Aerial Wildlife Survey Report

Wildlife Management Unit 254 Aerial Ungulate Survey - 2016

Background

Wildlife Management Unit (WMU) 254 is primarily agricultural and is located in east-central Alberta. The unit is approximately 2155 km². The majority of the ungulate habitat can be found along the Vermillion River which flows from northwest to southwest. There are two additional creek systems in the northeast and south central portion of the unit which ungulates also use.

Previous aerial ungulate surveys conducted in the unit have used the block survey method. Previous white-tailed deer, mule deer, and moose estimates have ranged from 2089 to 2855, 1137 to 600, and 226 to 286, respectively. In previous survey years, elk were rare sightings, with a maximum of 2 elk counted during the 2002 survey. Elk appear to be establishing in WMU 254 as revealed by this year's survey (Table 4). In addition, deer and moose population estimates are higher in the most recent surveys (Tables 1 to 3).

There is currently an archery season with general licence for antlered and antlerless white-tailed deer and mule deer (September 1 to October 31). General licences for white-tailed deer (antlered and antlerless) are also available during the general season. Antlered and antlerless moose are on special licence during both archery and general seasons. Mule deer are on special licence during the general season. Elk in this unit are managed as part of a superunit (252, 254, 258, 260) and are on general licence during archery season and special licence during general season.

Hunter harvest data for special licences indicate three year average success of:

- antlered moose - 83%

- antlerless moose - 79%

- antlered mule deer - 54%

- antlerless mule deer - 46%

and for elk in the WMU252/254/258/260 superunit:

- antlered elk - 44%

- antlerless elk - 46%

Survey method

The transect survey was conducted flying east-west lines at 1.6 kilometre (1 mile) intervals for 25% coverage using 400 metre wide survey strips during January 25 to 27, 2016. Animals were counted by species and identified by age and sex when possible. In addition to this, male ungulates had their antlers classified as small (spike or 2 points on one or both antlers), medium (3 or more points with antlers inside their ears), or large (4 or more points and antlers outside of the ears) when possible. Due to the variation in transect lengths, population

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estimates were determined by Jolly's (1969) method for sampling unequal sized units without replacement (Krebs 2014). Because of the timing of this survey some antler drop is expected to have happened, resulting in a male-skewed unclassified portion of the population, in particular for mule and white-tailed deer.

Results

A survey effort of 536 km^2 was expended, which covered 25% of the Wildlife Management Unit. Non-ungulate species observed during the survey included a pileated woodpecker, great horned owl, bald eagle, coyotes, gray partridges and snow buntings.

There were 769 white-tailed deer observed within 210 groups. Of the 769 white-tailed deer observed 47 (6%) were bucks, 321 (41%) were does, 308 (40%) were fawns and 93 (12%) were not classified. Of the 47 bucks identified, 20 (43%) were classified as small, 13 (28%) medium, and 14 (30%) large. The buck:doe ratio was 0.15 and the fawn: doe ratio was 0.96 (Table 1). The average white-tailed deer density in WMU 254 was estimated at 1.44 individuals/km^2. This resulted in an abundance estimate of 3093 (Table 1). This corresponds to a white-tailed deer population split estimate of 186 bucks, 1268 does and 1237 fawns.

There were 505 mule deer observed within 118 groups. Of the 505 mule deer identified 65 (13%) were bucks, 176 (35%) were does, 178 (35%) were fawns and 86 (17%) were not classified. Of the 65 bucks observed, 28 (43%) were classified as small, 15 (23%) medium, and 22 (34%) large. The buck: doe ratio was 0.37 and the fawn: doe ratio was 1.01 (Table 2). The average mule deer density in WMU 254 was estimated at 0.94 individuals/km^2. This resulted in an abundance estimate of 2031 (Table 2). This corresponds to a mule deer population split estimate of 264 bucks, 711 does and 711 fawns.

There were 182 moose observed within 101 groups. Of the 182 moose identified 31 (17%) were bulls, 86 (47%) were cows, 62 (34%) were claves and 3 (2%) were not classified. The bull: cow ratio was 0.36 and the calf: cow ratio was 0.72 (Table 3). The average moose density in WMU 254 was estimated at 0.34 individuals/km^2. This resulted in an abundance estimate of 732 (Table 3) and corresponds to moose population split estimate of 124 bulls, 344 cows and 249 calves.

Lastly, there were 35 elk observed within 8 groups. Of the 35 elk identified 9 (26%) were bulls, 8 (23%) were cows, 9 (26%) were calves and 9 (26%) were not classified.

Table 1. Density and age/sex composition ratios for white-tailed deer in WMU 254. Survey types include block surveys and line transects. Population estimate ranges in parentheses represent 90% confidence limits (p<0.10) where available. The multiple densities in 2002 represent densities at high, medium and low strata of block surveys.

Year	Survey Type	Population Estimate WTDE	Density WTDE /km^2	Buck:Doe	Fawn:Doe
1998	Block	2089 (1521, 2657)	1.03	0.24	0.59
2002	Block	2855 (2230, 3480)	1.75, 1.34, 0.60	0.51	0.89
2016	Transect	3093 (2277, 3909)	1.44	0.15	0.96

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Table 2. Density and age/sex composition ratios for mule deer in WMU 254. Survey types include block surveys and line transects. Population estimate ranges in parentheses represent 90% confidence limits (p<0.10) where available and multiple densities in 2002 represent densities at high, medium and low strata of block surveys.

Year	Survey Type	Population Estimate WTDE	Density WTDE /km^2	Buck:Doe	Fawn:Doe
1998	Block	1137 (460, 1814)	0.56	0.24	0.60
2002	Block	600	0.19, 0.45, 0.24	0.75	1.33
2016	Transect	2031 (1376, 2687)	0.94	0.37	1.01

Table 3. Density and age/sex composition ratios for moose in WMU 254. Survey types include block surveys and line transects. Population estimate ranges in parentheses represent 90% confidence limits (p<0.10) where available and multiple densities in 2002 represent densities at high, medium and low strata of block surveys.

Year	Survey Type	Population Estimate WTDE	Density WTDE /km^2	Buck:Doe	Fawn:Doe
1998	Block	226 (124, 328)	0.11	0.14	0.96
2002	Block	286 (210, 362)	0.26, 0.11, 0.04	0.22	0.93
2016	Transect	732 (526, 938)	0.34	0.36	0.72

Literature

Krebs, C.J. 2014. Ecological Methodology, 3rd Edition. Chapter 4, Estimating Abundance: Quadrat Counts [online] http://www.zoology.ubc.ca/~krebs/downloads/krebs_chapter_04_2013.pdf

Jolly, G.M. 1969. Sampling methods for aerial census of wildlife populations. E. Afr. Agric. For. J. 34:46-49.