2011 Wildlife Management Unit 339 moose

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Moose surveys began in WMU 339 in 1980 using a random search methodology. To gain increased confidence in estimating moose populations, the survey methodology was altered in 1984, and the random square mile quadrat method (Smith et al. 1984) was used. A third survey was flown in 1989 using the habitat-stratified method (Smith and Edmonds 1989). In 1994, a fourth survey was flown using the modified Gasaway method (Gasaway et al. 1986), which has been the method of choice through additional surveys in 1996, 2005, and 2011. Survey observations from 2011, along with information from previous surveys, assist in identifying trends in population, productivity and sex

structure. The 2011 moose population estimate will be used by ASRD to make management decisions and establish harvest allocations.

Study area

WMU 339 is located in Townships 44 - 48 and Ranges 10 - 18, west of the 5th Meridian (Figure 1). It is bound by the Pembina River to the north and the Brazeau River to the south. This WMU is characterized by moderate to high levels of oil and gas development (roads, wellsites, large and small gas plants, and pipelines), and has an extensive but moderate density of all-weather roads. Forest clear cuts in various stages of activity and early regeneration are dispersed throughout the WMU. The habitat is largely coniferous forest (predominately lodgepole pine), black spruce and tamarack muskegs, along with dwarf shrub bogs in the west and central portions, and mixed wood and pure deciduous stands in the eastern portion. Some large grass and willow flats occur along the Brazeau River.
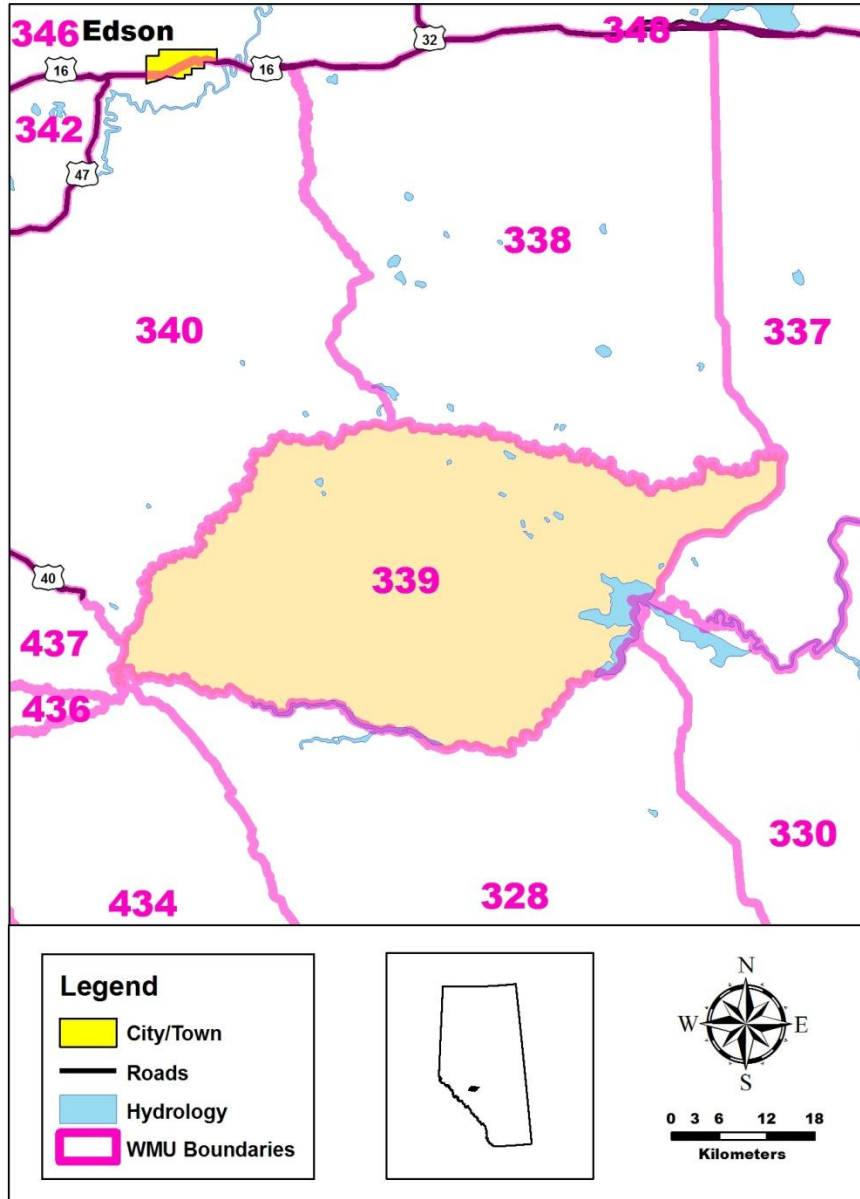
Figure 1.   Location of Wildlife Management Unit 339 in Alberta.

Survey methods

WMU 339 was surveyed for moose populations using the modified Gasaway method (Gasaway et al. 1986; Lynch and Schumaker 1995; Lynch 1997). The WMU was divided into 68 survey blocks (3 min latitude x 5 min longitude) and classified into low, medium and high strata by a fixed-wing stratification flight flown on 22 February 2011. Survey blocks were stratified based on the number of moose observed in each block during the fixed-wing flight. The stratification flight was followed by intensive survey flights of randomly selected survey blocks on 23 - 24 February 2011 using a Bell 206B helicopter. Five blocks from each of the three strata were flown and data were analyzed to determine confidence limits for the population estimate. The goal, to produce a population estimate with 90% confidence limits and a confidence level ≤ 20%, was obtained. 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.

Survey conditions were good, with complete snow cover, temperatures averaging -25 degrees Celsius, and skies varying between sunny and partially cloudy.

Results

During the intensive survey flights, 15 blocks were flown (5 low, 5 medium and 5 high) and a total of 80 moose were observed (25 bulls, 39 cows, 15 calves, and 1 unclassified). This resulted in a moose population estimate ranging from 298 to 396 (Table 1).

In 2005, the moose population was estimated to be 64% lower than in 1996. However, the 1996 survey was probably an over estimate of population size, as it was a combined survey with WMU 340 and the population estimate was calculated based on the size of each WMU (Ficht and Smith 2005). When comparing the 2005 survey to the 1994 survey (both used the same method and survey area), the 2005 moose population was estimated to be 37% lower than in 1994. Moose populations appear to have stabilized since 2005, however, the 2005 survey had much more variance around the estimated mean than the 2011 survey. Data from 1980 has not been included due to the random nature of the survey.

Table 1.   Comparison of aerial moose survey results in Wildlife Management Unit 339 from 1984 - 2011.

| Year | Population estimate (90% confidence limits) | Moose/km^2 | Ratio to 100 Females | |
			Males	Juveniles
2011	347 (±14.1%)	0.17	64	39
2005	332 (±34.6%)	0.16	35	27
1996	934 (--)	0.45	15	46
1994	525 (±20.0%)	0.28	10	41
1989	553 (--)	0.56	15	65
1984	711 (--)	0.35	29	61

"--" Confidence limits not reported.

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