CURRENT STATUS OF DALL SHEEP IN THE SOUTHERN RICHARDSON MOUNTAINS 1988

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Abstract

Two small, isolated populations of Dall sheep reside in the southern Richardson Mountains straddling the Yukon/NWT border, in the vicinity of Mt. Cronin and Canyon Creek east of the the Dempster Highway near Eagle Plains Lodge.

From 1978 to 1983 populations appeared relatively stable; the combined populations were estimated at less than 140 animals. In 1984 a 20% decline was observed in the Mt. Cronin population and lambs were virtually absent. Enquiries at Eagle Plains Lodge led to reports of unusually harsh weather in the last week of May, at the peak of lambing. In 1985 the Cronin population was only 70% of the counts in the late 1970's, which was attributed to the previous year's lamb failure and no recruitment into the non-lamb population. A study was initiated in 1988 to assess the current population status and demography.

The 1988 non-lamb count of the Mt. Cronin population was similar to the 1985 count, although lamb production was excellent, resulting in a 40% population increase since 1985. With good survivorship we can expect rapid population recovery.

For comparison, the Canyon Creek population had increased since the late 1970's in both ram and nursery sheep segments. Lamb production was good in 1988 and the population was experiencing growth.

INTRODUCTION

Two small, apparently isolated, populations of Dall sheep (Ovis dalli dalli) reside in the vicinity of Mt. Cronin (subsequently referred to as the Cronin population) and Canyon Creek in the Southern Richardson Mountains. These populations received some attention in the late 1970's as a result of road construction and pipeline proposals associated with the Dempster Highway corridor. General distribution and abundance were first documented in 1977 based on comprehensive helicopter surveys in the entire Richardson Mountains. More intensive surveys were done in 1978, and an intensive ground study was conducted in 1979 in the Cronin area to detail population demography and range use (Russell and Hoefs 1979). This work led to recommendations pertaining specifically to sheep in relation to the Dempster highway and possible pipeline corridors (Hoefs 1978). Concerns focused in the Cronin area. A major concern was the facilitated access of sheep to subsistence hunters and potential poachers, which was compounded by the location of a well-used lick in very close proximity to the highway. The fact that mature rams in the Cronin population were of exceptional trophy quality amplified concerns.

From 1978 to 1983 the Cronin population appeared relatively stable, at about 57 non-lamb nursery sheep and 20 rams three years and older (YTG file reports). The relatively small ram component was suspected to be the

result of illegal hunting or insufficient knowledge of total range (Hoefs 1978). The Canyon Creek population was not further investigated.

In July, 1984, a survey in the Mt. Cronin area found the population to have declined by approximately 20% from previous estimates, and lambs to be virtually absent (YTG file report). This finding occurred at a time when the sheep population in the Northern Richardson Mountains were healthy and expanding, and lamb crops were high (Barichello et al. 1987). Also, there was a paucity of 3/4 curl rams (1/12), which was again inconsistent with findings in the Northern Richardsons (Barichello et al. 1987). Enquiries at the Eagle Plains Lodge (km 368, Dempster Highway) led to reports of unusually harsh (winter) weather conditions in the last week of May, at the peak of lambing.

In June, 1985, only 39 nursery sheep were observed in the Mt. Cronin area, a decline of approximately 30% from estimates in the late 1970's. This decline was probably attributed to the previous year's failure of the lamb crop which resulted in virtually no recruitment into the non-lamb population in that year.

In light of this apparent population decline, and the relative vulnerability of the population due to it's isolation from other sheep populations and accessibility from the Dempster Highway, a study was initiated in 1988 to

assess current population status and demography. The Canyon Creek area was also surveyed to provide a comparison.

STUDY AREA

The Cronin sheep population resides in the Richardson Mountains, approximately 35 km north of the Arctic Circle, in the headwaters of the Vitrekwa River, an unnamed tributary of the Rock River, and Tetlit Creek (tributary of the Road River; Fig. 1).

The area extends approximately 20 km across the entire Richardson Mountains, and encompasses approximately 500 km^2. The Cronin population is considered discrete from the Canyon Creek population further south, and the relatively large population north, in the northern Richardson Mountains at the headwaters of the Rat and Little Bell Rivers.

Mt. Cronin is the highest point in the study area, at approximately 1100 m.a.s.l. The topography is atypical of sheep habitat. Hills are generally rounded and weathered and topographic breaks are relatively scarce, giving the impression of an area with insufficient sheep escape terrain. Talus is common.

The Canyon Creek population is found in the southern extremity of the Richardson Mountains, and south of the Arctic Circle, in the vicinity of Canyon and Doll Creeks (see Fig. 1). The area is largely above treeline and appears to be characteristic of Dall sheep habitat. Upper drainages have escarpment characteristics; that is, flat grassland benches bounded by abundant topographic breaks.

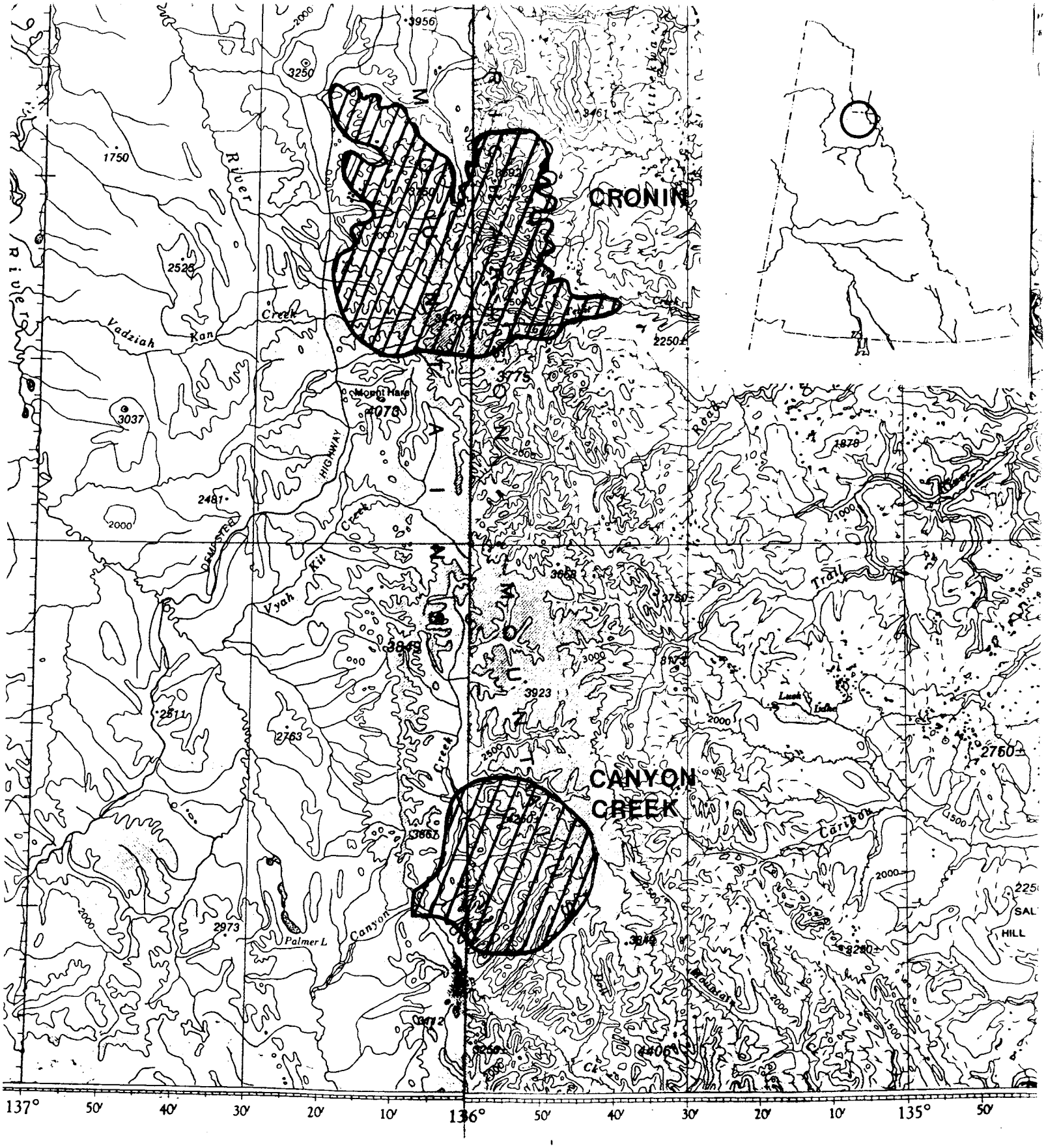

Figure 1. Location of the Cronin and Canyon Creek sheep populations in the Southern Richardson Mountains.

At lower elevations steep canyons are common. The canyon bounding Canyon Creek is particularly impressive, with 30 to 60 m sheer walls in places. The sheep population appears to reside in an area similar in size to the Cronin population, approximately 500 km^2.

These areas fall within the Northern Mountains and Coastal Plain Ecoregion, described by Oswald and Senyk (1977), and is largely above treeline. Trees (Larix laricina, Picea glauca, Picea mariana, and Populus balsmifera) are found only along the major drainages. Typical vegetative cover is Carex and Eriophorum tussock communities in the lowlands, and Dryas, Carex, Arctostaphylos and Graminoids on the steeper well-drained slopes and ridge tops.

METHODS

The census area was stratified based on previous survey results. Areas where sheep had not been found in previous surveys were superficially searched. Where sheep had previously been sighted, the search was intense and complete. A drainage survey technique was used according to Barichello et al. (1987). A Bell 206B helicopter was used, flying at less than 80 km per hour.

Animals were counted, classified by sex and age, and their locations mapped. The census was assumed to represent a total count. Animals in nursery groups were segregated as lambs and nursery sheep. Rams were classified into three horn curl categories (1/2, 3/4, and 4/4 curl), according to Barichello et al. (1987).

The entire census was done in less than three hours in the Cronin area, and approximately one hour in the Canyon Creek study area, on 20 June, 1988.

RESULTS AND DISCUSSION

The Cronin population.

A total of 66 sheep were sighted and classified, including 37 nursery sheep, 17 lambs and 12 rams. The breakdown of rams into 1/2, 3/4 and 4/4+ curl, was 2, 5 and 5, respectively. The percentage of lambs in the population was 25.8, or 45.9 lambs per 100 nursery sheep. Only 18.2% of the estimated population were 3+-year-old rams. Sheep locations were similar to those observed on 20 July, 1984, the last complete census achieved (Fig. 2).

From 1978 to 1984, summer counts have yielded between 80 and 107 sheep, with a consistent bias toward nursery sheep (Table 1). Rams three years and older have represented between 15.0 and 20.6% of the population, or about 35 per 100 nursery sheep. Rams in the northern Richardson Mountains from 1984-86, typically represented 20-25% of the population, or 42 per 100 nursery sheep.

With the exception of the failed lamb year, productivity has ranged from 20.5 to 52.7 in the Cronin area, with a 7-year average of 38.2 lambs per 100 nursery sheep. Lamb production has generally been good, and in 1988 was exceptional.

Half curl rams were under-represented in 1988, as compared to previous years (Table 1); only 2 of 12 rams (3+ years; 17%) were half curls. In the northern Richardson

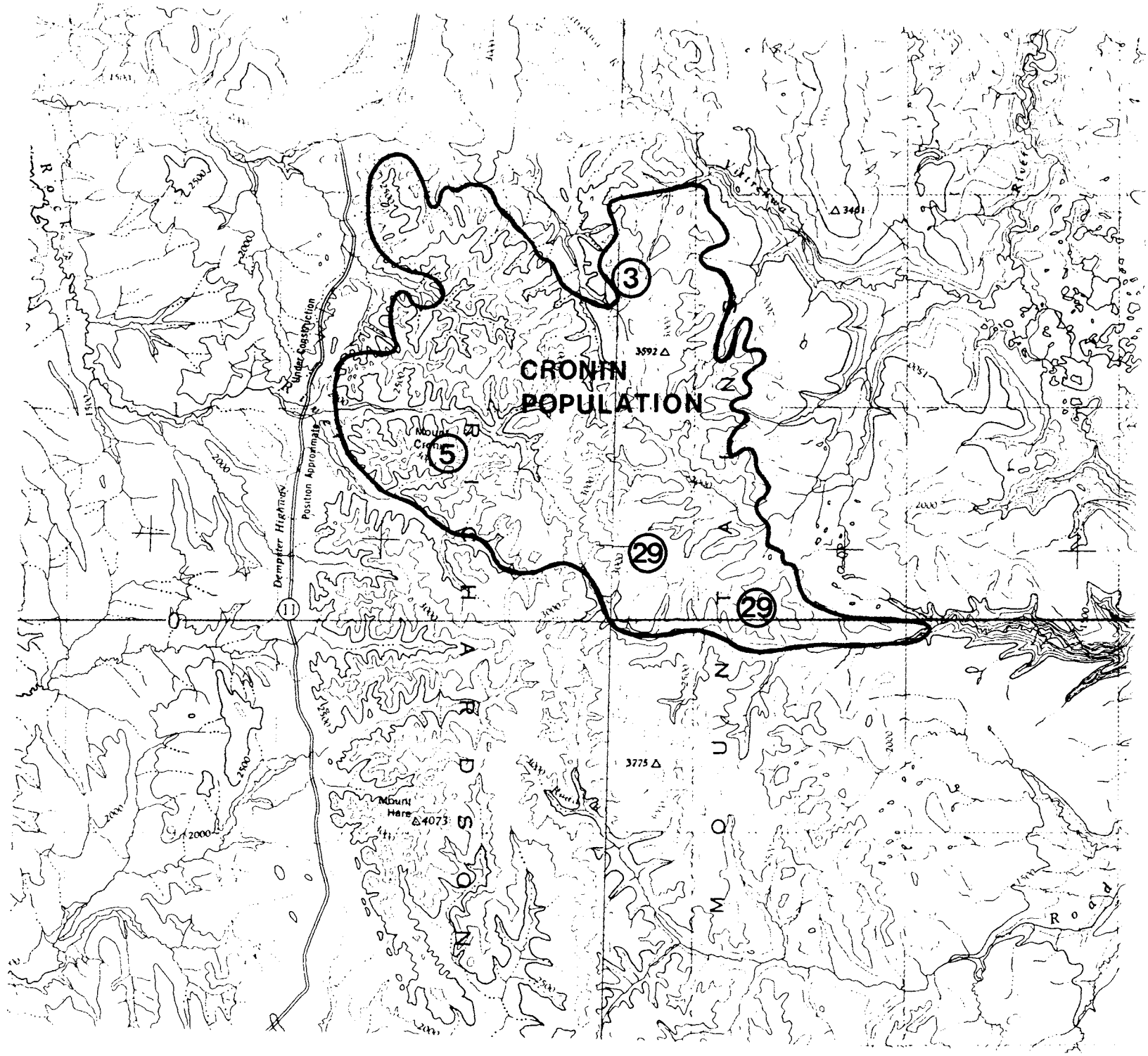

Figure 2. Number and distribution of sheep in the Mt. Cronin area, June, 1988.

Table 1. Sheep survey results in the vicinity of Mt. Cronin.

Year	Month	Nurs	Lambs	Rams				Total
				1/2	3/4	4/4	Total	
1977	July	37	13	-	-	-	8	58
1978	July	55	26	5	5	8	20	101
1979	Feb	-	-	-	-	-	-	60
1980	July	59	26	11	4	7	22	107
1981	July	55	29	4	4	11	19	103
1983	July	59	13	-	-	-	-	72
1984	July	67	1	7	1	4	12	80
1985	March	40	-	-	-	-	-	40
1985	June	39	8	-	-	-	-	47
1988	June	37	17	2	5	5	12	66

Mountains half curls typically represented about 31% of the 3+-year-old ram population (Barichello et al. 1987).

The entire population appears to have declined by about 36% since the early 1980's, at which time the population appeared relatively stable.

Nursery sheep, in June, 1988, represented only 65% of the typical count in the early 1980's. However, the 1988 nursery sheep count was similar to the 1985 count. A substantial decline (58%) was observed from 1984 to 1985, representing a decline of 32% since the stable counts of the early 1980's.

Ram numbers in 1988 were identical to the 1984 count. Between 1981 and 1984, 40% of the estimated ram population dissappeared. We noted no recovery in 1988. It is possible that rams are being overlooked. Given such a small population, if one group were missed, we would assume rams had declined. We concede that the search was superficial over a large area and may not represent a complete ram count. We have more confidence in the nursery count due to a well-accepted assumption that nursery groups are more traditional in their use of range (Hoefs and Cowan 1979, Festa-Bianchet 1986). A rut count will hopefully remove some of this uncertainty.

The under-representation of half curl rams in 1988 is probably a reflection of a declining population since 1984,

and more specifically, the loss of the 1984 cohort, and poor recruitment in 1985 and 1986.

In summary, the population count was similar to the June, 1985 count, and lamb production was excellent. We expect the population is slowly recovering. We are at a loss to explain the under-representation of rams. A rut count my shed light on this question.

The Canyon Creek Population

A total of 24 sheep were observed, all occuring in the lower reaches of Canyon Creek, along steep canyon walls (Fig. 3). The breakdown by sex and age was as follows: 12 nursery sheep of which at least one was a yearling, 5 lambs, and 7 rams. Of the rams, there was one 1/2 curl, one 3/4 curl and 5 full curls. One of the full curl rams was of exceptional trophy quality. Rams represented 29.2% of the population, which was a ratio of 0.58 rams to nursery sheep. This is a typical ratio of rams to nursery sheep.

Lamb production was 41.7 lambs per 100 nursery sheep, and lambs accounted for 20.8% of the population. These results are nearly identical to those observed in the Cronin area.

Half and three-quarter curl rams were under-represented suggesting some previously poor years of recruitment.

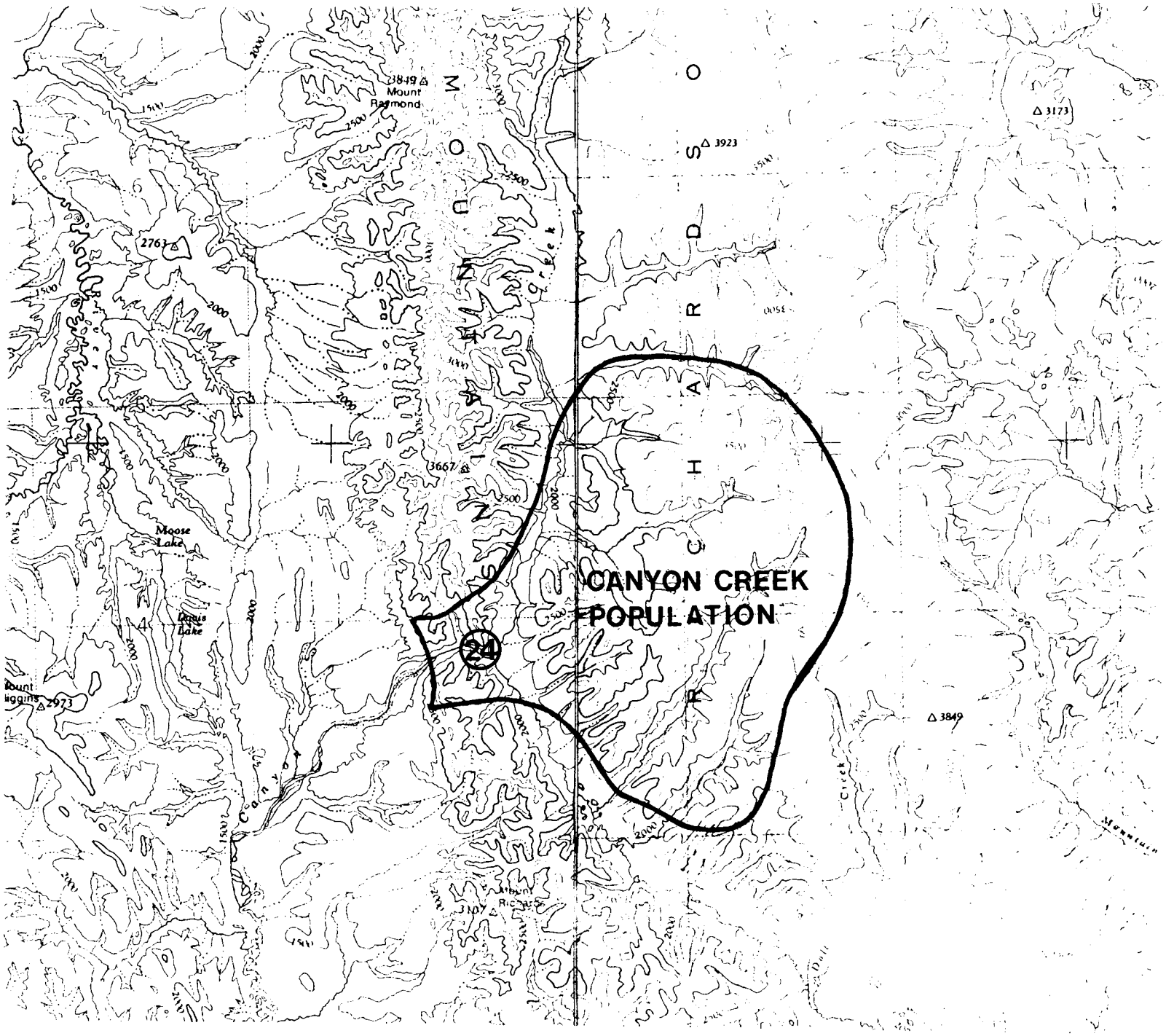

Figure 3. Number and distribution of sheep in the Canyon Creek area, June, 1988.

In total, the Canyon Creek population is fairing well, with increases observed of both rams and nursery sheep, since 1978 (Table 2). The sheep decline observed in the Cronin area since 1983 was not obvious in the Canyon Creek area, although the ram composition indicates poor recruitment in the mid 1980's. Perhaps population growth occurred from 1978 to 1983, followed by declines since 1984, similar to that observed in the Mt. Cronin area. Currently the population appears to be experiencing population growth.

Table 2 Sheep survey results in the vicinity of Canyon Creek.

Year	Month	Nurs	Lambs	Rams				Total
				1/2	3/4	4/4	Total	
1977	July	10	5	-	-	-	4	19
1978	Feb	10	5	-	-	-	4	19
1978	July	9	5	-	-	-	5	19
1985	March	6	2	-	-	-	3	11
1988	June	12	5	1	1	5	7	24

REFERENCES

Barichello, N., J. Carey, and K. Jingfors. 1987. Population ecology, range use, and movement patterns of Dall sheep (Ovis dalli dalli) in the Northern Richardson Mountains. Unpubl. rep. for Northern Oil and Gas Action Program Project G-14.

Festa-Bianchet, M. 1986. Site fidelity and seasonal range use by bighorn rams. Can. J. Zool. 64: 2126-2132.

Hoefs, M. 1978. Dall sheep in the Richardson Mountains - Distribution, abundance, and management concerns. Yukon Game Branch report 78-2.

Hoefs, M. and I. McT. Cowan. 1979. Ecological investigations of a population of Dall sheep. Syesis Vol. 12, suppl. 1.

Oswald, E.T. and J.P. Senyk. 1977. Ecoregions of Yukon Territory. Report by Fisheries and Environment Canada. 115 pp.

Russell S. and M. Hoefs. Mount Cronin Dall sheep study. Unpubl. rep.