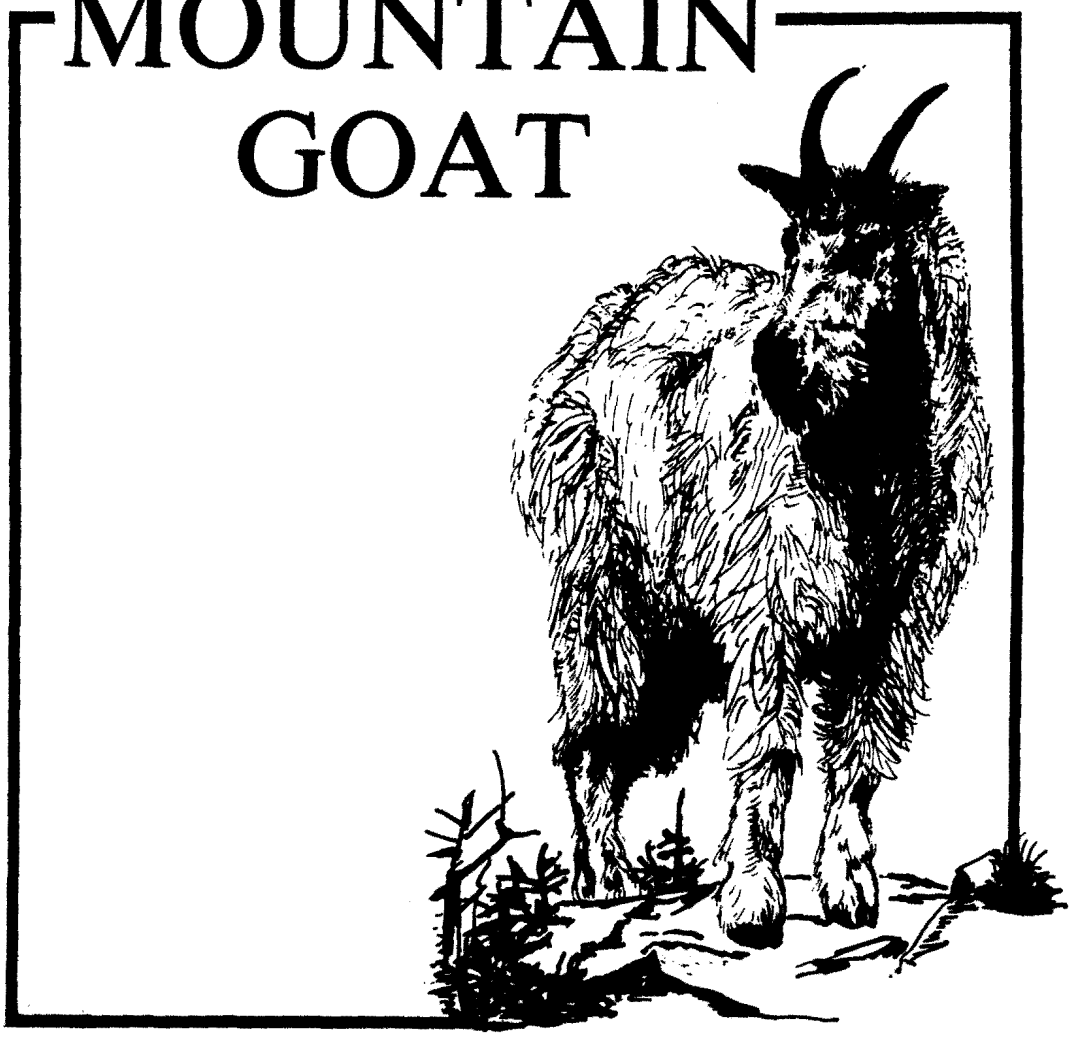
Alaska Department of Fish and Game
Division of Game
Federal Aid in Wildlife Restoration
Annual Report of Survey—Inventory Activities

MOUNTAIN GOAT



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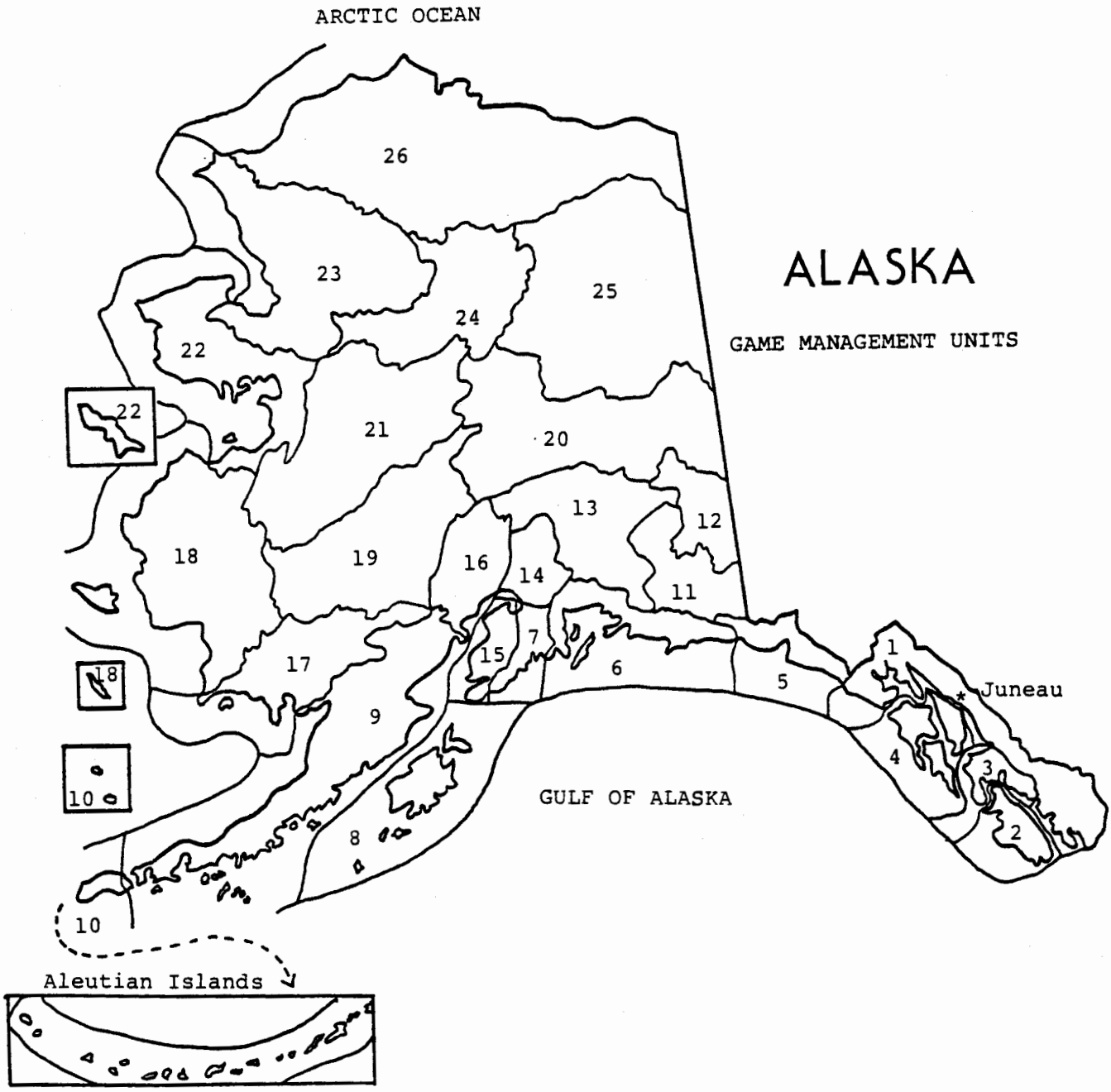
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STATEWIDE HARVEST AND POPULATION STATUS

Mountain goat population trends were variable in 1985-86; populations in Units 4 and 8 (both of which are the results of transplants) and in 7 and 15 are increasing. Goat populations in Unit 1 are stable or decreasing slowly; populations elsewhere are stable.

Hunter harvest of goats in 1985-86 was likewise variable. The highest take occurred on the Kenai Peninsula (Units 7 and 15), followed by Unit 6 (95 goats) and Unit 1A (51 goats).

Unit	Reported harvest
1A	51
1B	33
1C	35
1D	15
4	42
5	8
6	95
7 & 15	132
11	13
13-14	38

Robert A. Hinman
Deputy Director

MOUNTAIN GOAT

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 1A

GEOGRAPHICAL DESCRIPTION: Ketchikan area

PERIOD COVERED: 1 July 1985-30 June 1986

Season and Bag Limit

See Hunting Regulations No. 26.

Population Status and Trend

The winter of 1984-85 was somewhat more severe than was first believed, and surveys in September 1985 of both radio-collared goats and of traditional survey routes indicated fewer goats than in 1984. The winter of 1985-86 also brought fairly heavy snowfall at higher elevations, but the effect on goat populations will not be known until fall 1986 surveys are completed.

Population Composition

Complete surveys were flown in 3 areas in September 1985. Total survey time was 3.3 hours and 386 goats were seen (117 goats/hour). The ratio of kids to adults was 24:100.

Two areas were surveyed in April 1986. Results of the fall surveys are shown in Table 1; spring surveys are summarized in Table 2.

Mortality

The winter of 1985-86 was moderately severe with fairly heavy snow accumulation at higher elevations. It is difficult to assess over-winter losses until fall surveys are completed, but the limited 1986 spring surveys indicated fewer kids per 100 adults than in September, an indication of some over-winter loss.

Goat hunting in southeast Alaska has been on a registration permit system for 6 years. For the past 4 years, 2nd permits for portions of Units 1A and 1B have been available to those hunters who killed a goat and returned their 1st permit hunt report. In 1985, 250 1st permits and 10 2nd permits were issued from the Ketchikan office. If holders of a 2nd permit are treated as additional hunters, 141 hunters killed 51 goats

(30 males and 21 females) in 460 hunter days (Table 3). Success was 36%, and 9 hunter days were expended per goat taken. Hunter numbers, goats harvested, and success were all essentially the same as in 1984.

All 260 hunt reports issued from the Ketchikan office were eventually returned. Considerable effort was expended in contacting hunters who initially failed to report, but no citations were issued.

Chronology of the harvest was similar to that of past years. This year 14% of the goats were taken in August, 49% in September, 29% in October, and 8% in December. September is consistently the month of highest kill, while November is the lowest.

Airplanes were again the primary means of transportation used to get to the hunting area. Ninety percent of successful hunters and 78% of unsuccessful hunters used air transport. Boats were used by those hunters not utilizing airplanes. Boat transportation is primarily used later in the season when lakes at high elevations are beginning to freeze. Late-season hunts from boats are not very successful.

The area of heaviest harvest was Rudyerd Bay-Smeaton Bay which yielded 31% of the goats taken from Subunit 1A. The Chickamin River-Rudyerd Bay area yielded 22% of the harvest; 18% came from the Yes Bay-Eagle River area, 16% came from the Unuk River-Chickamin River area; and 12% came from the Boca de Quadra-Portland Canal area.

Management Summary and Recommendations

The Subunit 1A goat population appears to be moderately high. The harvest remains relatively low and is fairly well distributed over a wide portion of the subunit. Winter 1985-86 did not appear to have a substantial impact on the goat population. The only problems foreseen for goats in Subunit 1A are in the lower Cleveland Peninsula and the Quartz Hill molybdenum mine areas. Goat densities are very low on the lower Cleveland Peninsula, and current U.S. Forest Service plans call for road building and logging in the area in the near future. Both the Quartz Hill and Cleveland Peninsula areas will need additional hunting restrictions once development activity begins.

A mountain goat transplant to Revillagigedo Island was conducted in June and July 1983. Radio collars placed on 15 of these goats have indicated only 1 mortality as of May 1985. No further data are available on the status of the release.

PREPARED BY:

Robert E. Wood
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SUBMITTED BY:

David A. Anderson
Management Coordinator

Table 1. Subunit 1A mountain goat composition surveys, September 1985.

Area	Date	No. Adults	No. kids	Total goats	Hours of survey time	No. goats observed/hr	Kids:100 adults	Survey rating
K-3	(no survey)	--	--	--	--	--	--	--
K-4	(no survey)	--	--	--	--	--	--	--
K-5	26 Sep 85	99	21	120	1.03	117	21	Fair
K-6	(no survey)	--	--	--	--	--	--	--
K-7	(no survey)	--	--	--	--	--	--	--
K-8	(no survey)	--	--	--	--	--	--	--
K-9	9 Sep 85	92	24	116	1.15	101	26	Good
K-10	11 Sep 85	120	30	150	1.12	134	25	Good
K-11	(no survey)	--	--	--	--	--	--	--
Totals		311	75	386	3.30			
Means						117	24	

Table 2. Subunit 1A mountain goat spring composition surveys, 1982-86.

Area	Date	No. adults	No. kids	Total goats	Hours of survey time	No. goats observed/hr	Kids:100 adults	Survey rating
Walker/Rudyerd	13 May 82	69	15	84	1.08	78	22	Good
Rudyerd	22 Apr 83	47	13	60	1.10	55	28	Good
Walker	22 Apr 83	92	20	112	0.73	153	22	Good
Chickamin	12 May 83	44	9	55	0.97	57	20	Good
Walker	19 Apr 84	77	16	94	0.80	118	21	Good
Walker	15 May 85	46	10	56	0.75	75	22	Fair
Walker	25 Apr 86	52	9	61	0.78	71	17	Good
Rudyerd	25 Apr 86	15	3	18	0.37	49	20	Good

Table 3. Subunit 1A goat harvest and hunter success, 1972-85.

Season	No. animals M	F	Unk	Totals	Percent harvest by nonresidents	No. successful hunters	No. hunters	Percent hunter success	Hunters taking 2 goats
1972	23	23	2	48	0	42	117	36	6
1973	36	20	4	60	22	50	133	38	10
1974	26	19	2	47	13	37	109	34	10
1975	8	9	0	17	24	17	93	18	-[a]
1976	10	5	0	15	0	15	55	27	--
1977	19	16	2	37	14	37	80	46	--
1978	10	13	0	23	0	23	55	42	--
1979	19	10	0	29	ND	29	39	74	--
1980[b]	23	37	0	60	7	60	131	46	--
1981	36	34	0	70	27	70	158	44	--
1982[c]	41	39	0	80	23	80	162	49	1[c]
1983[c]	36	31	0	67	25	67	148	45	0
1984	34	19	0	53[d]	38	53	142	37	2[c]
1985	30	21	0	51[d]	41	51	141	36	2[c]

[a] Bag limit reduced from 2 to 1 in 1975.

[b] Registration permit system-mandatory reporting required, starting 1980.

[c] Second permit issued to reporting, successful hunters; 2nd permits treated as separate hunters.

[d] Lower kill in 1984 and 1985 vs. 1983 is primarily due to a change in assigning kill locations: harvest previously counted as Subunit 1A harvest is now assigned to Subunit 1B.

MOUNTAIN GOAT

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 1B

GEOGRAPHICAL DESCRIPTION: Southeast mainland from Cape Fanshaw to Lemusurier Point

PERIOD COVERED: 1 July 1985-30 June 1986

Season and Bag Limit

See Hunting Regulations No. 26.

Population Status and Trend

Limited aerial surveys indicated that Subunit 1B goat populations remain stable, but kid production was down in the sample area, probably due to heavy snows that persisted much later than usual. Local populations may differ greatly; some are rarely hunted because of poor access, while those easily reached may be subjected to heavy hunting pressure.

Population Composition

A Piper Super Cub was used to conduct population surveys in August. Surveys were begun just after sunrise or late in the evening. Clear or high overcast days were normally selected for survey flights so that mountain peaks would be free of clouds. Early morning flights reduced the probability of air turbulence.

Because of poor flying conditions and problems with aircraft scheduling, only 1.5 hours were spent surveying goat ranges in Subunit 1B in 1985. Only those goat ranges from Scenery Creek to Horn Cliffs were censused. Fewer adult goats were observed in all survey areas than in 1984, and kids were observed in only 1 herd. The combined count showed a ratio of 6 kids:100 adults (Table 1) compared with a mean of 30 kids:100 adults in 1984. Because of the small sample size, it is not possible to conclude that kid:adult ratios have declined throughout the subunit.

Mortality

In 1985, 202 mountain goat registration permits were issued for Subunit 1B. Of hunters obtaining permits, 112 (55%) hunted mountain goats in Subunit 1B. Twenty-nine percent (33) of those hunting killed a mountain goat, compared with 40% in

1984. Females in the harvest declined from 76% (n = 32) in 1984 to 58% (n = 19) in 1985. Table 2 summarizes harvest information derived from the mandatory goat registration permit system.

Several factors influence the timing of the Subunit 1B goat harvest. Storm systems after September intermittently prevent air or boat travel to goat ranges. The hunting season is long to allow hunters to take advantage of brief periods of calm, clear weather occurring intermittently throughout the 5-month season. Alpine lakes are used as floatplane landing sites until they freeze in late fall. Goats then begin to use the spruce-hemlock forests at lower elevations. In November and December hunters usually travel by boat to goat ranges.

Thirty percent of the harvest occurred during the 1st 2 weeks of September, with the remainder distributed throughout the season (Table 3).

Fifty-five percent (n = 18) of successful hunters used aircraft while 45% (n = 15) of successful hunters used boats. Successful hunters using boats hunted a total of 37 days while successful hunters using aircraft hunted 49 days (Table 2).

The Horn Cliffs area, which is easily accessible by skiff from Petersburg, was the most popular hunting location. It received 37% of the hunting pressure and contributed 24% of the Subunit 1B harvest. A total of 297 days of hunting effort was reported by hunters in all of Subunit 1B. Successful hunters averaged 3 days of hunting.

Management Summary and Recommendations

The goat population in Subunit 1B appears to be declining, but the opportunity to survey goat ranges in 1985 was limited by poor weather and lack of availability of suitable aircraft. Aerial surveys should be conducted in the Swan Lake drainage and Horn Cliffs area after parturition to determine the total population and reproductive success. If the population is significantly lower than in previous years or if the kid:adult ratio is significantly lower, then an emergency closure will be recommended.

Although a 2nd goat permit was available to successful hunters, only 7 obtained a 2nd permit and only 2 killed a 2nd goat. The 2nd permit appears to provide additional recreational opportunity but does not appreciably increase the harvest.

The sex ratio of the kill continues to be distorted in favor of females (58%), but the data (Table 2) indicate that the

harvest of females was well distributed throughout the subunit, with the exception of Horn Cliffs where 63% of the kill was females.

Harvest and hunting effort were highest at Horn Cliffs and Paradise Lake, each area contributing 24% of the total kill for Unit 1B.

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SUBMITTED BY:

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Management Coordinator

Table 1. Subunit 1B mountain goat aerial survey results, 1985.

Survey date	Count area number	Area	Adults	Kids	Total goats	Kids:100 adults	% Kids
27 Aug	05	Scenery Creek	23	5	28	22	18
27 Aug	06	Swan Lake	6	0	6	0	0
27 Aug	07	Patterson Peaks	8	0	8	0	0
27 Aug	08	S. Patterson/Muddy R.	16	0	16	0	0
27 Aug	10	Horn Cliffs	16	0	16	0	0
Totals			69	5	74	7	9

Table 2. Subunit 1B goat hunter transport and hunting effort by location, 1985.

Area	Boat			Airplane			Total harvest
	No. days	Harvest M	Harvest F	No. days	Harvest M	Harvest F	
Thomas Bay	4	1	1	-	-	-	2
Swan Lake	-	-	-	2	0	1	1
Patterson Peaks	-	-	-	1	0	1	1
Horn Cliffs	16	3	5	0	0	0	8
Stikine River	4	0	1	-	-	-	1
Wilkes Range	11	1	2	0	0	0	3
Andrews North	-	-	-	2	1	0	1
Berg Creek	1	0	1	3	0	1	2
Aaron Creek	-	-	-	3	1	0	1
Santa Anna	-	-	-	11	2	0	2
Paradise Lake	-	-	-	21	5	3	8
Bear Lake	-	-	-	4	-	1	1
Unspecified	-	-	-	4	0	1	1
Totals	36	5	10	51	9	9	33

Table 3. Chronology of Subunit 1B mountain goat harvest, 1985.

Period	Goats taken		Sex		Percent by month
	n	%	Male	Female	
1-15 Aug	5	15	2	3	--
16-31 Aug	3	9	1	2	24
1-15 Sep	11	34	5	6	--
16-30 Sep	5	15	3	2	49
1-15 Oct	2	6	-	2	--
16-31 Oct	1	3	1	-	9
1-15 Nov	3	9	1	2	--
16-30 Nov	0	0	-	-	9
1-15 Dec	1	3	0	1	--
16-31 Dec	2	6	1	1	9
Totals	33	100	14	19	100

MOUNTAIN GOAT

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 1C

GEOGRAPHICAL DESCRIPTION: Southeast mainland from Cape Fanshaw to the latitude of Eldred Rock

PERIOD COVERED: 1 July 1985-30 June 1986

Season and Bag Limit

See Hunting Regulations No. 26.

Population Status and Trend

Populations appear stable.

Population Composition

Mountain goat aerial surveys were flown along the northern rim of Tracy Arm from Williams Cove to South Sawyer Glacier. No other surveys were flown in Subunit 1C in 1985. In 2.4 hours of flying, 335 goats were observed, including 75 kids. The kid:adult ratio was 28 kids:100 adults.

Mortality

Goat hunting in Subunit 1C has been conducted under 2 registration permit hunts since 1980 (Tables 1 and 2). During 1985, no goats were killed in Hunt Area 802. Sixteen hunters spent 45 days hunting, with a range of 1-9 days and an average of 2.8 days per hunter. All hunters were Alaska residents from Subunit 1C.

The 1985 goat harvest in Hunt Area No. 803 was 35 goats (19 males and 16 females). Hunters spent 148 days hunting in this area, averaging 2.2 days per hunter. Success rate was 52%. Of the 35 animals taken, 32 were killed in the Tracy and Endicott Arm areas; 29 goats were taken by Alaska residents and 6 by nonresidents.

In Subunit 1C as a whole, goat hunters spent 193 days in the field and killed 35 animals (19 males and 16 females). Hunters spent 5.5 days afield for each goat killed and the success rate was 42%.

Management Summary and Recommendations

Mountain goat populations are believed to be stable in Subunit 1C, but remain below previously recorded levels, particularly along the Juneau road system and in the Chilkat Range south of the Endicott River. A check on collared goats in the Quartz Hill area and results of other surveys by Department personnel in the Ketchikan area in 1985 indicated that heavy snows late in the 1984-85 winter may have contributed to significant losses to the population. The loss of 3 prime-aged (4-5 years old) collared goats at Quartz Hill over the winter suggests unusually high adult mortality. The 1985 Tracy Arm survey results did not indicate any significant changes in that population. No surveys were conducted in 1984 to be used for comparisons. That portion of Hunt Area No. 802 between Eagle River/Glacier and the Taku Glacier has been closed for the past 3 years. Assessment of the population in this area should be made in 1986 or 1987.

An Emergency Order was issued shortly after the 1986 spring Board meeting to close that portion of the Chilkat Range south of the Endicott River to prevent overharvest.

The 1985 harvest of 26 goats in the Tracy Arm/Endicott Arm area was very close to the desired harvest level of 10% of the observed number of goats. This area appears to be exceptional habitat for mountain goats because relatively high densities are maintained even under extreme environmental conditions. However, a significant portion of the population is very accessible to hunters under favorable weather conditions; therefore, hunting activity should be closely monitored to prevent overharvest.

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SUBMITTED BY:

David A. Anderson
Management Coordinator

Table 1. Mountain goat registration permit hunt data for Subunit 1C, southeastern Alaska, 1985.

Hunt No.	Year	No. permits issued	No. hunters	No. days hunted	Chronology of harvest					Harvest				Hunter success	Success/ unit of effort[a]
					Aug	Sep	Oct	Nov	Total	M	F	Unk	Total		
802	1980	117	34[b]	67	--	-[c]	6	2	8	2	4	2	8	23.5	0.12
	1981	111	44[b]	87	--	--	6	3	9	3	6	0	9	20.5	0.10
	1982	101	53[b]	124	--	--	5	6	11	4	6	1	11	20.8	0.09
	1983[d]	29	8	13	--	--	1	0	1	0	1	0	1	12.5	0.08
	1984	33	21	52	--	--	4	0	4	2	2	0	4	19.0	0.08
	1985	46	16	45	--	--	0	0	0	0	0	0	0	0.0	0.00
803	1980	140	47	166	6	7	7	8	28	9	8	11	28	59.6	0.17
	1981	129	46	129	1	2	6	13	22	8	14	0	22	47.8	0.17
	1982	140	67	189	6	0	5	21	32	16	16	0	32	47.8	0.17
	1983	203	94	322	5	9	13	14	41	23	17	1	41	43.6	0.13
	1984[b]	169	62	183	4	9	2	10	25	13	12	0	25	40.3	0.14
	1985	156	68[e]	148	4	5	4	22	35	19	16	0	35	51.5	0.24

[a] Number of goats taken per day hunted.

[b] Includes 2 hunters who had permits for Hunt No. 803 but hunted in Hunt No. 802.

[c] No season.

[d] The area between Eagle River and Taku Glacier (about two-thirds of the hunt area) was closed by Emergency Order for the entire season.

Table 2. Subunit 1C goat harvest statistics for 1972-84 derived from hunter reports from the harvest ticket system (1972-79) and the registration permit system (1980-85).

Year	Chronology of harvest								Sex composition				No. of hunters	Hunter success	Success/ unit of effort
	Aug	Sep	Oct	Nov	Dec	Jan	Unk	Total	M	F	Unk	% M			
1972[a]	18	10	7	8	4	17	6	70	36	34	0	51	149	40.3[b]	--
1973	30	32	11	21	17	--[c]	1	112	56	56	0	50	177	52.5[d]	--
1974	19	18	7	15	30	--	5	94	40	51	3	44	159	44.0[e]	--
1975[f]	7	8	20	15	13	--	5	68	42	25	1	63	138	49.3	--
1976	2	0	12	5	16	--	6	41	13	28	0	32	107	38.3	--
1977	8	8	0[g]	8[g]	3[g]	--	3	30	19	9	2	68	72	41.6	--
1978	3	3	6	17	--[c]	--	6	35	24	11	0	69	80	43.8	--
1979	7	3	13	15	--	--	0	38	21	17	0	55	65	58.5	--
1980	6	6	13	10	--	--	0	36	12	12	12	50	81	44.4	0.16
1981	1	2	12	16	--	--	0	31	11	20	0	36	90	34.4	0.14
1982	6	0	10	27	--	--	0	43	20	22	1	48	120	35.8	0.14
1983	5	9	14	14	--	--	0	42	23	18	1	56	102	41.2	0.13
1984	4	9	6	10	--	--	0	29	15	14	0	52	83	34.9	0.12
1985	4	5	4	22	--	--	0	35	19	16	0	54	84	41.7	0.18

[a] Bag limit for seasons 1972-74 was 2 goats.

[b] Based on 60 successful hunters, 10 of whom took 2 goats each.

[c] Season closed.

[d] Based on 93 successful hunters, 19 of whom took 2 goats each.

[e] Based on 70 successful hunters, 24 of whom took 2 goats each.

[f] Bag limit for seasons 1975-83 was 1 goat.

[g] Revised in 1979 from figures reported in Table 2 of the 1978 Survey-Inventory report for Subunit 1C.

MOUNTAIN GOAT

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 1D

GEOGRAPHICAL DESCRIPTION: Upper Lynn Canal

PERIOD COVERED: 1 July 1985-30 June 1986

Season and Bag Limit

See Hunting Regulations No. 26.

Population Status and Trend

Aerial composition counts were conducted in each of the 3 hunt areas (804, 805, and 806) in Subunit 1D in 1985. Compared with counts done prior to 1970, goat populations remained at low densities and recruitment was poor. Low recruitment may have been caused by deep snow accumulation that lasted into June 1985.

Population Composition

Hunt Area No. 804 was surveyed completely for the 3rd consecutive year. The number of adults observed (29) was similar to results of the past 2 surveys, but was substantially lower than pre-1982 observations (Table 1). The number of kids observed (3) and the kid:adult ratio (10:100) were the lowest in recent years.

Thirty adults and 2 kids (7 kids:100 adults) were observed on the southwest face of Takshanuk Ridge (Hunt Area No. 805) in 1.1 hours of survey time (29 goats/hour). This survey was terminated at the halfway point because of poor survey conditions on the northeast side of the ridge. Therefore, total counts were not comparable with those of past surveys. However, the kid:adult ratio can be compared with the ratio from the September 1983 survey (18:100); the comparison suggests a decline.

More goats were observed on the Takhin Ridge (Hunt Area No. 806) in 1985 than during the previous survey in 1983, but the kid:adult ratio was lower (Table 2).

Mortality

Hunt Area No. 804 was closed to hunting in 1985, and no mortality was documented.

One hundred sixty-five persons applied for registration permits for Hunts 805 and 806 in 1985. Eighty-eight hunters took 9 goats in Hunt Area No. 805 (5 males, 4 females) and 6 goats in Hunt Area No. 806 (5 males, 1 female), yielding an overall success rate of 17%. These harvest and success levels were the lowest since a single-goat bag limit was established in 1975 (Table 3). Chronology of harvest was as follows: August, 0; September, 5; October, 5; November, 4; December, 1. Methods of transportation of successful hunters were: boat, 8; car, 4; foot, 2; and off-road vehicle, 1. All successful hunters were Alaska residents.

Management Summary and Recommendations

For the 1st time, a single registration permit was used for Hunt Nos. 805 and 806, reducing application processing and data compilation time considerably. However, this procedure may lead to errors in comparison of data among years because many hunters applied for both hunts in the past. Thus, they were counted twice in summary statistics (once for each permit). Despite this drawback the permit format should be continued because of the reduction in processing time involved and favorable reaction by the public to the new system.

Due to difficulty in comparing recent survey data with historic data, I recommend that survey routes be standardized in Subunit 1D and composition surveys be conducted in late summer or early fall when possible. Conducting surveys shortly after parturition may result in underestimation of kids because of their tendency to stay close to their mothers. During the June 1985 survey, I observed nannies shielding kids against the cliff faces with their bodies, making it difficult to observe and count the kids. I have not seen this behavior in nannies with older kids in autumn.

The goat population in Hunt Area No. 804 has not recovered to pre-1982 levels despite season closure in 1984 and 1985. Hunt Area No. 805 continues to provide the most opportunity for goat hunting, particularly Takshanuk Ridge, Chilkoot Ridge (above and behind Chilkoot Lake and along Lutak Inlet), and West Taiya Inlet. Because densities are low and recruitment in 1985 was poor, these areas should receive the highest priority for surveys in Hunt Area No. 805 in the future. Hunting pressure in Hunt Area No. 806 does not seem to be great enough to adversely affect goat populations there. Therefore, no change in season or bag limits is recommended.

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David A. Anderson
Management Coordinator

Table 1. Historical Subunit 1D mountain goat survey data, Hunt Area 804, 1980-85.

Year	No. of kids	No. of adults	Kids:100 adults	Total goats	Count time (hrs)	Goats/ hr
1980	31	60	52	91	1.6	57
1981	22	73	30	95	1.6	59
1982[a]	--	--	--	--	--	--
1983	5	26	19	31	0.6	56
1984	13	27	48	40	1.1	36
1985	3	29	10	32	1.3	26

[a] No surveys conducted.

Table 2. Historical Subunit 1D mountain goat survey data, Takhin Ridge (Hunt Area No. 806), 1983 and 1985.

Year	No. kids	No. adults	Kids:100 adults	Total goats	Count time (hrs)	Goats/ hr
1983	11	29	38	40	0.8	50
1985	13	41	32	54	0.8	69

Table 3. Historical Subunit 1D mountain goat harvest, 1975-85.

Year	Males	Females	Unknown	Totals	No. hunters	Success rate (%)
1975	21	12	1	34	77	52
1976	8	9	0	17	65	45
1977	15	9	1	25	69	26
1978	7	10	0	17	52	36
1979	14	8	0	22	40	55
1980	11	10	9	30	103	29
1981	24	19	0	43	127	34
1982	13	11	1	25	103	24
1983	20	14	0	34	130	26
1984	12	18	0	30	115	26
1985[a]	10	5	0	15	88	17

[a] Number of hunters for years prior to 1985 were computed from permit reports for 3 different hunts (804, 805, and 806); therefore, individuals were counted once for each hunt area in which they hunted. In 1985 individuals were counted once if they hunted in 1 or more areas.

MOUNTAIN GOAT

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 4

GEOGRAPHICAL DESCRIPTION: Admiralty, Baranof, Chichagof, and adjacent islands

PERIOD COVERED: 1 July 1985-30 June 1986

Season and Bag Limit

See Hunting Regulations No. 26.

Population Status and Trend

The 1985 survey information suggests that the Unit 4 goat population is still increasing. Recent harvests have been about 15% of the goats counted during aerial surveys. Mountain goat harvests of this magnitude elsewhere have been found to be excessive. However, survey data have indicated that an ample number of young enter the population annually to replace harvested and natural losses.

Kids usually compose about 20% of the population following a "normal" winter. Following relatively snow-free winters, kid numbers are higher (as in 1977 and 1980), and following winters of extended duration (1970 and 1982) kid numbers are lower. The low number of kids in the 1985 count was a predictable reflection of the extended winter of 1985-86.

Population Composition

Five hundred thirty-four goats were counted and classified on 11 and 12 September 1985. Counts were made under excellent counting conditions from a Jet Ranger helicopter with 2 observers. Only the area north of Lake Diana was surveyed. Kids composed 14.2% of the population (16.6 kids per 100 adults). The area south of Lake Diana is not usually counted because difficult access precludes hunting there. Because this area is unhunted, regular counts are not necessary.

Mortality

All persons intending to hunt goats on Baranof Island were required to obtain a registration permit (Hunt No. 815), a system that has been in effect since 1976. In 1985, 337 permits were issued with 138 of those persons actually hunting

(Table 1). Hunters killed and retrieved 36 goats (18 males and 18 females); 6 additional goats were killed but not retrieved. Two permit holders failed to report. Inclement weather in 1985, as in 1984, undoubtedly resulted in a reduced goat kill.

Examination of horns brought in by hunters, not a legal requirement of Hunt No. 815, showed the average male to be 3.4 years of age (n = 12) with a horn length of 21.8 cm (n = 12). Females averaged 4.4 years of age (n = 12) with a horn length of 20.3 cm (n = 12). Because horns from only 33% of the harvested goats were examined, this sample may not accurately reflect the age structure of the population.

Management Summary and Recommendations

The 1985 survey suggests that the population is still increasing. Therefore, the regulations covered by Registration Hunt No. 815 seem appropriate for the population.

No change in season or bag limit is recommended.

PREPARED BY:

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Table 1. Unit 4 mountain goat survey, 1923-85.

Date	Survey data: No. kids	No. adults	Total goats	Kids:100 adults	Goats/ hr	Observer	Aircraft type
1923	--[a]	--	18[b]	--	--	--	--
1937	--	--	41	--	--	Alaska Game Commission	--
1954	41	222	263	18.5	--	USF&WS	--
Sep 1960	26	90	116	28.9	38.4	Merriam - ADF&G	--
Sep 1961	20	98	118	20.4	--	Merriam - ADF&G	--
Sep 1970[c]	15	139	154	10.8	--	Courtright - ADF&G	Helio Courier
Sep 1970	13	108	121	12.0	--	Courtright - ADF&G	Helio Courier
Sep 1973[d]	50	203	253	24.6	36.1	Johnson - ADF&G	Piper PA-18
Aug 1976[d]	47	195	242	24.1	62.0	Johnson - ADF&G	Piper PA-18
Aug 1977[e]	148	393	541	37.7	73.1	Johnson - ADF&G	Hughes 500 Helicopter
Aug 1979[f]	76	321	397	23.7	79.4	Johnson - ADF&G	Hughes 500 Helicopter
Aug 1980[d]	106	367	473	28.9	70.9	Johnson - ADF&G	Alouette II - Helicopter
Sep 1982[f]	84	422	506	19.7	76.9	Johnson - ADF&G	Alouette II - Helicopter
Sep 1985	76	458	534	16.6	68.9	Johnson - ADF&G	Jet Ranger Helicopter

[a] Data not available.

[b] Original transplant of 18 goats from Tracy Arm, Subunit 1C.

[c] Incomplete coverage.

[d] North of Vodopad River only.

[e] North of Medvejie Lake - Baranof River only.

[f] North of Lake Diana only.

Table 2. Unit 4 mountain goat harvest data, 1970-85.[a]

Regulatory year	No. males	No. females	No. unk	Total harvest	No. hunters	Percent success
1970-71	unk	unk	16	16	48	33.3
1971-72	unk	unk	20	20	75	26.6
1972-73	5	5	0	10	50	20.0
1973-74	11	13	0	24	45	53.3
1974-75	7	3	0	10	39	26.5
1975-76	18	10	0	28	65	43.0
1976-77	18	10	0	28	100	28.0
1977-78	22	18	0	40	97	41.2
1978-79	17	14	1	32	85	37.6
1979-80	30	27	2	59	151	39.0
1980-81	25	23	1	42	147	33.3
1981-82	30	44	0	74	211	35.0
1982-83	42	33	0	75	221	33.9
1983-84	33	28	0	61	212	28.8
1984-85	34	15	0	49	143	34.3
1985-86	18	18	6	42[b]	138	30.4

[a] Data source: 1970-72 10% hunter interview; 1972-75 harvest ticket reports; 1976-85 registration permit hunt reports.

[b] Includes 6 goats that were reported killed but not retrieved.

MOUNTAIN GOAT

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 5

GEOGRAPHICAL DESCRIPTION: Cape Fairweather to Icy Bay, Eastern Gulf Coast

PERIOD COVERED: 1 July 1985-30 June 1986

Season and Bag Limit

See Hunting Regulations No. 26.

Mortality

Fifty-three registration permits were issued to Unit 5 goat hunters in 1985 (Table 1). Twenty-six permittees did not hunt, while 4 nonresidents and 15 state residents (5 from Yakutat) hunted unsuccessfully for an average of 3.4 days (range = 1-10). Fifteen unsuccessful hunters (79%) used aircraft for transportation, while 2 used highway vehicles (11%), 1 used a boat (5%), and 1 used a snowmachine (5%). Four Yakutat residents, 1 additional state resident, and 3 nonresidents took 2 male and 6 female goats during the reporting period. Mean hunt length was 2.1 days (range = 1-4); 4 successful hunters used aircraft and 4 used boats. Two goats were taken in September, 4 in October, and 2 in December. The harvest was evenly distributed across Subunits 5A and 5B, with 2 goats taken from each of the Tanis Mesa, Harlequin Lake, Nunatak Fiord, and Chaix Hills areas.

Management Summary and Recommendations

Lack of 1985 survey data prevents speculation regarding population levels, trends, and age/sex composition of mountain goats in Unit 5. Survey results for 1983 and 1984 were similar for areas surveyed in both years. Complete aerial surveys should be conducted in 1986 to determine whether the apparent population stability exhibited from 1983 to 1984 is being maintained.

The disproportionately high harvest of females in 1985 (Table 2) may be cause for concern. Although hunting effort and the total harvest of goats were low this year, an early harvest in 1986, if composed mostly of females, might justify restrictive measures, especially if surveys have not been conducted by that time.

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

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Table 1. Unit 5 mountain goat hunter effort and success, 1980-85.

Year	Permits issued	Permittees not hunting	Permittees hunting		Success rate (%)
			Unsuccessful	Successful	
1980	90	37	29	24	45
1981	102	49	33	20	38
1982	91	46	31	14	31
1983	89	48	18	23	56
1984	73	45	21	7	25
1985	53	26	19	8	30

Table 2. Unit 5 mountain goat harvest, 1972-85.

Year	Sex			Totals
	Male	Female	Unknown	
1972	18	13	1	32
1973	10	3	0	13
1974	14	5	0	19
1975	10	3	0	13
1976	4	3	0	7
1977	4	2	0	6
1978	2	8	0	10
1979	12	6	1	19
1980[a]	--	--	--	24
1981	12	8	0	20
1982	8	5	1	14
1983	8	5	1	23
1984	2	4	1	7
1985	2	6	0	8
Totals	111	76	4	215
Means	9	6	<1	15

[a] Error on hunter report form precluded determination of sex ratio.

MOUNTAIN GOAT

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 6

GEOGRAPHICAL DESCRIPTION: Prince William Sound and North Gulf Coast

PERIOD COVERED: 1 July 1985-30 June 1986

Season and Bag Limit

See Hunting Regulations No. 26.

Population Status and Trend

Although late summer aerial composition counts produce variable indices of population size (Ballard, 1977; Nichols, 1980), results of composition counts in Subunit 6C are believed to indicate a stable or increasing trend in that subunit. A September count produced 145 goats in 3.5 hours of flying in a Piper PA-12. The most recent comparable count, conducted in 1969 in a PA-18 Super Cub (time unknown), produced 307 goats. A small portion of the subunit, however, had also been flown in 1977 and 1983. A comparison of results in this portion of the subunit in all years shows density peaked in 1969 (82 goats), fell in 1977 (36), fell still further in 1983 (17), and recovered slightly this period (42).

Population Composition

The composition count conducted in Subunit 6C in September produced 128 adults and 17 kids. Kids represented 12% of the subunit population. The percent kids represents an improvement from 1977 (9%) and 1983 (6%) composition counts, but is well below the results of the 1969 (22%) count.

Mortality

Hunters killed a minimum of 95 goats this period: 53 males, 36 females, and 6 of unknown sex. A minimum of 322 hunters participated in hunting goats, with a success rate of 30%. An additional 265 persons acquired permits but did not hunt and 57 persons did not report their efforts. A total of 644 permits was issued.

The goat kill in Unit 6 was distributed as follows: Subunit 6A, 26; Subunit 6C, 7; Subunit 6D, 57; and unknown subunit, 4. In Subunit 6D between Rude River and Columbia Glacier, 47

goats were killed, which is 23 fewer than the previous 9-year average of 70 reported by Reynolds (1986). The number of goats killed in all of Subunit 6D was 38 fewer than the previous 9-year average of 95. The goat kill in Subunits 6A and 6C was near average.

Of successful hunters, 58% traveled by airplane to their hunting areas, 16% used boats, 11% used highway vehicles, 9% used snowmachines, and 6% used off-road vehicles.

Management Summary and Recommendation

The goat harvest in Unit 6 (96 goats) was the lowest since 1972, the 1st year of harvest data collection.

Although the harvest declined substantially, hunter interest, as indicated by permits issued, did not appear to decline proportionately. During this reporting period, 593 permits were issued to hunters interested in Hunt No. 879 (Unit 6, excluding closed areas and Cape Fairfield to Tiger Glacier), which represents only a 16% decline in interest from the previous 5 years. Reported harvest, however, declined at least 22% but probably more.

In the past, unsuccessful goat hunters participating in Hunt No. 879 were not required to report, which may have led to nonreporting by successful hunters. At the end of the required reporting period (15 days following the end of the season), 242 permittees had reported only 56 goats harvested. Letters were sent to all nonresponding permittees requesting a report of effort and success. A 2nd follow-up letter was sent approximately 30 days after the initial letter to the remaining nonresponding permittees. After 90% compliance by all permittees, the reported harvest increased to 89 goats, which represents a 59% increase from the initial report deadline.

Poor reporting by goat hunters in previous years may have caused misleading conclusions of harvest stability. It may also magnify the importance of the low harvest this period. The harvest and hunter success may have declined to a greater degree this reporting period, possibly indicating a substantial population decline in Subunit 6D.

Inconsistencies in hunter reporting should be corrected. All hunters participating in goat hunts in Unit 6 should be required to report regardless of effort and success.

Persistent winter conditions during the spring of 1985 are probably to blame, in part, for low kid percentages in Subunits 6C and 6D. Low hunter success in Subunit 6D is currently, however, the only indication that populations may have suffered.

Aerial composition counts should be conducted in most of Subunit 6D to assess population status before, or as near the beginning of, the hunting season as possible. Emergency closures should be enacted in those parts of the subunit exhibiting "below acceptable" numbers of goats. No other regulation changes are recommended.

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MOUNTAIN GOAT

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNITS: 7 and 15

GEOGRAPHICAL DESCRIPTION: Kenai Peninsula

PERIOD COVERED: 1 July 1985-30 June 1986

Seasons and Bag Limits

See Hunting Regulations No. 26.

Population Status and Trend

Mountain goats are abundant and their populations increasing in most parts of the Kenai Mountains. Population density on summer range varies from 0.5 goats/mi^2 along the west slope of the mountains to 2.5 goats/mi in coastal environments (Table 1).

Population Composition

Fixed-wing surveys were conducted in 7 count areas in 1985. Seven hundred and ninety-seven goats including 645 adults and 152 kids were counted and classified. The ratio of kids:100 adults ranged from 15:100 to 30:100 with a mean of 24:100.

Mortality

The reported harvest in 1985 for Hunt Areas 831-865 was 132 mountain goats. Five goats were taken during the drawing permit season and an additional 127 were killed during the October registration season. Mean ages of harvested goats were 4.0 years (range = 0.3-12.3 years) for males and 3.9 years (range = 0.3-10.3 years) for females. A large proportion of both males (78%) and females (80%) in the harvest were between 1.3 and 5.3 years of age.

Males composed 51%, females 47%, and unidentified goats 2% of the reported kill. An analysis of harvest data from 1982 through 1985 demonstrates a large increase in the percentage of females killed during the October registration permit hunt when compared with the August/September drawing permit hunt (Table 2).

Southcentral offices issued 577 registration permits for 20 hunt areas in 1985. Three hundred twenty-eight permittees (57%) hunted, and their success rate was 29%. Hunt areas in the Kachemak Bay and Resurrection Bay/Day Harbor regions were the most popular among hunters.

The registration season harvest chronology was: 1st week, 67%, 2nd week, 17%, 3rd week, 13%, and 4th week, 3%. In 4 hunt areas the harvest slightly exceeded 10% of the mountain goats observed in those areas during recent aerial surveys. However, the overall registration season harvest was equivalent to 6% of the observed goats in the 20 count areas.

Management Summary and Recommendations

October registration seasons for mountain goats were introduced on the Kenai Peninsula in 1982 to allow additional hunting opportunity and harvests in areas where the kill during the drawing permit season was substantially less than the allowable harvest. The allowable harvest for a hunt area is defined as 5-10% of the number of mountain goats observed in the most recent aerial survey. In 1985, however, the Board of Game elected to harvest mountain goats exclusively by an October registration season in 20 (80%) of the Peninsula hunt areas.

Analysis of harvest sex ratios revealed significantly more nannies were killed in October seasons than in August/ September seasons. I believe this difference can be explained as a combination of hunter behavior and changes in mountain goat distribution.

Mountain goats still occupy summer range during August and most of September. During this time, nannies, subadults, and kids are generally found in upper alpine valleys. Billies also occur in remote alpine habitats, but tend to dwell on the high ground along the ends of ridges that overlook the lower segments of valleys, where nannies are seldom found in summer. This pattern of distribution frequently puts billies closest to hunter access points. Since the majority of goat hunters are nonselective and stalk the closest goats, it seems reasonable that killing of males predominates in the August/ September seasons.

By late September, mountain goats begin moving toward winter ranges, which are typically located below 2,500 ft elevation on south/southwest-facing slopes near the lower ends of valleys. Nanny/subadult/kid bands normally move to winter ranges (i.e. closer to hunter access points) ahead of billies, which increases in 2 ways the probability of females being killed by hunters. First, the chance of a traveling goat being sighted by a hunter is greater than for a sedentary goat. Second, mountain goats in transitional fall range or winter range are generally closer to hunter access points and, therefore, more vulnerable to hunting mortality.

Due to the sensitivity of mountain goat populations to harvesting, managers should be aware of the increased likelihood of killing nannies in October. Even where the overall harvest level is only 5-10% of the known population, an increase in the proportion of females killed could have a dramatic effect on population dynamics. October hunting seasons for mountain goats should be implemented with caution when: 1) there is easy access to winter range; 2) herd size is 50 or less animals; and 3) the population trend is declining.

No change in season or bag limit is recommended.

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Table 1. Comparison of mountain goat population parameters from 3 regions of the Kenai Mountains, 1982-85.

Mountain region	Kids:100 adults	% Kids	Total count	Minimum density[d]
Coastal[a] (Resurrection Bay/Day Harbor)	22	18.3	448	2.6
Interior[b] (West Slope)	27	21.4	112	0.5
Coastal[c] (Kachemak Bay)	31	23.8	339	2.6
Means and totals	26	20.8	399	1.6

[a] Count areas 845, 846, and 847.

[b] Count areas 855, 856, and 857.

[c] Count areas 860, 861, and 862.

[d] Goats/mi^2.

Table 2. Comparison of sex ratios of mountain goats killed in August/September and October seasons on the Kenai Peninsula, 1982-85.

Season	Males	Females	Total	% Females
Aug/Sep	147	57	204	28
Oct	135	110	245	45
Totals	282	167	449	37

MOUNTAIN GOAT

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 8

GEOGRAPHICAL DESCRIPTION: Kodiak Island and adjacent islands

PERIOD COVERED: 1 July 1985-30 June 1986

Season and Bag Limit

See Hunting Regulations No. 26.

Population Status and Trend

The mountain goat population on Kodiak Island appears to be stable to slightly increasing. A 13.6-hr island-wide survey of mountain goat habitat yielded a total of 360 goats. Within the area open to hunting, 262 goats were observed.

Population Composition

Winter and spring goat composition and distribution surveys were again conducted by helicopter in the Terror Lake study area which includes Terror, Kizhuyak, and north Ugak Bay drainages. Hunt Areas 871-874 (between Terror and Kizhuyak bays and Ugak Bay) and the northern part of Hunt Area 876 (west of Ugak Bay) were included in these surveys. During the spring 1985 survey 170 goats were counted and during the winter 1986 survey 113 goats were counted. Kid:adult ratios were 26:100 and 28:100, respectively.

An island-wide survey was conducted from fixed-wing aircraft in August and September 1985. A total of 360 goats was counted; the kid:adult ratio was 22:100. In the Terror Lake study area, 262 goats were counted and the kid:adult ratio was 27:100. Ninety-eight goats were counted on the remainder of the island and the kid:adult ratio was only 11:100. The low kid:adult ratio and small sample size indicate a relatively slow expansion of goats south of Ugak Bay.

Mortality

Hunters reported killing 36 goats during the 1985 hunting season, including 15 males (42%) and 21 females (58%). Seventy-four of 161 permittees reported hunting; hunter success was 49%. The mean age of 14 males was 3.2 years (range = 1-9 years). The mean age of 17 females was 4.9 years (range = 1-11 years).

Hunt No. 872 was classified as a Tier II subsistence hunt, open only to residents meeting certain qualifications of dependence on wild game for food. Ten of 25 permittees reported hunting during the 1-31 October season; hunter success was 86%. Six goats including 2 males and 4 females were killed.

Hunt Nos. 871, 873, 874, and 876 were open by registration permit. The season was regulated by Emergency Order, opening on October 1. Hunt Nos. 871, 873, and 874 closed 10 October. Hunt No. 876 remained open through 31 October. Of 136 permittees, 64 reported hunting in these areas; hunter success was 47%. Thirty goats, including 13 males and 17 females, were killed. Distribution of the kill was: Hunt No. 871, 8 goats; Hunt No. 873, 10 goats; Hunt No. 874, 7 goats; Hunt No. 876, 5 goats.

Management Summary and Recommendations

The change from a drawing permit to a registration permit hunt in 1985 resulted in numerous inexperienced goat hunters going afield. A competitive atmosphere developed, caused by crowded hunting conditions in registration Hunt Nos. 871, 873, and 874. The high hunter density resulted in less selectivity. Reports of herd shooting and wanton waste were common. A potential overharvest was averted by inclement weather during the opening week and an early closure by emergency order.

Hunt Areas 871, 873, and 874 have good access and the allowable harvest quota is usually less than 10 goats per hunt. To minimize the potential for overharvest and to reduce hunter density, a return to restricted participation hunts is recommended. Restricted participation hunts are also recommended for Hunt Areas 872 and 876, because restrictions in the other hunt areas would cause crowding and potential overharvest.

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MOUNTAIN GOAT

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 11

GEOGRAPHICAL DESCRIPTION: Wrangell Mountains

PERIOD COVERED: 1 July 1985-30 June 1986

Season and Bag Limit

See Hunting Regulations No. 26.

Population Status and Trend

During a 5 August 1985 aerial survey of the MacColl Ridge trend count area, 63 mountain goats were counted. The number of goats counted during the 1985 survey was higher than previous observations of 44 goats in 1983 and 52 in 1984.

Population Composition

Fifty-one adults and 12 kids were observed during the MacColl Ridge trend count. The ratio of kids:adults was 24:100. A ratio of 27:100 was obtained in 1984 (41 adults, 11 kids).

Mortality

Hunters killed 13 mountain goats during the 1985 season. The kill included 3 males and 10 females. Thirty-four of 75 permittees reported hunting; the success rate was 38%. Successful permittees reported spending an average of 2.4 days hunting compared with 4.5 days for unsuccessful hunters. The most popular method of transportation reported by hunters was aircraft (60%) followed by three-wheelers.

Management Summary and Recommendations

Mountain goats are difficult to count using standard aerial survey techniques. Yearly fluctuations in count data often reflect changes in mountain goat distribution and survey conditions rather than actual population changes. Continued increases in the total number of mountain goats observed in trend count areas during the past 2 years suggests that goat numbers are slowly increasing in more favorable habitats. Since 1980, a series of mild winters may have resulted in increased survival rates, accounting, in part, for the increase in the number of goats observed.

The number of hunters and the level of goat harvest declined in 1985 after 2 years of increase. The total kill was well within allowable harvest levels. MacColl Ridge received heavy hunting pressure and 6 goats were taken, but the remainder of the harvest was well distributed throughout the unit.

No changes in current hunting regulations are recommended.

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MOUNTAIN GOAT

SURVEY-INVENTORY PROGRESS REPORT

GAME MANAGEMENT UNIT: 13 and 14

GEOGRAPHICAL DESCRIPTION: Talkeetna Mountains and northwestern Chugach Mountains

PERIOD COVERED: 1 July 1985-30 June 1986

Season and Bag Limit

See Hunting Regulations No. 26.

Population Status and Trend

Aerial surveys for mountain goats were conducted only in Subunit 14C of the northwestern Chugach Mountains. During 5 hours of flight time 326 goats were counted. These count data show a 26% decrease in goats observed, in contrast to a comparable 7-hour survey in 1984 in which 442 goats were counted.

Population Composition

The composition of 326 goats observed in Subunit 14C was 263 (81%) adults and 63 (19%) kids. In comparison, 325 adults (74%) and 117 kids (27%) were observed during 1984.

Mortality

Permit reports from 147 hunters indicate that 38 goats (26% success rate) were killed during the hunting season. Thirty-six of these goats, including 25 males and 11 females, were killed in the northwestern Chugach Mountains in Subunit 14C. Of 6 hunters, 2 reported they hunted successfully in Subunit 14B. No goats were reported taken in either the Talkeetna or Chugach Mountains portion of Subunit 14A.

The ages of 24 goats were estimated to the nearest whole year by counting horn annuli. The mean age of 18 males was 5.1 years (range 1-11), and the mean age of 6 females was 4.7 years (range 2-8).

Management Summary and Recommendations

The lack of adequate goat surveys in the Talkeetna Mountains and the remainder of the northwestern Chugach Mountains (excluding Subunit 14C) prevents acceptable population evaluation.

Despite this lack of population information, hunting of either-sex goats occurred in Subunits 14A and 14B. However, Subunit 13D remained closed to goat hunting because population data were not available. This inconsistency in management policies was identified. I recommend, therefore, that goat seasons in Subunits 14A and 14B be closed until population information is collected and evaluated. Goat surveys within Subunit 14C are adequate and suggest the population is stable. The 26% population decline is likely not as substantial as indicated and probably reflects less than perfect survey conditions. It is apparent, however, that heavy late-spring snows did result in decreased survival of kids.

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