ALASKA DEPARTMENT OF FISH AND GAME
JUNEAU, ALASKA

STATE OF ALASKA
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DEPARTMENT OF FISH AND GAME
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ANNUAL REPORT OF SURVEY-INVENTORY ACTIVITIES
PART III. MOOSE

Edited and compiled by
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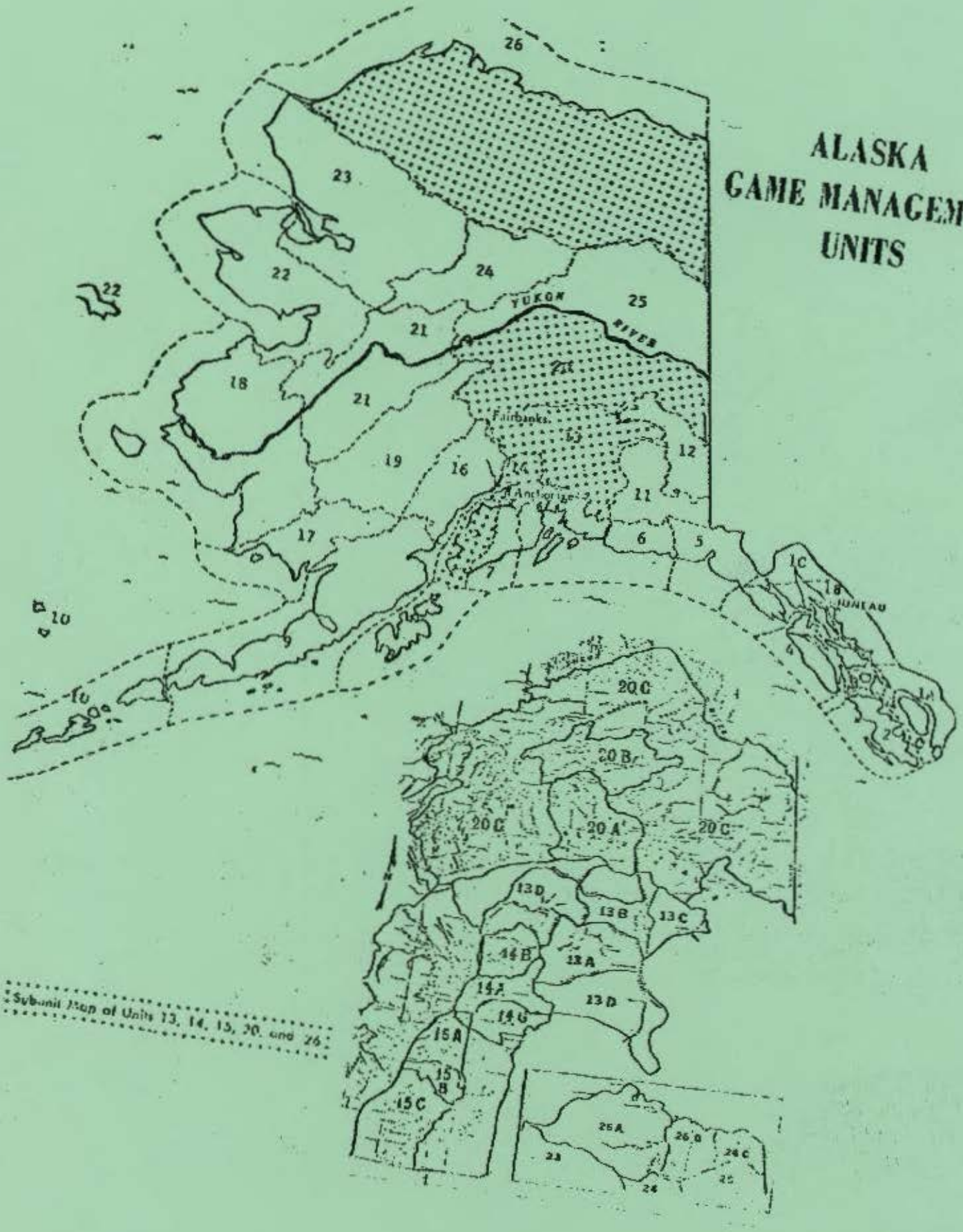
ALASKA GAME MANAGEMENT UNITS



STATEWIDE HARVESTS AND POPULATION STATUS

Moose

The statewide reported moose harvest for 1975 was 3,239*, the lowest harvest on record and 42 percent below the 1975 harvest. Although more conservative seasons, both in length and timing, contributed to the decreased harvest, the most important factor was the abolition of antlerless moose hunting in most units as a result of legislative action.

Harvests are computed from hunter report cards. In many of the rural Game Management Units (e.g. Units 17, 19, 21, 23, 24, 25, and 26) compliance with reporting requirements is poor and actual harvests may be twice that reported.

Moose populations varied between areas but were generally low or moderate in much of the state, with the notable exception of Units 22 and 26. Reasons for declines also varied; lingering effects of severe winters, excessive predation, and range decline were factors in various units. Lack of calf survival continued to be an important result in many units, particularly Units 9, 15, 12, 13, and 20.

* A discrepancy exists between this total and that reported in the Big Game Data Index file, which gives a total of 3,286 from compilation of harvest reports.

R.A.H.

STATEWIDE MOOSE HARVEST - 1975*

Unit	Bulls	Cows	?	Total
1B	24			24
1C	4			4
1D	25			25
5	18			18
6E	24	15		39
6W	16			16
7	66			66
9	232			232
11	40			40
12	75			75
13	690	2	23	715
14A	166	1		167
14B	24			24
15A	101			101
15B	24			24
15C	94			94
16	244			244
17	115			115
18	16			16
19	243		5	248
20A	31			31
20B	48			48
20C	212		11	223
20D	22			22
21	242	2	5	249
22	138			138
23	76			76
24	63			63
25	67			67
26	35			35
Totals	3175	20	44	3239

* Figures are taken from the Big Game Data Index File and may differ slightly from figures given in the reports.

R.A.H.

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MOOSE

SURVEY-INVENTORY PROGRESS REPORT - 1975

Game Management Subunit 1B - Southeast Mainland from Cape Fanshaw to the Cleveland Peninsula

Seasons and Bag Limits

Sept. 15 - Oct. 15 — One bull

Harvest and Hunting Pressure

Harvest ticket returns indicate 24 moose were taken in Subunit 1B during 1975. Of the 24, 15 were taken in the Stikine River area, 8 in the Thomas Bay area and 1 in the Farragut Bay area.

The Stikine harvest was monitored by Fish and Game personnel throughout the season by contacting hunters in the field. Based on hunter interviews and kill inspections, it was estimated that over 150 hunters killed a total of 16 bulls in 1975. Hunting pressure was heaviest during the first 2 weeks when an estimated 100+ hunters took 10 bulls. In 1974, 18 bulls were killed during this same 2-week period.

The reported Canadian harvest was 14 moose taken within 8 miles of the border.

Composition and Productivity

Two aerial surveys, each yielding a count of 68 moose were flown on December 17, 1975 and March 9, 1976. Percentage of calves in the herd decreased from 22 percent to 10 percent between the two counts. This was down somewhat from counts in 1974 when 125 moose with 25 percent calves were counted in November and 104 with 26 percent calves in March 1975.

Ages of eight bulls were determined by the tooth wear and replacement method. The 1975 sample consisted of 50 percent yearlings and 50 percent 2-year-olds or older bulls. Of 13 bulls taken in 1974, 54 percent was yearlings and 46 percent was 2-year-olds or older.

Management Summary and Conclusions

The 1975 season marked the second consecutive year of a month-long bulls-only season in Subunit 1B. The harvest of 16 bulls taken on the Stikine in 1975 was low compared to the 24 harvested in 1974 and to the 23-year average of 25.8 bulls per year. Hunter access was hampered throughout the season by low water levels on the Stikine River and this may have contributed to fewer animals being taken.

Overall, total numbers of moose were down about 30 percent compared to results of early and late winter surveys conducted since 1972.

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MOOSE

SURVEY-INVENTORY PROGRESS REPORT - 1975

Game Management Subunit 1C - Juneau

Seasons and Bag Limits

Subunit 1C, except Berners Bay drainages	Sept. 15 - Sept. 30	One bull
Subunit 1C, Berners Bay drainages only	No open season	

Harvest and Hunting Pressure

According to harvest ticket data the 1975 harvest was 4 bulls, the lowest on record (Appendix I, 1974 Annual Report of Survey and Inventory Activities, Part II, Moose, page 7) and included three bulls from the Taku River and one bull from the Chilkat Range. A temporary Fish and Game Technician stationed on the Taku River during the 1975 moose season reported a harvest of five moose from the Taku River after contacting hunters afield. Seventy-one hunters reported hunting in Subunit 1C and 5.6 percent were successful compared to 14.8 percent in 1974. There was no open season in Berners Bay in 1975.

Composition and Productivity

Sex and age composition surveys were conducted within the Berners Bay and Taku River drainages in November 1975 and January 1976. A total of 119 moose was counted, 59 from the Taku drainage and 60 in the Berners Bay area. In 1974 the total count was 84 moose with 39 from the Taku drainage and 45 from the Berners Bay area. The ratio of bulls to cows in Berners Bay was 28.2 bulls:100 cows compared to 17.2 bulls:100 cows in 1974. The Taku herd had 24.1 percent calves in 1975 compared to 17.0 in 1974. The Berners Bay herd had 16.7 percent calves in 1975 compared to 24.4 in 1974.

Management Summary and Conclusions

Aerial surveys in 1975 revealed a probable increase in moose numbers for the Berners Bay and Taku River moose herds. Hunter harvest was very low on the Taku River and nil in Berners Bay. The Taku River herd should have another hunting season similar to 1974 and 1975 (Sept. 15-30) to ease the pressure on a depressed herd. The hunting season should remain closed on the Berners Bay herd until the observed population approaches 80 animals.

There have been increased reports of wolf predation in these herds since the early 1970's. What effect predation has upon the status of these moose herds is unknown, but it is assumed that continued or increased predation will cause fewer moose to be available to the hunter and viewer.

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MOOSE

SURVEY-INVENTORY PROGRESS REPORT - 1975

Game Management Subunit 1D - Haines

Seasons and Bag Limits

Sept. 15 - 18	One moose by registration hunt; a maximum of 50 animals will be taken.*

*Season changed by Commissioner's announcement to 25 bulls.

Harvest and Hunting Pressure

The harvest of 25 bulls in 1975, as determined from harvest ticket data, was the smallest on record (Appendix I and 1974 Annual Report of S&I Activities, Part II, Moose, Page 11). Twenty-eight bulls were checked in at the Haines moose check station. Hunter success was 8 percent in 1975 compared to 18 percent in 1974 and 23 percent in 1973. The 1975 season lasted 4 days compared to 5 days in 1974 and 30 days for previous average season lengths.

A historical breakdown of hunter pressure and harvest chronology is presented in Appendices I and II. These data allow comparisons of type of season, number of hunters and rate of harvest.

Because the 1974 moose season was a registration hunt, fewer hunters participated (330 hunters in 1974 compared to 494 in 1973). Another factor reducing the number of hunters afield was the uncertainty of season length, as the season was to be closed when a set quota of moose was taken. In 1975, there was again a reduction in the number of hunters afield (294) because the bag limit was reduced from 50 either sex moose in 1974 to 25 bulls in 1975. The reduction in hunters from the change in bag limit was not as drastic as that which resulted from changing the season from an open hunt to a registration hunt.

Historical moose harvest chronology (Appendix II) is useful when trying to predict harvests for various seasons. Factors such as weather control the rate of harvest as much, or more, than hunter densities. However, we cannot accurately measure the impact of weather on moose harvests nor can we predict weather months in advance of the season.

In 1973, 22 cows were harvested in 2 days while in 1974, 31 cows were taken in 2 days. Little correlation exists between the total number of hunters afield and the number of cows harvested in the first 2 days. No data were available on the number of hunters afield during any specific day.

Composition and Productivity

Sex and age composition surveys were conducted in December 1975 with a total of 188 moose observed (all sample areas surveyed). The calf percent in the herd was 16.5 and 40 moose were observed per hour of survey time. Previous years' composition data are available in Appendix II and 1974 Annual Report of S&I Activities, Part II, Moose, Page 12. The total of 188 moose observed was lower than a similar count made in 1974 in which 206 moose were observed. The 1975 count was 29 percent less than the 265-moose average for 1972 and 1973, and 43 percent less than the 329-moose average count for surveys made from 1965 through 1968.

Age was determined on 93 percent of the bulls harvested in 1975. Eleven were yearlings (42.3%), 5 were 2-year-olds (19.2%), 4 were 3-year-olds (15.4%), 3 were 4-year-olds (11.5%), 1 was 5 years old (3.9%), 1 was 7 years old (3.9%), and 1 was 10 years old (3.9%). The mean age for the 26 bulls aged was 2.6 years.

Management Summary and Conclusion

Based on aerial surveys, there seems to be a reduction in herd size in sample areas. Counts in the high 200's and low 300's were typical of aerial surveys completed from the early 1960's through 1973. This reduction in sample size is either caused by count conditions (more vegetation, poor light during surveys and snow conditions) or represent a herd reduction. A much reduced harvest was realized for 1974 and 1975 because of reduced bag limits and season length (25 in 1975, 62 in 1974 and 115 in 1973).

Subunit 1D is unique in that moose are in terrain suitable for surveying for only a short time (approximately Nov. 10 through Dec. 25). After December 25 moose tend to move to wintering areas in the mixed forest on mountain slopes. Considerable emphasis should be placed on obtaining the best count possible for Subunit 1D during fall and winter 1976.

Based on inconclusive aerial counts and two small harvests (1974 and 1975), the 1976 season should be conservative. If replicate counts in November and December reveal a population near 200, hunting should be minimized to allow for growth of the herd.

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MOOSE - GMU 1D - Haines

Appendix I

Historical Hunter Pressure for Unit 1D compared to Units 1C and 5, Residence of Hunter and Condition of Hunt

Year	Total Harvest		Residence of Hunter*						Condition of Hunt	
			Juneau Hunters		Haines-Skagway Hunters		Other Hunters Residents - Non-residents			
Hunting Season	Total Hunters for Units 1C, 1D&5	Total Hunters for Unit 1D	Total Hunters	Hunted Unit 1D	Total Hunters	Hunted Unit 1D	Total Hunters	Hunted Unit 1D	Type of Season	Length of Season
1972	857	325	328	63	252	218	277	44	40 Cow Limit Either Sex	30 Days
1973	992	494	436	128	323	308	233	58	40 Cow Limit Either Sex	30 Days
1974	537	330	231	59	252	247	54	24	50 Moose Limit Registration Permit	5 Days
1975	414	294	123	30	247	244	44	20	25 Bull Only Limit Registration Permit	4 Days

*Only those hunters that checked their harvest ticket as hunting Units 1C, 1D or 5.

Appendix II. Historical harvest chronology in Subunit 1D, Haines.

Day of Season	Year 1971 Female/Male[1/]	1972 F/M[1/]	1973 F/M[1/]	1974 F/M[1/]	1975 F/M[1/]
1	17/10	11/6	16/10	18/9	0/14
2	11/5	10/5	6/5	13/6	0/8
3	4/2	4/1	9/5	2/1	0/4
4	4/0	2/1	1/1	6/3	0/2
5	3/0	1/3	0/0	4/4	NA
6	0/2	7/0	2/1	NA	NA
7	0/0	3/0	1/1	NA	NA
8	3/1	5/2	4/2	NA	NA
9	1/1	2/0	3/0	NA	NA
10	NA	5/0	NA	NA	NA
Chk Station Harv	43/21[2/]	50/18[2/]	42/25[2/]	43/33	0/28
Harv Ticket Data Total Season Kill	30/67	45/46	46/69	37/21	0/25
Total Hunters by Harv Ticket Data	318	325	494	330	294
Total Hunters by Permit Data	n/a	n/a	n/a	454	374

1/ Data in these columns are from check station data.

2/ It was not mandatory for hunters to check in at the check stations in 1971, 1972 and 1973. Also the station closed at the end of the cow season.

MOOSE

SURVEY-INVENTORY PROGRESS REPORT - 1975

Game Management Unit 5 - Yakutat

Seasons and Bag Limits

That portion of Unit 5 lying north of Nunatak and Russel Fjords from east Nunatak Glacier and including the area west of Yakutat Bay.	Sept. 15 - Oct. 5*	One bull moose by registration hunt. A maximum of 50 animals will be taken.
Remainder of Unit 5	No open season	

*The 1975 season was extended by Commissioner's announcement until October 15 due to requests from Yakutat residents who desired a later season closure in order to accommodate local residents who were commercial fishing until September 25.

Harvest and Hunting Pressure

From September 15 to October 5 (prior to the season extension) 71 persons registered to hunt, of whom 19 were from Yakutat; 55 (10 from Yakutat) actually hunted and took 15 bulls, 2 by Yakutat residents.

During the extension, October 6 to 15, seven hunters registered to hunt (3 from Yakutat) and six actually hunted (2 from Yakutat), taking three bulls, one by a Yakutat hunter.

Of the 22 Yakutat hunters registering during the entire season, nine were commercial fishermen of which four hunted and two killed moose - one during the extended season.

Voluntary returns of harvest reports indicated a harvest of 15 bulls, 83 percent of the actual harvest. The average age of bulls harvested was 3.4 years with a range of 1 to 6 years.

Composition and Productivity

Sex and age composition surveys were conducted with Cessna 180 aircraft within established count areas in March and November.

In the Yakutat Forelands count area 330 moose were observed in March (82.4% adults, 17.6% calves) in 9.7 hours (34.1 moose/hour). During the November survey 288 moose were counted (63.5% cows, 14.9% bulls, 10.4% yearlings, 11.1% calves) in 10.9 hours (25.3 moose/hour).

On the Malaspina Forelands 186 moose were counted in March (79.6% adult, 20.4% calves) in 7.9 hours (23.5 moose/hour). In November 163 moose were counted (57.7% cows, 14.3% bulls, 19.6% yearlings, 8.1% calves) in 6.2 hours (26.3 moose/hour). Forty moose, unclassified as to sex or age, were observed in the Nunatak Fjord area in March. No survey was conducted in this area during November.

Management Summary and Conclusions

Winter 1974-75 was considered mild and correspondingly there was good calf survival and recruitment into both subpopulations. However, calf survival in 1975 was much lower than the previous year.

The Yakutat Forelands population possibly increased slightly over 1974 but is still below carrying capacity of the range. It is recommended that the season be closed again in 1976.

The Malaspina Forelands population appears stable. Wintering conditions are less severe in this area and the wolf population is low. The November surveys revealed an adequate ratio of bulls to cows after the hunting season and a short, bulls-only season is recommended for 1976.

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MOOSE

SURVEY-INVENTORY PROGRESS REPORT - 1975

Game Management Unit 6 - East of Copper River - Martin River and Controller Bay areas

Season and Bag Limit

Aug. 20 - Nov. 30*	One moose by permit; conditions and number of permits will be described by Commissioner's announcement.

* Season subject to closure by field announcement.

Permit conditions were: 1) permits could be obtained at the Cordova Fish and Game office from August 1 throughout the season, 2) the harvest was restricted to 15 cows and 25 bulls (20 bulls from Martin River and 5 bulls from Controller Bay), 3) the antlerless moose season was to end September 1 and 4) successful antlerless moose hunters were to report their kill within 24 hours, successful bull hunters had 5 days to report their kill.

Harvest and Hunting Pressure

The 1975 moose harvest east of the Copper River was 39 animals. Nineteen bulls and 12 cows were taken in the Martin River area (Appendix I) and five bulls and three cows were taken from the Bering River-Controller Bay area. The antlerless season east of the Copper River terminated at noon, August 22. The desired quota of 15 females was taken in 2 1/2 days. The bull season east of Katalla (Controller Bay area) was closed at 4 p.m., August 25, after five bulls had been taken. The bull season in the Martin River area ran the full length (August 20-November 30) since only 19 bulls were taken. The desired harvest was 20 bulls.

Two hundred and eighty-seven persons received permits to hunt moose east of the Copper River during the 1975 season. Two hundred and fifty-eight permits were issued in 1974 and 213 in 1973.

As in past years, airboats were the major method of transportation used by successful hunters. Thirty (77 percent) of the 39 moose harvested east of the Copper River were taken with the aid of an airboat.

Composition and Productivity

Several surveys were flown over the Martin River area during 1975 as part of a collared moose study (Appendix II). Survival through the

1974-75 winter appeared excellent. Calf production was about 45 calves per 100 cows, and calves comprised about 25 percent of the herd. The bull:cow ratio was probably about 30 to 35 per 100 cows.

The December 9 survey was used for comparison with prior years (Appendix III).

A sex and age survey flown over Controller Bay January 14, 1976, revealed 96 moose, a substantial increase over previous surveys (Appendix IV). The bull:cow ratio was at least 50 bulls:100 cows, and the calf:cow ratio was approximately 50 calves per 100 cows.

Age composition of the 1975 harvest was as follows:

Cementum Age Data - Unit 6 Moose - 1975

	MARTIN RIVER VALLEY				CONTROLLER BAY	
Age	Male	Female	Total	Percent	Sex Unk.	Percent
1	6	4	10	38	0	0
2	0	2	2	8	2	28
3	4	0	4	15	1	14
4	1	0	1	4	1	14
5	2	0	2	8	0	0
6	2	2	4	15	1	14
7	0	0	0	0	1	14
8	1	1	2	8	0	0
9		1	1	4	0	0
10					1	14
	16	10	26	100	7	100

Natural mortality was documented in both areas. Drownings caused the deaths of three animals, wolf predation was suspected on three, a bear killed one and the causes of death of two were unknown. Poaching is not a problem at present.

Management Summary and Conclusions

The moose resource east of the Copper River is comprised of two herds: the Martin River and Controller Bay herd is presently below the desired size of 150-175 animals. Bull:cow and calf:cow ratios were high and winter survival of all segments of the herd has been excellent. Wolf predation is limited because of the removal of several wolves by a local trapper.

The Controller Bay herd is expanding rapidly. The calf crop, bull:cow ratio and overwinter survival appear to be excellent. This is the first year a significant harvest (eight moose) has occurred. More animals should be harvested from this herd in the future to hold the herd in balance with its habitat.

Recommendations

Martin River moose - (1) retain current regulations but limit the harvest to 15-20 bulls next fall and (2) protect females to allow this herd to expand to the desired size.

Controller Bay herd - (1) retain the current regulations governing the harvest and (2) a small, either sex (10 each) hunt should be allowed to stimulate hunting pressure upon this herd.

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APPENDIX I

Moose Harvest, Unit 6 - East of the Copper River - Martin River Area

Year	Bulls	Cows	Unid.	Total
1965	8	0	0	8
1966	3	0	0	3
1967	14	0	0	14
1968	15	0	0	15
1969	27	7*	0	34
1970	75**	26*	0	101
1971	39*	37*	0	76
1972	34*	32*	0	66
1973	17*	0	0	17
1974	18*	0	0	18
1975	19*	12*	0	31

* Number reported to Cordova Fish & Game office by permit hunters.

** Estimated harvest. Harvest report data indicated 23 bulls.

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APPENDIX II

Moose Sex & Age Ratios - Unit 6

Martin River Valley Area

Year	Date	Males per 100 FF	Yrlg % in herd	Calves per 100 FF	Twins per 100 FF with calves	Calf % in herd	Sample Size
1974	April 26	26.9		30.8	14.3	19.5	82
	May 22**	36.4	15.2	15.2	25.0	8.5	59
	June 10	43.8		93.8	15.4	39.5	38
	June 27**	66.7	7.4	41.7	25.0	18.5	27
	Oct. 8	31.4		60.0	16.7	31.3	67
	Nov. 6	41.8		43.6	14.3	23.5	102
	Dec. 26	15.8		50.0	21.2	30.1	136
1975	Jan. 27				12.1	28.5	137
	Feb. 28				18.9	30.5	151
	Mar. 25				11.8	26.2	145
	April 24				25.0	31.0	100
	May 31**	35.1	24.7	54.0	81.8	21.5	93
	Aug. 26	36.8		39.5	50.0	22.4	67
	Oct. 16	60.7		53.6	25.0	25.0	60
	Dec. 9	27.7		46.2	36.4	26.5	113
1976	Feb. 16				32.0	26.4	129
	Mar. 12				28.0	24.2	132
	May 21	12.3		45.6	11.1	28.9	90
	June 2**	63.0	14.3	103.7	80.0	33.3	84

** Yearlings not included in females.

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APPENDIX II (cont.)

Moose Sex & Age Ratios - Unit 6

Martin River Valley Area

Year	Date	Lg. MM	Sm. MM	Total MM	FF W/O	FF W/1	FF W/2	Total FF	Total Adults	Lone Calves	Total Calves	Yrlgs.	Adults Unid.	Sample Size
1974	April 26			14	38	12	2	52	66		16			82
	May 22			12	29	3	1	33	45		5	9		59
	June 10			7	3	11	2	16	23		15			38
	June 27			8	8	3	1	12	20		5	2		27
	Oct. 8	8	3	11	17	15	3	35	46		21			67
	Nov. 6	22	1	23	34	18	3	55	78		24			102
	Dec. 26	11	2	13	49	26	7	82	95	1	41			136
1975	Jan. 27			2		29	4			2	39		63	137
	Feb. 28					30	7			2	46		68	151
	Mar. 25					30	4				38		73	145
	April 24			12		18	6			1	31		33	100
	May 31			13	26	2	9	37	50		20	23		93
	Aug. 26	8	6	14	28	5	5	38	52		15			67
	Oct. 16	11	6	17	16	9	3	28	45		15			60
	Dec. 9	14	4	18	43	14	8	65	83		30			113
1976	Feb. 16	3	2	5		17	8			1	34		65	129
	Mar. 12					18	7				32		75	132
	May 21			7	39	16	2	57	64	6	26			90
	June 2			17	12	3	12*	27	44		28	12		84

* Female with 3 included.

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APPENDIX III

Moose Sex and Age Ratios - Unit 6 - Martin River Count Area

Year	Total MM Per 100 FF	Sm. MM Per 100 FF	Sm. MM Per 100 Lg. MM	Sm. MM % in Herd	Sm. MM Per 100 MM Calves	Calves Per 100 FF	Twins per 100 FF w/calf	Calf % in Herd	Survey Conditions	Total Sample
1964-65							36.4	28.8	UNK	52
1965-66							20.8	31.2	UNK	93
1966-67	ZERO DATA									
1967-68	76.2	36.9	93.9	15.0	105.1	70.2	25.5	28.5	UNK	207
1968-69							27.3	21.4	UNK	201
1969-70							17.4	20.3	POOR	138
1970-71	41.2	14.5	54.3	8.1	76.0	38.2	6.4	21.3	GOOD	235
1971-72	37.6	14.1	60.0	9.2	177.8	15.9	13.6	10.3	EXCELLENT	261
1972-73	50.7	17.4	52.2	10.0	171.4	20.3	0.0	11.7	GOOD	120
1972-73							0.0	14.8	EXCELLENT	135
1973-74							5.0	15.9	GOOD	132
1974-75	41.8*					50.0**	18.9	30.5	EXCELLENT	151
1975-76	27.7	6.2	28.6	3.5	26.7	46.2	36.4	26.5	FAIR	113

* Based on a 11/6/75 survey.
** Based on a 12/26/74 survey.

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APPENDIX III (cont.)

Moose Sex and Age Ratios - Unit 6 - Martin River Count Area

Date	Lg. MM	Sm. MM	Total MM	FF W/O	FF W/1	FF W/2	Total FF	Total Adults	Lone Calves	Total Calves	Unid. Adults	Total Sample	Count Ti (hours
12/17/64	8	6	14	0	7	4	11		0	15	12	52	UNK
1/27/66	8	8	16	1	19	5	25		0	29	23	93	2.6
1966-67	ZERO DATA												
12/11/67	33	31	64	37	35	12	84	148	0	59	0	207	3.1
1/18/69	4	3	7		24	9*			0	43	118	201	UNK
2/13/70	1	0	1		19	4			1	28	86	138	4.7
12/8/70	35	19	54	94	44	3	131	185	0	50	0	235	2.8
12/2/71	40	24	64	148	19	3	170	234	2	27	0	261	3.1
12/21/72	23	12	35	56	13	0	69	104	1	14	2	120	3.6
3/16/73					19	0			1	20	96	135	3.7
2/26/74					19	1			0	21	91	132	2.7
2/28/75					30	7			2	46	68	151	3.1
12/9/75	14	4	18	43	14	8	65	83		30		113	2.4

* One set triplets.

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APPENDIX IV

Moose Sex and Age Ratios - Unit 6 - Controller Bay Area

Year	Total MM Per 100 FF	Sm. MM Per 100 FF	Sm. MM Per 100 Lg. MM	Sm. MM % in Herd	Sm. MM Per 100 MM Calves	Calves Per 100 FF	Twins per 100 FF w/calf	Calf % in Herd	Survey Conditions	Total Sample
1968-69							66.7	26.3	UNK	19
1970-71	140.0					60.0	20.0	20.0	POOR	30
1972-73							28.6	22.5	FAIR	40
1974-75							46.2	29.2	FAIR	65
1975-76							25.0	20.8	FAIR	96

PREPARED BY: Julius Reynolds, Game Biologist III

MOOSE

SURVEY-INVENTORY PROGRESS REPORT - 1975

Game Management Unit 6 - West of Copper River

Season and Bag Limits

Sept. 10 - 15	One moose by permit; conditions and number of permits will be described by Commissioner's announcement.

The conditions of this permit hunt were: (1) any person could apply for a permit at the Cordova Fish and Game office during the month of August, (2) a public drawing was held September 4, 1975 for 20 bull moose permits, (3) successful hunters were required to report their kill within 2 days.

Harvest and Hunting Pressure

During the 1975 season, 16 bulls were taken by the 20 permit holders. In addition, 2 cows were shot during the bull-only season and 2 yearling bulls were shot prior to the season. The 1975 bull harvest is about average for the number of bulls taken. The typical harvest of 35-45 moose has been for either-sex hunts (Appendix I).

During the month of August, 477 hunters applied for the 20 permits. All 20 permit holders reported hunting. Thus the success ratio was 80 percent.

The 6-day season ran from September 10 - 15. Weather during the first 2 days was poor with heavy rain and strong winds.

Composition and Productivity

As part of a 2-year collared moose study, several sex and age composition counts were flown (Appendix II). Calf production as indicated by the June - December 1975 surveys was about 50 calves per 100 cows. Winter survival of calves was excellent as indicated by the May 1976 survey of 55 short yearlings per 100 cows. The bull-cow ratio is at least 22 per 100. A February 1976 survey revealed 191 moose, the second largest number of moose ever observed west of the Copper River. The December 1975 survey of 143 animals probably best reflects the general composition of the herd and therefore was used for comparison with previous counts (Appendix III).

Cementum age data were obtained on 15 of the 16 bulls harvested. Yearlings (5) constituted one-third of the harvest and 2, 3 and 4 year olds each accounted for 20 percent. A single 5-year-old was taken.

Management Summary and Conclusions

The 1975 moose harvest of 16 bulls allowed the moose herd west of the Copper River to build up to the desired level of 175-200 moose as revealed by the February 1976 survey of 191 moose. The bull/cow ratio seems adequate as calf production and survival through the winter was excellent. This herd is responding as desired and is in conformance with management objectives.

Recommendations

Retain the present season and bag limit.

PREPARED BY:

Julius Reynolds
Game Biologist III

SUBMITTED BY:

John S. Vania
Regional Management Coordinator

APPENDIX I

Moose Harvest - Unit 6

West of the Copper River

Year	Bulls	Cows	Unid.	Total
1960*	25	0	0	25
1961	NO OPEN SEASON			
1962	25	0	0	25
1963	15	2	0	17
1964	15	0	0	15
1965	20	0	0	20
1966	20	1	0	21
1967	23	0	0	23
1968	28	8	0	36
1969	30**	12	0	42**
1970	14	32	0	46
1971	12	27	0	39
1972	24	23	0	47
1973	18	0	0	18
1974	12	28	0	40
1975	16	0	0	16

* First harvest since introduction of moose to Unit 6.

** Estimated.

SUBMITTED BY: Julius Reynolds, Game Biologist III

APPENDIX II

Moose Sex & Age Data - Unit 6

West of Copper River

Date		LG. MM	Sm. MM	Total MM	FF W/O	FF W/1	FF W/2	Total FF	Total Adults	Lone Calves	Total Calves	Yrlgs.	Unid. Sex	Total Sample
1974 - April	25								59			15		74
May	28			13				42	55		13	20		88
June	11			12				38	50		18	16		84
June	26			12				24	36		12	6		54
July	18	16	7	23	30	12	2	44	67		16			83
Aug.	23	10	5	15	26	7	3	36	51		13			64
Sept.	27	7	7	14	22	12	4	38	52	3	23			75
Nov.	7	11	15	26	37	17	3	57	83	1	24			107
Dec.	20	16	13	29	52	25	8	85	114	3	44			158
1975 - Jan.	29			14		15	8		95	1	32		72	141
Mar.	3			0		20	9		93		38		64	131
April	28			4		10	3		59	1	17		42	76
May	28			8		1		25	33		1	19		53
June	6			15		6	7	42	57		20	15		92
Aug.	25	18	7	25	34	10	6	50	75		22			97
Sept.	22	12	6	18	31	11	5	47	65	1	22			87
Oct.	24	10	2	12	26	8	7	41	53		22			75
Dec.	10	14	4	18	47	27	8	82	100		43			143
1976 Feb.	18			11		28	13		136	1	55		84	191
May	17			12	31	10	6	47	59	4		26		85

SUBMITTED BY: Julius Reynolds, Game Biologist III

APPENDIX II (continued)

Moose Sex & Age Ratios - Unit 6

West of Copper River

Year	Date	MM per 100 FF	Yrlg. % in herd	Calves per 100 FF	Calf % in herd	Twins per 100 FF W/C	Sample
1974	April 25		20.3				74
	May 28	31.0	22.7	31.0	14.8		80
	June 11	31.6	19.1	47.4	21.4		84
	June 26	50.0	11.1	50.0	22.2		54
	July 18	52.3		36.4	19.3	14.3	83
	Aug. 23	41.7		36.1	20.3	30.0	64
	Sept. 27	36.8		60.5	30.7	25.0	75
	Nov. 7	45.6		42.1	22.4	15.0	107
	Dec. 20	34.1		51.8	27.9	24.2	158
1975	Jan. 29				22.7	34.8	141
	March 3				29.0	31.0	131
	April 28				22.4	23.1	76
	May 28	32.0	35.9	4.0	1.9	0.0	53
	June 6	35.7	16.3	47.6	21.7	53.8	92
	Aug. 25	50.0		44.0	22.7	37.5	97
	Sept. 22	38.3		46.8	25.3	31.3	87
	Oct. 24	29.3		53.7	29.3	46.7	75
	Dec. 10	22.0		52.4	30.1	22.9	143
1976	Feb. 18				28.8	31.7	191
	May 17	25.5	30.6	55.3	30.6	37.5	85

SUBMITTED BY: Julius Reynolds, Game Biologist III

APPENDIX III

Moose Sex and Age Composition - Unit 6

West of Copper River

Date	Lg. MM	Sm. MM	Total MM	FF W/O	FF W/1	FF W/2	Total FF	Total Adults	Lone Calves	Total Calves	Unid. Sex	Total Sample	Count Time (hours)
3/15/63	1	0	1	0	18	2	20	21	0	22	24	67	2.3
1963-64	Z E R O	D A T A											
12/9-10/64	5	6	11	9	26	6	41	52	0	38	31	121	4.7
1965-66	Z E R O	D A T A											
1966-67	Z E R O	D A T A											
12/7/67	5	5	10	49	26	2	77	87	0	30	0	117	4.8
1/15-16/69	2	2	4	0	25	7*	33	37	1	43	76	156	UNK
1/17/70	4	5	9	0	28	10	38	47	1	49	97	193	3.1
11/27/70	11	4	15	94	26	12	132	147	2	52	0	199	3.4
11/2/71	6	9	15	82	19	12	113	128	4	47	0	175	3.5
12/22/72	21	7	28	75	17	1	93	121	0	19	0	140	3.0
1/19/74	16	8	24	80	23	9	112	136	0	41	0	177	2.7
12/20 74	16	13	29	52	25	8	85	114	3	44	0	158	3.2
12/10/75	14	4	18	47	27	8	82	100	0	43	0	143	1.8

* Plus 1 female with 3.

SUBMITTED BY: Julius Reynolds, Game Biologist III

APPENDIX III (continued)

Moose Sex and Age Ratios - Unit 6

West of Copper River

Year	Total MM per 100 FF	Calves per 100 FF	Twins per 100 FF W/Calf	Calf % in herd	Survey Conditions	Total Sample
1962-63			10.0	32.8	Unknown	67
1963-64	Z E R O D A T A					
1964-65			18.8	31.4	Unknown	121
1965-66	Z E R O D A T A					
1966-67	Z E R O D A T A					
1967-68	13.5	39.0	7.1	25.6	Excellent	117
1968-69			21.9	27.6	Excellent	156
1969-70			26.3	25.4	Good	193
1970-71	11.4	39.4	31.6	26.1	Good	199
1971-72	13.3	41.6	38.7	26.9	Fair	175
1972-73	30.1	20.4	5.6	13.6	Good	140
1973-74	21.4	36.6	28.1	23.2	Good	177
1974-75	34.1	51.8	24.2	27.9	Good	158
1975-76	22.0	52.4	22.9	30.1	Good	143

SUBMITTED BY: Julius Reynolds, Game Biologist III

SURVEY-INVENTORY PROGRESS REPORT - 1975

Game Management Unit 7 - Seward

Seasons and Bag Limits

Unit 7 only that portion which includes the drainages of Resurrection, Little Indian, Big Indian, Juneau Creek and all Chickaloon River drainages.	Sept.1-Sept.10	One moose; antlerless moose may be taken by permit only; dates and conditions of the hunt will be described by Commissioner's announcement.
Remainder of Unit 7	Sept.1-Sept.10	One bull

Harvest and Hunting Pressure

Harvest reports indicate that 462 hunters harvested 66 bull moose during the 1975 moose season for a success rate of 14 percent (Appendix I). The number of hunters afield declined by 6 percent from 1974, while hunter success was little changed.

The 1975 harvest of 66 bulls was similar to the 1974 harvest of 64 bulls but was 42 percent below the 1973 level of 114 and 35 percent below the annual average of 101 for the preceding 5 years.

Composition and Productivity

Lack of adequate snow cover and inclement weather prevented surveys except in the Twenty Mile River valley, count area 6 (Appendices II and III). In count area 5, the bull-cow ratio was low at 3 bulls per 100 cows. Calf production remains high at 43 calves per 100 cows but the incidence of twins was the lowest recorded in this area at 3.6 twins per 100 cows with calves. The twin calf ratio has been declining since 1971.

Management Summary and Conclusions

The 1975 harvest and hunting pressure was similar to 1974. The low level of harvest compared to the period 1966 through 1973 appears to be attributable to shortened seasons and reduced effort.

In count area 5 (Twenty Mile River) calf production is good but the incidence of twins has been decreasing over the past 4 years. This may indicate deteriorating range conditions.

Recommendations

No changes in seasons or bag limits are recommended.

PREPARED BY:

Paul A. LeRoux
Game Biologist III

SUBMITTED BY:

John Vania
Regional Management Coordinator

APPENDIX I

loose Harvest and Hunting Pressure - Unit 7

ear	Season	Bulls	Cows	Unid.	Total	Hunters	Percent Success
965	1st	*	*	*	*		
	2nd	*	*	*	*		
	Comb.	60	1	0	61	*	*
966	1st	*	*	0	*		
	2nd	*	*	0	*		
	Comb.	112	1	0	113	445	25
967	1st	*	*	*	*		
	2nd	*	*	*	*		
	Comb.	123	1	1	125	414	30
968	1st	140	1	0	141		
	2nd	19	0	0	19		
	Comb.	160[2]	1	3	164[2]	481	34
969	Comb.	174	4	1	179	557	32
970	1st	104	0	1	105		
	2nd	23	0	1	24		
	Ant.[1]	0	14[3]	0	14		
	Comb.	152[2]	14[3]	2	168[2]	520	32
971	1st	110	14	2	126		
	2nd	25	0	0	25		
	Comb.	153[2]	14	2	169[2]	563	30
972	1st	111	19	0	130		
	2nd	16	0	0	16		
	Comb.	154[2]	22[2]	0	176[2]	780	22
973		114	47[3]	0	161	779	21
974		59	2	3	64	492	13
975		66	0	0	66	462	14

* Date not available
1 Antlerless season held December 2-6
2 Total exceeds summation of various seasons because of kills for which data were not given
3 Data from permit returns; harvest reports indicate 152:11:2 for 1970, 114:43:0 for 1973.

Prepared by: Paul A. LeRoux, Game Biologist III

MOOSE - GMU - 7

APPENDIX II

Sex and Age Ratios, Survey Area 6, Twenty Mile River

Date	Tot.♂ Per 100♀	Sm.♂ Per 100♀	Sm.♂ Per 100 Lg.♂	Sm.♂ % in Herd	Sm.♂ Per 100 ♂calves	Calves Per 100♀	Incidence of twins per 100♀ w/calf	Calf % in Herd	Hours	Animals Per Hour	Animals Total
2/64	--	--	--	--	--	--	7.7	29.4	2.2	31	68
No Data											
1/14/66	2.5	--	--	--	--	25.3	17.6	19.8	1.3	73	101
11/14/66	8.4	7.0	500	4.4	27.8	50.7	20.0	31.6	1.5	76	114
11/28/67	8.4	5.6	200	4.0	38.0	29.6	16.7	21.4	1.2	84	98
?	5.9	4.4	300	2.9	19.4	45.6		30.1	1.0	103	103
11/12/69	4.2	2.1	100	1.5	10.8	39.4	20.0	27.4	1.4	90	135
11/24/70	2.1	1.0	100	0.8	6.4	32.3	6.9	24.0	1.0	129	129
11/1/71	11.1	*	*	*	*	33.3	35.3**	23.1	1.7	61	104
12/1/72	6.1	3.0	100	2.0	14.0	43.4	13.20	29.0	3.3***	76***	148
11/27/73	3.8	1.3	50	0.9	6.1	41.8	10.0	28.7	1.2	96	115
2/3/75	--	--	--	--	--	--	--	34.5	--	--	29
11/25/75	3.0	1.5	100	1.0	6.9	43.3	3.6	29.6	2.0	49	98

* Yearling bulls not properly identified on survey.
** Includes one set of triplets.
*** Count time and moose/hour is calculated for C.A. 5 & 6 together.

Prepared By: Paul A. LeRoux, Game Biologist III

MOOSE - GMU - 7

APPENDIX III

Sex and Age Composition, Survey Area 6, Twenty Mile River

Date	Lg. ♂	Sm. ♂	Total ♂	♀ W_0	♀ W_1	♀ W_2	Total ♀	Total Adults	Lone Calves	Total Calves	Unid. Sex	Total Moose	Count Time	Moose Per Hour
2/17/64	0	0	0	0	12	1	13	13	6	20	35	68	2.2	31
--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1/14/66	2	0	2	62	14	3	79	81	0	20	0	101	1.3	78
11/14/66	1	5	6	41	24	6	71	77	0	36	1	114	1.5	76
11/28/67	2	4	6	53	15	3	71	77	0	21	0	98	1.2	82
?	1	3	4	--	--	--	68	72	--	31	0	103	1.0	103
11/12/69	2	2	4	64	24	6	94	98	1	37	0	135	1.4	96
11/24/70	1	1	2	67	27	2	96	98	0	31	0	129	1.0	129
11/1/71	2	6*	8	55	11	6***	72	80	0	24	0	104	1.7	61
12/1/72	3	3	6	61	33	5	99	105	0	43	0	148	3.3**	76
11/27/73	2	1	3	49	27	3	79	82	0	33	0	115	1.2	96
2/3/75	--	--	--	--	6	2	--	8	--	10	11	29	--	--
11/25/75	1	1	2	39	27	1	67	69	0	29	0	98	2.0	49

* Yearling bulls not properly identified.
** Combined count time for C.A.'s 5 & 6.
*** Includes 1cow/3 calves.

PREPARED BY: Paul A. LeRoux, Game Biologist III

MOOSE - GMU 7 - SEWARD
APPENDIX IV

Moose Sex and Age Ratios

Year	Total MM per 100FF	Sm.MM per 100FF	Sm.MM per 100 Lg.MM	Sm.MM % in Herd	Sm.MM per 100 MM Calves	Calves per 100FF	Twins per 100 FF w/calf	Calf % in Herd	Count Areas	Animals Per Hour	Total Sample
1966	17.4	4.6	36.2	3.2	34.7	26.6	8.6	18.4	All	--	656
1967	28.5	10.6	59.4	6.4	59.4	35.8	12.3	21.5	10 & 6	87	297
1968	14.1	5.3	60.0	3.4	30.8	34.3	4.9	22.1	1,4,5,6,8,9, 10,13,14,20	55	792
1969	10.4	3.0	40.9	2.1	18.0	33.4	18.3	23.2	5,6,8,9,12,20	52	430
1970	19.8	7.4	59.6	5.1	61.2	24.2	6.4	16.8	5,6,10,12,8,9 20,21	88	1,090
1971	22.4	8.7	63.6	6.0	82.4	21.2	9.4	14.6	5,6,10,12,8, 9,20,21	88	1,393
1972	12.2	2.2	22.7	1.6	15.4	29.3	7.8	20.7	5,6,10,12,8 9,20,21	64	942
1973	13.9	2.6	23.2	1.8	18.9	27.7	3.9	19.5	5,6,10,12,8 9,20,21	63	866
1974	SEE APPENDIX II								5 & 6		
1975	SEE APPENDIX II								6		

PREPARED BY: Paul A. LeRoux, Game Biologist III

MOOSE - GMU 7 - SEWARD

APPENDIX V

Moose Sex and Age Composition

Year	Lg. MM	Sm. MM	Total MM	FF W/0	FF W/1	FF W/2	Total FF	Total Ad.	Lone Calves	Total Calves	Unid. Sex & Age	Total Sample	Count Time (Hrs.)	Moos Per Hour
1966	58	21	79	351	95	9	455	534	8	121	1	656	--	--
1967	32	19	51	122	50	7	179	230	0	64	3	297	3.4	87
1968 11/12/68 2/8/69 11/12 69 12/13 1/2/70	45	27	72	346	156	8	510	582	3	175	35	792	14.8	54
1970 11/19-24 12/1-2	94	56	150	586	160	11	757	907	1	183	0	1,090	12.4	88
1971 11/1-4	132	84	216	782	163	17*	962	1,178	6	204	11	1,393	15.7	89
1972 11/29-12/2	66	15	81	487	165	14	666	747	2	195	0	942	14.8	64
1973	69	16	85	455	149	6	610	695	8	169	2	866	13.7	63
1974	SEE APPENDIX III													
1975	SEE APPENDIX III													

* Includes one set of triplets.

PREPARED BY: Paul A. LeRoux, Game Biologist III

MOOSE

SURVEY-INVENTORY PROGRESS REPORT - 1975

Game Management Unit 9 - Alaska Peninsula

Seasons and Bag Limits

Unit 9, that portion south and west of a line drawn from the head of Port Moller Bay to the head of American Bay	No open season	
Remainder of Unit 9	Sept.20-Sept.30 Dec.1-Dec.31	One bull

Harvest and Hunting Pressure

The 1975 harvest of 232 moose was the lowest ever reported for the Alaska Peninsula (Appendix I). Antlerless moose were not legal so the harvest, unlike previous years, was entirely bulls. Alaskan residents took 53 percent of the moose, with 85 percent of the harvest (196 moose) taken during the 11-day September season.

Composition and Productivity

Data for the single early June calving survey are presented in Appendix II. Reproductive success remained poor and results of the spring survey were substantiated by the fall sex and age composition surveys (Appendices III and IV). The overall calf ratio of 13.2 calves per 100 cows represents the sixth successive year of poor calf production on the Alaska Peninsula. Calf-cow ratios obtained during the fall ranged from a high of 20.3 calves per 100 cows to a low of 3.8 calves per 100 cows.

Management Summary and Conclusions

Seasons and bag limits for the Alaska Peninsula were greatly altered from past years. Originally, a short bull season and a liberal antlerless moose season were adopted by the Board of Fish and Game. Passage of Senate Bill 230 eliminated antlerless seasons statewide and thereby removed the opportunity for local residents to take antlerless moose for domestic use. As a result, the remaining bull season was altered through a Field Announcement (No. 11-5-75) eliminating the last 6 days of the published season and establishing a bull season during the month of December to provide for local needs. Confusion resulting from the dates published in the regulatory booklet and the dates established by the field announcement may have resulted in the nine moose reported taken during the closed season.

The effects of sport hunting selection for bulls remains evident on the Alaska Peninsula. In the heavily hunted Mother Goose area, the fall bull-cow ratio was only 15.8 bulls per 100 cows (Appendix III).

Although only 57 percent of the moose observed during the 1975 fall composition surveys were from areas closed to hunting, inside the Katmai National Monument 79 percent of all bulls observed were found within these two trend areas (179 of 226 bulls). Weather and inadequate snow conditions prevented surveys of additional trend areas so the overall Alaska Peninsula composition data are strongly influenced by the Katmai National Monument data.

Trophy hunting has reduced the number of mature bulls in most areas of the peninsula and the additional harvesting of younger age class males by recreational-meat hunters has severely reduced recruitment into the mature age class bulls. During the 1975 season the scarcity of large antlered bulls was particularly evident. Antler spreads over 60 inches were uncommon and many guided hunts produced trophies with antler spreads under 50 inches. Data gathered for the Department's moose antler size-age study, clearly reflect the trend of declining trophy abundance on the Alaska Peninsula (Appendix IV).

At least a portion of Unit 9 should be managed to produce large antlered moose under aesthetically pleasing hunting conditions. The antler size-age study indicates that no place in the state grows large antlers faster than the Alaska Peninsula. Furthermore the Boone and Crocket record book has been dominated in recent years by trophies from this area. The unit has a widespread reputation for providing this type of hunt.

The moose herd in the central portion of the Alaska Peninsula, which received the heaviest hunting pressure, continued to decline in numbers. Although aggravated by direct mortality factors the primary cause of the decline appears to be the result of poor reproductive success resulting from past overuse of the range. As moose are removed by hunting, predators, disease, or accidents, they are not replaced by calf production. Overall calf-cow ratios have not exceeded 15 calves per 100 cows since 1969 (Appendix V). The declining bull-cow ratios, although of significance to trophy management, have not reached a point which would be biologically significant to reproductive success. The area with the highest fall bull-cow ratio (Savonoski) also had the lowest calf-cow ratio (Appendix II). In addition to poor initial calf production, there are indications that a high loss of calves to brown bears may occur immediately following parturition. Until the pattern of poor calf production and survival is reversed, the decline of the moose herd in the central portion of the Alaska Peninsula can be expected to continue.

The reduced 1975 harvest level (Appendix I) was the result of the short fall season and the loss of the antlerless moose season because of Senate Bill 230. In recent years the majority of this unit's harvest has been by recreational hunters during the first 60 days of a liberal 120-plus days either-sex season. Although the 1975 recreational hunting season was reduced to 10 days, 196 moose were harvested.

The recreational hunting force is now capable of harvesting a large number of moose even under restricted seasons. Because many of the bulls taken by this category of hunters are of the younger age classes,

a short season length alone is not conducive to management for large antler size because it does not protect animals necessary for recruitment into the larger antler age classes.

Recommendations

Moose management on the Alaska Peninsula should recognize the different uses that have been established for bulls in various areas of the unit. Management of the area north of Katmai National Monument should provide a hunt for bulls during the traditional fall recreational hunting period, but without emphasis on antler size. The area between Katmai National Monument and Port Moller should be managed to provide for the harvest of large antlered bulls. In both areas, management should also retain high hunting aesthetics in association with recreational hunting. The domestic needs of local residents in both areas can be provided for with an either-sex seasons in December when a large influx of recreational hunters would not be expected. The portion of the unit south and west of Port Moller should remain closed to moose hunting until a viable population has been established.

PREPARED BY:

James B. Faro
Game Biologist III

SUBMITTED BY:

John S. Vania
Regional Management Coordinator

MOOSE - GMU 9 - Alaska Peninsula

APPENDIX I

Moose Harvest and Hunting Pressure - Unit 9

Year	Bulls	Cows	Unid.	Total	Hunters	Percent Success
1964	185	64	0	249	-	-
1965	213	68	4	285	-	-
1966	240	75	8	323	519	62.2
1967	301	68	9	378	509	74.3
1968	366	72	5	443	583	76.0
1969	317	70	6	393	527	74.6
1970	266	84	2	352	457	77.0
1971	317	116	7	440	591	74.5
1972	454	91	11	556	773	71.9
1973	607	206	26	839	1175	71.4
1974	520	167	18	705	1072	65.8
1975	222	0	10	232	436	53.2

PREPARED BY: James B. Faro, Game Biologist III

MOOSE - GMU 9 - Alaska Peninsula

Mother Goose to Dog Salmon

APPENDIX II

Moose Productivity, Unit 9 - Alaska Peninsula 1975

Date	Calves per 100 FF	Calves per 100 FF and Yearlings	Percent FF with Calves	Twins per 100 FF with Calf	Total Sample
June 8	31.0	28.2	23.0	34.6	169

	Total Calves	Total Cows & Yearlings	Total Cows	Total Cows w/Twins
June 8	35	124	113	9

PREPARED BY: James B. Faro, Game Biologist III

MOOSE - GMU 9 - Alaska Peninsula

APPENDIX III

Moose Sex and Age Ratios, 1975 - Alaska Peninsula - Unit 9

Trend Area	Total MM per 100 FF	Small MM per 100 FF	Small MM per 100 Large MM	Sm. MM % in Herd	Small MM per 100 MM Calves	Calves per 100 FF	Twins per 100 FF w/calf	Calf % in Herd	Moose per Hour	Total Sample
Katmai *	47.5	9.4	24.7	5.6	92.7	20.3	13.9	12.1	90.4	339
Mother Goose	15.8	6.3	66.7	4.9	92.3	13.7	-	10.6	58.6	123
Flats A	17.2	7.0	69.2	5.6	163.6	8.6	10.0	6.8	123.8	161
Flats B	10.2	4.1	66.7	3.3	57.1	14.3	40.0	11.5	66.7	122
Savonski *	79.1	9.5	13.7	5.2	500.0	3.8	-	2.1	47.1	193
Totals	36.0	7.6	27.0	5.1	115.7	13.2	13.7	8.9	71.6	938

* Trend area within Katmai National Monument, no hunting allowed.

PREPARED BY: James B. Faro, Game Biologist III

MOOSE - GMU 9 - Alaska Peninsula

APPENDIX IV

Moose Sex and Age Composition - Unit 9 - 1975

Trend Area	Date	Lg. MM	Sm. MM	Total MM	FF W/0	FF W/1	FF W/2	Total FF	Total Adults	Total Calves	Unid. Sex & Age	Total Sample
Katmai *	Nov. 12	77	19	96	166	31	5	202	298	41	-	339
Mother Goose	Nov. 14	9	6	15	82	13	0	95	110	13	-	123
Flats A	Nov. 14	13	9	22	118	9	1	128	150	11	-	161
Flats B	Nov. 15	6	4	10	88	6	4	98	108	14	-	122
Savonski *	Nov. 30	73	10	83	101	4	0	105	188	4	1	193
Totals		178	48	226	555	63	10	628	854	83	1	938

* Trend area within Katmai National Monument, no hunting allowed.

PREPARED BY: James B. Faro, Game Biologist III

MOOSE - GMU 9 - Alaska Peninsula

APPENDIX V

Moose Sex and Age Ratios - Unit 9

Year	Total MM per 100 FF	Small MM per 100 FF	Sm. MM per 100 Lg. MM	Sm. MM % in Herd	Sm. MM per 100 MM Calves	Calves Per 100 FF	Twins per 100 FF w/calf	Calf % in Herd	Moose per Hour	Total Sample
Nov., 1962	99.4	19.0	23.6	8.2	115.2	33.0	24.4	14.2	91.0	1,113
Nov., 1963	62.1	11.9	23.7	6.4	97.5	24.4	17.5	13.1	104.0	1,852
Nov., 1964	67.8	11.8	21.2	6.4	137.7	17.2	9.9	9.3	146.0	1,312
1965*	-	-	-	-	-	-	-	-	-	-
Nov., 1966	73.5	13.9	23.3	6.6	85.9	32.4	16.3	15.4	96.0	786
Oct., 1967	73.0	14.0	23.0	7.0	121.0	24.0	30.0	12.0	89.0	1,447
Oct., 1968	63.3	9.1	15.7	4.8	84.7	21.3	19.1	11.1	163.9	1,619
Nov., 1969	53.9	18.7	52.9	10.3	148.8	25.1	14.1	13.9	65.0	620
Nov. & Dec., 1970	44.9	14.7	48.7	9.4	118.8	12.4	11.3	7.9	93.2	1,016
Oct. & Nov., 1971	46.8	11.2	31.6	7.1	219.7	10.2	4.5	6.5	105.9	1,091
Nov. & Dec., 1972	51.0	11.8	30.1	7.1	170.0	13.9	6.8	8.4	91.3	954
Dec., 1973	30.5	5.1	20.3	3.7	119.0	8.6	11.1	6.2	65.1	677
Nov., 1974	23.0	5.6	32.6	4.1	83.5	13.5	5.3	9.9	91.0	1,402
Nov., 1975	36.0	7.6	27.0	5.1	115.7	13.2	13.7	8.8	71.6	938

* Sex and age composition counts were not conducted in 1965

PREPARED BY: James B. Faro, Game Biologist III

MOOSE - GMU 9 - Alaska Peninsula

APPENDIX VI

Moose Antler-Age Relationship

Year	Antler Spread			Mean Age	Sample Size
	% Less than 50"	% Greater than 50"	% Greater than 60"		
1972	0.0	100.0	76.0	6.9	25
1973	8.3	91.7	62.5	6.4	48
1974	6.4	93.6	46.2	7.5	78
1975	39.5	60.5	15.8	5.4	38

PREPARED BY: James B. Faro, Game Biologist III

MOOSE

SURVEY-INVENTORY PROGRESS REPORT -1975

Game Management Unit 11 - Chitina Valley and eastern half of Copper River Basin.

Seasons and Bag Limits

Sept. 1 - 20 — One bull

Seasons and bag limits in Unit 11 have varied since 1960. During the period from 1960 through 1962, bag limits became more liberal. From 1963 through 1972 they remained liberal and from 1973 through 1975 they became more restrictive. The past hunting season marks the first year since 1961 with no antlerless moose season in any portion of Game Management Unit 11.

Harvests and Hunting Pressure

The 1975 reported harvest of 40 moose was the lowest since harvest ticket information became available in 1963 (Appendix I). Hunter harvest has varied from 123 moose to 242 and has averaged 164. From 1963 through 1974 the male portion of the harvest averaged 98 moose. Previously recorded harvests included both male and female moose but in 1975 the harvest was limited to bull moose only.

The number of hunters going afield declined for the second consecutive year and hunting pressure was the lowest since information became available in 1966.

Success ratios declined to 24 percent which was also the lowest figure reported. Moose harvested, the number of hunters and success rate were lower in 1975 than in the previous season.

Composition and Productivity

Moose sex and age composition surveys have been conducted periodically in count area 11 (Mount Drum) since 1955 and in count area 18 (Nabesna Road) since 1965. Appendix II shows the results of these counts.

Numbers of moose observed in these areas are insufficient to draw any conclusions on the trend of sex and age ratios in recent years. In 1974 new count areas were designed which would yield higher numbers of moose and sample moose over additional, previously uncounted areas. These count areas correspond to moose harvest units and will be useful in developing management strategy for specific areas within Unit 11.

Management Summary and Conclusions

Moose populations in Unit 11 declined during the early 1970's. The number of moose observed in recent surveys is too low to accurately reflect trends in sex and age ratios within the population. Recently established count areas have not been in existence long enough to show trends in the population. Harvests have been markedly reduced in Unit 11, primarily due to the 1975 restrictions in hunting season and bag limit. Although these seasons seem excessively restrictive, further information is needed to accurately assess trends within this moose population.

Recommendations

1. Additional areas within Unit 11 should be surveyed to obtain population information from more of the moose habitat in Unit 11.

2. Moose count areas established in 1974 should be surveyed annually to determine trends in the moose population.

3. Until additional information is available, the season in Unit 11 should conform with adjacent units.

PREPARED BY:

Sterling Eide
Game Biologist II

SUBMITTED BY:

John S. Vania
Regional Management Coordinator

APPENDIX I

Moose Harvest and Hunting Pressure - Unit 11

Year	Harvest				Hunters	Percentage Success
	Male	Female	Unid.	Total		
1963	86	37	0	123		
1964	89	38	0	127		
1965	116	70	2	188		
1966	89	69	5	163	263	62%
1967	108	70	2	180	317	57%
1968	99	34	8	141	293	48%
1969	101	59	2	162	378	43%
1970	126	115	1	242	562	43%
1971	90	89	2	181	546	33%
1972	86	55	5	146	525	28%
1973	105	77	5	187	594	31%
1974	79	43	1	123	397	31%
1975	38	0	2	40	164	24%

Prepared by: Sterling Eide, Game Biologist II

APPENDIX II

A Comparison of Moose Sex and Age Composition Data

Year	Large Males per 100 Females	Small Males per 100 Females	Calves per 100 Females	Moose per Hour	Sample Size
Mt. Drum Count Area					
1955*	116	29	36	75	300
1956*	130	15	30	55	55
1957*	64	7	39	92	92
1958*	128	12	34	94	291
1960*	64	16	36	48	110
1965*	55	25	19	81	268
1967	62	10	29	117	456
1969	54	11	28	85	299
1970*	46	15	14	59	199
1972	46	5	10	69	250
1973	72	6	12	25	97
1974	53	5	13	16	65
1975	39	7	14	16	70
Nabesna Road Count Area					
1965*	22	20	39	52	83
1968*	14	5	12	44	140
1971	11	0	24	20	50
1972	0	6	20	16	39
1973	--**	--**	--**	5	15
1974	23	8	69	7	52

* Area boundary change.
** Data of no value because of small sample size.

Prepared by: Sterling Eide, Game Biologist II

MOOSE

SURVEY-INVENTORY PROGRESS REPORT - 1975

Game Management Unit 12 - Upper Tanana River

Seasons and Bag Limits

Unit 12	Sept. 1-Sept. 20	One bull

Harvest and Hunting Pressure

Information derived from harvest tickets revealed that 75 moose were taken in Unit 12 during the 1975 season. The average annual harvest for the past 10 years has been 168 animals. As in the past, the largest harvest occurred in the Tok-Little Tok drainage (Table 1).

Table 1. Unit 12 moose harvest by drainage, 1975.

Drainage	Number of animals harvested	Percent of total harvest
Tok-Little Tok	26	34.6
Tanana	15	20.0
Nabesna	11	14.6
Chisana	11	14.6
Beaver Creek	4	5.3
Unknown*	8	10.6
Total	75	

*Locations unreported or could not be determined from harvest ticket.

Of the successful hunters, 69 percent (52) were residents and 31 percent (23) were nonresidents. The number of moose hunters reporting declined from 471 (1974) to 308 (1975). During 1975, 233 hunters (76 percent) were unsuccessful. Residents accounted for 92 percent of those failing to take moose.

As usual, the latter part of the season proved to be the most productive; about 61 percent of the harvest occurred during the last half of the season. The modes of transportation used by hunters in Unit 12 are summarized below.

Transportation mode*	Number of hunters	Percent of total
Motorbike	95	40
Aircraft	58	24
Highway vehicle	46	19
Boat	24	10
Horse	13	5
Snow machine	2	1

*Data are from hunters reporting only one mode of transportation.

Composition and Productivity

Results of aerial composition counts in 1975 are presented below:

Drainage	Calves per 100 cows	Moose per hour	Bulls per 100 cows	Sample size
Tok-Dry Tok	14	85	15	111
Little Tok	14	90	22	215

Calf survival through October in the Tok, Dry Tok and Little Tok drainages was the lowest recorded since composition counts were begun in 1968. Late October surveys revealed only 14 calves per 100 cows in these areas. This marks a significant decline from the 27-32 calves per 100 cows recorded for the same areas during October 1974.

The number of bulls per 100 cows in the Tok-Dry Tok drainage declined from 17 (1974) to 15 (1975). This change was probably insignificant, and the bull:cow ratio probably has not changed markedly in these drainages since 1972. Twenty-two bulls per 100 cows were recorded in the Little Tok drainage in 1975. While this probably represented little change from the 19 bulls per 100 cows observed there in 1974, the proportion of bulls among moose occupying this drainage continued to be considerably lower than that prior to 1974.

Range and Habitat

Five snow measuring stations were established in 1971 along the Tok-Slana Highway in Unit 12. Snow depths were measured periodically at the stations throughout the winter. Snow measurements from a single year are of little value, but when data from several years are compared, an indication of the severity of winters with respect to moose browsing conditions is obtained.

Browse utilization plots were established along the same route as snow measurement stations. Green leaf willow (Salix pulchra) and felt leaf willow (Salix alaxensis) were used as indicator species to classify

utilization of browse within the plots as light, moderate or heavy. When snow depth along the highway exceeded two feet, moose were forced to the valley floor, and if this movement occurred before mid-December, browse utilization on the winter range approached 100 percent (all available twigs showed use). Timing of the migration to winter range and the abundance of moose appeared to dictate winter range utilization.

Snowfall was light during the winter of 1975-76, and measured less than 15 inches (total accumulation) throughout the winter. The majority of moose remained in the foothills throughout the winter, finally moving to the valley floor during February.

Browse utilization on critical winter range was light; about 50 percent available twigs on plots examined were utilized.

Management Summary

December surveys suggested that moose numbers remained very low in the Nabesna Road area despite the fact that moose seasons have been closed there since 1974. Recruitment remained low throughout portions of Unit 12 annually surveyed, and even the relatively favorable calf per cow ratios observed during 1974 failed to alter the situation noticeably. It is believed that during 1975 moose declined in abundance throughout Unit 12 except in the Little Tok River drainage where total numbers probably remained unchanged. So few moose were present on the north side of the Alaska Range foothills between Tok and the Robertson River that it was impossible to obtain a sample of adequate size to determine population trends. Moose numbers are not expected to increase in Unit 12 until a significant increase in recruitment occurs.

Recommendations

Because of continued low recruitment it is recommended that the short seasons, providing only for the taking of bulls, be continued in Unit 12. If the bull per cow ratio continues to decline, further season restrictions may be necessary. Presently, however, no changes in the season or bag limit are recommended.

PREPARED BY:

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Game Biologist III

SUBMITTED BY:

Oliver E. Burris
Regional Management Coordinator

MOOSE

SURVEY-INVENTORY PROGRESS REPORT - 1975

Game Management Unit 13 - Nelchina, Upper Susitna, and western half of the Copper River Basin

Seasons and Bag Limits

Sept.1-Sept.20 — One bull

Seasons for previous regulatory years were outlined by McIlroy (1974). The 1975 season was 10 days shorter than the 1974 season and reflects an attempt to reduce bull moose harvests and thereby stabilize declining bull moose populations.

Harvest and Hunting Pressure

The shorter 1975 hunting season resulted in a slight reduction in the total harvest as shown in Appendix I. Hunting pressure in Game Management Unit 13 increased while the success ratio decreased from 29 percent to 24 percent. Harvest figures show that 22 percent of the 1975 statewide moose harvest occurred in Game Management Unit 13.

Transportation methods of successful hunters in Unit 13 since 1967 are shown in Appendix II. The percent of successful hunters using off-road vehicles continued to increase during 1975 and biologists in the field reported increasing numbers of complaints concerning congestion of hunters, particularly at trail heads and on the trails themselves. This congestion was aggravated not only by the apparent increase in off-road vehicle numbers but also by the shorter legal hunting season. Appendix III compares the number of bull moose reported during the first reporting period of season since 1966. These figures indicate that as seasons become shorter, an increasing number of moose are taken during the first few days of the season.

Composition and Productivity

Figure I shows trends in Unit 13 moose sex and age composition calculated from fall sex and age composition surveys. Trends toward lower values for bull/cow and calf/cow ratios were continuing. Although the overall bull/cow sex ratio was declining, of particular concern were the bull/cow and calf/cow ratios for the Wells Creek, Upper Nenana area where the bull/cow ratio had declined to 4.2 bulls/100 cows.

Results of counts from any one area may vary from year to year depending upon variables, however, the long range trend toward reduced bull ratios and reduced calf ratios seems quite clear for this entire unit. McIlroy has previously discussed possible causes for this

decline and intensive investigations of moose and wolves are currently being conducted in Game Management Unit 13. Final results of this research will probably not be available for several years, but initial results of the effects of experimentally removing wolves may be available in late 1976.

Management Summary and Conclusions

Since 1972 more restrictive seasons have been employed to reduce hunter harvest and to stabilize a declining bull ratio in Unit 13. These restrictive seasons have not stabilized the bull/cow ratio although they may have reduced the rate of decline. Hunters have compensated for the reduction in season length by increasing use of off-road vehicles and by intensifying their hunting efforts. Further attempts to reduce bull moose harvests by shortening the season will probably not result in reduced harvests. The reduced bull ratio and lower calf ratio in the 1975 sex and age composition surveys coupled with the present harvest level point to the likelihood that a decline in huntable bulls will continue during the coming seasons. At some level this decline will result in the inability of bulls to breed the available cows during the optimum period.

Recommendations

1. Retain present season for the 1976 regulatory year.

2. Continue monitoring hunting effort and sex and age composition.

3. Obtain results of intensive research effort as they become available.

4. If present trends continue, implement vehicle and permit restrictions which will reduce future harvest levels.

PREPARED BY:

Sterling Eide
Game Biologist II

SUBMITTED BY:

John S. Vania
Regional Management Coordinator

MOOSE - GMU 13 - Nelchina Basin

APPENDIX I

A Comparison of Annual Moose Harvest and Hunting Pressure

Year	Season	Male	Female	Unknown	Total	Hunters	Percent Success
1963	Total	1385	343	7	1735		
1964	Total	1213	394	0	1607		
1965	Total	1318	3	10	1331		
1966	Total	1336	181	36	1553	4163	37%
1967	1st	1009	319				
	2nd	112	0				
	Total	1217*	319	16	1552	4027	38%
1968	1st	1013	243				
	2nd	171	0				
	Total	1240*	243	29	1512	4476	34%
1969	1st	817	0				
	2nd	87	7	8			
	Total	1204	7	8	1219	3381	36%
1970	1st	746	56	14			
	2nd	271	58	8			
	Total	1141*,***	158*	30*	1329	3585	37%
1971	1st	703	333				
	2nd	205	338				
	Total	1126*	671****	18	1815	4881	37%
1972	1st	559	5	7			
	2nd	39	2	1			
	Total	689*	7*	16*	712	3199	22%
1973	Total	604	4	10	618	2513	24%
1974	Total	768	3	23	794	2770	29%
1975	Total	690	2	23	715	2978	24%

* Moose whose date of kill is unknown are included in the total.
** 220 antlerless moose were known killed.
*** Adult, antlerless bulls killed during the late antlerless season are included.
**** Data from antlerless permit returns. Harvest ticket returns indicated a female kill of 614.

PREPARED BY: Sterling Eide, Game Biologist II

MOOSE - GMU 13 - Nelchina Basin

APPENDIX II

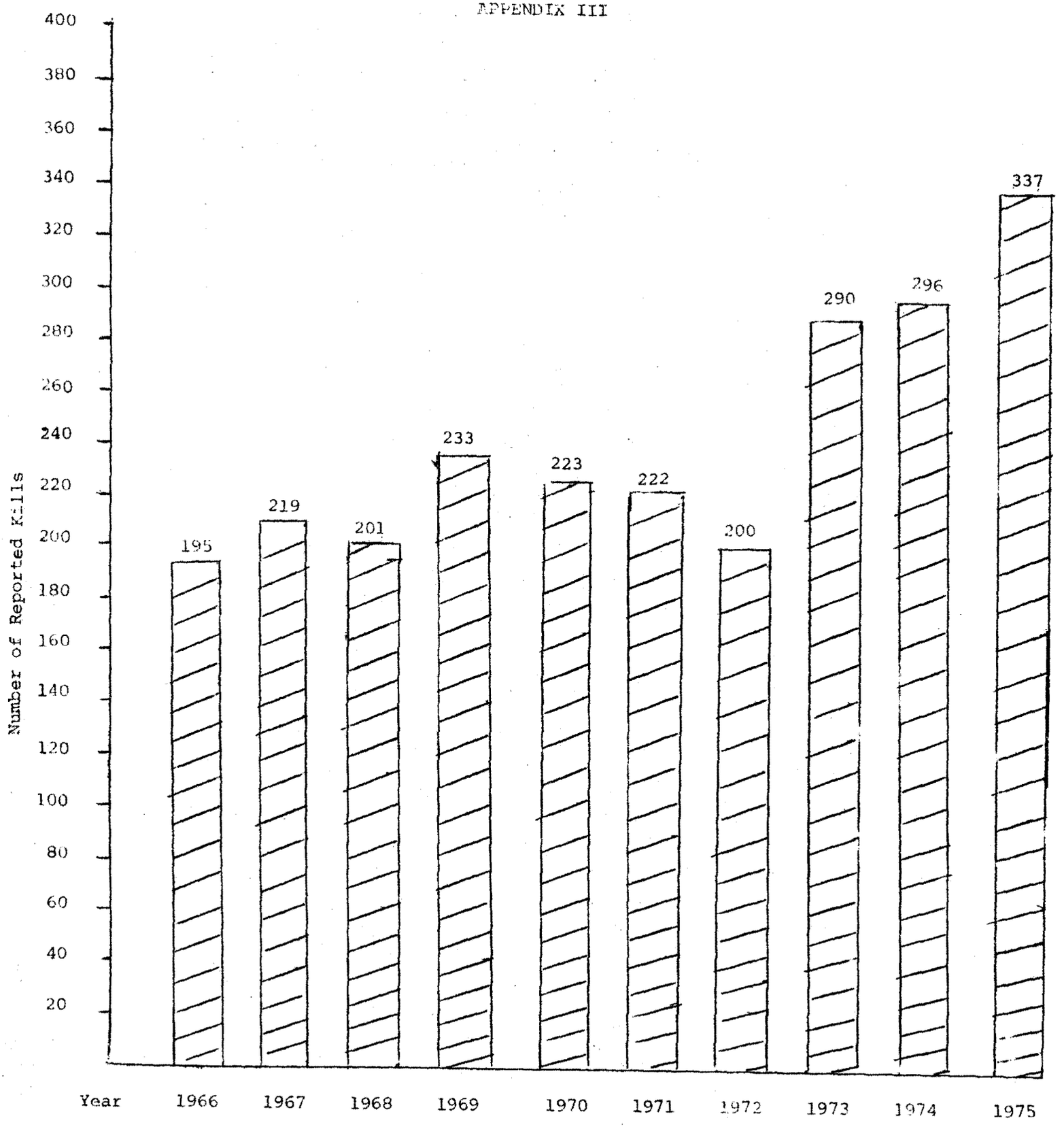
Transportation Trends of Successful Hunters Since 1967[a].

Year	TRANSPORTATION TYPE: Airplane	Horse	Boat	Motorbike	Snowmachine	Off-road Vehicle	Highway Vehicle And Afoot	Sample Size
1967, %:	22%	2%	4%		1%	34%	37%	
no.:	310	26	57		21	475	525	1414
1968, %:	19%	3%	6%		3%	34%	34%	
no.:	288	39	85		52	515	517	1496
1969, %:	22%	2%	5%	<1%	2%	30%	39%	
no.:	260	18	55	9	26	357	470	1195
1970, %:	20%	2%	4%	<1%	10%	25%	39%	
no.:	259	24	52	5	131	323	505	1299
1971, %:	19%	3%	8%	<1%	11%	24%	33%	
no.:	349	57	141	12	206	436	596	1797
1972, %:	34%	7%	8%	<1%	5%	28%	18%	
no.:	252	51	57	5	37	210	132	744
1973, %:	36%	3%	8%	<1%	<1%	32%	20%	
no.:	229	21	50	4	1	201	123	629
1974, %:	24%	3%	10%	1%	<1%	38%	23%	
no.:	201	29	82	11	1	320	190	834
1975, %:	26%	4%	8%	1%	<1%	41%	19%	
	186	26	61	8	1	297	139	718

a. Because of hunters using more than one transportation type or not reporting any transportation types, the numbers and percentages used below should be interpreted as levels rather than as absolute values.

PREPARED BY: Sterling Eide, Game Biologist II

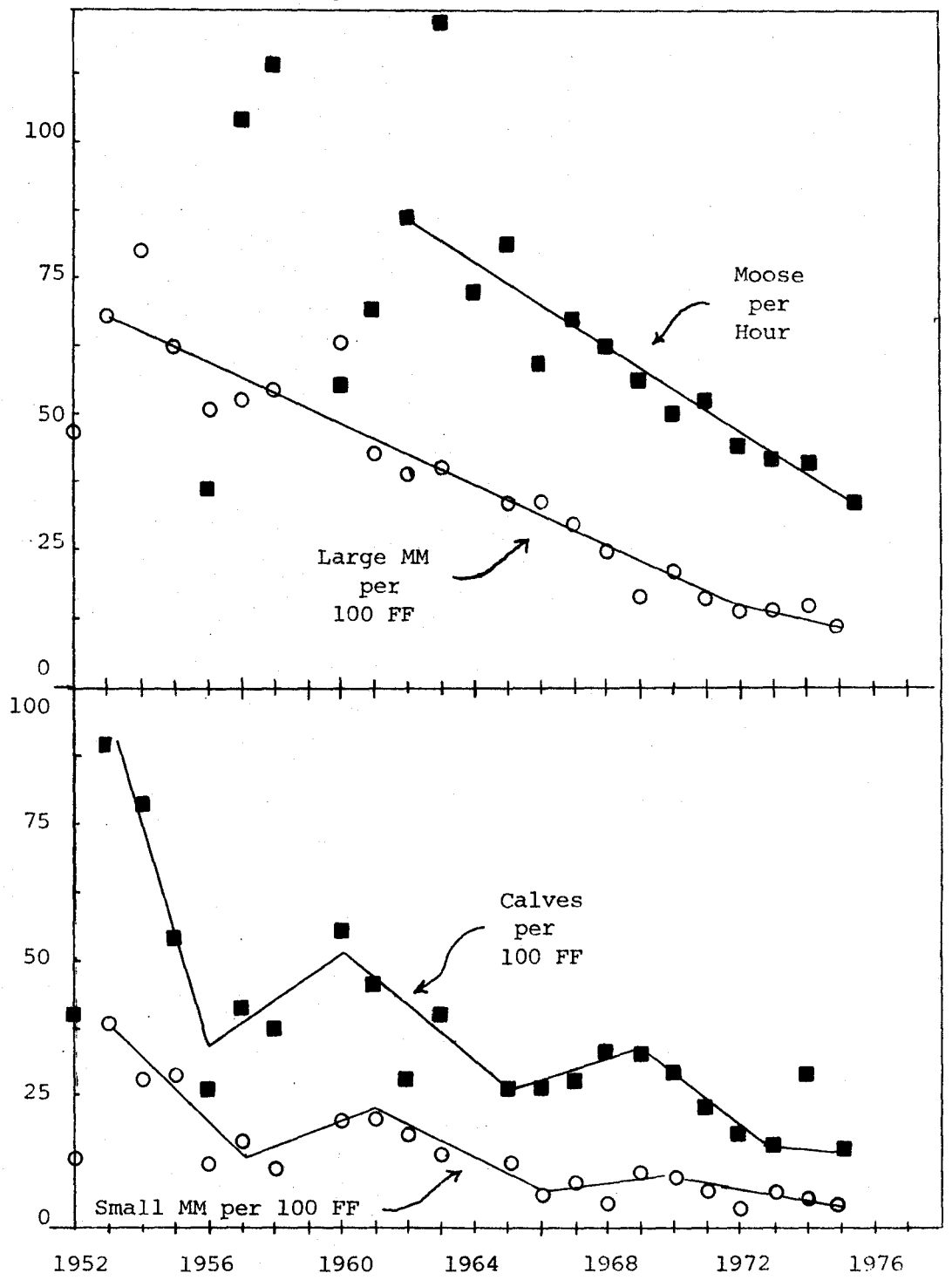
APPENDIX III



Appendix III. Number of bull moose taken during first report period of season. Prior to 1975 first period is Aug. 20-31. In 1975 it is Sept. 1-7.

PREPARED BY: Sterling Eide, Game Biologist II

Fig. I. A comparison of Unit 13 moose population indices for the period 1952 through 1975.



PREPARED BY: Sterling Eide, Game Biologist II

SURVEY-INVENTORY PROGRESS REPORT - 1975

Game Management Subunit 14A - Palmer

Seasons and Bag Limits

Sept. 1 - Sept. 20	One moose; antlerless moose* may be taken by permit only; dates and conditions of hunt will be described by Commissioner's announcement.

*The local Advisory Committee disallowed the antlerless season in 1975.

Harvest and Hunting Pressure

The final IBM reported harvest for Subunit 14A totaled 167 moose; 166 males and one female (Appendix I). The 1974 and 1975 harvests were the lowest since record keeping began in 1965. These reductions in the harvest were probably due to elimination of the November moose season. There have been no antlerless hunts in Unit 14 for the past 3 years. The September season was shortened 10 days this year to make the Subunit 14A hunting season similar to adjoining Game Management Units.

Documented moose mortality from causes other than hunting is shown in Appendix II. Except for hunting and illegal kills, moose mortality from all causes has generally been greater during severe winters. Documented illegal kills declined in 1975-76, partially because less effort was made to locate poached animals.

Composition and Productivity

Moose sex and age surveys tallied 682 moose in Game Management Subunit 14A count areas in 1975 (Appendix III). The late arrival of suitable snow cover forced the postponement of the surveys until December 20, and, since some bulls may have shed antlers by that date, the sex ratios are suspect. Bull:cow and yearling:cow ratios were higher than in preceding years and calf:cow ratios remained high (44 calves:100 cows). These data conform with expectations considering reduced bull harvests and mild winters in recent years.

A total of 40 cow moose (killed by auto collisions, starvation during winter, and losses not related to hunting) were examined for pregnancy; 34 (85%) carried fetuses.

Management Summary and Conclusions

The moose population has probably increased to levels existing prior to the 1970-71 and 1971-72 winter-kills. Although only a few of the count areas were surveyed, the 1975 composition count appeared consistent with previous years. The 1975-76 winter was relatively mild with apparently good overwinter moose survival.

Moose harvests during 1974 and 1975 were low relative to preceding years, primarily due to elimination of the November moose season. No major forest fires or land clearing operations have occurred for several years, and available moose browse has been decreasing through seral changes toward a climax spruce forest. Large scale winter-kills and further deterioration of browse may be expected in the future because of the moose population and low bull harvest.

An easy solution to maintaining and fully utilizing the moose population in the Matanuska Valley does not exist. Conversion of wooded tracts to subdivisions results in the loss of critical winter habitat. Land values are high due to industrial and residential development, and moose range must be publicly-owned or complementary or ancillary to other private land uses to exist. Effective range rehabilitation using mechanical equipment will entail competition for other uses of public lands and competition for funds with more favorable cost:benefit ratios. Maintaining an antlerless moose season to balance sex ratios and optimize harvest levels has not been possible, and even maintaining bull harvests may be difficult as the area becomes increasingly populated.

Recommendations

A continuation of the present September 1-20 moose season is acceptable. Selected portions of state-owned critical winter range for moose should be identified and dedicated for preservation of habitat and for future browse rehabilitation. Efforts to inaugurate a program to rehabilitate moose browse in Subunit 14A should be increased. Antlerless moose seasons should be initiated.

PREPARED BY:

Jack C. Didrickson and Carl McIlroy
Game Biologist III and Game Biologist III

SUBMITTED BY:

John S. Vania
Regional Management Coordinator

Appendix I. Moose Harvest and Hunting Pressure in Alaska's Game Management Subunit 14A, 1970-1975.

Year	Date	Bulls	Cows	Unid.	Total	Number of Hunters	Percent Success
1970	8/20-9/20	182	0	1	183		
	11/1-11/20	102	0	6	108		
	To be announced Antlerless	Season Cancelled					
	Unknown Date	79	2	4	85		
	TOTAL	363	2	11	376	897	42
1971	8/20-9/20	177	0	1	178		
	11/1-11/20	225	0	0	225		
	9/1-9/20 Antlerless	0	101	0	101		
	11/1-11/14 Antlerless	0	233	0	233		
	Unknown Date	127	145	9	281		
	TOTAL	529	479	10	1018	2090	49
1972	8/20-9/20	83	1	1	85		
	11/1-11/20	100	1	0	101		
	9/1-9/20 Antlerless	0	75	0	75		
	To be announced Antlerless	Season Cancelled					
	Unknown Date	29	17	2	48		
	TOTAL	212	94	3	309	No Data	No Data
1973	8/20-9/10	136	0	2	138		
	11/1-11/10	167	0	3	170		
	To be announced Antlerless	Season Cancelled					
	Unknown Date	34	1	3	38*		
	TOTAL	337	1	8	346	1506	23
1974	8/20-9/20	164	0	3	167		
	To be announced Antlerless	Season Cancelled					
	TOTAL	164	0	3	167	1225	14
1975	9/1-9/20	166	1	0	167		
	To be announced Antlerless	Season Cancelled					
	TOTAL	166	1	0	167	893	19

* Includes 4 males, 1 female, and 1 moose of unknown sex reportedly taken in October, December, January or February.

PREPARED BY: Jack C. Didrickson, Game Biologist III and Carl Mc Ilroy, Game Biologist III

Appendix II. Verified Moose Mortality (Excluding Hunting) in Alaska's Game Management Subunit 14A During the Period June 1 - May 31, 1970 to 1976.

	Road Kill						Train Kill						Incidental Kill						Illegal Kill						Winter Kill					
	*Ad. M.	Ad. F.	Calf M	Calf F	?	Tot.	Ad. M.	Ad. F.	Calf M	Calf F	?	Tot.	Ad. M.	Ad. F.	Calf M	Calf F	?	Tot.	Ad. M.	Ad. F.	Calf M	Calf F	?	Tot.	Ad. M.	Ad. F.	Calf M	Calf F	?	Tot.
1970-71	18	31	15	31	4	99	6	4	-	1	11	22	2	10	7	10	2	31	3	20	5	6	18	52	1	6	5	3	-	15
1971-72	8	35	27	28	11	109	2	4	0	3	6	15	6	13	2	3	5	29	3	30	0	4	8	45	0	6	8	10	1	25
1972-73	4	20	6	4	2	36	0	0	0	0	0	0	0	2	0	2	1	5	3	31	2	6	7	49	0	0	0	0	0	0
1973-74	2	17	7	5	2	33	1	2	1	2	1	7	0	2	1	4	0	7	1	37	2	2	7	49	1	1	2	3	0	7
1974-75	8	28	10	13	4	63	5	10	4	1	1	21	0	6	2	6	0	14	5	24	3	3	5	40	0	0	3	4	0	7
1975-76[a/]	0	20	5	3	1	29	1	1	0	0	1	3	0	1	0	1	0	2	1	8	1	0	3	13	0	1	0	0	0	1

Total Confirmed Non-Hunting Kill

	1970-71	1971-72	1972-73	1973-74	1974-75	1975-76[a/]
Adult Male	30	19	7	5	18	2
Adult Female	71	88	53	59	68	31
Calf Male	32	37	8	13	22	6
Calf Female	51	48	12	16	27	4
? Sex &/or Age	35	31	10	10	10	5
Total	219	223	90	103	145	48

* Ad.M=Adult Male; Ad.F.=Adult Female; Calf M=Calf Male; Calf F=Calf Female; ?=Unknown Sex or Age; Tot.=Total.

a/ A reduced effort was made to document moose mortality this year. Mortality along the Alaska Railroad Tracks was not tallied during the spring of 1976. PREPARED BY: Jack C. Didrickson and Carl Mc Ilroy, Game Biologists III.

Appendix III. Moose Sex and Age Ratios, Game Management Subunit 14(A), 1968-1975.

Year	Total MM per 100 FF	Small MM per 100 FF	Small MM per 100 Large MM	Small MM % in Herd	Small MM per 100 MM Calves	Calves per 100 FF	Twins per 100 cows w/Calf	Calf % in Herd	Moose per Hour	Total Moose
1968	16	7	71	4	28	48	6	29	54	2378
1969	Sex and age composition counts were not conducted due to unfavorable weather conditions.									
1970	9	4	72	2	18	42	8	28	49	2362
1971	10	6	134	4	28	40	3	26	35	2063
1972	9	5	153	4	36	29	2	21	28	1395
1973	6	3	144	2	16	42	6	28	46	1982
1974	12	8	196	5	38	42	7	27	38	1932
1975[a/]	15	11	250	6	50	44	6	26	49	682

a/ Late count; only count areas 1, 8 and 5 were surveyed.

PREPARED BY: Jack C. Didrickson, Game Biologist III and Carl McIlroy, Game Biologist III.

MOOSE

SURVEY-INVENTORY PROGRESS REPORT - 1975

Game Management Subunit 14B - Willow to Talkeetna

Seasons and Bag Limits

Sept.1-Sept.20 One bull

Harvest and Hunting Pressure

The final reported moose harvest in Subunit 14B totaled 24 bulls (Appendix I). Harvests, hunting pressure, and hunter success have all declined from previous years. These reduced harvests resulted from cancelled antlerless hunts, elimination of the November season, and shortening of the early season. The early moose season was shortened during 1975 to conform with seasons in adjacent units.

Verified, non-hunting mortality of moose in Subunit 14B is shown in Appendix II. Less effort was made to document non-hunting moose mortality during 1975-76, and the 1975 information is not comparable to prior years. Mortality due to road and train kills and winter starvation has been higher during severe winters (1970-71 and 1971-72) than during mild winters.

Composition and Productivity

Total bull:cow ratios declined to a low in 1973 but have apparently recovered (Appendix III). Small bull:cow ratios have been relatively low during the 1970's, whereas calf:cow ratios have varied within a normal range. This implies substantial overwinter calf mortality on the overbrowsed winter range. However, errors in classifying yearling bulls as adult bulls (due to rapid antler growth), or as cows (due to decreased visibility of smaller antlers in timbered areas), may occur to a larger extent that expected. Calf:cow and twin:cow ratios prior to 1975 have been high relative to values found in Interior Alaska. There is no obvious cause for the decrease in 1975 calf:cow values. Considering the decline in hunting mortality and the lack of correlation in mortality and population statistics, it is possible that variations in moose composition data may reflect selection of noncomparable count areas during the past 4 years.

Management Summary and Conclusions

Moose harvests have declined during the 1970's. Cancellation of antlerless hunts, elimination of the late season, and shortening of the early season have contributed to the declining harvest. Season restrictions on moose have been primarily in response to public pressure rather than on biological considerations.

Moose abundance is uncertain because of variation in counting conditions. The low yearling bull:cow ratio may not accurately reflect high overwinter calf mortality because of errors in classifying yearling bulls. The apparent poor condition of browse in the valley floor does not limit moose during mild winters because moose can stay higher on the slopes. Moose in Subunit 14B are clearly food-limited during winters with deep snows, but the population seems to increase during intervening mild winters. Available browse has been reduced by past overuse and is decreasing further due to seral changes. Management should consider creating additional browse by rehabilitation programs and focus on increased harvesting of both sexes of moose to reduce further damage to critical winter browse and utilize for human consumption many of those moose that will probably starve during the next severe winter.

Recommendations

Strive for public acceptance of substantial harvests of both sexes of moose.

Obtain, through dedication or ownership, lands that can be used for range rehabilitation. Planning will have to account for the future necessity of obtaining favorable ratios of benefits to costs of range rehabilitation. For example, accessible land in large tracts will be far more beneficial than remote lands in small or scattered tracts. This land should be acquired or dedicated far in advance of the spread of substantial human settlement.

PREPARED BY:

Jack C. Didrickson and Carl McIlroy
Game Biologist III and Game Biologist III

SUBMITTED BY:

John S. Vania
Regional Management Coordinator

Appendix I. Moose Harvest and Hunting Pressure in Alaska's Game Management Subunit 14B, 1970-1975.

Year	Season	Bulls	Cows	Unid.	Total	Hunters	Percent Success
1970	8/20-9/30	34	0	0	34		
	11/1-11/20	21	0	1	22		
	To be announced Antlerless	Cancelled					
	Unknown Date	26	0	0	26		
TOTAL		81	0	1	82	264	31
1971	8/20-9/30	36	0	4	40		
	11/1-11/20	48	0	1	49		
	9/1-9/30 Antlerless	0	39	0	39		
	11/1-12/15 Antlerless	0	101	0	101		
	Unknown Date	40	103*	0	143		
TOTAL		124	243*	5	372	950**	39**
1972	8/20-9/30	13	0	0	13		
	11/1-11/30	12	0	0	12		
	9/1-9/30 Antlerless	0	16	0	16		
	Unknown Date	10	0	0	10		
TOTAL		35	16*	0	51	289**	18**
1973	8/20-9/20	28	0	1	29		
	11/1-11/20	59	0	1	60		
	To be announced Antlerless	Cancelled					
	Unknown Date	6	0	1	7		
TOTAL		93	0	3	96	395	24
1974	8/20-9/20	36	0	0	36		
	8/20-9/20 Antlerless	0	18	0	18		
	Unknown Date	5	0	0	5		
TOTAL		41	18	0	59	355	17
1975	9/1-9/20	24	0	0	24	203	12

* Using antlerless permit returns rather than harvest report returns.

** Using harvest report returns plus additional successful permit returnees who did not submit harvest report.

PREPARED BY: Jack C. Didrickson, Game Biologist III and
Carl McIlroy, Game Biologist III

Appendix II. Verified Moose Mortality (Excluding Hunting) in Alaska's Game Management Subunit 14B, June 1-May 31, 1970-71 through 1975-76.

	Road Kill						Train Kill						Incidental Kill						Illegal Kill						Winter Kill					
	*Adult		Calf		?	Tot.	Adult		Calf		?	Tot.	Adult		Calf		?	Tot.	Adult		Calf		?	Tot.	Adult		Calf		?	Tot.
	M	F	M	F			M	F	M	F			M	F	M	F			M	F	M	F			M	F	M	F		
1970-71	0	7	0	0	3	10	16	43	7	9	40	115	0	0	0	0	0	0	1	0	0	1	0	2	24	9	19	24	5	81
1971-72	2	1	2	1	1	7	13	18	7	7	30	75	3	0	0	0	0	3	3	3	0	0	0	6	3	4	8	4	0	19
1972-73	1	0	0	0	2	3	0	4	2	1	3	10	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	0	1
1973-74	0	3	0	1	1	5	Tracks not walked						0	1	0	0	0	1	1	1	0	0	0	2	0	0	0	0	0	0
1974-75	1	0	2	0	2	5	3	15	2	8	19	47	1	1	0	0	0	2	0	1	0	1	0	2	0	0	1	1	0	2
1975-76 a/	2	1	1	1	1	6	0	1	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0

Total Confirmed Non-Hunting Kill

	1970-71	1971-72	1972-73	1973-74	1974-75	1975-76
Adult Male	41	24	1	1	2	3
Adult Female	59	26	4	5	17	2
Calf Male	26	17	2	0	5	1
Calf Female	34	12	2	1	10	1
? Sex &/or Age	48	31	6	1	21	1
Total	208	110	15	8	55	8

a/ A reduced effort was made to document moose mortality this period; moose mortality along the Alaska Railroad tracks was not tallied during the spring, 1976.

* Adult F=Adult Female; Adult M=Adult Male; Calf M=Calf Male; Calf F=Calf Female; ? = Unknown Sex or Age; Tot. = Total.

PREPARED BY: Jack C. Didrickson, Game Biologist III and Carl Mc Ilroy, Game Biologist III

Appendix III. Moose Sex and Age Composition and Ratios, Alaska's Game Management Subunit 14B, 1970 through 1975.

Year	Total MM per 100 FF	Small MM per 100 FF	Small MM per 100 Large MM	Small MM% in Herd	Small MM per 100 MM Calves	Calves per 100 FF	Twins per 100 Cows w/Calf	Calf % in Herd	Moose per Hour
1970	29	10	48	6	46	41	7	24	--
1971	25	8	50	5	57	30	4	19	52
1972	22	2	13	2	18	28	2	19	32
1973	11	3	38	2	16	36	6	25	33
1974[a/]	14	6	71	4	39	29	9	20	49
1975[b/]	32	4	15	3	43	20	2	13	27

a/ Only the portion of Subunit 14B between Willow Creek and Sheep Creek was flown in 1974.
b/ Only portions of Subunit 14B were flown in 1975.

PREPARED BY: Jack C. Didrickson, Game Biologist III and Carl McIlroy, Came Biologist III

MOOSE

SURVEY-INVENTORY PROGRESS REPORT - 1975

Game Management Unit 15A - Kenai Peninsula

Seasons and Bag Limits

Sept. 1 - Sept. 20 — One bull

Harvest and Hunting Pressure

Harvest reports indicated that hunters took 101 bulls during the 1975-1976 season (Appendix I). The bull harvest was down 34 percent from the 1974-75 level of 152 bulls and down 61 percent from the 1973-74 harvest of 259 bulls. The 1975-76 season was 20 days shorter than the 1974-75 season and 30 days shorter than the 1973-74 season.

Six hundred and ninety-five hunters reported hunting Subunit 15A in the 1975-76 season. This level of effort was the lowest recorded since 1967 (Appendix I). The number of hunters afield declined 14 percent from the 1974-75 level of 804 and 42 percent from the preceding 7-year average of 1,204.

The decline in the 1975-76 harvest was attributed to the shortened season, reduced effort, and poor calf survival through the winter of 1974-75 which resulted in limited recruitment of yearling bulls.

Composition and Productivity

Inadequate snow cover and poor flying conditions resulted in no sex and age composition surveys being conducted in 1975 (Appendices II and III). The only composition data available for comparison are the calf percent of herd data obtained from the random stratified census of Subunits 15A and 15B combined. This census, conducted March 28 - April 2, indicated 21.4 percent calves in a sample of 365 animals (Appendix IV), well above the level of 12.3 percent in 1975 and 18.2 percent in 1974.

A spring survival survey was flown on May 5, 1976 (Appendix IV). Although percent winter mortality cannot be calculated, an indication of survival can be obtained by comparing the yearling percent of herd with past years. The yearling percent of herd observed in 1976 was the highest recorded since spring survival surveys were initiated in 1970 indicating that survival was relatively high. If it is assumed that the 1975 fall calf percent of herd was 24.3, the mean for the previous 5 years, percent winter mortality was about 21 percent, again indicating a high rate of overwinter calf survival.

Winter 1975-76 was mild in terms of snow depth. Snow cover never exceeded 12-14 inches over most of the unit all winter. Parts of 15A were nearly snow free by mid-March. Moose were able to feed on lowbush cranberry throughout the winter and no mortality due to malnutrition was observed.

A census of Subunits 15A and 15B was conducted by the U.S. Fish and Wildlife Service utilizing the random stratified sampling technique (Appendix V). These data indicated that moose numbers increased between 1975 and 1976 after having declined during the previous 3 years.

Management Summary and Conclusions

The 1975 harvest of 101 bulls was the lowest ever recorded. The low level of harvest was the result of a shortened season and poor yearling recruitment.

Calf survival through winter 1975-76 was high, possibly 75 to 85 percent. Yearling bulls should be relatively abundant in 1976 and hunting should be much improved.

The high rate of calf survival was attributed primarily to the mildness of the winter and lack of snow. Increasing forage production on the 1969 burn and range rehabilitation by the U.S.F.&W.S. may also have contributed to higher survival.

Recommendations

No changes in seasons or bag limits are recommended.

PREPARED BY:

Paul A. LeRoux
Game Biologist III

SUBMITTED BY:

John S. Vania
Regional Management Coordinator

MOOSE - GMU 15 (A) - Kenai

APPENDIX I

Moose Harvest and Hunting Pressure - Subunit 15 (A) (Harvest Ticket Return Data)

Year	Season	Bulls	Cows	Unid.	Total	Hunters	Percent Success
1965	1st	*	0	0	*		
	2nd	*	299	0	*		
	Combined	365	299	0	664	*	*
1966	1st	211	185	0	396		
	2nd	137	0	0	137		
	Combined	382[1]	185	0	567[1]	*	*
1967	1st	185	0	0	185		
	2nd	62	0	0	62		
	Combined	247	0	0	247	1036	24
1968	1st	166	1	0	166		
	2nd	91	0	0	91		
	Combined	268[1]	1	0	269[1]	1092	25
1969	1st	*	*	*	*		
	2nd	*	*	*	*		
	Antlerless			NOT HELD			
	Combined	287	*	7	294		
1970	1st	134	0	3	137	*	*
	2nd	69	0	1	70	*	*
	Antlerless	16	191	3	209	*	*
	Combined	291[1,2]	191	11[1]	493	918	54
1971	1st	153	223[2]	1	376		
	2nd	141	261[2]	0	402		
	Antlerless						
	Combined	369[1]	484[2]	4	897	1637	52
1972	1st	106	145[2]	1	236		
	2nd	54	0[2]	0	54		
	Combined	193[1,2]	145[2]	1	339[1]	1518	22
1973	1st	156	4	2	162		19
	2nd	82	2	1	85		
	Combined	259[1]	7[1]	4[1]	270[1]	1427	
1974		141	6	5	152	801	19
1975		101	0	0	101	695	14

* Data not available.
[1] Total of 1st and 2nd season may be less than for combined season because of inclusion of animals for which date of kill was not given.
[2] These data from permit returns. Numbers include both male and female calves.

Prepared by: Paul A. LeRoux, Game Biologist III

MOOSE - GMU 15(A) - Kenai

APPENDIX II

Moose Sex and Age Composition - Subunit 15(A).

Year	Large MM	Small MM	Total MM	FF W/O	FF W/1	FF W/2	Total FF	Total Adults	Lone Calves	Total Calves	Unid. Sex & Age	Total Sample
12/3-21/62	85	76	161	597	317	52	966	1,127	2	423	18	1,568
1/1964	--	--	--	--	284	19	--	1,160	--	511	--	2,171
12/1-12/64	145	66	211	1,254	470	25	1,740	1,951	--	520	--	2,471
6/1965*	--	--	298	475	188	17	680	978	--	222	--	1,200
6/1966*	--	--	230	345	104	4	453	683	--	112	--	795
10/3-16/67*	29	17	46	280	96	18	394	440	--	135	--	575
12/1968*	148	125	273	945	598	32	1,575	1,848	14	676	137	2,661
11/18-20/69	40	17	57	243	181	14	438	495	1	210	--	705
11/30-12/2/70	98	58	156	756	305	19	1,080	1,236	4	343	6	1,586
11/8-16/71	185	98	283	940	367	17	1,324	1,607	14	415	5	2,027

* Lowlands only.
** CA's 19C, 19D, 19E, and 19F omitted.

Table (continued) Moose Sex and Age Composition - Subunit 15(A)

Year	Large MM	Small MM	Total MM	FF W/0	FF W/1	FF W/2	Total FF	Total Adults	Lone Calves	Total Calves	Unid. Sex & Age	Total Sample
11/27-12/5/72	136	35	171	678	399	19	1,096	1,267	14	451	5	1,723
11-21 27/73	89	17	106	752	367	21	1,140	1,246	15	424	7	1,677
11/20-24/72**	41	21	62	440	254	18	712	774	3	293	0	1,067
1975	No Surveys Conducted											

PREPARED BY: Paul A. LeRoux, Game Biologist III

MOOSE - GMU 15 (A) - Kenai

Appendix III

Moose Sex and Age Ratios - Subunit 15 (A)

Year	Total MM Per 100FF	Small MM Per 100FF	Sm. MM per 100 Lg. MM	Sm. MM % in Herd	Sm. MM per 100 MM Calves	Calves per 100 FF	Twins per 100 FF W/calf	Calf % in Herd	Animals per Hour	Total Sample
1962[1]	16.7	7.9	89.4	4.8	35.8	43.8	14.9	27.0	-	1568
1963[1]	-	-	-	-	-	-	6.3	23.6	-	2171
1964[1]	12.0	3.8	46.0	2.7	25.4	29.9	5.1	21.0	-	2471
1965[2]	43.8	-	-	-	-	32.6	8.3	18.5	-	1200
1966[2]	50.8	-	-	-	-	24.7	3.7	14.1	-	795
1967[2]	11.7	4.3	58.6	3.3	25.0	34.3	15.8	23.5	-	575
1968	20.0	9.0	82.8	5.1	38.6	46.9	5.1	26.7	-	2661
1969[3]	17.4	-	-	-	-	42.8	-	29.7	-	705
1970	14.1	5.4	59.2	3.6	32.9	32.1	5.9	21.9	58	1586
1971	21.4	7.4	53.0	4.8	47.0	31.5	4.4	20.6	49.7	2027
1972	15.6	3.2	25.7	2.0	15.5	41.2	4.5	26.3	39.2	1723
1973	9.3	1.5	19.1	1.0	8.0	37.2	5.4	25.4	45.4	1677
1974[4]	8.7	2.9	51.2	2.0	14.3	41.2	6.6	27.5	42.3	1067
1975	No Surveys Conducted									

[1] Varied count areas
[2] Lowlands only
[3] Count areas 9A, 11, 12A, 12B, 18A, 18B
[4] CA's 19C, 19D, 19E and 19F omitted.

Prepared by: Paul A. LeRoux, Game Biologist III

MOOSE - GMU 15 (A) - Kenai

Appendix IV

Productivity (Spring Fall survival) Ratios and Percents

Date	Bulls/* 100 Cows	Yearlings/* 100 Cows	Calves/ 100 Cows in Fall	Yrlg. % of Herd	Calf % of Fall Herd	% Calf Winter Mortality	Total Sample
(4/14-5/4-70)[1]	21.4	24.6	42.8	16.4	29.7	44.8	744[2]
(5/14/71)[3]	15.8	14.0	32.1	10.9	21.9	50.2	245
(5/15/72)[4]	16.5	4.8	31.5	4.0	20.6	80.6	302
(5/10/73)	-	-	41.2	6.5	26.3	71.5	142
(5/7/74)[5]	-	-	37.2	6.5	25.4	74.4	277
(5/3/75)[6]	-	-	42.1	3.6	27.5	86.9	195
(5/10/76)	-	25.0	-	19.2	-	-	182

* Use only if survey is conducted late enough to distinguish bulls, if not, work with calf % in herd.
1 From data compiled on tagging recon flights. Data compiled by Bob LeResche.
2 Includes 30 antlerless long yearlings. Data compiled by Bob LeResche.
3 Area surveyed included only Moose River Flats.
4 Area surveyed included Moose River Flats and area between Kenai River and Skilak Loop, Sterling Highway.
5 Area surveyed Beaver Creek, Swanson River, Moose River Flats and area between Skilak Loop Road and Kenai River.
6 Area surveyed included Moose River Flats, Swanson River and Swan Lake Road rehab area.

Prepared by: Paul A. LeRoux, Game Biologist III

MOOSE - GMU 15 (A) - Kenai

Appendix V

Moose Population levels of Subunits 14 (A) and 15 (B) combined as determined by the random stratified sampling technique.

Year	Population Estimate	Confidence Limit
1964	8279 ± 1556	90%
1965	7432 ± 1561	90%
1966	7152 ± 1262	90%
1967	6732 ± 1413	90%
1971	7904 ± 1461	90%
1973	5692 ± 1348	90%
1974	4850 ± 1045	90%
1975	3374 ± 985	90%
1976	3782 ± 605	90%

Prepared by: Paul A. LeRoux, Game Biologist III

MOOSE

SURVEY-INVENTORY PROGRESS REPORT - 1975

Game Management Subunit 15B - Soldotna

Seasons and Bag Limits

Subuit 15B East, that portion of Subunit 15B east of a straight line from the mouth of Shantatalik Creek, on Tustumena Lake, to the head of the westernmost fork of Funny River; east of Funny River from the head of its westernmost fork to the Kenai National Moose Range boundary, and south of the Kenai National Moose Range boundary eastward from Funny River to the Kenai River.	No open season	
Subunit 15B West, the remainder of Subunit 15B	Sept. 1-Sept. 20	One bull

Harvest and Hunting Pressure

Harvest reports show that 182 hunters took 24 bull moose in Subunit 15B west during the 1975-76 season (Appendix I). The eastern portion of the subunit was closed to moose hunting. The 1975 harvest of 24 bulls was the lowest on record.

Forty-seven percent of the total harvest was taken during the first week of the 3-week season. Harvests for the second and third weeks of the season were 29 and 24 percent, respectively, of the total harvest.

Composition and Productivity

Fall sex and age composition surveys were not conducted in 1975 due to lack of adequate snowfall. However, stratified random counts were conducted by the USFWS in late March 1976. These counts resulted in a total population estimate for both Subunits 15A and 15B of 3782 $\pm$ 605 at 90 percent CI based upon a sample size of 365. Comparison of these data with those collected in 1974 and 1975 indicates an increase in calf percentages. Calf percentages for 1974 through 1976 were 18.2, 12.3 and 21.4, respectively.

Spring survival surveys were initiated in Subunit 15B in 1973 (Appendices IV and V). Calf survival was 96 percent in 1972-73, 79 percent in 1973-74 and only 14 percent in 1974-75. Although fall counts were not conducted in 1975, spring 1976 counts based upon a sample size of 159 indicated that yearlings comprised 21.4 percent of the herd. If these data are representative it would appear that calf survival during 1975-76 was good.

Management Summary and Conclusions

Harvest reports indicated 24 bulls were taken during the 1975-76 season, the lowest recorded since 1965.

Spring survival surveys for 1975-76 indicated that calf survival was considerably better than that experienced in 1974-75.

Recommendations

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

PREPARED BY:

Warren Ballard
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SUBMITTED BY:

John S. Vania
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MOOSE - GMU 15 (B) - SOLDOTNA

Appendix I

Moose Harvest and Hunting Pressure - Subunit 15 (B) - Soldotna

Year	Bulls	Cows	Unk. Sex	Totals	No. Hunters	Percent Success
1965	183[1]	193[1]	1[1]	377		
1966	119[1]	26[1]	4[1]	149		
1967	69[1]	0	1[1]	70		
1968	108[1]	6[1]	2[1]	116		
1969	119[1]	55[3]	2[1]	176		
1970	69[1]	75[1] *(15BE=50, 15BW=18) (Unk.=7)	2[1]	146		
1971	128[1]	79[2](15BE)	5[1]	212		
1972	73[1]	11[2](15BE)	1[1]	85		
1973	145[1] 15BE=82 15BW=63	116[1](15BE)	6[1]	267	877	30
1974	95[1]	1[1]	1[1]	97	313	31
1975	24[1]	-	-	24	182	13

1 Data derived from harvest reports.
2 Data derived from registration permit returns.
3 Data derived from field observations.

PREPARED BY: Warren Ballard, Game Biologist II

MOOSE - GMU 15 (B) - SOLDOTNA

APPENDIX II

Moose Sex and Age Composition - Subunit 15 (B)

Year	Large MM	Small MM	Total MM	FF W/0	FF W/1	FF W/2	Total FF	Total Adults	Lone Calves	Total Calves	Unid. Sex & Age	Total Sample	Count Time (Hrs.)	Moose Per Hour
12/3-21/62	377	61	438	673	317	28	1018	1456	2	375	1	1832	-	-
1963	NO COUNTS MADE													
12/64	337	46	383	690	166	10	866	1249	1	187	0	1436	22.0	65
1965	NO COUNTS MADE													
1966	NO COUNTS MADE													
1967	NOT AVAILABLE													
1968	NO COUNTS MADE													
1969	NO COUNTS MADE													
12/2-4/70 & 12/12/70	184	17	201	455	75	2	532	733	0	79	5	817	10.4	78
1971	NO COUNTS MADE													
12/1-2/72	200	14	214	515	174	4	693	907	4	186	0	1093	17.8	61
11/19-21/73	188	28	216	436	166	7	609	825	4	184	1	1010	23.4	43
11/20-23/74	102	14	116	338	147	10	495	611	6	173	0	784	13.4	58
1975	NO COUNTS MADE													

Prepared by: Warren Ballard, Game Biologist II

MOOSE - GMU 15 (B) - SOLDOTNA

APPENDIX III

Moose Sex and Age Ratios - Subunit 15 (B)

Year	Total MM per 100 FF	Small MM per 100 FF	Sm. MM per 100 Lg. MM	Sm. MM % in Herd	Sm. MM per 100 MM Calves	Calves per 100 FF	Twins per 100 FF w/calf	Calf % in Herd	Animals per Hour	Total Sample
1962	43.0	6.0	16.2	3.3	32.5	36.8	8.1	20.5	-	1832
1963	NO COUNTS MADE									
1964	44.2	5.3	13.6	3.2	49.2	21.6	5.7	13.0	65	1436
1965	NO COUNTS MADE									
1966	NO COUNTS MADE									
1967	28.8	3.5	13.8	2.4	44.0	15.8	2.0	10.9	-	457
1968	NO COUNTS MADE									
1969	NO COUNTS MADE									
1970	37.8	3.2	9.2	2.1	43.0	14.8	2.6	9.7	78	817
1971	NO COUNTS MADE									
1972	30.9	2.0	7.0	1.3	15.0	26.8	2.2	17.0	61	1093
1973	35.5	4.6	14.9	2.8	30.4	30.2	4.0	18.2	43	1010
1974	23.4	2.8	13.7	1.8	16.2	34.9	6.4	22.1	58	784
1975	NO COUNTS MADE									

Prepared by: Warren Ballard, Game Biologist II.

MOOSE - GMU 15 (B) - SOLDOTNA

APPENDIX IV

Moose Productivity (spring-fall survival) Composition

Date	Cows w/1 Ylgs.	Cows w/2 Ylgs.	Total Cows	Unid. Adults	Total Adults	Lone Ylgs.	Total Ylgs.	Unid. Sex & Age	Total Sample
5/11/73	10	0	10	67	77	5	15	0	92
5/08/74	16	0	16	92	108[1]	3	19	0	127
5/06/75	2	0	54	0	60[2]	0	2	0	62
5/11/76	31	1	100	0	125[3]	1	34	0	159

1 Includes 9 bulls
2 Includes 6 bulls
3 Includes 25 bulls

Prepared by: Warren Ballard, Game Biologist II

MOOSE - GMU 15 (B) - SOLDOTNA

APPENDIX V

Moose (spring-fall survival) ratios and percents

Date	Calves/ 100 cows in fall	Yrlg. % of herd	Calf % of fall herd	% Calf winter mortality	Total Sample
5/11/73	26.8	16.3	17.0	4	92
5/08/74	30.2	15.0	18.2	18	127
5/6/75	34.9	3.2	22.1	86	62
5/11/76	-	21.4	-	-	159

Prepared by: Warren Ballard, Game Biologist II.

MOOSE

SURVEY-INVENTORY PROGRESS REPORT - 1975

Game Management Subunit 15C - Homer

Season and Bag Limits

Sept. 1 - Sept. 20	One bull

Harvest and Hunting Pressure

Harvest reports indicated that 658 hunters bagged 94 bulls in Subunit 15C during the 1975 season (Appendix I). The 1975 season was shortened by 20 days and held 10 days later than the 1974 season. For the first time since 1968, no cow season was held. The 1975 reported harvest was the lowest on record since 1961.

Hunting pressure declined from a high of 1,240 hunters in 1974 to 658 hunters in 1975 (Appendix I). Hunter success also declined from 30 percent in 1974 to 14 percent in 1975.

As in previous seasons, nearly 50 percent of the harvest occurred during the first week of the season. Ninety-four percent of the hunting pressure was exerted by Alaska residents and yielded 96 percent of the harvest.

Composition and Productivity

A summary of sex and age ratios collected from 1964 through 1974 is shown in Appendix II. Due to low snowfall during October through January, sex and age composition counts were conducted in only 3 of 10 count areas during 1975. Data from these surveys (Appendices III through V) show little change from 1974. Calf percentages, however, showed small increases in a few areas while bull/cow ratios continued to decline.

Observations made during weekly aerial searches for collared moose indicated that calf survival was considerably higher than in 1974.

Management Summary and Conclusions

The 1975 harvest of 94 bulls was the lowest harvest on record. The low harvest was attributed to a shorter hunting season, poor survival of the 1974 year class, and low numbers of bulls available.

Since yearling bulls normally comprise a sizable portion of the harvest in 15C and overwinter calf survival during 1975-76 appeared good, bull hunting in 1976 should be better than in 1975.

Three wolf-killed moose were located in 15C during the winter. It is believed that a very low proportion of the wolf-killed moose were observed. Wolves are relatively abundant in this subunit and thus may be responsible for the low calf/cow ratios, particularly in the Caribou Hills area.

Recommendations

No changes in season or bag limit are warranted at this time. However, if declines in the bull/cow ratio continue, a shorter bull season may be justified. An antlerless season should not be conducted until significant increases in the total population are evident.

PREPARED BY:

Warren Ballard
Game Biologist II

SUBMITTED BY:

John S. Vania
Regional Management Coordinator

MOOSE - GMU 15C - HOMER

APPENDIX I

Moose Harvest and Hunting Pressure - Subunit 15C - Homer

Year	Bulls	Cows	Unk. Sex	Total	Hunters	Percent Success
1961	-	106[2]	-	-	-	-
1962	-	100[2]	-	-	-	-
1963	349[1]	147[1]	-	496	-	-
1964	470[1]	337[1]	-	807	-	-
1965	263[1]	229[1]	-	492	-	-
1966	278[1]	72[1]	-	350	-	-
1967	294[1]	-	-	294	643	46
1968	404[1]	20[1]	5[1]	429	972	44
1969	420[1]	109[3]	4[1]	533	-	-
1970	319[1]	68[1]	7[1]	394	775	51
1971	263[1]	146[1]	4[1]	413	836	49
1972	170[1]	114[2]	0[1]	284	1,041	27
1973	152[1]	143[2]	5[1]	300	1,111	27
1974	230[1]	133[2]	3[1]	366	1,240	30
1975	94[1]	-	-	94	658	14

1 Data derived from harvest ticket reports.

2 Data derived from permit hunt reports.

3 Data derived from field observations.

PREPARED BY: Warren Ballard, Game Biologist II

MOOSE - GMU 15C - HOMER

APPENDIX II

Moose Sex and age Ratios - Subunit 15C

Year	Total MM Per 100 FF	Sm MM Per 100 FF	Sm MM Per 100 Lg. MM	Sm MM % in Herd	Sm MM Per 100 MM Calves	Calves Per 100 FF	Twins Per 100 FF w/calf	Calf % in Herd	Animals Per Hour	Total Sample
1964	22.4	7.8	53.6	2.8	5.6	24.3	2.1	19.5	52.0	1848
1965	32.6	9.7	42.3	5.9	62.5	31.2	6.0	19.0	57.0	1889
1966	16.9	6.3	59.6	4.3	41.0	30.7	4.5	20.8	61.0	794
1967	21.0	6.6	46.0	4.2	34.0	40.0	14.0	25.6	150.0	3038
1968	20.5	6.1	41.8	3.8	30.2	40.1	6.9	25.0	60.5	1883
1969	13.9	6.5	88.0	4.5	46.5	27.9	5.8	19.1	53.6	1636
1970	20.4	3.3	25.1	2.3	27.1	24.3	4.1	16.8	150.0	1992
1971	26.0	7.7	42.2	5.3	82.6	18.7	7.7	12.8	48.4	1436
1972	9.8	0.8	8.7	0.6	6.2	25.4	2.1	18.8	72.5	2073
1973	18.8	7.1	60.3	4.8	50.6	27.9	3.9	19.0	62.9	1833
1974	14.3	5.2	56.7	3.5	32.5	31.8	7.1	21.8	33.4	960
1975	NO COUNTS MADE									

PREPARED BY: Warren Ballard, Game Biologist II

MOOSE - GMU 15C - HOMER

APPENDIX III

Moose Sex and Age Ratios - Subunit 15C, Caribou Hills Count Area.

Year	Total MM Per 100 FF	Sm MM Per 100 FF	Sm MM Per 100 Lg. MM	Sm MM % in Herd	Sm MM Per 100 MM Calves	Calves Per 100 FF	Twins Per 100 FF w/calf	Calf % in Herd	Animals Per Hour	Total Sample
1964	165.4	23.1	16.2	2.3	46.2	100.0	0.0	10.0	80	259
1965	162.0	28.0	21.0	10.0	247.0	29.0	3.5	8.0	142	379
1966	--	--	--	--	--	--	--	--	--	--
1967	36.0	6.2	21.0	3.7	40.1	29.0	6.0	17.6	233	1042
1968	48.1	11.6	31.8	6.7	94.4	24.6	5.9	14.2	163	506
1969	25.6	5.3	25.9	5.3	108.0	9.8	0.0	7.2	56	180
1970	30.1	6.8	11.1	2.1	35.1	21.8	2.7	11.7	174	972
1971	44.8	11.1	33.0	7.2	272.0	8.2	0.0	5.3	69.8	470
1972	16.04	1.80	12.7	1.34	20.61	17.48	3.19	13.1	98.42	746
1973	27.7	7.7	38.9	5.5	122.8	12.6	1.8	9.0	74.6	634
1974	22.7	3.4	17.6	2.6	100.0	6.8	0.0	5.3	50.0	114
1975	17.5	8	49	.7	25.0	6.5	0.0	5.3	59.6	304

PREPARED BY: Warren Ballard, Game Biologist II

MOOSE - GMU 15C - HOMER

APPENDIX IV

Moose Sex and Age Ratios - Subunit 15C, Ninilchik Dome Count Area.

Year	Total MM Per 100 FF	Sm MM Per 100 FF	Sm MM Per 100 Lg. MM	Sm MM % in Herd	Sm MM Per 100 MM Calves	Calves Per 100 FF	Twins Per 100 FF w/calf	Calf % in Herd	Animals Per Hour	Total Sample
1964	55.0	25.0	83.3	5.3	50.0	100.0	0.0	21.3	40	94
1965	33.0	12.0	59.0	8.0	115.0	16.0	6.0	14.0	77	291
1966	26.0	11.0	81.0	7.5	84.0	27.0	4.2	17.9	46	279
1967	16.0	8.6	116.0	5.5	43.4	40.0	7.0	25.5	191	1195
1968	16.4	6.5	65.5	4.2	32.8	39.7	1.8	25.4	109	456
1969	9.2	6.9	300.0	5.2	63.0	21.8	0.0	16.4	18	116
1970	10.8	3.3	44.8	2.4	22.4	29.8	4.5	21.2	146	547
1971	12.3	3.5	40.0	2.8	47.1	14.9	41.7	11.7	41.4	145
1972	2.80	0.0	0.0	0.0	0.0	19.63	0.0	16.03	124	393
1973	10.9	5.7	110.0	4.2	44.9	25.4	2.1	18.6	90.1	263
1974	21.4	4.8	28.6	3.6	80	11.9	0.0	8.9	13.3	56
1975	7.1	2.4	50.0	1.8	22.2	21.2	5.9	16.5	352	109

PREPARED BY: Warren Ballard, Game Biologist II

MOOSE - GMU 15C - HOMER

APPENDIX V

Moose Sex and Age Ratios - Subunit 15C, Homer Trend Count Area.

Year	Total MM Per 100 FF	Sm MM Per 100 FF	Sm MM Per 100 Lg. MM	Sm MM % in Herd	Sm MM Per 100 MM Calves	Calves Per 100 FF	Twins Per 100 FF w/calf	Calf % in Herd	Animals Per Hour	Total Sample
1964	3.5	2.6	300.0	0.7	5.0	105.2	2.6	28.7	59	422
1965	5.0	2.5	87.0	1.8	14.9	34.0	6.0	24.0	69	386
1966	9.0	5.0	125.0	3.3	24.0	41.0	3.9	27.6	74	305
1967	10.0	4.1	75.0	2.5	15.3	54.0	8.0	33.0	62	357
1968	3.5	2.7	300.0	1.8	13.0	40.7	9.6	28.2	47	326
1969	4.3	2.7	167.0	1.7	13.1	41.8	6.9	27.0	61	286
1970	5.6	2.4	75.0	1.7	15.0	32.2	8.1	22.6	79	177
1971	8.5	4.8	128.6	3.4	33.3	28.6	8.0	20.5	54.5	263
1972	1.19	0.4	50.0	.28	1.94	41.04	3.03	28.85	62.96	362
1973	6.1	3.6	150.0	2.2	12.1	60.0	4.3	36.1	53.9	278
1974	5.0	2.0	66.7	1.4	9.6	41.7	2.7	28.4	56.0	292
1975	4.6	4.6	00.0	3.0	19.2	47.7	3.4	31.3	17.5	99

PREPARED BY: Warren Ballard, Game Biologist II

MOOSE

SURVEY-INVENTORY PROGRESS REPORT - 1975

Game Management Unit 16 - West Side of Cook Inlet

Seasons and Bag Limits

Subunit 16A	Sept. 1-Sept. 20	One bull
Subunit 16B	Sept. 1-Sept. 20 Nov. 1-Nov. 10	One moose*

*Due to legislative action the bag limit was changed to one bull before the season commenced.

Harvest and Hunting Pressure

The moose harvest in Unit 16 totaled 244 in 1975, or roughly one-third of the average annual harvests from 1970 through 1974. Number of hunters was approximately one-half of 1970-1974 levels, and hunter success decreased to 28 percent. The reduced harvest and hunter success may be partially due to the cancellation of the antlerless season in 1975 and the regulation that prohibited hunters from hunting the same day they were airborne during 1974 and 1975.

The moose harvest was evenly distributed during both early and late seasons (Appendix II). Judging from the harvest chronology, the shortened season and the cancelled antlerless hunt apparently did cause a congestion of hunters but also discouraged many from hunting in Unit 16.

Transportation means used by hunters are shown in Appendix III. Aircraft remain the primary transportation despite the "no hunting the same day airborne" regulation. Hunter dependence on aircraft reflects the lack of alternate means of access. Calf:cow ratios in Unit 16 ranged from 8:100 (Mt. Yenlo) to 24:100 (Peters Hills), well below average values for preceeding years. Small bull:cow ratios did not decrease during 1975, however. The reason for reduced natality or calf survival in Subunit 16A is unknown. Moose seen per hour of survey time indicate a possible decline in moose numbers since 1974 in Subunit 16A (Appendix IV); moose per hour values from count areas in Subunit 16B count areas (Appendices V through VIII) showed no apparent trend. Within Subunit 16A, only two of six count areas showed substantial declines in the number of moose observed, and these were low altitude count areas. Poor snow cover and atypical moose distribution seem likely causes for the differences from 1974.

Management Summary and Conclusions

Moose harvests from Unit 16 have declined substantially due to season reductions and closures of antlerless moose seasons and the regulation prohibiting hunting the same day airborne. Moose in the

count areas are relatively abundant, with high bull:cow ratios, and (in prior years) good calf survival to November. The small bull:cow ratio for Unit 16 has usually been less than 10:100. While this indicates substantial overwinter calf mortality, calf losses may be density dependent. Calf survival is apparently adequate to support harvest levels equal to those existing prior to 1975. Assuming that calf survival improves in subsequent years and that maximum opportunity to hunt remains a major public objective for this area, the management strategy should focus on obtaining large harvests of both sexes to (1) reduce moose loss to starvation during severe winters, and (2) enhance overwinter calf survival. Adjustments of local harvests with composition data should provide criteria for desired harvests of bulls and cows. An obstacle to moose management in the area is that a portion of the public does not perceive harvesting both sexes as a beneficial management tool.

Recommendations

Regulations should be relaxed sufficiently to make Unit 16 more attractive to moose hunters. In selected areas, with good calf survival to November, seasons should be adjusted to make moose more vulnerable to hunters.

The advantages of cow harvests, where warranted by good calf survival, should be continually stressed to the public.

PREPARED BY:

Jack C. Didrickson and Carl McIlroy
Game Biologist III and Game Biologist III

SUBMITTED BY:

John S. Vania
Regional Management Coordinator

Appendix I. Moose Harvest and Hunting Pressure in Alaska's Game Management Unit 16, West Side of Cook Inlet, 1970-1975.

Year	Season	Bulls	Cows	Unid.	Total	Hunters	Percent Success
1970	8/20-9/30	238	0	3	241		
	11/1-11/30	228	0	5	233		
	11/21-11/30 Antlerless	0	152	0	152		
	Unknown Date	132	60	7	199		
	Total	598	212	15	825	1442	57
1971	8/20-9/30	174	0	0	174		
	Yentna 8/20-12/31	9	-	1	10		
	11/1-11/30	249	-	4	253		
	11/21-11/30 Antlerless	0	174	2	176		
	Unknown Date	153	61	8	222		
	Total	585	235	15	835	1648	51
1972	8/20-9/30	142	0	1	143		
	Yentna 8/20-11/30	11	-	0	11		
	11/1-11/30	236	-	0	236		
16A -	8/20-9/30 Antlerless and	0	119	0	119		
16B -	8/20-9/30 & 11/1-11/30						
	Unknown Date	69	25	4	98		
	Total	458	144	5	607	1413	43
1973	8/20-9/20	303	128	10	441		
	Yentna 8/20-11/30	9	8	0	17		
16A -	11/1-11/10 and	265	143	5	413		
16B -	11/1-11/20						
16A -	Antlerless	Cancelled					
	Unknown Date	32	18	4	54		
	Total	609	297	19	925	1995	46
1974							
16A -	8/20-9/20 and	266	95	6	367		
16B -	8/20-9/30						
16B -	11/1-11/20	49	49	1	99		
16A -	8/20-9/20 Antlerless	0	30	0	30		
	Unknown Date	21	11	0	32		
	Total	336	185	7	528	1580	33
1975							
16A -	9/1-9/20	43	0	0	43		
16B -	9/1-9/20	110	0	2	112		
	11/1-11/10	83	0	0	83		
	Antlerless	Cancelled					
	Unknown Date	6	0	0	6		
	Total	242	0	2	244	879	28

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Game Biologist III and Game Biologist III

Appendix II. Chronology of Moose Harvest from Harvest Reports in Alaska's Game Management Unit 16, 1975.

	August[a/]	September				October	November	
	20-31	1-7	8-15	16-23	24-30		1-7	8-15
Male	2	53	53	42	1	2	49	32
Female	0	0	0	0	0	0	0	0
Unknown	1	1	0	0	0	0	0	0
Total	3	54	53	42	1	2	49	32

	November		December				
	16-23	24-30	1-15	16-23	24-31	Jan.-Feb.	No Date
Male	2	0	0	0	0	0	6
Female	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0
Total	2	0	0	0	0	0	6

a/ Season: September 1-20
November 1-10

Total male - 242
Total female - 0
Total unknown - 2
Total - 244

PREPARED BY: Jack C. Didrickson and Carl McIlroy
Game Biologist III and Game Biologist III

Appendix III. Hunter Success vs. Transport Means from Harvest Report Data in Alaska's Game Management Unit 16, 1975.

*Transport Means	**Successful Means of Transport Res.	NR	Unk.	Total	***Unsuccessful Means of Transport Res.	NR	Unk.	Total	Total of Success. & Unsuccess. Methods of Transport Reported
1. Aircraft	124	29	3	156	273	27	14	314	470
2. Horse	2	0	0	2	1	0	0	1	3
3. Boat	27	1	0	28	81	2	4	87	115
4. Motorbike	1	0	0	1	6	0	0	6	7
5. Snowmachine	13	0	1	14	12	0	0	12	26
6. Off-road Vehicle	15	2	1	18	76	3	1	80	98
7. Highway Vehicle ("afoot")	17	5	1	23	151	8	2	161	184
8. 1/ Afoot									
No Means Reported	14	0	2	16	58	2	1	61	77
TOTAL	-	-	-	258	-	-	-	-	-

*Method of transport means will be counted more than once when listed in combinations.

**Many hunters reported more than one means of transportation used; therefore, these figures do not indicate the actual number of either successful or unsuccessful hunters afield.

***Unsuccessful moose hunters are not required to mark method of transportation on IBM harvest report card.

1/ Up to 1970 use this column for afoot. After 1970 "afoot" is combined with highway vehicle category.

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Game Biologist III and Game Biologist III

Appendix IV. Moose Sex and Age Ratios in Alaska's Game Management Unit 16, Peters Hills Count Area, Subunit 16A, 1967-75.

Year	Total M per 100 F	Small M per 100 F	Small M per 100 Large M	Small M % in Herd	Small M per 100 M Calves	Calves per 100 F	Incidence of Twins per 100 F w/Calf	Calf % in Herd	Animals per Hour	Total Sample
1967	25	8	43	4	39	40	13	24	126	1121
1968	26	9	53	5	46	40	8	24	58	587
1970	33	13	65	7	50	51	12	28	N/A	602
1971	26	8	42	5	49	32	3	20	42	815
1972	19	2	15	2	16	30	9	20	40	742
1973	21	6	42	4	27	46	11	27	41	858
1974	18	11	147	7	46	48	7	29	44	757
1975	30	11	55	7	88	24	1	16	34	478

PREPARED BY: Jack C. Didrickson, Game Biologist III and Carl McIlroy, Game Biologist III

Appendix V. Moose Sex and Age Ratios in Alaska's Game Management Subunit 16B, Sunflower Basin Count Area, 1973-1975.

Year	Total M per 100 F	Small M per 100 F	Small M per 100 Large M	Small M % in Herd	Small M per 100 M Calves	Calves per 100 F	Incidence of Twins per 100 F w/Calf	Calf % in Herd	Animals per Hour	Total Sample
1973	29	8	39	5	48	34	7	21	85	494
1974	34	10	43	6	78	26	4	16	58	328
1975	38	13	52	8	140	18	5	12	62	363

Appendix VI. Moose Sex and Age Ratios in Alaska's Game Management Subunit 16B, Mt. Susitna-Mt. Beluga Count Area, 1968-1975.

Year	Total M per 100 F	Small M per 100 F	Small M per 100 Large M	Small M % in Herd	Small M per 100 M Calves	Calves per 100 F	Incidence of Twins per 100 F w/Calf	Calf % in Herd	Animals per Hour	Total Sample
1968	48	7	18	4	54	27	4	15	54	457
1969	Not Flown									
1970	65	10	18	5	64	31	12	16	83	175
1971	48	10	27	6	66	31	4	17	62	1139
1972	21	1	5	1	11	18	1	13	40	557
1973	34	7	24	4	30	44	11	24	33	324
1974	34	10	40	6	51	38	9	22	51	730
1975	Not Counted									

PREPARED BY: Jack C. Didrickson, Game Biologist III and Carl McIlroy, Game Biologist III

Appendix VII. Moose Sex and Age Ratios in Alaska's Game Management Subunit 16B, Mt. Yenlo Count Area, 1974 and 1975

Year	Total M per 100 F	Small M per 100 F	Small M per 100 Large M	Small M % in Herd	Small M per 100 M Calves	Calves per 100 F	Incidence of Twins per 100 F w/Calf	Calf % in Herd	Animals per Hour	Total Sample
1974	50	22	78	12	112	39	4	21	86	121
1975	46	8	22	5	200	8	0	5	162	130

Appendix VIII. Moose Sex and Age Ratios in Alaska's Game Management Subunit 16B, Redoubt Bay Count Area, 1972-1975.

Year	Total M per 100 F	Small M per 100 F	Small M per 100 Large M	Small M % in Herd	Small M per 100 M Calves	Calves per 100 F	Incidence of Twins per 100 F w/Calf	Calf % in Herd	Animals per Hour	Total Sample
1972	11	1	8	1	6	26	7	19	45	330
1973	22	8	58	5	38	41	17	25	36	307
1974*	--	--	--	--	--	--	22	26	35	151
1975	Not Surveyed									

* Flown late, bulls had dropped antlers.

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SURVEY-INVENTORY PROGRESS REPORT - 1975

Game Management Unit 17 - Bristol Bay

Seasons and Bag Limits

September 1 - December 31	One bull

Harvest and Hunting Pressure

Again this year, the reported moose harvest increased significantly, establishing a new record high for the unit (Appendix I). The harvest of 115 moose represented a 168 percent increase over the level for 1974 and a 337 percent increase over the average annual harvest level established between 1964 and 1973. Nonresidents comprised 49.1 percent of successful hunters.

Composition and Productivity

No data were available.

Management Summary and Conclusions

Unit 17 has been hunted primarily by local residents. Only recently have nonresidents and Alaskan residents from other areas of the state begun hunting this area in significant numbers. Traditionally, local residents have taken moose during the late winter months for meat, with the majority of the harvest occurring after the season closes and going unreported. With improved transportation and growing village populations, the level of this late winter harvest has increased to the point that it has substantially reduced moose numbers in many areas. Reconnaissance surveys and observations by local residents indicate that concentrations of moose now exist only in areas remote from towns and villages.

Efforts to enforce season dates and prevent late winter harvest have met with public resistance. Some residents of the area mistakenly believe the late winter meat harvest is an established right not governed by the sport hunting regulations. Only recently have some village residents recognized that the existing "subsistence" harvest could be detrimental to local moose populations. This attitude, however, remains in the minority and the lack of public support for hunting regulations is the most important single factor affecting management.

The 1975 moose seasons throughout much of Alaska were severely restricted. The liberal 4-month season in Unit 17 attracted record numbers of sport hunters and directly resulted in the unit's highest kill on record. The increased harvest does not signify hunting success by local residents, but rather additional recreational harvest by nonresidents or persons living elsewhere in the state.

The combined harvest level by all sources is excessive and should be lowered. The fall hunting season should be reduced in length, and dates aligned with seasons of nearby areas to avoid attracting additional hunting pressure in the unit. Efforts to prevent the late winter harvest should be maintained and public support obtained for management designed to keep the harvest at biologically acceptable levels.

Recommendations

A short, early fall season should be provided to allow recreational harvest and an opportunity for local residents to take animals for meat prior to the rut. An early winter season would allow additional harvest by local residents when weather conditions facilitate meat storage and the use of snow machines for transport. Harvest should be restricted to antlered animals, with cows protected to maintain the maximum reproductive potential. Conservative harvest levels should be maintained until moose populations near villages have significantly increased from the present depressed levels.

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MOOSE - GMU - 17 - BRISTOL BAY

APPENDIX I

Moose Harvest and Hunting Pressure - Unit 17

Year	Bulls	Cows*	Unid.	Total	Hunters	Percent Success
1964	31	1	-	32	-	-
1965	41	1	-	42	-	-
1966	25	1	-	26	90	28.9
1967	37	0	1	38	77	49.4
1968	45	0	1	46	66	69.7
1969	11	1	3	15	31	48.4
1970	23	0	2	25	35	71.4
1971	36	0	1	37	63	58.7
1972	35	0	3	38	74	51.4
1973	39	2	1	42	94	44.7
1974	65	2	2	69	119	58.0
1975	113	0	2	115	[illegible]	[illegible]

* No legal cow season has been held.

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MOOSE

SURVEY-INVENTORY PROGRESS REPORT - 1975

Game Management Unit 18 - Yukon-Kuskokwim Delta

Seasons and Bag Limits

Unit 18, that portion north and west of a line from Cape Romanzof to Mountain Village; and west of (but not including) the drainage of the Andreafsky River	Sept. 1 - Sept. 20	One bull
Remainder of Unit 18	Sept. 1 - Dec. 31	One bull

Harvest and Hunting Pressure

During the 1975 season 16 moose were reported to have been taken. Although this was a larger take than during the past few years, it may only reflect increased compliance with the harvest ticket regulation. There were indications, however, that many more Unit 18 residents hunted for moose during 1975 than in the past, but their success was low (23 percent).

Range and Habitat

Range and habitat conditions remained excellent along the floodplains of the Kuskokwim and the Yukon Rivers, but excessive year-round hunting pressure prevented moose from becoming established in these areas.

Population Trends

No formal moose surveys were conducted in Unit 18, but general observations indicated that populations were not increasing.

Management Summary and Recommendations

Continual abuse of existing regulations continues to curtail establishment of moose in this unit. Establishment of a viable moose population in Unit 18 hinges on obtaining strict compliance with game regulations.

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MOOSE

SURVEY-INVENTORY PROGRESS REPORT - 1975

Game Management Unit 19 - McGrath Area

Seasons and Bag Limits

Unit 19	Sept. 1 - Nov. 30	One moose; antlerless moose may not be taken prior to Oct. 1*

*no open antlerless season

Harvest and Hunting Pressure

The reported 1975 moose harvest of 248 animals was comprised of 243 bulls and 5 of unspecified sex. Despite the closed season on antlerless moose the 1975 harvest exceeded that of 1974. The increased harvest resulted primarily from aerial hunting in the foothills of the Alaska Range. Over 100 hunters reported taking moose in this area during fall 1975. Most of these hunters were flown into lakes and river bars by air taxi operators, but some used private aircraft or the services of guides. Hunting pressure also increased in the Holitna drainage. This resulted largely from heavy use by hunters residing in villages along the lower Kuskokwim. A resident of Sleetmute, at the mouth of the Holitna, estimated that over 100 boats traveled up the Holitna during September 1 through October 5, 1975. Most boats carried two to four Because of indifference to harvest ticket regulations, harvest data failed to reflect this number of hunters or the take that probably occurred in the Holitna drainage. The estimated take for Unit 19, including unreported kills, was probably near 500 moose.

Composition and Productivity

An aerial survey of the Takotna River and Vinasale Mountain areas was made on February 19, 1976. During this survey 129 adults and 29 calves were observed. Calf composition based on this survey (13 percent) was approximately the same as that recorded for this area during February 1974.

Range and Habitat

Snowfall in early autumn 1975 was light, but very cold weather prevailed through most of December. Snow accumulation became heavy during February and March, but during this period temperatures were moderate. Moose movements did not appear to have been restricted by the deep snow.

Population Trends

Within Unit 19 moose abundance varied from low to moderate levels, and unit populations were increasing slowly. Wolf predation was not as

severe as in the past, but it remained effective in depressing population growth in some areas.

Management Summary and Recommendations

Because of accelerated moose harvests in the Alaska Range and Holitna drainage, changes in the season length may be required in the near future. Antlerless seasons should either be administered on a permit basis, or restricted to a short period following the fall bull hunt.

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MOOSE

SURVEY-INVENTORY PROGRESS REPORT - 1975

Game Management Unit 20A - Tanana Flats, North Slope of Alaska Range

Seasons and Bag Limits

Unit 20(A)	Sept. 1-Sept. 10	One bull

Harvest and Hunting Pressure

Based on harvest ticket returns, the reported legal sport kill of moose for the 1975 season was 31 animals, a decrease of 91 percent from the previous year, and well below the annual average of 394 recorded for the period 1968-73. Current regulations prohibit the taking of cow moose.

The 1975 season was shortened to 10 days and scheduled for early September to greatly reduce the harvest short of curtailing all hunting. In 1975 there were 77 percent fewer hunters than in 1974, and only 11 percent were successful (Table 1). Residents accounted for 87 percent of the hunters, a figure which is unchanged from those of previous years.

Table 1. Unit 20A moose hunting pressure and success in Unit 20A, 1975.

Total hunters	Successful hunters			Percent success
	Resident	Nonresident	Unknown	
295	16	11	4	11

Hunting pressure was spread somewhat uniformly throughout Unit 20A (Appendix I). For the first time in four years a large portion of the harvest was not concentrated in the Gold King-Japan Hills area. In 1974, the last year in which cow moose were harvested in Unit 20A, females comprised 62 percent of the harvest. The early and limited hunting season and decline in moose numbers resulted in a marked reduction in the 1975 harvest throughout Unit 20A.

Modes of transportation used by successful hunters are summarized in Appendix II.

Composition and Productivity

Results of June composition counts are summarized in Table 2. Initial production of calves was determined by capturing and palpating 59 cow moose during the period May 8-14, 1975. Ninety-four percent of the females older than two years were pregnant. Based on this pregnancy rate, June composition counts in 1975 and 1976 indicated 50 percent neonate mortality. However, data based on resightings of collared moose suggested that June composition counts underestimated the number of cows

with calves. Such underestimation results primarily from the secretive behavior of calves and cows with calves and from the type of habitat which they occupy. (For further discussion see Gasaway S & I Report, Vol. VI, Part II, page 147.) Therefore, calf mortality occurring prior to age 3-weeks in Unit 20A was thought to be 20-25 percent during 1975.

Table 2. Age and sex composition of moose observed during comparable aerial surveys on the Tanana Flats, June 1975-1976.

Count Area	Date	Calves per 100 cows	Yearlings per 100 cows	Cows w/calves per 100 cows	Total cows	Total bulls	Total moose	Moose hour
1	6/2-3/75	53	12	48	64	32	134	19
1	6/11-13/75	48	17	43	158	81	343	33
1	6/10-16/76	44	28	42	71	59	181	19
1	6/20-7/2/76	59	26	55	103	64	255	30
2&3	6/10-12/75	20	not recorded	20	55	37	104	14
2&3	6/7-9/76	48	19	38	31	38	90	13

Fall composition counts were conducted on standardized survey areas in Unit 20A during November 1975. Considerable variation in abundance and composition was noted within the various count areas. Among areas surveyed, the most favorable composition figures were recorded for the Tanana Flats, where 48 bulls per 100 cows and 23 calves per 100 cows were observed (Appendix III). Conversely, on the Yanert drainage only 27 bulls per 100 cows and no calves were counted. Moose density, as reflected by numbers of moose seen per hour of survey time, was greatest in the Yanert River drainage and lowest on the Tanana Flats.

The 1975 data (Table 3) suggested a continued decline in both the proportion of calves in the population and the total numbers of moose occupying Unit 20A. Restrictions on the sport harvest probably account for the improved bull to cow ratio. This was particularly noticeable in that portion of the foothills west of Wood River where, prior to regulatory restrictions, offroad vehicle access consistently resulted in relatively large bull harvests. In this area the number of bulls per 100 cows observed during fall counts increased from 16 (1974) to 40 (1975).

Table 3. Summary of Unit 20A fall moose count data, 1975.

Males/ 100 females	Calves/ 100 females	% yearling bulls	% calves	% large bulls
37	9	3	6	28

To assess overwinter survival of moose, pre-calving surveys were conducted in standardized count areas on the Tanana Flats during May 1975 and 1976. Because of manpower shortages only one of the standard

count areas was surveyed in 1976; consequently, the 1975-76 comparisons presented here are restricted to one area representing a single habitat type. Between 1975 and 1976 the proportion of yearlings rose from 6 to 18 percent, and the number of yearlings per 100 cows increased from 8 to 27. This three-fold increase marked the highest rate of calf survival to age 1-year recorded since the severe winter of 1970-71.

From Table 4 it is apparent that the time of the month in which spring surveys are conducted has considerable influence on the results. During 1975 and 1976 the later counts suggested increases in the proportion of bulls. This probably results from differential movement of moose onto the calving grounds in spring (nonpregnant cows and bulls are probably last to arrive).

Table 4. Age and sex composition of moose observed during pre-calving aerial surveys on a standard count area in the Tanana Flats*, May 1975-76.

Date	Yearlings per 100 cows	Yearlings % in herd	Bulls per 100 cows	% bulls	Sample size
5/17/75	11	9	18	14	77
5/19/75	5	4	20	15	44
5/20/75	9	6	27	20	89
5/21/75	9	5	37	24	139
5/12/76	24	17	17	12	163
5/20/76	42	22	33	17	45

* Count area #1

Calf tagging programs on the Tanana Flats (Bishop 1966, unpubl. data) and radio-collaring of adults in the Alaska Range foothills (Coady 1976, Job Progress Report) revealed that some calves born on the Flats disperse south to the foothills or north to the Tanana Hills, and that some adult cows migrate to the Flats from these areas to calve. In both cases the migration is partial; an unknown number of moose do not leave their wintering areas for calving. Those that do move long distances annually are traditional with regard to when the timing of the movement and the route followed. At this time, however, information regarding these movements is insufficient to provide meaningful interpretation of survey data. In the absence of more specific data regarding movement patterns, it is recommended that pre-calving surveys be conducted as close to the same day each year as possible.

The short yearling per 100 cow ratios ranged from 24-42 (Table 4) in May 1976 despite the fact that the number of calves per 100 cows had ranged from only 5 to 23 the previous November (Appendix III). This illustrates that biases inherent in survey techniques can greatly affect estimates of winter calf mortality that are based on comparisons of spring and fall composition data. Because of differential movement and behavioral patterns, different portions of the population are probably being counted. Furthermore, Coady (1976 Job Progress Report) reported that the different segments of the herd demonstrate considerable

seasonal variation in group size. Bulls and cows without calves are found in larger groups in November than in May. Cows with calves apparently do not associate with other moose to any great extent; hence, this segment of the population usually appears as groups of two. Since pods of moose are easier to locate from the air than pairs, fall composition counts tend to underestimate the proportion of calves in the population, particularly when data are presented as percent calves in the herd rather than as calf to cow ratios. Conversely, spring counts may overestimate the proportion of calves.

Management Summary and Recommendations

The decrease in the 1975 moose harvest was probably a direct result of the shortened season, the early timing of the season, the return to a bull-only bag limit, and a depressed moose population. The early September season presented the hunter with several difficulties, including reduced access (unfrozen ground and no snow) and reduced visibility (foliage still on trees). Furthermore, during the early season moose were still dispersed throughout the Flats and were not as active as they would have been later in the month. Despite improved recruitment of yearlings, total moose numbers remained very low. Because of this low reproductive base any hunting mortality will slow the recovery and limit the potential long-term management goal of quality hunting in the foothills and mountains. Thus, the present restrictive season minimizing hunter success should be retained.

Survey data suggested that calf survival improved considerably during late winter 1975. Calf:cow ratios on the Tanana Flats for 1975 had decreased from 84 per 100 at calving to 23 per 100 by November. The lowest short yearling:cow ratio obtained in May of 1976 was 24 per 100. Allowing for an underestimation of calves in the November survey, it is still apparent that overwinter survival was high. The last post-calving count for 1976 revealed that 59 calves per 100 females remained from a presumed base of 84 per 100 at calving. The apparent increase in calf survival can probably be attributed to a reduction in wolf predation. The fall 1975 wolf density was about 1 per 25 square miles. This is about 1 wolf per 15 moose. A wolf removal program commenced in February 1976. The combined take from the control program and the hunter/trapper harvest reduced the estimated 237 wolves to a maximum of 91 (Pete Shepherd, unpublished report). Moose and wolf surveys should be conducted in fall of 1976 to further assess the impact of the wolf control program. Removal efforts should be resumed during winter of 1976-77 in order to obtain a ratio of 1 wolf per 100 moose, thereby assuring favorable conditions for recovery of the moose population.

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Appendix I. Areas contributing to the majority of the Unit 20A moose harvest, 1975.

Location	Res.	Nonres.	Total	Percentage of known location of harvest
Tatlanika River	0	1	1	3
Tanana Flats (McDonald Creek, Bonnifield Trail, Bombing Range, Blair Lakes, Salchaket Slough, Clear Creek)	5	1	6	20
Wood River	4	2	6	20
Delta River, Delta Creek, Little Delta River	2	2	4	13
Dry Creek	1	0	1	3
Gold King, Japan Hills	1	0	1	3
Yanert River	6	4	10	34
Known location harvest	19	10	29	

Appendix II. Unit 20A, summary of successful moose hunters by transport method, 1975.

Transport type	No. moose harvested	Percentage of known transport harvest
Aircraft only	11	38
Horse (alone or in combination)	10	35
Boat only	4	14
Off-road vehicle only	2	7
Highway vehicle only	2	7

Appendix III. Moose sex and age ratios derived from aerial surveys in Unit 20A, fall 1975.

Area	Date	Total males per 100 females	Yearling males per 100 females	Yearling males % of herd	Calves per 100 females	Calves % of herd	Moose per hour	Total moose obs.
Tanana Flats	11/17-21,24	48.2	7.8	4.6	23.4	13.6	11	242
Foothills east of Wood River	11/4-5	38.7	1.2	1.1	4.8	3.4	12	89
Foothills west of Wood River	11/3-5	39.6	1.9	1.3	8.5	5.7	26	157
Upper Wood River	11/6,10,13	34.6	6.4	4.4	11.5	7.9	14	114
Yanert River	11/20-21	27.5	3.6	2.8	0.0	0.0	48	250
Total or mean		36.8	4.5	3.0	9.3	6.3	18	852

MOOSE

SURVEY-INVENTORY PROGRESS REPORT - 1975

Game Management Unit 20B - Fairbanks, Central Tanana Valley

Seasons and Bag Limits

Fairbanks Metropolitan Area	No open season	
Portions of the East and South Forks of Chena River	Sept. 1-Sept. 20 Nov. 1-Nov. 10	One bull
Remainder of Unit 20(B)	Sept. 1-Sept. 20	One bull

Harvest and Hunting Pressure

The number of moose hunters utilizing Unit 20B during 1975 dropped to half the number recorded in 1974. The reported legal sport kill of moose for 1975 (Table 1) was 48 animals, a substantial decrease from the record high of 301 harvested during 1973. Compared to 1975 the decline in kill (71%) was of greater magnitude than the decline in hunters (51%) and resulted in extremely low hunter success (8%). The lack of interest in hunting Unit 20B and the low success rate can probably be attributed to the reduced availability of moose.

Table 1. Unit 20B - Moose hunting pressure, success and harvest composition, 1975.

	Total hunters	Successful hunters			Percent success	Moose harvested		
		Res.	Nonres.	Unk.		Male	Female	Unk.
1975	607	42	5	1	8	47	1*	1

* illegal take.

Harvests in Unit 20B were concentrated in areas accessible by road vehicles (Appendix I). The Chena Hot Springs Road and the Yukon Training Areas supported the largest portion of the moose harvest. Declining bull ratios in the Chena drainage reflected heavy hunting pressure. Hunting effort by military personnel in the Yukon Training Area has been increasing and, in 1975, 35 percent of the total harvest for Unit 20B occurred in this area.

Analysis of transportation types utilized by successful moose hunters in 1975 reflected considerable hunting effort and success by road hunters (Table 2). Hunters with highway vehicles accounted for 42 percent of the harvest, while all terrain vehicle users accounted for 22 percent. Snow machine use declined considerably as a result of deletion of the late season in most of the subunit. The early season precluded virtually any use of snow machines. The use of boat transportation increased over that reported for 1974.

Table 2. Unit 20B - summary of successful moose hunters by transport method, 1975.

Transport type	Number of moose harvested	Percentage of known transport harvest
Boat	8	18
Snow machine	2	4
Offroad vehicle	12	27
Highway vehicle	23	51

Composition and Productivity

In all portions of Unit 20B surveyed, low recruitment rates and low numbers of moose observed indicated a general decline in the moose population. Results of 1975 fall count data are summarized in Appendix II.

Since 1970 some very apparent trends in sex and age composition occurred within Unit 20B. Bulls per 100 cows, yearling males per 100 cows and moose seen per hour during surveys generally declined in all portions of the Chena drainage. Further decline of the bull: cow ratio within this already low moose population may prove detrimental. The bulls only season approved for 1976 is expected to further depress the bull to cow ratio.

Population Trends

Probably the best indicator of change in population density in Unit 20B is the number of moose seen per hour of survey. Since 1970 there has been a progressive decline in moose seen per hour, and in 1975 these values were only 11 to 40 percent of those recorded during 1970 and 1971. Moose per hour values have not been shown to quantitatively describe moose abundance; however, the magnitude of change in these figures for the Unit 20B count areas are thought to truly reflect a very significant decline in moose abundance.

The most important factor leading to the population decline has probably been poor recruitment since 1970. Calf survival to early winter throughout Unit 20B was low (23-36 calves per 100 cows) as was survival to 17 months of age (2-10 yearlings per 100 cows).

Management Summary and Recommendations

Yearling recruitment should be closely monitored during fall 1976 in view of the shortened or closed seasons and restriction on the take of bulls. An attempt must be made to reverse the decline in the bull:cow ratio until a minimum of 20 bulls per 100 cows exists among moose occupying accessible portions of Unit 20B. In view of current low recruitment rates, hunting seasons will have to be modified for several

years to improve the bull ratio. Continued closure of the metropolitan Fairbanks area to moose hunting should provide an opportunity to appraise recruitment without the complications of hunting.

Wolf predation was probably responsible for poor recruitment to the Unit 20B moose population. Wolf numbers were probably high, but specific data regarding their abundance were lacking. Surveys in nearby Unit 20A revealed high wolf densities, and there was no reason to believe that wolves were not equally abundant in Unit 20B. The impact of the Unit 20A wolf control program on moose calf survival should provide information on the moose-wolf relationships applicable to Unit 20B. Meanwhile, removal of wolves by the public through legal hunting and trapping efforts should be encouraged, and the Department should attempt to assess wolf distribution and abundance in Unit 20B.

Habitat improvement in the remote and accessible portions of the subunit should be pursued with the Bureau of Land Management and the Alaska Department of Natural Resources.

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Appendix I. Areas contributing the majority of the Unit 20B moose harvest, 1975.

Location	Percentage of harvest
Road System Area	
Chena Hot Springs Road	19
Steese Highway (includes Cleary Summit, Fairbanks Creek, Fish Creek, Gilmore Creek)	19
Elliot Highway	0
Nenana Highway	2
Fairbanks and vicinity (includes Richardson Highway, Steele Creek, Farmers Loop, Badger Road, Johnson Road, North Pole)	8
Off-Road Areas	
Eielson, Yukon-Training Area	35
Murphy Dome	0
Goldstream Valley (includes Dunbar, Standard)	0
River System	
Tanana (includes Moose Creek, Piledriver Slough)	0
Chena River	15
Chatanika River	0

Appendix II. Summary of fall sex and age composition in Unit 20B, 1975.

Area	Males per 100 females	Small males per 100 females	% males	Calves per 100 females	Moose per hour	Total moose
Little Chena	56	20	10	40	9	49
Angel, Stiles and Colorado Creeks	22	8	5	29	16	98
South Fork Chena	24	0	0	36	19	120
East Fork Chena	55	9	5	24	10	104
Chena Flats	2	0	0	54	21	92
Goldstream	17	4	3	16	12	92
Unit 20B Totals	40	10	6	23	14	251

MOOSE

SURVEY-INVENTORY PROGRESS REPORT - 1975

Game Management Unit 20C - Tok, Upper Tanana, Kantishna

Seasons and Bag Limits

Unit 20(C), that portion draining into the south bank of the Tanana River from the confluence of the Tanana and Kantishna Rivers, and all drainages of the Toklat River to the western boundary of Unit 20(A)	Sept. 1-Sept. 10	One bull
Remainder of 20(C)	Sept. 1-Sept. 20 Nov. 1-Nov. 10	One bull

Harvest and Hunting Pressure

The number of moose hunters utilizing Unit 20C during 1975 (Table 1) was the lowest in recent years and continued a decline in hunting pressure that commenced in 1973. Harvest likewise declined to a record low. The 1975 take of 223 animals was only one-third of that recorded for 1973. Only 17 percent of the Unit 20C moose hunters were successful in 1975. The steady decline in hunter success since 1969 probably reflected decreased availability of moose, heavy competition in the few areas that had good access, and a short bull-only season in 1975.

Table 1. Unit 20C - Moose hunting pressure, success and harvest, 1975.

	Total		Successful Hunter				Percent M
Year	Hunters	Harvest	Res.	Nonres.	Unk.	% Success	in harvest
1975	1294	223	187	25	11	17	95

Areas providing river or trail access contributed most significantly to the 1975 harvest (Appendix I). Harvest in most areas declined in proportion to the overall harvest; however, the take from the Salcha drainage remained high, reflecting the increasing popularity of that area among recreationists and hunters. In addition to the excellent river access, military trails along the ridge system adjacent to the Salcha River are heavily used by hunters.

Analysis of the transportation modes utilized by successful hunters is shown in Table 2. Use of airplanes and ORV's has decreased since 1973, while the use of boats and highway vehicles has increased. Hunter success declined in all transportation categories except those

involving snow machines and horses. Percentages for the latter two categories are based on very small sample sizes. Success dropped most among highway vehicle users. Aircraft and horses remained the most effective methods of hunter transportation, but boats and highway vehicles were the most popular.

Table 2. Transportation modes utilized by Unit 20C hunters, 1975.

Mode	Percent	Percent Successful
Airplane	6	44
Horse	1	54
Boat	26	25
Motorbike	less than 1	33
Snow machine	3	18
ORV	13	24
Highway vehicle	26	6

Composition, Productivity and Abundance

Survey efforts were extended into the White Mountains for the first time in 1975. Calf survival to age 6-months and recruitment into the adult population were very low throughout the unit (Appendix II). For areas having prior survey data, a decline was evident. Despite extensive searching, the number of animals located in the Taylor Mountains and Mt. Fairplay areas was not sufficient to accurately reflect the age and sex composition of the herd. At the present rate of recruitment, further population declines are expected.

The bull:cow ratio remains good in the Kechumstuk and Sixtymile-Butte areas with 42 and 48 bulls per 100 cows recorded, respectively. This probably reflected the relatively low hunter harvest rather than a "healthy" moose herd. The high bull:cow ratios in the Beaver Creek-Nome Creek area and in McKinley Park are typical of unhunted populations. Heavily hunted areas such as Ninetyeight Creek and the Yanert River had considerably lower bull to cow ratios, but an adequate number of bulls remained to insure breeding. While the low bull:cow ratio probably decreased the quality of hunting (few large bulls were present), it is not considered detrimental to the population.

Summary and Recommendations

Composition data have established that moose populations in the surveyed portions of Unit 20C have declined because of poor calf survival and subsequent low recruitment. The reasons for continued poor calf survival are not known, but wolf and bear predation are probably partially responsible. Both wolves and bears (black and grizzly) appeared numerous throughout Unit 20C. Until calf survival improves significantly the moose population will continue to decline. It is unlikely that continued monitoring in the areas from which data are already available will provide further insight into factors responsible for low survival and

recruitment. Therefore, instead of repeating surveys in the areas covered during 1975 it is recommended that efforts be focused on other portions of Unit 20C, thus documenting the extent of the problem and widening the information base.

One area that should be resurveyed, however, is the Stampede Trail-Shushana River area west of Healy. Heavy hunting pressure had reduced the bull:cow ratio to 12 per 100 in 1973 when the area was last surveyed. Since then, hunting seasons have been shortened from 78 days in 1973 and 1974 to 20 days in 1975 and 10 days in 1976. Another survey should be conducted to assess the impact of the shortened seasons on the bull population, and if the bull:cow ratio has not increased, further restrictions should be considered for this area.

Bulls were very scarce in the Taylor Mountain and Mt. Fairplay areas. If the fall 1976 sex and age composition surveys indicate a further decline, consideration should be given to closing these areas to moose hunting.

With acceptable bull:cow ratios in most of Unit 20C, limited bull-only seasons can be tolerated, but the taking of cows should continue to be prohibited. No changes in seasons or bag limits are recommended at this time.

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Appendix I. Areas contributing to the moose harvest in Unit 20C, 1975.

Location	Number of moose harvested
Elliott Highway (Livengood, Manley)	6
Steese Highway (Central, Circle, Baker Creek)	7
Taylor Highway and surrounding country	34
Central 20C	
Shaw Creek	7
Healy Lake area	6
Goodpaster River	17
Salcha River	33
Volkmar River	1
Johnson to Robertson River	1
Northern 20C	
Yukon River	2
Nome Creek	2
Beaver Creek	9
Birch Creek	4
Hess Creek	5
Medicine Lake	1
Western 20C	
Minto Flats, Tolovana River	2
Kantishna River	9
Minchumina, Muddy River	5
Tanana River	1
Southwestern 20C	
Nenana River	4
Ferry, Healy, Usibelli, Otto Lake, Lignite	4
Savage River, Toklat River, Stampede Trail	5
Yanert River	7
Totatlanika River, California Creek, Seven-Mile Lake, Rex Trail	4

Appendix II. Summary of surveys conducted in Unit 20C, 1973, 1974, and 1975.

Area	Date	Males/ 100 Females	Calves/ 100 Females	% small bulls in herd	% calves in herd	Total moose	Moose/ hour
Beaver Creek	11/20-22/75	64	11	3	6	63	10.3
Nome Creek	11/22-25/75	70	5	3	3	35	8.1
Ninetyeight Creek	11/27-29/74	23	36	4	22	89	34.9
	11/4-6/75	31	30	5	19	124	21.4
Yanert River	11/29-30/73	29	13	6	9	412	60.6
	11/20-21/75	27	0	3	0	250	48.1
McKinley Park*	10/31-11/20/74	57	27	2	15	624	15.0
	11/26/75	**	8	**	6	281	**

* Note: McKinley Park surveys were conducted by Park personnel.
**1975 data may be misleading, therefore are omitted. Coverage was incomplete and the observer had difficulty classifying bulls correctly.

MOOSE

SURVEY-INVENTORY PROGRESS REPORT - 1975

Game Management Unit 20D

Seasons and Bag Limits

Unit 20(D) east, that portion of Subunit 20(D) east of the west bank of the Gerstle River	Sept. 1-20	One bull
Unit 20(D)* west of the remainder of Subunit 20(D)	Sept. 1-20	One bull by permit; 25 antlered moose may be taken from Sept. 1-Sept. 20. Conditions of the hunt will be described by commissioner's announcement

* Except an area closed to moose hunting to be described by commissioner's announcement.

Harvest and Hunting Pressure

A total of 22 bull moose were legally harvested by 257 hunters in Unit 20D during the 1975 season. Hunter success was eight percent. Four bulls were taken in Unit 20D east and the remainder from the western portion of the unit. One moose was taken in the closed area.

Most of the hunting pressure in 1975 was concentrated along the 33 Mile Loop Road, but the kill was distributed throughout the western portion of the unit and not concentrated along the Loop Road as in 1974. Ages of 10 bull moose taken during the 1975 season were as follows:

Age in years	Number taken
1	2
2	1
4	1
5	2
6	2
7	1
11	1

The registration type permit hunt used for the 1975 season was successful in controlling and determining the harvest.

Composition and Productivity

November composition counts (Table 1) indicated that the 1975 calf production (9 calves per 100 cows) was down significantly from the previous 6 year average of 19 calves per 100 cows. The count showed 29 bulls per 100 cows, an increase from the previous 6 year average of 21 bulls per 100 cows. Moose observed per hour dropped from 38 in 1974 to 29 in 1975.

Table 1. Summary of November moose composition counts in Unit 20D, 1975.

Bulls/100 cows	29.2
Calves/100 cows	9.0
Calf percentage in herd	6.5
Moose per hour	28.9

The spring survival counts showed 10 percent calves in the herd; this indicates a marked increase in winter mortality from that of previous years. In 1974 calves comprised 14 percent of the moose counted during spring surveys. The winter of 1974-75 was relatively mild with less than average snowfall; therefore, increased wolf predation was probably responsible for the increase in overwinter calf mortality.

Population Trends

The Unit 20D moose population remained static between 1972 and 1974 but began to decline in 1975. The number of moose observed per hour during comparable counts declined from 34 (the 1973-74 average) to 29 (1975). Population estimates from various sources (including biologists) ranged from 629 (1972) to 793 (1974). Using the same methods, prehunt populations were estimated at 744 and 644 in 1975 and 1976, respectively.

All evidence suggests that moose numbers are declining in Unit 20D, mainly because 1) major burns in the area are past their prime and browse production appears to be at an all time low, and 2) wolf predation upon moose is thought to be on the increase. The wolf harvest in Unit 20D increased from the previous yearly average of 4 to 12 in 1975; nonetheless, eight instances were documented in which moose were killed by wolves during 1975.

Management Summary and Recommendations

As indicated above, the 20D moose population appeared to be declining, but the 1975 bull-only season did not contribute significantly to this decline. Compared to previous years, the bull segment of the population appeared stable (in absolute numbers), but a harvest of 15 bulls, controlled by permit, is recommended for the western part of the unit. This portion of the unit is very accessible, and moose are subject to overharvest without strict controls on the number taken. The eastern half of the unit receives very little hunting pressure, and sustains a

low kill (four bulls in 1975). Therefore, a permit hunt is not recommended for the eastern portion of Unit 20D. Attempts to shift hunting pressure to the inaccessible eastern half of the unit should be continued.

Unless some form of meaningful habitat rehabilitation is undertaken and a predator control program is initiated, it is unlikely that the Unit 20D population can support repeated harvests exceeding 25 bulls per year. More information on predation should be gathered and a wolf control program should be initiated.

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MOOSE

SURVEY-INVENTORY PROGRESS REPORT - 1975

Game Management Unit 21 - Middle Yukon

Seasons and Bag Limits

Unit 21, that portion below Eagle Island on the Yukon (above Grayling) downstream to the Unit 18 boundary and upstream on the Innoko River to the mouth of the Iditarod River	Sept. 1 - Nov. 30 *Feb. 1 - Feb. 28	One moose; antlerless moose may not be taken prior to Oct. 1. Moose may be taken by permit only from Feb. 1-Feb. 28. Conditions of the hunt will be described by commissioner's announcement.

* Season did not take place, closed by ban on antlerless moose hunting.

Remainder of Unit 21	Sept. 1 - Nov. 30	One moose; antlerless moose may not be taken prior to Oct. 1.

Harvest and Hunting Pressure

The reported 1975 moose harvest of 249 animals was comprised of 242 bulls, 2 cows, and 5 moose of unspecified sex. This harvest was significantly larger than that of 1974. The great increase in number of bulls taken on the Innoko and Koyukuk River drainages was primarily responsible for the marked increase in the Unit 21 take. The number of sport and guided hunters utilizing these areas has increased rapidly because of the availability of large-antlered bulls, which are becoming scarce elsewhere. Competition between hunters using aircraft and those using boats continued to present a serious social problem. Reports of gross wastage of moose by aircraft hunters were common but were largely unsubstantiated. The estimated kill for Unit 21, including the unreported take, was 500 moose.

Composition and Productivity

Results of spring (1976) aerial surveys of the Middle Yukon and Nowitna drainages are shown below. These surveys suggested good calf survival (21% of herd was calves) and production in the Nowitna area. However, only 9.2 percent of the Middle Yukon herd was composed of calves. Poor weather conditions prevented surveys of the Koyukuk drainage.

Area	Adults	Calves	Percent calves	Moose observed/hour
Nowitna	90	19	21.0	78.0
Middle Yukon (Kaltag to Anvik)	163	15	9.2	102.0

Range and Habitat

Movement of moose onto winter range was late in 1975 due to light snow early in the winter. Heavy snowfall did occur in January and February and restricted moose mobility to some extent. Losses of moose to climatic influences were probably low, since no extremely cold weather accompanied the deep snow. Furthermore, a warming trend in late March reduced snow levels rapidly. Major movements out of the riparian habitat occurred in early April.

Population Trends

Low calf survival along the Middle Yukon continued to hamper growth of the moose population. Several wolf packs were seen and pursued in this area during the 1976 spring hunting period. Many of the large packs of wolves in the area were broken up or nearly eliminated by airborne hunters. Moose populations in other portions of Unit 21, such as the Nowitna drainage, seemed to be recovering from the poor production and/or survival of the early 1970's. Comments from residents of the lower Koyukuk suggested that calf survival on this drainage had been poor over the past several years. Overall, moose abundance in Unit 21 was considered low to moderate, but numbers were increasing slowly.

Management Summary and Recommendations

Hunting pressure has increased rapidly in the Innoko, Koyukuk, and Nowitna drainages. Despite the slow increase in moose numbers in these areas, shorter seasons may be necessary to reduce bull harvests.

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MOOSE

SURVEY-INVENTORY PROGRESS REPORT - 1975

Game Management Unit 22 - Seward Peninsula

Seasons and Bag Limits

Unit 22	Aug. 1-Jan. 31	One moose; antlerless moose may be taken by permit only; dates and conditions of the hunt will be described by commissioner's announcement

Harvest and Hunting Pressure

Although the Board of Fish and Game authorized an antlerless moose season for Unit 22, a statute passed by the 1975 State Legislature set new criteria for such seasons. Because these criteria could not be met prior to the August 1 opening, antlerless moose hunting was illegal in Unit 22 during the 1975-76 season.

The reported harvest of bull moose during the six-month open season was 138. Many successful hunters failed to report their kills. Although regulations require the use of a moose harvest ticket, compliance was poor, especially in the rural villages. Therefore, the total harvest was estimated to be near 175 animals.

Hunters using one of the three road systems radiating from Nome accounted for 65 percent of the reported harvest. Forty-one percent of the total kill came from drainages of the Kuzitrin and Pilgrim Rivers in the central Seward Peninsula. Most of the moose taken in these drainages were killed within one mile of the road. A small percentage of successful hunters used riverboats for transportation.

Hunters took 71 percent of the known kill during the first 8 weeks of the season. While August hunting pressure was about the same as that of September, hunter success was considerably higher in September.

Incisors from 87 moose were collected for age analysis. Most of this sample was from the Kuzitrin drainages. The percentages of animals comprising various age classes are shown below:

Age:	1	2	3	4	5	6	7	8+
Percentage:	23	32	10	17	7	5	4	2

Although yearlings and two-year-old moose comprised 55 percent of the sample, they probably comprised a lower proportion of the wild population. Older moose tend to remain in the foothills and are not readily available to hunters until later in the season when hunting pressure has subsided.

Composition and Productivity

Aerial surveys were conducted in April when moose were concentrated along the major river drainages. Snow depth during winter 1974-75 was about average. At the time of the surveys it was estimated that at least 70 percent of the moose population occupied the main river valleys. Approximately 60 percent of the best winter range on the Seward Peninsula was surveyed. Appendix I shows the areas surveyed and the age-sex composition of moose observed in each drainage.

Short yearlings accounted for 26 percent of the 1091 moose counted during spring surveys. In recent years moose have increased in number and have expanded their range on the Seward Peninsula. This trend was reflected in the relatively high percentage of calves surviving to age 1-year.

Fall composition surveys were limited by unfavorable snow conditions and poor flying weather. A November survey was conducted in the Kuzitrin basin to monitor the effects of fall hunting. The small sample (51 moose) revealed a composition of 50 bulls per 100 cows and 63 calves per 100 cows. While the Kuzitrin drainage normally receives the greatest hunting pressure of any area on the Seward Peninsula, neither the bull:cow ratio nor productivity appeared to have been adversely affected. Based on results of spring and fall surveys the moose population in Unit 22 was estimated to contain a minimum of 1500 animals, but the actual number may have been closer to 2000.

Management Summary and Recommendations

Surveys during the past five years have indicated a substantial increase in the moose population. Even though seasons have been liberalized, hunting pressure has not kept pace with annual recruitment. In many drainages the density of moose during the February through April period exceeded 10 animals per square mile. Winter browse is limited on the Seward Peninsula, and some areas appeared to already be suffering from the effects of excessive use by moose.

Assuming a minimum of 1500 moose and a maximum yearly harvest of 200 animals, hunters took about 16 percent of the population annually. Yearling recruitment has averaged about 25 percent annually. Wolf predation was low in 1975, but there were signs it may be increasing. Available data indicate that more moose could be harvested, particularly in areas away from the road system, with no detrimental effects on the population. Because of their accessibility, moose populations in drainages of the Kuzitrin should be closely monitored.

No changes are recommended in the current six month season. To attain a harvest near the annual increment, antlerless moose permits should be issued. When the desired harvest is attained for a specific drainage, the antlerless season for that drainage should be terminated.

Appendix I. Summary of Unit 22 moose composition counts, 1975.

Area	Date	Total Adults	Total Calves	Percent Calves	Total Moose	Count Time (Hour)	Moose Per (Hour)
Main Serpentine	4/8/75	39	14	26.0	53	1.0	53
North Fork of Serpentine	4/8/75	2	1	33.0	3	0.16	19
South Fork of Serpentine	4/8/75	31	9	23.0	40	0.42	95
TOTAL SERPENTINE		72	24	25.0	96	1.58	61
Arctic River	4/8/75	12	0	0	12	0.25	48
American & Agiapuk	4/4/75	94	34	27.0	128	1.6	80
Koyuk River*	4/9/75	98	20	17.0	118	2.9	41
Niukluk River	4/28/75	22	7	24.0	29	0.2	145
Niukluk River	4/29/75	32	6	15.7	38	1.5	25
Fish River	4/29/75	109	35	24.3	144	1.5	96
TOTAL		163	48	23.0	211	3.2	66
Pilgrim River	4/11/75	75	22	23.0	97	1.25	78
Kuzitrin River	4/11/75	86	46	35.0	132	0.97	136
Noxapaga River	4/11/75	65	27	29.0	92	0.5	190
TOTAL KUZITRIN DRAINAGE		370	156	30.0	526	3.5	150
GRAND TOTAL ALL AREAS		809	282	25.8	1091	29.5	37.0

*Koyuk River counts low; may have seen only half of moose present; percent calves low because most were bedded down in heavy timber.

MOOSE

SURVEY-INVENTORY PROGRESS REPORT - 1975

Game Management Unit 23

Seasons and Bag Limits

Unit 23	Aug. 1-Dec. 31	One moose; antlerless moose may not be taken prior to Sept. 1

Harvest and Hunting Pressure

A statute passed by the State Legislature in 1975 set new criteria for antlerless moose seasons. Because these criteria were not met prior to August 1, it was illegal to take antlerless moose during the 1975-76 hunting season.

The reported harvest of bull moose during the five month open season was 76. Although game regulations required the use of moose harvest tickets, compliance throughout the entire unit was very poor. For example, the number of moose hunters permanently residing in Unit 23 was conservatively estimated at 600, yet the number of moose harvest tickets issued in this area was only 166.

Spot checks at villages along the Kobuk and Noatak Rivers suggested the average harvest per village was about 8 to 10 moose. Based on these data the Unit 23 harvest during the 1975-76 season was estimated to be 150 moose. Among hunters completing harvest tickets 46 percent were successful.

Hunters prefer to take moose early in the season, when they consider the meat most palatable. This pattern was reflected in the distribution of the kill by season. Ninety-three percent of the successful hunters took moose during the first 8 weeks of the season, and 76 percent of this kill occurred in August.

Hunters utilizing aircraft and boats accounted for 28 and 58 percent, respectively, of the 1975 moose harvest. Most hunters utilizing aircraft depended on the community of Kotzebue as a base of operation, but those using boats resided in villages along the Kobuk River.

Composition and Productivity

Aerial surveys were conducted in the spring when moose were most concentrated on their winter ranges along the major rivers. Because of high winds, inadequate aircraft, poor terrain and other factors, only cursory surveys were conducted in many areas. Spring counts usually provide a reliable assessment of the total population, but

during the 1975 surveys less than one half the moose present probably were sighted. Appendix I summarizes findings of the 1975 moose surveys.

Short yearlings comprised 21 percent of the 874 moose observed during spring. The highest productivity occurred along the lower Noatak River where 29 percent of the animals counted were calves. Lowest production (18% calves) occurred along the upper Kobuk River. Although specific data are lacking, condition of winter range and distribution of wolves may be primarily responsible for the observed differences in production between these two drainages. Within the Kobuk region wolves were abundant and winter moose browse limited, but in the lower Noatak area wolf density was low and winter browse abundant along the broad river valley.

Fall composition surveys were limited by unfavorable weather and shortage of manpower. To monitor the effects of fall hunting, a November survey was conducted in the lower Noatak basin during which 114 moose were observed. Calves comprised 30 percent of the moose counted, and the age-sex composition of the herd was 60 bulls per 100 cows and 68 calves per 100 cows. Although this area received relatively heavy pressure from hunters using aircraft and boats, the high ratio of bulls to cows suggested hunters had little impact on the expanding moose population.

Based on the results of spring and fall surveys the moose population in Unit 23 was estimated at a minimum of 1500 animals; the actual number may have exceeded 2000.

Management Summary and Recommendations

Surveys during the past few years have indicated a stable or perhaps declining moose population in the eastern half of the unit and an expanding population in the northwestern portion, principally in the Noatak drainage.

The harvest was relatively low because most hunting pressure was concentrated in the early portion of the season when moose were most difficult to obtain. Assuming a minimum of 2000 moose and a maximum yearly harvest of 300 hunters took no more than fifteen percent of the population. Annual recruitment averaged 20 percent in areas surveyed. Wolves were abundant throughout the unit, but appeared to rely heavily on caribou as their main food source. Annual moose mortality from predation probably accounts for less than five percent of the population. Hunters have removed many of the resident moose within a 15 mile radius of most villages, but there are many remote drainages where few if any moose were harvested. Available data suggested that more moose could be taken without affecting reproduction or significantly reducing the population.

It is recommended that the current five month season remain unchanged, and that harvest of antlerless moose be allowed (by permit) in all drainages except that portion of the unit west of the Noatak River.

Moose have recently moved into the area west of the Noatak drainage, and, until surveys are initiated to evaluate stocks, it is advisable to maintain conservative seasons and bag limits. Moose densities and hunting pressure should be closely monitored in the Kobuk and lower Noatak drainages.

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Appendix I. Summary of Unit 23 moose composition counts, 1975.

Area	Date	Total adults	Total calves	Percent calves	Total moose	Count time (hour)	Moose per (hour)
Upper Kobuk	2/26/75	38	16	30	54	0.75	72
Kobuk to Walter Lake	3/13/75	66	8	11	74		
Ambler to Shungnak	3/13/75	26	4	13	30		
Kiana to Ambler	3/13/75	62	17	22	79		
N. Fork Squirrel River	3/13/75	37	5	12	42		
TOTAL KOBUK		229	50	18	279	0.75	72
Wulik River	4/3/75	Tracks of 2 or 3 moose					
Kelly River	4/3/75*	14	5	26	19	0.3	63
Kegurok River	4/3/75	62	19	23	81	1.1	73
Noatak (Kougururok to village)	4/3/75*	37	12	24	49	0.5	98
Lower Noatak	4/12/75*	61	25	29	86	1.6	54
TOTAL NOATAK		174	61	26	235	3.5	67
Buckland River	4/10/75	79	10	11	89	1.7	52
Kiwalik River	4/10/75	53	17	24	70	1.0	70
Kauk River	4/11/75	19	4	17	23	0.3	77
Kugarak River	4/11/75	11	9	45	20	0.4	50
Selawik River	4/11/75*	30	12	28	42	0.4	105
Tagagavik River	4/11/75	95	21	18	116	1.0	116
TOTAL SELAWIK DRAINAGES		287	73	20	360	4.8	75
TOTAL ALL AREAS		690	184	21	874	15.8	55

*Poor survey due to high winds; moose mostly in heavy timber.

MOOSE

SURVEY-INVENTORY PROGRESS REPORT - 1975

Game Management Unit 24 - Koyukuk drainage

Seasons and Bag Limits

Unit 24	Sept. 1 - Nov. 30	One moose; antlerless moose may not be taken prior to Oct. 1.

Harvest and Hunting Pressure

A total of 63 moose (all bulls) were reported taken in Unit 24 during the 1975 season. A number of cows were probably taken after October 1, but local native residents are not in the habit of using moose harvest tickets. Therefore, the take of cows was not determined. For this same reason the total harvest figure of 63 must be considered minimal.

The shortened season and lowered bag limit in 1975 resulted in an 18 percent reduction in harvest from that reported in 1974 (77 moose). As stated previously, no cows were reported to have been taken in 1975, although cows comprised 12 percent of the reported 1974 harvest.

Residency status was determined for successful hunters in Unit 24. Residents of local villages took 26 percent of the reported harvest, although this figure, once again, must be considered minimal due to the failure to use moose harvest tickets. Residents of the Fairbanks area accounted for 39 percent of the reported kill, those of the Anchorage area for only 3 percent and those of other areas for 31 percent.

Most hunters residing outside of Unit 24 relied upon airplanes for transportation, while riverboats are used extensively by local hunters.

Composition and Productivity

A spring 1975 survey of the upper Koyukuk drainage indicated poor recruitment; short yearlings comprised only 11 percent of the 118 animals counted. The moose per hour figure was extremely low, with the observer counting only 8.2 moose per hour for 14.4 hours. The survey data for this area reported in the 1974 S&I Report were incorrect in that they were actually collected during spring 1975.

Management Summary

The harvest of moose in Unit 24 during 1975 was relatively high in spite of more restrictive regulations governing season length and bag limit.

Productivity data, although based on a small sample size, are indicative of a stable or a slowly declining population.

It is recommended that annual surveys be conducted to monitor reproductive success and survival of moose in the upper Koyukuk drainage.

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MOOSE

SURVEY-INVENTORY PROGRESS REPORT - 1975

Game Management Unit 25 - Chandalar and eastern Yukon drainages

Seasons and Bag Limits

Unit 25	Sept. 1 - Dec. 31	One moose; antlerless moose may not be taken prior to Oct. 1.

Harvest and Hunting Pressure

A total of 67 moose (all bulls) were reported taken in Unit 25 during the 1975 season. Because native residents of Unit 25 are not in the habit of using moose harvest tickets, any harvest of cows occurring after October 1 would not have been reported. Therefore, the reported take of 67 bulls and no cows must be considered a minimal estimate of the true harvest. The 1975 reported harvest was 60 percent lower than that of 1974 (111 moose). Perhaps this is a result of more restrictive regulations in effect during 1975.

Most hunters relied upon riverboats for transportation while hunting Unit 25.

Composition and Productivity

A winter distribution and abundance survey was flown in late February 1975 along the upper Yukon and its tributaries, including the Kandik, Charley, Nation, Tatonduk and Seventymile Rivers and Woodchopper and Coal Creeks. Calves comprised only 14 percent of 196 moose counted. The observer tallied 22 moose per hour in this area.

Because of the rather small sample size these figures may not be representative of the whole population, but calf survival appears to be fair. Much wolf sign was observed throughout the area, but wolves appeared to be most abundant in the side drainages of the Yukon. The survey data for this area reported in the 1974 S&I Report were incorrect in that they were actually collected during the spring of 1975.

Management Summary

As a result of the more restrictive season the 1975 harvest of moose in Unit 25 was lower than that reported for 1974.

Surveys of the Unit 25 moose population have been infrequent and, due to small sample size, inconclusive, but data available indicate a stable or decreasing population. Wolf predation may be a major factor influencing calf survival in Unit 25.

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MOOSE

SURVEY-INVENTORY PROGRESS REPORT - 1975

Game Management Unit 26 - Arctic Slope

Seasons and Bag Limits

Unit 26	Aug. 20-Dec. 31	One moose (as the result of legislative action, only bulls could be taken after Aug. 31)

Harvest and Hunting Pressure

During 1975, 35 moose were killed and reported in Unit 26 by sport hunters. This represents a decrease from the reported kill of 57 moose during 1974 but is the same as the average annual harvest for the previous six seasons. An estimated 10-15 additional unreported moose were probably killed by residents of the unit and not reported. Hunting pressure throughout the unit was very light.

Composition and Productivity

During April surveys were conducted to determine productivity and numbers of moose on the Anaktuvuk, Chandler and Siksikpuk Rivers and the Colville River between the Killik and Anaktuvuk Rivers mouths. Of 556 moose observed, 420 were adults and 136 were calves born in 1974 ("short yearlings"). No sexual distinction between adults was made during the survey since most bulls were without antlers.

Sex and age composition surveys were conducted on portions of the Colville and Anaktuvuk Rivers during October 1975. In the area surveyed, 130 moose were seen, including 55 cows, 26 bulls, 31 calves and 18 yearlings. If these sex ratios are applied to the spring survey results, the moose counted during the spring can be broken down as follows: 135 bulls (47 bulls per 100 cows), 285 cows, and 136 yearlings (48 yearlings per 100 cows). Also, if the proportion of calves seen during the October surveys was representative of the 1974 calf cohort, survival of calves from 4 to 10 months of age was good, with 48 short yearlings per 100 cows surviving from 56 calves per 100 cows.

Management Summary and Recommendations

At present the moose population on the North Slope is healthy and productive. Vegetation analysis along the Colville River shows little evidence of overbrowsing, an indication that moose are below the carrying capacity of the winter range.

The high yearling recruitment rate could be indicative of an expanding population or high population turnover. If the population is increasing, it could sustain a greater harvest than now occurs. A

substantially larger population is not necessarily desirable in the present situation of limited winter habitat and good moose-range relationships, as indicated by calf production and survival.

Close monitoring of the population should be continued because of the high vulnerability of the moose to overhunting in this area of stunted cover and easy aircraft access. An annual survey of calf survival should be conducted to assess production and possible effects of predation.

No changes in season or bag limit are recommended.

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