2011 Wildlife Management Unit 521 moose, white-tailed deer and elk

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Aerial ungulate surveys are invaluable for setting hunter harvest allocations, along with providing information for ungulate depredation discussions and habitat protection efforts. Big game populations in WMU 521 were last surveyed in 2005. Since the 2005 survey, the area experienced a very hard winter (2006 - 2007), with reports of high levels of moose mortality due to winter ticks. A 2011 detailed aerial survey to determine the effect that recent winters have had on populations of moose, deer and elk was required to ensure that harvest levels remain sustainable in this WMU.

Study area

WMU 521 is bordered to the east by Highways 43 (south of Valleyview) and 49 (north of Valleyview), to the south by the Simonette Road, and the Simonette River, and to the west and north by the Smoky and Little Smoky rivers (Figure 1). This WMU is comprised of the central mixedwood and dry mixedwood subregions, as described by the Natural Regions Committee (2006). Mixedwood forests of aspen and white spruce dominate the Crown land portions of the WMU, the Puskwaskau Hills in the north, and along the rivers. Considerable fragmentation within the forested areas has resulted from substantial forestry, and oil and gas activity. The remaining portions of the WMU are dominated by agriculture, including annual cereal and perennial crops, and livestock operations.

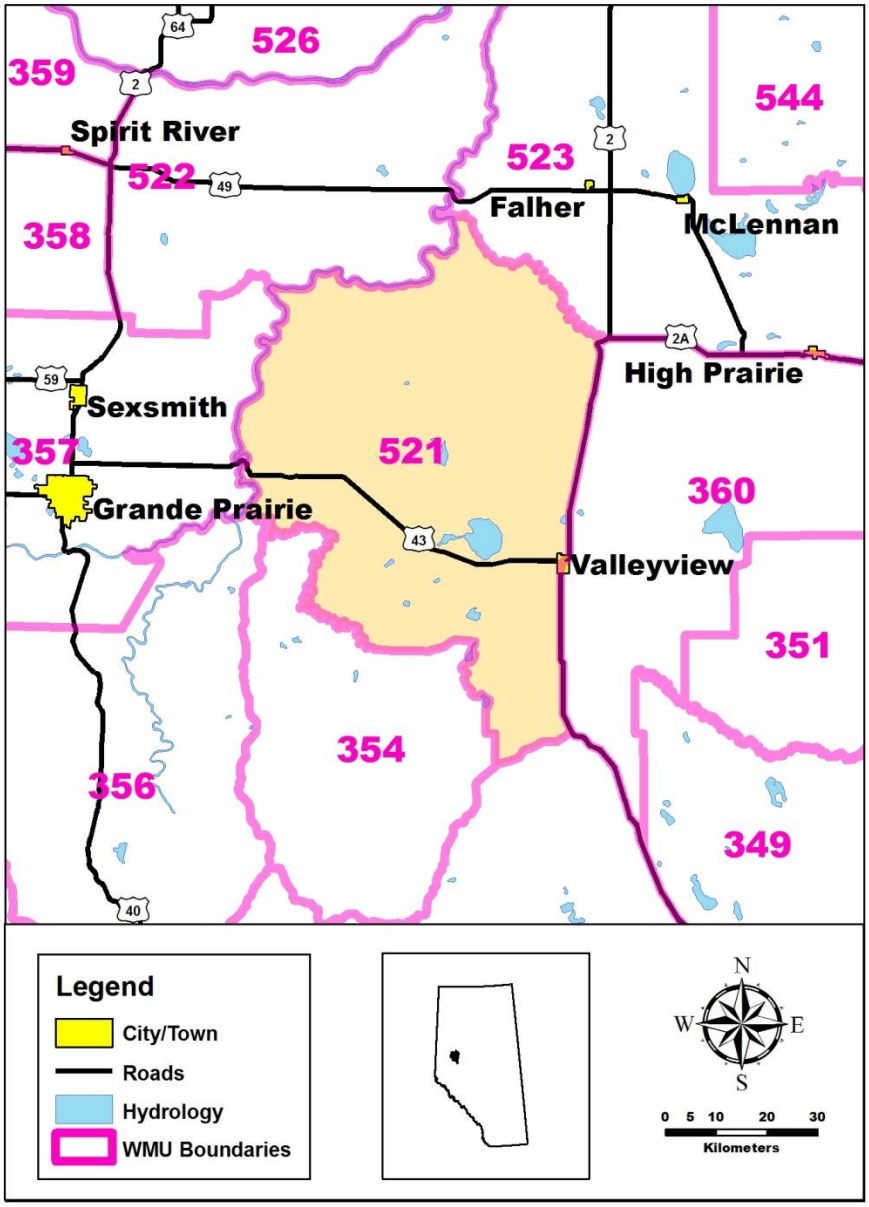

Figure 1. Location of Wildlife Management Unit 521 in Alberta.

Survey methods

Transects were flown across WMU 521 by fixed-wing aircraft on 11 and 13 January 2011 to stratify the distribution of moose and deer, in preparation for intensive survey block flights using rotary-wing aircraft. Two Cessna 206 airplanes were used to fly along transects spaced every 1 degree latitude (except for every 5th line, which fell on survey block borders) within the WMU. Air speed during stratification flights was approximately 160 km/h, and flight altitude was maintained at approximately 90 m. Locations of moose, elk, deer and other wildlife were recorded using a Garmin 60CSx GPS.

Survey blocks were classified according to the number of moose and deer observed during stratification flights, following a modified Gasaway technique (Gasaway et al. 1986; Lynch 1997), into low, medium and high density strata. Survey blocks were 5 minutes latitude x 5 minutes longitude in area. Fifteen survey blocks were randomly selected for intensive search by helicopter. Five of the survey blocks were classed as low, five as medium and five as high.

A Bell 206B helicopter was used to survey the number of moose and deer within each of the 15 randomly selected survey blocks on 14 - 21 January 2011. Each survey block was flown in an east/west orientation on flight lines spaced approximately 400 m apart, at 100 - 140 km/h, and at an altitude of approximately 30 m above treeline. Flight crews consisted of a pilot, a navigator/recorder/observer in the front seat, with two observers located in the back seat. Observers on each side of the helicopter were responsible for a field of view approximately 200 m wide. Animals were identified by sex and age using physical characteristics that were easily observed from the air (e.g. presence of white vulva patch on cow moose, or antlers on males). Following the moose and deer surveys, we surveyed elk on 22 January 2011 in areas where damage complaints or prior knowledge of elk locations (gained through the stratification flights) guided efforts to find large or dispersed herds. Adult males of all ungulate species with antlers present, were classed as either small, medium or large (ASRD 2010). All data was compiled and entered in the Quadrat Survey Method Program developed as per the Gasaway population model (Lynch 1999). 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.

Heavy snow flurries and ice fog throughout mid-January impeded our ability to survey on consecutive days. Snow flurries during stratification flights kept crews grounded on 12 January

and for portions of 13 January. Cloud cover was between 50% and 60% providing flat light conditions. Temperatures averaged between -20 and -27 degrees Celsius. Ground temperatures at the start of the intensive survey block flights averaged -20 degrees Celsius; however, conditions warmed throughout the week to +2 degrees Celsius near the survey's end. Winds were generally calm throughout the moose and deer portions of the survey, but were gusting between 30 - 50 km/h during elk surveys. Snow conditions were excellent, with an average of 90 cm of fresh snow. Sightability was generally good throughout the farmland and mixed conifer/deciduous forest.

Results

We flew 15 survey blocks during the intensive survey (5 low, 5 medium and 5 high), resulting in a moose population estimate between 2,513 and 3,406 in WMU 521 (Table 1). Most bulls (54.8%) had already shed their antlers at the time of the survey. The remaining bulls were classed as small (37.6%) or medium (7.5%). Given the timing of the survey, it is likely that the large bulls had already dropped their antlers.

Deep snow conditions and variable weather during the survey (preventing surveying on consecutive days) resulted in a great deal of variability and questionable accuracy of results for mule deer and white-tailed deer. In particular, we suspect that large groups of mule deer moved between the stratification and intensive surveys. As a result, a precise population estimate for mule deer in WMU 521 was not obtained. White-tailed deer populations were estimated to range between 941 and 1,795 (Table 1), but these results must be interpreted with caution.

A total of 1,588 elk were observed, with 17 bulls and 39 calves per 100 cows. Note that this is only a minimum population count of elk in this WMU. Elk data have only been collected on an opportunistic basis during previous surveys, thus historical comparisons cannot be made for elk in this WMU.

Table 1. Comparison of aerial survey results for moose, white-tailed deer and elk in Wildlife Management Unit 521 from 1998 - 2011.

Species/Year	Population estimate (90% confidence limits)	Animals/km²	Ratio to 100 Females	
			Males	Juveniles
Moose				
2011	2,959 (±15.1%)	0.23	26	48
2005	4,782 (±11.0%)	1.02	33	48
1998	4,306 (±17.7%)	0.93	16	109
White-tailed deer				
2011	1,368 (±31.2%)	0.29	8	52
2005	4,490 (±15.6%)	0.24	35	126
1998	1,099 (±30.7%)	0.96	27	114
Elk				
2011[a]	--	--	17	39

[a] No data from previous years is available for comparison.
"--" A precise estimate was not obtained.

Literature Cited

Alberta Sustainable Resource Development (ASRD). 2010. Aerial ungulate survey protocol manual. Produced by ASRD, Fish and Wildlife Division, Edmonton, Alberta, Canada. 65 pp.

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, USA. 108 pp.

Lynch, G.M. 1997. Northern moose program moose survey field manual. Unpublished report produced by Wildlife Management Consulting, Edmonton, Alberta, Canada. 68 pp.

Lynch, G.M. 1999. Northern moose management program, final report. Unpublished report produced by Wildlife Management Consulting, Edmonton, Alberta, Canada. 234 pp.

Natural Regions Committee. 2006. Natural regions and subregions of Alberta. Compiled by D.J. Downing and W.W. Pettapiece. Pub. No. T/852, produced by the Government of Alberta, Edmonton, Alberta, Canada.