# Aerial count of moose, elk, and deer, Elk Island National Park, December 29 and 30, 1967

This report will record the results of an aerial count of moose, elk, and deer in Elk Island National Park, December 29 and 30, 1967.

In most previous aerial surveys of large mammals in Elk Island Park a helio courier aircraft has been used. As compared to other fixed-wing aircraft that model has the advantage of slow cruising speed to permit time to search for animals on the strip viewed. Because no helio courier was available for charter in Edmonton this year, the survey was conducted with a Bell-G3 B-1 helicopter. The machine, piloted by Bud Tillotson, was chartered from Associated Helicopters. J. R. McGillis counted animals on the right of the flight path and D. R. Flook counted on the left. Other details of the procedures were the same as those of previous surveys.

The conditions of weather and snow cover encountered in the survey are described in Table 1. Under the conditions of complete snow cover and overcast sky encountered December 29 when we surveyed the north area, moose and elk were very readily observed. On that day most animals were on their feet, and flushed as the helicopter approached. That made them readily observed but also contributed to difficulty in recognizing duplicate observations from adjacent flight lines because some animals flushed from one strip to the next.

On December 30 when we surveyed the south area, we found moose more difficult to see than [illegible] the previous day.

Table 1. Daily conditions of survey.

| Date | Area | Time on transects | Temperature | Sky | Snow cover |
|---|---|---|---|---|---|
| December 29 | North | 9:15 am - 11:40 am<br>12:40 pm - 3:40 pm | + 10° to + 30°F | Overcast | Fresh complete 6-8 inches |
| December 30 | South | 9:15 am - 11:20 am | - 14°F | Clear | Fresh complete 6-8 inches |

The circumstances that contributed to that difficulty were: the contrasting shadows cast by trees in the absence of cloud cover, the larger size and closer spacing of trees, frost on the sides of the helicopter bubble associated with the lower temperature and interfering with the view, and a tendency of moose to remain bedded down as the helicopter flew over, making them difficult to see.

In the park as a whole moose were found to be more abundant than in any previous complete aerial count, the first having been made in February, 1960. In counts previous to 1967 we often recognized animals and groups of animals viewed twice while flying two adjacent lines. In that way we were probably usually successful in avoiding counting the same animals twice. In the 1967 survey we found moose so numerous that we could not be confident of recognizing individuals or groups seen from two adjacent flight lines. There was also a smaller number of observations of elk made from adjacent flight lines which we could not be certain represented different animals. In Appendices 1 and 2, the results of the survey are tabulated by strip for the north and south areas respectively. Flight lines are numbered from north to south as in previous surveys. The higher values for the numbers of moose and elk on each strip represent the total numbers of observations made on that strip from the flight lines on either side of it. The lower values were determined by eliminating all possible duplicate observations. The total numbers of each species observed in each area are given in Table 2. The upper and lower values were obtained as indicated above for individual strips. For the north area the

Table 2. Total numbers of elk, moose, and deer counted in survey of Elk Island National Park by helicopter, December 29 and 30, 1967.

| | Elk | | Moose | | Deer |
|---|---|---|---|---|---|
| | Higher | Lower | Higher | Lower | |
| North area | | | | | |
| Number | 528 | 452 | 723 | 627 | 59 |
| No./sq. mi. | 10.6 | 9.0 | 14.5 | 12.5 | 1.2 |
| South area | | | | | |
| Number | 15 | 15 | 250 | 226 | 159 |
| No./sq. mi. | 0.6 | 0.6 | 10.0 | 9.0 | 6.4 |

numbers of elk and moose actually present are believed to lie between the higher and lower values. However, in view of the poor conditions for surveying encountered in the south area, the actual number of moose present in that area at the time was probably greater than the higher value given. Actual numbers of deer present in both areas were, no doubt, higher than those observed.

The relationships of the population estimates from the survey of 1966-67, and those from the present survey, and the numbers slaughtered in January, 1968 are shown in Table 3.

In view of the high numbers of elk and moose remaining, I would recommend that the park plan on holding a slaughter of each of those species in the winter of 1968-69. Advice on numbers to be removed will be provided in early winter, based on the data available then.

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April 9, 1968

Table 3. Comparison of estimates of elk, moose, and deer numbers, winter 1966-67, and December 1967, and numbers slaughtered January 1968.

| | North area | | | South area | | |
|---|---|---|---|---|---|---|
| | Elk | Moose | Deer | Elk | Moose | Deer |
| Population estimate winter 1966-67 | 325 | 429 | 34 | 21* | 235 | 76 |
| Population estimate December 1967 | 452-528 | 627-723 | 59 | 15 | 250+ | 159 |
| Slaughter January 1968 | 1 | 132 | - | - | 81 | - |
| Population estimate spring 1968 (by difference) | 451-527 | 495-591 | 59 | 15 | 160+ | 159 |

*Four elk removed by capture during 1967.

Appendix 1. Numbers of large mammals counted on strips surveyed by helicopter, Elk Island National Park, north of Highway 16, December 29, 1967.

| Interval between flight lines | Elk | | Moose | | Deer |
|---|---|---|---|---|---|
| | Higher | Lower | Higher | Lower | |
| 1 - 2 | 51 | 51 | 22 | 22 | 12 |
| 2 - 3 | 51 | 14 | 25 | 23 | - |
| 3 - 4 | 22 | 22 | 15 | 12 | - |
| 4 - 5 | 22 | 15 | 28 | 26 | 6 |
| 5 - 6 | - | - | 14 | 14 | 4 |
| 6 - 7 | 2 | 2 | 28 | 24 | 4 |
| 7 - 8 | 6 | 6 | 20 | 20 | - |
| 8 - 9 | - | - | 21 | 18 | 3 |
| 9 - 10 | 2 | 2 | 8 | 6 | - |
| 10 - 11 | 2 | 2 | 11 | 8 | - |
| 11 - 12 | 9 | 9 | 3 | 3 | 4 |
| 12 - 13 | - | - | 1 | 1 | 1 |
| 13 - 14 | - | - | 5 | 5 | 1 |
| 14 - 15 | - | - | 4 | 4 | - |
| 15 - 16 | - | - | 12 | 12 | 4 |
| 16 - 17 | 5 | 5 | 12 | 11 | - |
| 17 - 18 | - | - | 27 | 17 | - |
| 18 - 19 | 45 | 45 | 51 | 39 | - |
| 19 - 20 | 26 | 25 | 23 | 19 | - |
| 20 - 21 | 56 | 56 | 23 | 21 | - |
| 21 - 22 | - | - | 24 | 22 | - |
| 22 - 23 | 15 | 15 | 31 | 26 | 1 |
| 23 - 24 | 1 | 1 | 17 | 15 | 3 |
| 24 - 25 | - | - | 18 | 17 | 1 |
| 25 - 26 | 7 | 4 | 26 | 24 | 5 |
| 26 - 27 | 6 | 6 | 31 | 29 | - |
| 27 - 28 | 18 | 17 | 29 | 22 | - |
| 28 - 29 | 24 | 24 | 25 | 22 | 1 |
| 29 - 30 | 16 | 16 | 21 | 15 | - |
| 30 - 31 | 9 | 7 | 17 | 17 | - |
| 31 - 32 | 12 | 12 | 24 | 17 | - |
| 32 - 33 | 4 | 3 | 11 | 11 | 1 |
| 33 - 34 | 52 | 52 | 7 | 6 | - |
| 34 - 35 | 10 | 4 | 8 | 6 | - |
| 35 - 36 | 17 | 7 | 14 | 14 | 1 |
| 36 - 37 | 21 | 14 | 14 | 13 | - |
| 37 - 38 | 7 | 7 | 5 | 5 | - |
| 38 - 39 | - | - | 14 | 14 | - |
| 39 - 40 | 6 | 5 | 22 | 15 | - |
| 40 - 41 | 4 | 4 | 7 | 7 | 3 |
| 41 - 42 | - | - | 3 | 3 | 2 |
| 42 - 43 | - | - | 2 | 2 | 2 |
| Totals | 528 | 452 | 723 | 627 | 59 |

Appendix 2. Numbers of large mammals counted on strips surveyed by helicopter, Elk Island National Park, south of Highway 16, December 30, 1967.

| Interval between flight lines | Elk | Moose | | Deer |
|---|---|---|---|---|
| | | Higher | Lower | |
| 40 - 41 | - | 2 | 2 | - |
| 41 - 42 | - | 7 | 7 | 7 |
| 42 - 43 | - | 16 | 15 | 10 |
| 43 - 44 | - | 10 | 8 | 12 |
| 44 - 45 | 11 | 16 | 15 | 13 |
| 45 - 46 | - | 11 | 8 | - |
| 46 - 47 | - | 26 | 26 | 10 |
| 47 - 48 | - | 16 | 13 | 7 |
| 48 - 49 | - | 15 | 15 | 10 |
| 49 - 50 | - | 12 | 11 | 17 |
| 50 - 51 | - | 27 | 25 | 10 |
| 51 - 52 | 1 | 15 | 11 | 16 |
| 52 - 53 | 1 | 30 | 28 | 22 |
| 53 - 54 | - | 14 | 11 | 16 |
| 54 - 55 | - | 19 | 19 | 6 |
| 55 - 56 | 2 | 9 | 7 | 1 |
| 56 - 57 | - | 5 | 5 | 2 |
| 57 - 58 | - | - | - | - |
| Totals | 15 | 250 | 226 | 159 |