

## 2008 WMU 359 moose, mule deer, and white-tailed deer

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Ungulates in WMU 359 were surveyed previously in 1998 and 2004. Although a moose calf harvest and an antlerless mule deer harvest have been in effect for many years, tags were dramatically increased in the last few years (including issuing triple tags for antlerless mule deer). A detailed survey was required to monitor the result of these increased harvest opportunities. Additionally, the relatively high use of this area by hunters, a notable tick outbreak in late winter of 2007, and human-wildlife conflicts in this WMU also necessitated an updated inventory of moose and deer populations. This section contains the results and preliminary analysis of moose and deer surveys conducted in WMU 359 in 2008.

### ***Study area***

Wildlife Management Unit 359 is primarily within the Saddle Hills County, with a small portion to the southeast within the Municipal District of Spirit River No. 133 (Figure 16). The unit is bordered by the Saddle Hills to the south, the British Columbia border to the west, and the Peace River to the north. This area includes portions of the Peace River Parkland, Dry Mixedwood, and Lower Foothills subregions, as described by the Natural Regions Committee (2006). Mixedwood forests of aspen and white spruce dominate the non-agricultural portions of the WMU and are interspersed with peatlands and lotic river systems. Agriculture is prevalent throughout the WMU, and is dominated by annual cereal and perennial forage crops, interspersed with small aspen stands, and both ephemeral and permanent wetlands. The most prominent feature in the WMU is the Peace River, and the numerous tributaries that flow into it, providing ideal riparian habitat for ungulates. Increased forestry activity at the green/white zone interface has generated substantial amounts of additional forage for moose.

### *Survey methods*

Wildlife staff (ACA and ASRD) from the northwest region flew transects across WMU 359 by fixed-wing aircraft on January 30 and 31, 2008 to stratify the distribution of moose and deer across 69 subunits in preparation for detailed surveys of ungulates using rotary-wing aircraft. Fixed-wing aircraft (Cessna 185) flights were run along lines of 1° latitude (except for every fifth line, which fell on survey unit borders) within the WMU. Air speed during stratification flights was approximately 150 km/h, and flight altitude was maintained between 60 and 90 m (200 and 300 ft) above ground. Locations of moose, deer, incidentally encountered elk, and other pertinent wildlife were marked using a GPS.

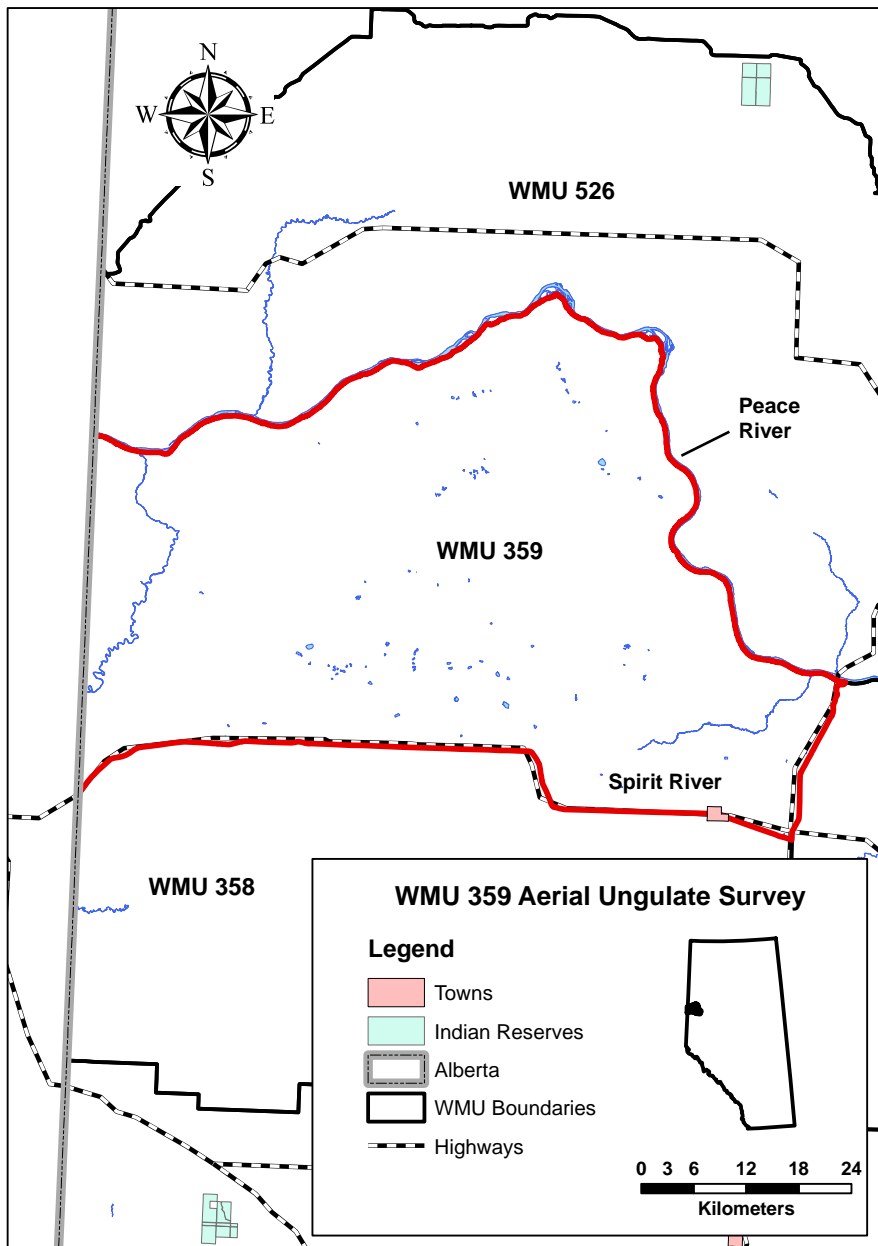


Figure 16. Location of the Wildlife Management Unit 359 aerial ungulate survey in Alberta.

Survey blocks were classified according to the number of moose and deer observed during fixed-wing stratification flights, following a modified Gasaway technique (Gasaway et al. 1986, Lynch 1997). Information used to classify survey units into stratum was obtained in a variety of ways, depending on the species of ungulate that was enumerated. For the moose survey, stratification was carried out by flying four fixed-wing transects through each survey unit and counting all moose seen during these flights (Lynch 1997). Based on relative counts from stratification flights, survey units were stratified for moose into low (< 5), medium (5 - 9), and high (> 9) classifications with few deviations. For mule deer, survey units were only stratified into either high or low using a combination of information derived from transect surveys, as well as through application of local knowledge of animal concentrations, food sources, cover availability and animal movement patterns in winter. In particular, mule deer are known to concentrate in the river valleys throughout the unit. For white-tailed deer, units were not stratified due to the low numbers distributed throughout the landscape. Survey blocks were 5 min latitude x 5 min longitude (approximately 48 km<sup>2</sup>). Seventeen survey blocks were randomly selected for intensive search by helicopter. The classification distribution of these blocks differed by species. For moose, six of the blocks were classed as low, six as medium and five as high. For mule deer, the classification of survey units was broken down as 12 low and five high.

A Bell 206 helicopter was used to determine the number of moose and deer within each of the randomly selected blocks on February 1 - 3, 2008. Each block was flown east to west (and west to east) on flightlines approximately 400 m apart, at 100 - 140 km/h, and at an altitude of approximately 30 m. Each flight crew consisted of three passengers: a navigator/recorder/observer up front, an observer left-behind, and an observer right-behind. Observers on each side of the helicopter were responsible for a field of view of approximately 200 m from the helicopter. All ungulates were identified by sex and age using physical characteristics that were easily observed from the air (e.g., presence of white vulva patch on cow moose, or antlers on males). Adult males were classed into one of three categories, as outlined in Table 16. In addition to observations of moose and deer, sightings of elk, wolves or kill sites were also marked.

Table 16. Classification criteria for male ungulates during the 2008 aerial surveys in Wildlife Management Unit 359.

<b>Size Class</b>	<b>Moose</b>	<b>Deer</b>
Yearlings	Bulls with small forked antlers	Bucks with small forked antlers
Medium	Bulls with small palmated antlers and one or two small points to the front	Bucks with 3 (occasionally 4) short, spindly points per side, and main beams not spreading past the ears.
Large	Bulls with large palmated antlers and a minimum of 3 large points to the front.	Bucks with a minimum of four large, long antler points per side, plus main beams spreading out well past the ears.

Data were entered into a Gasaway population estimate spreadsheet (“Quad6.xls”) to calculate population estimates, ratios of males and juveniles to 100 females, and population densities.

### *Results*

During the stratification flights, winds were calm and snow cover was complete. Visibility was acceptable, but hindered by frosting on windows, a result of very cold temperatures. Mean air temperature was -27°C. Conditions for rotary-wing surveys were generally good with excellent snow coverage. Temperatures varied from -23°C to -27°C.

Moose populations were estimated to be  $1,709 \pm 15.4\%$  (Table 17). There were 18 bulls/100 cows and 25 calves/100 cows. An estimated 1.3% of cows had twins, and the overall density was 0.52 moose/km<sup>2</sup>. Of the bulls that were observed during detailed surveys, 75% had already shed their antlers. Of those bulls still with antlers, 93% were yearlings. No bulls in the large category were observed. Minor patchiness was observed on a few moose in relation to ticks, but was not noticeably high.

Mule deer populations were estimated at  $3,016 \pm 12.7\%$  (Table 17), for a density of  $0.91/\text{km}^2$ . There were 22 adult bucks and 23 fawns per 100 does, and 3.2% of does had twins. Although proportionately fewer large bucks were observed than in previous years (Table 18), this may have been a function of the condition of deer at the onset of winter. Given the previous harsh winter conditions, large bucks may have shed their antlers earlier, accounting for fewer observed.

White-tailed deer populations were estimated at  $865 \pm 29.5\%$  (Table 17). There were 14 bucks and 44 fawns per 100 does, and 16.3% of does had twins.

Table 17. Population estimates and herd composition of moose, mule deer, and white-tailed deer in Wildlife Management Unit 359.

Species	Year	Population estimate		Ratio to 100 Females	
		(confidence limits)	Density/ $\text{km}^2$	Males	Juveniles
Moose	2008	1709 (15.4%)	0.52	18	25
	2004	3223 (13.3%)	0.98	31	39
	1998	2586 (13.2%)	0.79	22	52
Mule deer	2008	3016 (12.7%)	0.91	22	23
	2004	4993 (21.2%)	1.52	65	118
	1998	3524 (23.3%)	1.07	12	107
White-tailed deer	2008	865 (29.5%)	0.26	14	44
	2004	483 (36.9%)	0.15	14	117
	1998	355 (36.4%)	0.11	5	116

Table 18. Age structure of classified male mule deer in Wildlife Management Unit 359.

<b>Age classification</b>	<b>Mule Deer</b>		
	<b>1998 (N = 34)</b>	<b>2004 (N = 220)</b>	<b>2008 (N = 122)</b>
Yearling	44%	36%	44%
Medium	41%	52%	51%
Large	15%	12%	5%

*Literature Cited*

- Gasaway, W.C., D. DuBois, D.J. Reed, and S.J. Harbo. 1986. Estimating moose population parameters from aerial surveys. Biological Papers of the University of Alaska No. 22, Fairbanks, Alaska. 108 pp.
- Lynch, G. 1997. Northern moose program moose survey field manual. Unpublished report by Wildlife Management Consulting, Edmonton, Alberta. 68 pp.
- Natural Regions Committee. 2006. Natural Regions and Subregions of Alberta. Compiled by D.J. Downing and W.W. Pettapiece. Government of Alberta. Pub. No. I/005.