## 6.9 Wildlife Management Unit 350 moose

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Historically, WMU 350 was part of Alberta's Northern Moose Management Program and was surveyed annually over the winters of 1993/94 to 1997/98 (Lynch 1997). The WMU was again surveyed during the winter of 2001/02. Attempts were made to survey the WMU during the winter of 2005/06, but poor weather and snow conditions forced the cancellation of the survey in its early stages.

WMU 350 receives substantial hunting pressure by hunters from First Nations and Métis communities, and it is also a highly desirable WMU for recreational hunters given historical moose populations in the WMU, ease of access, and relative proximity to major urban centres. Therefore, regular moose surveys in WMU 350 are important to assess moose population status and trends in order to properly manage the resource. Current information on moose populations and distribution is also required for proper habitat and land use management.

### *6.9.1 Study area*

WMU 350 is delimited to the north by the shorelines of Lesser Slave Lake and the Lesser Slave River from Kinuso to Smith, to the west and southwest by Highway 33 from Kinuso to the Peace Pipeline west of Fort Assiniboine, and to the east and southeast by the Athabasca River from Smith to the ferry on the Athabasca River west of Vega (Figure 16).

The town of Slave Lake and parts of the town of Swan Hills are found within the boundaries of the WMU. The only major lake present within the WMU is Mitsue Lake, which is surrounded by the Mitsue Lake Industrial Park. The waters of the Lesser Slave River from Smith to Slave Lake, and the Athabasca River from the southern end of the WMU to Smith, fall within the boundaries of the WMU. Two other major river systems found within the WMU are the Otauwau and Saulteaux rivers and their tributaries. These river systems are all buffered by habitats important to ungulates, especially moose.

We used two Bell 206 JetRanger helicopters to determine the number of moose within each of the randomly selected blocks on 13 – 15 February 2009. We flew each block east-west on flight lines spaced every 0.25 min of latitude (approximately 400 m) apart. On 13 February, both flight crews consisted of one pilot and three observers. On 14 and 15 February, one of the flight crews had only two observers in an effort to maximize flight times due to weight restrictions imposed by the charter company.

We classified all moose as antlered bulls, unantlered bulls, adult cows, unknown adults and calves. In addition to observations of moose, we recorded other wildlife sightings. We further classified bull moose into size classes based on antler development as outlined in Table 1. We recorded locations and numbers of moose observed on survey datasheets.

We judged snow cover and condition to be adequate for survey purposes, but these were not ideal. Snow depth averaged approximately 50 cm with very little fresh snow present. Some melt was present around trees and bushes, as well as on south-facing slopes and benches. Stumps and deadfalls were generally not covered by snow. Flying conditions throughout the survey were excellent, with little turbulence and good visibility.

We entered block survey results into a population estimate spreadsheet ("Quad6.xls") and calculated population parameters (e.g., population estimate, male:female:juvenile ratios, density, twinning rates).

The landbase in WMU 350 includes portions of the Central Mixedwood, Upper Foothills and Lower Foothills subregions, as described by the Natural Regions Committee (2006). Mixedwood forests of aspen and white spruce dominate the landscape. These are interspersed with stands of jack and lodgepole pine as well as black spruce and tamarack muskeg. Only two small portions of the WMU are under cultivation for agricultural purposes, the southeast tip and the northwest tip. The farmland in these two areas is dominated by tame hay and pasture lands, with some grazed mixedwood forest. The western half of the WMU is highly fragmented with logging cutblocks; however, cutblocks can be found throughout the WMU. Footprint from the oil and gas industry is pervasive on the landscape, but not to the extent observed in neighbouring WMU 351 to the west.

### *6.9.2 Survey methods*

To assess moose populations in WMU 350, we conducted an AUS following methodology adapted from the Gasaway survey technique (Gasaway et al. 1986), as described in the Northern Moose Management Program Moose Survey Field Manual (Lynch 1997), in February 2009. We used two C-185 fixed-wing aircrafts equipped with wheels and a crew comprised of a pilot and three observers (ASRD and ACA) for the stratification flights. Stratification crews in each aircraft flew east-west transects across the WMU at 1 min latitude intervals between 10 – 12 February 2009.

We marked locations of moose and other wildlife using a GPS. We recorded waypoint numbers, numbers of moose observed, distance to animals, and side of the line (north or south) on stratification datasheets. Weather and observer information was also recorded on the datasheets at the start of the survey and afterwards, whenever these changed.

We divided the WMU into detailed survey blocks of common size (5 min latitude x 5 min longitude). We stratified detailed survey blocks according to the number of moose observed within each block during the stratification flights. Based on relative moose counts, we stratified survey blocks into low (0 – 1 moose), medium (2 – 5 moose), and high (> 5 moose) strata. As a result, 41 blocks were classified as low, 65 as medium, and 25 as high (131 blocks total).

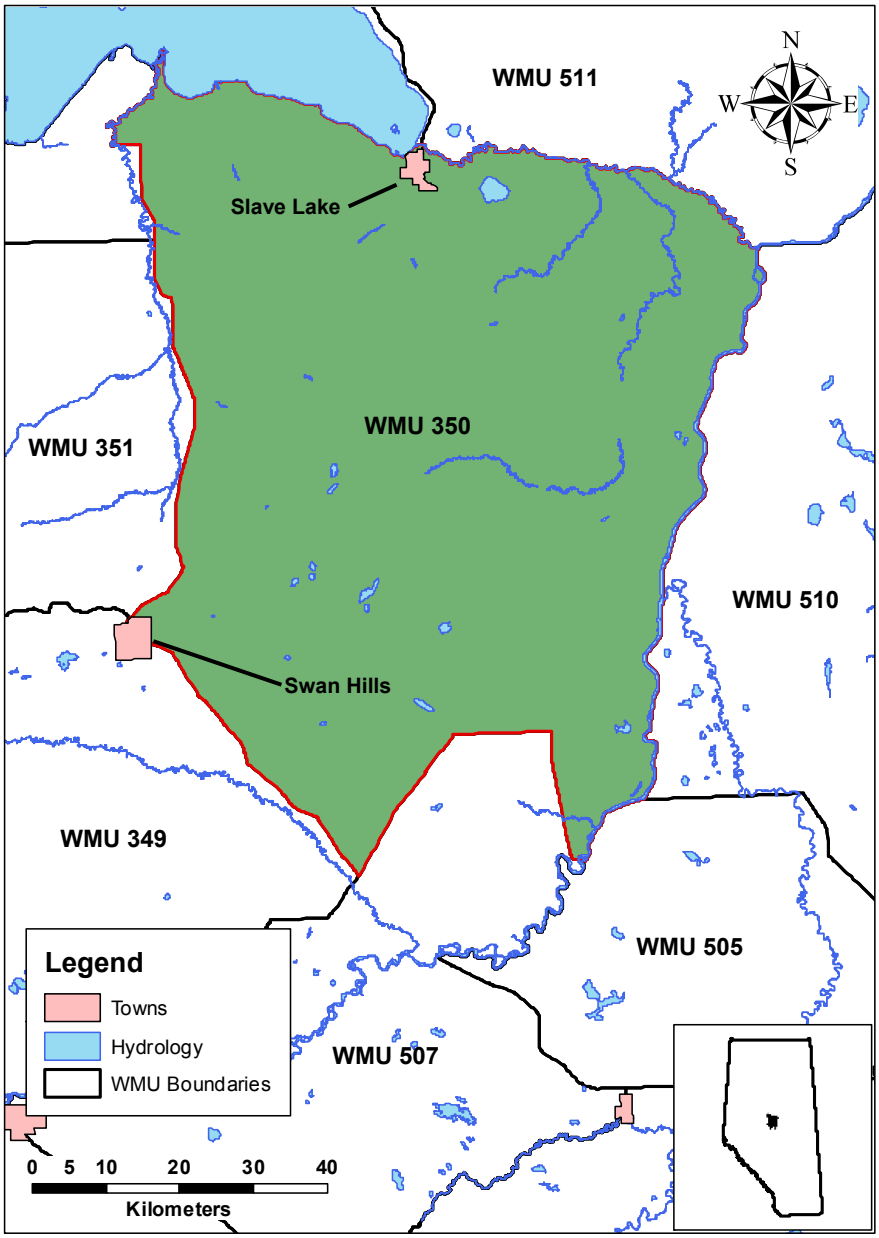


Figure 16. Location of Wildlife Management Unit 350 in Alberta.

### *6.9.3 Results*

We calculated a population estimate for moose in WMU 350 of 2,999 ± 525 (90% CI = 17.5%) (Table 13). The overall density was 0.48 moose/km$^2$. Ratios of bulls and calves to 100 cows were 22 and 31, respectively. Of cows and calves we observed during detailed block surveys, 70.6% were single cows, 27.7% were cows with a single calf, and 1.7% were cows with twins for a twinning rate of 5.9%. Of observed bulls, 98% had already shed their antlers (50 of 51 observed bulls). Therefore, we could not make inferences regarding the distribution of bulls by antler class.

Table 13. Comparison of moose population and demographic estimates for Wildlife Management Unit 350.

| Year | Population Estimate (90% confidence limits) | Moose/km$^2$ | Ratio to 100 Females | |
|---|---|---|---|---|
| | | | Males | Juveniles |
| 2009 | 2999 (17.5%) | 0.48 | 22 | 31 |
| 2002 | 4561 (14.1%) | 0.73 | 35 | 49 |
| 1998 | 3204 (14.0%) | 0.51 | 29 | 32 |
| 1997 | 3593 (18.9%) | 0.57 | 28 | 35 |
| 1996 | 3557 (19.5%) | 0.57 | 25 | 39 |
| 1995 | 2701 (15.7%) | 0.45 | 10 | 32 |
| 1994 | 2952 (18.9%) | 0.51 | 23 | 45 |