

## 2009 WMU 152 Mule Deer

*Section Author: Mike Grue*

### Suggested Citation:

Grue, M. 2009. WMU 152 Mule Deer. Pages 35-38. In: N. Webb and R. Anderson. Delegated aerial ungulate survey program, 2008-2009 survey season. Data Report, produced by the Alberta Conservation Association, Sherwood Park, Alberta, Canada. 94pp.

Mule deer are an important game animal in Prairie WMUs. White-tailed deer can be included with mule deer surveys with a little extra flying and stratification work (Glasgow 2000), although time restraints led us to stratify WMU 152 for mule deer only during this survey.

Survey results will allow us to estimate changes in population numbers over time and to assess herd composition. These data will also be used by ASRD to calculate allowable hunter harvest and license allocations for future hunting seasons.

### *Study Area*

WMU 152 is located in the Grasslands region of the Alberta. It is a large WMU residing north of the town of Brooks, Alberta (Fig. 6.2.1). A legal description of the area is found in Schedule 9, Part 1 of the Wildlife Act – Wildlife Regulation (Province of Alberta 1999). The WMU is bisected by the Red Deer River which is oriented east/west. Approximately 50% of the WMU is cultivated with the remaining 50% remaining as native grassland. Most of the mule deer habitat in the WMU is associated with the coulees and draws along the Red Deer River.



Figure 6.2.1. Location of WMU 152 in Alberta.

### *Survey Methods*

The study area was stratified for mule deer densities (Gasaway et al. 1986), using a helicopter (Bell 206L) on February 28 and March 1-2, 2009. Air speed during stratification was approximately 180 km/h and altitude above ground was approximately 100 m. Height and speed of the aircraft varied depending on wind speed and direction, amount of cover and topography of the area. Stratification lines were approximately 2 km apart. Where cover and topography required, distance between lines was reduced. In areas with deep coulees and/or heavy tree cover (i.e. Red Deer River); lines were meandering to effectively cover the area for accurate stratification. Observers were expected to see deer to 800 m in open areas. When flying rivers and coulees, observers were expected to see deer to approximately 100 m. Survey crews for both stratification flights and intensive survey block flights were comprised of one navigator (who also recorded and observed) in the front left seat beside the pilot and two observers in the back, one on each side of the aircraft. The pilot was able to observe intermittently, but was not considered an observer.

Mule deer observed during the stratification flights provided a good representation of distribution within the WMU and allowed for stratifying survey blocks (3 minutes latitude x 5 minutes longitude as per Shumaker 2001A) into one of three stratum (low, medium, or high). The assignment of blocks was based on number of deer seen within the survey block. The usual method of assigning survey blocks to the appropriate strata is to have approx. 60% in the middle stratum and the remaining 40% split between the high and low stratum (Shumaker 2001B). However, during this survey, a large percentage of survey blocks (62 %) had zero deer observed. These survey blocks made up the low stratum for mule deer. The remaining blocks were stratified based on deer numbers observed during stratification.

Nine survey blocks (3 blocks x 3 stratum) were randomly selected for intensive surveys, using Microsoft Excel (Shumaker 2001C). Each survey block was searched intensively (100% coverage) with a Bell 206L helicopter. Results were incorporated into a Quad file program developed for WMU 152 as per (Gasaway et al. 1986). Stratum were evaluated based on variance associated with deer density, and additional blocks were randomly selected and flown from stratum with high variance until confidence intervals were at acceptable levels (<25%). Herd composition data were not collected because many of the males had dropped their antlers before the start of the survey.

*Results*

Mule Deer — We observed a total of 1,552 mule deer during stratification flights. During the intensive survey a total of 415 mule deer were observed while flying a total of 9 survey blocks in rotary-wing aircraft. From this, a population estimate of 3,051 (+/- 9.3%, 90%C.L.) was calculated (Table 6.2.1). The density of mule deer in WMU 152 was 0.78/km<sup>2</sup>.

White-tailed Deer — During stratification flights a total of 938 white-tailed deer were observed. Because WMU 152 was not stratified for white-tail deer, a population estimate was not calculated.

Table 6.2.1. Comparison of aerial mule deer survey results from 2004 and 2009 in WMU 152.

Year	Population Estimate (conf. limits)	Density / km <sup>2</sup>	<u>Ratio to 100 Females</u>	
			Males	Juveniles
2009	3051 (9.3%)	0.78	--	--
2004	3336 (20.7%)	0.86	37	47