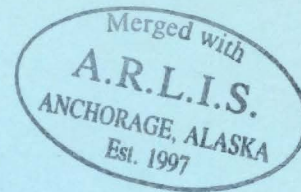


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Bill Sheffield, Governor

DEPARTMENT OF FISH AND GAME
Don W. Collinsworth, Commissioner

DIVISION OF GAME
Robert A. Hinman, Acting Director

ANNUAL REPORT OF
SURVEY-INVENTORY ACTIVITIES

PART IV. MOUNTAIN GOAT AND SHEEP

Edited and Compiled by
Joann A. Barnett, Publications Technician

Volume XIII

Federal Aid in Wildlife Restoration
Project W-22-1, Job 12.0 and 6.0

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p. 4

CONTENTS

Game Management Unit Map.....	ii
Statewide Harvest and Population Status.....	iii
Game Management Unit/Geographical Description	

Mountain Goat

GMU 1A - Southern Southeast Mainland.....	1
GMU 1B - Southeast Mainland from Cape Fanshaw to Lemesurier Point.....	7
GMU 1C - Mainland of Southeastern Alaska from Cape Fanshaw to the Latitude of Eldred Rock.....	12
GMU 1D - Haines-Skagway Area.....	16
GMU 4 - Admiralty, Baranof, Chichagof, and Adjacent Islands.....	19
GMU 5 - Gulf of Alaska, Yakutat Bay.....	22
GMU 6 - Prince William Sound-North Gulf Coast.....	24
GMU 7 and 15 - Kenai Peninsula.....	30
GMU 8 - Kodiak and Adjacent Islands.....	32
GMU 11 - Wrangell Mountains.....	35
GMU 13 and 14 - Nelchina and Upper Cook Inlet.....	37

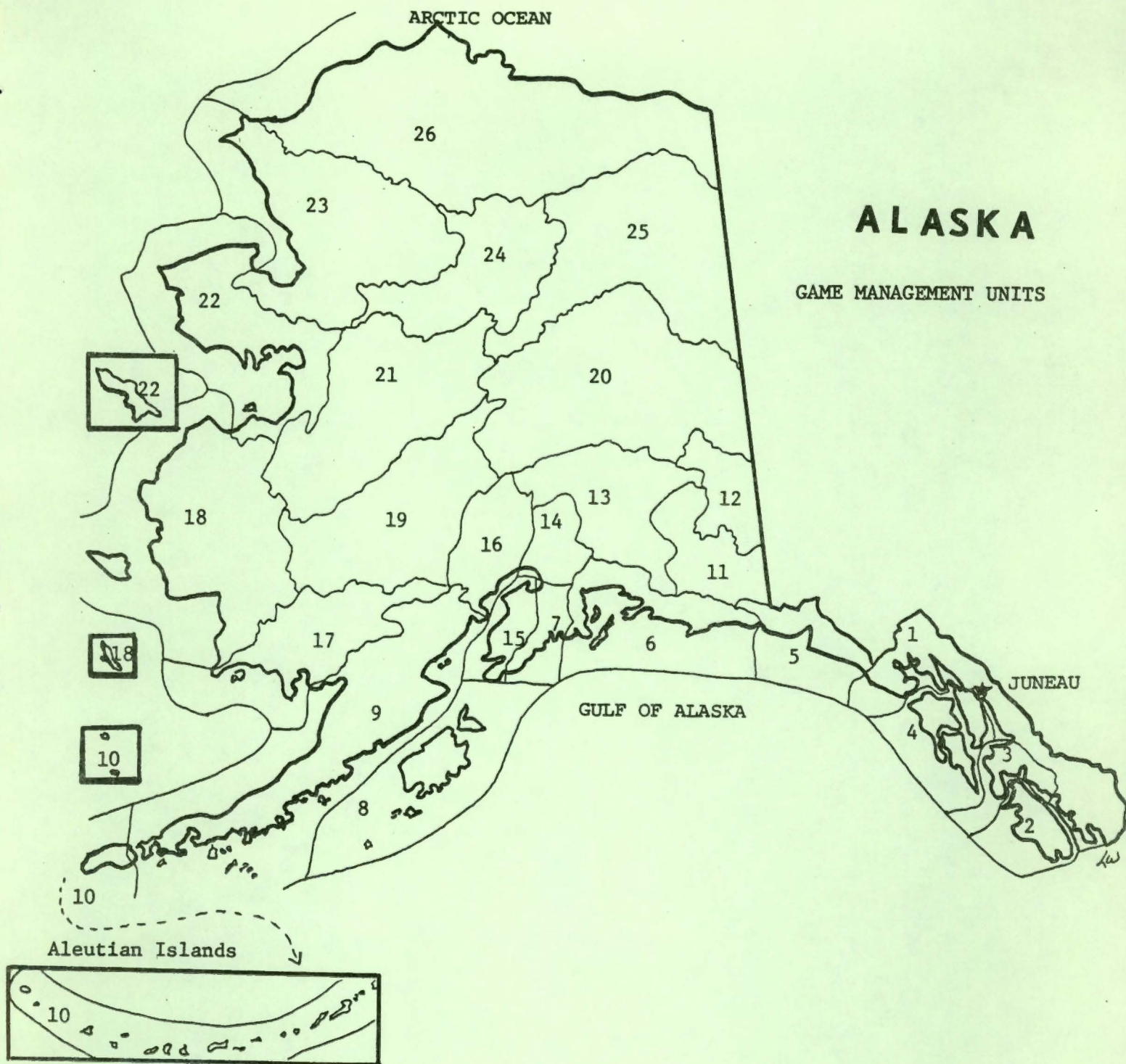
Sheep

GMU 7 and 15 - Kenai Mountains.....	39
GMU 11 and 12 - Wrangell Mountains.....	42
GMU 11, 13, and 14 - Chugach Mountains.....	45
GMU 12, 13, and 20 - Tok Management Area.....	47
GMU 13 and 14 - Talkeetna Mountains and Chulitna/Watana Hills.....	49
GMU 13 and 20 - Delta Controlled Use Area.....	53
GMU 16, 17, and 19 - Alaska Range West of Denali National Park.....	55
GMU 20 - Alaska Range East of Denali National Park, except the Tok and Delta Areas.....	57
GMU 20 - Tanana Hills and White Mountains.....	60
GMU 23 - Kotzebue Sound.....	62
GMU 23 through 26 - Brooks Range.....	65

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Statewide Harvests and Population Status

Mountain Goat

Mountain goat populations have largely recovered from declines experienced a few years ago, and populations in most Units are reported to be stable or increasing. Of particular interest is the continued increase of the transplanted population on Kodiak Island and the present high level in Subunit 1A.

The registration permit system, in place in most Units, has been well received by the public and provides greatly improved harvest data on goats.

Statewide harvest was 458 goats. Unit 6 provided the greatest harvest (128 goats), followed by Unit 4 (74 goats) and Subunit 1A (70 goats).

Sheep

The 1981-82 statewide harvest of Dall sheep was 1,049, higher than the 1980-81 harvest of 826 and the 1979-80 total of 933. In many areas, the increase in harvest resulted from an increase in hunter success rather than an increase in hunting pressure. A summary of harvest by mountain range is as follows:

<u>Area</u>	<u>Harvest</u>	<u>Remarks</u>
Kenai Mts.	11	
Wrangell Mts.	305	
Chugach Mts.	101	
Tok Management Area	54	Includes 5 ewes
Talkeetna Mts./ Chulitna-Watana	96	
Delta Controlled Use Area	30	
Alaska Range West	93	
Alaska Range East	116	
Tanana Hills- White Mts.	9	
Brooks Range	234	Includes 36 (25 ewes, 11 rams) on subsistence permits

Sheep appear to be stable throughout much of their range in the State; those populations in the Hulahula drainage of Unit 26 (where subsistence hunting occurs), and the sheep on the Kenai appear to be declining, while sheep in the Wrangells and the Talkeetnas appear to be slowly increasing.

Robert A. Hinman
Acting Director

MOUNTAIN GOAT
SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 1A

GEOGRAPHICAL DESCRIPTION: Southern Southeast Mainland

PERIOD COVERED: July 1, 1981-June 30, 1982

Season and Bag Limit

Aug. 1-Dec. 30

One goat

Population Status and Trend

Goats continued to increase in most areas of Subunit 1A. This past winter was the 1st severe winter in several years, but no significant mortality apparently resulted. Kid:adult ratios in the September 1982 surveys should show any losses occurring in newborn kids as a result of the winter. Current populations are excellent over most of the goat habitat and are approaching the highest counts for several years.

Population Composition

Five survey areas were flown between August 26 and September 21, 1981. Total survey time was 5.98 hours; 614 goats were seen (102 goats/hour). There were 33 kids/100 adults in the sample. Past years' survey results are shown in Appendix A.

Mortality

The 1981-82 winter was moderately severe, and while some losses surely occurred, they appear to have been light. One spring survey conducted in the Walker Cove-Rudyard Bay area indicated 78 goats/hour of survey and 22 kids/100 adults. Surveys in September 1981 indicated 28 kids/100 adults and 122 goats/hour of flight time. The possible effects of winter weather on 1982 production will be assessed by the September 1982 surveys.

The on-going research study on the upper Cleveland Peninsula indicated a similar survival rate of kids; only 1 of the collared goats (a 10-year-old male) died during the winter.

This is the 2nd year that goat hunting in Southeast has been on a registration permit system. The system seems to be reasonably well accepted and is providing much more complete data on harvest and hunter effort.

During the 1981 season, 254 permits were issued from the Ketchikan office. One hundred fifty-eight hunters reported killing 70 goats (36 males and 34 females) in 525 hunter days.

Hunter success was 44%; 7.5 hunter-days were expended per goat taken.

The apparent increases in harvests in 1980 and 1981 were most likely a result of the more stringent reporting requirements of the new registration permit system in effect for these 2 years (Appendix B). Of the 254 permittees, 8 were cited for late reporting or nonreporting of hunting activities.

The early part of the season was again the most popular time to hunt. August (29%), September (26%), and October (33%) accounted for 86% of the harvest. The lowest month was November (4%); 10% were taken in December.

Air transport was used by 80% of both successful and unsuccessful hunters. The remaining 20% used boats as their primary transportation. Most November and December hunting occurs from boats and generally results in a lower success rate than the earlier hunts.

The distribution of the 1981 harvest changed somewhat from last year and was more evenly distributed. The Yes Bay to Eagle River area accounted for 20% of the harvest, down from 35% last year. The Chickamin River to Rudyerd Bay area produced 24% of the 1981 harvest, compared to 27% in 1980. The Unuk River to Chickamin River and the Rudyerd to Smeaton Bay areas each accounted for 21% of the 1981 kill; the rest of Subunit 1A produced the remaining 14%. The Rudyerd to Smeaton area kill resulted from a considerably above normal harvest around Big Goat and Little Goat Lakes.

Management Summary and Recommendations

The current Subunit 1A goat population level appears excellent. The harvest remains relatively low and is fairly well distributed over a wide portion of the Subunit.

The moderately hard winter of 1981-82 did not appear to severely impact the goat population, although the success of the 1982 kid production will not be known until September 1982.

The registration permit system will be in its 3rd year in 1982. It is recommended that the reminder letters to late-reporting permit holders be dropped and those in violation of the published reporting date be cited.

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SUBMITTED BY:

Nathan P. Johnson
Regional Management Coordinator

APPENDIX A. Ketchikan area goat composition surveys, Subunit 1A, 1968 through 1981.

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

Year	Survey date	Adults	Kids	Unk.	Total	Kids/100 adults	Survey time (min)	Goats/hour
1968	Sept. 17	193	73	0	265	37	80	199
1971	Sept. 15	155	56	9	220	36	70	189
1973	Aug. 16	90	13	0	103	14	65	95
1974 ^a	Aug. 27	26	8	0	34	31	36	57
1975	Aug. 12	15	3	0	18	20	47	23
1976	Sept. 1	18	7	0	25	39	57	26
1977	Sept. 6	39	19	0	58	49	56	62
1978	Sept. 9	65	19	0	84	29	51	99
1979 ^b	Sept. 19	44	16	0	60	36	65	55
1980 ^a	Aug. 27	35	18	0	53	51	42	76
1981 ^b	Sept. 13	68	27	0	95	40	47	122

Area K-5 (Marten Arm to Portland Canal)

Year	Survey date	Adults	Kids	Unk.	Total	Kids/100 adults	Survey time (min)	Goats/hour
1968	Sept. 18	298	73	0	371	24	115	194
1971	Sept. 16	133	34	1	168	26	83	121
1973	Aug. 20	59	22	0	81	37	85	57
1974	Sept. 20	24	6	0	30	25	74	24
1975	Aug. 13	21	7	1	29	33	87	20
	Sept. 11	40	17	0	57	43	78	44
1976	Sept. 7	40	7	0	47	18	99	29
1977	Aug. 31	83	41	0	124	49	101	74
1978	Sept. 8	97	34	0	131	35	90	87
1980 ^b	Sept. 12	116	35	0	151	30	125	72
1981 ^b	Sept. 21	145	47	0	192	32	110	105

APPENDIX A. Continued.

Area K-7 (Yes Bay to Eagle River)								
Year	Survey date	Adults	Kids	Unk.	Total	Kids/100 adults	Survey time (min)	Goats/hour
1975	Aug. 22	37	11	0	48	30	111	26
1980	Aug. 20	128	36	0	164	28	108	91

Area K-9 (Klahini River to Chickamin River)								
Year	Survey date	Adults	Kids	Unk.	Total	Kids/100 adults	Survey time (min)	Goats/hour
1975	Aug. 28	52	11	0	63	21	79	48
1976	Sept. 10	73	20	0	93	27	92	61
1977	Sept. 1	104	44	0	148	42	122	73
1978	Sept. 5	121	37	0	158	31	93	102
1979 ^b	Sept. 20	99	23	0	122	23	98	75
1980	Sept. 9	158	66	0	224	42	110	122
1981	Aug. 26	100	39	0	139	39	111	75

APPENDIX A. Continued.

Area K-10 (Chickamin River to Walker Cove)								
Year	Survey date	Adults	Kids	Unk.	Total	Kids/100 adults	Survey time (min)	Goats/hour
1975	Sept. 10	74	31	0	105	42	65	97
1976	Sept. 9	65	20	0	85	31	59	86
1977	Sept. 2	111	55	0	168	49	86	117
1978	Sept. 6	12	36	0	157	30	76	124
1979 ^b	Sept. 21	95	23	0	118	24	64	111
1980	Sept. 10	116	42	0	158	36	88	108
1981	Aug. 29	119	33	0	152	28	75	122

Area K-11 (Walker Cove to Rudyerd Bay)								
Year	Survey date	Adults	Kids	Unk.	Total	Kids/100 adults	Survey time (min)	Goats/hour
1975	Sept. 10	18	5	0	23	28	14	99
1976	Sept. 9	16	5	0	21	31	17	74
1977	Sept. 6	15	6	0	21	40	15	84
1980	Aug. 26	22	7	0	29	32	17	102
1981	Aug. 29	29	7	0	36	24	16	135

^a Incomplete survey.

^b Different observation than normal.

APPENDIX B. Goat harvest and hunter success, Subunit 1A, 1972-1981.

Season	M	F	Unk.	Total	Hunters taking 2 goats	% harvest by nonres.	No. successful hunters	Total no. hunters	% hunter 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
1975	8	0	0	17	0 ^a	24	17	93	18
1976	10	5	0	15	0 ^a	0	15	55	27
1977	19	16	2	37	0 ^a	14	37	80	46
1978	10	13	0	23	0 ^a	0	23	55	42
1979	19	10	0	29	0 ^a	Unk.	29	39	74
1980 ^b	23	37	0	60	0	7	60	131	46
1981 ^b	36	34	0	70	0	27	70	158	44

^a Bag limit reduced from 2 to 1 in 1975.

^b Registration permit system. Mandatory reporting required.

MOUNTAIN GOAT

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 1B

GEOGRAPHICAL DESCRIPTION: Southeast Mainland from Cape Fanshaw
to Lemesurier Point

PERIOD COVERED: July 1, 1981-June 30, 1982

Season and Bag Limit

Aug. 1-Dec. 31

One goat

Population Status and Trend

Goat populations in Subunit 1B during 1981 appeared to remain stable or increase slightly. However, populations have not recovered from the decline suffered during the severe winters of the 1960's. Examination of wolf scats indicates goats in Subunit 1B experience some wolf predation.

Population Composition

Population surveys were conducted using fixed-wing aircraft during the report period (Appendix A). Surveys were flown just after sunrise or during the last hours of daylight. Clear days were normally selected for survey flights, since mountain peaks are shrouded in clouds on most days in Southeastern Alaska. Early morning and late evening flights reduce the problem of air turbulence and increase the chance of observing goats and making proper sex and age identification.

A total of 4 hours flying time was spent in surveying Subunit 1B goat ranges from Cape Fanshaw to the Stikine River. The Bradfield Canal, Harding River, Eagle River, and Aarons Creek drainages were not flown because of budget limitations or weather problems during the survey period. Spring counts were conducted in the Cape Fanshaw area in June 1981 (Appendix A). Spring 1981 counts indicated a kid:adult ratio of 38.6:100. The fall count was conducted in August and showed a ratio of 21 kids:100 adults in a more limited count area.

Mortality

Goat hunting remained under the registration permit hunt system in 1981.

In Subunit 1B, 198 mountain goat registration permits were issued. Of these, 55 (28%) were issued in Wrangell and 143 (72%) in Petersburg. Sixty percent of the applicants resided in Petersburg, 24% in Wrangell, 12% in other Alaska communities, and 4% were nonresidents.

Of the applicants who hunted, 40% killed a mountain goat (Appendix B), an increase from 35% in 1980. The percentage of females in the harvest increased from 33 in 1980 to 42 in 1981.

Several factors affect the timing of the goat harvest in Subunit 1B. Many residents of Petersburg and Wrangell depend on seasonal employment in the fishing, construction, and logging industries during summer and early fall. Weather conditions seldom favor the mountain climbing associated with goat hunting, so a prolonged period of clear weather encourages hunters to seek goats. Snow begins to fall in the alpine areas in mid-October, and goats seek lower elevations and are often to be found in timbered sites. August proved to be the most popular goat hunting month with successful hunters in 1981, accounting for 35% of the total harvest (Appendix C). In 1980, September was the most popular month, followed closely by October.

Successful hunters reported an average of 2.2 days hunting for each goat taken. Unsuccessful hunters spent an average of 4.6 days in the field. The hunting effort for both successful and unsuccessful hunters in 1981 was 3.3 days/hunter as compared with 2.6 days/hunter in 1980.

The majority (68%) of Subunit 1B hunters favored the use of boats (68%) as transportation in 1981. Use of aircraft was second (23%), while 8% hiked from permanent camps or used vehicles on road systems. Transportation means were very similar for both successful and unsuccessful hunters.

Areas which received the greatest hunting pressure were Horn Cliffs (37%), up from 13% in 1980; the Bradfield River, (11%); Thomas Bay, (10%); the Wilkes Range (8%); Swan Lake (7%); and LeConte Bay (5%). All other areas received 2% or less of the pressure.

The Horn Cliffs area, within easy reach of Petersburg, is increasing in popularity with goat hunters. Snows in December 1981 forced goats to lower elevation but did not cause an increase in harvest that month. High winds and low temperatures accompanied the snows, discouraging hunters from crossing Frederick Sound. Hunters were most successful at Horn Cliffs, where 32% of the Subunit's goats were taken. Of the hunters who hunted Horn Cliffs, 35% were successful.

Reported Subunit 1B goat harvests for 1973-81 are reported in Appendix D.

Management Summary and Recommendations

The registration permit system is working well and provides good information to manage goat hunting pressure. Close monitoring of harvest is necessary to ensure that accessible herds are not cropped too closely.

The percentage of female goats in the harvest increased from 33% in 1980 to 42% in 1981. On Horn Cliffs, 42% of the goats taken were females, perhaps indicating increasing pressure on the herd in that area. The Horn Cliffs area should be intensively surveyed during the fall to determine herd productivity.

PREPARED BY:

SUBMITTED BY:

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Nathan P. Johnson
Regional Management Coordinator

APPENDIX A. Subunit 1B mountain goat aerial survey data, 1981.

Area ^a	Date	Adults	Kids	Undeter- mined	Total	Kids/100 adults	% kids	Count time (min)
1	6/18/81	9	5	11	25	55.6	37.7	60
1	6/22/81	22	6	1	29	27.3	21.4	58
2	8/11/81	24	5	0	29	20.8	17.2	110

^a Area 1--Cape Fanshaw Ranges; Area 2--Baird Glacier to LeConte Glacier.

APPENDIX B. Subunit 1B mountain goat permit registration data, 1980-81.

Year	Permits issued	Goats killed	% males	% females	% suc- cessful	% unsuc- cessful	% not hunting
1980	178	30	67	33	35	65	41
1981	198	37	50	42 ^a	40	60	53

^a In 1981, 8% of the harvest was of unknown sex.

APPENDIX C. Chronology of Subunit 1B mountain goat harvest, 1981.

Month	No. taken	% of total	% by month
August			35
1-15	9	24	
16-31	4	11	
September			25
1-15	4	11	
16-30	5	14	
October			21
1-15	6	16	
16-31	2	5	
November			14
1-15	5	14	
16-30	--	--	
December			5
1-15	2	--	
16-31	5	--	
Totals	37	100	100

APPENDIX D. Subunit 1B goat hunter harvest, 1973-1981.

Season ^a	Males	Females	Unknown	Total
1973	20	12		32
1974	9	9		18
1975	10	5		15
1976	13	10		23
1977	18	19		37
1978	9	6		15
1979	7	8		15
1980	20	10		30
1981	18	16	3	37

^a Seasonal harvest data from 1973 through 1979 are based on voluntary post-card (harvest ticket) returns. 1980 and 1981 data are taken from the mandatory returns of registration permits.

MOUNTAIN GOAT
SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 1C

GEOGRAPHICAL DESCRIPTION: Mainland of Southeastern Alaska
from Cape Fanshaw to the Latitude of
Eldred Rock

PERIOD COVERED: July 1, 1981-June 30, 1982

Seasons and Bag Limit

Unit 1C, that por- tion draining in- to Lynn Canal, Stephens Passage, and Taku Inlet between Antler River and Taku Glacier	Oct. 1-Nov. 30*	One goat by registration permit only. See 5 AAC 81.055 and separate registration permit hunt supplement.
---	-----------------	--

Remainder of Unit 1C	Aug. 1-Nov. 30	One goat
-------------------------	----------------	----------

* Emergency Order No. 1-04-81 closed the area between Salmon
Creek, Gold Fork, and Carlson Creek effective October 10, 1981.

Population Status and Trend

Results of surveys conducted in selected areas in 1981, which are
comparable to surveys in 1980, indicated at least stable popu-
lations in these areas. Goat populations in the remainder of
Subunit 1C appear stable but below previous recorded levels.

Population Composition

A total of 148 goats was observed during aerial surveys flown in
portions of Subunit 1C in September 1981. Nineteen kids were
observed, giving a kid:100 adults ratio of 15, which is low.

Mortality

All goat hunting in Subunit 1C was conducted under 2 registration
permit hunts in both 1980 and 1981 (Appendix A). During 1980 and
1981, 72 and 60% of the effort was spent in Hunt 803. Hunter
success has been higher in Hunt 803 since 1980, averaging 53.7%
compared to 22.0% for Hunt 802.

The 1981 goat harvest for all of Subunit 1C was 31 animals (11
males, 20 females), comparable to the last 4 years of harvest

data (Appendix B). Ninety hunters spent 216 days hunting goats in Subunit 1C in 1981, averaging 7.0 days/goat. The success rate was 34.4%, substantially below the 9-year average of 45.9%.

Management Summary and Recommendations

The harvest and hunting pressure in Subunit 1C in 1981 of 31 goats and 90 hunters was similar to the previous 5-year average (1976-1980) of 36 animals (range 30-41 goats) and 81 hunters (range 65-107 hunters), respectively.

The mountain goat registration hunt permit system greatly improved the timeliness of reporting of kills over prior years. This allowed closer monitoring of harvests from sensitive areas, such as those adjacent the Juneau road system.

Compliance to hunt conditions set forth for each hunt, particularly those requiring the return of hunter reports, is vital to the usefulness of the permit system. A 100% hunter report return rate was achieved in 1981 by sending out reminder letters via certified mail, extending the deadline date, and enforcing compliance of the remaining 16 delinquent reports through the efforts of Fish and Wildlife Protection. In 1980, the compliance rate was 97%. Effort to attain maximum compliance in 1980 was similar to 1981, except for sending reminder letters by certified mail.

In 1981, the season was closed early in a portion of Hunt 802 between Salmon Creek, Gold Fork, and Carlson Creek on October 10. One or 2 goats was the desired harvest level for this area, or 10% of the observed number of goats prior to the hunting season. By the effective date of this closure, 3 goats had been taken. No additional kills were reported.

Close monitoring of the harvest and populations in areas adjacent the Juneau road system should continue in order to achieve desired harvest levels.

A proposal to close Mt. Juneau to goat hunting was adopted by the Board of Game in 1982. This regulatory change protects what few goats occasionally use the slopes on Mt. Juneau directly behind Juneau.

With the adoption of the registration permit system and adequate enforcement of permit conditions, no season or bag limit changes are recommended at this time.

PREPARED BY:

SUBMITTED BY:

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Game Biologist II

Nathan P. Johnson
Regional Management Coordinator

APPENDIX A. 1981 mountain goat registration permit hunt data for GMU 1C, Southeastern Alaska.

Hunt No.	Year	No. permits issued	No. hunters hunting	No. days hunted	Chronology of harvest						Harvest				% hunter success
					Aug.	Sept.	Oct.	Nov.	Unk.	Total	M	F	Unk.	Total	
802	1980	117	34 ^a	65	NA	NA	6	2	0	8	2	4	2	8	23.5
	1981	111	44 ^a	87	NA	NA	6	3	0	9	3	6	--	9	20.5
803	1980	140	47	166	6	7	7	8	0	28	9	8	11	28	59.6
	1981	129	46	129	1	2	6	13	0	22	8	14	--	22	47.8

^a Includes 2 hunters with permits for Hunt 803 but hunted in Hunt 802.

APPENDIX B. Subunit 1C goat harvest statistics for 1972-1981 as derived from hunter reports from the harvest ticket system (1972-1979) and the registration permit system (1980-1981).

Year	Chronology of harvest								Sex composition				No. hunters	% hunter success
	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Unk.	Total	M	F	Unk.	% male		
1972 ^a	18	10	7	6	4	16	5	70	36	34	0	51.4	149	40.3 ^b
1973 ^a	30	32	11	21	17	NA	1	112	56	56	0	50.0	177	52.5 ^c
1974 ^a	19	18	7	15	30	NA	5	94	40	51	3	44.0	159	44.0 ^d
1975 ^e	7	8	20	15	13	NA	5	68	42	25	1	62.7	138	49.3
1976 ^e	2	0 ^f	12 ^f	5 ^f	16 ^f	NA	6	41	13	28	0	31.7	107	38.3
1977 ^e	8	0 ^f	8 ^f	8 ^f	3 ^f	NA	3	30	19	9	2	67.9	72	41.6
1978 ^e	3	3	6	17	NA	NA	6	35	24	11	0	68.6	80	43.8
1979 ^e	7	3	13	15	NA	NA	0	38	21	17	0	55.3	65	58.5
1980 ^e	6	7	13	10	NA	NA	0	36	12	12	12	50.0	81	44.4
1981 ^e	1	2	12	16	NA	NA	0	31	11	20	0	35.5	90	34.4

^a Bag limit - 2 goats.

^b Based on 60 successful hunters of which 10 took 2 goats each.

^c Based on 93 successful hunters of which 19 took 2 goats each.

^d Based on 70 successful hunters of which 24 took 2 goats each.

^e Bag limit - 1 goat.

^f Revised in 1979 from figures reported in Survey-Inventory Report, 1978, Table 2.

MOUNTAIN GOAT
SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 1D

GEOGRAPHICAL DESCRIPTION: Haines-Skagway area

PERIOD COVERED: July 1, 1981-June 30, 1982

Seasons and Bag Limit

Unit 1D, that por- tion east of Taiya Inlet and River between Chilkoot Trail and White Pass and Yukon Railroad	Oct. 1-Oct. 15	One goat by registration permit only. See 5 AAC 81.055 and separate registration permit hunt supplement.
--	----------------	--

Unit 1D, that por- tion lying north of the Katzehin River and east of the Haines Highway	Sept. 15-Nov. 30	"
--	------------------	---

Remainder of Unit 1D	Aug. 1-Dec. 31	"
-------------------------	----------------	---

Population Status and Trend

No survey or inventory data are available for this reporting period. However, hunter interviews and reports indicate no significant changes in population status or trend.

Population Composition

No survey or inventory data are available.

Mortality

Game Management Unit 1D is composed of 3 separate registration hunt areas. A complete breakdown of harvest by hunt area is given in Appendix A. For all 3 hunts, 338 permits were issued to mountain goat hunters. One hundred twenty-seven hunters harvested 43 goats (24 males, 19 females) for a success rate of 34%.

One nonsport mortality was recorded for this reporting period. A study-related death occurred when a drugged goat fell from a high cliff during a capture operation on the Kelsall River in October.

Management Summary and Recommendations

No changes in seasons or bag limits are recommended.

PREPARED BY:

SUBMITTED BY:

Ronald E. Ball
Game Biologist III

Nathan P. Johnson
Regional Management Coordinator

APPENDIX A. Game Management Unit 1D goat harvest by hunt area,
1981-82.

Hunt No.	Permits issued	No. hunters	Goat harvest	
			Males	Females
804	48	22	1	4
805	161	72	18	11
806	129	33	5	4

MOUNTAIN GOAT
SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 4

GEOGRAPHICAL DESCRIPTION: Admiralty, Baranof, Chichagof, and
Adjacent Islands

PERIOD COVERED: July 1, 1981-June 30, 1982

Season and Bag Limit

Aug. 1-Dec. 31

One goat by registration
permit only. See 5 AAC
81.055 and separate
permit hunt supplement.

Population Status, Composition, and Trend

No data were available.

Mortality

The 1981 harvest as measured by a registration permit system (Hunt No. 815) was 74 goats, 30 males, and 44 females. That is about a 65% increase over the past 4 years' average and represents about a 10-15% harvest of the 1980 goat population on Baranof Island.

In 1981, there was a sharp increase in the number of permits issued for Hunt No. 815. This is the 2nd sharp increase in interest in this hunt in the last 6 years. The number of permits increased from about 175 during 1976-78 to about 260 in 1979 to 339 in 1981. About 60% of the persons who obtain a permit actually hunt. As in previous years, the majority of the permittees were residents of Sitka-Mt. Edgecumbe. The chronology of the 1981 kill was similar to previous years as was the location where the bulk of the harvest was taken (Appendix A).

Management Summary and Recommendation

The 1981 harvest of an estimated 10-15% of the population may be excessive and will have to be carefully monitored. An aerial survey is scheduled for late summer 1982. That survey is needed to assess the impact of the severe winter of 1981-82 on goat

survival and to obtain a more current population estimate and to adjust the harvest level for 1982 if needed.

No changes in season or bag limit are recommended.

PREPARED BY:

SUBMITTED BY:

Loyal J. Johnson
Game Biologist III

Nathan P. Johnson
Regional Management Coordinator

Appendix A. Mountain goat survey and harvest data, 1954-1981, Game Management Unit 4.

Date	Survey data						Harvest data				
	Total goats	Goats/hour	No. kids	No. adults	Kids/100 adults	Data source (aircraft type)	Total kill	Males	Females	Total no. hunters	Data source
1923	18 goats introduced										
1937	41					Alaska Game Commission					
1954	263	--	41	222	18.5	USFWS	-----				
9/1/60	116	38.4	26	90	28.9	Merriam, ADF&G	ZERO DATA				
9/11/61	118	--	20	98	20.4	Merriam, ADF&G	-----				
9/3/70 ^a	154	--	15	139	10.8	Courtright, ADF&G (Helio Courier)	16			48	Hunter intrvw.
9/29/70	121	--	13	108	12.0	Courtright, ADF&G (Helio Courier)				75	Hunter intrvw.
1971	--	--	--	--	--	--	20				
1972	--	--	--	--	--	--	10	5	5	50	Harvest ticket
9/12-9/13/73	253	36.1	50	203	24.6	Johnson, ADF&G (Piper PA-18)	24	11	13	45	Harvest ticket
1974	--	--	--	--	--	--	10	7	3	39	Harvest ticket
8/24-8/25/76 ^b	242	62.0	47	195	24.1	Johnson, ADF&G (Piper PA-18)	28	18	10	107	Harvest ticket Regist. permit
1977	541	73.1	148	393	37.7	Johnson, ADF&G (Hughes 500 helic.)	40	22	18	101	Regist. permit
1978	--	--	--	--	--	--	32	17	14 (1 unk.)	93	Regist. permit
1979 ^c	397	79.4	76	321	23.7	Johnson, ADF&G (Hughes 500 helic.)	59	30	27 (2 unk.)	151	Regist. permit
1980 ^d	473	70.9	106	367	28.9	Johnson, ADF&G (Alouette II helic.)	49	25	23 (1 unk.)	156	Regist. permit
1981	--	--	--	--	--	--	74	30	44	230	Regist. permit

^a Incomplete coverage.

^b North of Vodopad River only.

^c North of Medvejie Lake-Baranof River only.

^d North of Lake Dianne only.

MOUNTAIN GOAT
SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 5

GEOGRAPHICAL DESCRIPTION: Gulf of Alaska, Yakutat Bay

PERIOD COVERED: July 1, 1981-June 30, 1982

Season and Bag Limit

Aug. 1-Dec. 31

One goat

Population Status and Trend

No surveys were conducted during this reporting period, but based upon hunter reports and interviews, goat populations appear stable throughout Unit 5.

Population Composition

No new data were available.

Mortality

Goat hunting has been by special registration permit since fall 1980. Goat hunters register with the local Fish and Game office prior to entering the field. Successful hunters are required to report their kill within 10 days. Information obtained from each hunter include specific location of kill, date and sex of kill, number of days hunted, and mode of transportation used. Unsuccessful hunters or those who did not hunt have until 10 days after the close of the goat season to return their permit. At this time, they must report the dates of all unsuccessful hunts, locales where they hunted, and number of days hunted.

Unitwide, 102 permits were issued. Forty-five persons did not hunt, while 53 hunters put in 171 days of effort to harvest 20 goats (12 males, 8 females). Hunter success was 38.0%; there were 3.3 days expended per goat taken. Four persons did not return their permits.

Overall, hunting pressure was about the same as in 1980, but harvest declined by 8% and hunter success declined by 7%. The distribution of hunting pressure also changed. The highest pressure occurred in Subunit 5A with 40 hunters, an increase of 74% over the previous season. The harvest for 5A increased from 7 to 12 animals, while the success rate remained about the same (30%).

Subunit 5B had a decline in hunting pressure of 60%. The harvest for 5B declined from 17 goats to 8 goats, but the success rate increased from 56.6% to 75%.

Management Summary and Recommendations

The registration permit system provides more accurate data on hunting pressure and goat harvest than did the previous harvest ticket program. When coupled with regular aerial surveys, this system should provide sufficient information to manage mountain goat populations on a herd-by-herd or drainage-by-drainage basis.

For example, between 1980-81 and 1981-82, the shift in hunting pressure from Subunit 5B to Subunit 5A was quickly recognized due to the continual return of hunter reports throughout the season. Under the harvest ticket system, there was a tendency for the hunters to procrastinate about returning their reports until the season was over. Many did not return them at all. The mandatory reporting system seems to have eliminated most of those problems, although reminder letters did have to be sent to some hunters.

The observed shift in hunting pressure can probably be attributed to the creation of the Wrangell-St. Elias National Park on the west side of Yakutat Bay. Most of the area at the head of Icy Bay, historically used by sport hunters, has been closed to all hunting except by local subsistence users. The only exception is a small segment of the south ridge complex in the Chaix Hills that is outside the park boundary. The remainder of the Chaix Hills, as well as the Karr and Guyot Hills are closed to sport hunting.

This closure by the National Park Service has put unnecessary pressure on the remainder of the goat herds and actually works against both the sport hunter and the subsistence user. Icy Bay has historically received more sport hunting pressure than subsistence utilization. Closing it to sport hunting has forced hunters into areas that are more accessible and suitable to subsistence users and, as a result, has put more pressure on local herds normally used by area residents. The Icy Bay herds, which are best suited for sport utilization, are receiving less pressure.

No changes in seasons or bag limits are recommended.

PREPARED BY:

SUBMITTED BY:

Ronald E. Ball
Game Biologist III

Nathan P. Johnson
Regional Management Coordinator

MOUNTAIN GOAT
SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 6

GEOGRAPHICAL DESCRIPTION: Prince William Sound-North Gulf Coast

PERIOD COVERED: July 1, 1981-June 30, 1982

Seasons and Bag Limit

Hunt No. 830

Unit 6D, that Aug. 10-Nov. 30
portion of the
mainland between
Cape Fairfield
and Tiger Glacier

One goat by drawing
permit only. 20 per-
mits will be issued. See
5 AAC 81.055 and sepa-
rate drawing permit
hunt supplement.

Hunt No. 878

Unit 6B and No open season
that portion of
Unit 6A lying
west of Bering
River, Canyon
Creek, and Martin
River Glacier,
plus the Suckling
Hills.

Hunt No. 879

Remainder of Aug. 1-Dec. 31
Unit 6

One goat by registration
permit only. See 5 AAC
81.055 and separate regis-
tration permit hunt supple-
ment.

Conditions outlined in the 1981-82 Permit Hunt Supplements were
as follows:

Hunt No. 830

1. Application deadline was June 26 for 20 permits that were
drawn by July 20, 1981.

2. Successful hunters were required to report their kill and present the horns for measurements within 10 days to a Fish and Game office in Anchorage, Palmer, Soldotna, Homer, Seward, or Cordova.
3. Unsuccessful hunters were required to return their completed permit reports within 15 days after the close of the season.

Hunt No. 879

1. Hunters were required to obtain a registration permit at a Fish and Game office in Seward, Anchorage, Valdez, Glennallen, Cordova, or Yakutat. Permits were available beginning July 27 and throughout the season.
2. Successful hunters were required to report their kill and present the horns for measurement within 10 days to a Fish and Game office in Seward, Anchorage, Valdez, Glennallen, Cordova, or Yakutat.
3. Unsuccessful hunters were not required to return their permit reports.

Population Status and Trend

Mountain goat populations in Unit 6 appear to be stable except for the area from Copper River to Bering Glacier where small isolated herds are well below the desired level.

Population Composition

Surveys were flown in 1981 in Prince William Sound between Columbia Glacier and Gravina Point. Three surveys flown in September revealed 723 goats; 16.2% of the herd were kids. Survey data are shown in Appendix A.

Mortality

The 1981 mountain goat harvest in Unit 6 was 128 animals: 70 males, 55 females, and 3 of unknown sex (Appendix B). The area from Valdez Arm to Rude River (within Hunt No. 879) produced the largest harvest: 48 animals. The area east of Suckling Hills (also in Hunt No. 879) followed with a harvest of 29 goats.

The Department issued 659 registration permits for Hunt No. 879. The harvest for this hunt was 122 goats: 66 males, 53 females, and 3 unknown sex. Chronology of the harvest was as follows: August, 21 goats; September, 32 goats; October, 39 goats; November, 19 goats; and December, 11 goats.

Hunt No. 830 produced a harvest of 6 goats from the 20 permits issued. Eight of the 20 permittees actually hunted.

Management Summary and Recommendations

The 1981 mountain goat harvest of 128 compares favorably with previous harvests (Appendix C). Analysis of the harvest data by area for the previous 6 years shows annual fluctuations, but the Valdez Arm to Rude River portion of Prince William Sound continues to yield the most goats.

Mountain goat populations in Unit 6 appear to be in good numbers except for the Copper River to Bering Glacier area where wolf predation is believed to have caused a decline in the goat populations. Aerial surveys flown in 1981 revealed one-third more goats in the Columbia Glacier to Gravina Point area than observed in 1973 and 1974. The difference in numbers is believed to be a function of survey conditions rather than an increase in numbers.

Mountain goat populations in Unit 6 appear to be withstanding the current level of harvest without apparent detrimental effects. Therefore, no regulatory changes were recommended.

PREPARED BY:

SUBMITTED BY:

Julius L. Reynolds
Game Biologist III

Leland P. Glenn
Survey-Inventory Coordinator

APPENDIX A. Unit 6 mountain goat survey data, fall 1981.

Area	Date	Adults	Kids	Total	Kids/100 adults	% kids in pop.
Columbia Glacier to Valdez	9/21/81	146	30	176	20.5	17.0
Jack Bay to Port Fidalgo	9/22/81	252	39	291	15.5	13.4
Port Fidalgo to Gravina Point	9/23/81	208	48	256	23.1	18.8
Totals		606	117	723	19.3	16.2

APPENDIX B. Unit 6 mountain goat harvest by area and sex, fall and winter 1981.

Unit/ area no.	Area description	Male	Female	Unk.	Total	%
6-01	East of Suckling Hills to Icy Bay	14	13	2	29	23.8
6-02	Bering Lake-Burg Lake area	1	0	0	1	0.8
6-03 ^a	Suckling Hills	--	--	--	--	--
6-04 ^a	Ragged Mountain	--	--	--	--	--
6-05 ^a	Goat Mountain	--	--	--	--	--
6-06	Rude River to Copper River	5	5	0	10	8.2
6-07	Valdez Arm to Rude River	25	23	0	48	39.3
6-08	Valdez Arm	13	5	1	19	15.6
6-09	Port Wells to Columbia Glacier	0	0	0	0	0.0
6-10	Unit 6 - Unknown	0	0	0	0	0.0
6-11	Whittier-Port Wells	6	2	0	8	6.6
6-12	Kings Bay to Cape Fairfield	1	4	0	5	4.1
6-13	Prince William Sound - Unknown	1	1	0	2	1.6
Hunt No. 879 totals		66	53	3	122	100.0
% of total		54.1	43.4	2.5	100.0	
Hunt No. 878 - Closed to goat hunting.						
Hunt No. 830 Totals		4	2	0	6	

^a Closed to goat hunting.

APPENDIX C. Unit 6 mountain goat harvest by area and year, 1976-1981.

Unit/ area no.	Area description	1976	1977	1978	1979	1980	1981	Avg.
6-01	East of Suckling Hills to Icy Bay	6	6	17	18	19	29	16
6-02	Bering Lake-Burg Lake Area	11	7	5	12	3	1	7
6-03	Suckling Hills	0	3	4	3	1	-- ^a	2
6-04	Ragged Mountain	9	7	6	5	1	-- ^a	6
6-05 ^a	Goat Mountain	--	--	--	--	--	--	--
6-06	Rude River to Copper River	10	10	10	9	9	10	10
6-07	Valdez Arm to Rude River	28	30	34	24	41	48	34
6-08	Valdez Area	6	10	20	23	17	19	16
6-09	Port Wells to Columbia Glacier	11	9	8	6	8	0	7
6-10	Unit 6 - Unknown	11	5	5	8	0	0	5
6-11	Whittier-Port Wells	6	0	0	2	3	8	3
6-12 ^b	Kings Bay to Cape Fairfield	24	14	23	20	14	11	18
6-13	Prince William Sound -Unknown	1	8	3	3	4	2	4
Totals		123	109	135	133	120	128	125

^a Not open to hunting.

^b Includes the Cape Fairfield to Tiger Glacier area which was restricted to drawing permit holders in 1980 and 1981.

MOUNTAIN GOAT

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNITS: 7 and 15

GEOGRAPHICAL DESCRIPTION: Kenai Peninsula

PERIOD COVERED: July 1, 1981-June 30, 1982

Season and Bag Limit

Units 7 and 15, No open season
those portions
within the Kenai
Fjords National
Park, the Exit
Glacier closed
area, and the
Cooper Landing
closed areas

Remainder of Units Aug. 10-Nov. 30
7 and 15

One goat by drawing permit
only; 185 permits will
be issued. See 5 AAC 81.055
and separate drawing permit
hunt supplement.

Population Status and Trend

Results of surveys conducted in trend count areas suggest a continued increase in the Kenai Mountain goat population. These surveys indicated moderate to high densities of goats in the count areas.

Population Composition

Aerial surveys were flown in selected goat permit areas; 575 goats were observed. Composition data from these surveys included 407 adults, 130 kids (32:100 adults), and 38 goats of undetermined age.

Mortality

Hunters reported harvesting 31 goats in 1981, compared to 27 in 1980. Composition of this harvest was 25 (81%) males and 6 (19%) females. Composition of the kill for the past 2 years has averaged 71% males and 29% females.

The Department received 955 applications for 185 available permits to hunt goats in 22 hunt areas. The previous year, the Department received 878 applications for 185 available permits to hunt in 27 distinct areas (5 hunt areas are now in Kenai Fjords National Park).

In 1981, only 92 (50%) permittees reported hunting; 31 (34%) were successful. The previous year, 73 (39%) permittees hunted; 28 (38%) were successful.

Successful hunters indicated they utilized aircraft (41.8%), boats (27.7%), and highway vehicles (23.3%) as primary means of transportation to the hunting area.

Management Summary and Recommendations

Goat hunting by drawing permit was initiated in 1980 by the Board of Game to distribute hunting pressure more evenly over the known goat habitat. Analysis of 1980 and 1981 harvest data indicated that this management approach was successful in controlling and distributing hunting pressure. However, under current permit allocations, hunters have only taken about 25% of the desired harvest.

I recommend that the number of drawing permits be increased. In addition, I recommend a separate late registration season to increase goat harvest in those areas of low hunting pressure.

PREPARED BY:

SUBMITTED BY:

Ted H. Spraker
Game Biologist III

Leland P. Glenn
Survey-Inventory Coordinator

MOUNTAIN GOAT
SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 8

GEOGRAPHICAL DESCRIPTION: Kodiak and Adjacent Islands

PERIOD COVERED: July 1, 1981-June 30, 1982

Season and Bag Limit

Unit 8	Sept. 1-Oct. 31	One goat by drawing permit only; 36 permits will be issued. See 5 AAC 81.055 and separate drawing permit hunt supplement.
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Population Status and Trend

The Unit 8 goat population continues to increase in size and in area of distribution.

Population Composition

Composition surveys were conducted in late summer 1981 and in late winter 1982. The summer survey was flown with fixed-wing aircraft and covered much of the known or suspected goat habitat. Inclement weather prevented complete coverage of some drainages. The winter survey was flown with a helicopter and included only the Terror Bay, Kizhuyak Bay, and northwestern Ugak Bay drainages. Results of the 2 surveys are shown in Appendix A.

The summer survey of 202 goats exceeded by 37% the previous high count of 149 goats in 1980. The count of 44 kids was the highest total count on record for summer composition counts; however, the ratio of 28 kids:100 adults was less than the previous 5 years' average of 30 kids:100 adults.

While 179 goats were observed in areas open to hunting, 23 goats were observed outside the area open to hunting. A herd of 20 goats, 13 adults and 7 kids, was observed in the Uyak Bay drainage. This newly established herd was previously reported to number 15 animals (Smith 1981).

The winter composition ratio of 32 kids:100 adults was higher than that recorded for the summer survey. Although the winter survey's sample size was much smaller, the data suggest that winter survival of kids was high.

Mortality

Eleven goats, 7 males and 4 females, were killed by hunters in 1981. Seventeen permittees reported hunting, and hunter success was 65%. The 7 males ranged from 2 to 9 years old and had a mean age of 4.1 years. The 4 females ranged from 1 to 4 years old and had a mean age of 2.8 years. Distribution of the 1981 harvest is shown in Appendix B.

Management Summary and Recommendations

Recent mild winters, favorable for the survival and establishment of goat herds in previously uninhabited range, have resulted in an increasing population. The 1981 harvest of 11 goats represented only 6% of the 179 goats observed during the summer survey in areas open to hunting.

An annual harvest of 20 goats should be sustainable if the increasing population trend continues. Sufficient additional hunting permits should be issued in 1982 to accomplish this harvest level.

Literature Cited

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PREPARED BY:

SUBMITTED BY:

Roger B. Smith
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Leland P. Glenn
Survey-Inventory Coordinator

APPENDIX A. Results of surveys flown, 1981 and 1982.

Date	Adults	Kids	Total	Kids/100 adults
8/6, 8/26, 9/1/81	158	44	202	28
2/27-2/28/82	60	19	79	32

APPENDIX B. Distribution of the 1981 goat harvest, Unit 18.

Hunt No.	Location	Males	Females	Total
871	Wild Cr.-Center Mtn.	3	2	5
872	Crown Mountain	2	0	2
873	Hidden Basin-Terror Lk.	0	2	2
874	West Ugak Bay	2	0	2
Totals (%)		7 (64)	4 (36)	11

MOUNTAIN GOAT
SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 11

GEOGRAPHICAL DESCRIPTION: Wrangell Mountains

PERIOD COVERED: July 1, 1981-June 30, 1982

Season and Bag Limit

Sept. 1-Dec. 31

One goat by registration
permit only

Population Status and Trend

Comparison of trend count information suggested that the mountain goat population in the southern portions of the Wrangell Mountains is stable or increasing slightly. Aerial surveys were flown over 5 trend count areas north of the Chitina River; 250 goats were counted. Surveys conducted over the same areas in 1970 and 1973 show that only 127 goats were counted. The degree of error associated with a direct comparison of these counts, however, is unknown.

Population Composition

Few data are available on population composition. However, trend count information suggested the ratio of kids:100 adults was 25:100. Additional population data obtained from aerial surveys were unreliable due to the difficulty of determining sex and age from the air.

Mortality

The 1981 mountain goat harvest was 10, 4 more than in the previous year. The harvest was comprised of 9 males and 1 female, with an average age of 6.6 years. Fifty-four registration permits were issued, and 23 permittees reported hunting. Aircraft were used by 8 and horses by 2 successful hunters.

Management Summary and Conclusions

More goats were counted in 1981 than in previous years. Because of the many variables associated with aerial counts, population trends are often difficult to detect. However, the increase in the number of goats observed between surveys in the early 1970's and recent surveys suggest the goat population is experiencing some growth.

The mountain goat harvest increased slightly in 1981. Harvest data suggest goats are numerous enough for hunters to select for older males. The success rate is high for those permittees actually hunting.

Management guidelines indicate the harvest of mountain goats should not exceed 10% of the population. The current harvest, based on 1981 count data, is well below the 10% level. The possibility of overharvesting local, accessible populations exists; such areas should be monitored to prevent overharvesting.

No changes in season dates or bag limits were recommended.

PREPARED BY:

SUBMITTED BY:

Robert W. Tobey
Game Biologist III

Leland P. Glenn
Survey-Inventory Coordinator

MOUNTAIN GOAT
SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNITS: 13 and 14

GEOGRAPHICAL DESCRIPTION: Nelchina and Upper Cook Inlet

PERIOD COVERED: July 1, 1981-June 30, 1982

Season and Bag Limit

Units 13, 14A No open season
north of the Matak-
nuska River and
14C within Chugach
State Park

Remainder of Unit	Aug. 10-Nov. 30	One goat by drawing permit only; 50 permits will be issued. See 5 AAC 81.055 and separate drawing permit hunt supplement.
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Population Status and Trend

An estimate of mountain goat numbers was extrapolated from 1981 composition surveys conducted in Subunit 14B and portions of Subunits 14A and 14C. The estimate for goats in Unit 14 is 340 ± 50 (50 ± 10 in Subunit 14A, 55 ± 10 in 14B, and 235 ± 30 in 14C). The number of goats in Unit 13 is unknown.

The current goat population estimate in Unit 14 appears similar to a population estimate derived from composition surveys conducted during 1974 and 1976. This estimate was 350 ± 45 goats.

Differences in the adult segments of the 2 goat populations surveyed in 1974-76 and 1981 are evident. During 1974-76, approximately 207 adults were observed, and 189 adults were observed in 1981. Further analysis reveals a large disparity between years in the number of adult goats in areas open to hunting. In these areas, 198 adults were counted during 1974-76 and 153 adults in 1981.

Population Composition

During 1981 composition surveys, 61 kids (24%) and 189 adults (76%) were observed. Composition surveys did not include Subunit 14A south of the Matanuska River (which 30-50 goats inhabit), a portion of 14C (which 20-30 goats inhabit), and Unit 13.

Mortality

Hunters killed 3 goats in the present drawing permit hunt. Fifty permits were issued, but only 24 (48%) permittees hunted. The success rate was 12.5%. Two goats were harvested in Subunit 14C and 1 in 14B.

Management Summary and Recommendations

Composition surveys indicate that the number of goats in Unit 14 has remained stable. However, these composition surveys were incomplete. It is recommended that composition surveys be conducted throughout the goat range in Units 13 and 14 to provide a more accurate assessment of population status and trend.

Since initiation of drawing permit hunts for goats, only 50% of the permittees have hunted goats in permit areas. Severity of fall weather and the difficulty in hunting goat habitat were probably responsible for this low participation rate.

Hunter success has seldom exceeded 20% in any hunt area within Unit 14 under the current permit system. This hunter success rate and the present level of permittee participation have caused the goat harvest to be below the desired harvest of 12-16 goats. Therefore, I recommend an increase in the number of goat permits issued for Unit 14. Additional permits would allow greater hunter participation and not be detrimental to the goat population.

PREPARED BY:

SUBMITTED BY:

Herman J. Griesse
Game Biologist II

Leland P. Glenn
Survey-Inventory Coordinator

SHEEP

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 7 and 15

GEOGRAPHICAL DESCRIPTION: Kenai Mountains

PERIOD COVERED: July 1, 1981-June 30, 1982

Season and Bag Limit

Aug. 10-Sept. 20

One ram with 7/8-curl
horn or larger

Population Status and Trend

Aerial surveys were conducted in portions of Unit 15 during summer 1981. Data from these areas indicated a stable to slightly decreasing population. Information about the entire Kenai Mountain sheep population is not adequate to accurately assess its status; however, I believe it is stable and healthy.

Population Composition

There were 395 sheep classified during aerial surveys conducted in Unit 15 trend count areas (Appendix A). The sample included 21 (5%) legal rams, 64 (16%) sublegal rams, 69 (18%) lambs, and 241 (61%) ewes and unclassified sheep.

A comparison of trend count data suggested a slight decrease in the percent of legal rams from 1979 (8.3%) to present (5.3%). The number of lambs/100 unclassified sheep (Appendix A), however, appears to represent an average rate of productivity.

Mortality

There were 11 rams reported killed in the Kenai Mountains during 1981. The harvest show a substantial decline when compared to the 1980 harvest of 30 rams and is well below the previous 10-year average of 47 rams.

The decline in harvest is thought to be related to the reduced number of legal rams and reduced hunting pressure. The reported hunting pressure decreased from 182 hunters in 1980 to 107 hunters in 1981. Sheep hunting pressure for the past 10 years has averaged 165 hunters.

Management Summary and Recommendations

The sheep hunting pressure and harvest show a downward trend since 1967. Both the reduced hunting effort and the decline in the number of legal rams have contributed to the below average harvest.

Current mortality rates appear to be preventing the Kenai Mountain sheep population from increasing. Mortality factors in addition to hunting should be identified.

PREPARED BY:

SUBMITTED BY:

Ted H. Spraker
Game Biologist III

Leland P. Glenn
Survey-Inventory Coordinator

APPENDIX A. Unit 15 aerial sheep composition surveys from Kenai River to Sheep Creek, 1978-1981.

Year	% legal rams of total observ.	% sublegal rams of total observ.	Sublegal/100 legal rams	% lambs of total observ.	Lambs/100 unclass.	Sheep/ hour	Sample size
1978	7.2 ^a	13.9	193	18.9	31.6	32	417
1979	8.3 ^b	16.0	191	14.0	22.6	45	551
1980	6.6 ^b	10.0	150	16.6	24.8	41	452
1981	5.3 ^b	16.2	305	17.5	28.6	36	395

^a Minimum requirement for a legal ram was 3/4 curl.

^b Minimum requirement for a legal ram was 7/8 curl.

SHEEP

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 11 and 12

GEOGRAPHICAL DESCRIPTION: Wrangell Mountains

PERIOD COVERED: July 1, 1981-June 30, 1982

Season and Bag Limit

Aug. 10-Sept. 20

One ram with 7/8-curl
horn or larger

Population Status and Trend

Dall sheep are abundant, and numbers are either stable or slightly increasing in the Wrangell Mountains. During summer 1981, 11,458 sheep were counted. Sheep populations of unsurveyed areas were estimated using data gathered from the early 1970's and took into account increased survey efficiency and greater lamb numbers observed in 1981. Based on this approach, I estimate the Wrangell Mountains sheep population at 16,000-17,000 which represents considerable increase over the previous estimate of 12,000 made by Heimer and Smith in 1979. Generally favorable weather conditions have prevailed since the mid-1970's (particularly on the north side of the range) and may have resulted in modest increases in sheep populations since the early 1970's; however, the primary reason for the apparent increase in sheep numbers is greater survey effort and efficiency. In areas where survey technique and effort are comparable, little change has been noted except the increase in number of lambs seen in 1981 surveys.

Gradual changes in population numbers will occur as weather and harvest affect recruitment and mortality. Further population increases are not expected. There are no data to indicate that the current densities should cause concern for the range.

Population Composition

Department personnel counted 9,528 sheep in the surveyed portion of the Wrangell-St. Elias Park Preserve; the National Park Service (NPS) staff counted 1,930 sheep in the surveyed portion of the park proper. Department surveys were done from Piper PA-18-150 hp Super Cub aircraft, and the NPS used a Jet Ranger helicopter with pilot and 3 observers. Not all areas of the park and park preserve were surveyed because of unsuitable weather.

Lamb production in the Wrangell Mountains was good in 1981. In the northern populations (Unit 12), lambs composed 20.4% of the

sample with an overall lamb:100 ewe ratio of 36:100. The southern (Unit 11) populations were slightly better with lambs composing 23% of the sample for a ratio of 39 lambs:100 ewes. Ratios derived from aerial surveys must always be considered minimal because some young rams and unproductive yearlings are inevitably classified as productive ewes. The actual lamb:100 ewe ratios are higher. The percentage of legal rams is about the same in the northern and southern areas. On the north side, observers classified 3/4-curl and greater rams (10.3%), on the south side, observers classified rams 7/8-curl rams or greater (8.3%). These classifications should not be thought unimpeachable, since classification of rams to the nearest 1/8-curl from aircraft is tenuous.

Mortality

Hunting pressure during this reporting period was nearly equivalent to levels before establishment of the Wrangell-St. Elias National Park and Preserve in late December 1978. Harvest ticket returns showed that 564 hunters harvested 305 sheep. Residents took 218 (72%) rams with a mean horn length of 34.0 inches. Nonresidents took 83 (27%) rams with a mean horn length of 34.5 inches. Four rams were taken by hunters of unknown residency. Fifty-five percent of all hunters used aircraft for transportation, 22% used highway vehicles, and 23% used other methods.

In Unit 11, more than 25% of the 93 rams harvested came from the Barnard and Chitina Glaciers and had a mean horn length of 37.1 inches. It is questionable whether this horn size can be maintained at this harvest level. Over 15% of the harvested rams came from the Copper Glacier east of Mt. Sanford; their mean horn length was 34.4 inches. The remaining 55 sheep came from 16 other locations, bringing the mean horn length for Unit 11 to 35.7 inches.

In Unit 12, 50% of the 212 rams were taken from the Mentasta Mountains and had a mean horn length of 33.5 inches. The remaining 106 rams harvested from 12 other locations brought the mean horn length in Unit 12 to 33.5 inches. No other mortality factors were investigated during the report period.

Management Summary and Recommendations

Approximately 2,500 to 3,000 sheep are found in the park proper. This leaves about 80% (13,500-14,000) of the sheep available for sport hunting. Major concentrations within the park proper occur (in Unit 11) between the Long Glacier and Castle Peak (600-700 sheep) and along the south side of the White River in Unit 12 (900-1,000 sheep). Smaller concentrations which reside in the park proper are found north of Nikolai Pass and in the area of Mt. Sanford (300-500 sheep in each area). Hunting of these sheep is limited exclusively to subsistence harvest. While the number of sheep within the park proper is relatively small (about 20% of the Wrangells population), it should be noted that the largest

Dall rams in Alaska occur within the park proper above Barnard Glacier and to the south in the upper reaches of the Chitina valley in the Chugach Mountains. These rams have an unmatched trophy potential for sheep within Alaska.

Dall sheep populations in the Wrangell Mountains are abundant and productive. Populations on the northern side of the range are quite dense and are not expected to increase significantly. Sheep populations on the south side are less dense. In Unit 11, there has been no apparent increase from the early 1970's. Given current levels of sport hunting, the 7/8-curl regulation is probably adequate to maintain mature rams in these populations for breeding purposes. The Department should monitor harvest and legal ram abundance to prevent a severe depletion of mature rams if hunter pressure or other factors change. No changes in season or bag limit are currently recommended.

Nearly all sheep range in the Wrangell Mountains is managed by the NPS as park preserve or park lands. This condition may assure adequate protection of sheep habitat from incompatible uses but may pose other problems in the future. One potential problem is subsistence use of Dall sheep. Any regulations to accommodate subsistence use should be in the best interests of the sheep resource. If these populations are indeed stable or increasing slightly, a relatively small increase in mortality will likely result in a decline of sheep numbers.

The NPS has considerable latitude in regulating sheep hunting within the park preserve through access regulations and area closures. Regulations currently governing access by aircraft are liberal but may become more restrictive. Perceived conflicts between sheep hunters and nonconsumptive recreationists could also influence NPS to curtail sheep hunting. Care should be taken to communicate with the NPS on regulatory changes which may generate conflicts.

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SUBMITTED BY:

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SHEEP

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 11, 13, and 14

GEOGRAPHICAL DESCRIPTION: Chugach Mountains

PERIOD COVERED: July 1, 1981-June 30, 1982

Seasons and Bag Limit

Units 11, 13 and 14A	Aug. 10-Sept. 20	One ram with 7/8-curl horn or larger
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Unit 14C	Sept. 8-Sept. 20
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Population Status and Trend

Sheep surveys were conducted only within the Subunit 14C portion of the Chugach Mountains. A total of 1,292 sheep were observed, an 11% increase over 1980 and a 30% increase over 1979. These data support the belief that the population has remained relatively stable or increased slightly.

The Chugach Mountain Range contains portions of 4 Game Management Units or Subunits. From west to east, these include Subunit 14C which extends from Anchorage to Knik River, Subunit 14A from the Knik River to the Coal Creek drainage, Unit 13 from Coal Creek to the Copper River near Chitina, and Unit 11 from the Copper River to the Yukon border. The Unit 11 portion is within the Wrangell-St. Elias National Park and is entirely closed to sport hunting. The Unit 13 and Subunit 14A portions have an open season (Aug. 10-Sept. 20) of 40 days. Within 14C, the season runs from the day after Labor Day until September 20, a 13-19 day period depending on when Labor Day occurs. The greatest densities of sheep are found within Subunits 14A and 14C which represent only about 25% of the sheep range, yet contain approximately 45% of the sheep population.

Population Composition

Survey data collected within Subunit 14C revealed that 6.3% of the sheep were legal rams and 18.5% were lambs. The percentage of lambs was the highest on record. The relatively low percentage of legal rams reflects excellent lamb production and survival in recent years and a rapidly growing population. The actual number of legal rams (82) is similar to past years and should increase over the next several years as production levels off and the population matures.

Mortality

One hundred one legal rams were killed by 357 sport hunters (28% successful) in 1981, 10 more than during 1980 and 22 less than the 1976-1980 mean harvest. Of those taken in 1981, 2 were killed in Unit 11, 57 in Unit 13, 13 in Subunit 14A, and 29 in Subunit 14C. Mean horn size of the 1981 harvest was 35.4 inches, identical to the mean horn size of the previous 2 years.

The below average harvest apparently reflects the 1979 regulation change which increased the minimum horn size from 3/4 to 7/8 curl. The level of harvest should increase in 1982 as more rams reach legal horn size. Within Subunit 14C, the season which opens the day after Labor Day will increase from 13 days in 1981 to 24 days in 1982. For this reason, the 1982 kill from Subunit 14C is expected to increase.

Management Summary and Recommendations

Harvest data from throughout the Chugach Mountain Range, together with aerial survey data from Subunit 14C, indicate a stable, or slightly increasing, sheep population.

A substantial increase in hunting pressure, anticipated after the passage of Alaska National Interest Lands Conservation Act, has not occurred. Perhaps both access limitations and existing levels of hunting pressure dictate maximum participation at or near current levels. Within Subunit 14C, hunting pressure declined by 36%, mainly as a result of a shorter season. Elsewhere in the range, hunting pressure increased only 6%. Hunter success increased from 23% in 1980 to 28% in 1981.

Under the existing management plan, hunting pressure and harvest levels in 14C are sufficiently high to warrant hunting by permit only. Such a system has been recommended for the 1982-83 season. Current harvests and hunting pressure on rams in the remainder of the range do not warrant similar changes at this time.

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SHEEP

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 12, 13, and 20

GEOGRAPHICAL DESCRIPTION: Tok Management Area

PERIOD COVERED: July 1, 1981-June 30, 1982

Season and Bag Limit

Units 12, 13, and 20, that portion known as the Tok Management Area (see 81.229 Controlled Use Areas)	Aug. 10-Sept. 20	One ram with full (4/4) curl horn or larger by drawing permit only. 120 permits will be issued. See 5 AAC 81.055 and separate permit hunt supplement.
	Sept. 25-Oct. 30	One ewe sheep by registration permit only; only 20 ewe sheep may be taken. See 5 AAC 81.055 and separate permit hunt supplement.

Population Status and Trend

No extensive aerial surveys were conducted in the Tok Management Area (TMA) during the reporting period. However, based upon rather constant lamb production and survival, no significant changes in population size were likely. Winter 1981-82 was more severe than normal in terms of snow cover, hardness, and depth on the winter range. As of early April, winter ranges were still blanketed with snow, and sheep occupied areas of lower elevation than normal for early spring.

Population Composition

A total of 5,758 sheep were classified at the Sheep Creek lick during late May and June 1981 (data not included in the 1980-81 report). Of the 5,758 sheep seen during lick observations, many were classified repeatedly. Among sheep classified at the lick, 938 (16%) were yearlings; 1,503 (26%) were lambs. There were 32 yearlings/100 ewes and 52 lambs/100 ewes. Survival of the 1980 lamb crop to age 13 months was 49%.

Eighty-six percent of 65 known-age, collared ewes over 2 years old were accompanied by lambs. This sample revealed a greater, but unexplained, rate of lamb production-survival than in the population as a whole.

Mortality

Natural factors are responsible for the greatest mortality in the TMA. Wolves, wolverines, and golden eagles are common in the area; all have been found to prey upon sheep.

The ram harvest was 49 during the 1981 season for the TMA. Of the 781 hunters who applied for permits, 120 (15%) received permits. Twelve permits were issued to nonresidents and 108 to residents. Among the 83 hunters who reported hunting in the TMA, 59% were successful. Mean horn length was 37.12 inches, approximately the same as during 1980.

Only 5 ewe sheep were taken, as snow conditions dissuaded many hunters who obtained permits from hunting.

Management Summary and Recommendations

The TMA is fulfilling its function as a trophy sheep hunting area. The sheep population is apparently stable, production is good, and mean horn size of rams harvested remains high. No changes in seasons or bag limits are recommended.

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SHEEP

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 13 and 14

GEOGRAPHICAL DESCRIPTION: Talkeetna Mountains and Chulitna/
Watana Hills

PERIOD COVERED: July 1, 1981-June 30, 1982

Season and Bag Limit

Units 13, 14A, and 14B	Aug. 10-Sept. 20.	One ram with 7/8-curl horn or larger
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Population Status and Trend

The Talkeetna Mountains and Chulitna/Watana Hills sheep ranges (TCW) are located in portions of 4 Game Management Subunits. The Talkeetna Mountains sheep range includes Subunit 14A north of the Matanuska River, Subunit 14B, Subunit 13A, and Subunit 13E south of the Susitna River. The Chulitna/Watana Hills sheep range include the portion of Subunit 13E between the Susitna, Chulitna and Nenana Rivers.

In 1981, sheep composition surveys were flown in the Subunit 14A and 14B portions of the Talkeetna Mountains. A total of 628 sheep were counted, 336 in Subunit 14A, and 292 in Subunit 14B. In these surveys, 48.5% more sheep were observed than in previous surveys (423) conducted in 1974.

A sheep survey was also flown in the Watana Hills portion of the Chulitna/Watana Hills range, and 209 sheep were classified. In that survey, 17% more sheep were observed than in a previous survey (174) conducted in 1980.

Population Composition

Composition surveys were flown in the Watana Hills (Subunit 13E) and the Talkeetna Mountains (Subunits 14A and 14B). Survey results are shown in Appendix A.

Mortality

There were 236 hunters who reported killing 96 rams. Hunters killed 64 rams (66.7%) in Subunits 13A and 13E, 20 rams (20.8%) in Subunit 14A, and 12 rams (12.5%) in Subunit 14B. The number of rams killed was the highest reported in the TCW since 1975, and hunter success (41%) was the highest reported to date (Appendix B).

Management Summary and Recommendations

The sheep population in TCW appears to be increasing. The relatively mild winters for the past several years are believed the primary reason for the increases.

Changes in Federal land status beginning in 1978 have reduced the areas open to sheep hunting in Alaska. Department staff speculated that this would markedly increase hunting pressure in areas which remained open to sheep hunting. An increase in hunting pressure, however, did not occur. With the exception of the 1977 season, 1981 data show the lowest number of sheep hunters utilizing the TCW sheep range on record.

No changes in season or bag limits were recommended.

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APPENDIX A. Composition surveys flown in Subunits 13E, 14A, and 14B.

Area	Legal rams	Sublegal rams	Lambs	Unspecified	Total
Subunit 13E	2	37	43	127	209
(Watana Hills)					
Subunit 14A	31	61	64	180	336
Subunit 14B	22	38	68	164	292

APPENDIX B. Reported harvest of Dall sheep rams, numbers of hunters, and % success of hunters for Talkeetna Mountain Range, 1971-1981, as derived from harvest reports.

Year	All hunters ^a			Residents			Nonresidents		
	No. rams harvested	No. hunters	% success	No. rams harvested	No. hunters	% success	No. rams harvested	No. hunters	% success
1971	85	240	35	39	178	22	44	59	75
1972	81	304	27	41	227	18	34	61	56
1973	61	277	22	39	232	17	21	31	68
1974	114	312	37	83	259	32	26	40	65
1975	109	281	39	75	231	32	30	40	75
1976	77	300	26	55	267	21	20	29	69
1977 ^b	55	203	27	40	182	22	14	17	82
1978	77	304	25	56	256	22	19	38	50
1979 ^c	65	269	24	37	225	16	27	37	73
1980 ^c	80	244	33	48	187	26	31	51	61
1981 ^c	96	236	41	62	187	33	31	43	72

^a Data included hunters of unknown residency.

^b No reminder letters were sent to sheep hunters.

^c Legal horn size increased from 3/4 to 7/8 curl.

SHEEP

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 13 and 20

GEOGRAPHICAL DESCRIPTION: Delta Controlled Use Area (including the drainages of the Delta River from McGinnis Creek south to Castner Glacier and drainages of the Tanana River flowing into its south bank from the Delta River upstream to the west bank of the Johnson River)

PERIOD COVERED: July 1, 1981-June 30, 1982

Season and Bag Limit

Aug. 10-Sept. 20

One ram with 7/8-curl horn or larger by permit only
See drawing permit hunt supplement.

Population Status and Trend

The Dall sheep population in the Delta Controlled Use Area (DCUA) was estimated to number 1,500 in 1980. No estimates have been made since that time, and the trend of the population is uncertain.

Population Composition

Population composition was determined from ground classification counts at the Granite Creek and Little Gold Creek mineral licks. The Granite Creek count was conducted in late June 1981, the Little Gold Creek count in late July 1981. A total of 314 sheep were classified at the 2 licks. Lambs composed 22% of the population, about average for known production in the DCUA since 1972. There were 44 lambs/100 ewes and 49 yearlings/100 ewes. The figure for yearlings appears inconsistent with the previous year's data, as the 1980 count indicated 39 lambs/100 ewes. I feel that the number of yearlings in the population in 1981 was lower than indicated here. Similar inconsistencies have occurred in data from the Granite and Little Gold Creek mineral licks in the past. The terrain in these areas is such that without using blinds, sheep must be observed at distances too great to allow accurate classification.

Mortality

A total of 447 individuals applied for the 120 permits available for hunting in the DCUA. Thirty sheep were harvested. Success

rate for the 80 hunters who participated was 38%. Horn size as measured and reported by hunters averaged 35.2 inches. Average horn size has increased since the inception of permits and the 7/8-curl regulation in 1978 and 1979, respectively. The average horn size reported in 1980 was 34.5 inches and 34.6 inches in 1979.

As in 1980, most hunter effort was concentrated on the Gerstle River and its tributaries. In 1981, more effort was expended in the mountains along the Richardson Highway than in 1980, but the portion of the harvest (7%) did not change. The greatest success was realized on the Gerstle drainage, followed by the Granite Mountains and Jarvis Creek. The proportion of hunters utilizing aircraft (37%) increased 10% in 1981 from the previous year. Forty-five percent of the successful hunters used this transportation mode. Walk-in hunters took 30% of the reported harvest.

Other mortality remains unquantified. During a March 4, 1982 aerial wolf survey, 4 sheep apparently killed by wolves were observed. One apparent accidental mortality was noted. In mid-February, rain and subsequent crusting snow conditions may have made forage inaccessible and therefore caused some prenatal lamb and short yearling mortality.

Management Summary and Recommendations

The apparent inconsistency in yearling survival in the 1981 data suggests that the observation technique used at both licks may need to be changed to permit closer viewing of sheep at licks. The use of camouflaged observation blinds should be tried as a technique for improving the accuracy of classification.

Average horn size of sheep taken in the DCUA in the past 3 seasons has increased, suggesting that additional sheep could be taken. An increased number of permits would allow a greater harvest but would increase hunter density and possibly decrease hunter satisfaction. Since the management goal for the DCUA is hunting under aesthetically pleasing conditions, hunter satisfaction should be monitored if the number of permits is increased. If hunter satisfaction becomes a concern, some method of distributing hunting pressure would have to be implemented, or permits reduced in number.

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SHEEP

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 16, 17, and 19

GEOGRAPHICAL DESCRIPTION: Alaska Range West of Denali National Park

PERIOD COVERED: July 1, 1981-June 30, 1982

Season and Bag Limit

Aug. 10-Sept. 20

One ram with 7/8-curl
horn or larger

Population Status and Trend

Surveys flown before 1979 indicated the sheep population in the western Alaska Range was stable or slightly increasing. No data have been gathered since, and population status and trend are presently unknown.

Mortality

One hundred forty-one hunters reported hunting in the western Alaska Range in 1981. This was fewer than 1980 and continues the trend in decreasing hunter numbers that started in 1978. In 1977, an all-time high of 297 hunters reported hunting in the western Alaska Range. Total harvest was 93 rams. Hunter success was 66% in 1981, which exceeds the average success rate recorded for recent years. Reasons for this increase are unknown. Residents enjoyed a 47% success ratio; nonresident success was 85%. This difference is probably a result of the guide requirement for nonresident sheep hunters. The mean number of days hunted, 4.9 for residents and 5.0 for nonresidents, was similar. Horn length averaged 35.4 inches in 1981, an increase of 0.8 inches over the mean horn length since establishment of the 7/8-curl regulation in 1979. About a third of the rams harvested in the western Alaska Range during 1981 came from the area between Sheep Creek and Big River. The other major hunting area was the lower and middle South Fork of the Kuskokwim River where 24% of the 1981 harvest occurred. These areas have traditionally yielded most of the harvest from the western Alaska Range. Harvest in the Tonzona drainage and Unit 16 declined considerably during the last 2 years.

Management Summary and Recommendations

Following land classification changes attending settlement of the Alaska Native Claims (summer 1979), sheep harvest in the western Alaska Range appears to have declined. Although approximately

one-third of the sheep in the western Alaska Range occur in national parks where sport hunting is prohibited, there has been no apparent shift in hunting effort to areas remaining open to hunters.

No surveys have been flown during the last 3 years. Surveys should be conducted in summer 1982. The South Fork and the Sheep Creek-Windy Fork areas should be examined first because the greatest hunting pressure occurs there.

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SHEEP
SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 20

GEOGRAPHICAL DESCRIPTION: Alaska Range East of Denali Park,
except the Tok and Delta Areas

PERIOD COVERED: July 1, 1981-June 30, 1982

Season and Bag Limit

Aug. 10-Sept. 20

One ram with 7/8-curl
horn or larger

Population Status and Trend

This area contains a dense sheep population which appears to be stable. Surveys in 1981 indicate initial production and recruitment were above normal, and mortality appeared to have decreased due to wolf control in Subunit 20A. Sheep populations in or immediately adjacent to the wolf control area are increasing; sheep numbers elsewhere are declining.

Population Composition

Composition and productivity data obtained at the Dry Creek mineral lick during late June 1981 revealed that initial production was 60 lambs/100 ewes and recruitment was 43 yearlings/100 ewes.

Mortality

Harvest tickets indicated that during the 1981 season 116 sheep were taken, a take equaling annual harvests prior to institution of the 7/8-curl regulation in 1979. The lower harvests recorded for 1979 and 1980 (86 and 88 sheep, respectively) were a temporary but anticipated response to the new regulation. Recruitment to the 7/8-curl segment of the population appears to have been substantial since 1979 as evidenced by the marked increase of the 1981 harvest over those of the 2 previous years.

The mean horn length was 34.9 inches, the same as during 1979, and a slight increase from the 1980 average of 34.4 inches. The mean horn size for sheep taken by nonresidents was 1.9 inches longer than those taken by residents. This portion of the Alaska Range does not produce fast-growing, large-horned sheep.

In 1981, the 252 reporting hunters had an overall success rate of 46%. Successful hunters spent an average of 4.3 days afield. Residents composed 83% of the hunters, took 66% of the harvest, and had a 38% success rate. Nonresidents (17%) took 34% of the harvest, for a success ratio of 98%.

The pattern regarding transportation modes was similar to recent years. Hunters using horses experienced the highest success ratio (94%), and those using aircraft harvested the most sheep (63). Much of the western portion of Unit 20 is in the Yanert-Wood River Controlled Use Area, where off-road vehicles are prohibited, hence few ORV's are used by hunters in this area.

Transportation means used by successful hunters were as follows: aircraft (63%), horse (30%), off-road vehicle (5%), and highway vehicle (14%). Unsuccessful hunters used aircraft (76%), horse (2%), motorbike (3%), off-road vehicle (22%), and highway vehicle (27%).

Hunter pressure and harvest were highest in the Wood River drainage (Appendix A.)

Management Summary and Recommendations

Sheep populations adjacent to areas of intensive wolf control in the central Alaska Range continue slow increases from the lows recorded in the mid-1970's. The increases appear to be caused by wolf control. Populations not benefiting from wolf control continue to decline. Ewes examined in the eastern Alaska Range exhibit alternate-year reproduction; therefore, recruitment is relatively low. At the current rate of recruitment, sustainable ram harvest levels are not likely to increase significantly.

The central Alaska Range continues to remain a popular area for resident hunters, despite low numbers of large-horned sheep and only average hunting success.

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APPENDIX A. Sheep hunter success by drainage, Alaska Range east of Denali Park, except the Tok and Delta Areas, 1981.

Drainage	No. succ. hunters	No. unsucc. hunters	Total hunters	% success	Mean horn size (inches)
Yanert	13	10	23	57	35.2
Healy	17	46	63	27	33.9
Totatlanika	6	12	18	50	32.8
Tatlanika	3	2	5	60	37.0
Wood	52	28	80	65	35.3
Dry Creek	9	9	18	50	35.1
W. Fk. L. Delta	7	11	18	39	34.6
E. Fk. L. Delta	7	8	15	47	35.7
Delta Creek	2	10	12	17	34.4
Totals	116	136	252	46	34.9

SHEEP

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 20

GEOGRAPHICAL DESCRIPTION: Tanana Hills and White Mountains

PERIOD COVERED: July 1, 1981-June 30, 1982

Season and Bag Limit

Aug. 10-Sept. 20

One ram with 7/8-curl
horn or larger

Population Status and Trend

Discontinuous, low-density sheep populations are found in the Tanana Hills from the White Mountains to Glacier Mountain where suitable habitat exists. Although distribution and abundance surveys were not conducted during the reporting period, populations are thought to have changed little in recent years.

Population Composition

Sheep classification counts conducted from the ground during late July 1981 in the Mt. Schwatka/Jefferson Creek area revealed 66 lambs/100 ewes and 43 yearlings/100 ewes. Both lamb and yearling survival were excellent. A relatively small sample ($N = 76$) was obtained, however, and therefore may not be representative of the population.

Mortality

According to harvest ticket data, 9 sheep were harvested during the 1981 season, an increase over the 1980 harvest of 4. In recent years, annual harvests have averaged about 6. One ram was taken in each of the following locations: Glacier Mountain, Mt. Sorenson, Lime Peak, and Mt. Schwatka. Four sheep were taken from the Mt. Harper area; the harvest location of 1 sheep was not reported. Horn length averaged 36.25 inches.

Both successful and unsuccessful hunts averaged 4.9 days. Eighteen individuals reported hunting unsuccessfully during the 1981 season. All hunters were residents.

Management Summary and Recommendations

Low-density, disjunct populations characterize sheep residing in the Tanana Hills. Overall hunter numbers are low; however, the limited sheep resource in this area cannot support a significant

harvest increase. Access is generally difficult in the Tanana Hills, and harvests are not expected to increase significantly in the near future.

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SHEEP

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 23

GEOGRAPHICAL DESCRIPTION: Kotzebue Sound

PERIOD COVERED: July 1, 1981-June 30, 1982

Season and Bag Limit

Aug. 10-Sept. 20

One ram with 7/8-curl
horn or larger

Population Status and Trend

Although there have been few attempts to periodically duplicate surveys to determine sheep population trends, the 1981 S&I sheep report compared total sheep counted in the Wulik River area in 1980 with total sheep counted in 1977. The results were similar for the 2 years (114 and 111, respectively), but differences in the timing of the survey and the number of hours flown reduce the comparability of the results (Appendix A). We reviewed all of the sheep surveys for Unit 23 in an effort to find other comparable surveys which might indicate a population trend.

Tony Smith (in 1977) and Dave Johnson (in 1981) surveyed the upper Kugururok River drainage and adjacent portions of the Nimiuktuk River drainage (Appendix B). Both surveys began July 23; however, Smith flew approximately 3 times as long as Johnson but observed 7 fewer sheep. Ewe:lamb ratios were indicative of a very productive population. It appears that the sheep population in this area has increased slightly since 1977, perhaps by as much as 20%.

Population Composition

In addition to the 1981 survey listed in Appendix B, Johnson observed 52 sheep (6 rams, 33 ewes, and 13 lambs) north of the Noatak canyon, and 33 sheep (4 rams, 18 ewes, and 11 lambs) near the headwaters of the Agashashok River. Combining all 1981 flights, 266 sheep were observed in 6 hours and 50 min of flying time (39 sheep/hour). The sex and age composition was 62 rams, 135 ewes, and 69 lambs or a ratio of 45:100:51.

Eight percent of the sheep observed were legal rams. A summary of the last 5 years is presented in Appendix C.

The decline in the percentage of legal rams after 1979 is a reflection of the regulatory change in the definition of a legal ram (from 3/4-curl or larger to 7/8-curl or larger).

Mortality

The 1981 hunter success rate was 42%, with 31 hunters reporting a harvest of 13 sheep. Seven sheep were taken north of the Noatak River in the Kelly and Kugururok drainages, 3 were harvested from the Eli and Agashashok drainages, and 3 were taken from the upper Noatak. No sheep were reported taken from the Wulik or Kivalina drainages. The average horn length of harvested sheep was 34.1 inches with a range of 30-37 inches.

The reported harvest in Unit 23 has decreased steadily in recent years, 38 in 1977, 35 in 1978, 25 in 1979, and 16 in 1980, respectively. A decrease in the sheep population in Unit 23 is not a factor in the decline of hunter harvest.

Management Summary and Recommendations

A systematic procedure is needed in Unit 23 for gathering quantitative information on sheep populations and habitat. The staff is presently working on a system designed to accomplish this objective.

Local hunters have expressed a desire to harvest either-sex sheep whenever they are encountered along the Noatak River. In 1982, the staff of Unit 23 submitted a proposal to the Board of Game to establish a special season for boat hunters. Sheep would be harvested primarily from small bands crossing the river valley and from bands found in the Noatak gorge. At its regular March meeting, the Board determined that this request was consistent with the State subsistence priority and adopted a special sheep season for hunters permanently residing north and west of the Noatak River. No other changes in seasons or bag limits are recommended at this time.

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APPENDIX A. Composition surveys in the Wulik River area, 1977 and 1980.

Observer	Year	Sheep counted	Rams/ ewes/ lambs	% legal rams	Sheep/ hour	Survey time (hr:min)
Johnson	1980	114	28:100:31	4	23	5:10
Smith	1977	111	53:100:49	11	9	12:10

APPENDIX B. Composition surveys in the Kugururok and Nimiuktuk drainages, 1977 and 1981.

Observer	Year	Sheep counted	Rams/ ewes/ lambs	% legal rams	Sheep/ hour	Survey time (hr:min)
Johnson	1981	181	62:100:54	10	30	5:57
Smith	1977	174	78:100:51	15	9	18:40

APPENDIX C. Unit 23 sheep composition counts, 1977-81.

Year	Rams/ewe/lambs	<u>N</u>	% legal rams
1981	45:100:51	266	8
1980	28:100:31	646	5
1979 ^a	--	--	--
1978	37:100:56	247	13
1977	53:100:49	405	11

^a No data available.

SHEEP

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 23 through 26

GEOGRAPHICAL DESCRIPTION: Brooks Range

PERIOD COVERED: July 1, 1981-June 30, 1982

Seasons and Bag Limits

Unit 23	Aug. 10-Sept. 20	One ram with 7/8-curl horn or larger
Units 25 and 26C those portions within the Arctic National Wildlife Refuge	Aug. 1-Sept. 20	One ram with 7/8-curl horn or larger by permit only. See drawing permit hunt supplement.
Remainder of Units 25 and 26C	Aug. 10-Sept. 20	One ram with 7/8-curl horn or larger
Unit 26C	Oct. 1-Apr. 30	Three sheep by permit only. See registration permit hunt supplement.

Population Status and Trend

Sheep populations in the Brooks Range vary in density. Numbers are low in Unit 23, central portions of Unit 24, and Unit 25. Western portions of Unit 24 support moderate sheep numbers, while high numbers exist in eastern Unit 24. Unit 26 populations decrease in density from high in the eastern portion to low at the western end. The population status has been established by aerial surveys conducted during the mid-1970's in much of the Brooks Range.

During this reporting period, the U.S. Fish and Wildlife Service (USFWS) continued studies of sheep population trends in the Arctic National Wildlife Refuge (ANWR) begun in 1979. Backpack surveys were conducted annually in the Hulahula drainage. An additional ground survey was conducted on a section of Bathtub Ridge on the upper Kongakut River in 1981. No aerial surveys were flown.

From these data, sheep populations in the ANWR generally appeared stable. Lamb and yearling to ewe ratios were good. Adult sheep numbers were stable, although the 1981 Hulahula data showed a noticeable decrease in ewes and an increase in young rams. This may reflect hunting pressure from the residents of Kaktovik and may substantially affect future population trends. No information on population trend for the remainder of the Brooks Range was gathered.

Population Composition

The USFWS provided the following population composition data from the Hulahula River drainage for 1980 and 1981 (Appendix A). Lamb production was moderate in both years. The yearling to ewe ratio was high in 1980. In 1980, there were 36.7 lambs:100 ewes, 35.7 yearlings:100 ewes, and 56.8 rams:100 ewes. In 1981, there were 38.7 lambs:100 ewes, 29.5 yearlings:100 ewes, and 72.8 rams:100 ewes in the same area.

The 1981 survey in the upper Kongakut River showed high lamb and yearling ratios (63 lambs:100 ewes and 40 yearlings:100 ewes).

Mortality

During the 1981 season, 383 sport hunters took 198 rams (66 were taken in drawing permit hunts in the former Arctic National Wildlife Range, while 132 were taken elsewhere in the Brooks Range). Subsistence hunters reported taking 36 sheep (25 ewes and 11 rams).

Hunting in the upper portions of Subunit 25 and 26C, the former Arctic National Wildlife Range, continued on a permit basis. The fall season was divided into 4 lottery permit hunts. For example, the Hulahula drainage and the remainder of the wildlife refuge each had an early and a late season. The 1st season opened August 1 and ran through August 15. The 2nd season was from August 16 through September 20. Four hundred permits were available for these hunts, and all applicants for these hunts received permits. Appendix B gives the combined results of the permit hunts.

The late hunt for sheep in 26C opened October 1 and closed April 30. Participation in this hunt required a permit which was available upon registration at Kaktovik. The bag limit for this hunt was 3 sheep, and the harvest quota was 50. Twenty permits were issued from October 1980 to April 1981. Hunters reported killing 36 sheep (25 ewes and 11 rams).

In the remainder of the Brooks Range, 264 hunters reported taking 132 rams, 63 of which were taken by Alaska residents and 59 by nonresidents (Appendix C). Residency of 10 successful hunters was unreported. There were 131 unsuccessful residents, 20 unsuccessful nonresidents, and 4 unsuccessful hunters of unknown residency. Overall, success was 50%.

Management Summary and Recommendations

Little is known about sheep population trends in the Brooks Range. Areas where replicate surveys have been done show stability with the notable exception of an area near the traditional Kaktovik village camp on the Hulahula River. Populations immediately adjacent to this site appear to be declining. No trend in hunter numbers is currently apparent in the Brooks Range. Sheep populations are capable of withstanding sport harvests expected in the foreseeable future. The capacity for commercial utilization of sheep by guides in the Hulahula River, the defined sport harvest quota, and the subsistence priority given the Kaktovik villagers combine to make the Hulahula an area where greater inventory and monitoring efforts should be expended.

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APPENDIX A. Sheep population composition obtained in the Hulahula River drainage from ground surveys in July 1980 and 1981 (USFWS).

Age/sex category	1980	1981
Ewes	286	261
Lambs	105	101
Yearlings	102	77
2/8	26	55
3/8	25	42
4/8	32	24
5/8	21	9
6/8	12	13
7/8	11	13
8/8	4	7
Unidentified	63	31
Total rams	131	163
Total sheep	687	633
Total classified	519	602

APPENDIX B. Reported Dall sheep harvest during sport hunting season August 1 to September 20, 1980, Arctic National Wildlife Refuge. (Figures do not include subsistence harvest for residents of Kaktovik and Arctic Village.)

Area	Sheep killed	Unsuccess. hunters	Total hunters	% success
Aichillik	5	4	9	56
Jago	1	4	5	20
Canning	10	11	21	48
E. Fork Chandalar	2	1	3	67
Coleen	2	2	4	50
Hulahula	20	11	31	65
Kongakut-Egaksrak	8	6	14	57
Sadlerochit Mountains	2	1	3	67
Peters-Schrader Lake	1	2	3	33
Sheenjok	12	8	20	60
Unspecified ANWR	3	3	6	50
Totals	66	53	119	55

APPENDIX C. Number of hunters and harvest by Game Management Unit in the Brooks Range, fall 1981 (harvest from permit hunts excluded).

GMU	<u>Successful hunters^a</u>			<u>Unsuccessful hunters</u>		
	Res.	Nonres.	Unspec.	Res.	Nonres.	Unspec.
23	9	3	1	18	0	1
24	15	12	0	23	4	1
25	9	16	8	20	5	0
26	30	28	1	47	11	2

^a Successful hunters took 1 sheep each.