation in the next 10-20 years. The Department should secure and develop land for bison winter range before all tillable lands are in private ownership.

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# MOUNTAIN GOAT

## SURVEY-INVENTORY PROGRESS REPORT - 1974

Game Management Subunit 1A - Ketchikan

### Seasons and Bag Limits

Aug. 1 - Dec. 31

Two goats

### Harvest and Hunting Pressure

Goat harvest ticket returns for the 1974 season showed that 109 reporting hunters took 47 goats (58%) males in Subunit 1A. Ten (27%) of the 37 successful hunters in 1974 reported taking two goats. The 1974 harvest was down 22 percent from the 60 taken in 1973 and was about the same as the 48 taken in 1972. Data from the harvest ticket program for the 1972-74 seasons are summarized below.

Season	Goat Harvest				Hunters Taking	Percent Harvest by	Number Successful	Total	Percent Hunter
	Male	Female	Unk	Total	Two	Nonresidents	Hunters	Hunters	Success
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

Nonresidents reported taking 12.5 percent of the 45 goats from Subunit 1A for which hunter residency was reported. For all of Unit 1, nonresidents reported taking 19 percent of the goats killed.

Chronology of the goat harvest for Subunit 1A shows the August 29 through October 2 period to be the most productive, with 45 percent of the kill. The August 1-28 period accounted for 17 percent and 15 percent of the goats were taken from October 3 through November 6. Eleven percent were taken from November 7 through December 4 and only 3 percent were taken in the remaining part of December.

Distribution of the harvest within the subunit shows 30 percent of the goats were taken in a small area between Rudyerd Bay and Wilson Lake and 77 percent of the kill came from the area between Walker Cove and Humpback Lake.

Of the 321 hunters from Unit 1 reporting means of transportation 37 percent used aircraft, 44 percent boats and 17 percent highway vehicles. There was no significant difference in modes of transportation used by successful and unsuccessful hunters.

## Composition and Productivity

A single flight was made over each of two established transects and the results indicated further declines in the goat populations in these areas.

Transect K-4 between Wilson Arm and Boca de Quadra was only partially covered, but the 56 goats seen per hour of survey time was down substantially from the 95 goats per hour seen in 1973.

In the area between Marten Arm and the Portland Canal (transect K-2) 25 goats were seen per hour of survey time in 1974 while the same transect in 1973 showed 57 goats per hour.

Surveys conducted since 1968 have been flown in a Piper PA-12, generally in the late evening (between 7:00 and 9:00 P.M.) at an altitude between 3,300 and 4,000 feet. Contours are followed as closely as possible and both the pilot's and observer's sightings are recorded.

## Management Summary and Recommendations

Both the harvest and number of hunters declined from 1973 and the limited survey time indicated a further decline in the goat population. Appendix I compares past survey data for roughly similar areas. Much of the survey area is over inaccessible terrain and populations in these areas are also declining indicating factors other than hunting are depressing goat numbers.

Considerably more survey work should be done and it should be started earlier than in past years. The few days in September when weather conditions permit flying are not sufficient to complete surveys, therefore flights should start in early August.

Several reports from goat hunters this year indicated severe insect problems while hunting and they also reported goats in poor condition with infected eyes, ears and noses which were attributed to the flies. Maggots were present in some cases.

Also reported this year were three verified cases of Orf (contagious ecthyma) in hunters who had recently killed goats. Several other cases were reported but not verified. The disease is commonly called sore mouth or scabby mouth in domestic sheep and symptoms in animals are apparently similar to some of the conditions goat hunters reported as fly damage. Possibly this disease accounted for some reports of fly bitten goats received from hunters.

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SUBMITTED BY:

Robert Pegau  
Regional Research/Management Coordinator

## MOUNTAIN GOAT-SUBUNIT 1A-KETCHIKAN AREA

## APPENDIX I

## Mountain Goat Composition Surveys, Subunit 1A, 1960 through 1965

Year	Survey Date	Adults	Kids	Unknown	Total	Kids Per 100 Adults	Survey Time	Goats/Hour
1960	Sept. 12	33	20	--	53	61	66 Min.	48
1961*	Aug. 10	28	15	--	43	54	No Data	No Data
	Sept. 12	36	3	--	39	8	No Data	No Data
1964	Sept. 8	38	21	36	95**	55	89 Min.	64**
	Sept. 10	41	15	12	68**	37	81 Min.	50**
	Sept. 11	21	6	2	29**	27	90 Min.	19**
	Sept. 12	24	8	0	32**	33	65 Min.	30**
1965	Sept. 15	61	20	19	100	33	87 Min.	69
	Sept. 16	179	61	17	257	34	115 Min.	134
	Sept. 17	213	67	11	291	31	112 Min.	156

\* No map of survey area available

\*\* Observations include only those of the observer. Pilot instructed not to help.  
On Sept. 8, 1964 on a comparison count, pilot had 133 goats while observer had 95 goats.

Prepared by: Robert E. Wood Game Biologist III

# MOUNTAIN GOAT-SUBUNIT 1A-KETCHIKAN AREA

Goat Composition Surveys, Subunit 1A, 1968 through 1974

## 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	--	94	30	80 Min.	71
1973	No Survey							
1974	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

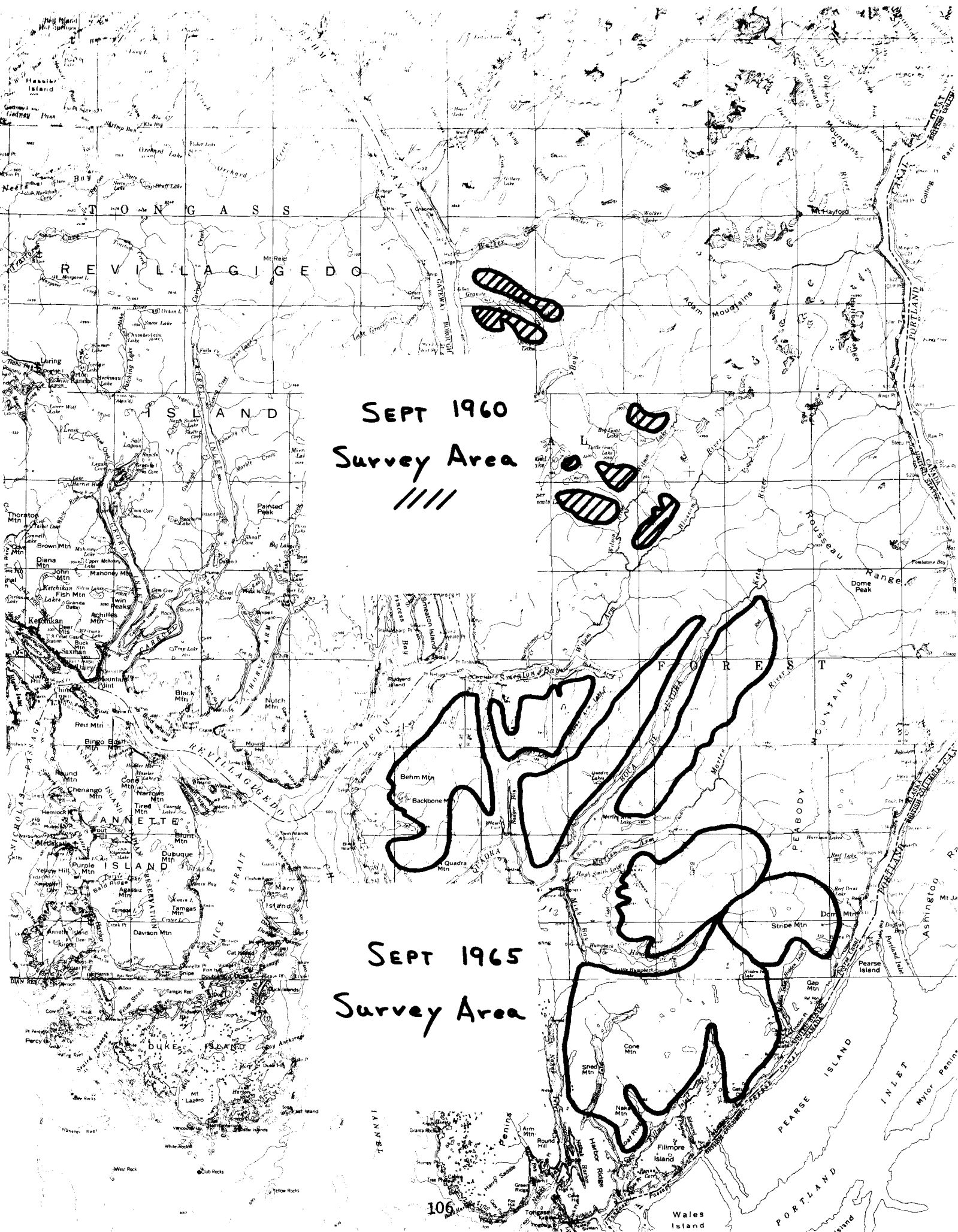
\*Incomplete Survey

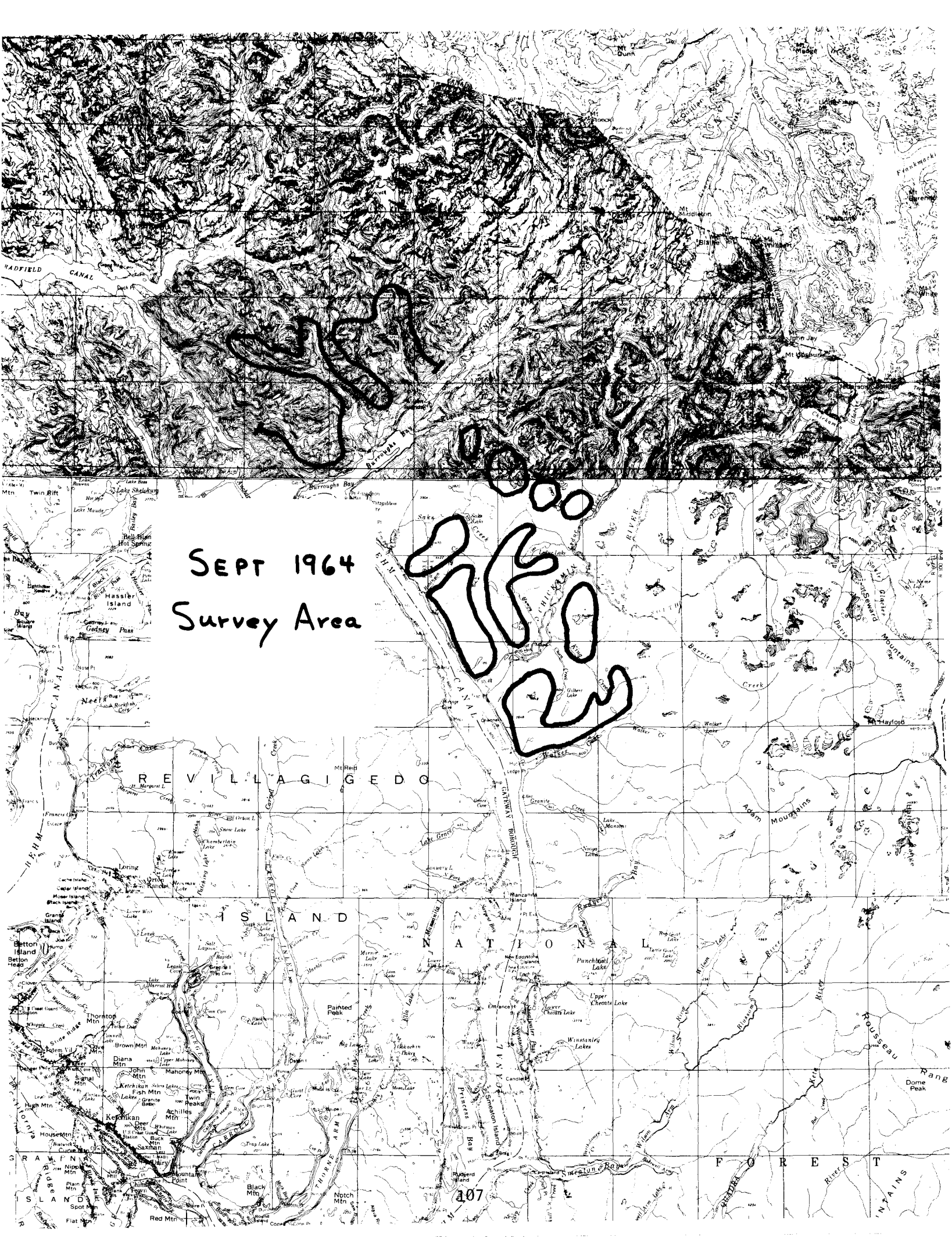
## Area K-5 (Marten Arm to Portland Canal)

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
1973	Aug. 20	59	22	--	81	37	85 Min.	57
1974	Sept. 21	24	6	--	30	25	74 Min.	24

Prepared by: Robert E. Wood Game Biologist III







SEPT 1964  
Survey Area

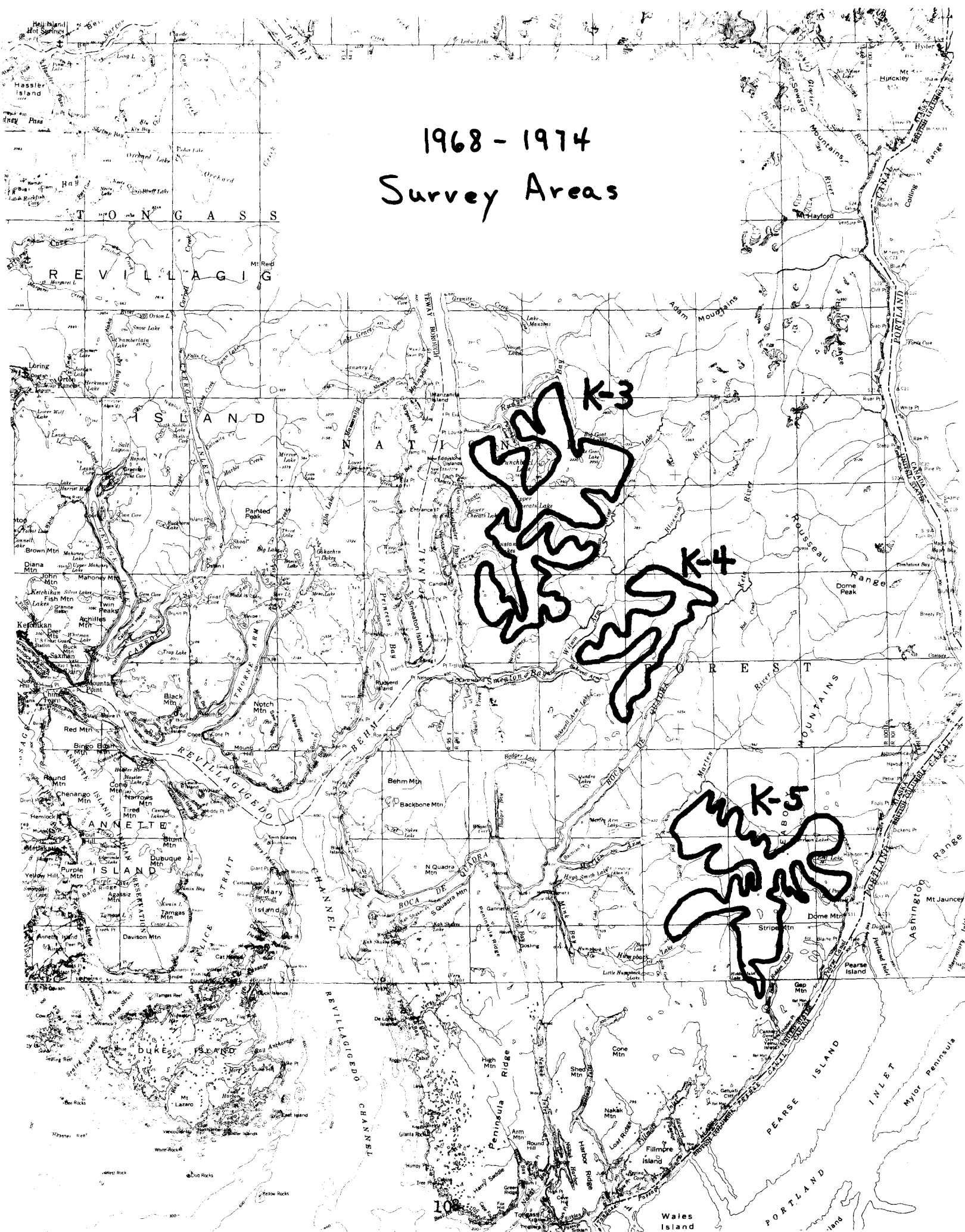
REVILLAGIEDO

ISLAND

NATIONAL

FOREST

1968 - 1974  
Survey Areas



## MOUNTAIN GOAT

### SURVEY-INVENTORY PROGRESS REPORT - 1974

Game Management Subunit 1B - Southeast Mainland, Cape Fanshaw to Lemesurier Point

#### Seasons and Bag Limits

Aug. 1 - Dec. 31

Two goats

#### Harvest and Hunting Pressure

Goat harvest ticket returns indicated 56 people hunted for goats in Subunit 1B in 1974; 17 were successful, all were Alaskan residents and took 20 goats (10 males and 10 females). A second goat was taken by three (18%) of these hunters. Harvest and hunter distribution within Subunit 1B for the past three years were divided into six areas (Appendix I). The harvest breakdown by area for 1973-74 was incomplete.

In 1974, 37 (66%) of the hunters hunted in the northern portion of the subunit, including the Stikine River drainage, and took 35 percent of the goats.

The most heavily hunted portion of Subunit 1B was the LeConte Bay-Horn Cliff area near Petersburg where hunter success was lowest (9%).

Fifty hunters indicated they spent 150 days hunting goats in Subunit 1B during the 1974-75 season. Of these 150 days, 95 were spent in the northern area, 43 in the southern area and 12 in unspecified areas.

Mode of transportation used by successful hunters showed 64.7 percent using aircraft, 23.5 percent using boats, 5.9 using highway vehicles and 5.9 not specifying transportation method.

Chronology of the harvest for the past three years indicates most goat hunting in Subunit 1B occurs in August and September.

Year	Aug. %	Sept. %	Oct. %	Nov. %	Dec. %	Unspecified %	Total Kill
1972-73	42	16	18	3	5	16	38
1973-74	34	9	16	28	3	9	32
1974-75	30	35	10	20	0	5	20

#### Composition and Productivity

Aerial composition surveys were conducted over selected areas from the Stikine River to Port Houghton and from Wrangell Peak to Goat Lake in August and September 1974. In the Stikine-Port Houghton area 183 goats were observed, 58 of which were kids. Forty-three goats, 4 of which were kids, were seen in the Wrangell Peak-Goat Lake area.

All surveys conducted in Subunit 1B are listed in Appendix II.

Comparable data from three specific areas within the Stikine-Port Houghton area (Appendix III) indicate a significant decline in goat populations since the early 1960's. These data indicate reductions of 78.4 percent in numbers of observable goats in the LeConte Bay-Patterson Glacier area since 1960, 84.8 percent in the North Baird Glacier-Farragut River area and 50.3 percent in the Farragut River-Port Houghton area since 1961.

#### Management Summary and Recommendations

Hunting pressure and harvest, as reported in the early 1960's, were insignificant compared to the number of goats available. For example, in 1959, seven goats were known to have been taken (estimated maximum 10-15) in the Stikine River-North Baird Glacier area where 197 goats were seen during aerial surveys.

Aerial surveys were not conducted between 1964 and 1973, therefore, it is uncertain when goat populations in Subunit 1B began to decline. Reductions in goat numbers were noted in established survey transects between 1968 and 1971 on the mainland coast near Ketchikan. These reductions are believed to be due to losses which may have occurred during the severe winters of 1968-69, 1970-71 and 1971-72. It is probable that goat populations along the coast to the north were similarly affected.

Hunter harvest data suggest that the magnitude of hunting effort varies according to available numbers of goats and/or accessibility to the hunting area. One of the most heavily hunted areas in GMU 1B, north of the Stikine River and accessible by float plane, is DeBore Lake. Nine of 11 goats killed in the Thomas Bay area in 1972 (Appendix I) were taken from this area while in 1973 only 2 goats were taken and in 1974 no goats were reported taken. The number of hunters decreased from 6 in 1972 to 1 in 1974 and the hunting effort has shifted to the east side of Thomas Bay. During aerial surveys in this area in 1974, 15 goats including 6 kids were observed. Overall, the harvest and hunting pressure in the Thomas Bay area has gone from 11 hunters taking 11 goats in 1972 to 4 hunters and 1 goat in 1974.

The LeConte Bay-Horn Cliff area is somewhat different in that poor hunter success does not seem to influence hunting effort. Hunter harvest report data show a declining rate of success from 19 percent in 1972 to 9 percent in 1974 although the number of hunters remained constant (21 in 1972 and 22 in 1974). Apparently hunters choose this area because of its easy accessibility rather than for the opportunities to actually take an animal. This area is only a few miles from Petersburg and access is almost entirely by boat.

Snow conditions during the months of November and December usually drive goats down to low elevations where they are easier to hunt. Since 1972, 50 percent of the total reported harvest has occurred in the months of November and December. Presently the harvest from the LeConte Bay-Horn Cliff area is 25 percent of the observed production in 1974 (12 kids).

Trend count areas should be established to evaluate the status of goat populations within this subunit. Populations which are lightly hunted, heavily hunted and unhunted should be considered to determine area selection.

The bag limit for goats was reduced from two to one by the Board of Fish and Game during their 1974 spring meeting. This bag limit reduction may relieve some hunting pressure in a few of the heavily hunted areas.

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# APPENDIX I

Goat harvest statistics by area from hunter harvest reports for the years 1972-73, 1973-74 and 1974-75 for Subunit 1B.

Area/Year	Harvest			No. Hunters Taking Two Goats	Total No. Success. Hunters	Total No. of Hunters	Percent Hunter Success
	M	F	Total				
<u>Farragut</u>							
1972-73	2	4	6	1	5	6	83
1973-74	0	0	0	0	0	(0)	0
1974-75	1	0	1	0	1	1	100
<u>Thomas Bay</u>							
1972-73	3	8	11	4	7	11	64
1973-74	7	4	11	4	7	(13)	n/a
1974-75	1	0	1	0	1	4	25
<u>LeConte- Horn Cliff</u>							
1972-73	4	0	4	0	4	21	19
1973-74	2	1	3	1	2	(8)	n/a
1974-75	2	1	3	1	2	22	9
<u>Stikine</u>							
1972-73	2	4	6	0	6	12	50
1973-74	0	1	1	0	1	(7)	n/a
1974-75	0	2	2	0	2	10	20
<u>Eastern Passage</u>							
1972-73	0	0	0	0	0	0	0
1973-74	2	1	3	0	3	(4)	n/a
1974-75	2	3	5	0	5	7	71
<u>Bradfield Canal and Cleveland Peninsula</u>							
1972-73	5	6	11	2	9	12	75
1973-74	9	4	13	2	11	(14)	n/a
1974-75	4	4	8	2	6	10	60
<u>Unspecified</u>							
1972-73	0	0	0	0	0	0	0
1973-74	0	0	0	0	0	(2)	n/a
1974-75	0	0	0	0	0	2	0
<u>TOTAL</u>							
1972-73	16	22	38	7	31	61	50.8
1973-74	20	12	32	8	24	66	36.4
1974-75	10	10	20	3	17	56	30.4

Note: Figures in parentheses indicate incomplete harvest reports.

Prepared by. David Zimmerman, Game Biologist II

## APPENDIX II

Mountain goat composition counts, Subunit 1B, 1959 through 1974.

Survey Date	Location	No. Kids	No. Adults	Kids/100 Adults	Survey Time (minutes)	Goats/hr.	Total Count
8/18/59	Patterson Glacier to North Baird Glacier	6	28	21	n/a	n/a	34
8/18/59	Patterson Glacier-LeConte Bay	23	61	38	n/a	n/a	84
9/21/59	LeConte Bay to Stikine River	21	58	36	n/a	n/a	79
9/22/60	Stikine R. to Patterson Glacier	79	184	43	180	124	374
9/1/60	Patterson Glacier to Farragut R.	21	90	23			
8/17/61	Farragut R. to Port Houghton	55	124	44	n/a	n/a	179
1962-1973	No counts conducted						
9/3/74	Stikine R. to LeConte Bay (Wilkes Range only)	15	28	54	195	25	79
9/3&4/74	LeConte Bay to Patterson Gl.	12	24	50			
9/10/74	Patterson Gl. to N. Baird Gl. (Preble Pk. only)	0	0	0	15	0	0
9/10/74	N. Baird Gl. to Farragut R. (Hamilton, Jefferson, Pierce, Hancock & Fulton Pks. only)	6	9	67	25	36	15
9/10/74	Farragut R. to Port Houghton	25	64	39	48	111	89
<u>Stikine River to Cleveland Peninsula</u>							
8/19/61	Aaron Creek to Unuk River	13	46	28	n/a	n/a	59
9/3/64	Aaron Creek to Unuk River	19	93	20	n/a	n/a	112
8/24/74	Wrangell Pk. to Andrew Creek	0	10	0	65	40	43
8/24/74	Andrew Creek to Goat Lake	4	29	14			

Prepared by: David Zimmerman, Game Biologist II



### APPENDIX III

Mountain goat composition summary by area and date for Subunit 1B.

Area	Date	No. Kids	No. Adults	Kids/100 Adults	Total Count
LeConte Bay to Patterson Gl.	8/22/60 9/3&4/74	49 12	118 24	42 50	167 36
North Baird Gl. to Farragut R.	9/1/60 9/10/74	20 6	76 9	26 67	96 15
Farragut R. to Port Houghton	8/17/61 9/10/74	55 25	124 64	44 39	179 89

Prepared by: Dave Zimmerman, Game Biologist II

## MOUNTAIN GOAT

### SURVEY-INVENTORY PROGRESS REPORT - 1974

Game Management Subunit 1C - Juneau

#### Seasons and Bag Limits

Aug. 1 - Dec. 31

Two goats

#### Harvest and Hunting Pressure

Harvest ticket returns for the 1974-75 goat season indicated that 173 hunters bagged 98 goats. Of that total harvest, 56 percent were males and 44 percent females. Harvest ticket information for the past three seasons is summarized in Appendix I. Overall hunting pressure during 1974 remained similar to 1973, however, total harvest declined 13 percent while days hunted per goat harvested increased 17 percent. Numbers of hunters bagging two goats increased to 16.8 percent while hunter success decreased to 39.9 percent.

During this reporting period particular attention was given to goat population numbers and hunter pressure adjacent to the Juneau road system. Studies in Montana (Chadwick 1973) and Alberta (Quaedvlieg letter to Chadwick 1973) indicate that there is a tendency to overharvest goat populations in areas with road systems while other areas remain underharvested. Overharvested populations have not responded to complete closures to hunting and thus a conservative approach has been recommended. A comparison of harvest statistics and available goat census data indicate an overharvest may be occurring in the Juneau area. A liberal population estimate of 250 animals with annual harvests of at least 30, excluding cripples and irretrievable goats, yields a harvest of at least 12 percent of the estimated population. Other areas in Subunit 1C appear to be underharvested or harvested on a sustained yield basis.

#### Composition and Productivity

Age composition data and population counts for Subunit 1C are shown in Appendix II. Areas surveyed in the last three years have shown a definite reduction in numbers compared to counts conducted in 1962. Some areas have shown downward trends in the past four years.

Results of studies conducted during this reporting period indicate census data derived from fixed-wing aircraft surveys may not provide trends for either total numbers or age composition (Ballard 1975a). Regardless, based upon the large number of surveys conducted for this subunit, all of which showed downward trends in total numbers, it is believed these data are probably representative of the current situation.

Reasons for the apparent decline in the goat populations are unknown. It is believed that severe winter weather has been primarily responsible since declines have occurred in other areas where hunting pressure appears to be insignificant, such as Unit 5 between 1971 and 1973 (Ballard 1975b). No doubt overharvests in localized areas, such as along the Juneau road system, have compounded the natural decline and could depress population recovery if current annual harvest levels persist.

## Management Summary and Conclusions

Harvest statistics derived from hunter report cards indicate hunting pressure was similar to that experienced in 1973 while the total harvest was 13 percent lower. Survey data on population numbers show downward trends.

Severe winter weather is thought to be the primary factor causing population declines, however increasing harvests of the lower goat populations along the Juneau road system are also thought to be a contributing factor.

A conservative approach should be taken toward harvests of goat populations with a tentative goal of 10 percent maximum harvest for each population. Research should be initiated to give more exact population estimates, information concerning optimum levels of annual harvest and major goat population limiting factors.

## Recommendations

The goat season in that portion of Subunit 1C draining into Lynn Canal, Stevens Passage and Taku Inlet between the Antler River and Taku Glacier should be shortened and the bag limit should be reduced to one goat. Since most (81.9%) of the hunting pressure in this area occurs during the months of August, September and December the season should be open from October 1 through November 30. Hopefully such a reduction in season length and bag limit will redistribute hunters into other areas and facilitate a recovery of the Juneau area goat populations. No changes in season length for the remainder of the subunit are recommended at this time, however, the bag limit should be reduced to one goat.

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# APPENDIX I

Game Management Subunit 1C Goat Harvest Statistics  
for 1972, 1973 and 1974 as derived from mandatory  
hunter report tickets. 1/

Area	Harvest Year	Chronology of Harvest by Month								Tot.	Total Number Reporting Hunters	Percent Hunter Success	Percent of all Hunters Taking Two Goats	Total Days Hunted	Days Hunted per Goat Harvested
		A	S	O	N	D	J	<u>2/</u>	Unk.						
Pt. Bishop to Gilkey River to Norris Glacier (Juneau area)	1972	12	6	1	1	2	0	3	25	33	69.7	6.1	117	4.7	
	1973	9	16	3	0	1	0	0	29	45	57.8	6.7	155	5.3	
	1974	10	10	3	3	2	0	1	29	32	65.6	25.0	96	3.3	
Chilkat Range and Berners Bay above Gilkey River	1972	4	2	5	3	0	1	0	15	64	23.4	0.0	146	9.7	
	1973	19	15	3	9	1	0	0	47	84	47.6	8.3	217	4.6	
	1974	6	6	2	3	3	0	3	23	71	23.9	8.5	214	9.3	
Norris Glacier to Cape Fanshaw	1972	2	2	1	2	2	16	2	27	36	55.6	19.4	108	4.0	
	1973	1	1	5	12	16	0	1	36	42	64.3	21.4	141	3.9	
	1974	4	1	2	8	28	0	3	46	58	53.4	25.9	187	4.1	
Unit 1C-Area Unknown	1972	0	0	0	2	0	0	1	3	16	-	-	62	-	
	1973	0	0	0	0	0	0	0	0	7	-	-	13	-	
	1974	0	0	0	0	0	0	0	0	12	-	-	38	-	
Totals	1972	18	10	7	6	4	16	5	70	149	40.3	6.7	433	6.2	
	1973	29	32	11	21	18	0	1	112	178	52.2	10.7	526	4.7	
	1974	20	17	7	14	33	0	7	98	173	39.9	16.8	535	5.5	

1/ Based upon the following statewide return rates: 1972 - 73.4%, 1973 - 71.7% and 1974 - 69.9%

2/ No January season during 1974.

Prepared by: Warren Ballard Game Biologist II and David Johnson Game Biologist III

## APPENDIX II

## Goat Numbers and Age Ratios obtained from Fixed-Wing Aircraft

	1961			1962			1971				1972				1973				1974			
	Ad.	Kids	Kid/Ad. Ratios	Ad.	Kids	Kid/Ad. Ratios	Ad.	Kids	Kid/Ad. Ratios	Goats/ hour	Ad.	Kids	Kid/Ad. Ratios	Goats/ hour	Ad.	Kids	Kid/Ad. Ratios	Goats/ hour	Ad.	Kids	Kid/Ad. Ratios	Goat/ hours
Port Houghton to Endicott Arm	178	74	42																			
Tracy Arm, Sweet-heart L. to Mt. Sundum <sup>1</sup> /				475	118	25													138	25	18	105
Taku R. to Salmon Cr.	107	23	21																			
Norris G. to Carlson Cr. <sup>2</sup> /				131	40	31													23	6	26	28
Carlson Cr. to Mendenhall G. <sup>3</sup> /															34	12	35	50	41	12	29	18
Salmon Cr. to Berners Bay	216	61	28																			
Mendenhall G. to Eagle G. <sup>3</sup> /				147	30	20					67	13	19	44	42	11	26	52	14	8	57	10
Antler R.							28	13	46	62					37	10	27	53	34	6	18	89
Teardrop L.											26	8	31	68	15	3	20	36				
William Henry Mtn.											61	7	12	82	41	11	27	78	35	9	26	59
Endicott R. to Sullivan R.							153	34	22	167									42	19	45	35

1 1962 survey boundry was Endicott Arm to Whiting River.

2 1962 survey boundry was Taku River to Carlson Creek.

3 1962 survey boundry was Mendenhall Glacier to Berners Bay.

Prepared by: Warren Ballard, GBII and David Johnson, GBIII.

## MOUNTAIN GOAT

### SURVEY-INVENTORY PROGRESS REPORT - 1974

Game Management Subunit 1D - Haines

#### Seasons and Bag Limits

Aug. 1 - Dec. 31

Two goats

#### Harvest and Hunting Pressure

The 1974 goat harvest of 52 animals was 40.9 percent less than in 1973 (Appendix I). Hunting pressure was down slightly from 114 to 102 hunters, while the number of days hunted to bag a goat increased from 4 to 6.

Harvest statistics for Subunit 1D were divided into two areas in order to compare hunting pressure and goat population trends (Appendix I). The Skagway area (Dayebas Creek to Ferebee River) showed an increase in hunting pressure from 1973 to 1974 while the harvest remained stable. This is in contrast to the Haines area (remainder of Subunit 1D) which showed a significant drop in hunting pressure and total harvest from 1973 to 1974. None of the harvest figures include crippling losses or irretrievable goats.

Studies in Montana (Chadwick 1973) and Alberta (Quaedulieg 1973 cited in Chadwick 1973) indicate that goat populations have declined in areas with relatively easy access due to overhunting. Their goat populations have not recovered even after several years of closed seasons. Goat hunting pressure in Subunit 1D has for the most part been concentrated adjacent to the Haines Highway, the Skagway road system and the White Pass-Yukon Railroad. Harvests along access corridors may be approaching a level which could prove detrimental to these populations. The proposed Skagway to Carcross road can be expected to result in increased hunting pressure since it traverses a significant amount of summer and winter goat range. During road construction the addition of 50 to 100 residents to Skagway's population is expected to significantly increase hunting pressure.

#### Composition and Productivity

Population counts on areas surveyed during the reporting period are shown in Appendix II. Data from these surveys exhibit variations similar to those discovered during replicate counts in Subunit 1C (Ballard 1975) and thus no trends in total numbers or age composition can be ascertained at this time. However, area residents and charter pilots are of the opinion that goat populations in the northern half of the subunit have declined substantially in the last 5 to 10 years. Reasons for the apparent decline are unknown but severe winter weather is thought to be an important factor.

## Management Summary and Conclusions

The 1974 Subunit 1D harvest of mountain goats declined significantly from that in 1973. The Skagway area showed a significant increase in hunting pressure while the harvest remained stable. In contrast, the Haines area showed a decline in hunting pressure and harvest.

Survey data collected from 1973 through June 1975 exhibited such large variations that no trends were detectable. However, local residents and pilots believe that a decline in the goat population has occurred.

The hunting season length and bag limit which have been in effect for a number of years for Subunit 1D were based upon few data. Data on hunting pressure collected since 1972 and aerial surveys made in 1974 and 1975 indicate overharvests may be occurring in areas adjacent to transportation corridors. The potential effects of the Skagway-Carcross road system through goat summer and winter habitat are unknown but significant increases in hunting pressure are expected if seasons and bag limits remain unchanged.

## Recommendations

A conservative approach should be taken toward harvests of goat populations with a tentative goal of 10 percent maximum harvest for each population. Research should be initiated to provide more exact population estimates and information concerning optimum levels of annual harvest.

The goat season in that portion of Subunit 1D lying east of Taiya Inlet and Taiya River between the Chilkoot Trail and White Pass and Yukon Railroad should be closed to goat hunting at least until completion of the Skagway-Carcross highway. During this time the effects of the road on goat carrying capacity should be evaluated. Ground counts should be conducted to gather data on population numbers.

The portion of Subunit 1D lying between Chilkoot Inlet and Katzechin River on the east and Chilkat Inlet and Chilkat River and Klehini River on the west should have a shortened hunting season running from September 15 through November 30. The bag limit should also be reduced to one goat. The shorter season and reduced bag limit will hopefully reduce the harvest in areas where goat numbers are low and/or where goat populations are easily accessible to hunting, therefore, redistributing hunting pressure to underharvested areas.

No changes in the hunting season for the remainder of the subunit are deemed necessary at this time, however, the bag limit should be reduced to one goat.

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# APPENDIX I

Subunit 1D Goat Harvest as derived from hunter harvest tickets. 1/

Area	Year	Chronology of Harvest								Total Number Reporting Hunters	Percent Hunter Success	Percent all Hunters Taking Two Goats	Total Days Hunted	Days Hunted Per Goat Harvested
		A	S	O	N	D	J	2/	Unk.					
Skagway (Dayebas Creek to Ferebee River)	1972	6	4	0	0	2	2	0	14	24	45.8	12.5	141	10.1
	1973	2	5	4	5	3	0	0	19	20	65.8	30.0	71	3.7
	1974	6	4	4	1	5	0	0	20	36	50.0	5.6	134	6.7
Haines (Remainder of Subunit)	1972	7	10	5	5	2	2	7	38	79	40.5	7.6	275	7.2
	1973	24	20	9	1	11	0	3	68	86	64.0	15.1	263	3.9
	1974	20	4	3	2	3	0	0	32	66	40.9	7.6	180	5.6
1D Unknown	1972	0	0	0	0	0	0	0	0	8	NA	NA	34	NA
	1973	0	1	0	0	0	0	0	1	1	NA	NA	20	NA
	1974	0	0	0	0	0	0	0	0	0	NA	NA	0	NA
Total Unit 1D	1972	13	14	5	5	4	4	7	52	111	38.7	8.1	450	8.7
	1973	26	26	13	6	14	0	3	88	114	60.5	16.7	354	4.0
	1974	26	8	7	3	8	0	0	52	102	44.1	6.9	314	6.0

1/ Statewide return of harvest tickets: 1972 - 73.4%, 1973 - 71.7% and 1974 - 69.9%.

2/ No January season in 1974.

Prepared by: Warren Ballard Game Biologist II and David Johnson Game Biologist III

# APPENDIX II

Goat numbers and age ratios obtained from fixed-wing aircraft surveys of selected mountains in Subunit 1D.

Area Surveyed	Date	No. Adults	No. Kids	Total Goats	Kids/100 Adults	Total Survey Time (mins.)	Goats Per Hour
<u>Haines Area</u>							
I Davidson Glacier to McCellan Flats	9/3-5/65	-	-	65	-	20	
	9/18/73	38	4	42	11	40	63.0
	8/16/74	39	3	42	8	35	72.0
II Henry Clay Mtn.	9/19/73	60	21	81	35	60	81.0
	8/16/74	50	14	64	28	78	49.2
III Takshanuk Mtns.	9/5/65	-	-	157	-	55	
	3/15/75	25	8	33	32	168	12.0
	3/25/75	-	-	100	-	110	54.6
<u>Skagway Area</u>							
I Dayebas Creek to Nahku Bay	8/13/74	9	2	11	22	165	4.2
II Kasidaya Creek* to Canadian Border	8/20/74	22	2	24	9	139	10.2
III Warm Pass Valley and AB-Mt. Cleveland to Canadian Border**	3/15/75	22	2	24	9	-	
	5/22/75	-	-	17	-	-	
	6/14/75	37	4	41	11	75	33.0

\* Same as Skagway area I but excludes AB-Mt.-Cleveland Mtns.

\*\*Includes portions of Skagway areas I and II

Prepared by: Warren Ballard Game Biologist II and David Johnson Game Biologist III

## MOUNTAIN GOAT

### SURVEY-INVENTORY PROGRESS REPORT - 1974

Game Management Unit 4 - Admiralty, Baranof, Chichagof and adjacent islands

#### Seasons and Bag Limits

Chichagof Island only	No open season	
Remainder of Unit 4	Aug. 1 - Dec. 31	Two goats

#### Harvest and Hunting Pressure

Ten goats were reported harvested during the 1974 season (7 males and 3 females) by nine successful hunters. These animals were all taken during the first two months of the season. A total of 39 hunters reported hunting in Unit 4 during 1974. All reporting hunters were Alaska residents. One hunter reported taking the legal limit of two goats.

Incidental contacts with Sitka residents suggested the inclement weather which prevailed during most of the season caused them not to hunt goats. However, the kill and hunter effort is just about average for past seasons.

Two successful and seven unsuccessful hunters utilized aircraft to get to their hunting areas. Six successful and 10 unsuccessful hunters used boats. One successful and one unsuccessful hunter walked from the road system. Thirteen unsuccessful hunters did not give methods of transportation on their harvest reports.

#### Composition and Productivity

No data were gathered during this reporting period. Historic goat count data for Unit 4 are given in Appendix I.

#### Management Summary and Conclusions

The Unit 4 goat population receives adequate protection from sport hunting through the inhospitable terrain it occupies and the adverse weather which predominates in Southeastern Alaska. In an attempt to project a more favorable trophy image of the mountain goat the Alaska Board of Fish and Game at its April 1975 meeting adopted a department staff proposal reducing the bag limit from two goats to one. That regulation became effective for the 1975 regulatory year.

#### Recommendations

Aerial surveys should be conducted during the 1975 field season to monitor the Baranof Island goat population. An aerial survey should also be conducted to determine whether or not goats from the 1953 transplant are present on Chichagof Island.

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# APPENDIX I

Historic goat survey data - Game Management Unit 4.

Date	No. Kids	No. Adults	Kids/100 Adults	Total Goats	Goats/ Hour	Source
1954	41	222	18.5	263	-	USFWS
9/1/60	26	90	29.0	116	38.4	Merriam - ADF&G
9/11/61	20	98	20.0	118	-	Merriam - ADF&G
1962-69	No data available					
9/3/70	15	139	10.8	154	-	Courtright - ADF&G
9/29/70*	13	108	12.0	121	-	Courtright - ADF&G
9/12&13/73	50	203	24.6	253	36.1	Johnson - ADF&G

\* Incomplete coverage

## MOUNTAIN GOAT

### SURVEY-INVENTORY PROGRESS REPORT - 1974

Game Management Unit 5 - Yakutat

#### Seasons and Bag Limits

Aug. 1 - Dec. 31

Two goats

#### Harvest and Hunting Pressure

Mandatory hunter harvest ticket returns indicated that 15 of 19 hunters bagged a goat during the 1974-75 season. Harvest data from 1972-73 through 1974-75 are summarized below.

Year	Harvest				No. Hunters Taking two Goats	Total No. Hunters Reporting	Percent Hunter Success	Percent Ticket Response	1/
	Males	Females	Unk.	Total					
72-73	19	13	1	33	3	55	54.4	73.4	
73-74	10	3	-	13	3	32	31.3	71.7	
74-75	14	5	-	19	4	19	78.9	69.9	

1/ Statewide response rate

Hunting pressure for the 1974-75 season was considerably less than that experienced in previous years. The decline coincides with the closure of the moose season on the Yakutat Forelands which in previous years made possible a mixed species bag.

#### Composition and Productivity

A summary of Unit 5 goat surveys is contained in Appendix I. If these data are representative of goat population trends they indicate that a decline has occurred since 1971-72. Reasons for the decline are not known, however, severe winter weather is thought to be a major factor. Hunting pressure in previous seasons has been insignificant in nearly all areas and thus cannot be considered important to this population decline.

#### Management Summary and Recommendations

Survey data indicate the goat population in Unit 5 has declined since 1971-72 and severe winter weather is thought to be the major contributing factor. Hunting pressure and harvest for the past three seasons have been insignificant in relation to the total number of goats available.

No changes in the season length are necessary at this time, however, the bag limit should be reduced to one goat.

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# APPENDIX I

Summary of Unit 5 mountain goat age composition and  
population count surveys from 1971 through 1975.

Area	Date	No. Adults	No. Kids	Total No.	Kid/100 Adults	Survey Vehicle	Survey Time (min.)
Brabazon Range	10/5/71	213	70	283	32.8	Cessna 180	-
	9/16/73	54	9	63	16.7	Supercub	215
	10/17/74	112	30	142	26.8	Cessna 180	92
	5/14/75	-	-	92	-	Cessna 180	135
East Nunatak Fiord	9/24/73	35	7	42	20.0	Supercub	190
	10/17/74	5	2	7	40.0	Cessna 180	38
Chaix Hills	10/20/72	32	15	47	46.9	Cessna 180	28
	10/18/74	17	7	24	41.2	Cessna 180	40
Karr Hills	10/20/72	31	15	46	48.4	Cessna 180	8
	10/18/74	22	13	35	59.1	Cessna 180	40

Prepared by: Warren Ballard, Game Biologist II and David Johnson, Game Biologist III.

## MOUNTAIN GOAT

### SURVEY-INVENTORY PROGRESS REPORT - 1974

Game Management Unit 6 - Prince William Sound

#### Season and Bag Limits

August 1 - January 31

2 goats

#### Harvest and Hunting Pressure

The Unit 6 mountain goat harvest during the 1974-75 season was 125 goats; this is comparable to the 1973-74 harvest of 138 goats. Males comprised 70 percent of the harvest.

The area from Valdez Arm to the Copper River received most of the hunting pressure and accounted for nearly 40 percent of the harvest (Appendix I). The areas east of the Copper River received lighter pressure but hunter success was good.

Chronology of the harvest (Appendix II) revealed that better than 70 percent of the harvest occurred during the first half of the season.

Resident hunters accounted for 64 percent of the harvest and 15 (6.3 percent) of the hunters took their limit of 2 goats (Appendix III).

#### Composition and Productivity

Two mountain goat surveys were flown during 1974 (Appendix IV), primarily to determine goat distribution and abundance. Kids comprised nearly 20 percent of the population. This was comparable to the 1973 survey data.

#### Management Summary and Conclusions

The IBM harvest report data for the 1973-74 and 1974-75 seasons (Appendix V) provide a basic harvest picture for the present season and bag limit. Comparison of these data does not indicate any adverse affects.

Noteworthy is the unexplainable reduction of hunting pressure unit wide (Appendix V) and especially in the Valdez area (pipe line terminus). During the 1974-75 season 16 hunters took 4 goats from the Valdez area whereas during the previous season 42 hunters took 12 goats.

Recommendations

Retain the present season and bag limit.

PREPARED BY:

Julius Reynolds  
Game Biologist III

SUBMITTED BY:

John S. Vania  
Regional Management Coordinator



# APPENDIX I

## MT. GOAT - UNIT 6

### Sex Composition of Harvest by Area

<u>Code</u>	<u>Area</u>	<u>Males</u>	<u>Females</u>	<u>Unk.</u>	<u>Total Harvest</u>	<u>Number Hunters*</u>
6-01	East of Suckling Hills to Icy Bay	11	7	1	19	26
6-02	Bering Lake-Berg Lake Area	12	5	0	17	18
6-03	Suckling Hills	0	0	0	0	0
6-04	Ragged Mountains	9	6	0	15	23
6-05	Goat Mountain	3	2	0	5	12
6-06	Rude River to Copper River	20	4	0	24	46
6-07	Valdez Arm to Rude River	20	5	0	25	42
6-08	Valdez Area	4	0	0	4	16
6-09	Port Wells-Columbia Glacier	0	0	0	0	1
6-10	Unit 6 - Unknown	4	2	0	6	42
6-11	Whittier-Port Wells	0	0	0	0	5
6-12	Kings Bay-Puget Bay	5	4	1	10	22
	Unit 6	88	35	2	125	253
		(70.4%)	(28.0%)	(1.6%)	(100.0%)	

\* Hunters (15) that took two goats are counted twice.

PREPARED BY: Julius Reynolds, Game Biologist III

## APPENDIX II

### MT. GOAT - UNIT 6

#### Chronology of Harvest 1974 - 75

<u>Year</u>	<u>Month</u>	<u>Number</u>	<u>Percent</u>
1974	August	37	29.6
	September	25	20.0
	October	29	23.2
	November	13	10.4
	December	8	6.4
1975	January	9	7.2
	Unknown	4	3.2
		<hr/>	<hr/>
1974 - 75		125	100.0

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## APPENDIX III

### MT. GOAT - UNIT 6

#### Goat Hunter Distribution of Success

and

#### Goat Harvest by Residency of Successful Hunters

1974 - 1975

		<u>Number</u>	<u>Percent</u>		<u>Number Goats</u>	<u>Percent</u>
Hunters Killed	0	128	53.8	Resident	80	64.0
Hunters Killed	1	95	39.9	Non-Resident	39	31.2
Hunters Killed	2	15	6.3	Unknown	6	4.8
<hr/>						
Total Hunters		238	100.0	Total	125	100.0

46.2% Hunter Success

PREPARED BY: Julius Reynolds, Game Biologist III

# APPENDIX IV

## MT. GOAT - UNIT 6

### Composition and Productivity Surveys

<u>Area</u>	<u>Date</u>	<u>Adults</u>	<u>Kids</u>	<u>Total</u>	<u>Kids per 100 Adults</u>	<u>Percent kids in Total Population</u>
Valdez Arm	8/16/74	50	12	62	24.0	19.4
Caribou Mt.-Berg Lake	8/29/74	75	19	94	25.3	20.2

# APPENDIX V

## MT. GOAT - UNIT 6

### IBM Harvest Report Data

<u>Item</u>	<u>1973-74</u>	<u>1974-75</u>
1. Total Reported Harvest	138	125
2. % Males in Harvest	67.4	70.4
3. Total Hunters	280	238
4. % Hunter Success	41.1	46.2
5. % Hunters taking 2 goats	8.2	6.3
6. % Harvest: Aug, Sept., Oct.	68.2	72.8
7. Valdez Arm to Copper River		
% Harvest	42.8	39.2
% Hunters	38.6	34.8

PREPARED BY: Julius Reynolds , Game Biologist III

## MOUNTAIN GOAT

### SURVEY-INVENTORY PROGRESS REPORT - 1974

#### Game Management Unit 7 - Seward

##### Seasons and Bag Limits

Unit 7, that portion draining into salt water south and east of Fourth of July Creek.	Aug. 10-Dec. 31*	Two goats
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Unit 7, that portion west of a line along Sixmile Creek from its mouth near Hope to the Seward Highway, along 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	
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Remainder of Unit 7	Aug. 10-Nov. 15*	One goat
---------------------	------------------	----------

\* The Unit 7 season was shortened by emergency order to close August 31 (except that portion draining into the Gulf of Alaska west of Bear Glacier including the drainages into Bear Glacier from the west which remained open through December 31).

##### Harvest and Hunting Pressure

In 1974, 256 hunters reported harvesting 64 goats (25% success ratio) in Unit 7 (Appendix I). The emergency order shortening the season for most of the accessible portion of Unit 7 was effective in reducing the harvest by 62 percent from 1973.

Two hundred and thirty-five residents harvested 53 goats for a resident success rate of 26 percent. Twenty-one nonresidents took 11 goats for a success rate of 52 percent. Residents accounted for 83 percent of the harvest.

Successful hunters averaged 2.7 days hunting while unsuccessful hunters averaged 3.5 days. All hunters combined averaged 3.3 days hunting.

Airplane (22%), boat (33%) and highway vehicle (43%) accounted for the modes of transportation for 98 percent of the successful hunters specifying transportation means on their harvest reports. These same three modes accounted for the transportation means of 94 percent of unsuccessful hunters. For all hunters combined, transportation means were: airplane (18%), boat (30%), motorbike (1%), offroad vehicle (3%) and highway vehicle (48%).

Comparing the 1974 harvest to the minimum goat population by count area (as determined by the most recent survey) the shortened 1974 season appears to have corrected the overharvest occurring in those count areas hardest hit in 1973 (Appendix II). Of eight count areas cited in the 1973 Survey-Inventory Report as having sustained harvests of more than 40 percent of the number of kids observed in each area, only count area 10 continued to sustain a harvest in excess of 40 percent. Count area 2, also one of the eight overharvested areas in 1973, sustained a harvest of 40 percent of the observed number of kids.

Appendix IV presents the chronology of the harvest. Fifteen percent of the harvest occurred after September 1, illustrating the relative inaccessibility of those areas which remained open through December 31.

#### Composition and Productivity

Age composition counts were conducted in 11 count areas in 1974 (Appendix III). Nine of the 11 areas were also surveyed in the 1968 baseline survey. In these 9 areas 393 goats were observed in 1974 compared to 572 in 1968, a difference of 31 percent. Seven of the 9 areas had fewer goats observed in 1974 than in 1968.

Count areas 14, 15 and 20, closed to hunting since 1971, were surveyed in 1971 with 0, 12 and 10 goats were observed, respectively. In 1974 the numbers observed were 2, 15 and 18, respectively.

Productivity for the 11 areas surveyed in 1974 averaged 27 kids per 100 adults compared to an average of 34 kids per 100 adults for all areas surveyed in 1968 (Appendix III).

In count areas 2, 4 and 10 where the harvest was 40 percent or more of the number of kids observed on the most recent survey (Appendix II), two (2, 10) were surveyed in 1974. These had the lowest productivity of the 11 areas surveyed this year. The 23 kids/100 adults average for these two areas may be compared to the 28 kids/100 adults average for the other 9 areas counted in 1974.

Two of the 3 trend count areas (5 and 8) were surveyed in 1974 (Appendix V). Both numbers and productivity increased in these two areas from the last survey in 1972. Both of these areas were only moderately harvested at 27 percent and 24 percent of the number of kids observed (Appendix II). It is interesting to compare these two areas with the decreased numbers and productivity of heavily harvested areas 2 and 10 above.

#### Management Summary and Conclusions

The rather drastic reduction in season length for most of easily accessible Unit 7 produced some of the desired effects by reducing the harvest 62 percent from 1973 and the number of hunters afield by 49 percent. Even so, hunter success continued to decline. The general shortening of the season length did not, however, relieve pressure sufficiently on some of the more popular areas which were overharvested in 1973. Direct control of access may be the only way to sufficiently limit the harvest in some of these areas.

The significantly shortened season in Unit 7 was probably responsible for the greatest portion of the 54 percent increase in Unit 15 goat hunters and the 27 percent increase in harvest.

#### Recommendations

The 1974 season shortening was only a partial success in view of its objectives. It appears permits for a number of goat subunits with appropriate seasons may be the only means to regulate harvest in easily accessible areas without undue restrictions on lightly hunted populations.

It is recommended that goat hunting in count areas 1, 2, 6 and 10 be placed on a permit system.

PREPARED BY:

Spencer Linderman  
Game Biologist II

SUBMITTED BY:

John S. Vania  
Regional Management Coordinator

Mountain Goat - GMU 7 - Seward

Appendix I

Goat Harvest Unit 7 Total

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<u>Year</u>	<u>Males</u>	<u>%</u>	<u>Females</u>	<u>%</u>	<u>Unk.</u>	<u>%</u>	<u>Total</u>	<u>Hunters</u>	<u>Percent Success</u>
1969 <sup>1</sup>	52	67	24	31	2	3	78	-	-
1972 <sup>2</sup>	68	54	57	45	2	2	127	305	42
1973	93	56	71	43	2	1	166	501	33
1974	36	56	25	39	3	5	64	256	25

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<sup>1</sup> Based upon multi-species questionnaire on harvest report packet; believed to be low total.

<sup>2</sup> Harvest tickets and reports for goats were initiated July 1, 1972. Harvest questionnaires were discontinued in 1971 and hunter response so poor that 1970 data were not tabulated.

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Prepared by: Paul A. LeRoux, Game Biologist III and Spencer Linderman, Game Biologist II

# Mountain Goat - GMU 7 - Seward

## Appendix II

Reported harvest by year, date of latest surveys, number of adults and kids observed by count area.

Count Area	Reported Harvest		Goats Observed		Survey Date	1974 harvest as % of kids Observed
	1973	1974	Adults	Kids		
1	0	4	0	0	1974	-
2	7	2	22	5	1974	40
3	4	5	62	18	1973	28
4	2	7	73	13	1972	54
5	15	9	84	33	1974	27
6	12	2	20	6	1974	33
7	10	4	54	19	1973	21
8	64	10	115	41	1974	24
9	6	1	46	16	1972	6
10	6	5	34	8	1974	63
11	3	4	29	11	1968	36
12 <sup>1</sup>	1	0	44	13	1973	0
13 <sup>1</sup>	3	0	0	0	1974	- <sup>2</sup>
14 <sup>1</sup>	0	0	2	0	1974	0
15 <sup>1</sup>	1	0	11	4	1974	0
17	2	9	72	30	1974	30
19	1	0	8	1	1968	0
20 <sup>1</sup>	0	0	5	3	1974	0
26	1	0	12	4	1974	0
27	2	1	61	26	1969	4
28	2	0	23	3	1973	0
30	2	3	Unsurveyed		-	-
31	0	0	Unsurveyed		-	-
Unk.	12	1	-	-	-	-
Total	156	67	777	254		

<sup>1</sup> No open season

<sup>2</sup> This area has been surveyed annually since 1968 and no goats have been observed. Goats reported killed in this area are most likely misreported.

Prepared by: Spencer Linderman, Game Biologist II



Mountain Goat - GMU 7 - Seward

Appendix III

Observed goat numbers and percent kids by count area.

Count Area	Total Goats							Kids/100 adults						
	1968	1969	1970	1971	1972	1973	1974	1968	1969	1970	1971	1972	1973	1974
1	69					14	0	44					17	0
2	82					76	27	37					36	23
3	69					80		38					29	
4	207	144	155	90	86			35	28	27	27	18		
5	60	120	105	64	80		117	22	38	24	31	38		39
6	48			33	36		26				38	29		30
7	62					73		35					35	
8	170		217	147	150		156	38		22	20	25		36
9	58				62			29				35		
10	84		54		67		42	33			35	26		23
11														
12	35					57		35					30	
13														
14	32			0		1	2	46			0		0	0
15	6			12		13	15	50			20		30	36
17				161			102				28			42
19														
20	21			10	9	10	8	17			11	12	43	60
26							16							33
27														
28						26							13	
30														
31														
							Average	34						27

Prepared by: Spencer Linderman, Game Biologist II

# MOUNTAIN GOAT - GMU 7 - Seward

## Appendix IV

Chronology of the 1974 Goat harvest by 7 day period beginning August 1<sup>1</sup>.

Period	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>	<u>17</u>	<u>18</u>	<u>19</u>	<u>20</u>	<u>21</u>	<u>23</u>	<u>24</u>	Unknown	Total
Total Harvest	-	27	12	6	6	1	2	1	2	-	2	-	-	-	-	-	-	-	-	-	-	1	-	4	64
Males	-	18	9	1	3	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-	1	-	2	36
Females	-	9	3	4	3	1	2	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1	25

<sup>1</sup> The season was shortened by emergency order and closed August 31 in all of Unit 7 except that portion draining into the Gulf of Alaska west of Bear Glacier.

Prepared by: Spencer Linderman, Game Biologist II

## Appendix V

Trend area goat numbers and age ratios, 1968-74.

Year	Count area 4 Trend area 1		Count area 5 Trend area 2		Count area 8 Trend area 3		Combined Trend areas 1, 2 & 3	
	Kids/ 100 Ad	Total Animals	Kids/ 100 Ad	Total Animals	Kids/ 100 Ad	Total Animals	Kids/ 100 Ad	Total Animal
1968	35.2	207	22.5	60	38.2	170	34.5	437
1969	28.5	144	37.8	120	*	*	32.3	246
1970	27.0	155	23.5	105	22.3	217	28.5	476
1971	26.8	90	30.6	64	19.5	147	23.9	301
1972	17.8	86	37.9	80	25.0	150	25.9	316
1973	Not Surveyed		Not Surveyed		Not Surveyed		-	-
1974	Not Surveyed		39.3	117	35.7	156	37.2	199

Prepared by: Paul A. LeRoux, Game Biologist III and Spencer Linderman, Game Biologist II

## MOUNTAIN GOAT

### SURVEY-INVENTORY PROGRESS REPORT - 1974

#### Game Management Unit 8 - Kodiak and Adjacent Islands

##### Seasons and Bag Limits

Sept. 1 - Oct. 30

15 goats by permit only;  
conditions of the hunt to be  
described by Commissioner's  
announcement.

##### Harvest and Hunting Pressure

Sixteen goats were reported killed by hunters in 1974 (Appendix I). Composition of the harvest was ten females, five males and one unrecovered animal whose sex was undetermined. Fifty-eight hunting permits were issued, almost twice the number issued in 1973 (Appendix II). Only 28 of the 58 permit holders reporting actually hunted (Appendix I). Hunter success was 57 percent. Seven kills were made in September and nine in October. The season was closed by field announcement on October 14 after 15 animals were reported killed. An additional kill was reported after the closure.

Ten successful hunters used charter aircraft and six used boats for transportation. Fifteen successful hunters based their hunts in Hidden Basin and one hunter made his kill from a Terror Lake camp.

Hunting was not permitted in the northeastern part of Kodiak Island east of a line from Saltery Creek north to Crag Point. Goats occur here only occasionally, but there is some potential for roadside viewing should they become established.

Ages of the goats were determined by horn ring counts and incisor replacement. Eight of ten females harvested were 3.5 years or older and the average age of the ten females was 4.7 years. Five males averaged 3.5 years. The oldest female taken was 7.5 years old and the oldest male 8.5 years.

##### Composition and Productivity

Aerial surveys were made on August 18 and 19, covering most of the known or suspected goat range north of Kiliuda Bay. A total of 49 goats were seen on August 18, but none were located on August 19 (Appendix III). Twelve kids were recorded for a kid/adult ratio of 32.4/100. Although the total number of goats observed in 1974 was less than half the number recorded in 1973, productivity as indicated by kid/adult ratios was comparable to previous years. Unusually warm temperatures may have confined goats to shaded areas or snow patches where they were less

visible during the survey. Another factor which affected the count was the inexperience of the pilot who had not flown similar surveys previously. At least one group of animals known to inhabit the area south of Crown Mountain was not located. A goat hunter observed a group of 30 goats, including 12 kids, in that area on September 1.

Snow conditions during the 1973-1974 winter were apparently not severe enough to produce significant mortality from starvation or related causes. A hunter did observe a weak appearing adult goat along the shore of Hidden Basin during late April. A reconnaissance of that part of the wintering area during May did not confirm any mortality, however.

#### Management Summary and Recommendations

The number of goats observed during aerial surveys was lower than expected, but productivity appears similar to that of previous years. The goat population has maintained a general upward trend since its introduction. The results of the 1974 survey are insufficient evidence to indicate the trend has changed. Females comprised well over half the kill in 1974. The harvest was localized in a small area accessible from Hidden Basin. At the current harvest level the predominance of females is probably not limiting the population, but a more balanced harvest sex ratio is desirable.

It is recommended that hunters be encouraged to make every effort to select males and to avoid taking females accompanied by kids.

PREPARED BY:

Roger B. Smith  
Game Biologist III

SUBMITTED BY:

John S. Vania  
Regional Management Coordinator

# APPENDIX I

## Unit 8 - Mountain Goat Harvest Statistics, 1974\*

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	<u>No.</u>	<u>Percent</u>
Permits issued	58	100%
Permit holders reporting	55	95%
Reporting permit holders who hunted	28	51%
Successful hunters	16	57%
Mean days hunted per successful hunter	2.5	--
Males harvested	5	31%
Females harvested	10	63%
Unknown sex harvested	1	6%
Total harvest	16	100%
Mean no. goats sighted by hunters	23.2	--

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\*From hunter interviews

PREPARED BY: Roger B. Smith, Game Biologist III

May 28, 1975

## APPENDIX II

## UNIT 8 - MOUNTAIN GOAT HARVEST STATISTICS, 1968 - 1974

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 (3 M, 3 F)	10 goats by permit; public drawing
1969	Sept. 1-30	10*	11	55%	6 (5 M, 1 F)	10 goats by permit; public drawing
1970	Sept. 1-30	15	8	63%	5 (4 F, 1 UKN)	15 goats by permit; public drawing
1971	Sept. 1 - Oct. 30	25	8	50%	4 (1 M, 3 F)	15 goats by permit; public drawing
1972	Sept. 1 - Oct. 30	40	21	48%	10 (3 M, 4 F, 3 UKN)	15 goats by permit; To be closed by field announcemen
1973	Sept. 1 - Oct. 30	32	26	58%	15 (7 M, 8 F)	15 goats by permit; To be closed by field announcemen
1974	Sept. 1 - Oct. 30	58	28	57%	16 (5 M, 10 F, 1 UKN)	15 goats by permit; To be closed by field announcemen

\*5 additional alternate permits issued

PREPARED BY: Roger B. Smith, Game Biologist III  
May 28, 1975

## APPENDIX III

## Unit 8 - Mountain Goat Sex and Age Composition Counts, 1952-1974

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
9-18-1973	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

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

PREPARED BY: Roger B. Smith, Game Biologist III  
May 28, 1975

## MOUNTAIN GOAT

### SURVEY-INVENTORY PROGRESS REPORT - 1974

#### Game Management Unit 14 - Palmer

##### Seasons and Bag Limits

Subunit 14A	Sept. 21 - Nov. 15	One goat
Subunit 14B	Aug. 10 - Nov 15	
Subunit 14C within Chugach State Park	No Open Season	
Remainder Subunit 14C	Sept. 3 - Nov. 15	

##### Harvest and Hunting Pressure

Harvest and hunting pressure on goats in Game Management Unit 14 were the lightest since collection of these data began; only 3 goats were reported to have been harvested by 36 hunters in Unit 14 during 1974 (Appendix I). Two of the goats were males and one was a female (Appendix II). In 1972 and 1973, 6 and 11 goats, respectively, were harvested in this unit.

Hunter success ratios rose from 12 percent in 1972 to 23 percent in 1973, then decreased to 8.3 percent in 1974.

In 1973 season lengths were 98 days in both 14A and 14B. Season lengths were curtailed in Subunit 14A by 42 days in 1974. Subunit 14B season length remained unchanged, but the Subunit 14C season length was reduced by 24 days in 1974.

Chronology of harvest data reveal that 2 of the 3 goats harvested were taken in the period September 16-September 30, while the remaining goat was taken in the October 16-October 31 period. In 1973, 45.5 percent of the goats were harvested during the period September 9-September 12, but none were taken during that period in 1974.

Successful goat hunters in 1974 hunted an average of 2.5 days to harvest a goat. One of the three successful hunters did not indicate the time period he hunted and was not included in the computation. Unsuccessful hunters hunted an average of 3.7 days. Five unsuccessful hunters did not indicate the time period they hunted and were not included in the computation.

##### Composition and Productivity

An initial comprehensive mountain goat composition survey was flown in the goat habitat of Subunits 14A (north of the Matanuska River)



and 14B in 1974. In 1973, the portion of Subunit 14A south of the Matanuska River was flown (Mountain Goat Survey-Inventory Progress Report 1973).

In 1974 a total of 28 goats were seen, including 23 adults and 5 kids (Appendix III). Only one adult goat was seen in Subunit 14A north of the Matanuska River. The kid/adult ratio in Subunit 14B was 22.7 kids/100 adults or 18.5 percent kids in the population. There were no previously recorded goat surveys in this area.

#### Management Summary and Conclusions

Hunter pressure has been steadily decreasing in Unit 14. In 1972, 1973 and 1974, 50, 47 and 36 goat hunters, respectively, were active in Unit 14. That portion of Subunit 14C within Chugach State Park is continuously closed to goat hunting. The season in that portion of Subunit 14C outside the park opens September 3 and continues until November 15, but access and good weather are limited. It has been noted that goat populations in the huntable portion of 14C may move in a southerly direction, which would place them in inaccessible areas. In Subunit 14C the harvest decreased from 6 in 1973 to 1 in 1974.

#### Recommendations

The season on goats in Subunit 14A north of the Matanuska River should be closed. An effort should be made to test the validity of goat harvest reports.

PREPARED BY:

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SUBMITTED BY:

John S. Vania  
Regional Management Coordinator

Appendix I. Goat Hunter Success in Alaska's Game Management Unit 14, 1972-74.

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	<u>1972</u>	<u>1973</u>	<u>1974</u>
Total Hunters:	50	47	36
Successful Hunters	6 - 12%	11 - 23%	3 - 8%
Unsuccessful Hunters	44 - 88%	36 - 77%	33 - 92%
Mean Days Hunted*:			
Successful Hunters	2.7 Days (6)	2.6 Days (11)	2.5 Days (2)**
Unsuccessful Hunters	4.2 Days (41)	3.6 Days (29)	3.7 Days (28)**

\* Sample size in parentheses.

\*\* One successful and five unsuccessful hunters did not specify days hunted.

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Appendix II. Mountain Goat Harvest by Subunit and Sex in Alaska's Game Management Unit 14, 1972-1974.

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<u>Subunit</u>	<u>Year</u>	<u>Male (%)</u>		<u>Female (%)</u>		<u>Total</u>
14A	1972	0	(0.0%)	1	(100.0%)	1
	1973	2	(40.0%)	3	(60.0%)	5
	1974	1	(50.0%)	1	(50.0%)	2
14B	1972	1	(100.0%)	0	(0.0%)	1
	1973	0	(0.0%)	0	(0.0%)	0
	1974	0	(0.0%)	0	(0.0%)	0
14C	1972	3	(75.0%)	1	(25.0%)	4
	1973	2	(33.3%)	4	(66.7%)	6
	1974	1	(100.0%)	0	(0.0%)	1
Total Unit 14	1972	4	(66.7%)	2	(33.3%)	6
	1973	4	(36.4%)	7	(63.6%)	11
	1974	2	(66.7%)	1	(33.3%)	3

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PREPARED BY: Jack C. Didrickson, Game Biologist III

Appendix III. Goat Age Composition and Ratios in Alaska's Game Management Subunits 14A and 14B, 1974.

<u>Area</u>	<u>Date</u>	<u>Adults (Includes Sub-Adults)</u>	<u>Kids</u>	<u>Total</u>	<u>Kids/100 Adults</u>	<u>Percent Kids in Total Population</u>
<u>14A</u>						
G: West of Kings River and South of Kashwitna River.	6/24/74	1	0	1	0.0	0.0%
H: Kings River to Chickaloon River.	6/24/74	0	0	0	---	----
Total 14A		1	0	1	0.0	0.0%
<u>14B</u>						
I: Kashwitna River to Sheep River.	6/24-25/74	13	4	17	30.8	23.5%
J: Sheep River to Iron Creek, Talkeetna River above Yellow Jacket Creek.	6/25/74	9	1	10	11.1	10.0%
K: Talkeetna River to Iron Creek	6/25/74	0	0	0	---	----
Total 14B		22	5	27	22.7	18.5%

PREPARED BY: Jack C. Didrickson, Game Biologist III

## MOUNTAIN GOAT

### SURVEY-INVENTORY PROGRESS REPORT - 1974

Game Management Unit 15 - Western Kenai Peninsula

#### Seasons and Bag Limits

Aug. 10 - Dec. 31

One Goat

#### Harvest and Hunting Pressure

The reported harvest of goats in Unit 15 was 99 in 1974 (Appendix I). The harvest was up 26.9 percent over the 1973 harvest of 78 and up 3.1 percent from the 1972 harvest of 96. The 1974 harvest by subunit was: 15 (A) 0; 15 (B) 9, and 15 (C) 83. Seven reported kills had no location of kill given (Appendix II).

In 1974 males comprised 56.6 percent (56/99) of the harvest, females 41.4 percent (41/99) and unspecified sex 2.0 percent (2/99). Hunter success was 44.6 percent in 1974 compared to 45.2 percent in 1973. Hunters afield increased 54.2 percent from 144 in 1973 to 222 in 1974.

The reported harvest in count areas 23, 24 and 29 ranged from 10 to 13 percent of the number of goats observed on the most recent survey. In count areas 21 and 22 the harvest is high in proportion to the number of goats observed on surveys.

#### Composition and Productivity

Count area 16 was surveyed in 1974 (Appendix IV). The number of goats observed was 29 compared to 30 in 1973. The ratio of kids to adults increased from 25 per 100 in 1973 to 45 per 100 in 1974.

#### Management Summary and Conclusions

Although the 1974 reported harvest is the highest on record and was up 26.9 percent over 1973, it was only up 3.1 percent from the 1972 harvest, and the kill was better distributed over the Unit. No area appears to be experiencing an excessive harvest, and as long as no adverse change in the distribution of the harvest occurs there is no reason to believe that this level of harvest cannot be sustained.

The level of harvest in count areas 23, 24 and 29 is high enough that these areas should be surveyed on an annual basis and the harvest watched closely.

The high level of harvest in count areas 22 and 23 is probably more apparent than real. Goats inhabit alder-covered cliffs along the Killey River and Tustumena Glacier making them extremely difficult to observe, resulting in low survey numbers. In these areas goats are primarily taken incidental to sheep hunting. Since hunter pressure and harvest have remained relatively stable over the past several years, there does not seem to be a problem. These areas do, however, warrant close observation.

#### Recommendations

No changes are recommended.

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SUBMITTED BY:

John S. Vania  
Regional Management Supervisor

# MOUNTAIN GOAT - GMU 15 - WESTERN KENAI PENINSULA

## APPENDIX I

Reported Harvest by year, date of latest surveys, number of adults and kids observed by count area.

Count Area	Survey Date	Goats Observed		Harvest by Year		
		Adults	Kids	72	73	74
16	1974	20	9	2	7	1
21	68	0	0	1	4	0
22	72	12	2	7	6	8
23	72	117	44	16	2	18
24	68	134	54	27	17	19
25	No Surveys	*	*	2	0	0
29	72	146	47	27	22	25
32	No Surveys	-	-	0	8	11
Unspecified	N.A.	N.A.	N.A.	14	12	17
Total	-	429	156	96	78	99

\* No Data

# MOUNTAIN GOAT - GMU 15 - WESTERN KENAI PENINSULA

## APPENDIX II

Goat harvest and hunting pressure by Subunit for 1969, 1972, 1973 and 1974, GMU 15.

Year	15 (A)			15 (B)			15 (C)			Unit 15 Total			Number of Hunters	Percent Success
	MM	FF	All	MM	FF	All	MM	FF	All <sup>3/</sup>	MM	FF	All <sup>3/</sup>		
1969	*	*	*	*	*	*	*	*	*	31	38	69	*	*
1972	0	0	0	11	5	16	41	38	79	52	44	96	160 <sup>1/</sup>	50.0
1973	0	0	0	10	7	17	32	23	56	46	31	78	144 <sup>2/</sup>	45.8
1974	0	0	0	3	5	9	47	35	83	56	41	99	222	44.6

\* Data not available.

<sup>1/</sup> 16 hunters reported taking two goats each.

<sup>2/</sup> 12 hunters reported taking two goats each.

<sup>3/</sup> Includes animals of unknown sex.

PREPARED BY: Paul A. LeRoux, Game Biologist III

MOUNTAIN GOAT - GMU 15 - WESTERN KENAI PENINSULA

APPENDIX III

Chronology of the 1974 Goat harvest by 7 day period beginning August 1

Period	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Unknown	Total
Harvest	0	17	7	12	13	4	1	8	6	3	4	3	5	3	2	0	0	1	0	0	0	2	0	8	99

MOUNTAIN GOAT - GMU - 15

APPENDIX IV

Goat Numbers and Age Ratios, Unit 15, 1968-73.

Year	Count Area 16		Count Area 22		Count Area 23a		Count Area 23b		Count Area 23c		Total
	Kids/ 100 Ad.	Total Animals	Kids/ 100 Ad.	Total Animals	Kids/ 100 Ad.	Total Animals	Kids/ 100 Ad.	Total Animals	Kids/ 100 Ad.	Total Animals	
1968	29	18	57.1	11	38.9	25	58.3	38	40.0	63	137
1972	-	-	16.7	14	42.4	47	38.1	58	33.3	56	175
1973	25	30	-	-	-	-	-	-	-	-	30
1974	45	29	-	-	-	-	-	-	-	-	29

Submitted By: Paul A. LeRoux, Game Biologist III

## ELK

### SURVEY-INVENTORY PROGRESS REPORT - 1974

#### Game Management Unit 8 - Kodiak and Adjacent Islands

##### Seasons and Bag Limits

Unit 8, Raspberry Island and that portion of Afognak Island west and south of a line from the head of Malina Bay to the head of Back Bay.

No open season

Remainder of Unit 8.

Aug. 1 - Dec. 31 One elk by permit only.

##### Harvest and Hunting Pressure

Hunter harvest indicated by a 42 percent return of hunter reports was 30 elk (Appendix I). At least one additional animal, a bull, was killed but not reported. Males comprised 53 percent of the reported harvest. Eighty percent of the harvest occurred during September and October. No kills were reported for August or November. That part of Afognak Island east of Kazakof and Discoverer Bays supported at least 80 percent of the kill. Kill locations were not reported precisely enough to assign each kill to a specific herd, but most of the kill was from the Tonki Peninsula, Duck Mountain and Kitoi Lake herds. Kodiak hunters took 16 animals (53%) and hunters from elsewhere in Alaska took 13 animals (43%). One elk was taken by a West German hunter.

Hunter success was 25 percent in 1974, the highest recorded since 1970 (Appendix II).

##### Composition and Productivity

Composition surveys were flown in August and September. During five flights in a PA-18 aircraft totaling 11.2 survey hours, 386 animals were tallied (Appendix III). During a three-hour flight on July 30, 1974, an estimated 327 animals were seen but not classified. This flight encompassed only a portion of the elk summer range whereas the composition surveys covered all of Afognak and Raspberry Islands.

The Tonki Peninsula herd, inhabiting the area east of Izhut Bay, is the largest herd. One hundred and twenty-two animals were tallied during composition surveys in this area. On the July 30 survey, just prior to the opening of the hunting season, four separate groups totaling about 230 animals were seen.

Calf production, as indicated by the 41:100 calf/cow ratio recorded in 1974, was good (Appendix III). Calf/cow ratios averaged 34:100 during 1961-1973 and exceeded this average during only three of these years (Appendix IV).



The Raspberry Island herd produced eight calves for a 50:100 calf/cow ratio. Calf production has averaged 64 calves/100 cows during the 1972-1974 period. Despite good calf production and closed hunting since 1968 this herd has remained rather stable with the total count ranging from 29 to 45 animals (Appendix V). There has been no detectable winter mortality since the 1971-1972 winter. Some illegal hunting is probably occurring and may explain the failure of this herd to increase.

The Raspberry Straits-Afognak Lake herd produced at least 13 calves and had a 35:100 calf/cow ratio. This herd has been closed to hunting since 1970 and appears to be increasing as indicated by the higher total count in 1974 than recorded during the two previous years. (Appendix VI).

No mortality from malnutrition was documented during the 1973-1974 winter. Snow exceeding 12 inches in depth persisted no longer than one two-day period during January at Kitoi Bay. While no firm data are available, overwinter survival was probably good.

Two elk of unknown sex were taken during the closed season in January or February by trappers at Duck Lake. The whole, frozen carcass of another elk was discovered on a fishing vessel during late spring 1974 and was probably taken during the closed season.

#### Management Summary and Recommendations

Increased harvest, improved hunter success and an increase in the 1974 composition count total over the previous year indicate an upward trend in Afognak's elk population. Apparent good overwinter survival and a high calf crop indicate the 1974 harvest was well below the sustainable level. The Raspberry Straits-Afognak Lake herd appears to be increasing and a limited harvest could be sustained. The Raspberry Island herd appears to be static despite three successive years of good calf production. The high bull/cow ratio in this herd should be lowered by removing a limited number of mature bulls.

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Game Biologist III

SUBMITTED BY:

John S. Vania  
Regional Management Coordinator

# APPENDIX I

## Unit 8 - 1974 Elk Harvest Statistics from Hunter Reports

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	<u>NO.</u>	<u>PERCENT</u>
Permits issued	776	-
Permits returned	328	42%
Reporting permittees who hunted	118	36%
Successful hunters	30	25%
Mean days per elk	16.6	-
Total days afield	498	-
Male harvest	16	53%
Female harvest	14	47%
Total reported harvest	30	100%

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 March 19, 1974

# APPENDIX II

## Unit 8 - Elk Harvest Statistics, 1970-1974

Year	No. Hunters	Reported Harvest	Male Harvest	Female Harvest	Hunter Success	Season Length (days)
1970	184	62	43 (69%)	19 (31%)	34%	153
1971	190	27	15 (56%)	12 (44%)	14%	153
1972	112	18	9 (50%)	9 (50%)	16%	153
1973	116	18	8 (44%)	10 (56%)	16%	153
1974	118	30	16 (53%)	14 (47%)	25%	153

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March 19, 1975

## APPENDIX III

## Unit 8 - Elk Composition Counts, 1974

Herd	Count Date	Bulls		Cows		Calves		Calves/ 100 Cows	Total No. Animals
		No.	%	No.	%	No.	%		
Kitoi Lakes	8/9/74	4	9.3	30	69.8	9	20.9	30:100	43
Tonki Cape Peninsula	8/9/74	9	7.4	81	66.3	32	26.2	40:100	122
Raspberry Straits-Afognak Lake	8/16/74	4	7.4	37	68.5	13	24.0	35:100	54
Paramanof Peninsula	8/20/74	7	12.7	35	63.6	13	23.6	37:100	55
Paramanof Mountain	8/20/74	6	13.9	20	46.5	17	39.5	85:100	43
Raspberry Island	9/12/74	10	29.4	16	47.0	8	23.5	50:100	34
Duck Mountain	9/18/74	<u>4</u>	<u>11.4</u>	<u>24</u>	<u>68.6</u>	<u>7</u>	<u>20.0</u>	<u>29:100</u>	<u>35</u>
Combined Herds		44	11.4	243	62.9	99	25.6	41:100	386

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March 19, 1975

# APPENDIX IV

## Unit 8 - Elk Composition Counts, 1965-1974.

Date	Year	M	%	F	%	Calves	%	Calves 100/Cows	Total
8/0*	1965	139	15.0	588	63.5	199	21.4	33:100	926
8/0*	1966	65	7.2	676	74.5	166	18.3	24:100	907
8/0*	1967	55	7.7	522	73.3	135	18.9	25:100	712
8/0*	1968	124	17.9	432	62.4	136	19.7	31:100	692
---	1969	48	10.9	283	65.4	104	23.6	36:100	463 <sup>1</sup>
8/0*	1970	171	20.7	467	56.7	186	22.6	40:100	824 <sup>2</sup>
8/0*	1971	71	16.4	277	64.1	84	19.4	30:100	432
8/19; 9/13	1972	28	7.9	239	67.3	88	24.8	37:100	355
8/9; 9/0*	1973	32	8.8	250	69.1	80	22.1	32:100	362
8/9; 8/16; 8/20; 9/12; 9/18	1974	44	11.4	243	62.9	99	25.6	41:100	386

\*Zero indicates exact date unknown.

1. Does not include 39 animals on Raspberry Island.

2. An additional 60 unclassified animals were counted.

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March 19, 1974

APPENDIX V

Raspberry Island Herd Composition Counts, 1969-1974

Date	Year	M	%	F	%	Calves	%	Calves 100/Cows	Total
	1969	8	25.0	21	65.6	3	9.3	14:100	32
	1970	15	39.5	16	42.1	7	18.4	44:100	38
	1971	12	41.4	14	48.3	3	10.3	21:100	29
	1972	7	15.6	20	44.4	13	40.0	90:100	45
	1973	10	23.6	17	48.6	8	22.9	47:100	35
	1974	10	29.4	16	47.0	8	23.5	50:100	34

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March 19, 1975

## APPENDIX VI

## Raspberry Straits - Afognak Lake Herd Composition Counts, 1961-1974

Date	Year	M	%	F	%	Calves	%	Calves 100/Cows	Total
	1961	32	20.5	97	62.2	27	17.3	28:100	156
	1962	--	--	--	Survey Incomplete	--	--	--	--
	1963	--	--	No	Survey Conducted	--	--	--	--
	1964	--	Incomplete Survey; Animals Unclassified				--	--	70
	1965	16	10.6	91	60.3	44	29.1	48:100	151
	1966	21	11.7	123	68.3	36	20.0	29:100	180
	1967	10	11.0	61	67.0	20	21.9	33:100	91
	1968	13	8.8	101	68.7	33	22.4	33:100	147
	1969	4	5.0	22	25.0	61	70.0	36:100	87
	1970	18	18.7	60	62.5	18	18.7	30:100	96
	1971	14	17.3	50	61.7	17	20.9	34:100	81
	1972	2	4.4	32	71.1	11	24.4	34:100	45
	1973	5	11.6	31	72.1	7	16.3	23:100	43
	1974	4	7.4	37	68.5	13	24.0	35:100	54

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March 19, 1974

## MUSKOXEN

### SURVEY-INVENTORY PROGRESS REPORT - 1974

Game Management Unit 18 - Yukon-Kuskokwim Delta

#### Seasons and Bag Limits

No open season

#### Composition and Productivity

Nunivak herd - No muskox census was made in 1974. The last complete census prior to 1975 was conducted in the winter of 1973 with 534 animals observed. A survey conducted August 11-14, 1975, with the primary objective of determining the total number of muskoxen revealed a total of 569 animals. Sixty of these were calves, which were born in 1975. In March and April 1975, 31 yearlings and 9 two-year-olds were transplanted to Russia. From the above, it is apparent that at least 549 muskoxen were present on Nunivak Island in 1974. Of the 549 present in 1974, 330 were unclassified and 155 classified as males and 64 classified as females.

Of the 40 animals sent to Russia, which are included in the above figures, a further breakdown in classification is as follows:

<u>2-year-olds</u>		<u>Yearlings</u>	
2 males	7 females	1 male	30 females

Since a preponderance of females were transplanted to Russia a further imbalance of the sex ratio of muskox has resulted. In 1972 it was estimated that 61 percent of the two-year-old or older age class was males. In 1974, there were 330 unclassified animals which were non-calves. By using 61 percent of the 330 unclassified animals, 201 males are indicated. This gives a theoretical sex ratio of 356 males and 193 females. By using 61 percent of the total number of muskox, which is 549, a theoretical sex ratio of 335 males to 214 females is indicated. It seems apparent that the sex ratio is still severely out of balance with a preponderance of males. A large number of males are old bulls which contribute nothing to the welfare of the herd.

Nelson Island herd - The last survey prior to 1975 was made on May 4, 1973 revealing a total of 44 muskoxen on Nelson Island. On May 1, 1975 a survey revealed a total of 66 animals of which 4 were newly born calves. Therefore by the end of 1974 there were a minimum of 62 muskoxen on Nelson Island. This represents an increase of approximately 20 percent per year since 1973.



The muskoxen were found in four separate groups as follows:

Group	Adults		Unknown	Yearlings	Calves	Total
	Male	Female				
1	6 possibly					6
2			12	3		15
3			29	6	4	39
4	6 adults					6
Total muskoxen						66

#### Range Conditions

As reported in the 1971 S & I report the muskox winter range on Nunivak Island is very limited. Total available winter habitat may not exceed 4,000 acres. Of the 4,500-acre dune area which is the preferred winter range of muskoxen, less than one-half may be available and under severe winter conditions, even this area is reduced. In past years overgrazing of this limited range resulted in considerable deterioration.

#### Management Summary and Recommendations

Nunivak herd - In order to return the herd to a semblance of its former vitality, the following is recommended: 1) remove 200 adult males by public shooting controlled by state and federal authorities; 2) stabilize the breeding herd at 300 to 350 muskoxen of breeding age; 3) remove all calves and subadults in excess to those necessary to replace the natural mortality in the breeding herd and 4) determine the winter range condition trends.

Nelson herd - The serious mismanagement of the Nunivak muskox herd and its range makes it imperative to determine the seasonal movements of the Nelson Island herd and to identify preferred ranges so range condition trends surveys can be established. Up-to-date surveys and estimates of the population should be maintained. Of utmost importance is an agreement between the state and federal governments covering the eventual management and utilization of the herd if the lands remain in federal ownership as a wildlife refuge, national park, or national monument. Considering the recent increase in herd size the following is recommended pending more precise information: 1) limit the herd to 75-100 animals including calves until the extent and condition of the range are determined, 2) maintain a sex ratio of approximately five breeding females per adult male, 3) initiate procedures, agreements etc. to allow hunting or consumptive utilization to adjust sex and age ratios and to stabilize the herd.

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SUBMITTED BY:

William Griffin  
Game Biologist III

Oliver E. Burris  
Regional Management Coordinator

## MUSKOXEN

### SURVEY-INVENTORY PROGRESS REPORT - 1974

Game Management Unit 22 - Seward Peninsula

#### Seasons and Bag Limits

No open season.

#### Herd Size, Composition Productivity and Mortality

There are two main groups of muskoxen on the western Seward Peninsula. At the end of the year one of these consisted of eight adults, two yearlings and three calves. For the last two years this group has wintered in the area north of the York Mountains near the Mint River. In late April they moved to the foothills of the York Mountains apparently to calve. During the summer they move to the lowlands on the south side of the York Mountains.

The other group apparently remains year-round north of the York Mountains usually wintering near Ear Mountain, and in the summer being near Arctic and Serpentine Rivers. It is uncertain how many calves were produced by this herd in 1974.

There were no reported mortalities from this herd in 1974.

#### Management Summary and Recommendations

The area west of the Serpentine River seems to be the most suitable habitat on the Seward Peninsula. Any future transplants in GMU 22 should be in this area, preferably near one of the two groups of muskoxen presently in the area.

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SUBMITTED BY:

Oliver E. Burris  
Regional Management Coordinator

## MUSKOXEN

### SURVEY-INVENTORY PROGRESS REPORT - 1974

Game Management Unit 23 - Kotzebue Sound

#### Seasons and Bag Limits

No open season

#### Herd Size, Composition, Productivity and Mortality

A group of muskoxen, probably 16, was seen throughout the year mainly between the Kukpuk River and Cape Dyer. These muskoxen produced three calves during the summer. They were normally found on and near the hills around Cape Dyer during the winter months and moved down into the flats near the Kukpuk River during the summer.

Another group of four muskoxen was seen occasionally in the Mulgrave Hills near the head of Rabbit Creek, especially during winter months.

#### Management Summary and Recommendations

The one group of muskoxen near Cape Dyer has remained and followed similar routines during the last three years. This herd has produced calves the last two years and it appears to be relatively well established and productive. Any future transplants in GMU 23 should be placed in the vicinity of these animals.

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# MUSKOXEN

## SURVEY-INVENTORY PROGRESS REPORT - 1974

### Game Management Unit 26 - North Slope

#### Seasons and Bag Limits

No open season

#### Composition and Productivity

A total of 12 observations were made in 1974. Of these, 11 occurred between the Canning River on the west and the Egaksrak River on the east. One observation by an air taxi pilot placed one muskox on the Colville River approximately six miles upstream from the mouth of the Killik River.

From analyzing these observations, it is apparent that a minimum of 40 muskoxen were seen in Unit 26. Of these at least 12 were calves. Table 1 shows the approximate location by latitude and longitude of the muskoxen observed. As reported in 1972 these muskoxen have apparently divided into three separate groups. The map (Appendix I) shows the three areas in which the three different groups are usually found. Table 2 gives a comparison of the numbers found in these three separate areas for the years 1972 through 1974. Occasionally a muskox is observed outside of these areas. On November 13 one lone muskox was observed on the Colville River approximately 200 miles west of the nearest release site.

Table 1. Muskox observations 1974.

Area	Date	Muskoxen observed	Approximate Coordinate	
			Latitude	Longitude
I	July 9, 1974	9 adults 5 calves	69°55'	145°33'
II	July 4, 1974	9 adults 2 calves (possibly 3 or 4 calves)	69°43'	144°50'
	June 19, 1974	7 or 8 adults 1 to 2 calves	69°42'	144°47'
	April 4, 1974	7 adults (1-2 yrs)	69°52'	144°36'
	September 8, 1974	12 total (of which 3 were calves)	69°46'	144°26'
	July 8, 1974	1 adult	69°43'	144°26'

III	July 8, 1974	1 adult	69°45'	143°14'
	May 25, 1974	1 adult	69°48'	143°05'
	July 9, 1974	5 adults	69°43'	143°01'
		1 yearling		
		4 calves		
	July 2, 1974	7 adults	69°38'	142°56'
		3-5 calves (possibly 4)		
	July 1, 1974	6 adults	69°41'	142°54'
		1 yearling		
		4 calves		
Other	November 13, 1974	1 adult	68°59'	153°59'

Table 2. Muskoxen in Unit 26.

Area	Year	Adults	Calves	Total
1	1972	8	2	10
	1973	10	1	11
	1974	9	5	14
2	1972	11	3	14
	1973	10	1	11
	1974	9	3	12
3	1972	10	2	12
	1973	9	4	13
	1974	8	4	12
Total 1-3				
	1972	29	7	36
	1973	29	6	35
	1974	27	12	39

One muskox sighted west of Umiat on Colville River, 6 miles upstream from the mouth of the Killik River 1974.

A dead, adult male muskox was found on the coast at Angoon Point on July 27, 1974. This is approximately 33 miles east of Barter Island. The ear tag numbers were 7692 and 7693 showing that it was released at Barter Island in March or April 1969. It was estimated to be 23 months of age when released. The cause of death is unknown, however, the tracks of at least two wolves were around the carcass.

### Management Summary and Recommendations

The total number of observations in 1974 was 12 compared to 32 in 1973. This decline resulted from reduced flying on the North Slope by other agencies such as the Renewable Resources Consulting Services. The total number of muskoxen observed increased from 35 in 1973 to 40 in 1974. The number of observed calves increased sharply from 6 in 1973 to 12 in 1974. The largest increase in calves occurred in Area I (Appendix I). Two calves were observed here in 1972 and only one was seen in 1973. In 1975 this group of muskoxen produced five calves.

Since the area occupied by muskoxen on the North Slope is so vast and the number of observations so small, it should not be concluded that the total population of muskoxen here is known. The figures presented in this report are minimum figures only.

The muskoxen in Unit 26 appear to be healthy and the increase in reproduction is encouraging.

Efforts to observe muskoxen over a longer period of time should be increased by the Department of Fish and Game in Unit 26.

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SUBMITTED BY:

Oliver E. Burris  
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Appendix I. Muskox distribution areas - 1974

The map displays the distribution of muskoxen in 1974, divided into three areas:

- AREA 1:** Located in the western part of the map, covering the Yukon and Kuskokwim Mountains.
- AREA 2:** Located in the central part of the map, covering the Seward and Shublik Mountains.
- AREA 3:** Located in the eastern part of the map, covering the National Wildlife Range and the Seward Mountains.

Geographical features labeled on the map include:

- Mountains:** Seward Mountains, Shublik Mountains, National Wildlife Range, Seward Mountains.
- Rivers:** Yukon River, Kuskokwim River, Seward River, Shublik River.
- Lakes:** Kuskokwim Lake, Seward Lake, Shublik Lake.
- Other features:** Cape Smyth, Cape Wankarem, Cape Wankarem, Cape Wankarem.

**AREA 2**

**AREA 3**

MOUNTAINS  
ARCTIC

MOUNTAIN

NATIONAL WILDLIFE RANGE