2009 WMU 338 Moose

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Obtaining accurate moose population estimates is important for ensuring healthy moose populations and hunting opportunities. WMU 338 is surveyed on a rotational basis, approximately every 3-5 years. WMU 338 was surveyed by line transect method in 1980, 1985, 1990 and 1993 and the modified Gasaway method in 1996, 2003, and 2008. The objective of this year's aerial survey was to estimate moose population size, density, condition, and composition (i.e. ratio of bulls: cows: calves). In 2008, antlered moose hunting was permitted via a special license draw from September 3 - October 31 for archery and November 1 – 30 for firearms. In 2006, moose hunter success was estimated at 17% (ASRD 2007).

Study Area

WMU 338 is located east of Edson and south of Highway 16 between the Wolf Lake road/Wolf Creek to the west, the Cynthia road to the east and the Pembina River to the south (Fig. 6.6.1). This 2,536 km^2 WMU is characterized by heavy oil and gas development and extensive all-weather access in the southern third, large areas of cleared farmland in the northern third and some forestry clearcuts in various stages of activity and regeneration in the center. The WMU is located in the Lower Foothills Natural Region and the forest cover largely consists of mixed conifer and deciduous stands on the uplands and black spruce and tamarack bogs in the lowlands. There are a number of small and medium sized lakes in the WMU (e.g., Wolf Lake).

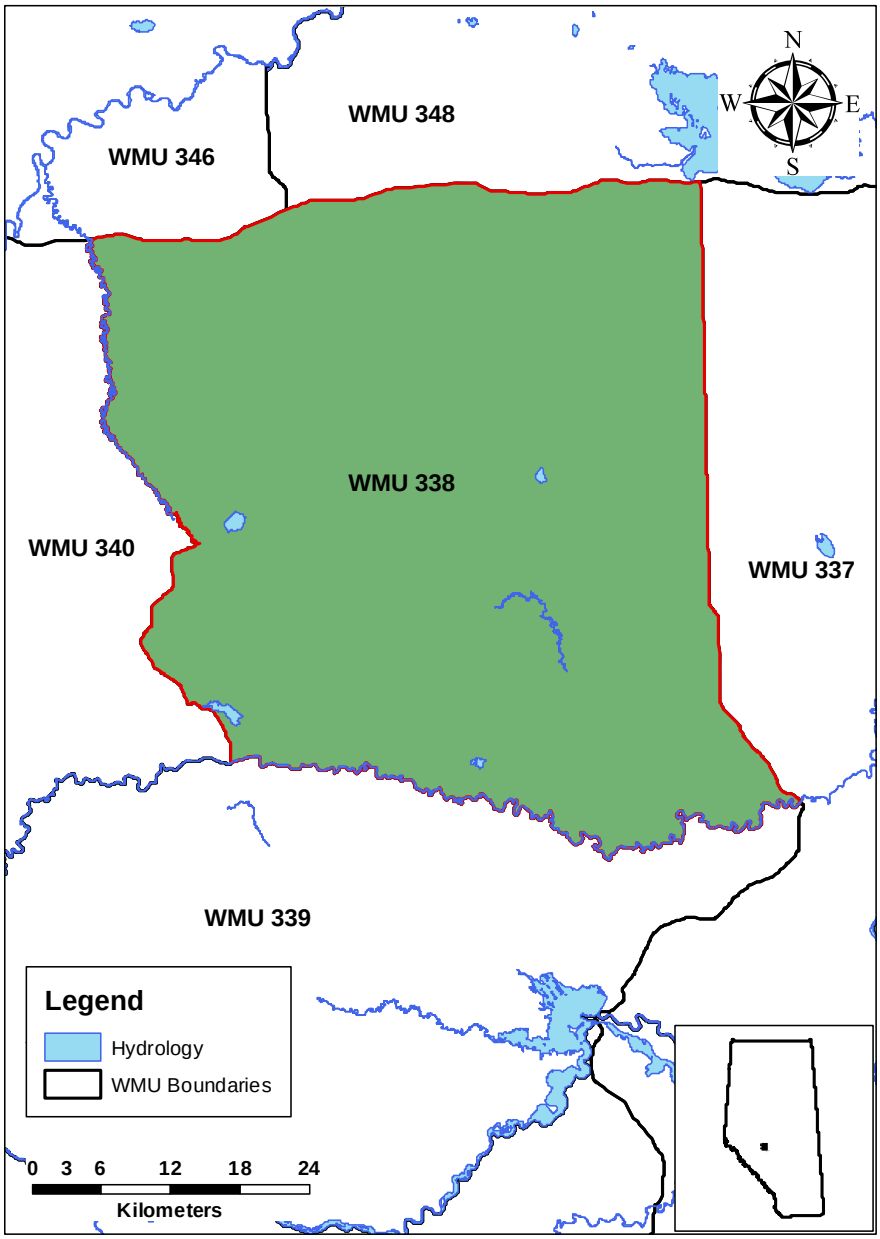

Figure 6.6.1. Location of WMU 338 in Alberta.

Survey Methods

We stratified the WMU based on moose observed from a Cessna 185 fixed-wing aircraft on February 9 – 10, 2009 (Gasaway et al. 1986). The aircraft flew at approximately 160 km/h, 90 m above the ground depending on land cover and topography (higher in dense forest and greater topography). We flew transects with the same 3 experienced observers in an East-West direction at 1 minute latitude (~1.9 km) intervals using a handheld GPS unit (Lynch and Shumaker 1995, Lynch 1997). Observers scanned 300 - 500 m out from the aircraft and recorded moose locations found along the transect. After the stratification survey, moose counts and GPS locations were uploaded into a GIS and intersected with a 5 minute latitude X 5 minute longitude sampling grid to determine the density of moose observed in each block. We determined strata based on moose density (i.e., low, medium, high) and randomly selected survey blocks using the Excel Seed file methods (Shumaker 2001C).

We searched for moose in 15 sample blocks (5 each from the high, medium, and low stratum) from February 11 - 12, 2009 using a Bell 206 JetRanger helicopter (Gasaway et al. 1986). We flew approximately 80 - 120 km/h, 50 - 100 m above the ground for the intensive surveys at 400 m intervals to ensure that each block was sampled completely. A navigator sat next to pilot and observed and recorded animal locations, while 2 observers sat in the back of the aircraft. Each observer was expected to observe 200 m out from the aircraft. We circled all moose to determine age, sex, total number of individuals, and condition. The white vulva patch below the tail indicated a cow moose and light brown-grey patches, typically occurring on the shoulders and back, indicated tick infestation. In addition, we recorded locations and counts for other wildlife species. Moose counts per block were summed and entered into an Excel Quad file to determine population estimates (Gasaway et al. 1986).

During the stratification flights, daytime high temperatures were cool (-1 to +5° C) and snow conditions were good with moderate to complete snow cover. The intensive surveys were flown during constant weather: clear to partially cloudy, calm days with average high temperatures ranging from -7 to -2° C. At the time of the survey the last snow had occurred 1 day prior, adding a few inches of fresh snow.

Results

We estimated the total population at 927 ± 167 (18.1%) moose, for an overall density of 0.37 moose/km^2 (Table 6.6.1). Moose density was lowest in the low strata (0.23 moose/km^2); similar moose densities were found in the medium and high strata (0.41 moose/km^2). The composition of moose was 40 bulls/100 cows and 39 calves/100 cows. No twins were observed. Evidence of ticks on moose was minimal (<5%).

The density of moose appears to have declined since 1993; however the bull/cow ratio has increased during the same time period. The calf/cow ratio has declined since 1990 and then remained variable over the last 4 surveys (Table 6.6.1).

Table 6.6.1. Comparison of population parameters from 7 surveys in WMU 338 from 1980 – 2009.

Year	Survey Type	Population Estimate (conf. limits)	Density / km^2	Ratio to 100 Females	
				Males	Juveniles
2009	RSB[1]	927 (18.0%)	0.37	40	39
2003	RSB	884 (15.2%)	0.35	36	49
1996	RSB	1119 (17.9%)	0.44	25	46
1993	Transect	1413	0.55	30	38
1990	Transect	1390	054	23	67
1985	Transect	--	0.56	24	60
1980	Transect	--	0.50	--	--

[1]Random Stratified Block

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