

2008 WMU 104 mule deer

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Wildlife Management Unit 104 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 random block 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 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 104 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 104 is located in the Grasslands region of the Prairies area. It is a small, rectangular-shaped unit lying south and east of the Town of Milk River (Figure 10). The unit is bisected by the Milk River which is oriented east/west. Writing-on-Stone Provincial Park (WOSPP) is located near the middle of the unit along the river. Most of the unit is predominantly native prairie, with some cultivation mostly north of the Milk River and west of WOSPP. Most of the mule deer habitat is associated with the coulees and draws along the Milk River.

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., along the 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 rear, 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.

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.

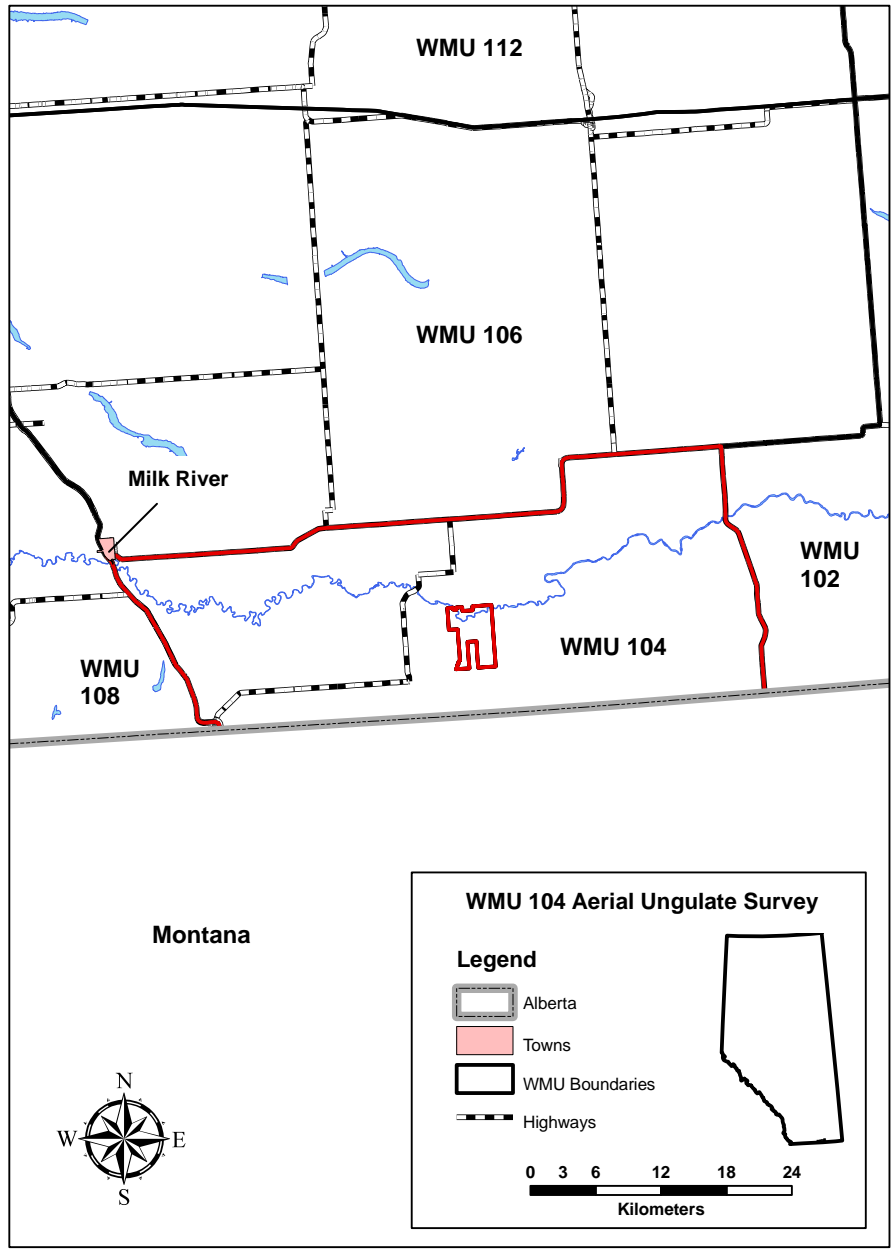


Figure 10. Location of the Wildlife Management Unit 104 deer surveys in Alberta.

Nine survey units (3 units x 3 stratum) were randomly selected from WMU 104, 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 (*Canis latrans*), game birds and raptor species.

WMU 104 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 assumed this change in approach allowed for consistent estimates even though survey effort varied.

Results

Mule Deer – During fixed-wing stratification flights, a total of 745 mule deer were observed. A total of 586 mule deer were observed while flying a total of 12 survey units in rotary-wing aircraft. From this, the population was estimated at $1,392 \pm 22.0\%$ with a density of 1.35 mule deer/km² (Table 9). Herd composition was 70 bucks/100 does and 67 fawns/100 does.

White-tailed Deer – During fixed-wing stratification flights, a total of 194 white-tailed deer were observed. Because WMU 104 was not stratified for white-tailed deer, a population estimate was not calculated. Herd composition data was calculated from individuals observed during intensive survey unit flights. From a total sample size of 136 deer observed, herd composition was 71 bucks/100 does/79 fawns. Of the 136 deer observed, only 70 were classed by age and sex. Most of the unclassified deer were in a single herd. Larger herds are commonly comprised of a high proportion of females and young; therefore, the buck to doe ratio of 71/100 may not be an accurate representation of the sex ratio in the unit.

Incidental Wildlife Observations – A total of 40 coyotes, 40 sharp-tailed grouse (*Tympanuchus phasianellus*), 88 Hungarian partridge (*Perdix perdix*), 182 pronghorn, one moose, three golden eagles, and one prairie falcon (*Falco mexicanus*) were observed during the survey.

Table 9. Population estimates and herd composition of mule deer and white-tailed deer in Wildlife Management Unit 104 in 2008.

Species	Population Estimate (confidence limits)	Density/km ²	Ratio to 100 females	
			Males	Juveniles
Mule deer	1392 (22.0%)	1.35	70	67
White-tailed deer	--	--	71	79

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.