2011 Wildlife Management Unit 332 moose

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WMU 332 is a desirable unit for moose hunters and receives high pressure from recreational and aboriginal hunters. To improve moose management, ASRD replaced the general hunting season in this WMU in the late 1990s, with a special license draw system for both antlered and antlerless moose during both the archery and general seasons. The harvest goal for antlered and antlerless moose is presently 4% and 1%, respectively, of the estimated pre-season populations. Moose hunter success according to hunter harvest questionnaires has averaged 33% for antlered moose and 61% for antlerless moose over the last five years. WMU 332 was last surveyed for moose in 2007. Regular population inventories are required to assist in managing losses due to hunter harvest, predation, and severe winters. The objectives of the 2011 survey were to estimate the total population and herd composition for moose in this WMU.

Study area

WMU 332 is located northeast of Rocky Mountain House and is approximately 2,904 km^2 in size (Figure 1). Highway 12 forms the southern boundary; Highways 766 and 20 are the eastern boundary; Highway 616 is northern boundary; and the North Saskatchewan River, along with HWY 22 and Wolf Creek are the western border. WMU 332 straddles the Lower Foothills, Central Mixedwood and Dry Mixedwood Natural Subregions of Alberta (Natural Regions Committee 2006).

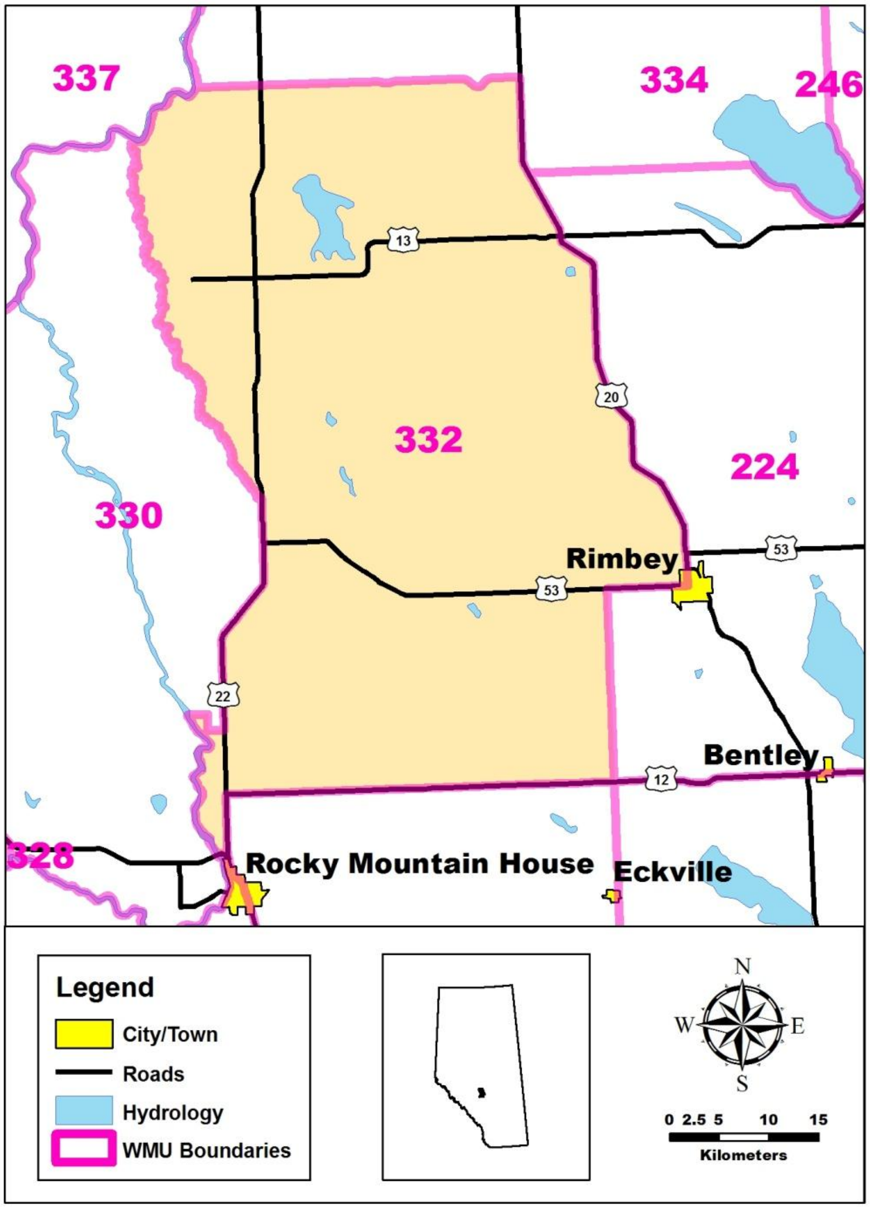

Figure 1. Location of Wildlife Management Unit 332 in Alberta.

Survey methods

We stratified WMU 332 for moose using a Cessna 185 airplane on 10 - 12 January 2011 (Gasaway et al. 1986). The aircraft flew at approximately 100 - 130 km/h, approximately 150 - 200 m above the ground, depending on vegetation cover and topography (higher elevation in dense forest and greater topography). We flew stratification flight transects in an east/west direction at 1 minute longitude intervals (1800 m apart) (Lynch and Shumaker 1995; Lynch 1997). Observers scanned approximately 400 m out from each side of the aircraft and recorded moose locations found along each transect. Temperatures were -24 to -19 degrees Celsius and snow conditions were good to excellent.

After the stratification survey flight, moose counts and GPS locations were uploaded into a GIS and intersected with a fishnet grid overlaid onto a map of WMU 332. The grid divided the WMU into 106 survey blocks (3 min latitude x 5 min longitude). We classified survey blocks into strata according to the density of moose counted during the stratification flight. Low blocks had 0 moose/km^2, medium blocks had 0.01 - 0.15 moose/km^2 and high blocks had $\geq$ 0.16 moose/km^2. Overall, 24 blocks (23%) were classified as low, 53 (50%) as medium, and 29 (27%) as high density blocks. We then randomly selected survey blocks for inclusion in the intensive rotary-wing survey flight, using the Excel Seed file methods (Shumaker 2001b).

We searched survey blocks with a Bell 206B helicopter from 13 - 15 January 2011. We surveyed a total of 16 blocks: 5 low, 6 medium and 5 high. We flew approximately 120 km/h, 30 - 50 m above the ground, at 400 m flight line spacing to ensure full coverage of each survey block. A navigator sat next to the pilot and observed and recorded animal locations, while 2 observers sat in the back of the aircraft. Each observer was responsible for observing approximately 200 m from each side of the aircraft.

We counted and recorded locations of moose, elk, deer (white-tailed and mule deer were combined), wolves, and coyotes. We determined age, sex, and total counts of moose; circling the animals if necessary. Most bulls at this time had shed their antlers, but cows were easily distinguishable by the white vulva patch below their tails. Light brown or grey patches, typically occurring on the shoulders and back, indicated winter tick (*Dermacentor albipictus*) infestation and were noted.

Moose counts per survey block were summed and entered into separate Excel Quad files to determine population estimates (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.

The intensive survey flights were flown during partially cloudy, calm days with average temperatures ranging from -24 to -20 degrees Celsius. Snow conditions were good to excellent throughout the survey area.

Results

During the intensive survey flight, 16 blocks (5 low, 6 medium and 5 high) were surveyed and a total of 153 moose were counted (33 bulls, 76 cows, 40 calves and 4 unclassified). From this, we estimated the total moose population to be between 730 and 1,178 (Table 1). Population estimates for moose in WMU 332 had progressively declined from 2000 to 2007, but appear to have rebounded in 2011. Other observations include; two cows were observed with twins, and two moose were observed to have slight tick related hair loss.

Table 1. Comparison of aerial moose survey results in Wildlife Management Unit 332 from 2000 - 2011.

			Ratio to 100 Females	
Year	Population estimate (90% confidence limits)	Moose/km^2	Males	Juveniles
2011	954 (±24.0%)	0.33	43	53
2007	480 (±27.0%)	0.23	43	68
2002	800 (±25.0%)	0.30	47	73
2000	1,077 (±17.0%)	0.40	34	55

Literature Cited

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