DALL'S SHEEP (*Ovis dalli dalli*) OBSERVATIONS

AT

ENGINEER CREEK SHEEP LICKS

(Km. 180 and Km. 186 on the Dempster Highway)

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BACKGROUND

Engineer Creek is situated in the Central Ogilvie Mountains and flows parallel to the Dempster Highway from km 160 to km 197, before draining into the Ogilvie River. The water in Engineer Creek is rich in the following minerals: fluoride, uranium, chlorine, molybdenum, manganese, iron, zinc, sulphate, and phosphorus (Stewart 1980:33).

Dall's Sheep (*Ovis dalli dalli*) come down from the surrounding mountains to lick the mineral laden soil in two main locations along Engineer Creek (Figure 1). The first lick area is situated between km 178.8 -180.3 and will be referred to as km 180 lick. The second lick is located between km 185.7 - 187.2 and will be referred to as km 186 lick (Stewart 1980). The actual lick sites vary but are usually exposed cut-banks, stumps, and other places where soil accumulates.

A study was done on intensity of sheep use of these lick locations during the months of May, June, July, and August of 1980 (Stewart 1980). Although sheep sightings were fairly frequent, especially in May and June, total population estimates were fairly low. The estimated population was 31 sheep: 8 lambs, 9 ewes, and 14 rams (Stewart 1980). Larsen (1978) estimated the population at 55 from actual observations of 42 sheep: 9 lambs, 26 nursery sheep and 7 rams (Stewart 1980). There have been very few if any further studies done on the status of sheep in the Central Ogilvies since 1980.

INTRODUCTION

The main objective of this study was to perform a general investigation on present sheep use and abundance at the licks on Engineer Creek. The intention was also to determine if sheep status and lick activity have remained stable since the study done in 1980 (Stewart, 1980). The field study objectives were:

a) to determine intensity and timing of sheep use at lick sites;

b) to record sheep composition, abundance, and behaviour;

c) to locate and map lick locations;

d) to determine if lambing takes place near the licks;

e) to determine general direction from which the sheep come from to reach the licks;

f) to compare present highway traffic to that of 1980;

g) to submit recommendations on how a similar study may be improved in the future;

h) informally interview long-term residents about their sheep sightings.

i) determine the role of predators

The general distribution, density, and composition of the sheep population in the Central Ogilvies is not known. The importance of these mineral licks to the sheep population is not understood. If lick use is restricted in any way, can we expect to see a decline in sheep density? Has the increase in Dempster Highway traffic impacted sheep use intensity? A

thorough and full scale study with intense monitoring of the sheep licks is required in order to answer such questions. In this way baseline status information can be established and any shift in the population trend can be detected. Management techniques can then be implemented or adjusted, depending upon the situation.

METHODS

This study consisted of four separate trips to the lick areas between May 27 and July 3, 1993. A total of nine full days were spent observing the lick sites and surrounding countryside. In addition, a sheep sighting form (Figure 2) was made up in an attempt to record sheep seen near the licks when the author was not present. Copies of these forms were distributed to the Y.T.G. foreman at Ogilvie River Maintenance camp, the Dawson District Conservation Officer, and other Renewable Resources staff. Four forms have been completed.

Sheep were counted and composition determined. The behaviour of the sheep towards the observer and highway traffic was also noted. The locations where sheep were sighted were recorded and mapped (Figures 3 and 4).

During the days that sheep were not present, the length of both sheep licks were examined for tracks to identify lick locations and to estimate approximately time and abundance of sheep use. On one occasion several track transect areas on the creek bed were raked clean in an attempt to determine recent sheep presence.

Sheep trails on the east side of 186 lick were followed in an attempt to determine sheep routes from neighbouring mountains. Possible lambing areas were checked for recent evidence suggesting such an occurrence.

Soil samples were collected from obvious licking locations as well as from areas that were not used by sheep (Figure 5). The results of the soil analysis are not yet available.

The N.W.T. Marine operations at Ft. McPherson was contacted to obtain traffic records for the Peel River ferry crossing. This enabled a rough estimate of traffic that passed by the sheep licks. Only records for the months of June and July were available at the time of request.

Informal interviews were conducted with a few long time residents of Dawson City who work for Highways and are familiar with the licks. This was an attempt to utilize local knowledge and to determine if present sheep status is comparable to past years. Information regarding rare winter sightings at the lick sites was also obtained.

RESULTS AND DISCUSSION

Lick Locations

Seven lick locations (3 at km 180 and 4 at 186) were identified by track aggregations and sheep hair found stuck onto willows (Appendix 1, photo #1 to #3 and Figure 5). Some of these lick sites are fairly close together and could be termed as one site but are counted individually according to soil sample numbers. Most of the tracks that were seen appeared to be ewes and lambs. Larger tracks that may of indicated rams were few. Judging by the amount of tracks, it appeared that 186 lick was visited by more sheep than 180 lick.

Lick Use Intensity and Timing

The timing of the lick use was consistent with the findings of the study done in 1980 (Stewart, 1980). Sheep begin to show up in May, increasing through June, and tapering off in July. Sightings do occur in August but at significantly reduced occasions. It appeared that the sheep were just beginning to arrive at the licks on May 27. Ice was still abundant in the creek and the water was quite high (Appendix 1, photo 4 & 5). The length of km 180 lick was examined at this time for tracks but none were seen. The ice and high water prevented a similar inspection at km 186 lick. Sheep were observed at km 180 lick on May 27 but were browsing on the lower slope on the west side of the road.

Sheep were seen on the creek bed actually licking once on June 5 at km 186 lick. The sheep were on the lower slope on the east side of the creek at

first but eventually moved down onto the creek and commenced licking for approximately 15 minutes.

Sheep use at the licks increased significantly during the first half of June. Although sheep were not always seen, the abundance of tracks at both lick sites indicated their presence.

It is also interesting to note that all three sightings from this study were between 10:00 and 14:00 hours which is compatible with the 1980 study (Stewart, 1980).

The high water in the spring may have some bearing on where the sheep lick. It was noted that one area at km 180 lick was used quite extensively by sheep in early summer but not so much afterwards. Perhaps spring run-off leaves mineral deposits which are later leached out of the soil. Ice and high water may prove to be favourable for sheep in that new cut banks are opened and may provide more licking opportunities. The opposite may also be true in that high water removes minerals which may have a negative impact upon the sheep. More information on soil composition at different times of the year is needed.

Sheep Trails

Sheep trails leading to 186 lick were followed up the mountainside to a bedrock outcrop where a cave was discovered (Appendix 1, photo 6). The cave had obviously been used by sheep for shelter and possibly for lambing. Sheep hair and the remains of a placental sack were found inside

this cave. This area appeared to be a major resting and browsing location for sheep as indicated by evidence such as diggings, faecal pellets, sheep hair and a well beaten path (Appendix 1, photo 7). This location provided an excellent vantage point to adjacent hills to the north and east where sheep trails were quite abundant, however no sheep were sighted.

There was evidence of sheep crossing the highway on a couple of occasions at km 179 which is consistent with the results of the study done in 1980 (Stewart, 1980). Judging by tracks, it seems that the majority of sheep come from the east to reach 186 lick and from the west to 180 lick.

Sheep Composition

Sheep were observed on 3 out of the 9 days that the licks were attended during this study. A total of 18 sheep consisting of 15 ewes and 3 yearlings were seen (Table 1). The largest group seen at one time was 16 sheep. Sightings of rams and newborn lambs were reported but none were seen by the author during this study.

It appears that the licks are used more frequently by ewes and lambs. It may be that the overall composition of this sheep population is in favour of ewes. More intense monitoring of the licks and perhaps aerial surveys by helicopter would help in defining the status of this sheep population. A total of 6 aerial surveys were done in the Central Ogilvies in the summer of 1980 (Stewart, 1980). Sheep were spotted on five out of the six flights (Figure 6).

Sheep Behaviour

The sheep were aware of our presence on all three sighting occasions. In general when the sheep were on the slopes, they did not appear nervous and would continue on with their activity only to look at us from time to time. The sheep that were observed on the creek bed appeared agitated and remained on the creek for only a short time. Vehicle traffic was moderate on all occasions and did not seem to upset the sheep. It is believed that moving vehicles are less disturbing to the sheep than ones that stop (Stewart, 1980). Harvest pressure on these sheep is minimal so the sheep seem to be trustworthy of humans to a certain extent. This may become a significant management concern should rams become more plentiful.

Vehicle Traffic

Traffic that crossed the Peel River ferry at Ft. McPherson during June and July are displayed in table 2. These figures are considerably higher than traffic records for 1980 which were obtained from gasoline sales at Eagle Plains Lodge (Stewart, 1980). Both these methods are only rough estimates for vehicle traffic that actually passes the lick locations. A traffic counter close to the lick sites would be more accurate. Traffic in itself is probably less disturbing to sheep than the occupants of these vehicles. Pull-outs for wildlife viewing is not recommended as increased human activity would surely interfere with sheep utilization of the licks.

Reported Sightings

John Olson, a highway worker from Ogilvie camp reported that he had seen 4 rams at km 186 on approximately June 15. He also said that he saw several ewes and one lamb a few days before in the same area. It was also interesting to hear that he saw one ram standing on the road at km 184 last winter around Christmas time.

Mike Warville, a highway worker also, recalls seeing one ram at Engineer Creek campground (5 km north of 186 lick) in January a few years ago. This would indicate that some sheep may use the licks during the winter months.

Predators

There was very little evidence of predators at either of the lick locations. On one occasion in mid August a grizzly bear was spotted by the Highways crew at km 186. No wolf tracks were seen on the creek bed. This would seem to be a likely spot for an ambush but there is no evidence suggesting this.

RECOMMENDATIONS

A future study would, at the very minimum, require constant surveillance of the lick sites during the months of May, June, and possibly July. In this way a more accurate population estimate can be achieved and identification of individual bands may be possible by becoming familiar with the composition of particular groups. Observing the licks full time would, in general allow the observer to see more sheep, thus collect more data that can become useful in detecting fluctuations in either the sheep population or their desire to use the mineral licks.

Study Methods

Study methods can be improved by identifying more lick locations earlier in the spring. Once identified, these areas can be monitored closer by raking the areas smooth of old tracks, the observer could roughly pinpoint sheep use to a matter of days or hours. This probably would only be necessary on days when the licks could not be attended.

Soil samples could be taken at different times of the year to detect if there are significant changes in mineral content which may help explain why sheep use the licks when they do.

The sheep sighting forms may prove more successful if they are distributed earlier in the spring to personnel from various government agencies such as Highways, Parks, and Renewable Resources.

Vehicle Traffic Counter

There is no traffic counter on the Dempster Highway at this time. It would be valuable to have one set up close to the sheep licks which would give a fairly accurate account of traffic passing the licks. Sheep sighting frequency to level of traffic could then be tested for correlation.

Aerial Surveys

Aerial surveys by helicopter are necessary in order to establish winter ranges, lambing areas, and to estimate the total population. A minimum of four aerial surveys spread over the seasons should be sufficient to determine sheep distribution and abundance. One winter survey in February or March to locate and identify winter ranges, another survey in early May to determine migration routes and a ewe count before lambing, another flight in late June to estimate reproduction success, and one more flight in late summer to determine lamb survival.

Road Construction and Other Developments

The months of May, June, and July are the times that sheep are most likely to use the mineral licks. Road construction or other developments should take this into consideration where possible to avoid unnecessary disturbance to the sheep.

Pullouts and advertisement for wildlife viewing should not be encouraged. This would only increase human interference and promote undesirable impacts upon the sheep and the environment. Pullouts also have to be maintained and can be hazardous to other highway users.

Harvest

Sheep harvest at the mineral licks is minimal though the sub-zone (2-27) is open from August 1 to October 31. The 1 km no-hunting corridor on either side of the road is in effect and should be maintained if not increased for this particular area. It may even be desirable to close sheep hunting in this area as a pro-active management approach until a more accurate account of the sheep status is available.

CONCLUSION

This study was successful in determining that sheep are still using the mineral licks on Engineer Creek relative to the study done in 1980 (Stewart, 1980). However there is still limited information regarding the present status of the sheep population in the Central Ogilvie Mountains. Evidence suggests that these licks are used by sheep most frequently in the spring year after year. Just how important these licks are to the sheep is not fully understood.

It is therefore imperative that information be gathered in order to become more familiar with the requirements of this sheep population. In this manner a realistic management plan for the area can be developed to protect, preserve, and possibly enhance this sheep population.

Literature Cited

Stewart, Donna L. 1980. Critical Areas for Dall's Sheep (Ovis dalli dalli) In the Ogilvie Mountains with Recommendations for Dempster Highway Corridor Management.

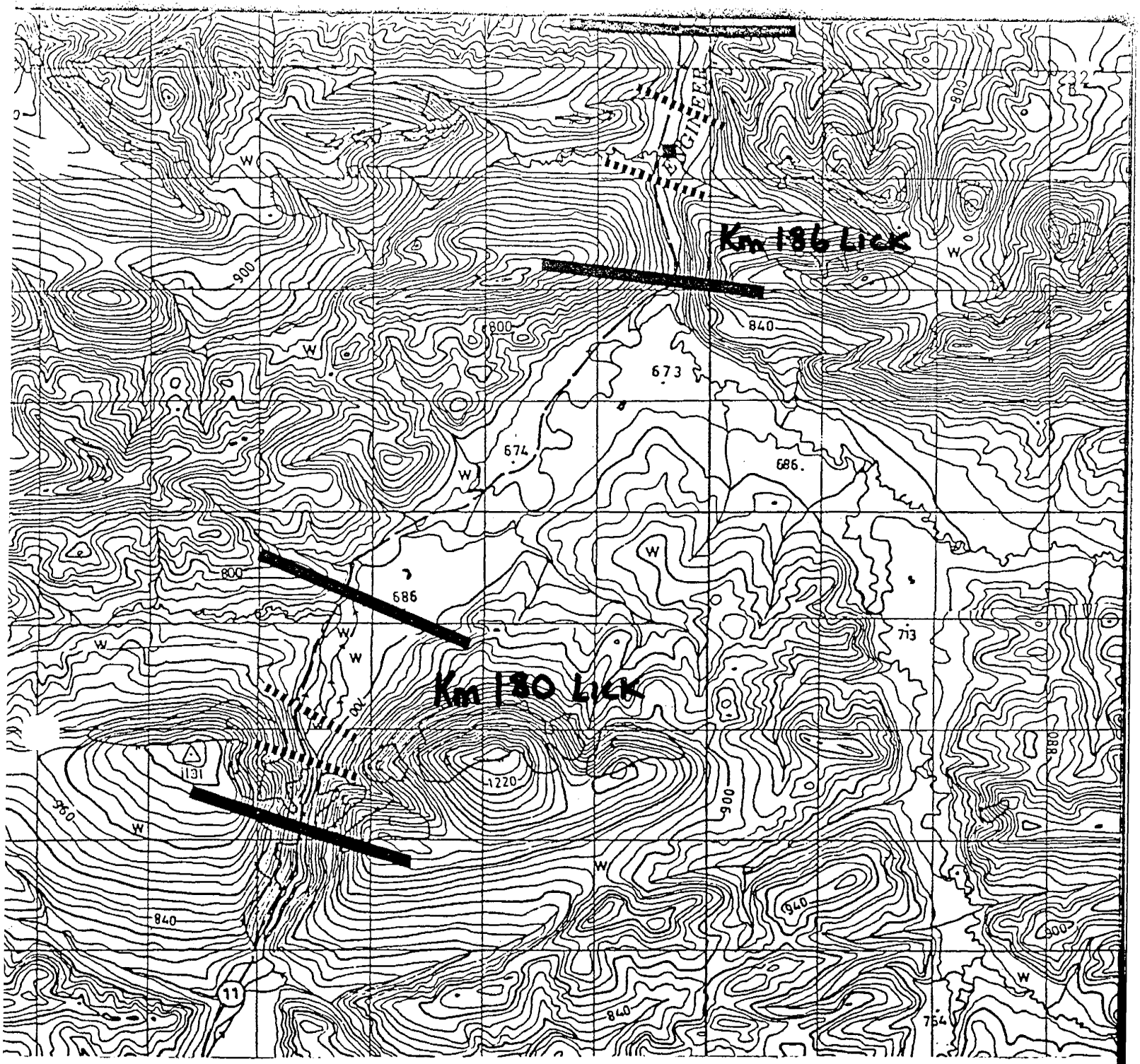


Figure 1: Mineral Licks in the Central Ogilvie Mountains

Legend:

lick area boundary (km 178.8 - 180.3 and km 185.7 - 187.2)

area of heaviest use (km 179.1 - 180.3 and km 186.0 - 186.9)

location of sulphur spring

(from Stewart, 1980: 32)

ENGINEER CREEK-SHEEP INVENTORY

Date: _____ Name: _____

Time: _____ Time spent observing: _____

Number of sheep observed:

Rams ___

Ewes ___

Yearlings ___

Lambs ___

Total ___

PLEASE SEND TO:

Renewable Resources
Box 600
Dawson City, Yukon
YOB IGO
(403) 993-6461

THANKS!

Location: Hwy Km:___ East of Hwy___ West of Hwy___ on Hwy__

Creek bed___

Height of Sheep location: low slope___ med slope___ high slope___

Behaviour of Sheep:

Were the sheep using the lick? Yes___ No___

Were the sheep eating plants? Yes___ No___

How did the sheep react to you?

___1. No reaction
___2. Looked at you, but not too concerned
___3. Begin to move slowly away from you
___4. Move away very quickly

Comments:

_____

_____

_____

Figure 2: Sighting Form to Assist in Recording Sheep

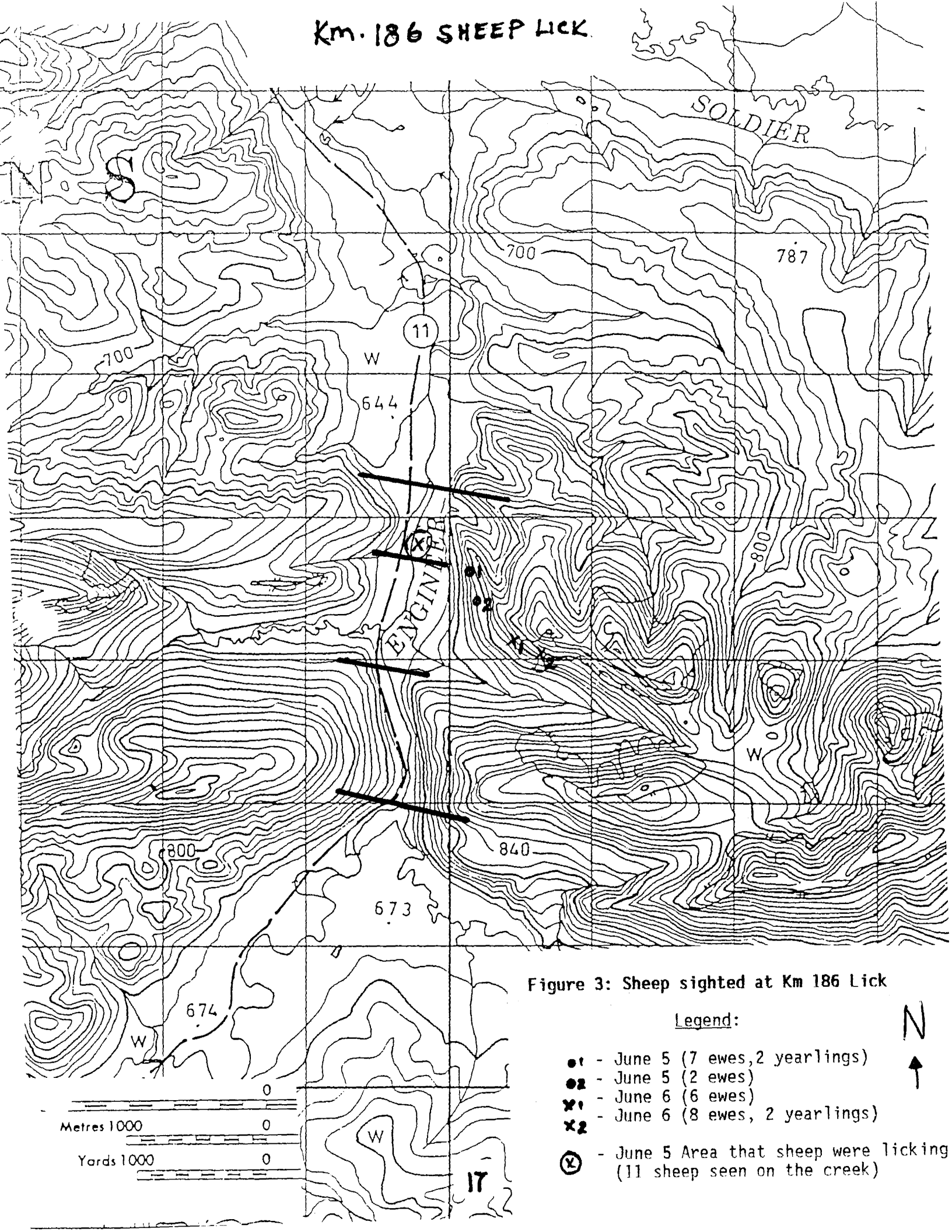


Figure 3: Sheep sighted at Km 186 Lick

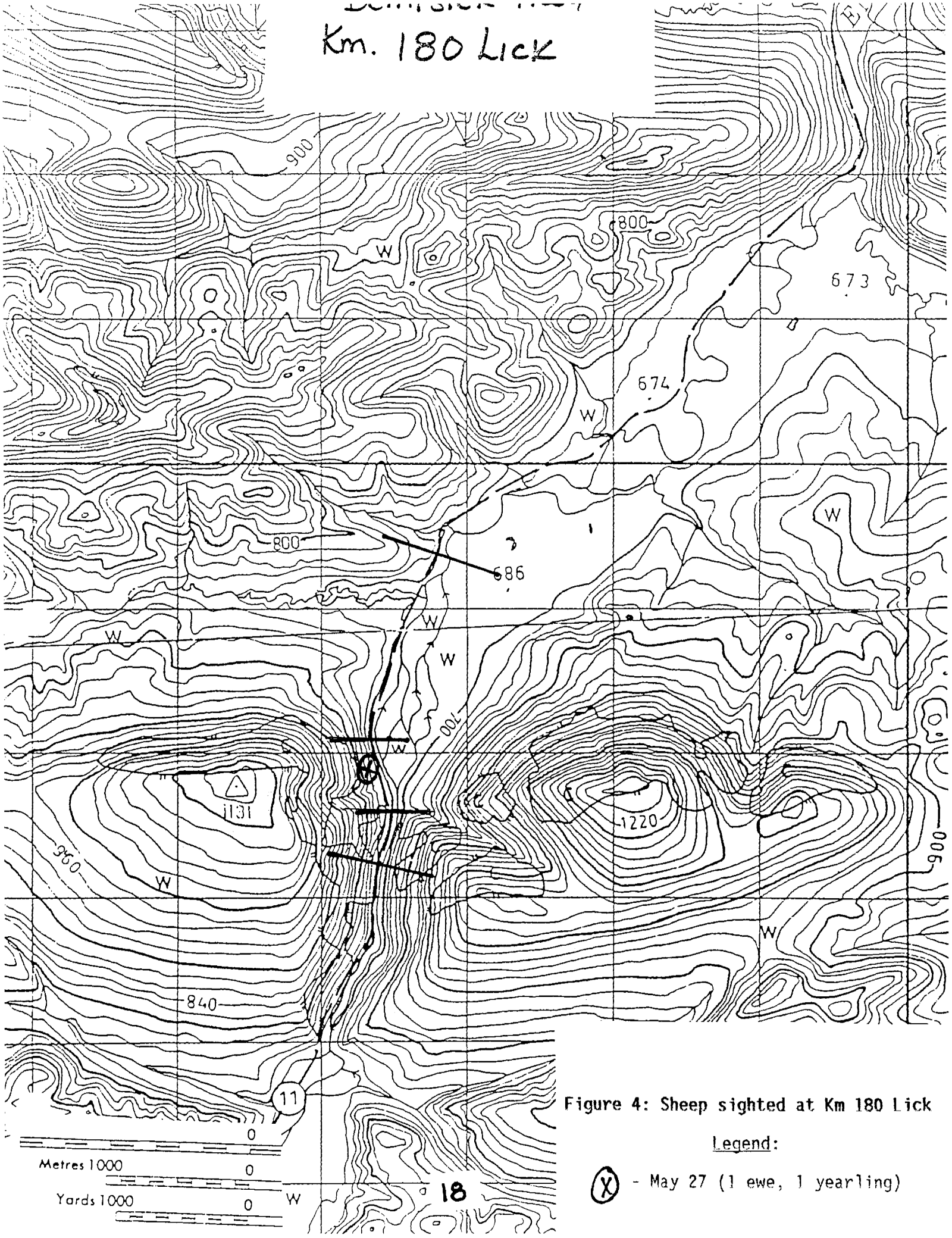
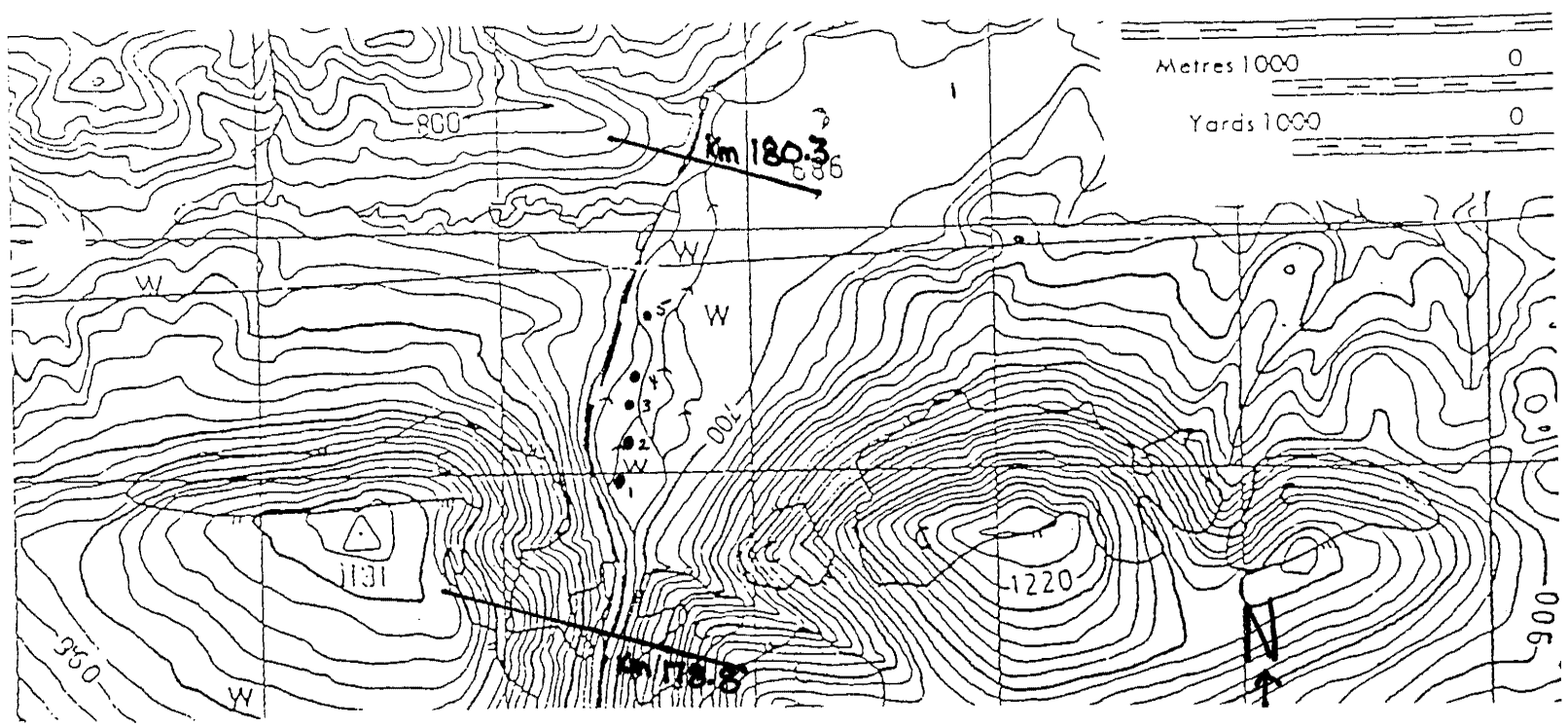


Figure 4: Sheep sighted at Km 180 Lick

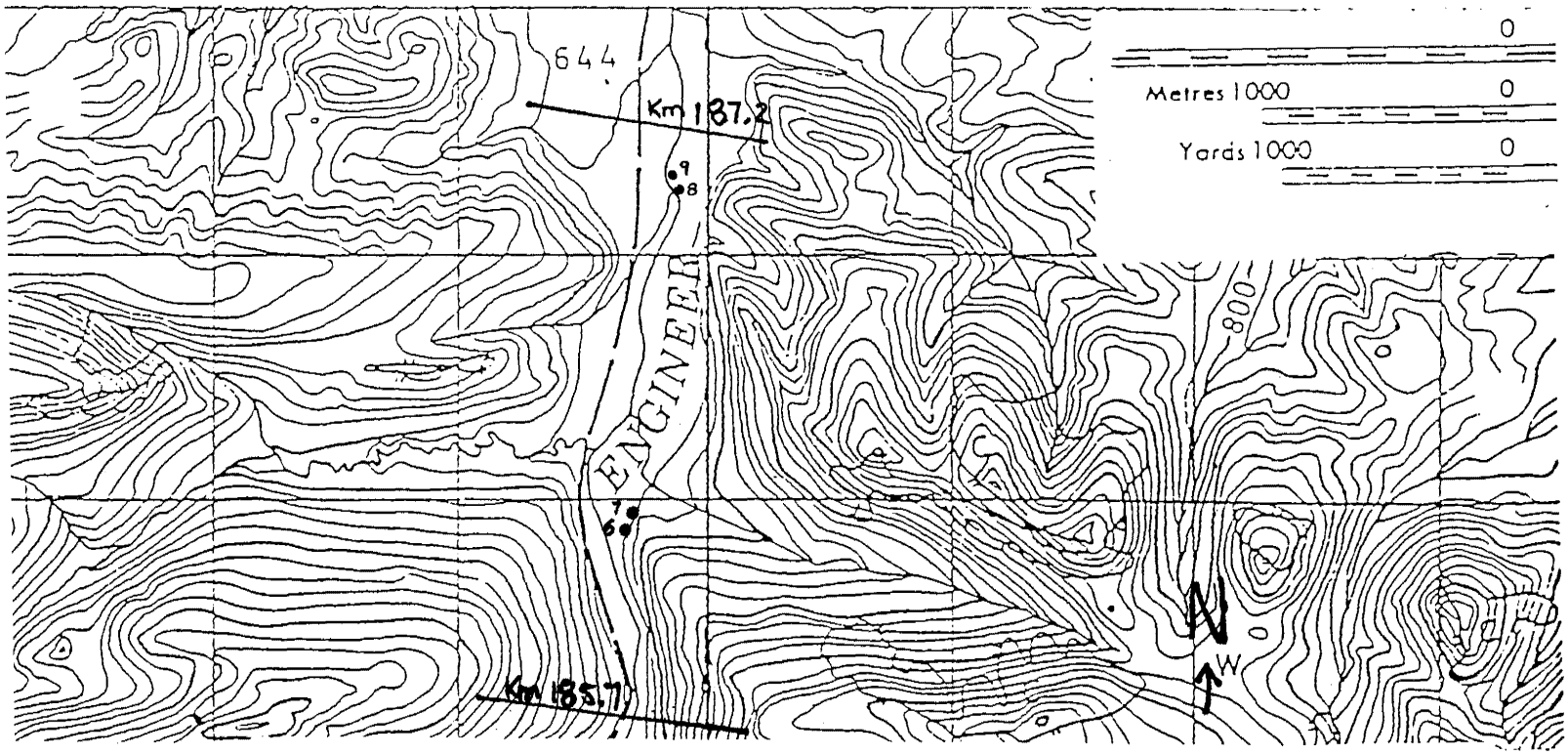
Legend:

(X) - May 27 (1 ewe, 1 yearling)



1 - Lick location (Soil sample # 1)] A
2 - Lick location (Soil sample # 2)]
3 - Lick location used early June (Soil sample #3)
4 - Soil sample #4 (not used for licking)
5 - Soil sample #5 (not used for licking) B

Km. 180 Lick



6 - Sulpher spring used for licking (Soil sample # 6)] C
7 - Lick location (Soil sample # 7)
8 - Lick location (Soil sample # 8)
9 - Lick location (Soil sample # 9)] D

N

Km. 186 Lick

Figure 5: Lick and Soil Sample Locations

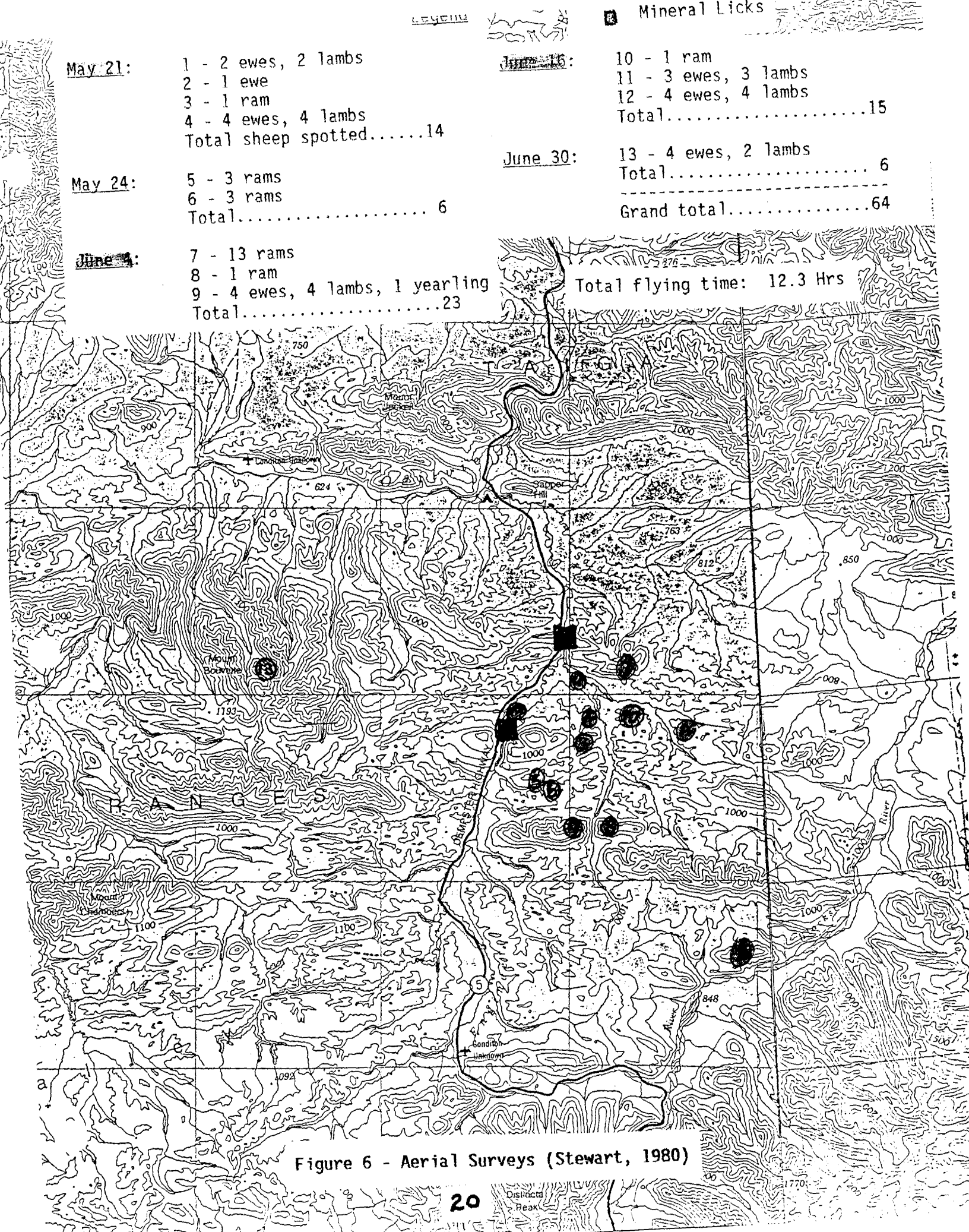


Figure 6 - Aerial Surveys (Stewart, 1980)

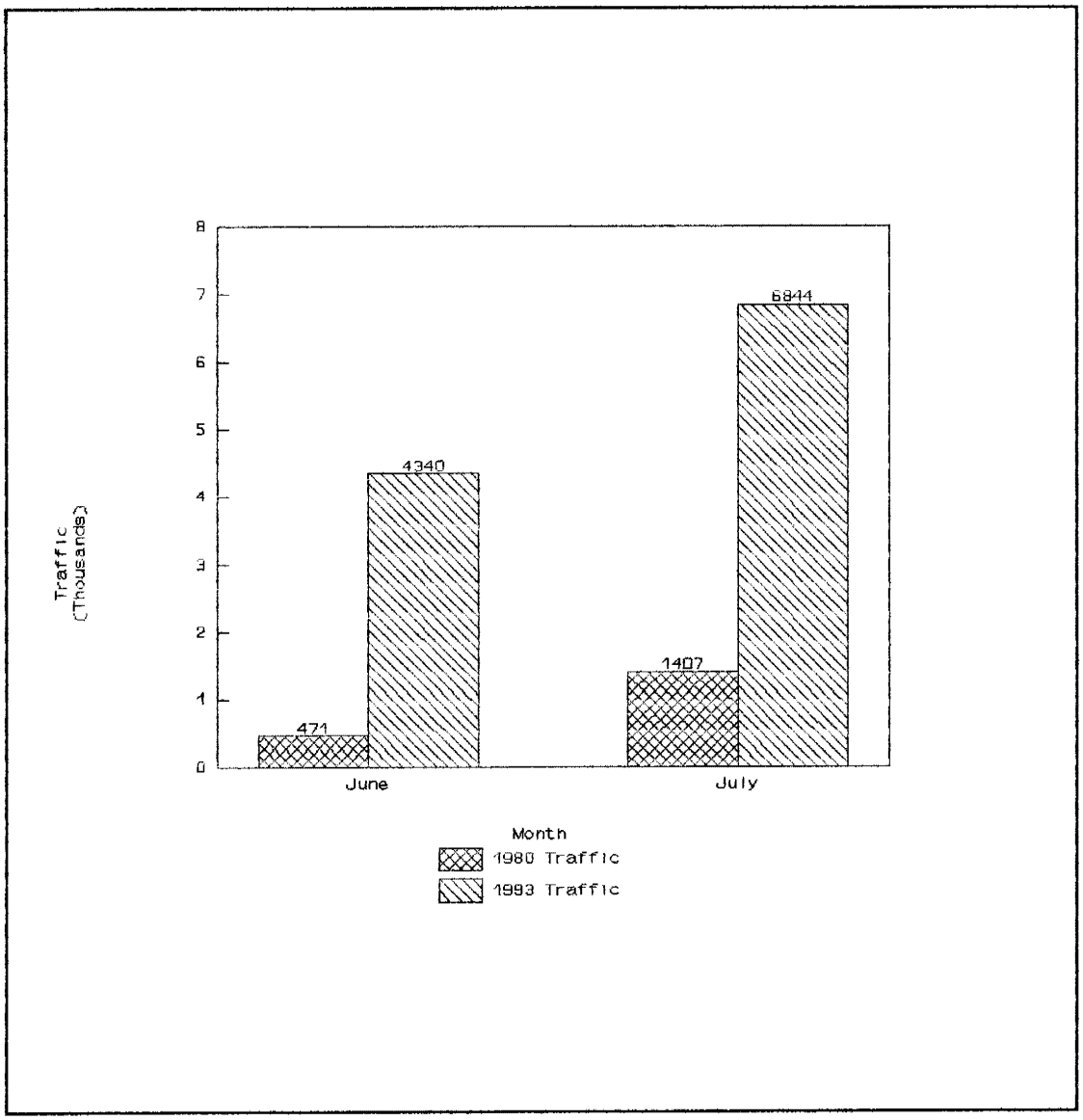


Figure 7: Dempster Vehicle Traffic 1980 and 1990

Date	Time	# of sheep seen	Comment
May 27	13:57	1 ewe, 1 yrling	-west side of road km 180 lick
June 5	13;00	11 ewes, 2 yrlings	-east side of crk km 186 lick
June 6	11:45	14 ewes, 2 yrlings	-east of creek km 186 lick
July 24	20:00	0	-sheep sighting form
Aug 18	13:00	0	-sheep sighting form
Aug 21	22:00	0	-sheep sighting form

Table 1: Sheep Observations

Motor Vehicle Traffic at Peel River Ferry X-ing	June 1993	July 1993
Light Passenger Vehicles	2964	4448
Recreational Vehicles	882	1635
Semi-Trucks	195	273
Single axle Trucks	129	89
Over-sized Trucks	29	65
Buses	4	43
Other (motorcycles, bicycles, etc.)	137	291
Total	4340	6844

Table 2: Vehicle Traffic at Peel River Ferry Crossing

PHOTO #1 Km. 180 Lick (Soil samples 1 and 2 were taken here)

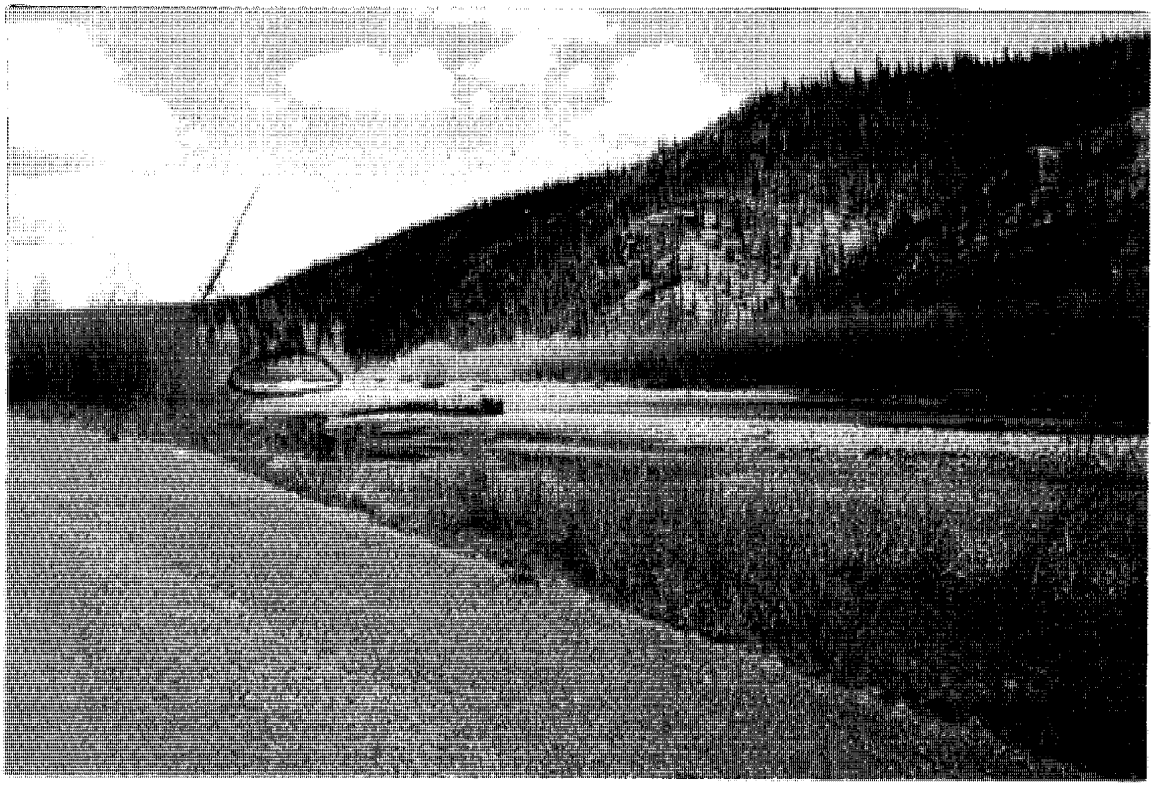
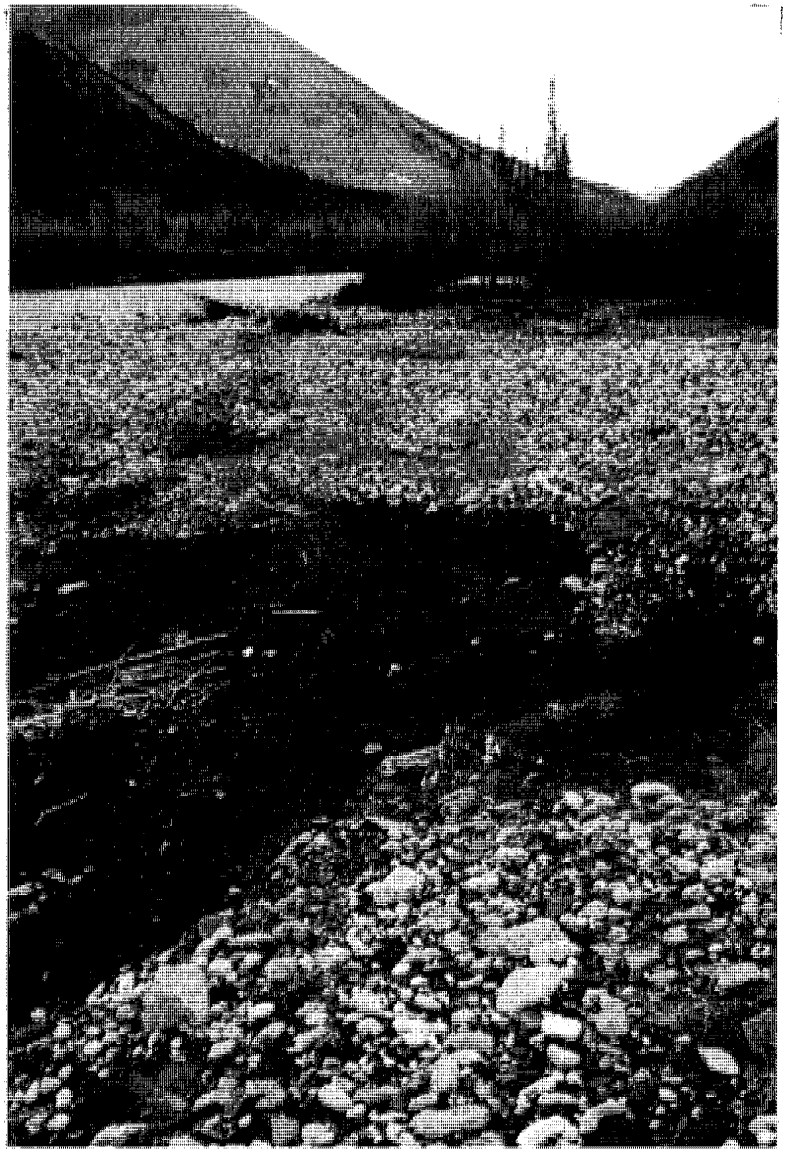


PHOTO #2 Km 186 - Sheep on Creek bed (Lick 8 and 9 circled)



Km 180 Lick (lick #3 was not used later in the season)

PHOTO #3

Photo # 4 - Km 186 Lick High water (May 27)

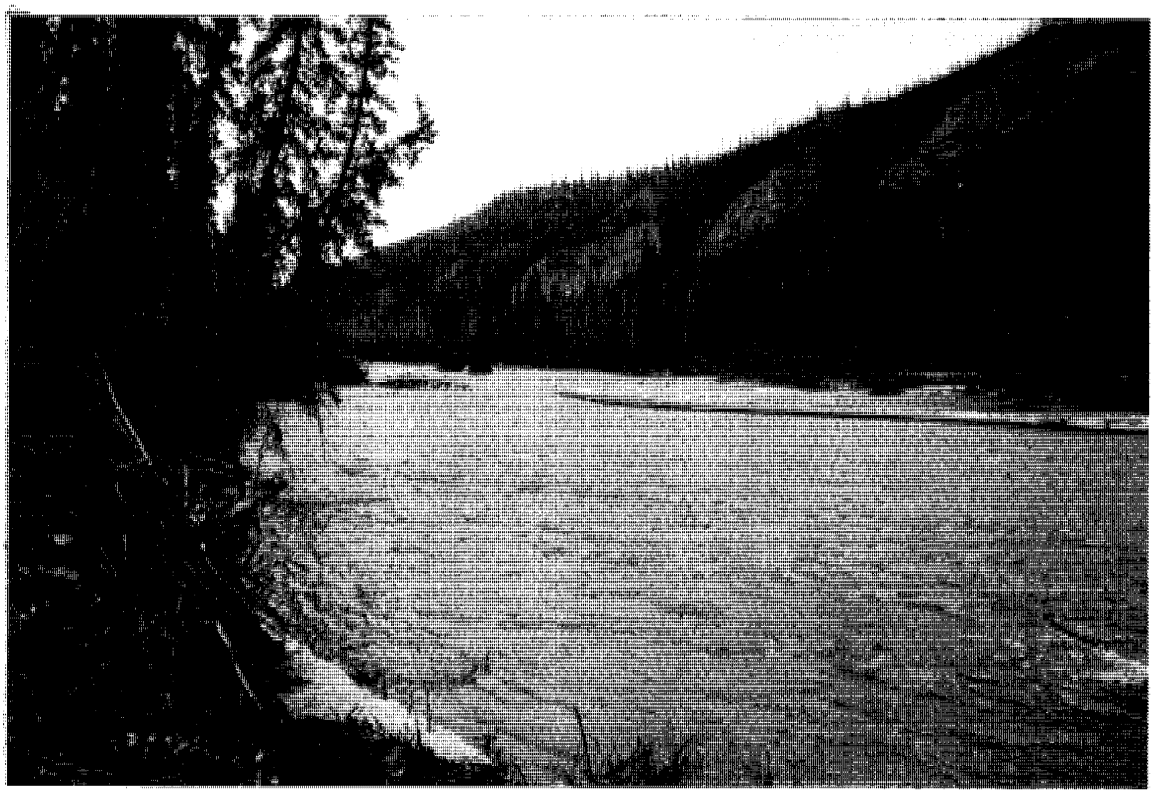


Photo # 5 - Km 186 (May 27)

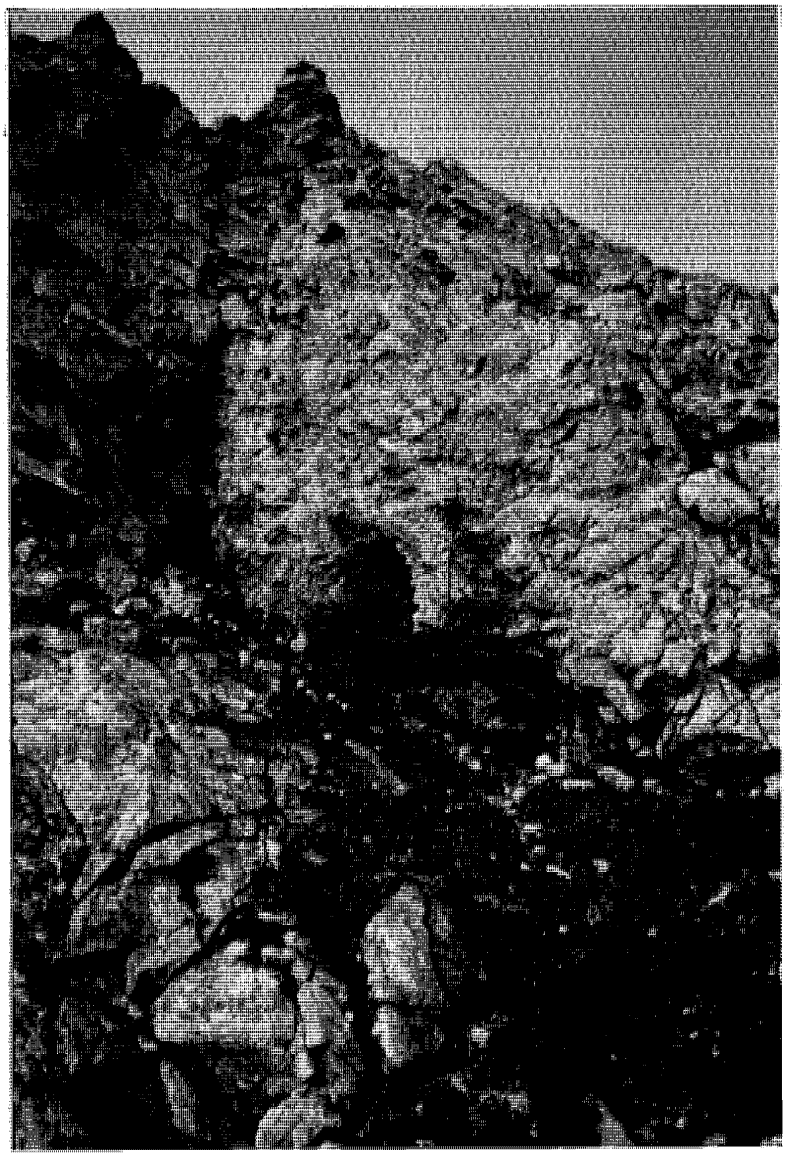


Photo # 6 - Cave in bedrock out-crop 1km east of 186 Lick

Photo # 7 - Sheep Trail leading to 186 from the east

Photo # 8 - Km 186 looking east to cave location (circled)

Photo # 9 - View looking west from cave location

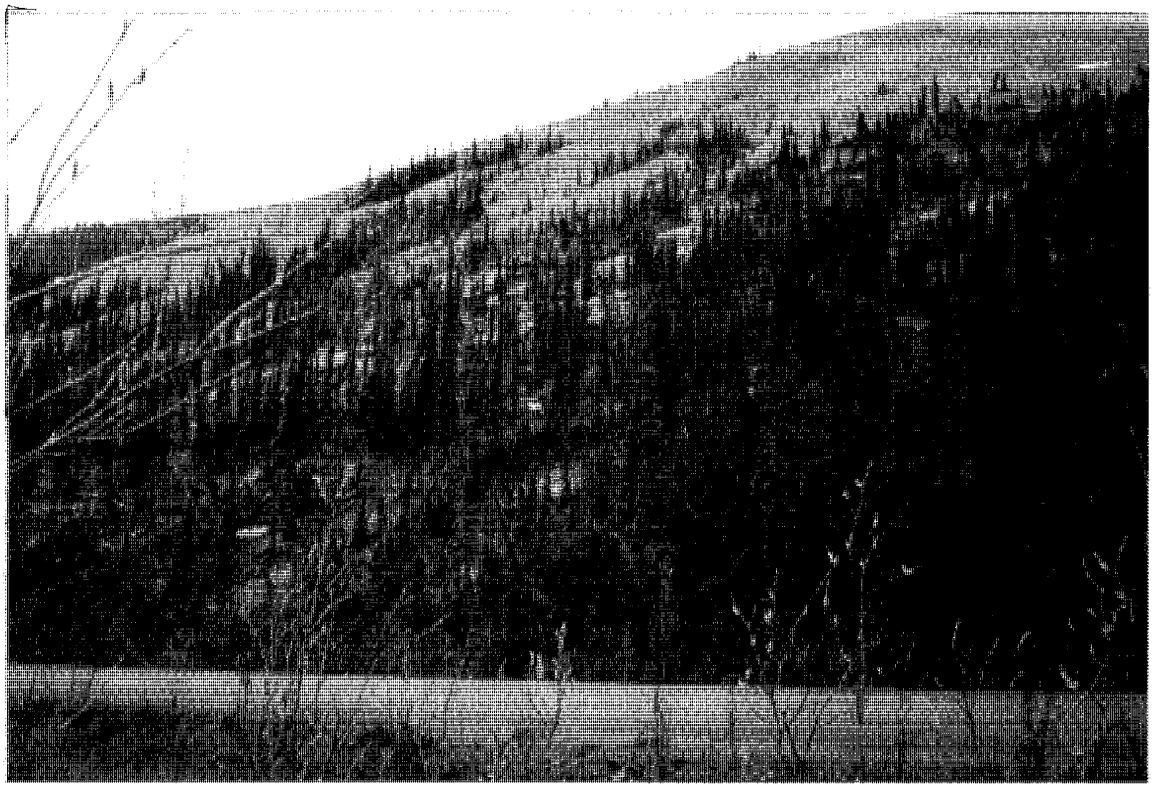


Photo # 10 - Km 180 Lick - ewe on slope west of lick (May 27)