2018 Big Game Surveys

Manitoba Sustainable Development conducted aerial moose surveys in three areas and aerial elk surveys in four areas of the province this past winter.

Moose Survey Results

Moose, Game Hunting Area 17A *(Eastern Region)*

An aerial survey was conducted in Game Hunting Area 17A from January 17 to February 1, 2018, to obtain current information on the moose population. A stratified random block survey method was used and sample units were grouped into three sample unit categories (strata). Intensive sampling was conducted on 31% of the total survey area. The survey produced a point estimate of 383 (90% Confidence Interval: 304 – 462) moose and an average density of 0.11 (90% Confidence Interval: 0.09 – 0.13) moose/km². The calf/cow and bull/cow ratios were 50 (90% Confidence Interval: 38 – 61) calves/100 cows and 36 (90% Confidence Interval: 26 – 46) bulls/100 cows, respectively. Survey results suggest that the moose population in Game Hunting Area 17A has declined since the previous survey conducted in 2011 (518 moose; 90% Confidence Interval: 422 – 615).
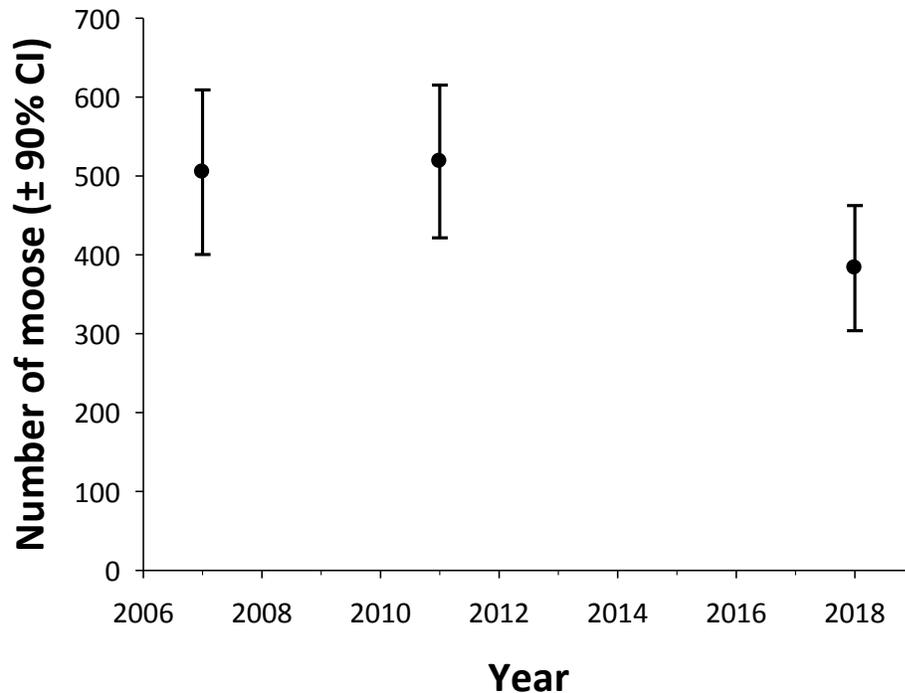

Figure 1: Point estimates of number of moose (± 90% CI (confidence interval)) in Game Hunting Area 17A, Manitoba derived from aerial surveys using stratified random sampling methods. For

surveys depicted on this graph, an equal quadrat method was used over a survey area of 3456.7 km^2 (2007) and 3472.6 km^2 (2011, 2018).

Moose, Game Hunting Area 7 *(Northwest Region)*

An aerial survey was conducted in Game Hunting Area 7 from January 16 to January 24, 2018. This was the first time that a moose population survey had been conducted for this Game Hunting Area. A stratified random block survey method was used and sample units were grouped into two sample unit categories (strata). Intensive sampling was conducted on 26% of the total survey area. The survey produced a point estimate of 206 (90% Confidence Interval: 156 – 257) moose and an average density of 0.04 (90% Confidence Interval: 0.03 – 0.05) moose/km². The calf/cow and bull/cow ratios were 35 (90% Confidence Interval: 21 – 49) calves/100 cows and 33 (90% Confidence Interval: 16 – 49) bulls/100 cows, respectively. Survey results suggest that there is a low density of moose in Game Hunting Area 7.

Moose, Game Hunting Area 26 *(Eastern Region – south of Bissett)*

Aerial survey results in 2010 suggested the moose population in Game Hunting Area 26 was declining. In response, the entire Game Hunting Area was closed to licensed moose hunting and a moose conservation closure restricted moose hunting by right-based hunters in a portion of the Game Hunting Area.

An aerial survey was conducted in Game Hunting Area 26 from January 15 to January 27, 2018 to obtain current information on the status of the moose population, including whether conservation efforts had been effective in its recovery. A stratified random block survey method was used and sample units were grouped into three sample unit categories (strata). Intensive sampling was conducted on 24% of the survey area. The survey produced a point estimate of 1602 (90% Confidence Interval: 1351 – 1853) moose and an average density of 0.21 (90% Confidence Interval: 0.17 – 0.24) moose/km². The calf/cow and bull/cow ratios were 28 (90% Confidence Interval: 24 – 33) calves/100 cows and 52 (90% Confidence Interval: 43 – 61) bulls/100 cows, respectively. Survey results suggest there has been an increase in this population since the 2010 survey when the point estimate was 823 moose (90% Confidence Interval: 699 – 947).
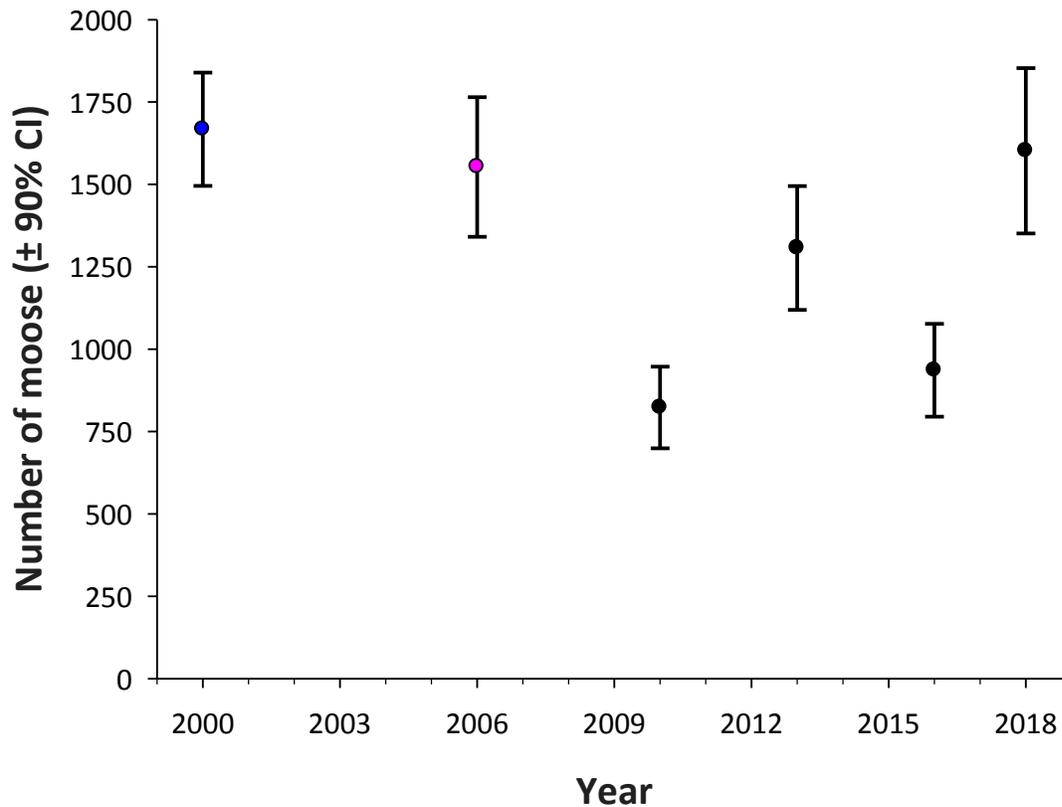
Figure 2: Point estimates of number of moose (± 90% CI (confidence interval)) in Game Hunting Area 26, Manitoba derived from aerial surveys using stratified random sampling methods. Different colors of point estimates show years for which methods and/or the area surveyed varied slightly. The point estimate depicted in blue was derived from a survey using unequal quadrats and a survey area of 6861.6 km². An equal quadrat method was used over a survey area of 6954.4 km² (pink) and 7793.1 km² (black). Portions of Game Hunting Area 26 closed to all hunters in January 2012 (Moose Protection Zones).

Elk Survey Results

Elk, Duck Mountain - Game Hunting Areas 18 to 18C *(Western Region)*

An aerial survey was conducted in Game Hunting Areas 18, 18A, 18B, and 18C from 2-13 February, 2018, to obtain current information on the Duck Mountain elk population. A combined survey method was used by which the entire survey area was stratified and a minimum count (total area coverage) was conducted in areas where elk were likely to occur (totalled 23% of the survey area). Sample units in the two strata less likely to contain elk were randomly sampled until suitable precision and confidence in the accuracy of density estimates

were obtained. The survey produced a point estimate of 1,162 (90% CI: 1093 – 1231) elk and an average density of 0.16 elk/km². Survey methods were the same for surveys conducted in 2014 and 2018 and the results are comparable. The 2018 point estimate suggests no change in this population since 2014. A 2005 survey of the Duck Mountain area was conducted using a different method (wedge method) and produced an estimate of 1,670 elk.

Year	Number of Elk (Point Estimate[1])	90% Confidence Interval	Mean Density (Elk/km²)	Total Survey Area (km²)
2014	1,170	977 – 1,363	0.169	6,922.5
2018	1,162	1,093 – 1,231	0.164	7,059.0

[1]Point estimate derived from a method combining principles of minimum counts and random sampling.

Elk, South Interlake - Game Hunting Areas 21, 25 and 25A *(Central Region)*

An aerial survey was conducted in Game Hunting Areas 21, 25 and 25A from 8-23 February, 2018, to obtain current information on the south Interlake elk population. A combined survey method was used by which the entire survey area was stratified and a minimum count (total area coverage) was conducted in areas where elk were likely to occur (totalled 32% of the survey area). Sample units in the two strata less likely to contain elk were randomly sampled until suitable precision and confidence in the accuracy of density estimates were obtained. The area to be surveyed for elk was evaluated prior to the survey and an attempt was made to capture the entire range of elk use at the time of survey. The survey produced a point estimate of 1,557 (90% CI: 1,406 – 1,707) elk and an average density of 0.23 elk/km². Survey methods were similar for the 2018, 2013 and 2006 surveys of this population and thus results are comparable. 2018 survey results suggest that this elk population has increased since 2013.

Year	Number of Elk (Point Estimate[1])	90% Confidence Interval	Mean Density (Elk/km²)	Total Survey Area (km²)
2006	1,180	991-1,370	0.16	7,422
2013	955	833 – 1,078	0.15	6,174
2018	1,557	1,406 – 1,707	0.23	6,762

[1]Point estimate derived from a method combining principles of minimum counts and random sampling

Elk, Game Hunting Area 35A *(Eastern Region – Vita area)*

An aerial survey was conducted in a portion of Game Hunting Area 35A on March 11 and 12, 2018, to obtain current information on the status of the Vita-Caribou elk population in

Manitoba (the range of this population includes an area near Caribou, Minnesota). A minimum count method was used whereby all areas of the Game Hunting Area where elk were likely to occur were flown (total coverage). Local knowledge and radio-telemetry relocations from collared cow elk were used to identify areas of elk use. The survey produced a minimum count of 126 elk. Survey methods were similar but not identical for the surveys conducted since 2005. Results suggest that the Vita-Caribou elk population has slowly increased since 2005.
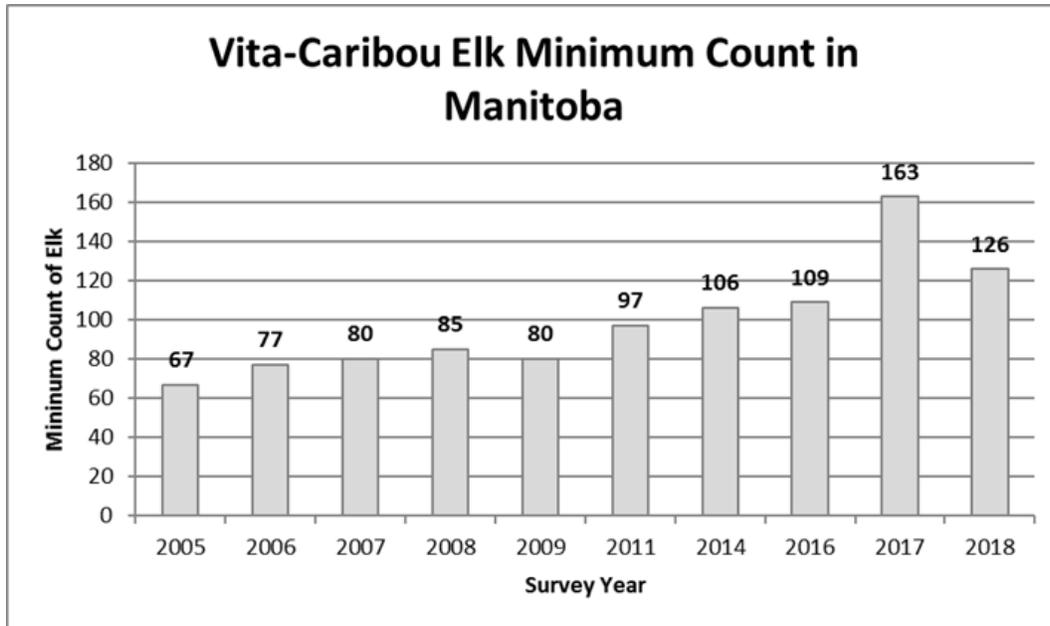
Elk, Game Hunting Areas 28 and 31A *(Western Region – Ninette area)*

An aerial survey was conducted in a portion of Game Hunting Areas 28 and 31A on March 1 and 2, 2018, to obtain current information on the status of the elk population in the Ninette area. A minimum count method was used whereby all areas where elk were likely to occur were flow (total area coverage). Local knowledge was used to identify areas of recent elk use. Attempts were made to not disturb and move large groups of elk to minimize the potential for double counting. All large groups encountered where photographed and photos later examined to refine total numbers (generally, more elk were counted via photos than were initially counted by observers). The survey produced a minimum count of 285 elk. A similar minimum count survey conducted in 2016 produced a minimum count of 180 elk. It should be noted that photography was not utilized during the 2016 survey.