



Aerial Wildlife Survey Report

Wildlife Management Unit 441 Aerial Ungulate Survey (2023)

Background

Wildlife Management Unit (WMU) 441 is located in West-Central Alberta near the community of Grande Cache, covering an area of 782 km². The WMU is bordered on the north and west by the Smoky River, on the south by Highway 40, and by the Forestry Trunk Road on the east (Fig. 1). Ongoing wolf reductions in the caribou ranges surrounding WMU 441 have halted declines in caribou population, avoiding extirpation, until habitat restoration actions can eventually support self-sustaining populations. This report describes the first population estimate, and population ratio for sex and age classes, for moose in WMU 441.

Survey Method

The aerial survey for moose in WMU 441 was conducted between February 14th and 15th, 2023. Distance sampling methods (AEP 2016, Buckland et al., 2001) were used to determine moose population and density estimates. Transects (N = 33) oriented east-west, with 1.2 km spacing were established throughout the unit (Fig. 1). Moose were classified by age (adult or young) and sex. Canopy cover (0-33%, 43-66%, and >66%) within 10 m of the moose was included as a covariate.

Results

All transects were flown for a total survey effort of 645.7 km and 14.1 hours of flight time.

In total, 93 moose were included in the analysis from 68 independent group observations. Of the 87 moose that were successfully classified, 37 were cows, 19 were calves, and 31 were bulls. Of the bulls observed, 87% had already shed their antlers at the time of the survey. Of those with antlers (n=4), all were considered small (small spike or forked antlers). The bull:cow and calf:cow ratios were 0.84 (95% CI 0.49 – 1.19) and 0.51 (95% CI 0.36 – 0.66), respectively. The density estimate was 0.41 moose/km² (90% CI 0.30 - 0.55) with a coefficient of variation (CV) of 17.63%. The estimated moose population for WMU 441 is 320 (90% CI 238 - 429).

We observed 22 white-tailed deer (3 does, 2 fawn, 17 unclassified), 11 mule deer (3 does, 2 fawn, 6 unclassified), 12 elk (2 cows, 2 calves, 6 medium bulls, 1 large bull, 1 unclassified), and 12 mountain goats (unclassified). Note that these should not be considered minimum total counts as this survey method is unreliable for these species in heavily forested WMUs when population densities are low.

TABLE 1: COMPARISON OF CURRENT AND PREVIOUS POST-SEASON SURVEY ESTIMATES FOR MOOSE IN WMU 441

Estimates include number of individual moose, density, and age-sex composition ratios. The survey methods refer to distance sampling methods (DS). Note that the 2022/2023 estimate represents the first estimate for this WMU.

Survey year	Survey method	Population size (90% CI)	Density (/km ²)	Ratio to 100 females	
				Males	Juveniles
2022/23	DS	320 (238-429)	0.41	84	51

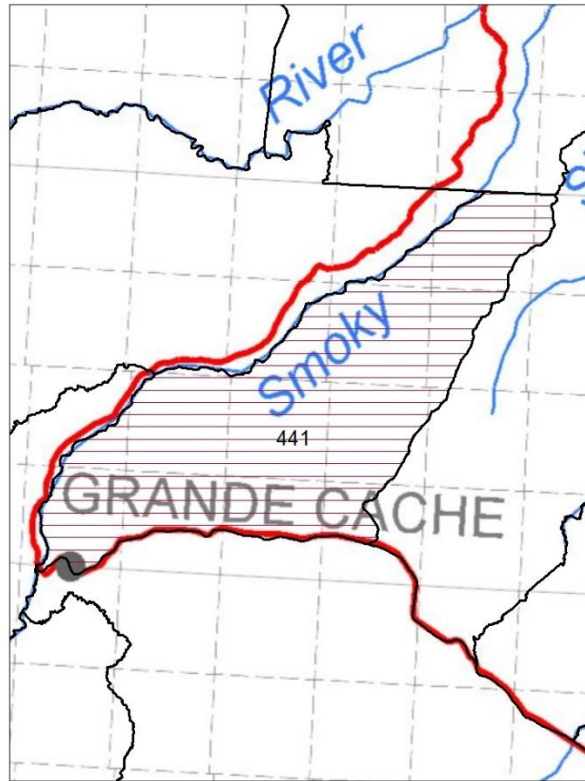


Figure 1. Map of WMU 441. The survey transects were oriented East-West and covered the entire WMU, separated by 1.2 km.

Literature

Alberta Environment and Parks. 2016. Aerial Ungulate Surveys using Distance Sampling Techniques – Protocol Manual.

Buckland, S.T., D.R. Anderson, K.P. Burnham, J.L. Laake, D.L. Borchers, and L. Thomas. 2001. Introduction to Distance Sampling: Estimating Abundance of Biological Populations. Oxford University Press, Oxford, UK.