

2008 WMU 106 mule deer

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Wildlife Management Unit 106 is managed for trophy mule deer and is a desirable zone for hunters. It is scheduled to be flown every three years in the Prairies area AUS rotation.

In the past, most WMUs in the Lethbridge area have been flown using stratified trend surveys. Unpredictable weather and poor snow conditions occur through most winter months. Based on the assumption that good snow cover is essential, multi-day surveys such as modified Gasaway are difficult to conduct. Over the past winter, the Lethbridge area survey team has considered flying surveys during periods of constant, consistent weather with less importance placed on amount of snow cover. The assumption is that animals are less likely to make unpredictable movements during periods where weather is stable. In the Lethbridge Area, during weather events that bring snow, it can fluctuate wildly from cold to warm, calm to windy. This hampers survey efforts, affects sightability and compromises the precision of the results.

Most Prairies area WMUs are managed primarily for mule deer as the key species. With a little extra flying and stratification work, white-tailed deer can also be accommodated (Glasgow 2000). Time restraints this winter led to the decision to stratify WMU 106 for mule deer only.

Survey results will be used to determine changes in populations over time and to determine herd composition. These data will also be used by ASRD to calculate allowable hunter harvest and license allocations for upcoming hunting seasons.

Study area

Wildlife Management Unit 106 is located in the Grasslands region of the Prairies Area. It is a large, rectangular-shaped unit lying east of Highway 4 between the towns of Stirling and Milk River, as far east as the community of Etzikom (Figure 11). The unit is bisected by Etzikom Coulee, which is oriented east/west. Most of the unit is a mix of native grassland and cultivation.

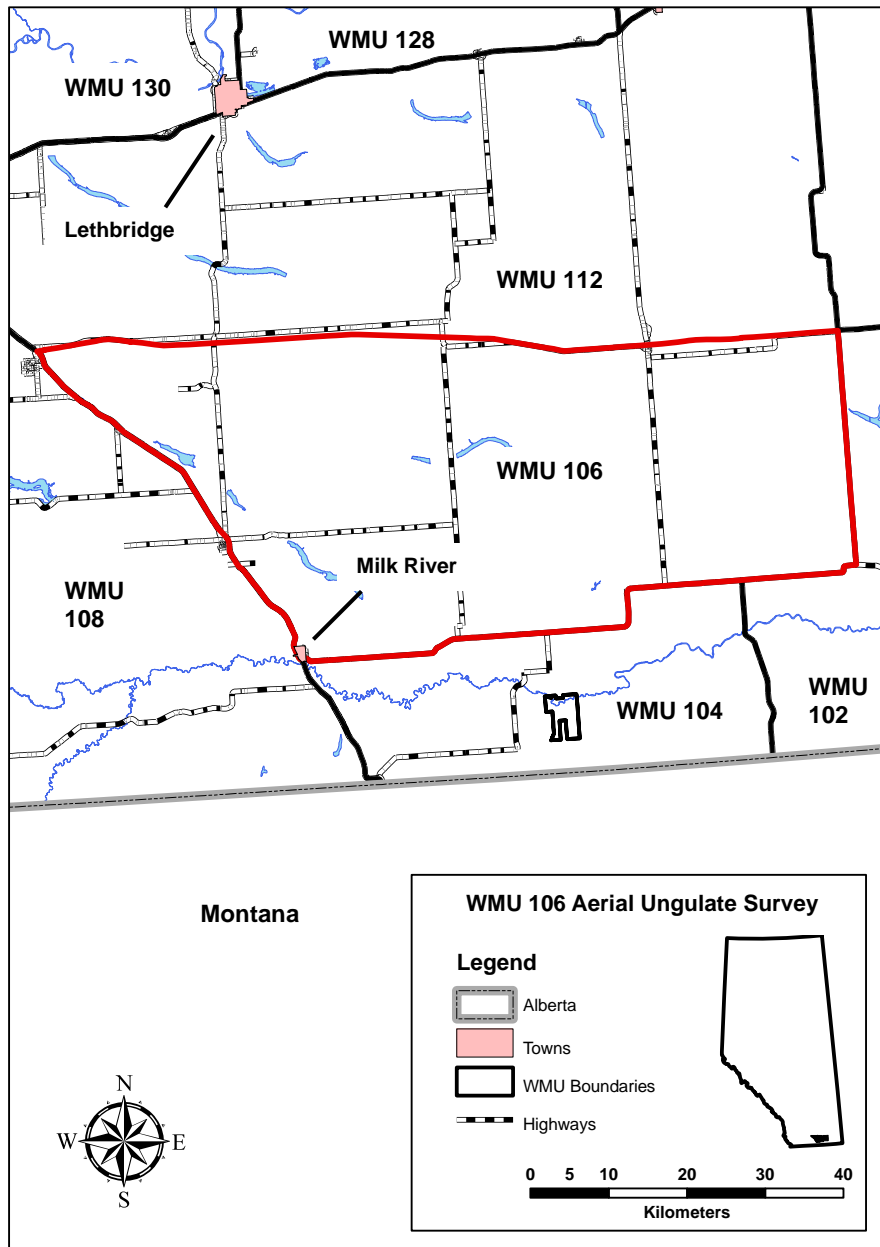


Figure 11. Location of the Wildlife Management Unit 106 deer survey in Alberta.

Survey methods

The study area was stratified for mule deer densities (Gasaway et al. 1986) using a fixed-wing Cessna 185 aircraft on January 16 and 17, 2008. To make more efficient use of AUS budgets and coordinate aircraft charters, WMUs 104 and 106 were flown concurrently. Stratification flights began in WMU 106 on January 16 and ended in WMU 104 on January 17. Air speed during stratification 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, 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., Milk River), lines were meandering rather than straight, to effectively cover the area for accurate stratification. Observers were assumed to see deer up to 800 m from the aircraft in open areas and 400 - 500 m in other areas. When flying rivers and coulees, observers were assumed to see deer to 100 m. Survey crews for both stratification flights and intensive survey unit flights were comprised of one navigator/recorder/observer in the front seat beside the pilot and two observers in the back, one on each side of the aircraft.

For population composition, sex was determined by the presence/absence of antlers. Sex ratios may be inaccurate if antlers were dropped by some deer prior to the survey. To determine age (adult vs. fawn), body size and length of face were used. This provides an accurate means to classify fawns as distinct from adults.

We assumed the mule deer observed provided a good representation of distribution within the unit and allowed for stratifying survey units (3 min latitude by x 5 min 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 unit. A large proportion of survey units had zero deer observed, and thus made up the low stratum for mule deer. The remaining units were stratified based on deer numbers observed during stratification, using cut-off values for each stratum with the goal of keeping the number of units equal between the medium and high strata.

Nine survey units (3 units x 3 stratum) were randomly selected from the WMU, using Microsoft Excel (Shumaker 2001c). Each survey unit was searched intensively (100%

coverage) with a Bell 206B helicopter. Results were incorporated into a Quad file program developed for the units as per Gasaway et al. (1986). Strata were evaluated based on the variance associated with deer density, and additional units flown for those strata with high variance. This process continued until 90% confidence intervals were less than 25% of the population estimate.

Incidental sightings of wildlife were recorded during all survey flights. Attempts were made to consistently record coyotes, game birds and raptor species.

Wildlife Management Unit 106 was flown during consistent weather patterns, and with good snow coverage, although initially snow cover was not 100%. To compensate in areas where sightability was considered low, stratification lines were flown closer together if the habitat warranted. We assume this change in approach allowed for consistent estimates even though survey effort varied.

Results

Mule deer – A total of 684 mule deer were observed during fixed-wing stratification flights and 233 mule deer were observed while intensively searching a total of 16 survey units in rotary-wing aircraft. From this, a population estimate of $729 \pm 25.6\%$ was calculated, resulting in a density of $0.24/\text{km}^2$. Herd composition was 45 bucks/100 does and 38 fawns/100 does (Table 10).

White-tailed deer – During fixed-wing stratification flights, a total of 582 white-tailed deer were observed. Because WMU 106 was not stratified for white-tailed deer, a population estimate was not calculated. Herd composition data was calculated from white-tailed deer observed during intensive survey unit flights. From a total sample size of 55 deer observed, herd composition was 31 bucks/100 does/73 fawns.

Incidental wildlife observations – A total of two coyotes, 77 Hungarian partridge, 35 pronghorn, one rough-legged hawk (*Buteo lagopus*), and one golden eagle were observed during the survey.

Table 10. Population estimates and herd composition of mule deer and white-tailed deer in Wildlife Management Unit 106 in 2008.

Species	Population Estimate (confidence limits)	Density/km ²	Ratio to 100 females	
			Males	Juveniles
Mule deer	729 (25.6%)	0.24	45	38
White-tailed deer	--	--	31	73

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.
- Glasgow, W.M. 2000. White area ungulate management plan, 1997-98 to 1999-2000 project completion report. Department of Alberta Environment, Calgary, Alberta, Canada. 39 pp.
- Shumaker, G. 2001a. White area ungulate management project in Alberta – wildlife management unit (WMU) survey grid procedures. Department of Sustainable Resource Development, Calgary, Alberta, Canada. 48 pp.
- Shumaker, G. 2001c. White area ungulate management project in Alberta – Alberta preflight stratification manual for aerial ungulate surveys. Department of Sustainable Resource Development, Calgary, Alberta, Canada. 78 pp.