

## 2009 WMU 342 Moose

*Section Authors: Robert Anderson, Dave Hobson, and Jeff Kneteman*

### Suggested Citation:

Anderson, R., D. Hobson, and J. Kneteman 2009. WMU 342 Moose. Pages 54-58. In: N. Webb and R. Anderson. Delegated aerial ungulate survey program, 2008-2009 survey season. Data Report, produced by the Alberta Conservation Association, Sherwood Park, Alberta, Canada.

WMU 342 is one of the many units in the province in which demand for moose licenses exceeds the number available. In 2008, 124 hunters applied for 48 available licenses. In general, applicants can expect to wait four or five years before getting an early-season draw for this unit. Aerial ungulate surveys are invaluable for setting license numbers for resident and non-resident hunters. Moose in WMU 342 were last surveyed in 1996. The long period between surveys, combined with anecdotal suggestions of reduced moose numbers in recent years, gave this unit high priority for surveying during the winter of 2008/2009. The primary purpose of this survey was to determine a moose population estimate and bull:cow:calf ratio. Information on deer and elk populations was considered secondary and is not presented in this report.

### *Study Area*

WMU 342 stretches from Hinton to Edson, primarily south of Highway 16 (Fig. 6.7.1). The official boundaries of the unit are described as such: Commencing at the junction of Highways 16 and 47 near Edson; thence southwesterly along Highway 47 to the road locally known as the Hinton-Robb Haul Road; thence northwesterly along the Hinton-Robb Haul Road to Switzer Drive in the town of Hinton; thence northeasterly along Switzer Drive to Highway 16; thence southwesterly along Highway 16 to Highway 40; thence northwesterly along Highway 40 to the right bank of the Athabasca River; thence downstream along the right bank of the Athabasca River to the road, in township 53, range 22, west of the fifth meridian, which runs south to Obed; thence southerly along this road to Highway 16; thence easterly along Highway 16 to the point of commencement. The unit contains portions of the McLeod River drainage and the town of Hinton. The area is dominated by the Lower Foothills Natural Subregion, as described by the Natural Regions Committee (2006), with the western portion

transitioning into Upper Foothills. Conifer forests, dominated by pine, are common in the western portion of the unit. Mixedwood forest becomes more common as you move west to east. The forest industry is prevalent throughout the unit. Oil and gas activity is also common. Some agricultural use is located along the Highway 16 corridor.

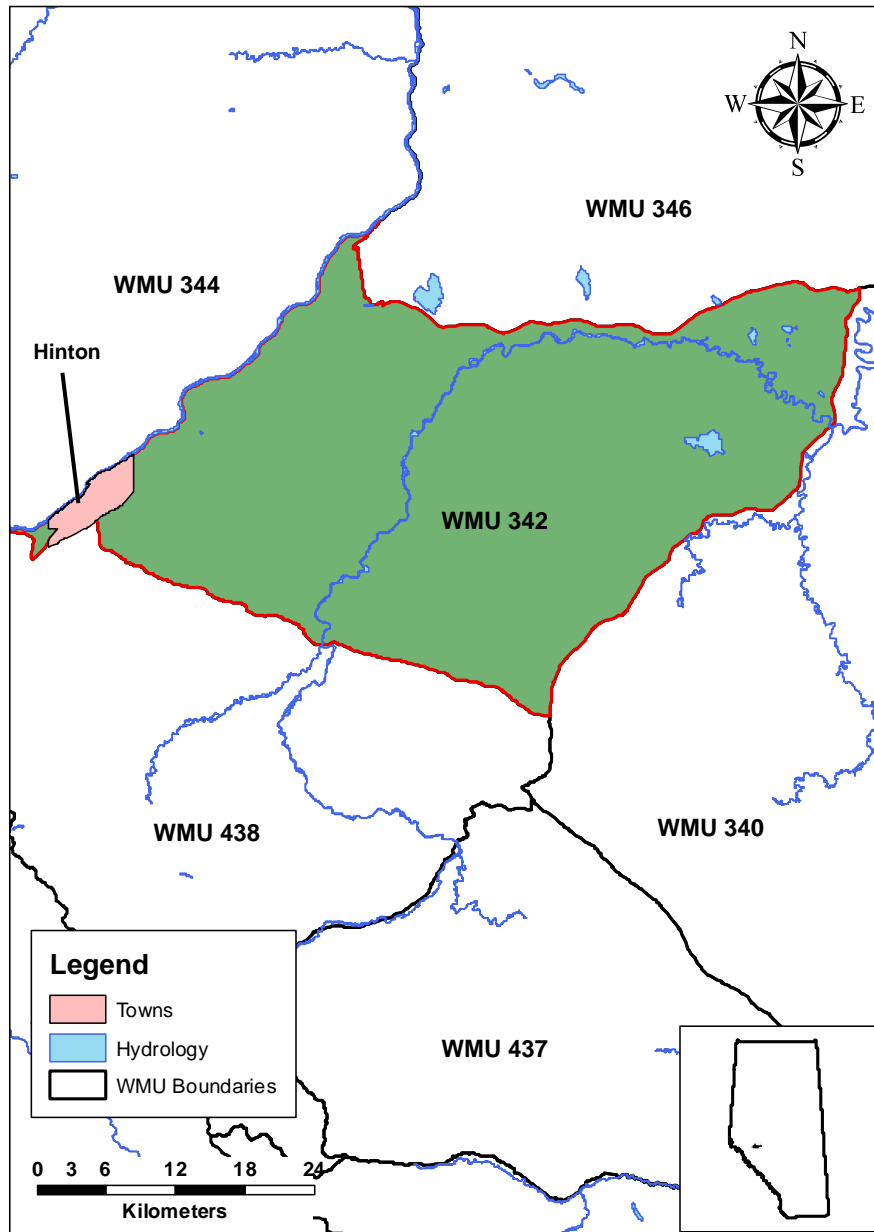


Figure 6.7.1. Location of WMU 342 in Alberta.

### *Survey Methods*

A random stratified block study design (Gasaway et al. 1986; Lynch 1997) was used to produce a population estimate for moose in WMU 342. On January 12<sup>th</sup> and 13<sup>th</sup>, 2009, wildlife staff from ACA and ASRD flew fixed-wing transects across WMU 342 to stratify the study area based on moose distribution observed across 56 sampling units (3 minutes latitude X 5 minutes longitude). Fixed-wing (Cessna 210) flights were flown along lines of 1° latitude (except for every 3<sup>rd</sup> line, which fell on sample unit borders). Winds varied across the unit, with more turbulence experienced near the western boundary. Snow cover had been complete during the previous week; however, warm weather (above freezing) caused melting, which exposed stumps and some bare ground. Visibility was generally excellent throughout the survey. Night-time low temperature was -8°C and +1°C during the stratification survey, while day-time highs reached +8°C and +9°C. Locations of moose, deer, incidentally encountered elk, and other pertinent wildlife were recorded during the stratification survey with aid from a GPS.

Sample units were classified according to the number of moose observed during fixed-wing stratification flights. Because the number of moose observed during these flights was low, a simplified stratification method was used. All units in which moose were observed during the stratification flight were classed into one stratum. All other units were classed as a second stratum.

Nineteen sample units were randomly selected for intensive search by helicopter (thirteen in stratum one and six in stratum two). Bell 206B helicopters were used to determine the number of moose within each of the randomly selected blocks between January 14<sup>th</sup> and 16<sup>th</sup>, 2009. A single crew surveyed on the first and third day, while three crews surveyed on the 15<sup>th</sup>. Each block was flown in a north-south orientation on flight lines spaced approximately 400 m apart, at 100-130 km/h, and at an altitude of approximately 100–150 m. Each flight crew consisted of 3 passengers: a navigator / recorder / observer up front, observer left-behind, and observer right-behind. Observers on each side of the helicopter were responsible for a field of view approximately 200 m wide. All ungulates were identified by sex and age using physical characteristics that were easily observed from the air (e.g. presence of white vulva patch on cow moose, or antlers on males). Incidental observations of other wildlife (deer, elk, sharp-tailed grouse and wolves) were also recorded. Conditions for rotary-wing surveys were moderate. Approximately 15 cm of snow covered the ground during the detailed

survey, though some bare ground and stumps were exposed. Night-time low temperatures ranged from  $-4^{\circ}\text{C}$  to  $+2^{\circ}\text{C}$ , with day-time highs ranging from  $+3^{\circ}\text{C}$  to  $+7^{\circ}\text{C}$ . Winds were generally light during rotary wing surveys.

Data were entered into a Gasaway population estimate spreadsheet ("Quad6.xls"), producing a moose population estimate, male:female:juvenile ratio, and population density.

### *Results*

A total of 55 moose were observed during the survey. Of these, 10 were bulls (6 antlerless, 1 yearling, 3 medium), and 39 were cows (33 solitary cows and 6 with a single calf). No cows were observed with twins. Estimates for bull:cow:calf ratio (Table 6.7.1) should be interpreted with caution as the total number of moose observed is considered lower than desired for estimating this population parameter. We estimated the population to be between 107 and 171 moose (90% confidence interval; see Table 6.7.1 for a comparison to previous years).

Sightability during the survey may have been influenced by weather conditions, thereby biasing the results towards a lower population estimate. Temperatures were above normal during the survey, and well above what is considered ideal surveying conditions. It is possible that moose may have spent more time under cover during this survey than would otherwise be the case, though we have no data to confirm or reject this. Incomplete snow cover may have affected sightability as well, particularly during the stratification flight. These transects were flown faster than is typically desired, but was unavoidable given the aircraft available. This may not have been as concerning under ideal survey conditions, but likely affected our ability to identify moose on January 12<sup>th</sup> and 13<sup>th</sup>. During future surveys, we recommend using a Cessna 185 aircraft for this unit, as opposed to a 210.

Table 6.7.1. Comparison of population estimates among current and previous surveys in WMU 342.

Year	Population Estimate (conf. limits)	Density / km <sup>2</sup>	Ratio to 100 Females	
			Males	Juveniles
2009	139 (22.7%)	0.09	26	15
1996	327 (19.8%)	0.22	20	40
1991	422 (31.5%)	0.28	17	59

*Literature Cited*

Gasaway, W.C., D. DuBois, D.J. Reed, and S.J. Harbo. 1986. Estimating moose population parameters from aerial surveys. Biological Papers of the University of Alaska No. 22, Fairbanks, Alaska. 108 pp.

Lynch, G. M. 1997. Northern moose program, moose survey field manual. 68pp.

Natural Regions Committee. 2006. Natural Regions and Subregions of Alberta. Compiled by D.J. Downing and W.W. Pettapiece. Government of Alberta. Pub. No. I/005.