

Aerial Wildlife Survey Report

Wildlife Management Unit 508 Aerial Ungulate Survey (2018-19)

Background

The Lac La Nonne Wildlife Management Unit (WMU) 508 in the Upper Athabasca Region covers an area of 3,250km². WMU 508 is bordered by the Paddle River, Highways 40, 2 and 43, the towns of Barrhead, Westlock, Morinville and Onoway, and intersected by the Pembina River and Highways 33 and 44. The unit consists of 76% Boreal Dry Mixedwood and 24% Central Parkland. Approximately 89% of the unit is private land, 6% belongs to the Alexander First Nation (No. 134) or Alexis First Nation (No. 133) and 5% is crown land. The Crown land in this unit includes numerous large lakes (i.e. Lac La Nonne, Majeau, Sandy, George, Oldman, Manawan and Nakamun lakes), and some large blocks of forested land between Majeau Lake, Lake Nakamun and Lac la Nonne. Aside from the lakes and forested areas, WMU 508 is primarily used for agriculture (>70%) with small patches of forest (15%) throughout.

A survey for ungulates (moose, elk, mule deer and white-tailed deer) was last conducted for WMU 508 in 2012-2013 using a random stratified block methodology; see Table 1 for previous ungulate survey estimates.

The primary objective of the 2018-2019 survey was to assess the status of the moose population by determining estimates for abundance, density and age-sex composition. Secondary objectives were to assess the status of the white-tailed deer, mule deer and elk populations. Since the survey was conducted in February, during favourable snow cover conditions for estimating a moose population, we were not able to acquire adequate antler class data as many moose and deer had dropped their antlers prior to this assessment.

Survey Method

An aerial survey for ungulates was conducted February 11 to 14, 2019 using Distance sampling techniques (Buckland *et al.*, 2001, 2010). A total of 82 north-south transect lines (survey effort = 700.33 kilometres; 22.6 hours) were flown. Aside from Distance sampling, additional effort was flown in areas of known elk herds, based on previous sightings in the last 10 years, in an attempt to get an elk population estimate using a minimum total count methodology.

Moose were analyzed using distance (Buckland *et al.*, 2001, 2010), white-tailed deer were analyzed using a strip transect method (Braid and Herman 2006), and an attempt was made to analyze mule deer using distance and elk using a minimum total count.

All observed ungulates were classified by age class (adult or young of the year) when possible. Moose and elk were classified by age class (adult or young of the year) and the adults by sex (cow or bull). Deer were classified to age class only since we could not distinguish between the sexes as antlers had begun to drop prior to the survey. Due to white-tailed deer abundance, our liberal harvest regulation on this species and difficulty surveying this species in forested areas, a strip transect methodology was performed to provide a general indication of the white-tailed deer population trend in this WMU.

Following this methodology, all white-tailed deer observations within a horizontal distance of 200 metres from the transect were recorded and classified from a distance (without leaving the transect). Other sightings of sensitive or at risk species (i.e. sharp-tailed grouse) or significant wildlife features (i.e. large raptor nests, dens) were recorded.

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Results

Moose

A total of 177 moose were observed in 101 groups. The estimated density was 0.39 moose/km² (90% CI 0.31 – 0.51) and the estimated abundance was 1,280 individuals (90% CI 996 – 1646). The coefficient of variation for both the density and abundance was 0.153 (Table 2). A total of 169 moose were successfully classified and the bull:cow:calf ratio was estimated to be 31:100:68. Compared to the last survey, there is considerable overlap in the population estimate ranges at 90% CI; though the mean estimates over the last three surveys suggest an increasing moose population in this unit. However, this year's survey did show a greater recruitment rate than the previous surveys.

White-tailed Deer

A total of 544 white-tailed deer were observed in 85 groups; 305 were observed in 74 groups within 200 metres from the aircraft. Using a strip transect analysis, the estimated density is 1.09 deer/km² (90% CI 0.74 – 1.44) and the estimated abundance is 3,539 individuals (90% CI 2405 – 4672). The coefficient of variation for both density and abundance was 0.19 (Table 2). A buck:doe:fawn ratio was not feasible due to antler drop and the high percentage of deer that were not confidently classified from a distance.

Compared to the last survey, there is considerable overlap in the population estimate ranges at 90% CI; though the mean estimates over the last three surveys suggest an increasing white-tailed deer population in this unit. However, while the white-tailed deer estimate appears reasonable, moose were the focus of this survey and the additional data collected on white-tailed deer is meant to provide an overview of general trend and is not intended as a detailed population estimate.

Mule Deer and Elk

A total of 106 mule deer in only 13 groups, and 22 elk in 1 group were observed during the survey. These low numbers of groups inhibit our ability to determine an accurate mule deer or elk population estimates. These species are clustered and inconspicuous in nature, and migratory elk herds move between WMU 508 and the surrounding units, making it difficult to estimate their population size. For these reasons, we were not able to report a population estimate for elk or deer in this unit.

Table 1 Ungulate Population Estimates over time

| Species | Survey Year | Survey Method | Abundance Estimate | Density | Ratio to 100 Cows | |
|-------------------|-------------|----------------|-----------------------|---------|-------------------|--------|
| | | | Mean (90% CI) | Sq. km | Bulls | Calves |
| Moose | 2018 – 2019 | Distance | 1280 (996 – 1646) | 0.39 | 31 | 68 |
| | 2012 – 2013 | Random Block | 1085 (929 – 1241) | 0.33 | 30 | 59 |
| | 2001 - 2002 | Random Block | 454 (357 - 552) | 0.14 | 47 | 42 |
| White-Tailed Deer | 2018 – 2019 | Strip Transect | 3539 (2405 – 4672) | 1.09 | na | na |
| | 2012 – 2013 | Random Block | 2598 (1867 – 3329) | 0.80 | 4 | 104 |
| | 2001 – 2002 | Random Block | 1260 (972 – 1548) | 0.39 | na | na |

Table 2. Distance analysis results for the 2018-19 aerial ungulate survey in WMU 347 (n = number of groups, D = estimated # individuals/km², N = estimated abundance, CI = 90% confidence interval, CV = coefficient of variation).

| Species | N | Mean Group Size | D (90% CI) | CV _D | N (90% CI) | CV _N |
|-------------------|------|-----------------|---------------------|-----------------|---------------------|-----------------|
| Moose | 1280 | 1.7 | 0.39 (0.31-0.51) | 0.153 | 1280 (996-1646) | 0.153 |
| White-Tailed Deer | 3539 | 6.4 | 1.09 (0.74-1.44) | 0.191 | 3589 (2404-4672) | 0.191 |

Literature

Braid ACR, Herdman EJE (2016) Wildlife Management Unit 258 Aerial Ungulate Survey. Environmental Monitoring and Science Division, Alberta Environment and Parks. Edmonton, Alberta, Canada

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