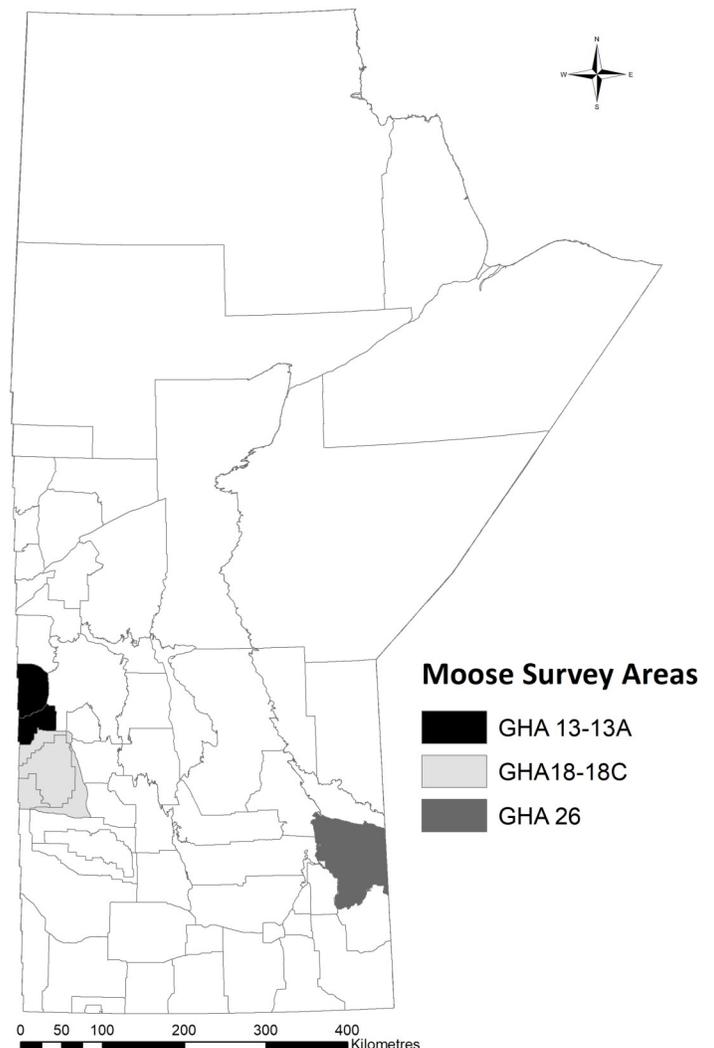


2020 Big Game Surveys

The Government of Manitoba collects a variety of information to help manage wildlife populations in the province. One method used to collect information is conducting aerial population surveys. Repeated aerial population surveys allow biologists to determine changes in population trend over time and evaluate changes in sex and age ratios. These surveys are conducted between January and March, depending on species and environmental conditions.

Wildlife and Fisheries staff conducted aerial moose surveys in three areas of the province in January and February of 2020. The areas include:

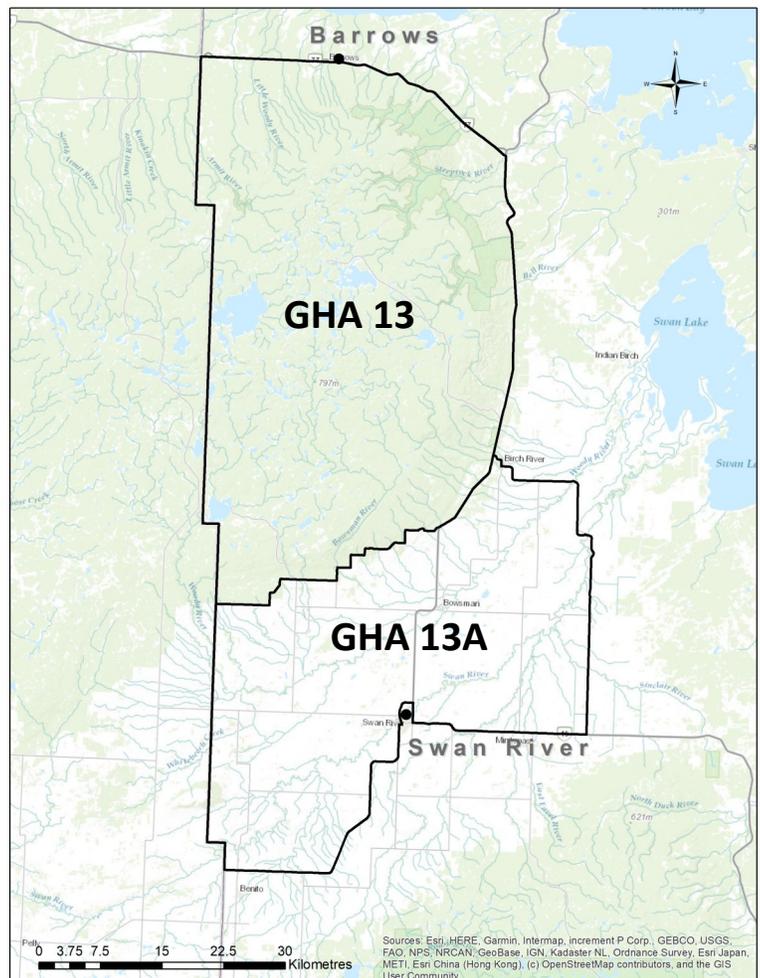
- 1) **Game Hunting Areas 13, 13A**
- 2) **Game Hunting Areas 18, 18A, 18B, 18C**
- 3) **Game Hunting Area 26**





Game Hunting Areas 13 and 13A

An aerial survey was conducted in Game Hunting Areas 13 and 13A from January 20 to 28, 2020, to obtain information on the status of the moose population. This area was last surveyed in 2017. A stratified random block survey method was used and sample units were grouped into three sample unit categories (strata): high, medium and low density. Intensive sampling was conducted on 19% of the total survey area. The survey produced a point estimate of 997 (90% Confidence Interval: 837 – 1157) moose and an average density of 0.44 moose/km². The calf/cow ratio was 38 (90% CI: 28 – 47) calves/100 cows. The bull/cow ratio was 52 (90% CI: 34 – 71) bulls/100 cows. This population estimate was not significantly different from the previous survey, conducted in 2017 (1,057; 90% CI: 884 – 1,230), suggesting a stable population.





Game Hunting Areas 13 and 13A

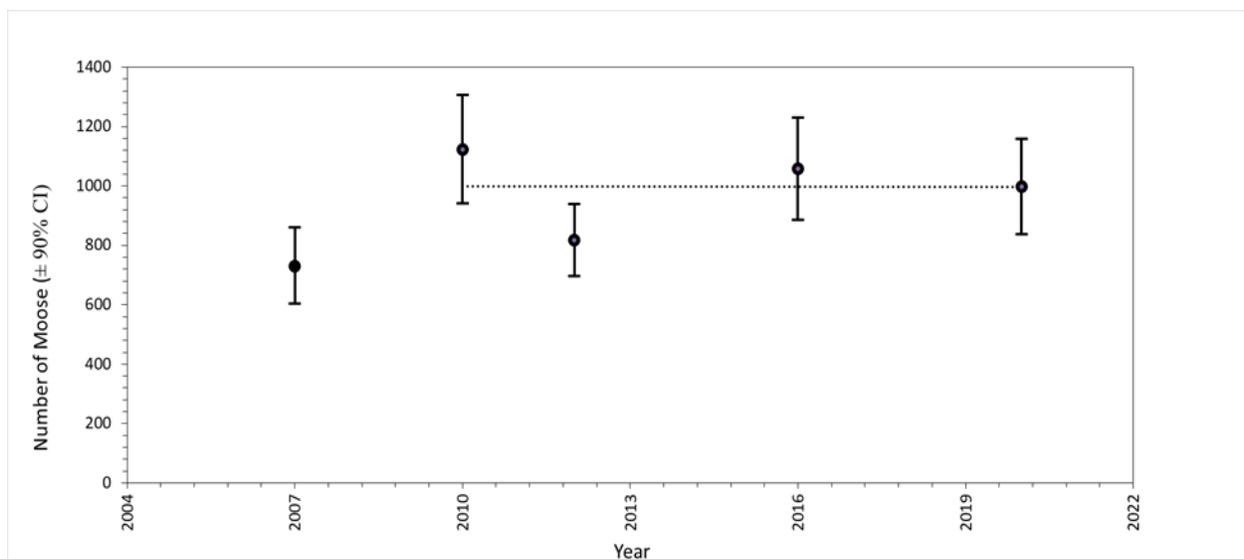
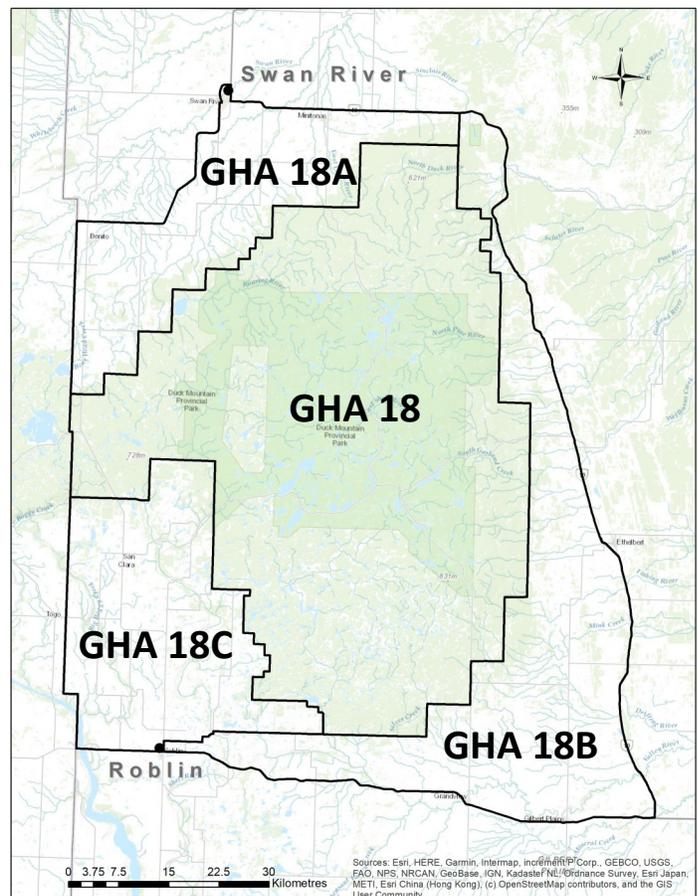


Figure 1: Point estimates of number of moose (\pm 90% confidence interval) in Game Hunting Areas (GHA) 13 and 13A, Manitoba derived from aerial surveys using stratified random sampling methods. Not all moose are observed during surveys as some are missed due to factors such as cloud cover, types of vegetation, and other environmental conditions, which influence detectability of moose. Reported point estimates do not account for detectability of moose, which can vary from survey to survey. Thus, point estimates presented are not accurate estimates of the number of moose in GHAs 13 and 13A *per se*; the values presented are likely biased low. Point estimates produced using these surveys are best suited to establishing long-term trends and thus provide information on whether the population appears to be increasing, stable, or decreasing. The dotted line depicts the population trend from 2010, following a population decline in the adjacent Duck Mountain Area (based on survey data and public observations), to 2020. Game Hunting Areas 13 and 13A were closed to all moose hunting in 2011.



Game Hunting Areas 18, 18A, 18B, and 18C

An aerial survey was conducted in Game Hunting Areas 18 - 18C from January 20th to February 1st, 2020 to obtain information on the status of the moose population. This area was last surveyed in 2017. A stratified random block survey method was used and sample units were grouped into three sample unit categories (strata): high, medium and low density. Intensive sampling was conducted on 26% of the total survey area. The survey produced a point estimate of 2,171 (90% CI: 1,841 – 2,519) moose and an average density of 0.38 moose/km². The calf/cow ratio was 41 (90% CI: 35 – 47) calves/100 cows. The bull/cow ratio was 83 (90% CI: 68 – 98) bulls/100 cows. This population estimate was not significantly different from the previous survey, conducted in 2017 (1,958; 90% CI: 1,663 – 2,253), but was significantly greater than the 2012 survey (1,466; 90% CI: 1,284 – 1,648) and the 2010 survey (1,349; 90% CI: 1,173 – 1,526) by approximately 48% and 61%, respectively, suggesting a gradual population increase over the last decade.





Game Hunting Areas 18, 18A, 18B, and 18C

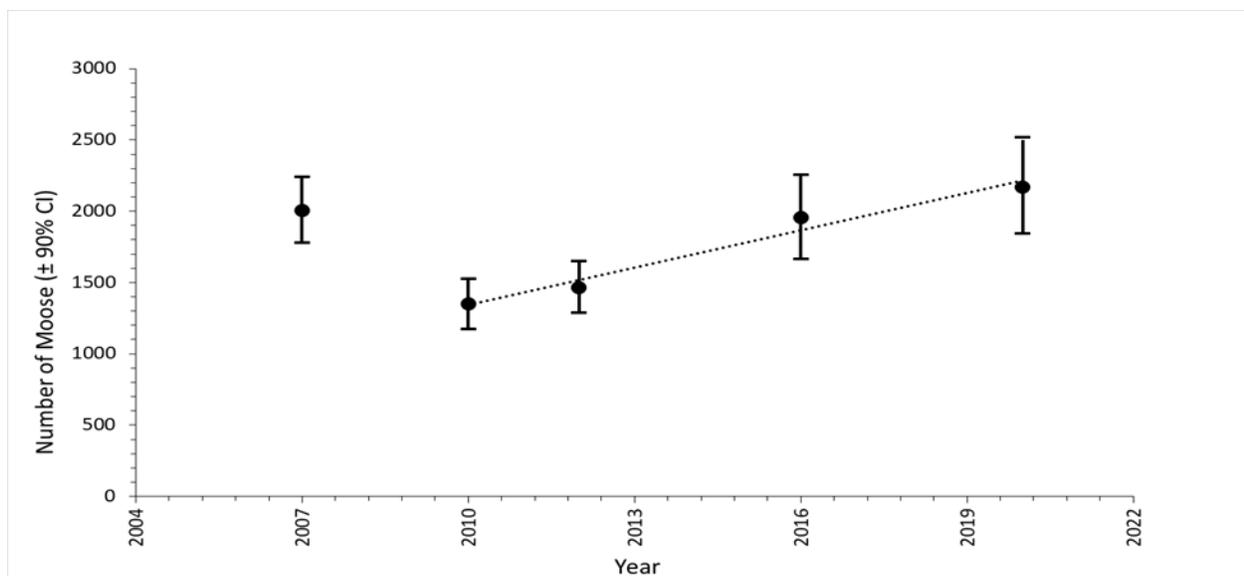


Figure 1: Point estimates of number of moose (\pm 90% confidence interval) in Game Hunting Areas (GHA) 18-18C, Manitoba derived from aerial surveys using stratified random sampling methods. Not all moose are observed during surveys as some are missed due to factors such as cloud cover, types of vegetation, and other environmental conditions, which influence detectability of moose. Reported point estimates do not account for detectability of moose, which can vary from survey to survey. Thus, point estimates presented are not accurate estimates of the number of moose in GHAs 18-18C *per se*; the values presented are likely biased low. Point estimates produced using these surveys are best suited to establishing long-term trends and thus provide information on whether the population appears to be increasing, stable, or decreasing. The dotted line depicts the population trend from 2010, when the population experienced a decline (based on survey data and public observations), to 2020. Game Hunting Areas 18 – 18C were closed to all moose hunting in 2011.



Game Hunting Area 26

An aerial survey was conducted in Game Hunting Area 26 from January 22 to February 13, 2020 to obtain current information on the status of 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 23% of the survey area. The survey produced a point estimate of 1170 (90% Confidence Interval: 989 – 1350) moose and an average density of 0.15 (90% Confidence Interval: 0.13 – 0.17) moose/km². The calf/cow and bull/cow ratios were 43 (90% Confidence Interval: 35 – 51) calves/100 cows and 72 (90% Confidence Interval: 54 – 90) bulls/100 cows, respectively. The survey trend suggests the population has been gradually increasing since the 2010 survey when the point estimate was 823 moose (90% Confidence Interval: 699 – 947).





Game Hunting Area 26

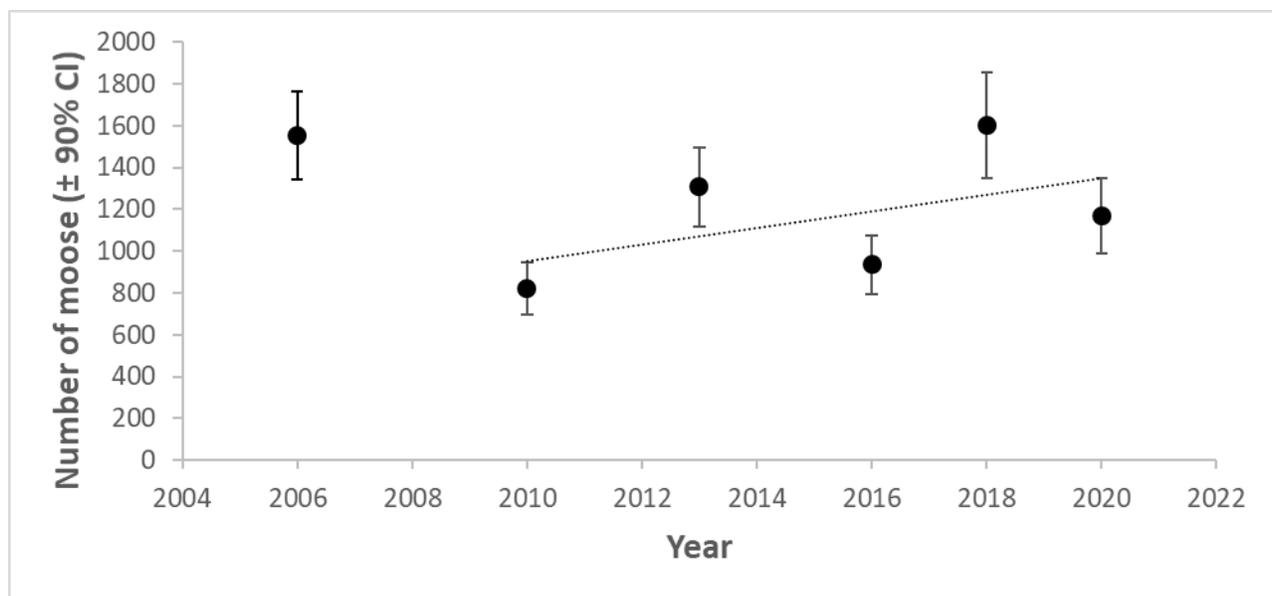


Figure 1: Point estimates of number of moose (\pm 90% confidence interval) in Game Hunting Area 26, Manitoba derived from aerial surveys using stratified random sampling methods. Not all moose are observed during surveys as some are missed due to factors such as cloud cover, types of vegetation, and other environmental conditions, which influence detectability of moose. Reported point estimates do not account for detectability of moose, which can vary from survey to survey. Thus, point estimates presented are not accurate estimates of the number of moose in Game Hunting Area 26 *per se*; the values presented are likely biased low. Point estimates produced using these surveys are best suited to establishing long-term trends and thus provide information on whether the population appears to be increasing, stable, or decreasing. The dotted line depicts the population trend from 2010, when the population experienced a decline (based on survey data and public observations), to 2020. Portions of Game Hunting Area 26 closed to all moose hunting in January 2012 (Moose Protection Zones).



What does this mean?

The survey results suggest a gradually increasing trend for the moose populations in GHAs 18, 18A, 18B, 18C and 26 since 2010 and a stable population in GHAs 13 and 13A. While year to year estimates may fluctuate, these fluctuations should not be interpreted as actual sharp declines or increases in moose numbers between survey years. Rather, it is the trend over time that is most important. The trend over time suggests these populations are recovering, but more slowly than anticipated.

While hunting closures have been in place in areas surveyed, hunting is clearly not the only challenge facing moose. There are a variety of factors affecting moose survival and reproduction. Some factors such as good nutrition and habitat have positive effects on moose survival and reproduction, while other factors such as disease, parasites, predation and the harvest of cows have negative effects on moose survival and reproduction. There are increasing indications some factors negatively affecting moose are getting worse with climate change.

Given the slower than anticipated recovery of the moose population in the three areas surveyed and the variety of factors negatively affecting moose in these areas, we remain concerned about any increase in moose mortalities. This includes considerable increases in harvest of moose. If set too high, harvest pressure in conjunction with other factors decreasing moose survival and reproduction can present a significant risk to the long-term viability of these populations.

While the population trend for moose in these survey areas are stable or gradually increasing, the slow recovery suggests moose in Manitoba are facing an uphill battle. In this ever-changing landscape, we need to continue to work together to help maintain healthy moose population for generations to come.