

DISTRIBUTION, ABUNDANCE AND MANAGEMENT
OF MOUNTAIN GOATS IN THE YUKON¹

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Until 1972 the Yukon Game Branch was an agency concerned solely with enforcement and administrative matters. While there was a general impression about the distribution of big game animals over the Yukon Territory based on information obtained from outfitters and hunters, no actual game surveys had been made. Hunting regulations were adopted from those of neighbouring jurisdictions, and a Canadian Wildlife Service biologist served as special advisor to the Commissioner of the Yukon Territory on game management matters.

In 1972 the Yukon Game Branch followed the example set by the Northwest Territories Game Branch and began to hire its own biologists. A Territory-wide big game inventory was begun in 1973 and has so far covered about one-third of the Yukon. The Yukon is divided into 11 game management zones, and the present budget allows the Game Branch to cover one game management zone per year with this inventory. Aerial surveys are conducted twice a year; one in July to do classified counts, and one in February to locate and map winter ranges. Utilizing helicopters for summer counts, population estimates are considered fairly reliable, since all goats are at alpine elevations and their white coats show up very distinctly against the dark background of cliffs or alpine meadows.

DISTRIBUTION AND ABUNDANCE

Goat ranges extend only into the southern one-third of the Yukon Territory, and using the criteria of productivity and goat density, these ranges are marginal compared to those of British Columbia and the Alaska Panhandle.

With the exception of Game Management Zone 10, all game management zones that are known to have goat populations or have had them in recent times, have been covered by our big game inventories. Hence our population estimates for Yukon are considered fairly reliable. The estimates given for Game Management Zone 10 are based on information obtained from the big game outfitters in the area: R. Hassard, C. Martin and D. Smarch.

Figure 1 shows the distribution of goat ranges in the southern Yukon in relation to the game management zones. Table 1 summarizes the population estimates.

Table 1. Population estimates of mountain goats in the Yukon Territory.

Game Management Zone	Population Estimates	Hunting Season	Source of Information
6	900	Closed	Hoefs, 1973 Christiansen, 1973
7	100	Sept. 1 - Sept. 30	Hoefs, 1974
9	20	Closed	Hoefs, 1974
10	80	Aug. 1 - Oct. 31	Outfitters: Smarch, Hassard, Martin
11	300	Aug. 1 - Oct. 31	Hoefs and Lortie, 1976

¹Editor's note. Paper not part of Symposium.

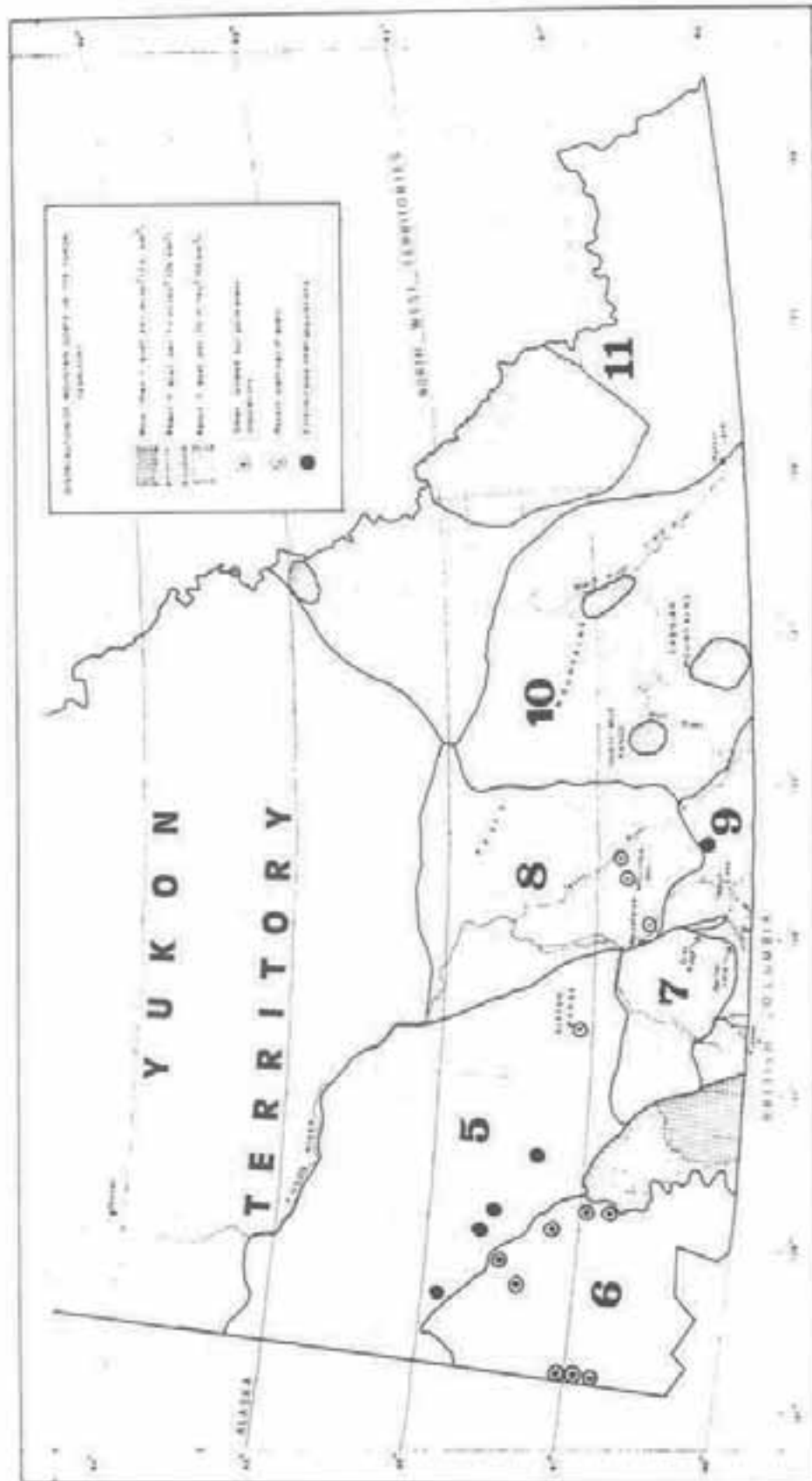


Figure 1.

Game Management Zone 6 - This zone comprises the newly-established Klauane National Park and the adjacent Klauane Game Sanctuary (Fig. 1). Detailed surveys conducted by Hoefs (1973) and Christiansen (1973) estimated the total goat population at about 900 with variable densities locally. Eight isolated small populations are found north and east of the Slims River (Fig. 1) while populations are more or less continuous at a density of 1 per 26km² south of the Slims River to the Kathleen Lake - Sockeye Lake valley. These areas are prime habitats for dall sheep. Goat populations are continuous and dense in the southernmost portion of the Klauane area, from the Kathleen Lake - Sockeye Lake valley south to the British Columbia border. This is the best goat habitat in the Yukon with an average density of more than 1 goat per 2.5km² and a considerably higher density around "Goatherd Mountain". Goats are the most abundant ungulates in this southern portion of the Klauane area, with dall sheep represented only in small, discontinuous populations (Hoefs, 1973).

Game Management Zone 7 - This area (Fig. 1) contains good goat ranges along its southern border, however, populations have been decimated by heavy hunting. Present estimates indicate a total population of not more than 100 (Hoefs, 1974). Remnant, small populations are found around Bennett Lake and in isolated area in the southwest portion.

Game Management Zone 9 - Goat ranges in this zone (Fig. 1) are restricted to its southwest corner, around Tagish Lake (Windy Arm) and Grey Ridge along the Carcross Road. The total population is estimated at about 20 (Hoefs, 1974).

Game Management Zone 10 - This area (Fig. 1) has not been surveyed yet and information on goat distribution was obtained from the outfitters in this area. Small populations are reported for the Cassiar Mountains, the Pelly Mountains along Black River, and the "Thirtymile Range" west of Wolf River. The total goat populations in this area appear to be not more than 80 to 100.

Game Management Zone 11 - This area (Fig. 1) includes extensive goat ranges in the Logan Mountains and a small population in the Itsi Range, the northernmost population (63° N) in the Yukon. Detailed surveys were conducted last year and the total population is estimated at about 300 (Hoefs and Lortie, 1976). However, it appears that goat habitat in this area is marginal, with densities as low as 1 goat per 52km², extremely low if one considers that there are no sheep in this range to compete with goats as in other areas of the Yukon. Productivity appears also to be very low in this range. Of 208 goats classified during our survey, only 22 (11.8 percent) were kids. This is hardly enough to compensate for adult mortality.

In addition to the "resident" populations described above, individual goats or small groups have been observed in recent years in the following locations: Grey Ridge east of Whitehorse, McClintock Mountain and Teslin River area east of Whitehorse, and Sifton Range northwest of Whitehorse.

There are a number of other locations where goats are known to have existed in small populations in recent history, but where they apparently have been exterminated. These areas include: White Mountains near Jakes Corner, Kockslide Creek in the Klauane Range, Mineral Creek in the Klauane Range, Tincup Lake area in the Klauane Range, and an unnamed mountain east of Pickhandle Lake along the Alaska Highway. Youngman (1975) lists unconfirmed records from Carmacks, Tombstone Mt., and even Lapierre House.

In summary, the goat population in the Yukon is presently estimated at about 1400. A slightly modified estimate may be established once game inventories have been carried out in Game Management Zone 10. Of the total of 1400 goats, 900 are under full protection in the Klauane Park area, as is a small population of perhaps 20 goats in Game Management Zone 9. Goats in the other areas are subject to hunting pressure of varying degrees.

MANAGEMENT OF GOATS IN THE YUKON

It appears that all goats in the Yukon, at least all hunted populations, are of the subspecies *Oreamnos americanus columbianae*. Game management practices therefore can concentrate on the status and performance of goat populations and need not accommodate taxonomic questions.

In spite of the fact that mountain goats are the rarest big game species in the Yukon with only about 500 subject to hunting, game laws until 1974 were very liberal. There was a Territory-wide open season of three months duration (Aug. 1 to Sept. 30), and goats of either sex could be shot as long as their horns were 10cm (4 in) long. This provision only protected the kids of the year, since yearling goats already have horns longer than 10cm by the time the hunting season starts in August.

When big game inventories were started in 1973 and 1974, it soon became apparent that the relatively small goat populations were subject to severe hunting pressure and that goats in some areas were definitely over-harvested. Table 2 lists the annual harvest statistic for goats over the past 25 years. While 50 to 60 goats per season in the early 1970's may not appear excessive

from a total population of about 500, one has to realize that hunting pressure was not evenly distributed, being concentrated in accessible areas. In particular, Game Management Zones 7 and 9, south of Whitehorse, were heavily hunted with at least 20 goats taken out of a population of about 100 animals in 1973.

Table 2. Goat harvest statistics for the Yukon Territory.

Season	Non-Residents	Residents	Trappers	Total Kill
1976/77	9	7	1	17
1975/76	16	8	1	25
1974/75	20	10	0	30
1973/74	27	15	0	42
1972/73	32	20	2	54
1971/72	42	17	3	62
1970/71	19	23	6	48
1969/70	19	18	1	38
1968/69	6	14	2	22
1967/68	26	18	1	45
1966/67	28	6	4	38
1965/66	17	19	3	39
1964/65	17	7	1	25
1963/64	9	21	4	34
1962/63	13	11	0	24
1961/62	5	13	0	18
1960/61	9	4	3	16
1959/60	7	9	0	16
1958/59	6	13	2	21
1957/58	6	8	1	15
1956/57	5	8	1	14
1955/56	9	7	4	20
1954/55	6	3	3	12
1953/54	1	5	4	12
1952/53	2	3	2	7
SUM	358	287	49	694
PERCENT	51.7	41.3	7.0	100.0

A number of restrictions were imposed for the 1974 hunting season with the objectives of reducing the harvest, particularly that of female goats, and allowing the depleted populations in Game Management Zones 7 and 9 to recover. In 1974 with the establishment of Game Management Zones

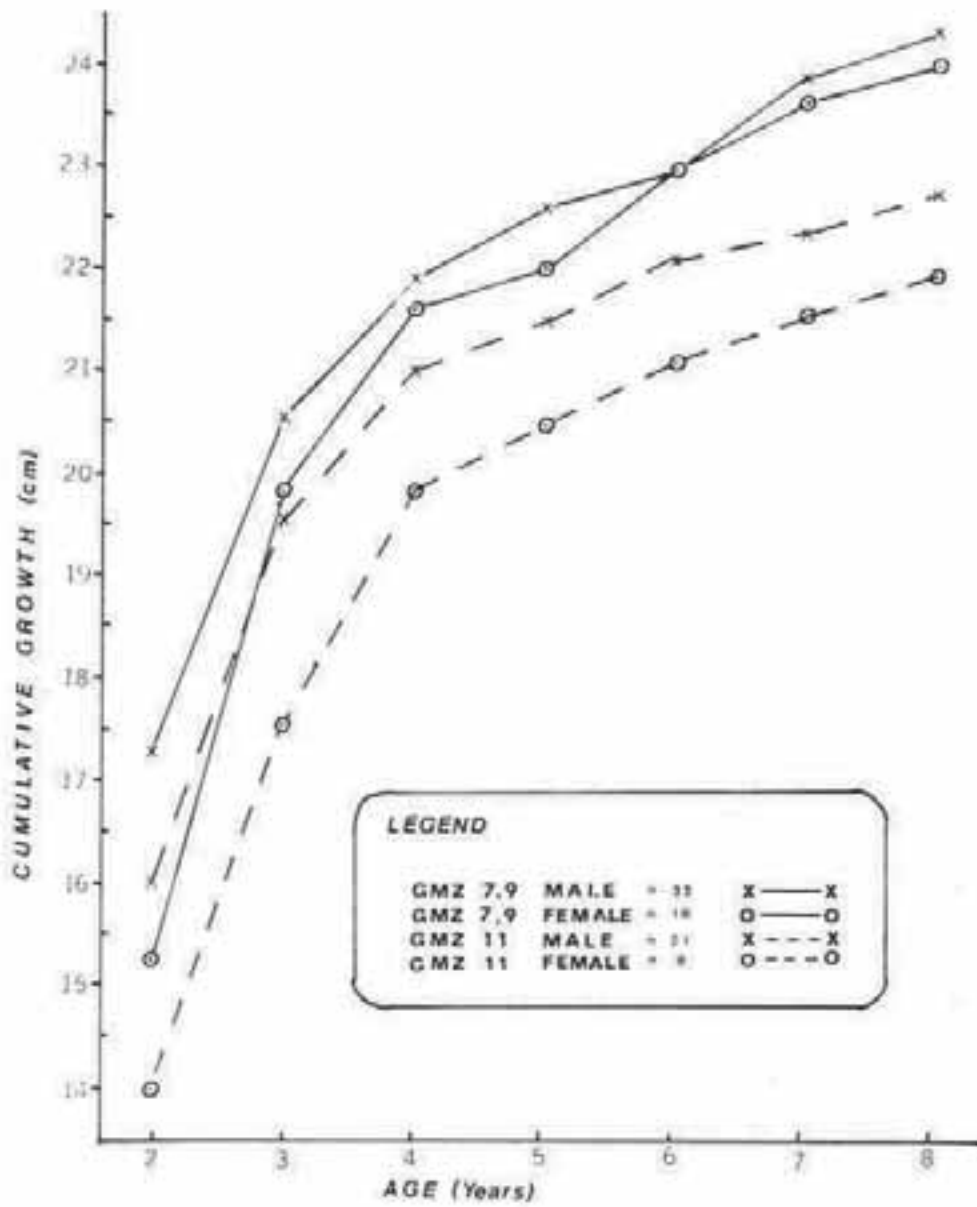


Figure 2. Horn growth of males and females.

the Game Branch was able to deal with these depleted populations separately from those of other areas, largely inaccessible, and hunted primarily through outfitters guiding non-residents.

The following new regulations came into effect in 1974: female goats accompanied by a kid were protected; all goats with a horn length of less than 20cm (3 in) were protected; the length of the open season in Game Management Zone 7 was reduced to one month (Sept. 1 to Sept. 30); Game Management Zone 9 was closed to goat hunting, and; all heads of the goats taken had to be submitted to the Game Branch for inspection and measuring.

Even though there was considerable opposition by the hunting community to the new regulations, in particular to the "8-inch (20cm) rule" the objectives of the Game Branch were achieved. The annual harvest during the past three years is less than 50 percent of what it had been during the early 1970's, and more importantly, there is more protection of the breeding stock. Prior to 1974 the sex ratio to the harvest was around 50:50, while during the past three years it has been 65:35 in favour of billies.

The effects of the "8-inch (20cm) rule" are shown in Figure 2 in which the cumulative horn growth is plotted against the age of the goats. This rule protects all goats less than three years old and females in certain populations (GMZ 11) until they are in their fifth growing season.

The fact that it is now compulsory to submit skulls for measurements allowed the Game Branch to do a number of statistical tests. Only those factors found to be significantly different (95 percent c.l.) are mentioned below.

- 1) Goats shot in GMZ 11 are significantly older than those shot in GMZ 7.
GMZ 11: $\bar{x} = 7.3 \text{ years} \pm 2.6$, $n = 29$
GMZ 7: $\bar{x} = 5.2 \text{ years} \pm 2.3$, $n = 41$
This further substantiates the different degree of hunting pressure to which these two populations are exposed.
- 2) Males have significantly larger horn bases than females.
 σ^2 : $\bar{x} = 13.39 \pm 0.8\text{cm}$, $n = 43$
 \pm : $\bar{x} = 10.59 \pm 0.5\text{cm}$, $n = 27$
While this is a known fact, exact statistics were previously not available for Yukon goats.
- 3) Male horn growth in the first two years is significantly larger than female horn growth.
 σ^2 : $\bar{x} = 16.6 \pm 1.4\text{cm}$, $n = 43$
 \pm : $\bar{x} = 14.7 \pm 1.9\text{cm}$, $n = 27$
- 4) Female horn growth during the third growing season is significantly larger than male horn growth.
 σ^2 : $\bar{x} = 4.4 \pm 0.6\text{cm}$, $n = 27$
 \pm : $\bar{x} = 3.4 \pm 0.6\text{cm}$, $n = 39$
- 5) To date sample sizes are not large enough to show a significant difference in horn growth rates between the females of GMZ 7 and those of GMZ 11, even though indications are in that direction (see Figure 2).

Because of the limited distribution of goats in the Yukon, their economic importance to the Territory is not very large. Resident hunters who want to bag a goat need to obtain, in addition to their hunting licenses (\$5.00), a goat tag for \$3.00. Non-resident hunters can only hunt through a registered outfitter. In addition to their license of \$100.00 (\$50.00 if Canadian) and the goat tag (\$3.00), they have to pay a trophy fee of \$100.00 after completion of a successful goat hunt.

During 1975, 140 resident hunters obtained a goat tag but only eight were successful for a success rate of only 5.7 percent. During the same year 72 non-resident hunters obtained a goat tag of which 16 were successful for a success rate of 22.5 percent. Total revenues collected by the Game Branch for goat hunting during that season therefore was less than \$2,000.00. The economic importance of goat hunting to the Yukon outfitters' industry is very low also. Even though five outfitting areas have goats in them, only one - located in GMZ 11 - depends heavily on goats as there are very few sheep in this area. This outfitter's harvest of goats has averaged 12 per season and at times has been as high as 22 (1972).

The Game Branch feels that the present regulations may be sufficient to allow the goat populations to maintain themselves. Poaching so far has not been a problem. To date re-introductions into formerly occupied ranges have not been attempted in the Yukon.

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