

## 2011 Wildlife Management Unit 160 mule deer



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WMU 160 is a popular hunting zone in south central Alberta. Ideally, WMUs in the prairie region would be surveyed on a 3 year rotation, although this frequency is often delayed due to funding constraints, and occasionally by inadequate weather conditions (lack of snow cover). The emergence of Chronic Wasting Disease in 2005 in eastern Alberta caused further delays, due to higher priority given to WMUs with the disease. As such, WMU 160 was last flown, using Gasaway survey techniques (Gasaway et al. 1986), in January 2000. Budget and time constraints led to the decision to stratify WMU 160 only for mule deer population counts during the 2010 survey. Survey results will be used to estimate changes in population numbers and herd composition over time. These data will also be used by ASRD to establish harvest allocations.

### *Study area*

WMU 160 is located in the grasslands region of Alberta. It lies east of Drumheller, Alberta and is quite large in size, covering an area of about 3,954 km<sup>2</sup> (Figure 1). A legal description of the unit is found in Schedule 9, Part 1 of the Wildlife Act - Wildlife Regulation (Province of Alberta 1999). The WMU is bisected diagonally by the Red Deer River which is oriented northwest/southeast. The WMU is predominantly a mix of native prairie and cultivated fields. Most of the mule deer wintering range in this WMU is associated with the Red Deer River.

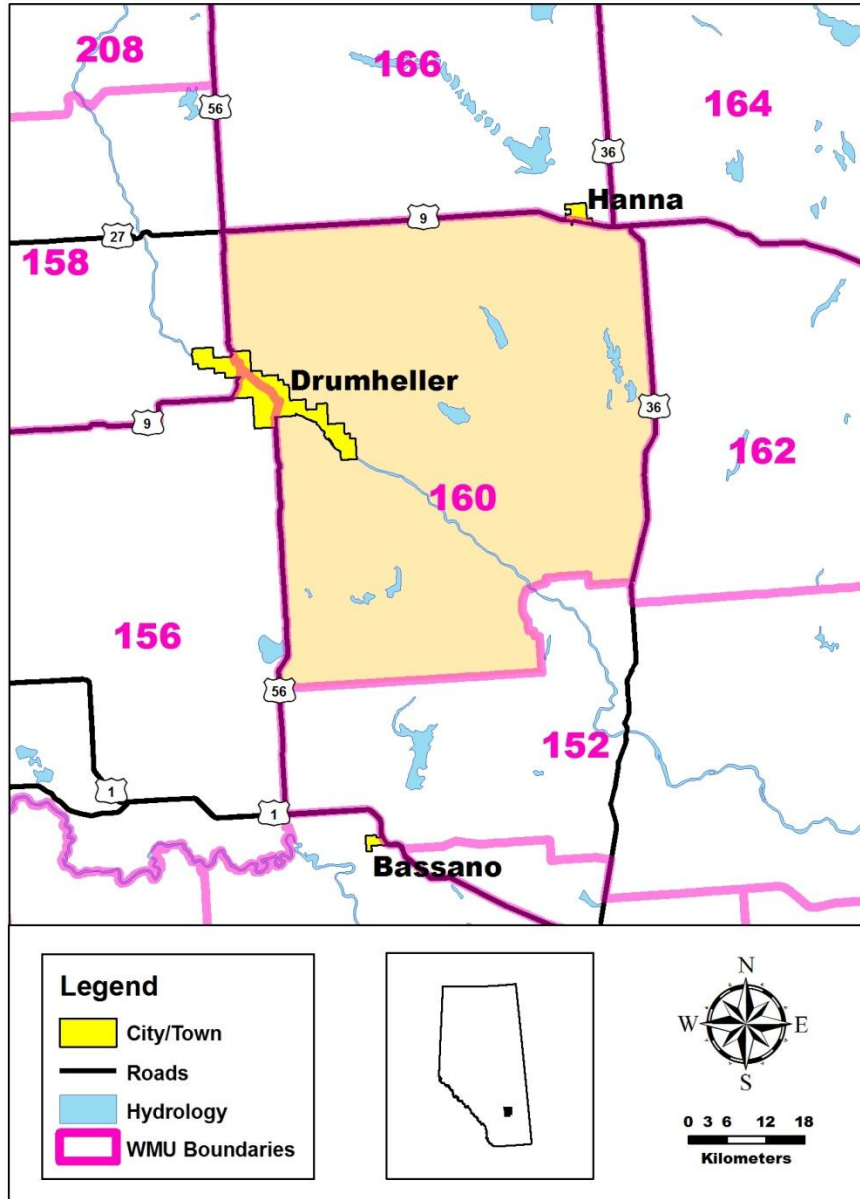


Figure 1. Location of Wildlife Management Unit 160 in Alberta.

## *Survey methods*

The study area was stratified and surveyed for mule deer (Gasaway et al. 1986; ASRD 2010), using a Bell 206B helicopter from 30 November to 4 December 2010. During the stratification portion of the survey, air speed was approximately 120 km/h and altitude above ground was approximately 120 m. Height and speed of the aircraft varied depending on wind speed and direction, as well as the amount of vegetation cover and topography of the area. Stratification flight lines were approximately 2 kilometers apart in areas of sparse vegetative cover. Survey crews for both the stratification flight and the following intensive survey flight were comprised of one navigator/recorder/observer in the front seat beside the pilot and two observers in the back seat, one on each side of the aircraft.

While the entire study area was flown for stratification purposes, not all animals in the WMU were observed. Mule deer observed during the stratification flight provided a representation of distribution within the unit and allowed for stratifying of survey blocks (3 min latitude x 5 min longitude) as per Shumaker (2001a) into one of four stratum (low, medium, high or very high). The assignment of blocks was based on the number of mule deer seen within each survey block. The usual method of assigning survey blocks to the appropriate strata is to have approximately 60% in the middle stratum and the remaining 40% split between the high and low stratum (Shumaker 2001b). We used four strata in this case because of the large amount of variability in the number of mule deer seen among survey blocks.

Twelve survey blocks (3 blocks x 4 strata) were randomly selected, using the RAND function in Microsoft Excel (Shumaker 2001c). Each survey block was searched intensively with a Bell 206B helicopter. Results were incorporated into the Quadrat Survey Method Program developed for WMU 160 as per Lynch (1997). 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.

Survey conditions over the five day period were challenging with fog creating visibility issues on most days, especially in river valleys and coulees. Snow conditions were very good for this time of year, with plenty of snow having fallen just prior to the survey. As a result of poor weather and a forecast for conditions to deteriorate further, the decision was made to not fly additional survey blocks to improve confidence levels.

## Results

We observed 1,675 mule deer during the stratification flight. During the intensive survey flight, 12 survey blocks were flown (3 low, 3 medium, 3 high and 3 very high). A total of 705 mule deer were observed (117 bucks, 380 does, 208 fawns and 0 unclassified). From this, a population estimate of  $3,596 \pm 1,064$  mule deer was calculated (Table 1).

During the intensive survey flight, a total of 86 white-tailed deer were observed. However, WMU 160 was not stratified for white-tailed deer and so we were unable to provide a population estimate.

Table 1. Comparison of aerial mule deer survey results in Wildlife Management Unit 160 in 2000 and 2010.

Year	Population estimate (90% confidence limits)	Mule deer/km <sup>2</sup>	Ratio to 100 Females	
			Males	Juveniles
2010	3,596 ( $\pm 29.7\%$ )	0.91	31	55
2000	5,330 ( $\pm 24.1\%$ )	1.35	35	76

### *Literature Cited*

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