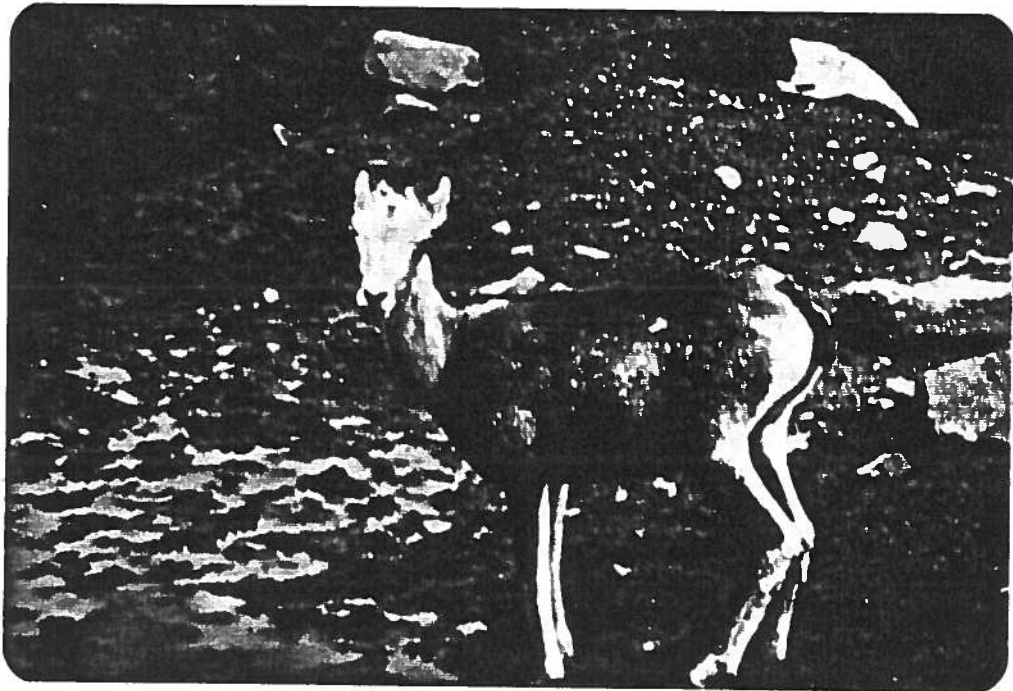


STONE SHEEP SURVEYS
IN MUNCHO LAKE AND STONE MOUNTAIN
PROVINCIAL PARKS. MARCH 18, 19, 1985.



Ewe at Mineral Lick, June 1972.

W. G. Hazelwood - Alpenglow Resources

MUNCHO LAKE AND STONE MOUNTAIN PARK WILDLIFE SURVEYS - MARCH 1985

INTRODUCTION

The survey of Muncho Lake Park and Stone Mountain Park took place on March 18 and 19, 1985. It was conducted on a contractual basis with Alpenglow Resources of Terrace, B. C. The helicopter was a Jet Ranger supplied by Highland Helicopters in Fort Nelson. A Parks Branch vehicle was utilized in support while in the field.

A total of 14 hours was spent in the helicopter, three hours were required for ferry time (2 hours) and fueling or travel between Parks. Survey time was equally split between Stone Mountain Park and its proposed extension area and Muncho Lake Park.

The consulting biologist's appreciation is extended to Pilot Phil Enns, and Parks personnel, Robin Soule and Don Gough; who acted as observers on alternate flights during the survey. Their data recording offered a valuable cross-check for accuracy of both maps and tape recording carried out while classifying animals.

Weather is often variable during late winter flights and this survey was no exception. March 18 was clear and -11° C and a decision was made to extend our operating time to take advantage of good sightability and longer days. Consequently we left the Fort Nelson Airport at 7:15 A.M. and shut down our surveys at 6:45 P.M. On March 19 we started at 8 A.M. and finished the surveys at 12:30 P.M. in sunshine. By 1:15 P.M. the clouds were on the mountain tops and it was beginning to snow in Stone Mountain Park.

OBJECTIVES

The primary objective was to carry out a wildlife survey in Muncho Lake Park and Stone Mountain Park area with special emphasis on Stone sheep. Wherever possible a classified count was conducted and all sightings accurately recorded on a contour map. Special attention was given to covering areas surveyed in February and July 1984 in order to facilitate accurate comparisons of populations and range usage in and adjacent to the two Parks. Comments and suggestions to improve future surveys will also be included near the end of the report.

METHODS AND PROCEDURES

Much of the procedure of observing and classifying wildlife from aircraft has been standardized in the literature. However the systematics are still open to improvements as equipment, techniques and individuals become more sophisticated.

In the surveys of the two Parks one observer was left on the ground in order to facilitate greater lift to the helicopter during close work along the cliffs and canyons of the sheep range. This arrangement worked very well as the observer space behind the pilot is superfluous except on level terrain or in tight valleys. This precaution may have saved the machine during downwind classification of the large caribou herd on the southern edge of Muncho Lake Park.

Again as discussed in the report "Mountain Goat Surveys on Spatsizi Wilderness Park, July, 1984" a low approach to the hillside was taken initially, forcing animals to retreat uphill and offering some reassurance to animals higher up and feeling secure at that altitude. Subsequent sweeps across the face of the mountain block upwards usually proved most effective as visibility is best looking upward from this machine. Often an optimum elevation near the top of scree slopes required only a single pass to cover an entire hillside or narrow valley. Vertical cliffs and benches (i.e. above the Toad River) require more intensive effort as shrubs and clumps of krummholz offer many hiding places if animals are not seen on the first pass.

Initial discussions with the pilot in Fort Nelson emphasized the need to approach animals from below and the approach over escape terrain so as to allow faster and easier classification and lessen the amount of prolonged stress on sheep in particular. In only two cases was this not achieved and they involved larger groups already in rugged terrain. In one instance 14 sheep had to be flushed from a single cave, but when they left one by one; classification was extremely easy to achieve. Many survey teams still do not appreciate the foregoing and its implications to the wildlife involved, thus animals are often harrassed unduely. Forgive the emphasis but experienced observers can classify quickly and safely when the helicopter approaches from behind and below; towards animals moving uphill and away from escape terrain.

The 8 tables in this report are not at all similar to those in the earlier surveys. They are however, able to be compared directly with previous survey data as requested by Parks Branch staff. The weakness of comparison lies in the earlier data base which is not as complete as this survey provided. For instance tables 7 and 8 provide composite classified counts of all ungulates seen on the entire survey. While this information is of limited value to Parks Branch, it is the management basis for decisions made by the Wildlife Branch and thus ultimately ~~concerns~~ the Park management as well.

There will be a section on comparisons and references to earlier surveys by this author and by Wildlife staff back to 1968. Although much of it is sketchy, at least it will be on record in Region.

HISTORICAL SURVEYS AND REPORTS

Previous surveys adjacent to both Parks were carried out in 1968, 1975 and 1978 but coverage of Park areas were only incidental to the main survey areas to the northwest. Specific sightings of interest are as follows:

February 1968. Cessna 172 - The flight line surveyed the subalpine ridge north of Rhododendron Creek and immediately south of the Racing River bridge and 4 sheep were recorded here. This provides some historical perspective and continuity of range use as our survey recorded 23 sheep in the same location in 1985.

February 1975. Cessna 185 - Only sheep trails were observed along with some tracks on NE corner of Muncho Lake Park.

February 1978. Jet Ranger Helicopter - Six sheep were recorded across the headwaters of Sulphur Creek from Muncho Lake Park boundary. As this and the Park sheep range is contiguous it is suggested that these animals would utilize the Trout Creek mineral licks and the Park summer ranges in between as lambing areas. Three caribou were also observed due East of the outlet of Muncho Lake on the height of land. Sheep tracks were recorded here at the same time.

Additional surveys of an intensive nature were conducted in February 1984 - Jet Ranger and July 1984 - Jet Ranger. These reports will be referred to throughout this report as comparisons of similarities and differences are discussed.

Another source of data since 1975 is the compulsory reporting computer program of the Wildlife Branch. Unfortunately it only records mortality of Class IV rams but it is one manageable component in Parks and elsewhere. In 1976 for instance Muncho Lake Park had at least 12 rams harvested (3 in Nonda Creek, 3 in 465 Mile Creek, 4 in 472 Mile Creek and 2 in 475 Mile Creek).

Stone Mountain Park had at least 4 rams harvested (2 in 113 mile Creek, 1 on Mount St. Paul and 1 on McDonald Creek). The Wokkpush area had at least 2 rams taken in 1976 (both in Develin Creek). Similar information should be available for every year since then.

A paper published in 1978 entitled "Provincial Parks and Stone Sheep" by this author estimated the 1977 population of Muncho Lake Park to be 110 sheep within the boundaries. Forty sheep was the estimated resident population of Stone Mountain Park for 1977.

The last source of data on Park wildlife came from the "Golden Circle Study" by P. J. Dooling, et al, in which this author conducted field work and wrote the narrative for wildlife values in 1972. The pertinent quotes are as follows:

"Mountain goat populations are scattered throughout the Rocky Mountains with the only concentration areas being small areas on the red bluffs west of Muncho Lake and on what the locals call Goat Mountain near Mile 482... Goats summering on the rocky slopes here can be seen from the highway."

From the discussion on "Wildlife Oriented Sites Within the Corridor" comes the information on mineral licks. " The mineral lick at Mile 438 near the Toad River is frequented by mountain sheep near the roadside. Two rams were also seen at this lick by Brian Price and Roger Norrish (Parks Branch) on June 17, 1972."

"Mineral licks at Mile 472 are heavily utilized by mountain sheep, less heavily by moose, elk and caribou. Sheep are frequently photographed by tourists as they cross the highway at this point. They seem quite tame as this is a "No Shooting" area. Twenty were seen here by the author on June 18, 1972".

"Mineral licks at Mile 478 are also utilized by mountain sheep. Fifteen to twenty sheep were seen by Brian Price and Roger Norrish on June 21, 1972". The only other observation of interest here was the sighting of two elk with one calf on top of one of the timbered knolls above the shore of Muncho Lake during the same June period in 1972. Interestingly 8 elk were recorded at Toad River in February 1984 during winter surveys.

The preceding resume of pertinent reports then sets the stage to evaluate and compare the results with that contained in this report.

RESULTS

Map I contains the flight lines and wildlife sightings for Muncho Lake Park on contour maps of scale 1:250,000. The survey was conducted on March 18 and 19, 1985.

The Stone sheep observed within Muncho Lake Park are recorded in Table I. Because of the Park boundaries lying on heights of land it is recommended that Table II be used in evaluating sheep populations for the Park. This table contains all sheep in and on ranges contiguous with those in the Park. If sheep that utilize Spring, Summer, Fall ranges and mineral licks within the Park can be thought of as "Park Sheep" from a management perspective then Table II undoubtedly gives a closer evaluation of the actual numbers present. If "Park Sheep" are defined as never leaving the Park on a seasonal basis then Table I is a better reference.

MAP I "Flight lines & Sightings
for MUNCHO LAKE PROVINCIAL PARK-
March 18 & 19, 1985"

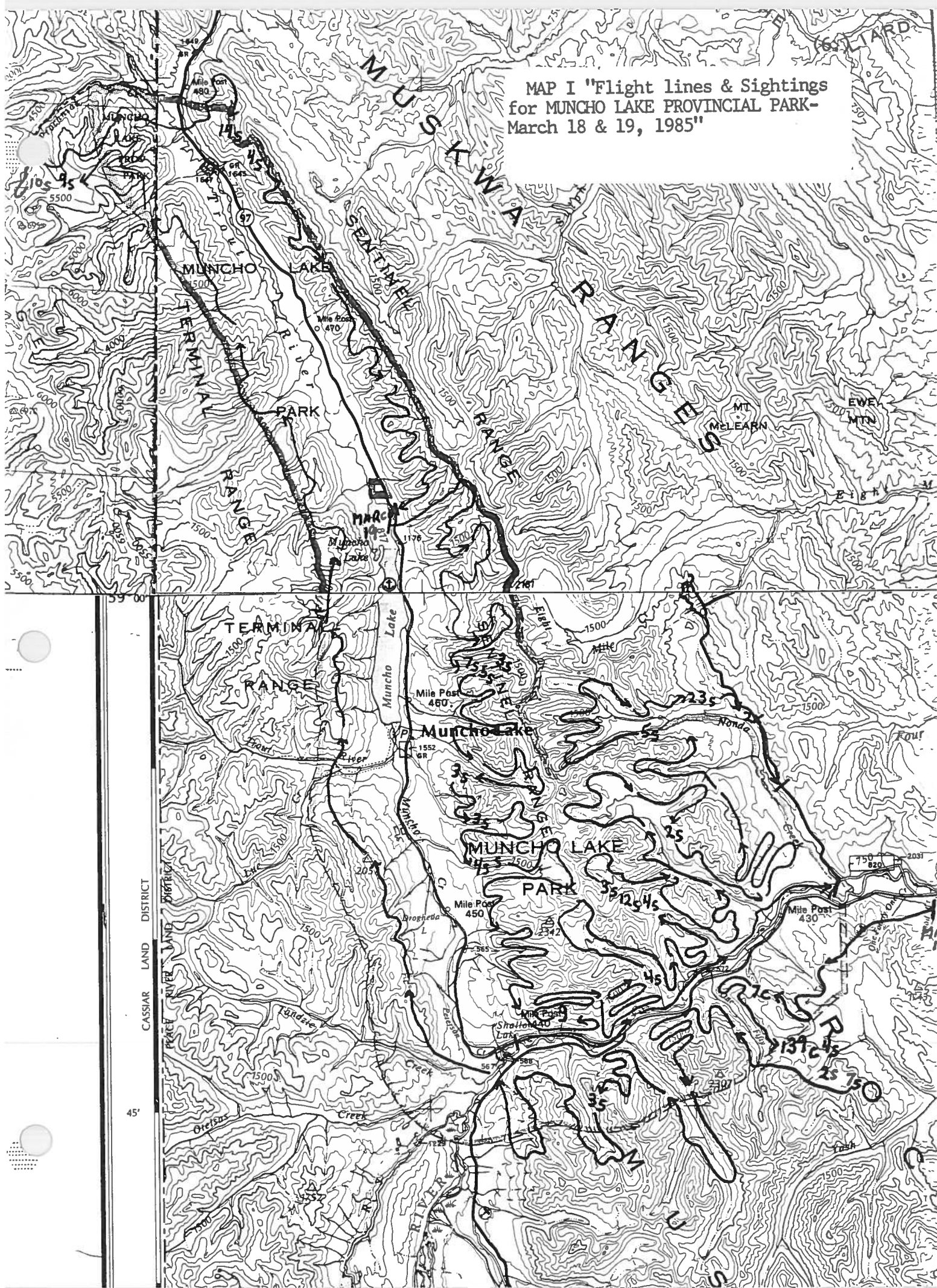


TABLE I. STONE SHEEP OBSERVED WITH MUNCHO LAKE PROVINCIAL PARK

GROUP SIZE	MALES				FEMALES	YOUNG OF YEAR	YEARLING
	I	II	III	IV			
3					1	2	
14		4	2		4	4	
4					2	2	
7		1			4	2	
5	1				2	2	
3		3					
3			1		1	1	
3		1	1	1			
4					3		1
1			1				
4					3	1	
4					2	2	
12		1			7	4	
3					1	1	1
2					1	1	
5		2		1	1	1	
77	1	12	5	2	32	23	2

RATIO OF COMPONENT GROUPS IN POPULATION OF MUNCHO LAKE PARK

100 females/ 37 males/ 6 yearlings/ 72 lambs

PERCENTAGE OF COMPONENT GROUPS IN POPULATION

41% ewes/ 26% rams/ 3% yearlings/ 30% lambs

10% of males are of harvestable size in population

TABLE II. STONE SHEEP IN AND MIGRATORY TO MUNCHO LAKE PROVINCIAL PARK
(Sharing contiguous range)

GROUP SIZE	MALES				FEMALES	YOUNG OF YEAR	YEARLING
	I	II	III	IV			
4*		2	1	1			
3					1	2	
9*		1			5	2	1
10*		1			6	2	1
14		4	2		4	4	
4					2	2	
7		1			4	2	
5	1				2	2	
3		3					
3				1	1	1	
3		1	1	1			
4					3		1
1			1				
4					3	1	
4					2	2	
12		1			7	4	
2					1	1	
5		2		1	1	1	
23*	1	2			13	5	2
2*					1		1
7*		2			3	1	1
129	2	20	6	3	59	32	7

* OUTSIDE PARK

TABLE I AND II

The ratio of component groups in the sheep population in Table I is: 37 males, 6 yearlings and 72 lambs per 100 females compared to 53 males, 12 yearlings and 54 lambs per 100 females for Table II.

In Table I the percentage of component groups in the sheep population is 41% ewes, 26% rams, 3% yearlings and 30% lambs compared to 46% ewes, 24% rams 5% yearlings and 25% lambs in Table II.

In both tables the number of legally harvestable rams is 10% of the total population.

TABLE III. CARIBOU, MOOSE AND MOUNTAIN GOAT IN AND ADJACENT TO MUNCHO LAKE PARK

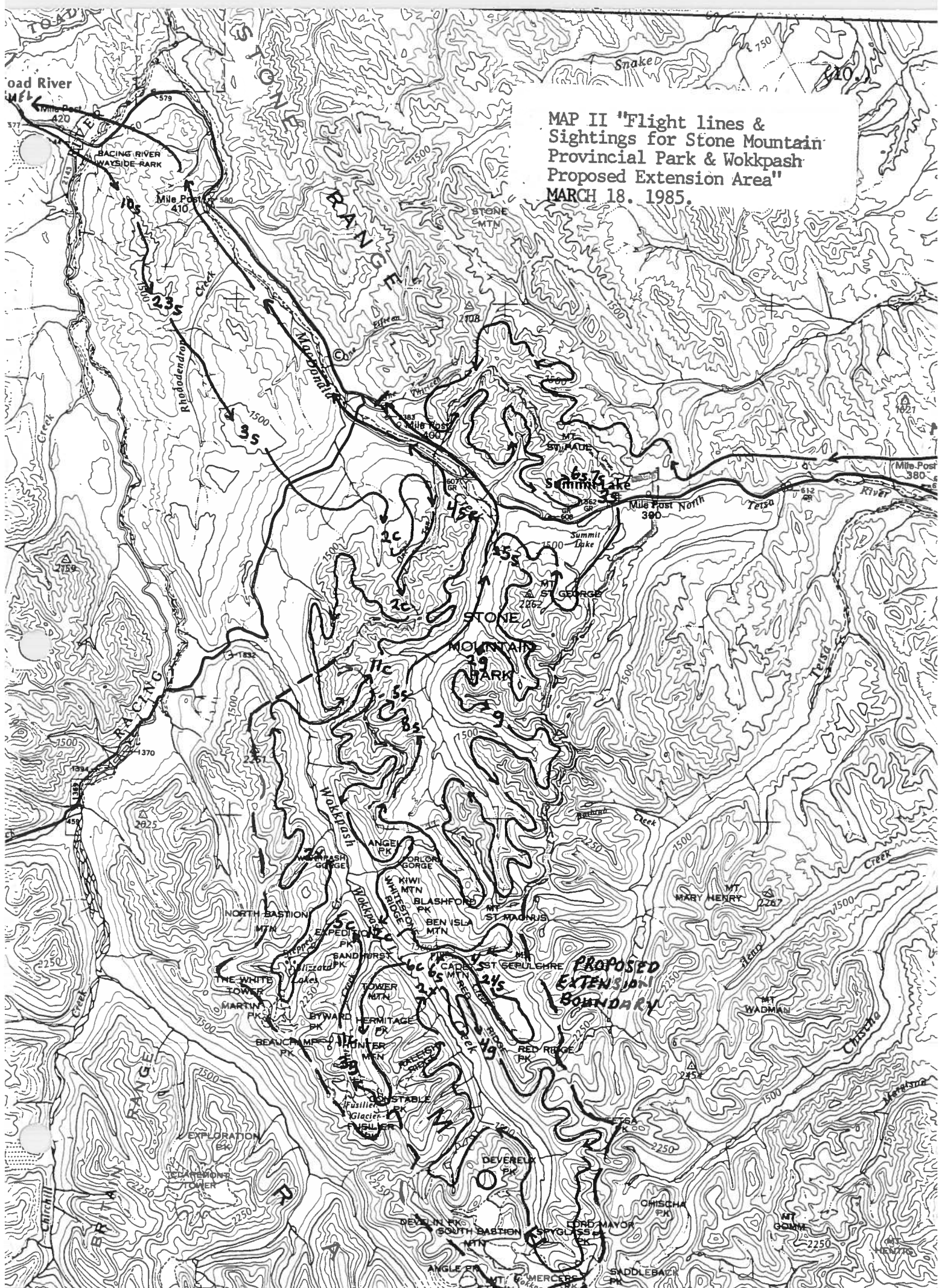
GROUP SIZE	Small	Medium	Large	FEMALE	CALF	YEARLING	UNCLASSIFIED ADULTS
7		1		6			
9				6	2	1	
27	4	9		7	5	2	
33*		2		27	3	1	
7*		3		1	1	2	
31*	2	2		23	2	2	
11*		1	2	3	5		
7*		4		2	1		
6*					1		5
8*					3		5
146	6	22	2	75	23	8	10
<u>MOOSE</u>							
2*				2			
2				2			
<u>MOUNTAIN GOAT</u>							
1				1			
1				1			
*OUTSIDE PARK							

TABLE III

This table contains the sightings of caribou, moose and mountain goat in and adjacent to Muncho Lake Park. Only the caribou were of a significant number to be meaningful in a statistical sense. The ratio of component groups in the caribou population were 40 males, 11 yearling and 31 calves per 100 females. The percentage of component groups in the caribou population is 51% cows, 21% bulls, 5 % yearlings, 16% calves and 7% were unclassified adults.

Of interest during the survey was that 53% of all bulls still retained at least 1 antler on March 19th in Muncho Lake Park. At least 2 large herd bulls still had antlers and they annually lose their antlers first.

MAP II "Flight lines & Sightings for Stone Mountain Provincial Park & Wokkash Proposed Extension Area" MARCH 18, 1985.



MAP II

Map II contains the flight lines of surveys in Stone Mountain Park and in the proposed Wokkpash Extension AREA. There is also a record of sheep included on ranges not associated with any Provincial Park. The flight was conducted on March 18, 1985 and is recorded on a contour map on scale 1:250,000 in this report.

Similar to the boundaries of Muncho Lake Park, the boundaries of Stone Mountain Park and its proposed extension stay on the height of land. Again it negates the value of identifying sheep as being "Park Sheep" when they inhabit the boundary itself. At the request of Park personnel the Park observations are tabled separately in Table 4. Table 5 has more wildlife management importance with regard to local sheep populations as it includes animals in and migratory to Stone Mountain - Wokkpash sheep ranges.

TABLE IV. STONE SHEEP OBSERVED WITHIN STONE MOUNTAIN PROVINCIAL PARK

GROUP SIZE	MALES				FEMALES	YOUNG OF YEAR	YEARLINGS
	I	II	III	IV			
6			1		3	1	1
7		1		1	4	1	
3					2		1
5			1		3	1	
8		1			5	2	
5		1			2	1	1
4			2	2			
38		3	4	3	19	6	3

TABLE V. STONE SHEEP IN AND MIGRATORY TO STONE MOUNTAIN PARK AND PROPOSED WOKKPASH EXTENSION AREA

GROUP SIZE	MALES				FEMALES	YOUNG OF YEAR	YEARLINGS
	I	II	III	IV			
6			1		3	1	1
7		1		1	4	1	
3					2		1
5			1		3	1	
8		1			5	2	
5		1			2	1	1
4			2	2			
24*	1	2			12	8	1
6*		1		1	3	1	
68	1	6	4	4	34	15	4

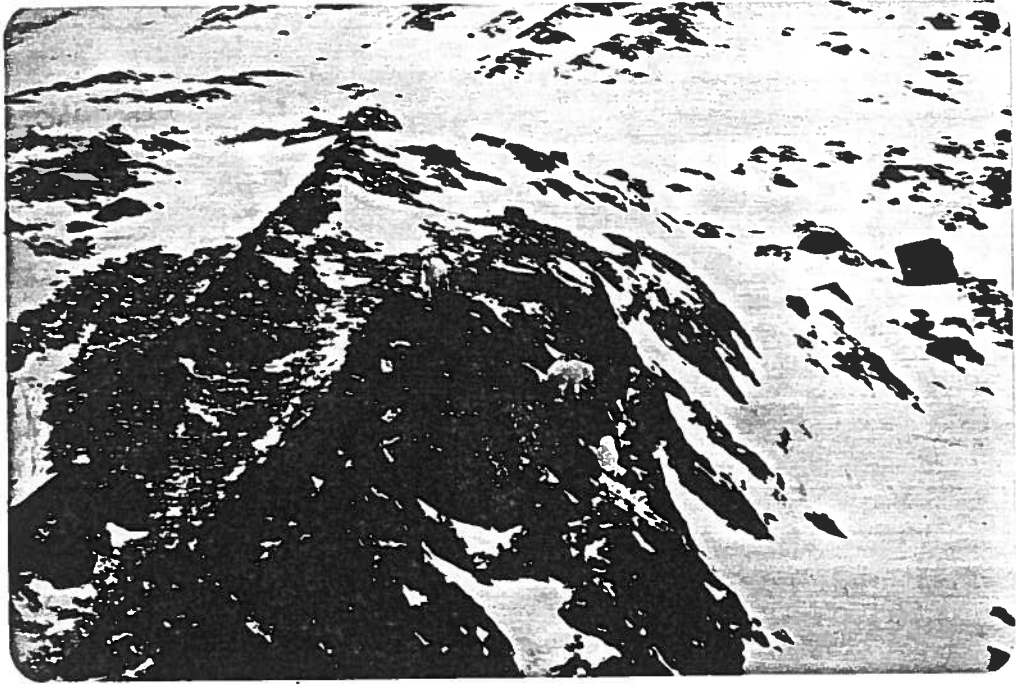
* OUTSIDE PARK



This large band of Stone sheep were found up in Plug Creek. The helicopter has the classifier in the best position to identify individuals as to sex and age as the animals are forced uphill and away from escape terrain.



Note the Class II ram and Class III ram in the center of the band of lambs and ewes. Compare the foreground winter range with the hillside in the background as aspect and winds dictate survival parameters in winter.



These mountain goats (two nannies and one billy) are on the only escape terrain available to them in this area of Fusillier Creek in the Wokkash drainage.



The yearling ewe on the left next to the ewe and two lambs has a ruff of hair on the back of her head. A Class II ram is top center in the picture. Our technique is to classify a group like this and then move on up behind the next group whose tracks are at top left.

The ratio of component groups in the population within Stone Mountain Park is 53 males, 16 yearlings and 32 lambs to every 100 females compared to the ratio of 44 males, 12 yearlings and 44 lambs for 100 females in Table V covering sheep populations in and adjacent to the Park and Extension area.

The percentage of component groups in the Park population (Table IV) is 50% ewes, 26 % rams, 8% yearlings and 16% lambs; while Table V gives 50% ewes, 22 % rams, 6 % yearlings and 22 % lambs.

The percentage of legal harvestable rams in the Park is 30 %. When peripheral groups of sheep to the Park are included (Table V) the percentage drops to 27 %.

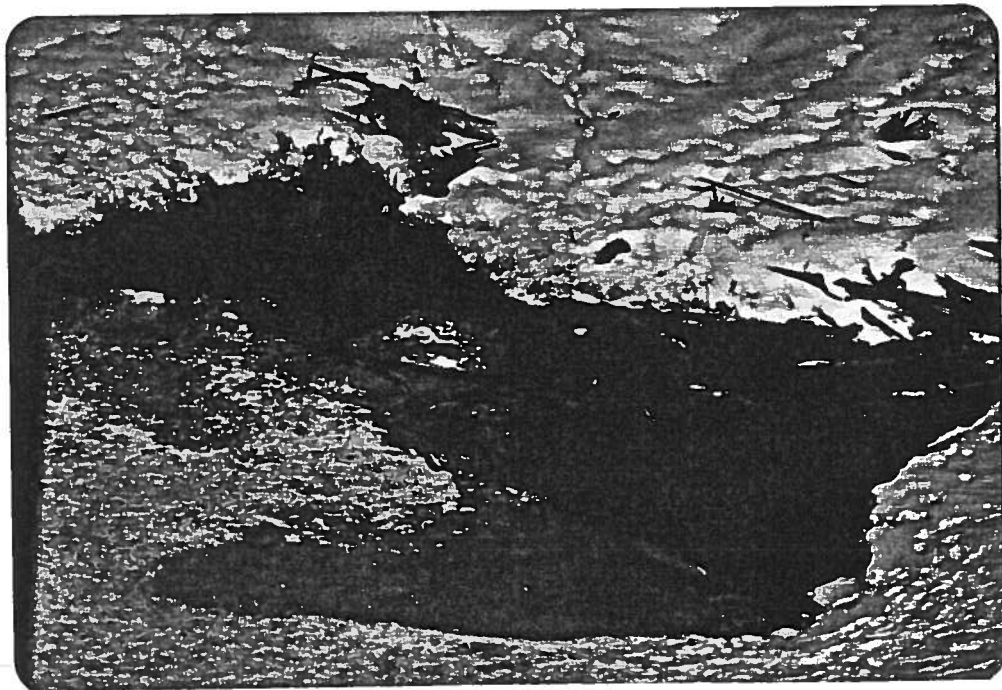
TABLE VI. CARIBOU, MOOSE, AND MOUNTAIN GOAT IN AND ADJACENT TO STONE MOUNTAIN PARK AND PROPOSED WOKKPASH EXTENSION

GROUP SIZE	MALE			FEMALE	YOUNG OF YEAR	YEARLING
	Small	Medium	Large			
<u>CARIBOU</u>						
2*				1	1	
2*				1	1	
12*			1	9	1	1
6*				6		
11*			1	3	5	2
5*				3	2	
11	1			6	1	3
49	1		2	29	11	6
<u>MOOSE</u>						
1*				1		
2*				2		
3				3		
<u>MOUNTAIN GOAT</u>						
2				1	1	
1				1		
4*				2	2	
3*		1		2		
10		1		6	3	

Table VI contains caribou, moose and mountain goat sightings in and adjacent to Stone Mountain Park and the proposed extension area. The ratio of component groups in the caribou population is 10 males, 21 yearlings and 38 calves for every 100 females. The percentage of component groups in the population is 59 % cows, 6 % bulls, 12 % yearlings and 23 % calves. All bulls were antlerless on March 18, 1985.



The view North down Wokkpash Creek. The lake is in the middle background with Mount Blashford on the right.



The warm spring mineral lick in the Southeast corner of Wokkpash Lake was used extensively by caribou this winter.

The moose sample size was too small for statistical consideration. The mountain goat total was also too small for serious consideration but the following numbers are offered. The ratio of component groups in the mountain goat population is 17 males, 0 yearlings and 50 kids for every 100 females. The percentage of component groups in the population are 60 % nannies, 10 % billies, 0 % yearlings and 30 % kids.

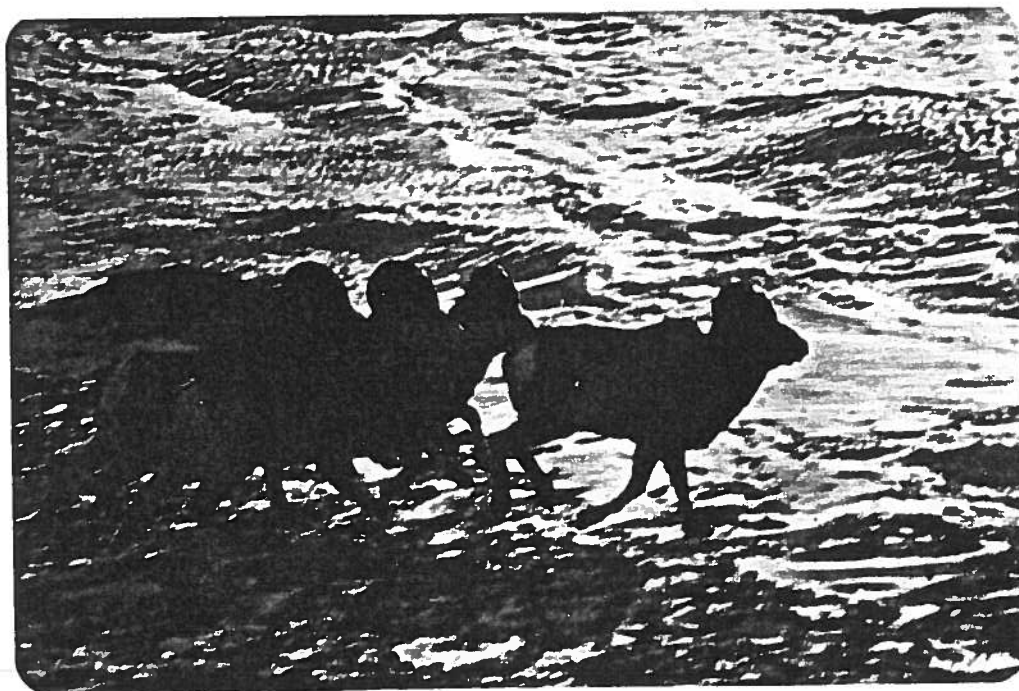
As an additional courtesy mainly for Regional Wildlife purposes, Table VII containing a total survey classified count of Stone sheep is included. Table VIII containing a composite classified count of caribou, moose and mountain goat is also included here.

TABLE VII. COMPOSITE CLASSIFIED COUNT OF ALL STONE SHEEP OBSERVED ON SURVEY

GROUP SIZE	MALE				FEMALE	YOUNG OF YEAR	YEARLINGS
	I	II	III	IV			
4		2	1	1	1	2	
3							
9		1			5	2	1
10		1			6	2	1
14		4	2		4	4	
4					2	2	
7		1			4	2	
5	1				2	2	
3		3					
3			1		1	1	
3		1	1	1	3		1
4							
1			1				
4					3	1	
4					2	2	
12		1			7	4	
3					1	1	1
2					1	1	
5		2		1	1	1	
23	1	2			13	5	2
2					1		1
7		2			3	1	1
6			1		3	1	1
7		1		1	4	1	
3					2		1
5			1		3	1	
8		1			5	2	
5		1			2	1	1
4			2	2			
24	1	2			12	8	1
6		1		1	3	1	
10		2	2		6		
23		1	1		20		
3		1	2				
236	3	29	14	9	119	48	12



These sheep were herded to the right away from escape terrain on the left edge of the picture. There are two Class I and two Class II rams in this band which was split from the larger group for classifying efficiency.



One of the rare mature ram-only groups led by a nice Class IV ram in Stone Mountain Provincial Park.

TABLE VIII. COMPOSITE CLASSIFIED COUNT OF CARIBOU, MOOSE AND MOUNTAIN GOAT DURING SURVEY

GROUP SIZE	MALE			FEMALE	YOUNG OF YEAR	YEARLING	UNCLASSIFIED ADULT
	Small	Medium	Large				
CARIBOU							
TOTALS							
146	6	22	2	75	23	8	10
49	1		2	29	11	6	
195	7	22	4	104	34	14	10
MOOSE							
TOTALS*							
3				3			
2				2			
5				5			
MOUNTAIN GOAT							
TOTALS*							
10		1		6	3		
1				1			
11		1		7	3		

* Small sample size precludes statistical analysis of moose and mountain goat.

The ratio of component groups in the Stone sheep population from Table VII is 46 males, 10 yearlings and 40 lambs for every 100 females. Percentage of component groups in the population is 51 % ewes, 23 % rams, 5% yearlings and 21 % lambs. The survey indicates that 16 % of all males are of harvestable size (i.e. Class IV)

Table 8 gives composite moose, caribou and mountain goat numbers from the two day survey of both Parks and adjacent areas. Only caribou are treated statistically here. The ratio of component groups in the caribou population is 32 males, 13 yearlings and 33 calves per 100 females. The percentage of the component groups in the population are 56 % cows, 18 % bulls, 8 % yearlings and 18 % calves. 5 % of the adults were not classified.

Other miscellaneous observations were of a golden eagle soaring in McDonald Creek valley, one peregrine falcon in the proposed extension area and 18 ptarmigan observed near One Ton Creek in a single flock.

TABLE IX.

Table I.		
Lambs per 100 adults	=	44
Yearlings per 100 adults	=	4
Class IV rams per 100 adults	=	4

Table II.		
Lambs per 100 adults	=	36
Yearlings per 100 adults	=	8
Class IV rams per 100 adults	=	3

Table III.		
Caribou calves per 100 adults	=	20
Caribou yearlings per 100 adults	=	7
Large bulls per 100 adults	=	2

Table IV.		
Lambs per 100 adults	=	21
Yearlings per 100 adults	=	10
Class IV rams per 100 adults	=	10

Table V.		
Lambs per 100 adults	=	31
Yearlings per 100 adults	=	8
Class IV rams per 100 adults	=	8

Table VI.		
Caribou calves per 100 adults	=	34
Yearling caribou per 100 adults	=	19
Large bulls per 100 adults	=	6

Mountain goat kids per 100 adults = 43

Table VII.		
Lambs per 100 adults	=	28
Yearlings per 100 adults	=	7
Class IV rams per 100 adults	=	5

Table VIII.		
Caribou calves per 100 adults	=	23
Caribou yearlings per 100 adults	=	10
Large Caribou bulls per 100 adults	=	3*

* This total is likely larger as antler size is main criteria and 50 % of all bulls had dropped antlers.

Mountain goat kids per 100 adults = 38

DISCUSSIONMUNCHO LAKE PARK

Most of the sheep observations showed the animals in mixed groups of males and females which is unusual. Usually mature rams stay by themselves except during the rut or perhaps in conjunction with mineral lick use. The large mixed band above Prochniak Creek likely was proceeding to or from the nearby lick area when surveyed last July (Observation #31 - 40 sheep).

In Bryan Webster's covering letter (September 20) for the July survey report he infers that many sheep move west or southwest to summer. This is certainly true in the Sentinal Range where sheep winter outside of the Park, then lamb and utilize licks within the Park in Spring and Summer. The reverse is true in the Terminal Range where sheep winter West of the Park boundary then move East and Northeast into the Park. Again mineral licks along Trout Creek are probably responsible for a lot of these local sheep movements. The Northeast side of this Range was snowbound during our survey with drifted and plastered snow cover. Only above Prochniak Creek was the wind able to remove snow effectively and here we found 19 sheep outside of the Park. They were the only sightings on the West side of Muncho Lake Park.

A comparison of the February 1984 sightings and our survey in 1985 exhibits the distributional difference between a low snow year 1984 and a moderate snow year in 1985. More sheep were in the Park on the West side in 1984 than in 1985. Coincidentally 19 sheep were recorded by both surveys above Prochniak Creek.

The 1984 winter survey recorded 35 sheep along the benches of South aspect above the Toad River whereas our 1985 flight recorded only 4 sheep in the same area. Tracks of another small band were seen here intermittently on the wind-blasted snowpatches but the animals could not be located.

Caribou being much more free-ranging, are hard to document by area and season with any certainty. The Nonda Creek area appears to be summer range according to the surveys. Conversely the limited range where we found 139 caribou would not support them for long and they were not there in February 1984 surveys. This epitomizes the potential dangers

of one-shot inventories for management of mobile species.

In the low snow year of 1984 moose were found up on the hillsides in Muncho Lake Park. Our survey found none but moose tracks were seen on the East side of Muncho Lake.

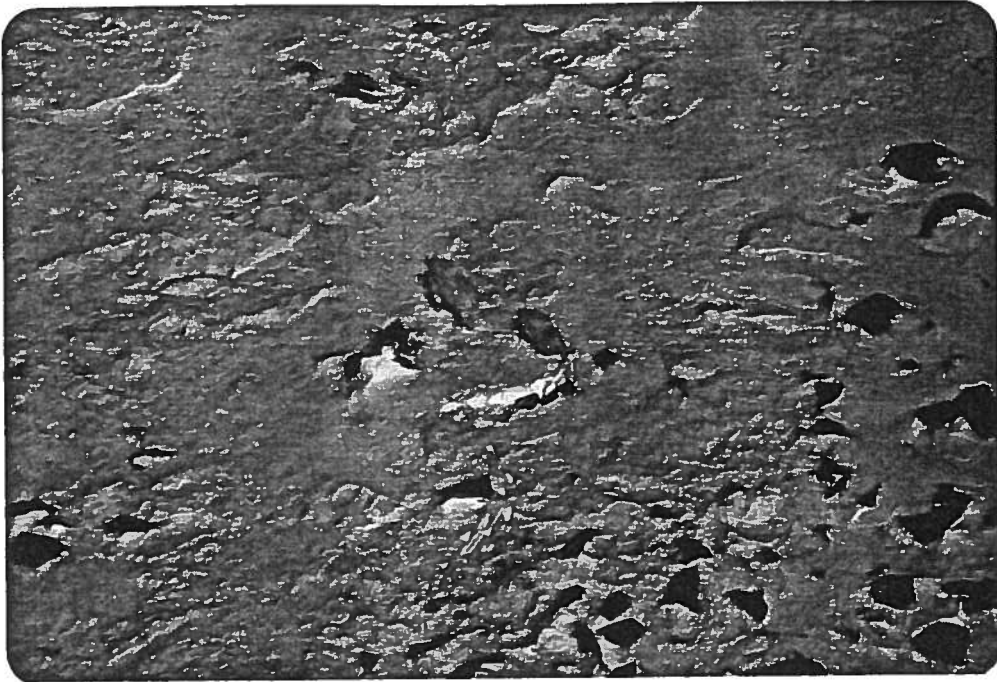
The mountain goats seen in 1984 and 1985 are all additive. The 4 goats in Lue Creek (February 1984) were not sought out in 1985 and could well have still been there. The two goats (July 1984) West of Muncho Lake and the one we observed (March 1985) plus tracks of two others total up to a minimum of 9 in the adjacent area to or within Muncho Lake Park. This is a marginal population at best and due to the visual corridor from the highway, hunting is likely a strong limiting factor. Local information of historic numbers may refute or agree with this prognosis. The Park alone has the range potential to support hundreds of mountain goats and they would be a welcome addition to the recreating travellers as well.

STONE MOUNTAIN PARK AREA

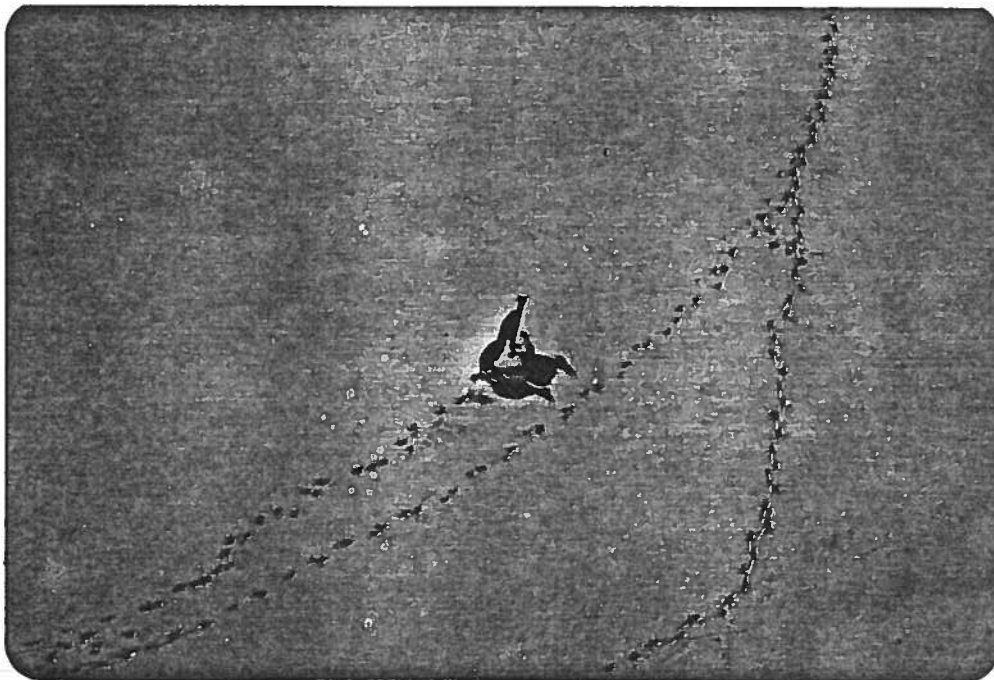
The three surveys show relatively constant Stone sheep numbers on the Mount St. Paul mountain block. 10 sheep (February 1984), 18 sheep (July 1984) and 16 (March 1985). In terms of distribution all 3 maps of the different surveys are in agreement with regard to sheep populations. The only discrepancy was that the February 1984 survey did not cover the upper Wokkpash nor the Southwest side of the drainage.

Caribou appear to range in the Wokkpash area throughout the year. McDonald Creek seems to be mainly a summer range in its upper reaches. The warm springs at the southeast corner of Wokkpash Lake is most probably a year-round mineral lick for caribou as 6 were found there in March with innumerable other tracks. Summer use could extend to moose, mountain sheep and mountain goat as well. The clay banks are extensively eaten back as well but winter caribou use is usually of slush in these sites. The guides cabin just up in the timber may be a source of conflict to wildlife usage here.

Moose sign and 4 moose were observed in the low snow 1984 survey but not in 1985. Our March 1985 survey observed heavy moose and caribou sign down the larger valley bottoms such as the Racing River and McDonald Creek but we did not investigate these areas.



This nanny and kid can stay on the surface of the wind-compressed snow if they move slowly. Note the kid is in trouble where the nanny broke through!



Conversely the shallow snows on the ice of Wokkash Lake allow the cow and calf caribou to run full out back to the rest of the herd.

Mountain goat were also widely dispersed and hard to find in all three surveys. Two were seen in February 1984, five (July 1984) and ten in March of 1985. Stone Mountain Park has very few goats and again this may be a reflection of easy visual access and heavy hunting pressure from the highway and upper McDonald Creek. A review of the limited entry computer printouts for mountain goat harvest may verify this hypothesis. The vegetative cover of this Park is very sparse or at least it appears so in winter - it may be that food is a limiting factor.

POPULATION DYNAMICS

Some of the comparisons between surveys have little meaning due to the habits of the individual species involved. Sheep for instance, run together for protection from an aircraft so group size has little meaning unless you can eliminate the introduced bias. The group sizes are all in the tables but then so are the bias.

The Stone Sheep were found at low levels in side valley bottoms to 6500' elevation on windswept saddles in ridges. Surprisingly they were found on North-facing aspects a number of times where wind had swept away the snow.

The ratio of lambs to ewes in 1985 is good. Judging by the lack of yearlings found in the populations it is obvious that mortality is greatest from lamb to yearling. The low number of Class I rams is also a reflection of this. No sick or injured sheep were observed on the survey although several ewes were in possession of only one horn.

Based upon my previous experience I would suggest that we were able to observe 75 % of the wintering sheep in the Parks. This equates to a resident winter population estimate of 96 sheep in Muncho Lake Park and 48 sheep estimated in Stone Mountain Park.

The February 1984 survey found 120 sheep in the Park during a low snow year (i.e. "18 inches of snow at Muncho Lake"). We had approximately 40 inches at the helicopter fuel cache. I would suggest that 1985 is a more typical winter than was 1984 and that 96 is closer to a realistic estimate than is 150 sheep in a wintering residency of Muncho Lake Park. Similarly 48 is a more realistic total for sheep in Stone Mountain Park than 75.

If Table II is used as a comparison then 1984 survey estimate is 156 sheep in and adjacent to the Park. In 1985 our survey estimate is 172 sheep in and adjacent to the Park. For Stone Mountain Park 1984 offers an estimate of 96 sheep in and adjacent to the Park while 1985 gives a total of 77 sheep. In summary, less sheep will winter in the Parks during a moderate or bad winter than will stick around in an easy winter. Unless all the critical winter ranges are within the Parks.

Only 5 groups out to 30 were ram bands during our survey however 8 other groups had at least 1 Class III or Class IV ram present. This is quite unusual in my experience where adult rams associate with nursery groups to this extent in the winter.

Caribou bulls as mentioned previously, were antlerless in Stone Mountain Park yet over half (53 %) still retained antlers in Muncho Lake Park only 50 air miles away. The March 18 and 19 dates are very late for antler drop. The genetics govern this phenomena according to the literature but it was noted that better alpine range exists at Muncho Lake Park where the bulk of the animals still were. In Wokkash and Stone Mountain Park 45 % (22 animals) were down near the lake feeding on shrubs, etc. which would be a poorer food source if nutrition was a factor or the animals condition in general influenced earlier antler drop. Only one large bull at Muncho Lake Park appeared to be unhealthy - he had a bad leg.

Moose ranges were not actively surveyed during the flights. Extensively tracked timber/swamp/fen areas in valley bottoms were often seen from high up and this could be attributed to either moose or caribou.

Mountain goat populations are very depressed in and around both Parks. The habitat appears to have good potential for this species and perhaps a habitat evaluation followed by a transplant of 10 to 20 animals might be in order. Low numbers mitigate against a natural increase particularly if this species is left open to hunting in and around the two Parks.

Miscellaneous observations consisted only of raptors and their prey birds. No sign of wolves was noted except for one track in the headwaters of McDonald Creek that may have been a single wolf. Wind erosion of the tracks negated positive identification.

RECOMMENDATIONS

1. That future winter surveys expand their coverage to include the South slopes of Tetsa River.
2. That future winter surveys expand their coverage to the Northeast side of the Sentinel Range and the West side of the Terminal Range.
3. That mountain goat harvest be reduced or eliminated in both Parks and adjacent areas.
4. That a transplant of Mountain Goat be considered to Muncho Lake Park in the vicinity of Mile 438 mineral lick on Toad River.
5. That a Spring and Summer census be conducted at the Muncho Lake Park mineral licks for Stone sheep in attendance after lambing.
6. That consideration be given to conducting a survey during the rut in November. Weather will be a problem.

CONCLUSIONS

One major conclusion based upon our winter survey is in agreement with comments made in the "Discussion" of the February 1984 report particularly in the second paragraph. Here an assessment is made of the low snow winter and the possible atypical results that were recorded. If most critical winter ranges are outside of the Park then it is reasonable to project that more sheep would and could return to the Park habitat; if indeed they were ever forced to leave. Further winter survey work is required on an expanded basis if the winter Park population is to be defined for management.

The other major conclusion reached was the urgent need to react to the absence of mountain goats in both Parks. Initial investigations of local sources is essential to document historic use. Then, if it is in the best interests of the Parks involved, to actively assess the range potential for restocking and to close any species harvest in or adjacent to the Parks. Does the Parks Branch want a viable population of mountain goats in Stone Mountain and Muncho Lake Provincial Parks for viewing and recreational hunting? If so then intensive management techniques must be implemented to achieve a population level that will support these uses.

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TAPE TRANSCRIPT - G. HAZELWOOD - MARCH 18 & 19, 1985
WINTER SURVEYS - STONE MOUNTAIN AND MUNCHO LAKE PARKS

STONE MOUNTAIN PARK - Clear -11°C

Take-off 7:15 A.M. March 18, 1985 Fort Nelson Airport - Highland Helicopters.

PILOT - Phil Enns

OBSERVERS - Robin Soule, Don Gough - Provincial Parks Personnel
Grant Hazelwood - Alpenglow Resources, Biologist

Start survey on N E corner of Stone Mountain Park at 5600' elevation, wind-swept slopes, very little vegetation above treeline at 4800'. Desolate area, snow crusted by wind, extensive rock. Flying optimum contour low on alpine counterclockwise around mountains to put observers (2) next to hillside. Pilot is good - follows directions well.

Flying outside N. boundary of Park. Some sheep summer trails in scree slopes. Good hiking country in summer.

Dropping down One-thirteen Creek into McDonald Creek vally. Will work our way along south slopes of Mount St. Paul towards Summit Lake.

6 sheep - 1 Class III Ram, 3 ewes, 1 lamb, 1 yearling female

Another group of sheep in same side valley above Summit Lake.

7 sheep - 1 Class II and 1 Class IV Ram, 4 ewes, 1 lamb

Completing circuit of mountain block at 6000'.

3 sheep - 2 mature ewes, 1 yearling ewe

Surveying near transmitter site N. of ~~Mount~~ St. George.

5 sheep west and below transmitter above McDonald Creek ~~on low~~ on low ridges, bare hillside.

1 Class III ram, 3 ewes, 1 lamb in group

Lot of bare rock in McDonald Creek in W. facing basins. Looks like good summer habitat, summer trails visible in scree.

1 golden eagle soaring in McDonald Creek valley.

2 goats - nanny and kid, in side drainage found in deep drifted snow area - were breaking through crust and wallowing. Animals in really good shape.

Tracks in cliffs 1/2 mile further down valley, appears to be a single goat here but likely hid when we first went by up the other side of valley.

One nanny goat in scree slopes on valley bottom at 6000', compacted snow in draw - she was breaking through wind ^{crust} when she ran.

Scattered tracks near head of McDonald Creek, wind obliterated. Likely 2 - 3 goats here as tracks are only visible in protected areas - hard to know how old tracks are.

One fairly fresh track going down centre of valley - may be wolf checking out this area.

8 sheep - 1 Class II, 5 ewes, 2 lambs

5 sheep - 1 Class III, 2 ewes, yearling female, 1 lamb in rocks

4 sheep - 2 Class III rams, 2 Class IV rams (one ram is 40-42 inch curl)

Time is 12 noon - fuel up at Toad River Lodge and have lunch.

Have fueled up and will now work in proposed Park extension into Wokkpash Creek drainage - famous for its Hoodoos.

Passing the Racing River Bridge, spotted sheep on N.E. trending bare narrow ridge - will count and classify.

1 ewe, 2 class II, 2 class III, 4 ewes, 1 ewe

Further along ridge southwards above Rhododendron Creek.

1 Class III, 1 lamb, 20 ewes, 1 Class II ram

3 rams - 2 class IV, 1 class III on isolated mountain S. of Rhododendron Creek and W. of McDonald Creek (5200') rocky butte formation.

Cow and calf caribou on flatter plateau lands immediately beside One Ton Creek but outside Stone Mountain Park.

2 caribou in headwaters of One Ton Creek - cow and calf (cow was antlerless)

Caribou in middle of Wokkpash Lake - cow and calf.

Another 10 caribou feeding just up in brush above LAKESHORE.

1 mature bull, 1 yearling bull, 8 mature cows

Up in side creek called Plug Creek 4 sheep - all ewes.

24 sheep - 1 Class I, 2 Class II, 12 ewes, 8 lambs, 1 yearling ram

On point of Red Ridge - 6 sheep - 1 Class IV, 1 Class II, 3 ewes, 1 lamb

4 goats on Red Ridge - 6800' elevation 2 nannies and 2 kids

1 cow moose on foot of slide at S. end of Wokkpash Lake.

On shore of lake is a warm spring site tested temperature of water is +2°C. The cold lake likely moderates the spring temperatures.

It is an active lick for caribou as soil is eaten as well as slush.

6 caribou - all cows were at lick and stood 200 yards away and watched while we landed.

3 goats - 1 medium billy, 2 nannies in Fusillier Creek.

Caribou - 1 yearling bull, yearling cow, 3 cows, 5 calves, 1 mature bull all were on bench just downstream of goats in Fusillier Creek. All cows antlered. Up in Blizzard Lakes and Stepped Creek - pretty valley 5 caribou in here - 3 cows, 2 calves (one calf had antlers)

One peregrine falcon above scree slopes dodging to avoid us - likely has a nest site in the cliffs here as March is nesting time for falcons like gyrs and peregrines.

2 cow moose wintering in a little hanging valley just off Wokkash Creek near Wokkash Gorge. Extensive tracks.

11 caribou - 1 calf, 1 small bull, 3 yearlings, 6 cows on W. tributary of McDonald Creek.

18 ptarmigan seen near One Ton Creek - this completes Stone Mountain Park. Landing to refuel at 2:50 P.M.

MUNCHO LAKE PARK

Starting at south-east corner of Park

4 rams - 1 Class IV, 1 Class III, 2 Class II.

On gentle caribou terrain just outside of Park saw some caribou but will circle mountain first before classifying.

7 caribou out on face overlooking highway. North aspect rocky.

6 cows, 1 antlered bull. All Stone Mountain caribou had dropped their antlers. This is first one retaining antlers so late in winter-medium sized bull. This area is very thinly covered bedrock on N. slopes and there is ^{of} ~~more~~ snow drifts and plastered faces.

Large amorphous herd of caribou up One Fifty Creek on Park boundary.

A lot of bulls are retaining their antlers here. I wonder if the better food supply here allows retention into late winter.

9 caribou - 6 cows, 1 yearling male, 2 calves

27 caribou - 13 bulls (8 with antlers), 7 cows, 2 yearling females, 5 calves

33 caribou - 2 bulls (antlered), 27 cows, 1 yearling female, 3 calves

7 caribou - 3 bulls (1 antlered), 1 cow, 2 yearling (male and female), 1 calf

31 CARIBOU - 4 BULLS (3 antlered), 23 cows (1 bald), 2
calves

11 caribou - 3 bulls (1 antlered), 3 cows, 5 calves

7 caribou - 4 bulls, 2 cows, 1 calf

6 caribou - 1 calf, 5 unclassified adults as they joined another group already counted.

8 caribou - 3 calves, 5 unclassified as others joined them before anything except calves were identified. There may have been more on edges of this plateau area as well.

3 sheep - 1 ewe and 2 lambs. Most of the N. end of these mountain blocks are very snowy. These sheep were on a saddle at 5600' in a creek head.

9 sheep - in headwaters of Prochniak Creek, 1 Class II, 5 ewes, 2 lambs, 1 yearling.

10 sheep - 1 Class II, 2 lambs, 6 ewes, 1 yearling. No winter range along W. side of Park in the Terminal Range - heavy snow cover and windswept.

We were going to survey Trout Creek bottoms for moose and caribou but the sun is still high so we will survey the S.W. slopes of Sentinal Range back to Muncho Lake. Lot of trails indicating summer range use at N. end of Park.

14 sheep - deep snow drifts in wind-whipped gullies, rock ridges all bare. Wind must be a limiting factor up here.

4 Class II, 2 Class III, 4 ewes, 4 lambs (This band of sheep retreated into a cave and had to be flushed out to be classified. Took pictures.

4 sheep - 2 ewes, 2 lambs.

Proceeding southwards snow is deeper and also on ridges and faces of mountains. Only a few bare patches.

It is quite evident why sheep are wintering at N. end of Park.

End of flight at Muncho - 6:35 P.M.

MARCH 19 - 8:15 A.M.

Take-off from Muncho Lake. Sky clear - high cloud.

Extensive wind action-crusted snow.

Band of 7 sheep low down on mountain in side valley, gentle slopes near creek bottom 5000' elevation

2 lambs, 4 ewes, 1 Class II ram

5 sheep - 1 class I, 2 ewes, 2 lambs

3 SHEEP - all Class II rams most of these sheep were on north aspect

3 Sheep - 5600' - 1 class III ram, 1 ewe, 1 lamb - on north aspect

3 Sheep in little canyon in creek bottom, 1 class II, 1 class III,
1 class IV, nice ram about 40" curl wide flare

4 sheep in wide valley - 1 yearling female, 3 ewes

1 sheep - 1 class III ram higher on slope above other band of 4
but likely part of group

1 goat - nanny, medium sized in cliffs above Toad River, several
other tracks as well. Good goat habitat here - why are there not more goats
here? - check out with locals etc.? 5000'

4 sheep - 3 ewes, 1 lamb in side valley

4 sheep - 2 ewes, 2 lambs

12 sheep - 4 lambs, 1 class II, 7 ewes

3 sheep - 1 ewe, 1 yearling female, 1 lamb

2 sheep - 1 ewe, 1 lamb at 6400' elevation highest sheep yet seen,
good vegetation on mountain high up here. Adjacent to Nonda Creek.

5 sheep - north-facing slope above Nonda Creek, 1 ewe, 1 lamb,
1 class IV ram, 2 class II rams.

23 sheep - 1 yearling female, 13 ewes, 1 yearling male, 5 lambs,
1 class I ram, 2 class II rams

2 moose - 2 cows in yard of guide outfitters camp on Nonda Creek
right on road

Fuel up - 11:35 A.M. finished survey of Muncho Lake Park.

Showing Don Gough caribou herd - did a total head count - found
139 caribou so correlated total to match.

2 sheep - 1 ewe, 1 yearling female

7 sheep - 2 class II rams, 3 ewes, 1 lamb, 1 yearling male

12:45 P.M. END OF SURVEY