Aerial Wildlife Survey Report

Wildlife Management Unit 521 Aerial Ungulate Survey (2018)

Survey Method

Distance sampling methods were used to determine moose density as described in the Distance Sampling Chapter of the Aerial Ungulate Survey Protocol Manual (ESRD, 2014). Transects were 10 km long, spaced 1.2 km apart and oriented north-south. A random sample of the available transects was flown. The unit was stratified into River Valley (including a 2000m buffer from the top of break); Agricultural (including a 1000m buffer) and Forest. To improve the precision of estimates, additional effort was flown in the River Valley stratum.

We did not encounter a sufficient number of mule deer groups to generate a meaningful density estimate, however we were able to estimate the density of white-tailed deer using distance sampling.

A minimum total count method was used for elk, combining transect observations with additional search effort in areas of traditionally high winter elk density.

Results

Two hundred seventy-six transects were surveyed on January 15th-18th and 23rd-24th, 2018, for a total survey effort of 1359 km and 48.9 hours flying time. In total, 590 moose were observed from 362 independent groups. Of the 586 moose that were successfully classified, 142 were bulls, 294 were cows, and 138 were calves. Of the bulls observed, 61% had already shed their antlers. Of those bulls still with antlers, 60% were small (small spike or forked antlers), 39% were medium (small palmated antler 'paddles'), and 2% were large (large palmated antlers with minimum 3 points to the front with a spread more than half the body length). The bull:cow and calf:cow ratio were 0.45 and 0.47 respectively after adjusting for strata area. The final density estimate was 0.71 moose/km^2 with a coefficient of variation of 11%. The estimated moose abundance for WMU 521 is 3332 (90% CI 2799 – 3966). See Table 1 for a comparison to previous survey results.

During this sampling effort, we also observed 168 mule deer from 53 independent groups. Of the 112 mule deer that were successfully classified, there were 57 does, 31 fawns and 24 bucks. Of the bucks observed, 48% were small (1 or 2 points), 43% were medium (3 or four points on at least one antler) and 9% were large (at least 4 points, with an antler spread beyond the ears). The buck:doe and fawn:doe ratios were 0.40 and 0.54 respectively. As in previous surveys, we were unable to generate a density estimate for mule deer.

We observed at total of 347 white-tailed deer from 104 independent groups. Of the 250 white-tailed deer that were successfully classified, there were 125 does, 88 fawns and 37 bucks. Of the bucks observed, 50% were small (1 or 2 points), 36% were medium (3 or four points on at least one antler) and 14% were large (at least 4 points, with an

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antler spread beyond the ears). The buck:doe and fawn:doe ratios were 0.30 and 0.70 respectively. See Table 2 for a comparison to previous survey results.

On January 26th, 2018, we flew an additional 2.6 hrs to locate significant groups of elk in areas of traditionally high winter density. A total of 1210 elk in 129 groups were observed from transects and focussed search flights. Of the 1082 elk that were successfully classified, 142 were bulls, 753 were cows, and 187 were calves. Of the bulls observed, 56% were small (1 or 2 point) 24% were medium (3 to 5 point) and 17% were large (six point or greater). At this time of year, most bull elk still have antlers so these proportions should be representative of the population post-hunting season. See Table 3 for a comparison to previous survey results.

Table 1. Comparison of current and previous moose densities, and age/sex composition ratios for WMU 521. Survey types for moose have included random stratified block (Gasaway) surveys, and distance sampling methods.

WMU 521 Moose

Year	Density	Estimate	CV	90% CI	Bulls/ 100 cows	Calves/ 100 cows
2018	0.71	3332	0.11	2799 - 3966	45	47
2011	0.63	2959	0.09	2512 - 3406	26	48
2005	1.02	4782	0.07	4256 - 5308	33	48
1998	0.93	4306	0.11	3544 - 5068	16	109

Table 2. Comparison of current and previous white-tailed deer densities, and age/sex composition ratios for WMU 521. Survey types for white-tailed deer have included random stratified block (Gasaway) surveys, and distance sampling methods.

WMU 358 White-Tailed Deer

Year	Density	Estimate	CV	90% CI	Bucks/ 100 does	Fawns/ 100 does
2018	0.71	3245	0.18	2398 - 4390	40	54
2011	0.29	1368	0.20	942 - 1794	8	52
2005	0.96	4490	0.10	3789 - 5192	36	126
1998	0.24	1099	0.19	758 - 1439	27	114

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Table 3. Comparison of current and previous elk densities, and age/sex composition ratios for WMU 521. Surveys for elk have been conducted as minimum total counts.

WMU 521 Elk

Year	Total	Bulls/ 100 cows	Calves/ 100 cows	Legal Bulls
2018	1210	19	25	41%
2011	1091	27	24	42%
2005	864*	20	15	23%
1998	1588	39	17	21%

*large snow accumulations in early winter appear to have prevented movement of elk from adjacent WMUs to traditional wintering areas in the south portion of WMU 521

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