2010 Wildlife Management Unit 358 moose

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Stepnisky, D., and R. Stavne. 2012. Wildlife Management Unit 358 moose. Pages 63-67. *In:* M. Ranger and S.Webb. Delegated big game surveys, 2009/2010 survey season. Data Report, D-2011-001, produced by the Alberta Conservation Association, Sherwood Park, Alberta, Canada.

Aerial ungulate surveys are valuable for setting license numbers for resident and non-resident hunters, for ungulate depredation discussions and for habitat protection efforts. Moose populations in WMU 358 were last surveyed in 1998. Since the last survey, a great deal of industrial development has occurred within the Saddle Hills. With increased industrial activity, there has been an increase in accessibility of moose to hunters (with more road access). A detailed survey was required to determine the effect of landuse change on moose populations and to ensure that harvest levels remain sustainable in this area. This report contains the results of analysis of moose surveys conducted in WMU 358 in 2010.

Study area

WMU 358 lies entirely within the Saddle Hills County and includes a mix of predominantly farmland to the east, and forested Crown land in the west. The unit is bordered by Highway 49 to the north, Highway 2 to the east, the British Columbia border to the West, and by the Saddle Hills County border to the south (Figure 1). This area is comprised primarily of the lower foothills natural subregion, but also includes portions of the dry mixedwood and central mixedwood natural subregions (Natural Regions Committee 2006). Considerable fragmentation within the forested area has resulted from substantial forestry and oil and gas activity. The increase in forestry activity at the green/white zone interface has generated substantial amounts of additional forage for moose.

Survey methods

Wildlife staff from ACA and ASRD flew transects across WMU 358 by fixed-wing aircraft on 25 January 2010 to stratify the distribution of moose across 61 sampling units, in preparation for detailed surveys of ungulates using rotary-wing aircraft. Fixed-wing (Cessna 185 and 206) flights were flown along lines of 1 degree of latitude (except for every fifth line, which fell on sample unit borders) within the WMU. Air speed during stratification flights was approximately 150 km/h, and flight altitude was maintained between 60 - 90 m. Cloud cover was 100% for the duration of the stratification, providing observers with flat light conditions and intermittent light snow flurries. Temperatures averaged -14 degrees Celsius. Snow conditions were good, with an average of 60 cm of old snow and 2 cm of fresh snow. Sightability was generally good throughout the farmland and mixed conifer/deciduous forest, however, heavy frost accumulations on dense conifer and aspen/willow stands resulted in isolated patches of very poor sightability in the western half of the unit. Locations of moose were recorded using a Garmin 60CSx Global Positioning System (GPS).

Sample units were classified according to the number of moose observed during fixed-wing stratification flights following a modified Gasaway technique (Gasaway et al. 1986; Lynch 1997; ASRD 2010). Based on relative densities from stratification flights, survey units were stratified for moose into low, medium, and high classifications. Sample units were 5 minutes latitude x 5 minutes longitude in size. Fifteen sample units (5 low, 5 medium and 5 high) were randomly selected for intensive search by helicopter.

A Bell 206B helicopter was used to determine the number of moose within each of the 15 randomly selected blocks on 26 – 29 January 2010. Each block was flown in an east to west orientation on flight lines spaced approximately 400 m apart, at 100 - 140 km/h,

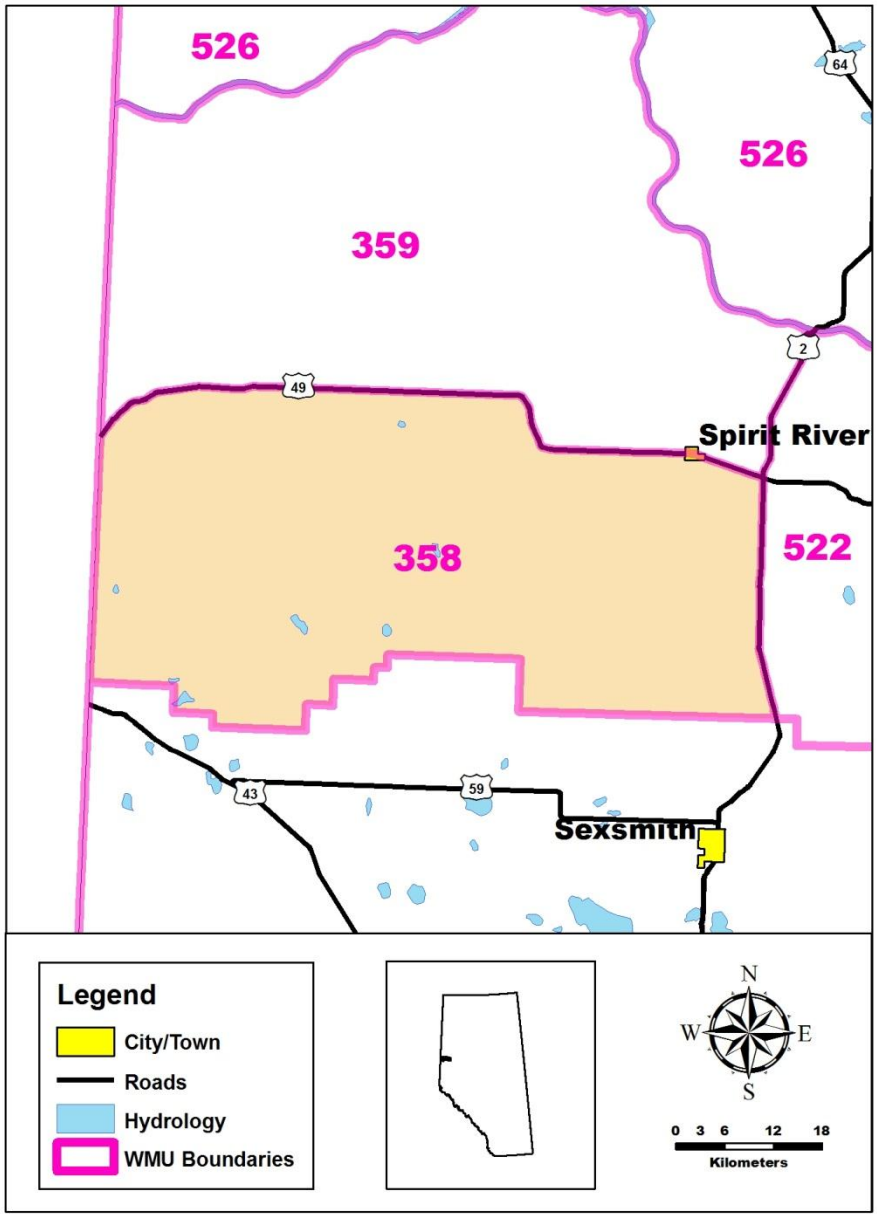

Figure 1. Location of Wildlife Management Unit 358 in Alberta.

and at an altitude of approximately 30 m. Because of very poor sightability conditions in a few blocks (owing to heavy frost and dense forest cover), some of the flight lines were narrowed considerably, to 150 - 200 m spacing, and helicopter altitudes were elevated to reduce the chance of observers missing moose.

Each flight crew consisted of three surveyors: a navigator/recorder/observer up front, and two observers in the back seat of the aircraft. Observers on each side of the helicopter were responsible for a field of view approximately 200 m wide. All ungulates 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). Although most bulls had already dropped their antlers, those that still retained their antlers were classed appropriately into either the small, medium or large antler size category (Table 1). 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.

Conditions for rotary-wing surveys were generally good with excellent snow coverage. Ground temperatures varied from -12 to -25 degrees Celsius, however some inversions were noted where air temperatures were measured to be -2 degrees Celsius. Winds were generally calm, providing us with excellent observation conditions throughout all portions of the rotary-wing survey.

Results

The total moose population estimate for WMU 358 was calculated to be between 2,056 and 2,448 (Table 1). The bull:cow ratio was higher than the previous survey, while the calf:cow ratio was lower than the previous survey (Table 1). The observed twin rate was 8.4%. Of the bulls that were observed, 29.3% had already shed their antlers. Of those bulls with antlers, 52.8% were small, 43.4% were medium and 3.8% were large. Note that proportions of large bulls may be underestimated, due to higher probability of early antler drop.

Table 1. Comparison of aerial survey results for moose in Wildlife Management Unit 358 in 1998 and 2010.

Year	Population Estimate (90% confidence limits)	Moose/km^2	Ratio to 100 Females	
			Males	Juveniles
2010	2,252 (±8.7%)	0.79	31	51
1998	2,552 (±10.5%)	0.89	24	56

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