2010 Wildlife Management Unit 510 moose

Photo: Shevenell Webb

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Moose, a highly sought after ungulate species from both a hunter and "watchable wildlife" perspective, are one of the primary game species in Alberta. They are found throughout most of the boreal forest, and in agricultural areas along the boreal/parkland "fringe" (Rippin 2000). Ecologically, moose can exert a significant impact on wildlife habitat and are an important component of predator-prey systems (Arsenault 2000). Their range may overlap with other ungulate species including white-tailed deer, mule deer, elk, and woodland caribou. Provided food and cover are available, moose are well-adapted to boreal climate patterns (Franzmann and Schwartz 2007), although moose in northeast Alberta typically occur in low population densities (Lynch 1999). This, combined with hunting pressure, predator pressure and habitat change make

understanding their population dynamics and distribution important for managing population levels.

Wildlife surveys for moose in the boreal are generally conducted a minimum of every 3 years or when land and wildlife management issues necessitate increased monitoring and assessment of populations and their distribution (ASRD 2010). These surveys are specifically designed to gather population data on the density, distribution, and age/sex classification of game species (ASRD 2010). General information on ungulate habitat use, the distribution and abundance of predator populations, and the occurrence of species-at-risk (e.g. woodland caribou) or less-encountered ungulate species (e.g. mule deer) are also gathered during the surveys. In turn, the data is used for wildlife management purposes including calculating allowable hunter harvest and license allocations, monitoring population trends, and tracking habitat change across the landscape. These surveys provide a reliable means of delivering information to concerned stakeholders including hunters, trappers, outfitters, landowners, and the general public.

The purpose of this report is to present the results of the 2009/10 wildlife survey of WMU 510. The current status of moose and other wildlife species in this area will be discussed, and compared to the results of the 2001/02 survey.

Study area

Situated on the transition zone between agricultural lands and the northern boreal mixedwood forest, WMU 510 covers 4,415 km^2 of diverse habitat and landforms (Figure 1). It is bordered by the Athabasca River in the northern and western portions, Highway 2 in the south-eastern portion and Highway 661 to the south. Much of the area south of Highway 663 and portions along Highway 2 and 44 is farmland, with additional residential and recreational development surrounding Baptiste and Island lakes. The remaining area is boreal mixedwood forest with scattered patches of muskeg, including many lakes and a portion of the Pembina River. In addition, approximately 300 km^2 of the forested area around Chisholm was burned by a wildfire in the spring of 2001 (Hubbs 2002).

Survey methods

Provincial aerial ungulate survey protocols (ASRD 2010) were followed for both the stratification and detailed block portions of the survey. Deviations from, or additional details to this protocol, will be outlined in the following paragraphs.
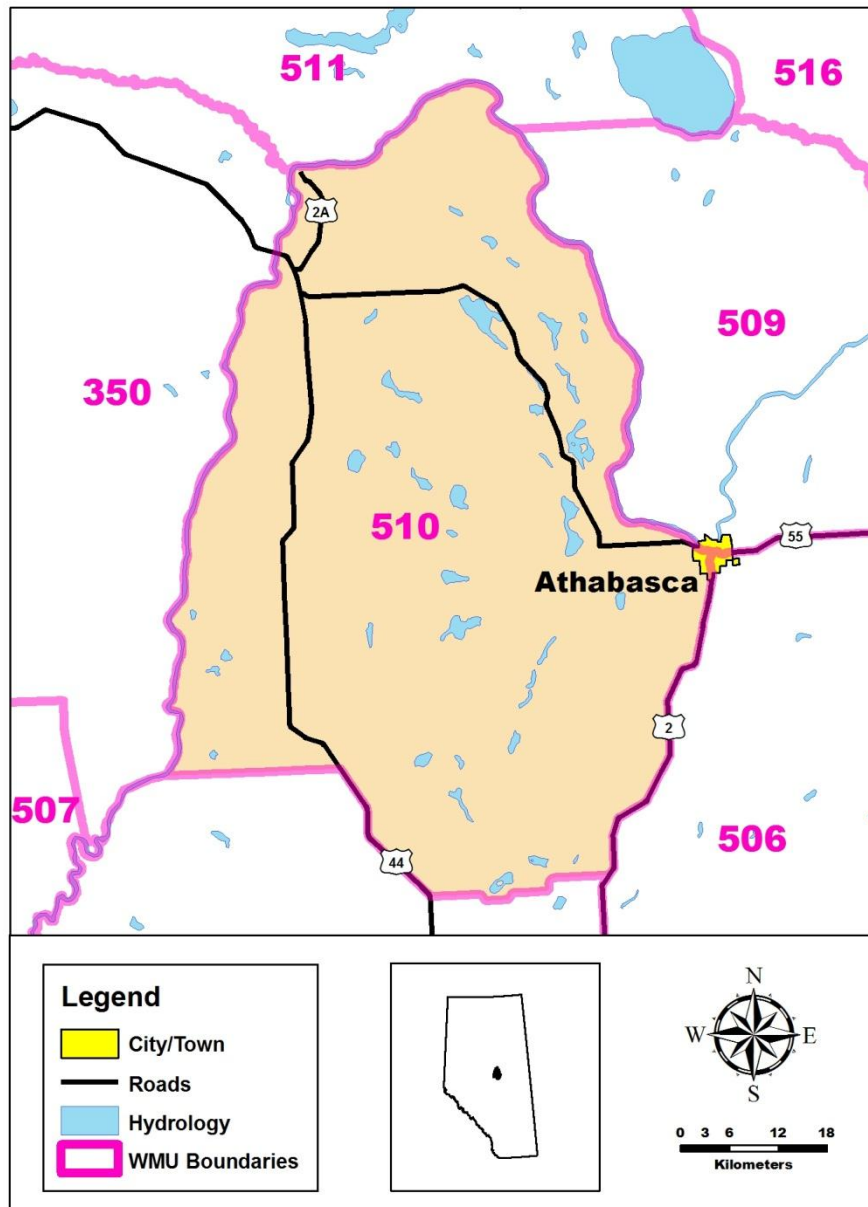

Figure 1.   Location of Wildlife Management Unit 510 in Alberta.

The area was stratified with a Cessna 206 fixed-wing aircraft for moose and deer on 7 – 10 December 2009 and detailed blocks were flown 11, 14 - 15 December 2009 in a Bell 206B helicopter. Flights were grounded 12 – 13 December due to extreme cold weather and wind chill conditions. Additional detailed block information was obtained from flights flown on a concurrent deer survey 14 – 16 December. All flights employed three observers, including a navigator in the front passenger seat, and were flown in an east to west orientation.

Data from the stratification flights were used to categorize the WMU into sampling units (5 degrees latitude x 5 degrees longitude) of low, medium, or high strata. This categorization was done based on moose density, with water features omitted from the land area. The assignment of the strata was based on natural breaks in the data, using roughly 20% of the blocks in each of the low and high categories as a guide. This resulted in 21 high blocks, 50 medium blocks and 20 low blocks. Nine of these sampling units were randomly selected for the detailed block portion of the survey. Information from an additional 6 blocks was obtained from the survey crew flying the concurrent deer survey. This resulted in the collection of moose information from a total of fifteen blocks, 5 from each stratum. Following the helicopter survey, the data was compiled for moose, entered in the Quadrat Survey Method Program, developed as per the Gasaway population model (Gasaway et al. 1986), and a population estimate and confidence interval determined.

Age (juvenile vs. adult) and sex classification were obtained wherever possible for all moose encountered. To save time, deer were only classified where the blocks overlapped those of the concurrent deer survey. Bulls and bucks were identified by the presence of antlers; cows were confirmed by the presence of a white vulva patch or calf at foot; while does and fawns were assumed to be those animals without antlers and classified according to their size. This classification is likely accurate, due to the timing of the survey (early winter), before significant antler drop occurs. Antler classification (Table 1) was recorded only for male moose. All other wildlife sightings were also recorded during the survey and a GPS waypoint taken. 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 fair, with approximately 20 cm of fresh snow in the 3 day period prior to the survey, although some features (i.e. stumps, tree wells, tall grass, etc.) were not completely snow covered. Temperatures ranged from -30 to -20 degrees Celsius during the stratification survey and -34 to -20 degrees Celsius during the detailed block portion of the survey. Wind

speeds were generally calm, ranging from 15 - 30 km/h and 5 - 25 km/h for the stratification and detailed block portions of the survey, respectively.

Results

A total of 633 moose were observed during the stratification portion of the survey, while 467 moose were observed during the detailed block portion of the survey. The resultant population was estimated to be between 2,541 and 3,531 moose (Table 1).

In the detailed block portion of this survey, there were 93 bull, 246 cow and 120 calf moose observed. The observed twin rate was 3%. Where antler class of moose was noted, 8% of bulls had dropped their antlers (confirmed by absence of vulva patch and other characteristics), 34% were classified as small (one was a yearling), 56% as medium and 2% as large. The incidence of ticks amongst moose in this WMU appeared to be low with only 20 individuals (~4%) appearing to be infested. This may be an underestimate of tick infestation as the prevalence of ticks often becomes more noticeable later in the winter.

Ninety-one elk were observed in six different locations during the stratification; no information on age/sex was obtained. Additional observations from the 9 blocks surveyed include 26 mule deer. White-tailed deer will be discussed in a future report (Powell and Morgan, in progress).

Table 1.   Comparison of aerial survey results for moose in Wildlife Management Unit 510 in 1996/97, 2001/02 and 2009/10.

Year	Population Estimate (90% confidence limits)	Moose/km^2	Ratio to 100 Females	
			Males	Juveniles
2009/10	3,036 (±16.3%)	0.72	38	49
2001/02	1,245 (±24.0%)	0.35	17	53
1996/97	1,399 (--)	0.37	65	55

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