

2012 Wildlife Management Unit 336 moose, mule deer, and white-tailed deer



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Suggested Citation:

Stambaugh, C., and M. Ranger. 2013. Wildlife Management Unit 336 moose, mule deer, and white-tailed deer. Pages 31-36. In: M. Ranger and K. Zimmer. Delegated big game surveys, 2011/2012 survey season. Data Report, D-2013-005, produced by the Alberta Conservation Association, Sherwood Park, Alberta, Canada.

Wildlife Management Unit 336 is a medium sized unit, located approximately 50 km west of Edmonton. Several communities including the towns of Drayton Valley, Sangudo and Onoway border this WMU. This WMU has been surveyed once using the modified Gasaway method for moose in 2003 (Gasaway et al. 1986; Lynch 1997; ASRD 2010). This WMU has also been surveyed for moose, mule deer and white-tailed deer in 1982, 1988, and 1993 using the line transect methodology, which is inherently biased towards river valley habitats, and thus, cannot be directly compared to Gasaway

surveys. In 2012, we surveyed this WMU for moose, mule deer, and white-tailed deer using the modified Gasaway method.

Study area

WMU 336 is located northeast of Drayton Valley and is bounded by Highway 22 and the Pembina River to the west, Highway 43 to the north, Highway 770 to the east, and the North Saskatchewan River to the south (Figure 1). This 2,616 km² area has extensive open pit coal mines concentrated around Wabamun Lake, along with moderate levels of oil and gas development (roads, well sites, gas plants, and pipelines). The majority of the WMU consists of mixed farming with a high rural residential population, located primarily to the east of Lac Ste. Anne and Wabamun Lake. Alexis and Wabamun First Nations are located in the north and central portions of this WMU, respectively. Crown grazing lease lands are interspersed throughout the WMU, with the largest area being Jack Pine Provincial Grazing Reserve, located southwest of Wabamun Lake. Forested habitat consisting largely of pure deciduous forest with small fragments of mixed wood forest is found throughout the area. An extensive network of high-density all-weather roads exist, allowing industry and hunters ease of access throughout the majority of the WMU.

Survey methods

Survey methodology followed the modified Gasaway technique (Gasaway et al. 1986; Lynch 1997; ASRD 2010). The WMU was divided into 3 minute latitude x 5 minute longitude grids (excluding First Nations reservations, Wabamun, St. Anne, and Isle Lakes), resulting in 83 survey blocks. Survey block stratification flights were conducted using a Cessna 185 and a Cessna 210 airplane on 29 February 2012. Both crews 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 3rd 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 GPS. The pilot attempted to maintain an altitude of approximately 100 m above ground level and a speed of 150 km/h.

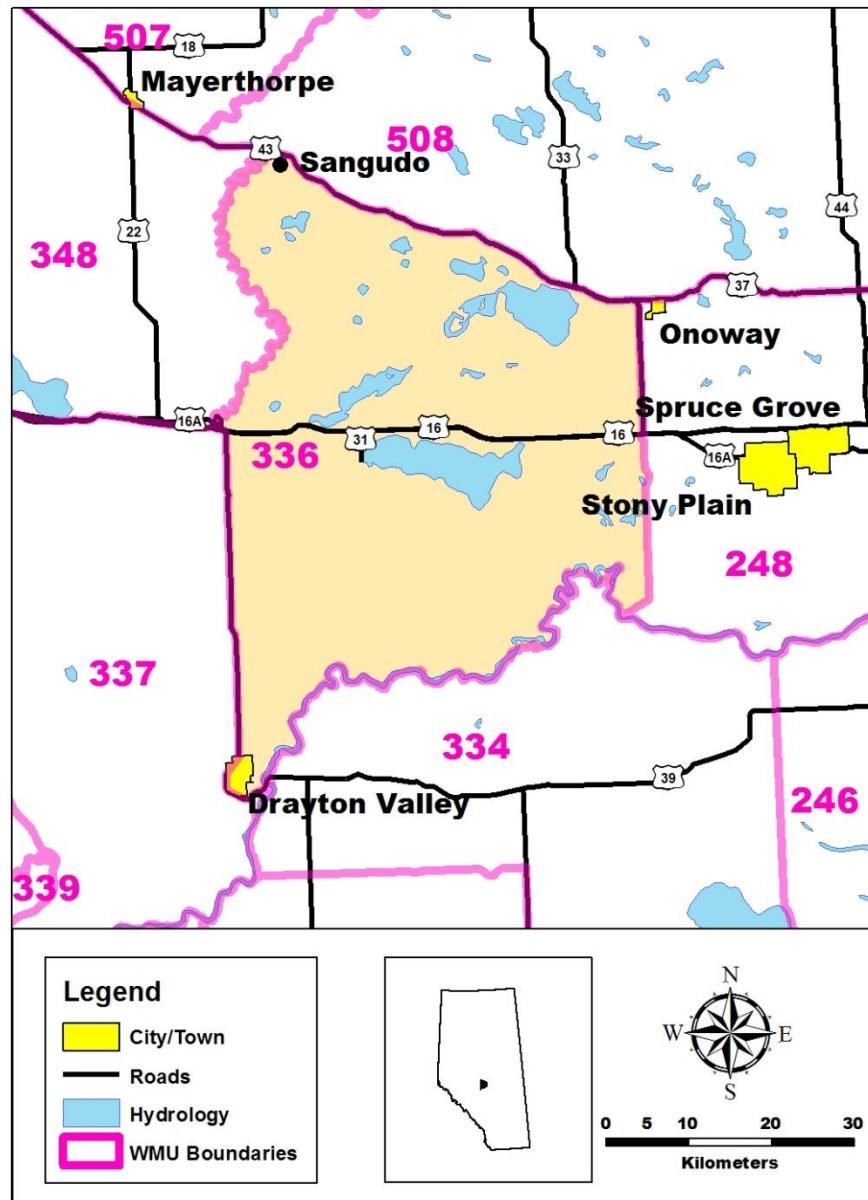


Figure 1. Location of Wildlife Management Unit 336 in Alberta.

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 and white-tailed deer was based largely on habitat, topography, and local knowledge, as well as observations from the stratification flights. For the intensive survey flights, a minimum of five survey blocks were chosen randomly from each of the low, medium and high strata for moose, mule deer and white-tailed deer.

Intensive survey flights, using a Bell 206B helicopter, began on 1 March with a crew consisting of a pilot, a navigator/observer and 2 full time observers. A second crew joined the intensive survey from 2 – 3 March, also employing a Bell 206B helicopter. 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 comparison of survey results among years may be difficult.

Survey conditions were good throughout the duration of the survey with nearly 30 cm of fresh snow having blanketed the entire WMU on 26 February 2012. Temperatures gradually warmed from -12 degrees Celsius at the beginning of the survey to -2 degrees Celsius by the end of the survey. Winds were light and turbulence was negligible throughout the survey.

Results

During the intensive survey, 16 survey blocks were flown for moose (5 low, 5 medium and 6 high) resulting in an estimated moose population ranging from 887 to 1,254 (Table 1). A total of 39 bulls were observed, with 77% having already shed their antlers. Of the 9 carrying antlers, eight were yearlings and one was classified in the medium size class. Population estimates for moose in WMU 336 appear to have remained stable from 2003 to 2012.

During the intensive survey, 16 blocks were flown for mule deer (7 low, 5 medium and 4 high) resulting in an estimated mule deer population ranging from 726 to 1,145 (Table 1). Nearly half of the mule deer went unclassified (43%), as most male deer lacked antlers making sex and age classification particularly difficult. Specifically, only 16 antlered males were observed; 10 yearlings and 6 medium. From the classified portion (57%) of the sampled population, a ratio of 36 bucks per 100 does and 102 fawns per 100 does were observed. However, these demographic ratios must be interpreted cautiously, as the male cohort would be drastically under represented as males with shed antlers were recorded as unclassified. Previous surveys of WMU 336 (line transect surveys) do provide a population and density estimate for mule deer; however, no confidence limits can be derived. In addition, these surveys do not provide demographic or gender metrics and are biased towards river valley habitats. Caution must be taken when comparing these results to the 2012 Gasaway survey.

During the intensive survey, 16 blocks were flown for white-tailed deer (6 low, 6 medium and 4 high) resulting in an estimated white-tailed deer population ranging from 2,485 to 4,099 (Table 1). Nearly half of all white-tailed deer went unclassified (45%), as most male deer lacked antlers making sex and age classification particularly difficult. Specifically, only 12 antlered males were observed; 5 yearlings and 7 medium. From the classified portion (55%) of the sampled population, 7 bucks per 100 does and 118 fawns per 100 does were observed. However, these demographic ratios must be interpreted cautiously, as the male cohort would be drastically under represented as males with shed antlers were recorded as unclassified. Previous surveys of WMU 336 (line transect surveys) do provide a population and density estimate for white-tailed deer; however, no confidence limits can be derived. In addition, these surveys do not provide demographic or gender metrics and are biased towards river valley habitats. Caution must be taken when comparing these results to the 2012 Gasaway survey.

Table 1. Comparison of aerial survey results for moose, mule deer, and white-tailed deer in Wildlife Management Unit 336 from 1982 – 2012.

Species/Year	Population estimate (90% confidence limits)	Animals/km ²	Ratio to 100 Females	
			Males	Juveniles
Moose				
2012 ^a	1,071 ($\pm 17.2\%$)	0.41	31	57
2003 ^a	1,150 ($\pm 16.9\%$)	0.46	50	57
1993 ^b		0.52	53	63
1988 ^b		0.51	26	76
1982 ^b		0.32	35	79
Mule deer				
2012 ^a	936 ($\pm 22.4\%$)	0.36	36	102
1993 ^b		0.42	--	--
1988 ^b		0.25	--	--
1982 ^b		0.15	--	--
White-tailed deer				
2012 ^a	3,292 ($\pm 24.5\%$)	1.26	7	118
1993 ^b		1.67	--	--
1988 ^b		0.72	--	--
1982 ^b		0.41	--	--

^a Survey was flown using the modified Gasaway methodology.

^b Survey was flown using line transect methodology; population estimates were not derived. Line transect survey data should not be directly compared to Gasaway survey data.

-- Demographic ratios were not obtained.

Literature Cited

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