

## 2011 Wildlife Management Unit 348 moose, mule deer, and white-tailed deer



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WMU 348 is a medium sized unit, located approximately 100 km northwest of Edmonton. Several communities including the towns of Whitecourt, Mayerthorpe, Sangudo, and Evansburg/Entwistle border this WMU. This WMU has been surveyed three times for moose (1998, 2000, and 2007) using the modified Gasaway method (Gasaway et al. 1986; Lynch 1997; ASRD 2010). This is the first time that both mule deer and white-tailed deer were systematically surveyed in this WMU.

### *Study area*

WMU 348 is located southeast of Whitecourt and is bounded by Highway 43 on the north, the McLeod River and Highway 32 on the west, the Pembina River on the east, and Highway 16 on the south (Figure 1). This 2,990 km<sup>2</sup> unit has moderate to high levels of oil and gas development (roads, well sites, large and small gas plants, and pipelines). Forest clear cuts at various stages of activity and regeneration are dispersed through the WMU. The southern and eastern portions are a mix of farmland and rural residential, while the remainder of the WMU is Crown land made up of relatively rugged terrain. The forested habitat is largely pure deciduous forest, mixed wood forest and muskeg. An extensive network of high-density all-weather roads exist, allowing industry and hunters ease of access throughout the majority of the WMU.

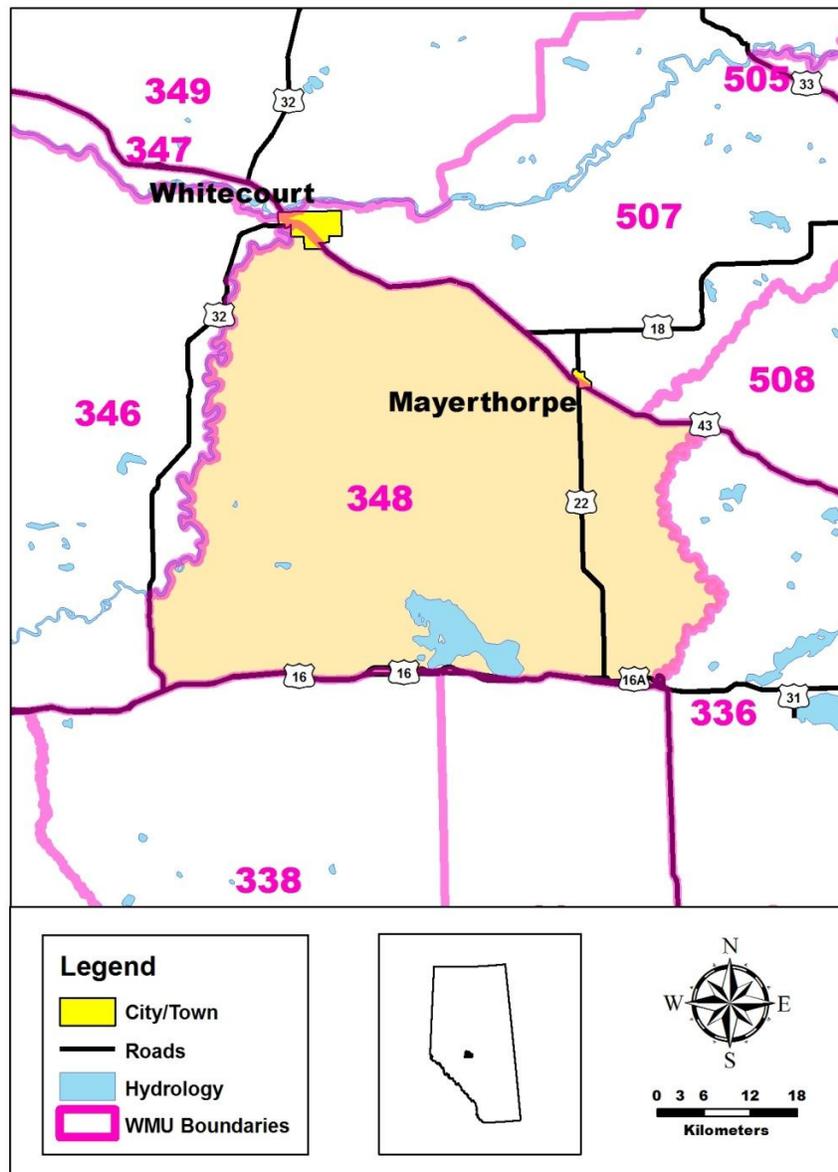


Figure 1. Location of Wildlife Management Unit 348 in Alberta.

## *Survey methods*

Survey methodology followed the modified Gasaway technique (Gasaway et al. 1986; Lynch 1997; ASRD 2010). The WMU was divided into 5 minute latitude x 5 minute longitude grids, resulting in 66 survey blocks. Survey block stratification flights were conducted using a Cessna 185 airplane on 30 - 31 January 2011. The crew consisted of a pilot, a navigator/observer and 2 full time observers. Stratification transects were flown every 1 minute of latitude, with the exception of survey block boundaries (every 5th minute), and all observations of moose, mule deer, and white-tailed deer on either side of the aircraft were recorded. All animal locations were recorded with a Garmin GPSMap 76CSx. The pilot attempted to maintain a consistent altitude of 100 m above ground level so an approximate distance to the animal could be consistently recorded. Aircraft speed was maintained at approximately 150 km/h.

Survey blocks for moose were then assigned to one of three strata; low, medium, or high, based on moose densities from the stratification flights. The stratification process for mule deer was based largely on habitat, topography, and local knowledge, as well as observations from the stratification flights. However, mule deer were only assigned two strata (low - medium and medium - high).

For the intensive survey flights, five survey blocks were chosen randomly from each of the low, medium and high strata for moose. In order to get a reasonable representation of mule deer and white-tailed deer survey blocks to coincide with the moose survey blocks, two randomly selected survey blocks were moved to adjacent cells to ensure strata representation and spatial distribution was maintained across all three species.

Intensive survey flights began on 31 January with a three person crew using a Bell 206B helicopter. Upon completing the stratification survey, a second crew joined the intensive survey, also employing a Bell 206B helicopter, from 1 - 2 February. Survey crews consisted of a pilot and at least two experienced observers; one in the front left seat (navigator/observer) and the other seated behind the pilot. A third observer was also seated behind the navigator/observer. North/south lines were flown every 0.170, 0.500, and 0.830 minutes longitude within each survey block resulting in an approximate 400 m line separation. Pilots flew approximately 30 m above the trees and at an average speed of 100 km/h, depending on cover type. Within the settled portions of the WMU, the pilot would increase altitude and/or

veer off the transect when approaching houses and domestic livestock (which ever was most appropriate to the circumstances and to adhere to Transport Canada's over flight standards).

All moose, mule deer and white-tailed deer locations were recorded with a GPS. Every attempt was made to sex and age the animals unless forest cover and/or wind prevented safe or confident identification. Animals were classified as adults or calves/fawns based on body size and length of snout; all yearlings were classified as adults. All adult moose were classified as cows if a white vulva patch was present. All adult bulls that still possessed antlers were classified as having small, medium or large antlers (ASRD 2010). Deer with antlers were classified as males and assigned to a size category of small, medium or large (ASRD 2010), while non-antlered deer not attended by a fawn(s) (i.e., does) were left unclassified. We did not correct for sightability; therefore, overall counts should be considered as minimum population estimates and direct comparisons of survey results among years may be difficult.

Conditions were good throughout the duration of the survey; however, the week of warm weather in early January did melt snow from tree bowls making observation slightly more difficult. Temperatures ranged from -28 degrees Celsius in the mornings to -5 degrees Celsius in the afternoons. On the final day of surveys the afternoon temperature climbed to +3 degrees Celsius, due to a warming trend. Winds were calm and turbulence was negligible throughout the survey.

## ***Results***

During the intensive survey, 15 survey blocks were flown for moose (5 low, 5 medium and 5 high) resulting in an estimated moose population ranging from 1,368 to 2,012 (Table 1). Although this represents a slight decrease in moose numbers (12%) from 2007, statistically no change between estimates occurred. A total of 67 bulls were observed, with 87% having already shed their antlers. Of those still carrying antlers, six were yearlings and three were classified as medium.

For the two strata that mule deer were assigned, 10 low - medium survey blocks and 5 medium - high survey blocks were flown, resulting in an estimated mule deer population ranging from 449 to 935 (Table 1). Unfortunately, most mule deer were unclassified (87%) as a result of being observed in close proximity to farm yards and domestic livestock, limiting our ability to maneuver the helicopter close enough to sex and age animals. Demographic ratios could not be

accurately obtained from the small sample size collected. However, from the 12 antlered males observed, 9 were yearlings and 3 were classified as medium. Previous surveys of WMU 348 did not dedicate effort into calculating a population estimate for mule deer, therefore comparison among survey years is not possible.

During the intensive survey, 15 blocks were flown for white-tailed deer (6 low, 5 medium and 4 high) resulting in an estimated white-tailed deer population ranging from 1,126 to 1,978 (Table 1). Most white-tailed deer were unclassified (74%) as most male deer lacked antlers, making sex and age classification particularly difficult. From the sampled population, 7 bucks per 100 does and 102 fawns per 100 does were observed. However, demographic ratios presented must be interpreted cautiously, particularly as the male cohort would be drastically under represented as males with shed antlers would have been recorded as unclassified. In addition, only 3 antlered males were observed; 1 yearling and 2 were classified as medium. Previous surveys of WMU 348 did not dedicate effort into calculating a population estimate for white-tailed deer, therefore comparison among survey years is not possible.

Table 1. Comparison of aerial survey results for moose, mule deer, and white-tailed deer in Wildlife Management Unit 348 from 1998 - 2011.

Species/Year	Population estimate (90% confidence limits)	Animals/km <sup>2</sup>	Ratio to 100 Females	
			Males	Juveniles
Moose				
2011	1,690 (±19.1%)	0.57	27	56
2007	1,913 (±20.1%)	0.66	37	52
2000	1,068 (±16.2%)	0.37	13	44
1998	1,965 (±19.5%)	0.66	26	57
Mule deer				
2011 <sup>a</sup>	692 (±35.1%)	0.23	--	--
White-tailed deer				
2011 <sup>a</sup>	1,552 (±27.4%)	0.52	7	102

<sup>a</sup>No data from previous years is available for comparison.

"--" Demographic ratios could not be accurately obtained due to the small sample size collected.

### *Literature Cited*

- Alberta Sustainable Resource Development (ASRD). 2010. Aerial ungulate survey protocol manual. Produced by ASRD, Fish and Wildlife Division, Edmonton, Alberta, Canada. 65 pp.
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