

# Aerial Wildlife Survey Report

## Wildlife Management Unit 440 Aerial Ungulate Survey (2020)

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### Background

Wildlife Management Unit (WMU) 440 is located in west-central Alberta, covering an area of 2462 km<sup>2</sup>. The unit is bordered by the Sulphur and South Sulphur Rivers to the west, Highway 40 to the north and east, and the Wildhay River to the south. The habitat is composed of mature and regenerating coniferous forest with scattered low elevation meadows, and non-forested alpine environments at higher elevations. Due to the constraints of the topography, alpine areas (979 km<sup>2</sup>) were not surveyed. These areas are presumed to support very few moose during the winter, and are not included in the density and population estimates.

Until this survey, a survey to estimate a population density for moose in WMU 440 has never been conducted. The goal of this year's (2020) survey was to assess the feasibility of using distance sampling to survey for moose in a mountain/foothill WMU and to establish a baseline status of moose in WMU 440. Specific objectives were to determine a population estimate, population ratio for sex and age classes, and a density estimate for moose in WMU 440. Incidental observations of other ungulates were also recorded, but there were too few observations to determine a population estimate.

### Survey method

An aerial survey for moose in WMU 440 was conducted from February 18<sup>th</sup> to 19<sup>th</sup>, 2020. Distance sampling methods (Buckland et al., 2001) were used to determine a moose density estimate. Distance sampling transects ( $n = 159$ ), were established throughout those portions of the unit that were considered feasible to fly (1483 km<sup>2</sup> outside of alpine areas and rugged terrain dominated by slopes exceeding 20°). Transects were spaced 1.2 km apart and spanned the entire width of the survey area from north to south. Moose, deer and elk were classified by age (adult or young) and sex.

### Results

All available transects were flown for a total survey effort of 1204 km and 26.9 hours flying time. In total, 78 moose were observed from 50 independent groups. Of the 70 moose that were successfully classified, 27 were cows, 10 were calves and 33 were bulls. Of the bulls observed, 12% had already shed their antlers. Of the bulls still with antlers, all were medium (small palmated antler 'paddles' with fewer than 3 points on the brow tine and with a spread less than half the body length). The bull:cow and calf:cow ratios were 1.22 and 0.37, respectively. In the portion of WMU 440 that was flown (i.e. non-alpine), density was estimated to be 0.15 moose/km<sup>2</sup> with a coefficient of variation of 17%. Assuming that there were no moose in the non-surveyed alpine areas, the moose population for WMU 440 is estimated to be 224 (90% CI 168 - 298). During this sampling effort, we also observed 34 elk from 6 independent groups, 7 mule deer from 4 groups, and one group of 3 white-tailed deer, but sample sizes did not allow for density estimation.

**Table 1. Moose survey estimate for WMU 440. Estimates include number of individual moose, density and age-sex composition ratios.**

Survey Year	Survey Method	Abundance Estimate Mean (90% CI)	Density Sq. km (90% CI)	Bull: Cow (90% CI)	Calf: Cow (90% CI)
2020	Distance	224 (168- 298)	0.15 (0.11 – 0.22)	1.22 (0.72-1.73)	0.37 (0.24-0.51)

**Figure 1. WMU 440 with the surveyed area (in blue) and the non-flyable alpine areas (in orange). Systematic transects flown are shown in blue.**

