

2011 Wildlife Management Unit 518 moose



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Moose are the primary big game species in WMU 518, providing recreational hunting opportunities and subsistence for many residents. White-tailed deer and mule deer are also harvested within the WMU but occur at low densities. The objective of this survey

was to obtain a moose population estimate for WMU 518 and compare the results with past estimates and surrounding WMUs. Aerial game surveys provide population and density estimates, distribution patterns, and habitat-use data that are used in determining hunting license allocations. When conducted at regular intervals of every 5 - 7 years (ASRD 2010), aerial surveys also offer valuable data for assessing wildlife population trends, in addition to providing an appraisal of natural and anthropogenic changes occurring on the landscape. WMU 518 has not been surveyed using the Gasaway technique (Gasaway et al. 1986) since 1999.

Study area

WMU 518 is located west of Fort McMurray and lies within the central mixedwood subregion of the boreal forest natural region (Natural Regions Committee 2006). It has an area of approximately 11,860 km², extending from Township 81 to Township 92, and is bordered by the Athabasca River on the east and the Wabasca River on the west (Figure 1). Fort McMurray is located on the northeast border of the WMU, and Wabasca Lake First Nations Reserve is located in the southwest corner. Chipewyan Lakes, in the northwest corner, is the only other community in the WMU. The Athabasca Oil Sands extend under most of the WMU. Open pit mine operations and upgrading facilities are located in the northeast corner of WMU 518, and steam assisted gravity drainage (SAGD) operations are scattered throughout. Access roads, pipelines and utility corridors dissect the WMU. WMU 518 is characterized by extensive open and treed fens, interspersed with mixedwood uplands and numerous small lakes. The Athabasca River valley is steep and rugged, while the Wabasca River is serpentine and features many oxbows. Riparian areas along both rivers provide key summer and winter ungulate habitat.

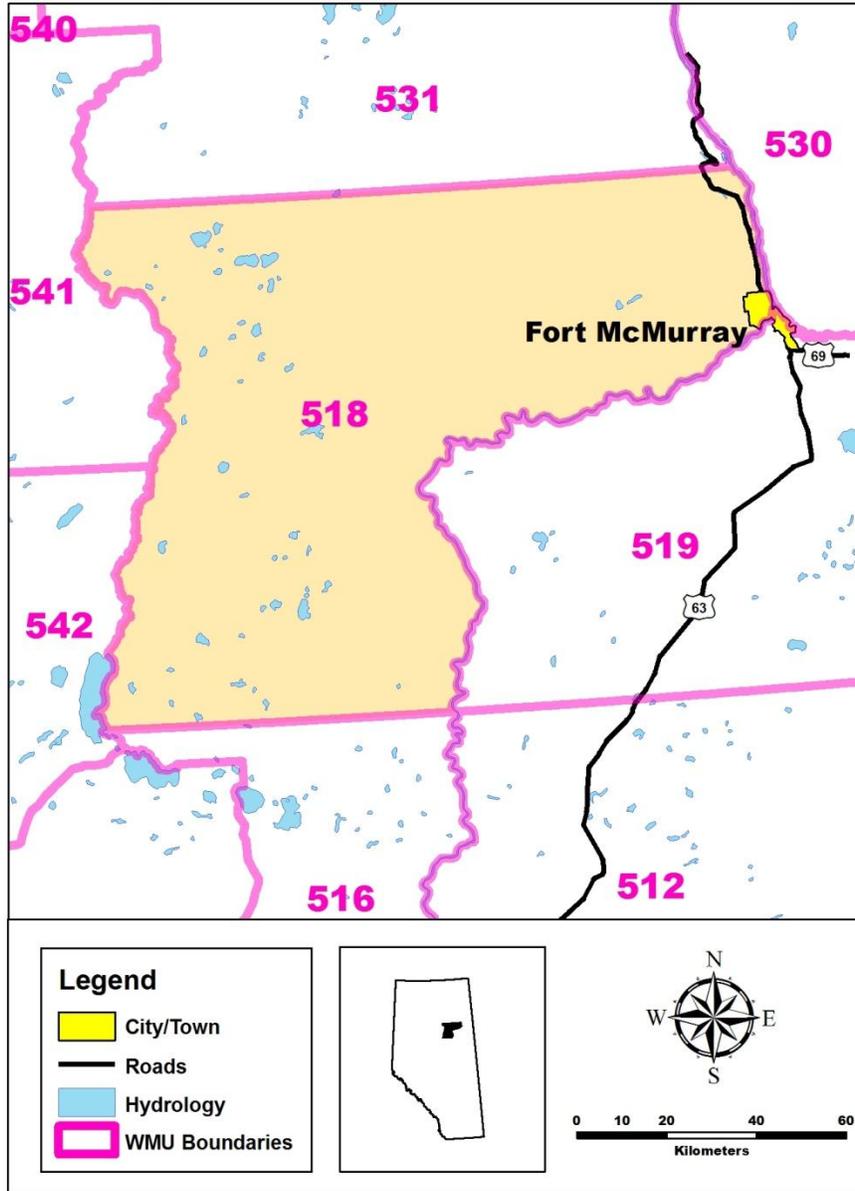


Figure 1. Location of Wildlife Management Unit 518 in Alberta.

Survey methods

WMU 518 was stratified for moose densities (Gasaway et al. 1986; ASRD 2010) using stratification flights with three fixed-wing aircraft (one Cessna 180 and two Cessna 185) from 7 - 10 February 2011. The following intensive survey block flights on 11 - 12 February 2011 were flown with two Bell 206B helicopters. Each crew consisted of a pilot, a navigator and two observers. All flights were flown in an east/west orientation. Stratification data were used to determine the stratum for each survey block based on moose density. WMU 518 was divided into 259 survey blocks (5 min latitude x 5 min longitude) of approximately 45.8 km² each. Areas that were less than half of a full survey block were combined with adjacent blocks to ensure sampling units of fairly uniform size. Normally, approximately 20% of the blocks are classed as low, 60% as medium, and 20% as high; however, based on the stratification results only two strata (low and high) were employed for WMU 518. Survey blocks which contained moose were classified as high, while those with no observed moose were classified as low.

Seventeen survey blocks were randomly selected to be intensively searched; thirteen of the seventeen blocks were actually sampled. Following the intensive survey block flights, data was compiled and entered in the Quadrat Survey Method Program developed as per the Gasaway population model (Lynch 1999), and a population estimate and confidence interval was determined. Moose were classified into age and sex using four criteria: presence of antlers or pedicel scars, presence of vulva patch, face, body shape and pigmentation, and behaviour. All wildlife observations were recorded on data forms with animal locations recorded using a GPS. 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.

Snow conditions were rated as excellent in the northern portion of the WMU and good to poor in the southern portion. Temperatures ranged from -3 to -29 degrees Celsius during the stratification flights and +1 to -14 degrees Celsius during the intensive survey block flights. The warmest temperatures were in the southern half of the WMU during the intensive survey block flights, with a mean temperature of -1 degrees Celsius occurring over the two day period. Wind speeds ranged from calm to 30 km/h for both portions of the survey.

Results

A total of 208 moose were observed during the stratification portion of the survey. The intensive search of 13 survey blocks (7 low and 6 high) resulted in the observation of 52 moose, which resulted in a total population estimate of between 326 and 1,567 moose. However, a precise population estimate and confidence intervals were not obtained (Table 1).

Additional survey blocks were not flown to reduce our confidence intervals for several reasons. Foremost, the forecast for the next several days indicated a projected rise in temperatures above -5 degrees Celsius, which would make moose more difficult to detect as they would be seeking thermal cover beneath conifers. Additionally, surveying moose in these warm temperatures would put undue stress on the animals. Finally, after surveying 13 blocks with a resulting confidence interval of $\pm 65.5\%$, it did not appear practical or effective to continue the survey. The amount of additional effort required would have put us significantly over our original budget and time and weather constraints may have ultimately prevented us from reaching our intended goal of a $\leq 20\%$ confidence interval.

Table 1. Comparison of aerial moose survey results in Wildlife Management Unit 518 from 1999 - 2011.

Year	Population estimate (90% confidence limits)	Animals/km ²	Ratio to 100 Females	
			Males	Juveniles
2011	--	--	48	19
2004 ^a	1,685	0.14	--	--
1999	1,471($\pm 35.6\%$)	0.13	66	38

-- A precise estimate was not obtained.

^a Survey was late in the season with insufficient funds to complete a standard modified Gasaway survey. A trend survey was conducted to provide an indication of population health and an understanding of surface disturbance from industrial use. Demographic ratios were not obtained.

Literature Cited

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