



Aerial Wildlife Survey Report

Willmore Mountain Goat Surveys (2021)

Background

Annual minimum total count (MTC) surveys for mountain goats have been conducted in the Willmore Wilderness Park and adjacent areas since 1974. The goal of these surveys is to collect data on population trends, distribution and herd composition, and to monitor the status of these mountain goat herds given their sensitivity to harvest. No aerial surveys were flown in 2020.

The objective of the 2021 surveys was to inform the status of mountain goat populations in the Northwest Region which have traditionally supported licensed or unlicensed harvest and 4 complexes where declines have resulted in very small populations with high conservation risk (i.e. Goat Cliffs/Grande Mountain, Mount Hamel, Caw Ridge and Sulphur Mountain).

Survey method

Surveys of the Ptarmigan Lake, Mt. Deveber, Llama-Turret, North Persimmon, South Persimmon, Monoghan, Goat Cliffs/Grand Mountain, Rockslide, Kvass, Triangle, Mt. Hamell and Sulphur Ridge complexes. A Bell 206B helicopter was flown counter-clockwise around each mountain complex between timberline and ridge top. Air speed ranged from 120 - 150 km/hr. The left front passenger was responsible for navigating, classifying and taking photos. The rear left observer also classified and photographed groups. Global Positioning System (GPS) locations and composition were recorded for each group of goats by the rear right observer. All flights were conducted in the early morning and in the evening during the goats' most active periods and when winds were typically minimal. After the survey, group photographs were used to confirm or improve field classification where possible. Caw Ridge counts are not from aerial surveys but instead were conducted from detailed ground counts by Laval University (Steeve Cote, pers. comm.).

To assess trends in local population abundance, we compared annual total counts of non-kids (adult and yearling mountain goats) to the long-term average for each of the complexes. At a regional scale, we used a population index to assess trends in abundance through time. This index was calculated by dividing the total number of non-kids observed in all complexes flown in a given year by the sum of the long term averages for those complexes. An index value of 1 represents average mountain goat abundance, 0.5 and 2.0 represent half and double the average mountain goat abundance for the region respectively. Similarly, we assessed regional trends in kid productivity by pooling all observed groups across complexes.

Results

Surveys were completed from June 23-July 12, 2021. A total of 478 mountain goats were observed from 99 independent groups across all surveyed complexes. Of this total, 338 adults, 34 yearlings and 107 kids were observed (Table 1). The kid:non-kid ratio was 0.29. After a period of general decline, many of the mountain goat populations within the Willmore are trending towards, or above, the long term averages, however the 4 mountain goat populations in the front ranges (Goat Cliffs/Grande Mountain, Mount Hamel, Caw Ridge, Sulphur Ridge) demonstrate continued low population sizes with no recovery.

TABLE 1: TOTAL COUNT AND AGE COMPOSITION OF MOUNTAIN GOATS OBSERVED, BY COMPLEX, DURING 2021 SURVEYS

Complex	Adult	Yearling	Kid	Total
Mount Deveber	72	8	23	103
Monoghan	51	2	22	75
Ptarmigan Lake	53	5	7	65
Llama-Turret	36	5	12	53

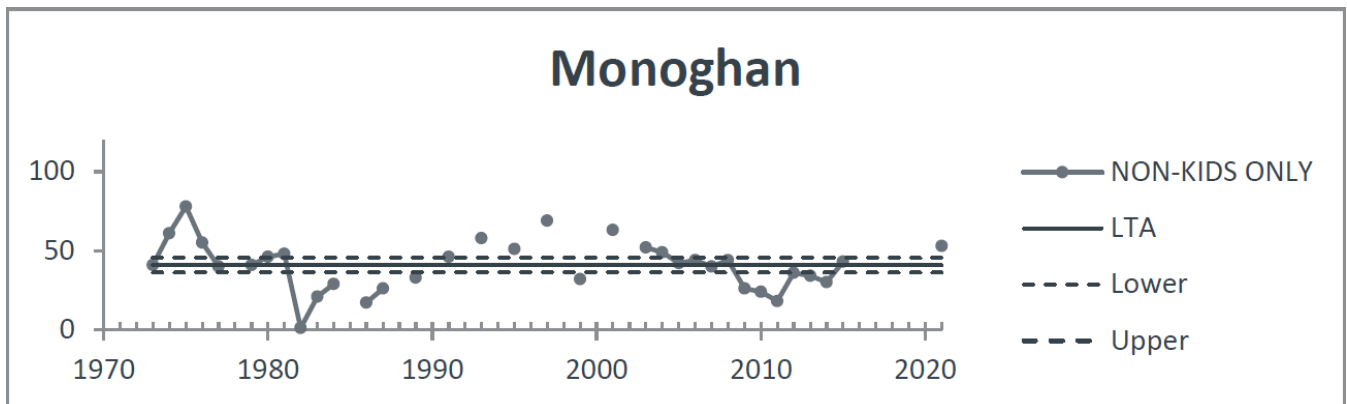
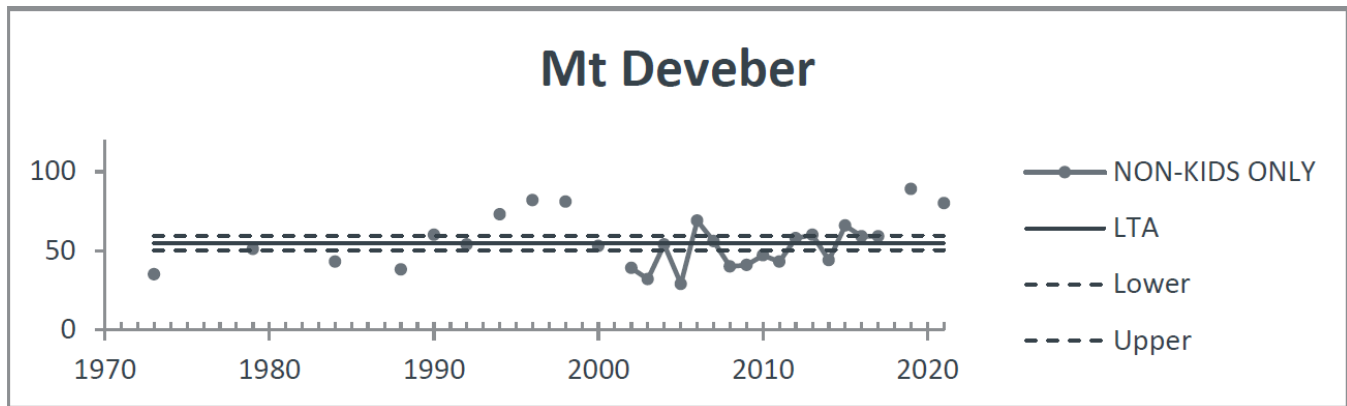
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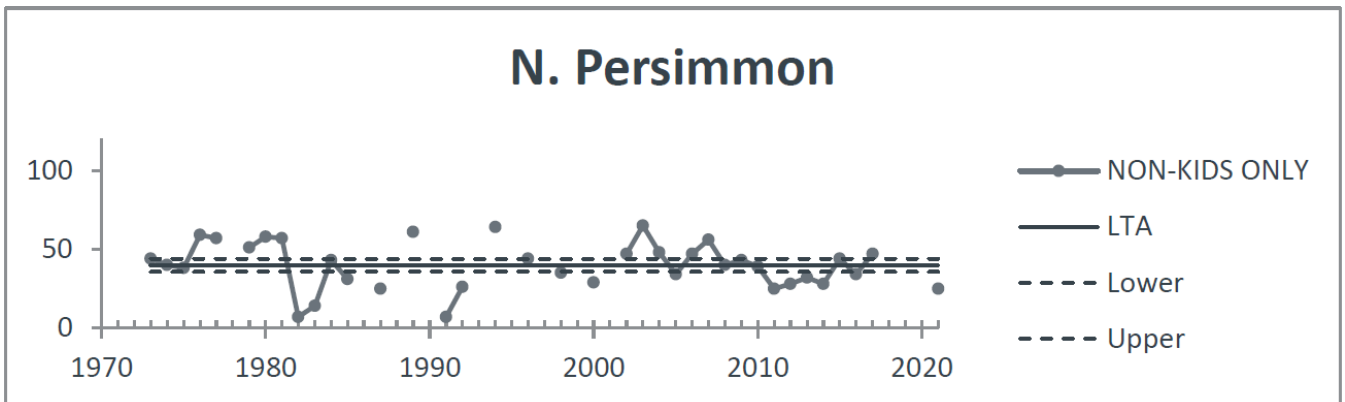
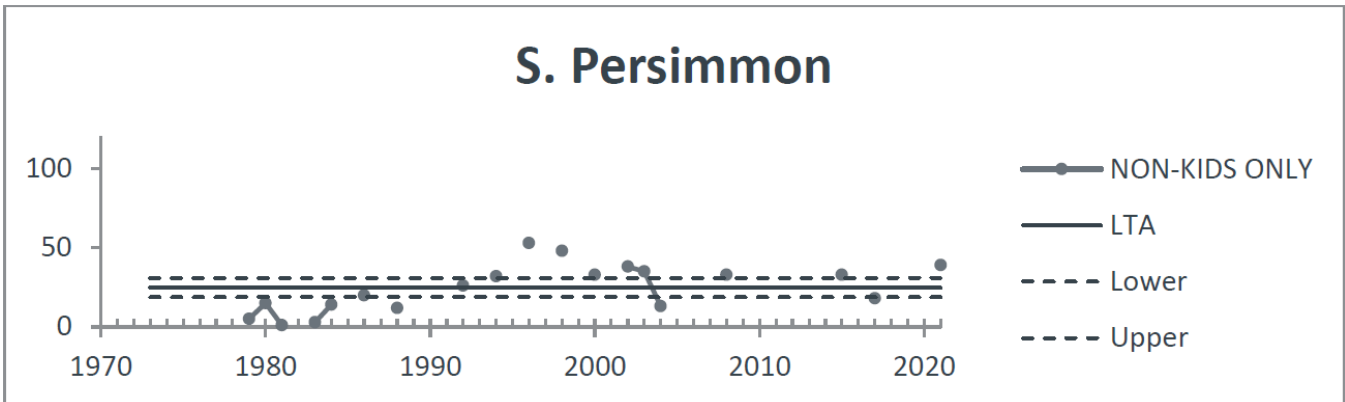
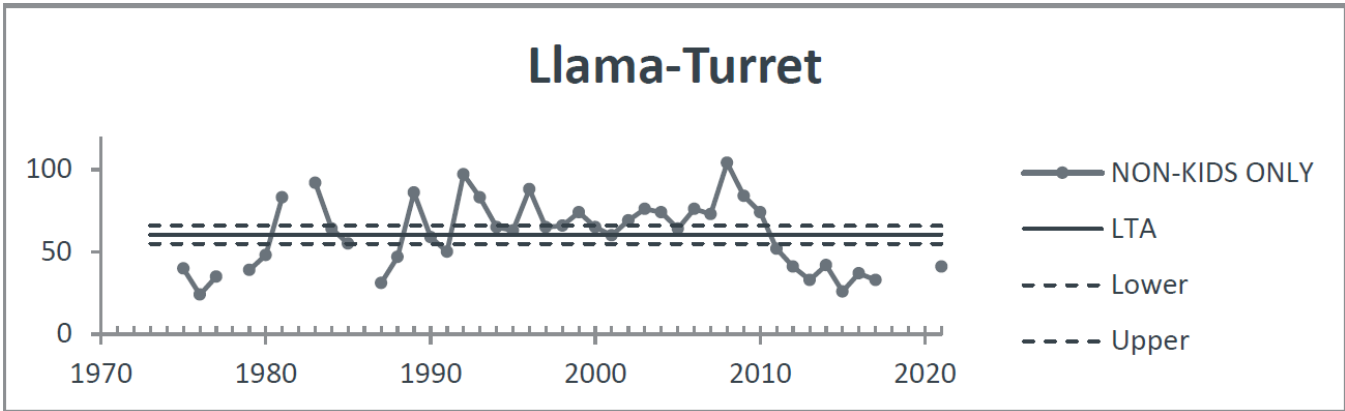
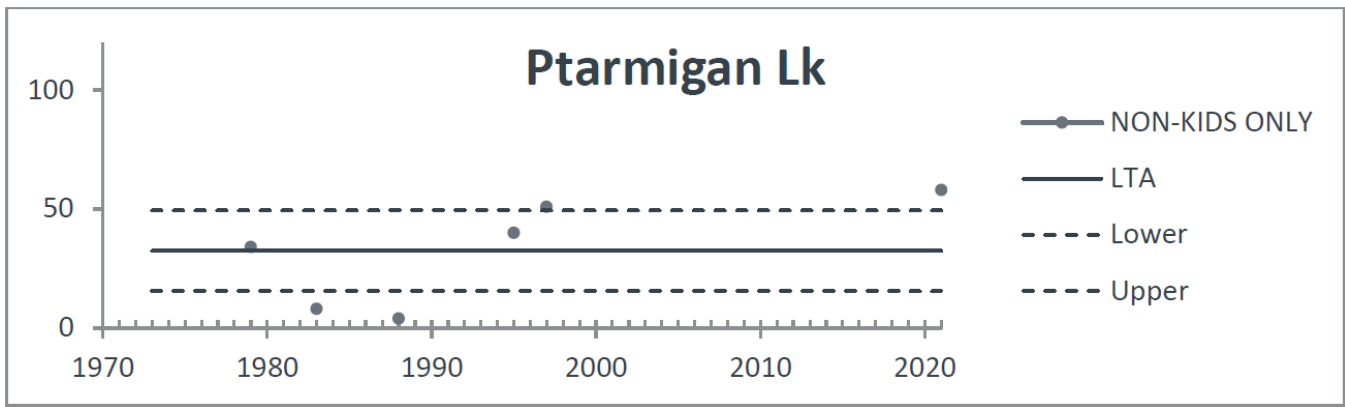
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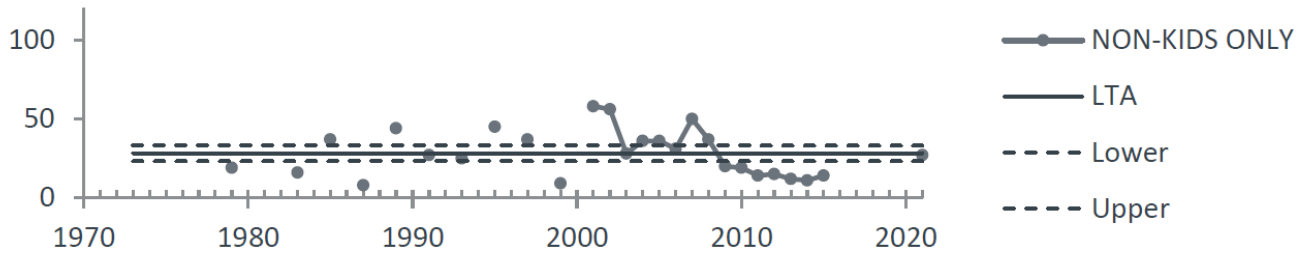
Complex	Adult	Yearling	Kid	Total
South Persimmon	31	8	12	51
North Persimmon	23	2	10	35
Rockslide	24	3	5	32
Goat Cliffs/Grande Mountain	13	1	4	18
Triangle	12	0	4	16
Mount Hamell	7	0	6	13
Sulphur Ridge	8	0	1	9
Kvass	8	0	0	8

FIGURE 1. MINIMUM TOTAL COUNT AND LONG-TERM AVERAGE (WITH 90% CONFIDENCE INTERVALS) OF ADULT (NON-KID) MOUNTAIN GOATS FOR EACH COMPLEX FLOWN (EXCEPT BY NON-AERIAL GROUND COUNT IN THE CAW RIDGE COMPLEX) IN 2021

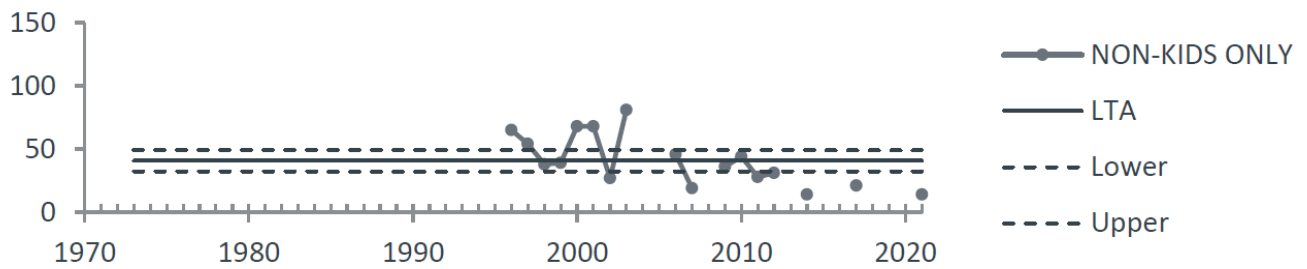




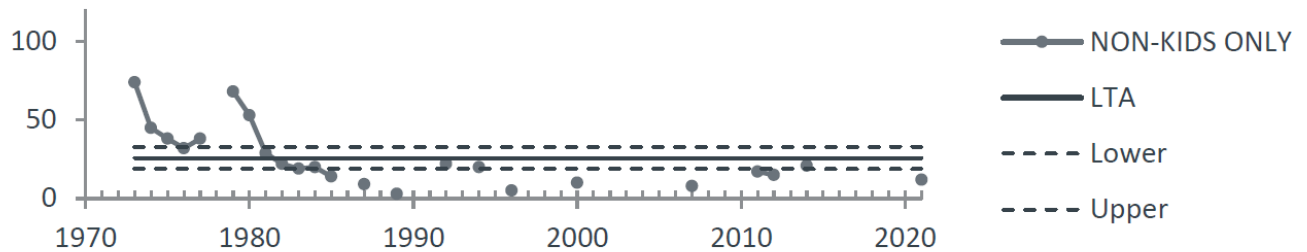
Rockslide



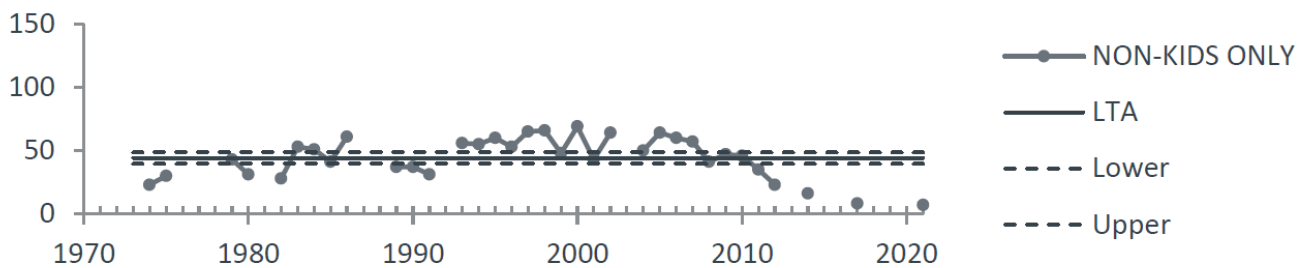
Goat Cliffs/Grande Mtn



Triangle



Hamell



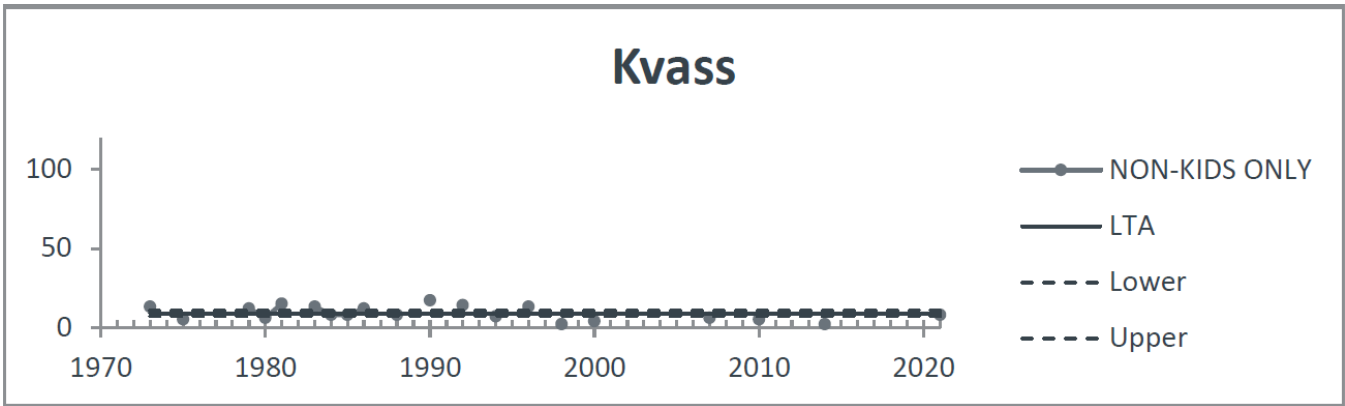
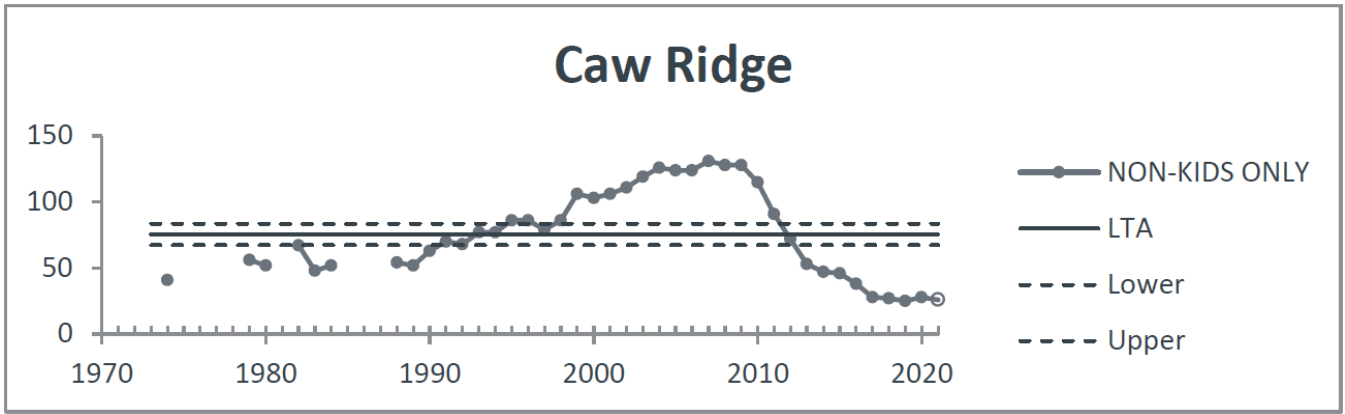


FIGURE 2. POPULATION INDEX AND KID/NON-KID RATIO OF MOUNTAIN GOATS AVERAGED ACROSS ALL WILLMORE COMPLEXES FROM 1973 TO 2021. THE Y-AXIS IS REPRESENTED ON A LOGARITHMIC SCALE.

