DALL SHEEP AND MOUNTAIN GOAT INVESTIGATION IN RELATION TO THE NORTH CANOL ROAD TRANSPORTATION CORRIDOR AND MINING DEVELOPMENT

by

Department of Renewable Resources

Government of Yukon

1983

INTRODUCTION

Over the past five years there has been increasing mineral exploration activities in the MacMillan Pass and Howards Pass area of the Selwyn Mountains. Every indication is that within this area of the Yukon one (and possibly four) mines will begin production within the next 10 years. Aside from ongoing exploration, such developments as town sights, air strips, access roads, mills, dumps, and a smelter are real possibilities.

The Government of Yukon together with the Deparatment of Indian and Northern Affairs and a number of companies actively involved in mineral exploration within the area, have inaugurated a series of wildlife investigations to determine the effects this development may have on wildlife populations of the area.

This study addresses only the concerns regarding mountain sheep and mountain goats.

THE STUDY AREA

The study corridor was established in 1981, and included those entire Game Management Subzones, within 30 to 60 miles from the existing North Canol road, south of the Hess and north of the Pelly rivers (see Fig. 1). Mountains in the area includes the eastern extension of the Anvil range, the southern parat of the Hess Mountain and the Itsi range. Much of the area is of gentle relief; below 6000 feet. The total area of the study corridor is approximately 7700 square miles.

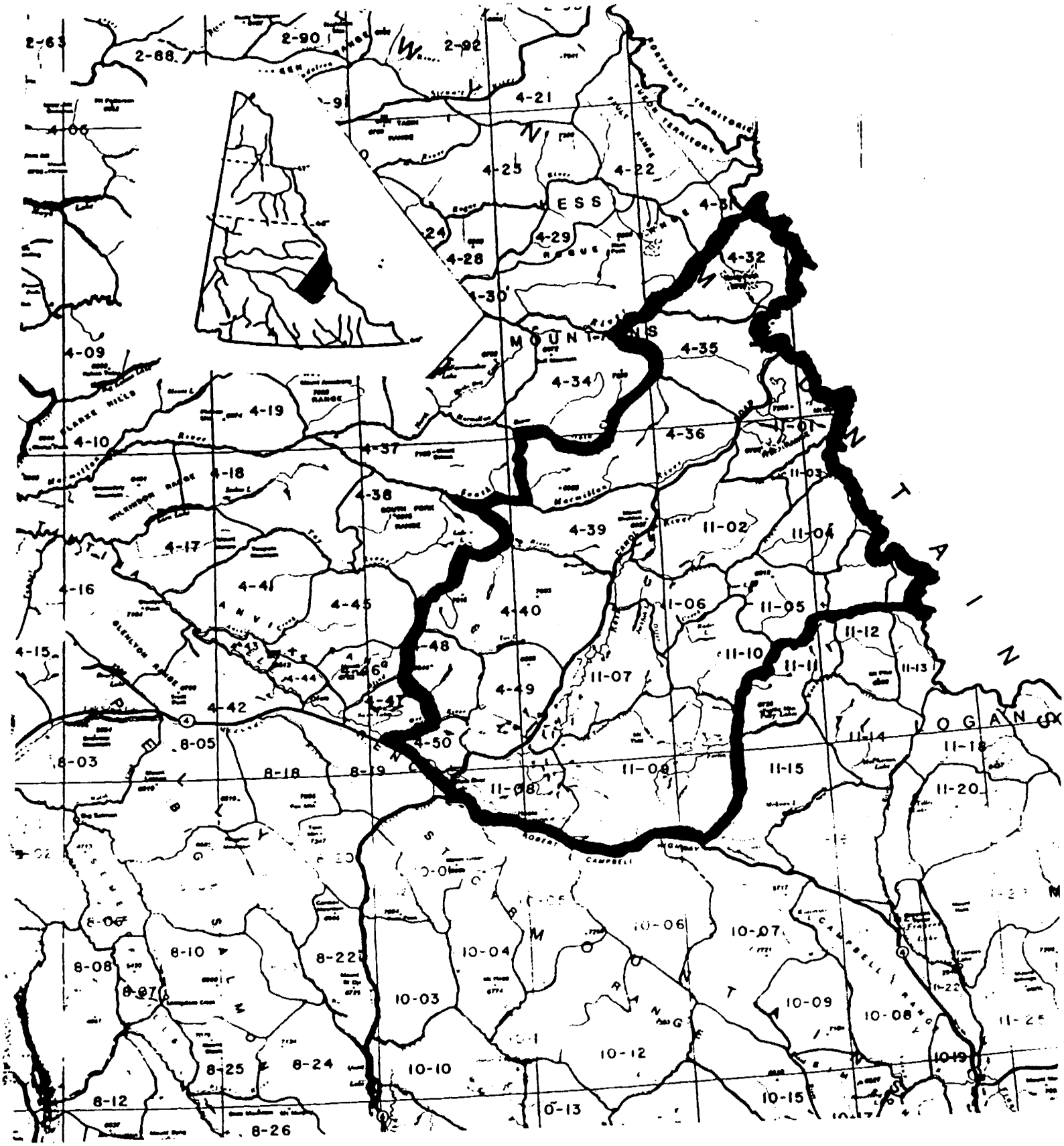

Figure 1: Location of the study corridor.

METHODS

Helicopter surveys were cararied out by Tony Nette, Wildlife Branch, Y.T.G., during the summer of 1981 and 1982. Gavin Johnston, Northern Biomes Ltd. conducted a late winter survey in March of 1983. The purpose of these surveys was to determine the distribution of sheep and goats, and when possible, determine the composition by sex and age of their populations, within the proposed transportation corridors. Surveys were flown in a Hiller 12-E and a bell 206 Ranger, at contours around all mountain blocks. Two observers were used; locations were mapped and the elevations recorded.

DALL SHEEP

A. DISTRIBUTION, ABUNDANCE, AND DEMOGRAPHY OF SHEEP IN THE PROPOSED TRANSPORTATION CORRIDOR.

I. Distribution and Abundance:

Dall sheep are not common over the length of the proposed road corridor. Only three game management subzones within the corridor could be considered to have moderate capability for sheep; the Keele mountain block (L4-32), the block of mountains between the south and north MacMillan rivers (4-36), and the mountains between Tay, Laforce and Dragon Lakes (4-40) (see. Fig. 2).

In the block of mountains west of MacMillan pass (4-35), surveys have noted the disappearance of about 25 sheep since 1978. Three recent surveys, and one incidental report have counted only 3 and 4 animals within the block. These findings are probably not cause for alarm. Sheep population counts have a history of fluctuating. Two sheep surveys on the mountain block immediately north of the block surrounding MacPass, in July of 1981 and 1982, had counts of 60 and 12 respectively. The 1982 count could not be accounted for from recruitment alone. The integrity of the population, or the rates of emmigration and immigration are unknown.

Furthermore the capability of block 4-32 for sheep may be marginal and sheep populations using the block may suffer periodic crashes. Snow measurements off the North Canol road, carried out in conjunction with

Figure 2: Distribution of sheep in the study corridor. (numbers represent the 1981 survey counts)

the 1981-82 moose inventory, in February and March 1982, recorded the greatest snow depths along the road in the vicinity of MacMillan Pass within block 4-32. Snow and sheep tend to be incompatible. Over their entire range sheep are most abundant in the rain shadow of high mountain ranges, and within their range, sheep frequent winter ranges that have minimal accumulations of snow. It is possible that snow conditions on block 4-32 are less than optimal to support sheep, and in bad winters sheep may suffer heavy losses, or disperse to adjacent mountain blocks.

II Density:

The densities of Dall sheep from helicopter surveys along the proposed corridor are as follows:

4-32	25/100 sq. mile
4-35	1/100 sq. mile
4-36	7/100 sq. mile
4-40	8/100 sq. mile
4-49, 4-50 and 11-01 to 11-10	0/100 sq. mile

Completed coverage of all mountain blocks was made but surveys weren't replicated in any one year so we have no measure of confidence around these estimates. These densities could be considered low in comparison with other areas in the Yukon.

III Population Composition

The composition, or breakdown of a population into sex and age classes provide an indication of population vigor. The classification of animals from helicopter surveys provides us with a measure of the proportion of lambs and rams in the population (Table 1).

Table 1. Composition of Sheep Using the Proposed North Canol Road Corridor.

Block	Year	Lambs/100 Nursery Sheep	Rams/100 Nursery Sheep	Full Curl O/ 100 sheep	Full Curl O/ 100 sheep
4-32	1981	14	23	30	6
4-32	1982	17	16	25	3
4-36	1981	8	40	20	6
4-40	1981	12	87	19	9

Lamb crops show wide annual variation; likely a function of winter conditions, spring weather, the population density, and predator density. Little attempt has been made in the Yukon to translate lamb crops into adult recruitment. The 1981/82 surveys at best allow us to compare population vigor between blocks, and with adjacent areas.

Lamb crops in the study area were low in 1981, averaging 13 lambs per 100 nursery sheep and varying between 8 and 14 lambs per 100 nursery sheep. Productivity was much lower than all other populations surveyed within GMZ 4, which averaged 26 lambs per 100 nursery sheep. In light

Figure 3: Location of known sheep winter ranges.

of what appears to be low sheep productivity as well as the distribution patterns and population density, it is probable that the capability for sheep is poor within the study corridor.

The proportion of rams in each survey block, in 1981, was variable, from 23 rams per 100 nursery sheep to 87 rams per 100 nursery sheep. Again we have no information about the integrity of populations within each block, nor do we have a measure of confidence around our population estimates. Ram:nursery sheep ratios in the study corridor may be a result of sampling bias. The proportion of full curl rams in the ram count was high, likely the result of low hunting pressure. No attempt has been made in the Yukon to evaluate Ram:ewe ratios as they may influence productivity or population trends.

B. SITE-SPECIFIC CRITICAL AREAS

Winter Ranges:

Winter ranges are best identified by observing sheep during the winter. This has met with some difficulties due to observability problems of white animals during the winter. It may be possible to map winter ranges with some degree of accuracy through habitat evaluation and a capability rating based on information about sheep winter habits. This has not been done in the Yukon.

Winter surveys were conducted during March of 1983. Two areas, one on block 4-32, the other on block 4-40 were identified as winter ranges (see Fig. 3).

Lambing Areas:

Dall sheep usually lamb during the month of May. Snow conditions at this time of year probably restrict sheep to areas in the vicinity of their winter range. Where Dall sheep lambing sites are known in the Yukon, it has been in close proximity to known winter ranges. Protection of winter areas, then, likely insures protection of lambing sites.

Lick Areas:

It is fairly well accepted that sheep suffer a sodium imbalance following spring green-up. Mineral licks become important, from May through July, often drawing sheep away from suitable summer ranges to low elevation sites. Unfortunately no mineral licks have been identified in the study areas.

Migration Pathways:

Winter ranges are often distant to summer ranges of they follow an altitudinal gradient. Dispersion to and from winter ranges often follows traditional pathways. The best approach to identify migration routes is to monitor sheep movements throughout the year. Unfortunately, this is expensive and often requires a fairly sophisticated sheep marking program. An obvious indirect approach would be to identify winter and summer ranges, and to link these areas along corridors offering optimum conditions of escape terrain, allowing for contingencies of snow and green-up phenology.

In the study area where sheep have been observed, it would appear that winter and summer ranges are contiguous and not separated by traditional movement corridors.

MOUNTAIN GOATS

A. DISTRIBUTION ABUNDANCE AND DEMOGRAPHY

I. Distribution and Abundance

Goats were observed in 2 game management subzones, within the proposed transportation corridor, 11-01 and 11-03, centered on the Itsi range (Fig. 4). Sixteen goats (12 adults, 3 yearlings, and 1 kid) were observed on the two blocks on 1 August 1982. A previous survey in 1979 counted 11 goats.

The Itsi range is home to the most northerly known population of goats in the Yukon and probably the most northerly population of goats in North America. The goat population appears to be isolated, with the next closest known population in the Yukon, some 75 miles south.

II. Density

The density of goats on the Itsi range is about .08 goats per sq. mile. This is very close to an estimated density of .09 goats per sq. mile, observed in the Logan range south of the Itsi's.

III. Population Productivity

The proportion of kids in the population was considerably lower than results from any previous goat survey in either the southern Yukon or the Logan mountains. Kids represented only 6% of the Itsi goat population in comparison to 21% found in the Logan mountains.

Figure 4: Distribution of mountain goats within the study corridor.

B. Site-Specific Area

There did not appear to be any obvious area or elevational delineations between summer and winter ranges (see Fig. 5). All goats observed during the winter, however, were on slopes oriented in the southeast.

No licks or kidding sites were identified.

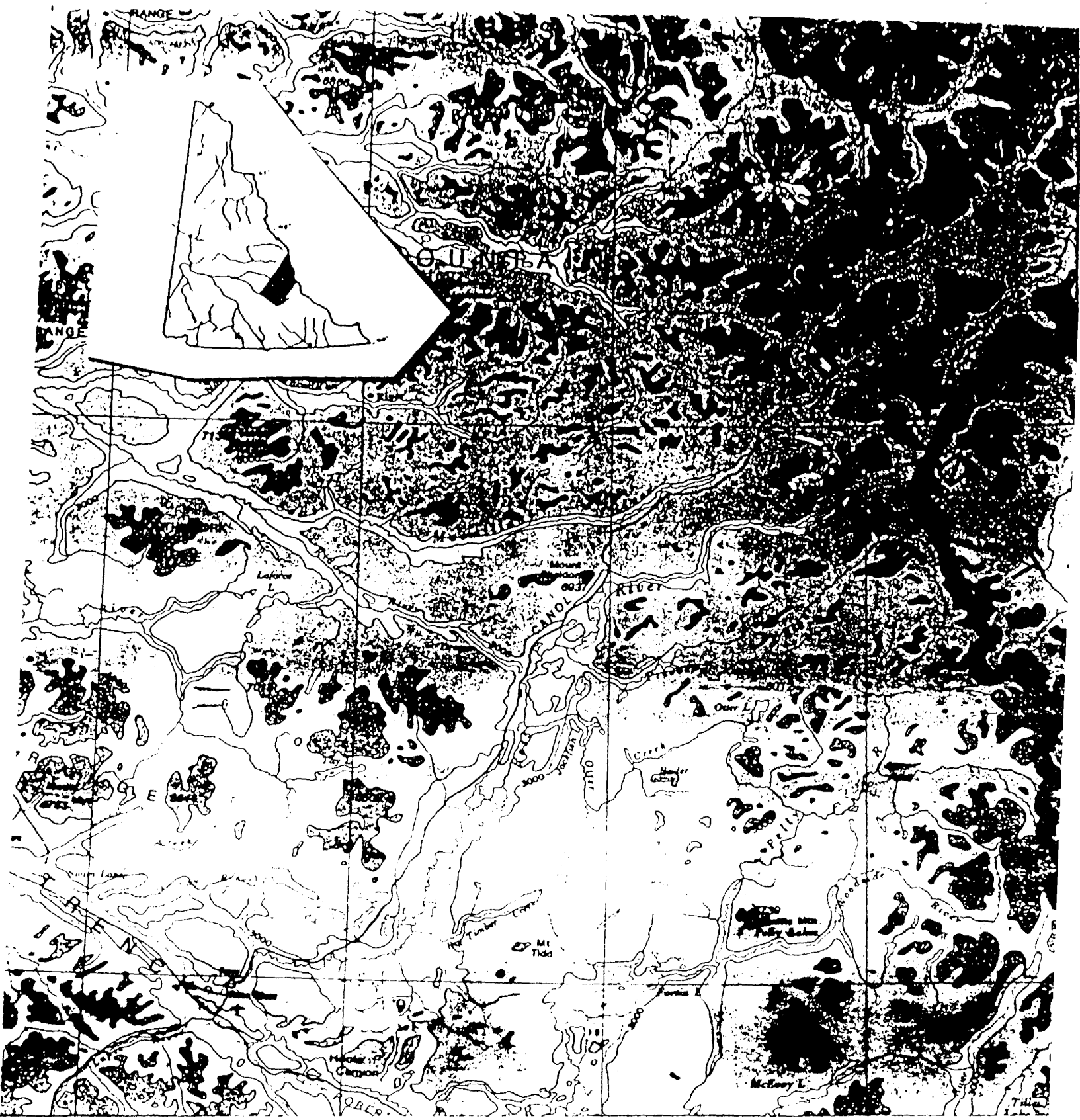

Figure 5: Delineation of known mountain goat winter range.

SUMMARY

(1) The capability for Dall sheep along the proposed transportation corridor appears low. Sheep occurred sporadically, densities were low and productivity was low in a year which produced good lamb crops over most of the Yukon.

(2) Sheep winter ranges identified within the study corridor were located 10 to 30 miles off the existing North Canol road. These areas are likely lambing areas.

(3) No sheep licks were located.

(4) The most northerly identified Yukon goat population and probably the most northerly population in North America occurs on the Itsi range, south of the North Canol road.

(5) The density of goats using the block was comparable to densities of goat populations occurring south of the Itsi's, in the Logan mountains.

(6) Productivity of goats was low.

(7) Goat winter and summer ranges were overlapping.

(8) No goat licks or kidding areas were identified.

RECOMMENDATION

(1) Mountain sheep presently using the transportation corridor are not a major concern. They occur sporadically, at low densities, and winter well away from the existing roadbed. Development in the vicinity of winter ranges, however, should be avoided if possible.

(2) Historic records show that mountain sheep did occur on Mt. Sheldon. Reintroduction of sheep to the area may provide a point of interest to tourist traffic using the North Canol road.

(3) Mountain goats represent a major concern along the proposed corridor. They are found using the Itsi mountains, just south of the Canol road, near the N.W.T.-Yukon border, and are probably the most northerly population of mountain goats in North America. They appear to be isolated to the Itsi mountains, and so are particularly vulnerable. The Itsi mountains should be acknowledged as a unique area.

(4) Goats may be sensitive to construction activity. Goats on Mt. White near Jakes Corner disappeared following the establishment of the Atlin Highway and reports from B.C. recorded the disappearance of certain goat populations following highway construction.

We have only a very limited idea how mountain goats are using the Itsi mountain block. We have not pinpointed kidding sites, and our identification of winter range is vague. Recommendations concerning highway routing and the timing of construction rely on this information. It is recommended that a series of late winter-spring helicopter surveys

be conducted to more accurately delineate goat winter range and kidding sites on the Itsi mountains. With the existing information we urge that road construction in the vicinity proceed cautiously and, if possible, should be halted for the month of June, which is the critical period when goat parturition occurs.

(5) A series of helicopter surveys should be carried out periodically following road construction to determine the immediate and long term effects of the road on sheep and goat populations using the corridor.