

THE STATUS OF THINHORN SHEEP (Ovis dalli)
IN BRITISH COLUMBIA

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ABSTRACT

Both subspecies of Thinhorn sheep Ovis dalli dalli and Ovis dalli stonei occur in the Province of British Columbia. The white Dall's sheep (O.d.d.) is restricted in distribution to the northwestern corner of the province, where about 200 are found, with much larger populations in adjacent Yukon Territory. On the other hand, B. C. has a large Stone's sheep (O.d.s.) population, estimated at 10-11 thousand. These are found on suitable mountain ranges north of 56° latitude and west of 122° longitude. Figure 1 shows the distribution of Thinhorn sheep in British Columbia as well as giving an indication of population density. Within their total range, the densest populations have been recorded in the Muskwa River and Kechika River drainages. Surveys indicate that the Province's Stone's sheep population appears to be declining with habitat deterioration and more importantly predation by wolves as causative agents. Currently the total annual harvest of thinhorn sheep in British Columbia amounts to 250 to 300 rams.

INTRODUCTION

Thinhorn sheep (Ovis dalli) are represented with two subspecies in British Columbia. The generic white Dall's sheep (Ovis dalli dalli) are found in low numbers contiguous with populations in the Yukon and Alaska, while the dark Stone's sheep (Ovis dalli stonei) are centered on the Kechika-Muskwa ranges of northern British Columbia. Figure 1 gives the generalized range and abundance for these two subspecies in the province. The Pine River marks the southern extent of the species, with no substantial numbers being found until one looks north of the Peace River. It appears that prior to impounding the Peace, Stone's annually travelled back and forth across the river.

The populations are associated with winter ranges receiving snow removal action by chinook winds. Many of the more dense populations have access to early, late, and in some cases mid-winter subalpine grassland ranges. These

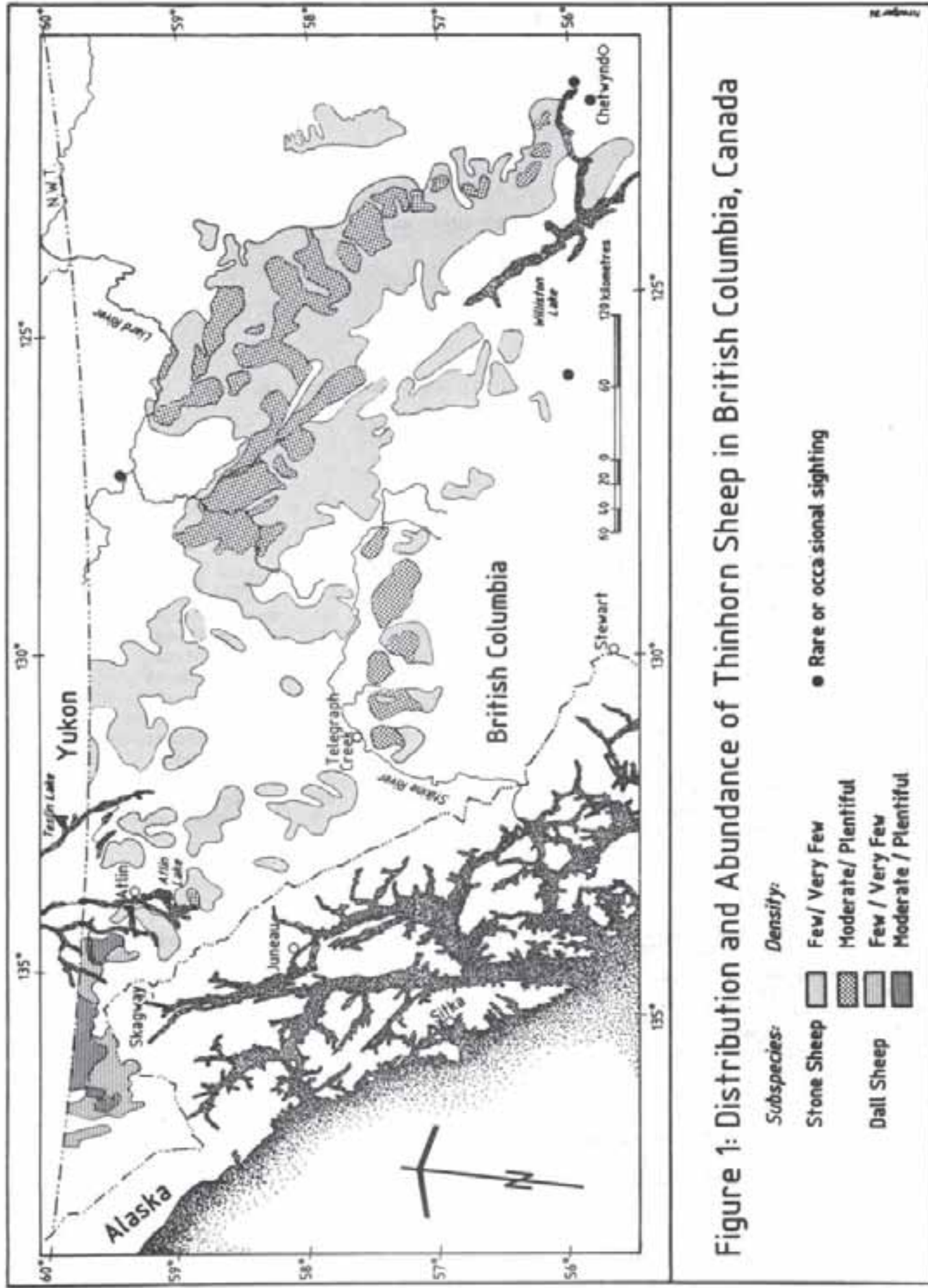


Figure 1: Distribution and Abundance of Thinhorn Sheep in British Columbia, Canada

are dis-climax sites resulting from fire. Lack of trees on these sites allows wind action and insolation to remove snow cover.

Thinhorn mountain sheep hunting is substantially the most valued hunting in the province (Reid, in prep.) both for resident and non-resident hunters. This attractiveness has made recreational hunting of these animals a major feature in the economic viability of northern B. C. guide outfitting operations. Further, as the only big game animal in the province which is not found in substantial proportion in other jurisdictions, it holds a unique importance.

METHODS

Information on the distribution, abundance, and trends in thinhorn sheep populations is based on aerial surveys supplemented with reports from local residents. The larger populations of the Liard drainage (downstream of the Dease) have received most study.

Specific surveys involve the determination of population numbers for discrete units of approximately contiguous (to the mountain sheep) winter range. Fairly intensive contour pattern searching of the units was undertaken during winter from helicopter. All likely sheep use areas in a unit were searched. Because of the wider distribution of males this procedure was felt to provide population estimates and proportions for ewes and juveniles only.

Determination of proportions observed and statistical confidence limits has proven difficult in the absence of marked animals. To gain some understanding of these parameters one forty square mile (100 square kilometer) test unit was counted five times over a ten day period utilizing the same observers and a similar (standard) search pattern. The standard deviation (plus or minus) of the counts was seven (7) percent of the mean. While this does not indicate the true population size, the open nature of the winter ranges, the normalized distribution of the estimate and, the narrow deviation suggest that on average the procedure would detect 75-85% of the sheep. For population estimates 75 percent was adopted, with numbers of adult ewes (two or more years of age) used for temporal comparisons.

A number of wintering areas have been searched with the standard technique at different points in time allowing calculation of rates of population growth. Rates for populations undergoing different treatments - unaltered, enhanced range and, reduced predators - have also been examined.

RESULTS AND DISCUSSION

Approximately 200 white Dall's sheep reside year round in the far northwest of the province with a summer influx of a further 200 to 300 from winter ranges outside the province.

Van Drimmelen (pers. comm.) reports that Stone's sheep west of the Dease and in the mountains drained to the Pacific appear to be remaining stable. Approximately 4000 mountain sheep are found in that area with the highest concentration areas being south of the 58th parallel.

The historically larger populations in the eastern half of the province have not fared so well. Utilizing population growth rates from the different units and weighting them based upon the number of ewes and years involved (total sample size of 3,319 ewe years), it was determined that the average population growth was minus 10.0 percent per year for the period 1977 to 1984. This yields a 52 percent population decline during that period.

Estimating that the units in the east searched within the last couple of years incorporate one-third of the Stone's in the east of the province, there are about 3,000 adult ewes remaining. This translates to approximately 6,000 to 7000 total thornhorn mountain sheep in the east, giving a provincial total of about 10,000 to 11,000. This is a substantial reduction from an estimated 17,000 to 18,000 in the late seventies.

Declines in the east appear to be accelerating with late winter counts now yielding about 20 short yearlings per 100 adult ewes and 5 long yearlings for 100 adult ewes.

Range enhancement by burning of accessible low elevation woodland has been found on average to slow population decline by 50 percent. Range burning has been widely applied for Stone's sheep, as it is also found to improve trophy quality (Elliott, 1978). Management of wolf numbers has been found more effective, however. Juvenile mountain sheep survival rates are highly negatively correlated with winter wolf densities and generally increasing wolf densities for several years appear to explain the accelerating sheep declines (Elliott, 1984 a and b).

The hunter harvest for 1983 in British Columbia was 266 Stone's sheep and 10 Dall's sheep. At present the entire Dall's sheep harvest by resident hunters is through a limited entry system as is approximately 2 percent of that of Stone's sheep. Excepting in parks, it is anticipated that there will be a move away from limited entry harvest. Harvest by non-residents is restricted through quotas.

At present 38 percent of the harvest of thornhorn sheep is by resident hunters. Only rams eight years or older, or rams with horn tips extending above the bridge of the nose are legal during open seasons. Some smaller populations are totally protected from hunting (excepting total open hunting by treaty Indians), however these populations seem especially prone to heavy mortality to wolves. Some portions of the range of larger populations are also closed to hunting. Compulsory reporting and horn inspection of hunter kills has been required since 1975.

Presently resident hunters must obtain a hunting license (\$17.00) and a mountain sheep license (\$50.00) for mountain sheep hunting. Non-residents must obtain a hunting license (\$43.00), a mountain sheep license (\$300.00) and use the services of a guide. There are now 33 registered outfitters operating within the range of thornhorn sheep in British Columbia.

LITERATURE CITED

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