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**CHAPTER 18: MOOSE MANAGEMENT REPORT**

From: 1 July 2011  
To: 30 June 2013<sup>1</sup>

**LOCATION**

**GAME MANAGEMENT UNIT:** 16B (10,405 mi<sup>2</sup>)

**GEOGRAPHIC DESCRIPTION:** West Side of Cook Inlet and Kalgin Island

**BACKGROUND**

Moose populations fluctuate greatly in Unit 16B due to heavy snow years that seem to occur once or twice every decade. Moose in this unit likely numbered in excess of 10,000 during the early 1980s (Griese 1996). Before the severe winter of 1989–1990, there likely were 8,500–9,500 moose (Harkness 1993). Following a 15–20% decline after winter 1989–1990, moose numbers in the unit continued to decline in response to deep snow winters and growing predation (Griese 2000).

Prior to 1989, moose hunting in Unit 16B was by permits with long season dates and had either any-moose or antlerless-moose bag limits. Tier II permits were issued beginning in regulatory year (RY) 1990 to ensure local residents have an opportunity to meet subsistence needs. A regulatory year begins 1 July and ends 30 June, e.g., RY90 = 1 July 1990–30 June 1991. Beginning in RY93 the bull harvest (during the general season) was restricted to moose with antlers having a spike or fork on at least one side, or a minimum of 3 brow tines on at least one side, or a minimum total width of 50 inches. This selective harvest strategy is referred to as “spike fork 50” (Schwartz et al. 1992). The general season was closed in both RY01 and RY02 and then again during RY06–RY08 due to the decreased population size and poor recruitment. The permit levels for the existing Tier II hunts were increased to provide for subsistence. These Tier II hunts were divided into 3 areas: TM565, TM567, and TM569 (Del Frate 2004).

For most of the post-statehood history of the unit, predation was not considered a significant factor limiting the moose population. Predation by wolves was not thought to influence the moose population until around 1992, when an increase in the wolf population was first noticed. The minimum population estimate in 1993 was 39–42 wolves. A subsequent survey in fall 1998 estimated a population of 120–140 wolves (Masteller 2000), and Del Frate (2003) reported an estimate of 160–245 wolves for all of Unit 16 in winter 2001. As a result of increased wolf numbers and a decrease in the moose population, the influence of wolf predation on the moose population is believed to have increased over time. A control program to reduce wolf predation on moose began in 2004. At that time, the population was estimated at 175–180 wolves (Peltier

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<sup>1</sup> At the discretion of the reporting biologist, this unit report may contain data collected outside the report period.

2006). Additionally, studies in Unit 16B suggest that bear predation also has a strong influence on calf recruitment (Faro 1989, Peltier 2012). Bear surveys were conducted in spring 2007 and indicated high densities of black bears (182 bears/1,000 km<sup>2</sup>) and brown bears (63 bears/1,000 km<sup>2</sup>) in the unit (Peltier 2008). Brown bear seasons and bag limits were liberalized and a black bear control program began in fall 2007 (Peltier 2008, 2010).

The establishment of the Kalgin Island moose population is the result of a translocation of calves during 1957–1959. Numbers grew to a density of 6 moose/mi<sup>2</sup> during 1981 (Taylor 1983), but were reduced to approximately 1 moose/mi<sup>2</sup> by 1985. High moose densities severely degraded habitat and the department adopted restrictive population objectives to maintain moose densities at 1–2 moose/mi<sup>2</sup> while vegetation recovered (Faro 1989). In 1999 the Board of Game adopted an any-moose registration hunt to reduce the population to the management objectives.

## **MANAGEMENT DIRECTION**

### **MANAGEMENT GOAL**

- Maintain and enhance the moose population to provide for high levels of human consumptive use.

### **MANAGEMENT OBJECTIVES**

#### *Mainland Unit 16B (excluding Kalgin Island)*

- Maintain a moose population of 6,500–7,500 moose and 20–25 bulls:100 cows.
- Achieve a harvest of 310–600 moose.

#### *Kalgin Island*

- Maintain a posthunt population of 20–40 moose with at least 15 bulls:100 cows.

## **METHODS**

Because of its size, Unit 16B is divided into 3 zones (North, Middle, and South) for survey purposes. The North area is described as Unit 16B north of the Skwentna River. The Middle area is defined as Unit 16B north of the Beluga River and Beluga Lake and south of Skwentna River. The South area is described as all of Unit 16B, south of Beluga River and Beluga Lake except Kalgin Island. We have conducted various types of surveys (Gasaway et al. 1986, Becker and Reed 1990, Ver Hoef 2001) in each of these units as funding and priorities allow (Table 1).

A geospatial population estimator (GSPE; Kellie and DeLong 2006) survey was conducted in Unit 16B Middle. Minimum count surveys were conducted on Kalgin Island in 2011 and 2012. Poor weather conditions precluded other surveys of the area during the reporting period.

We collected harvest and hunter effort data from registration (Kalgin), general harvest, and Tier II permit reports.

## RESULTS AND DISCUSSION

### POPULATION STATUS AND TREND

#### *Population Size*

The population of Unit 16B Middle was estimated at  $3,458 \pm 539$  (Table 1). This estimate includes a sightability correction factor derived from intensive sampling. The previous estimate was  $2,446 \pm 322$  moose which indicates a growing moose population. Based on this survey, as well as the 2010 survey of Unit 16B South of  $2,372 \pm 778$  and Unit 16B North at  $1,042 \pm 235$ , the estimated population for mainland Unit 16B (excluding Kalgin Island) is  $6,782 \pm 1,562$ . The moose population on Kalgin Island was estimated to be 60–70 moose in November 2011 and 110–120 in 2012. Given that the population could not possibly double in one year, the most likely explanation for the increase was poor sightability in the 2011 survey.

#### *Population Composition*

Based on the GSPE survey of Unit 16B Middle in 2011, the bull:100 cow ratio was 45.7 and the calf:100 cow ratio was 23.7 (Table 1). In Unit 16B South the 2010 GSPE survey indicated a bull:100 cow ratio of 52 and a calf:100 cow ratio of 18 indicating a potential lag in recruitment in Unit 16B South. However, these numbers should be considered with caution. Results of a multi-year calf recruitment study in the area indicate that calf:100 cow ratios can vary greatly (ADF&G, unpublished data, Palmer, Alaska); survey results may reflect this.

### MORTALITY

#### *Harvest*

Seasons and Bag Limits. The general resident hunting season for RY11 and RY12 was 20 August–25 September (Table 2). The general nonresident hunting season was 25 August–15 September. Tier II (TM565, TM567, and TM569) hunting was open for any bull 15 November–28 February for RY11 and shifted to 15 December–31 March for RY12. There were 260 Tier II permits issued for RY11 and 261 permits issued for RY12 (Table 3). Kalgin Island was open to registration hunting (RM572) 20 August–20 September in RY11 (any moose) and from 20 August to 10 September in RY12.

Alaska Board of Game Actions and Emergency Orders. During the Board of Game meeting in spring 2011, the board passed a nonresident hunting season for the unit which was implemented in fall 2011. The board also reauthorized the predation control intensive management plan and approved a brown bear control program in a  $960 \text{ mi}^2$  subsection of Unit 16B between the McArthur and Beluga rivers to aid the recovery of the moose population. They also changed the winter Tier II dates to 15 December–31 March. This regulation was to be implemented in RY12.

Due to a low population estimate in winter 2011, the RM572 Kalgin Island moose hunt was closed by emergency order, ending the RY12 hunting season 10 days early.

Harvest by Hunters. Harvest decreased slightly during RY11–RY12 over the previous reporting period (208 vs. 217 for RY09–RY10; Table 2). This is due mostly to the reduced harvest and participation in RY12. RY12 was a particularly wet and cool fall and hunter effort was reduced throughout Southcentral Alaska. The Tier II harvest which occurs midwinter was not noticeably

different than the previous reporting period (Table 3). The harvest on Kalgin Island was reduced during the reporting period, due to the fact that RM572 was closed by emergency order.

Hunter Residency and Success. The general season was opened to nonresidents during the RY11 hunting season for the first time since RY03 (Table 4). The general resident season was 10 days longer during this reporting period. The majority of resident hunters were nonlocal residents.

Harvest Chronology. In areas such as Unit 16B where competition among hunters is low, harvest of bulls is concentrated in the last 2 weeks of the season (Table 5). This is due to the fact that bulls become more vulnerable to hunters as they approach the rut.

Transport Methods. The lack of road accessibility to the unit is reflected by the dominance of aircraft and boat transportation modes used by successful hunters (Table 6). ATV access in the unit is from hunters starting at privately-owned, seasonally-occupied cabins.

#### *Other Mortality*

The severe winter of 1999–2000 had a negative impact on the moose population in Unit 16B, which has struggled to recover (Peltier 2010). Predation has been thought to be a limiting factor in the recovery. As a result, a wolf control program was implemented in 2004, a black bear control program began in 2007, and an experimental brown bear control program began on a portion of Unit 16B in 2011. At this time the effects of these programs are not clear (Peltier 2012). Calf recruitment is still relatively low compared with other moose populations; however, recruitment appears to be improving slightly. Overall survey numbers appear to be increasing, and anecdotal information from the field is that hunters are seeing more calves and more moose in general.

## **CONCLUSIONS AND RECOMMENDATIONS**

At this time it appears that with a population estimate of  $6,782 \pm 1,562$ , we are within the population objective of 6,500–7,500 moose for mainland Unit 16B (excluding Kalgin Island). The unit is still below the harvest objective of 310–600; however, with the recent return of nonresident hunting, along with some other changes in the regulations that will take place in the future, it is likely that we will be achieving our harvest objectives relatively soon.

As long as Unit 16B remains under intensive management additional information is needed to better understand the predator-prey dynamics of the unit. Current research plans include looking at calf recruitment in the lower Tyonek area, as well as an ongoing project looking at calf recruitment around Skwentna. Future efforts should be directed at gaining accurate and precise estimates of wolf and bear populations. There are currently plans to do a wolf population survey in RY14 if snow cover and weather conditions allow. Additional measures to determine the size of the black bear and brown bear populations should be taken to help determine their impact on the moose population and recovery potential. Spatial analysis of predators and moose in the unit could be used to develop geographic information system layers that could assist managers in deciding where to expect faster moose population recovery and where to concentrate predator control efforts.

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Table 1. Unit 16B fall aerial moose composition counts and estimated subpopulation sizes, Alaska, regulatory years<sup>a</sup> 2001–2012.

| Regulatory year   | Area                       | Date(s)      | Bulls:<br>100 cows | Yearling<br>bulls:100<br>cows | Calves:<br>100 cows | Percent<br>calves | Adults | Total<br>moose<br>observed | Moose<br>observed/<br>mi <sup>2</sup> | Population<br>estimate <sup>b</sup> |
|-------------------|----------------------------|--------------|--------------------|-------------------------------|---------------------|-------------------|--------|----------------------------|---------------------------------------|-------------------------------------|
| 2001              | Northern <sup>c</sup>      | 5–7 Nov      | 40                 | 7                             | 14                  | 9                 | 393    | 438                        | 0.8                                   | 1,187 ± 182                         |
|                   | Middle <sup>c</sup>        | 8–11 Nov     | 32                 | 4                             | 10                  | 7                 | 494    | 537                        | 0.7                                   | 1,836 ± 267                         |
|                   | South <sup>d</sup>         | 30 Oct–4 Nov | 31                 | 3                             | 13                  | 9                 | 539    | 594                        |                                       | 700–850                             |
|                   | Kalgin Island <sup>e</sup> | 22 Oct       |                    |                               |                     | 33                | 64     | 96                         | 4.2                                   | 110–140                             |
| 2002 <sup>f</sup> |                            |              |                    |                               |                     |                   |        |                            |                                       |                                     |
| 2003              | North <sup>g</sup>         | 24 Nov–6 Dec | 35                 | 7                             | 17                  | 9                 | 292    | 326                        |                                       | 898 ± 163                           |
|                   | South <sup>d</sup>         | 1 Dec        | 46                 | 17                            | 23                  | 14                | 133    | 154                        |                                       | 700–850                             |
|                   | Kalgin Island <sup>e</sup> | 25 Nov       | 38                 | 25                            | 89                  | 39                | 76     | 125                        |                                       | 179                                 |
| 2004              | South <sup>d</sup>         | 5–9 Dec      | 23                 | 10                            | 23                  | 16                | 509    | 604                        |                                       | 960                                 |
| 2005              | Middle <sup>h</sup>        | 26 Nov–1 Dec | 29                 | 4                             | 14                  | 13                | 582    | 628                        | 0.8                                   | 1,714 ± 343                         |
|                   | Kalgin Island <sup>e</sup> | 17 Jan 2006  | 17                 | 3                             | 47                  | 29                | 69     | 97                         | 4.2                                   | 100–120                             |
| 2006              | Kalgin Island <sup>e</sup> | 9 Feb 2007   |                    |                               |                     | 30                | 26     | 37                         | 1.6                                   | 50–70                               |
| 2007              | Kalgin Island <sup>e</sup> | 19 Nov 2007  | 26                 | 13                            | 67                  | 37                | 77     | 118                        | 5.2                                   | 120–140                             |
| 2008              | North <sup>h</sup>         | 29–30 Oct    | 58                 | 16                            | 12                  | 7                 | 318    | 340                        | 1.9                                   | 1,042 ± 245 <sup>i</sup>            |
|                   | Middle <sup>h</sup>        | 15–17 Nov    | 54                 | 11                            | 21                  | 12                | 600    | 678                        | 0.9                                   | 2,446 ± 322 <sup>i</sup>            |
|                   | South <sup>d</sup>         | 2 Dec 2008   | 78                 | 13                            | 18                  | 9                 | 224    | 247                        |                                       |                                     |
| 2009              | Middle <sup>d</sup>        | 15–17 Nov    | 39                 | 19                            | 19                  | 12                | 315    | 359                        |                                       |                                     |
| 2010              | South <sup>h</sup>         | 13–18 Nov    | 52                 | 15                            | 18                  | 11                | 628    | 703                        | 1.1                                   | 2,372 ± 778 <sup>i</sup>            |
|                   | Kalgin Island <sup>e</sup> | 7 Dec        |                    |                               |                     | 43                | 40     | 70                         | 3.1                                   | 80–90                               |
| 2011              | Middle <sup>h</sup>        | 20–26 Nov    | 46                 | 9                             | 24                  | 15                | 698    | 825                        | 1.1                                   | 3,458 ± 539                         |
|                   | Kalgin Island <sup>e</sup> | 13 Dec       |                    |                               |                     | 28                | 38     | 53                         | 3.1                                   | 60–70                               |
| 2012              | Kalgin Island <sup>e</sup> | 17 Dec       |                    |                               |                     | 38                | 65     | 104                        | 4.6                                   | 110–120                             |

<sup>a</sup> Regulatory year begins 1 July and ends 30 June, e.g., regulatory year 2001 = 1 July 2001–30 June 2002.

<sup>b</sup> Includes 80% confidence intervals where appropriate.

<sup>c</sup> Becker survey (Becker and Reed 1990).

<sup>d</sup> Trend area composition survey (2–4 min./mi<sup>2</sup>).

<sup>e</sup> Trend area composition survey (6–8 min./mi<sup>2</sup>).

<sup>f</sup> No surveys completed.

<sup>g</sup> J. Ver Hoef's regression sampling method (Ver Hoef 2001) for one-third of area (612 ± 151 [80% CI]), plus 350–550 estimated for remainder of area.

<sup>h</sup> Geospatial population estimator (Kellie and DeLong 2006).

<sup>i</sup> Includes a sightability correction factor.



Table 2. Unit 16B moose harvest and accidental deaths, Alaska, regulatory years<sup>a</sup> 2003–2012.

| Regulatory year   | Reported |    |     |                    | Estimated               |         |       | Accidental deaths |       |       | Grand total |
|-------------------|----------|----|-----|--------------------|-------------------------|---------|-------|-------------------|-------|-------|-------------|
|                   | M        | F  | Unk | Total <sup>b</sup> | Unreported <sup>c</sup> | Illegal | Total | Road              | Other | Total |             |
| 2003 <sup>d</sup> | 206      | 25 | 1   | 232                | 15                      | 25      | 40    | 0                 | 0     | 0     | 272         |
| 2004 <sup>d</sup> | 184      | 34 | 0   | 218                | 15                      | 25      | 40    | 0                 | 0     | 0     | 258         |
| 2005 <sup>d</sup> | 149      | 10 | 0   | 159                | 15                      | 25      | 40    | 0                 | 0     | 0     | 199         |
| 2006 <sup>e</sup> | 117      | 11 | 0   | 128                | 15                      | 25      | 40    | 0                 | 0     | 0     | 168         |
| 2007 <sup>e</sup> | 116      | 10 | 0   | 126                | 15                      | 25      | 40    | 0                 | 0     | 0     | 166         |
| 2008 <sup>e</sup> | 137      | 15 | 0   | 152                | 15                      | 25      | 40    | 0                 | 0     | 0     | 192         |
| 2009 <sup>f</sup> | 196      | 8  | 4   | 208                | 15                      | 25      | 40    | 0                 | 0     | 0     | 248         |
| 2010 <sup>f</sup> | 217      | 10 | 0   | 227                | 15                      | 25      | 40    | 0                 | 0     | 0     | 267         |
| 2011              | 206      | 13 | 0   | 219                | 15                      | 25      | 40    | 0                 | 0     | 0     | 259         |
| 2012              | 176      | 9  | 0   | 185                | 15                      | 25      | 40    | 0                 | 0     | 0     | 225         |

<sup>a</sup> Regulatory year begins 1 July and ends 30 June, e.g., regulatory year 2003 = 1 July 2003–30 June 2004.

<sup>b</sup> Includes all reported harvest including federal subsistence.

<sup>c</sup> Includes moose taken in defense of life or property.

<sup>d</sup> Season is Resident Harvest, 1 September–20 September (spike fork 50), Tier II 15 November–28 February (any bull); Kalgin Island 20 August–20 September.

<sup>e</sup> Season is Tier II only, 1 September–20 September (spike fork 50) and 15 November–28 February (any bull); Kalgin Island 20 August–20 September.

<sup>f</sup> Season is Resident Harvest, 20 August–20 September (spike fork 50), Tier II 15 November–28 February (any bull); Kalgin Island 20 August–20 September.

Table 3. Unit 16B moose harvest data by permit hunt, Alaska, regulatory years<sup>a</sup> 2003–2012.

| Hunt number <sup>b</sup> | Regulatory year | Permits issued | Percent did not hunt | Percent unsuccessful hunters | Percent successful hunters | Harvest |      |     | Total |
|--------------------------|-----------------|----------------|----------------------|------------------------------|----------------------------|---------|------|-----|-------|
|                          |                 |                |                      |                              |                            | Bulls   | Cows | Unk |       |
| TM565                    | 2003            | 141            | 27                   | 57                           | 43                         | 43      | 1    | 0   | 44    |
|                          | 2004            | 100            | 11                   | 42                           | 58                         | 43      | 1    | 0   | 44    |
|                          | 2005            | 141            | 28                   | 51                           | 49                         | 48      | 0    | 0   | 48    |
|                          | 2006            | 120            | 14                   | 53                           | 47                         | 46      | 0    | 0   | 46    |
|                          | 2007            | 100            | 21                   | 48                           | 52                         | 40      | 1    | 0   | 41    |
|                          | 2008            | 110            | 20                   | 49                           | 51                         | 44      | 0    | 0   | 44    |
|                          | 2009            | 102            | 25                   | 48                           | 52                         | 39      | 0    | 1   | 40    |
|                          | 2010            | 99             | 21                   | 42                           | 58                         | 44      | 0    | 0   | 44    |
|                          | 2011            | 100            | 37                   | 41                           | 59                         | 36      | 0    | 1   | 37    |
|                          | 2012            | 101            | 29                   | 47                           | 53                         | 38      | 0    | 0   | 38    |
| TM567                    | 2003            | 60             | 22                   | 49                           | 51                         | 23      | 0    | 0   | 23    |
|                          | 2004            | 60             | 8                    | 32                           | 68                         | 26      | 0    | 0   | 26    |
|                          | 2005            | 60             | 25                   | 55                           | 45                         | 20      | 0    | 0   | 20    |
|                          | 2006            | 140            | 21                   | 59                           | 41                         | 42      | 0    | 0   | 42    |
|                          | 2007            | 80             | 20                   | 48                           | 52                         | 33      | 0    | 0   | 33    |
|                          | 2008            | 120            | 18                   | 48                           | 52                         | 50      | 0    | 0   | 50    |
|                          | 2009            | 80             | 20                   | 48                           | 52                         | 32      | 0    | 1   | 33    |
|                          | 2010            | 80             | 24                   | 37                           | 63                         | 37      | 0    | 0   | 37    |
|                          | 2011            | 80             | 28                   | 42                           | 58                         | 32      | 1    | 0   | 33    |
|                          | 2012            | 80             | 26                   | 41                           | 59                         | 35      | 0    | 0   | 35    |
| TM569                    | 2003            | 60             | 28                   | 68                           | 32                         | 13      | 0    | 0   | 13    |
|                          | 2004            | 60             | 13                   | 64                           | 36                         | 9       | 0    | 0   | 9     |
|                          | 2005            | 59             | 36                   | 74                           | 26                         | 9       | 0    | 0   | 9     |
|                          | 2006            | 85             | 34                   | 69                           | 31                         | 17      | 0    | 0   | 17    |
|                          | 2007            | 100            | 19                   | 63                           | 37                         | 29      | 0    | 0   | 29    |
|                          | 2008            | 101            | 30                   | 58                           | 42                         | 23      | 0    | 0   | 23    |
|                          | 2009            | 80             | 36                   | 76                           | 24                         | 12      | 0    | 0   | 12    |
|                          | 2010            | 81             | 40                   | 55                           | 45                         | 22      | 0    | 0   | 22    |

| Hunt number <sup>b</sup> | Regulatory year   | Permits issued | Percent did not hunt | Percent unsuccessful hunters | Percent successful hunters | Harvest |      |     |       |
|--------------------------|-------------------|----------------|----------------------|------------------------------|----------------------------|---------|------|-----|-------|
|                          |                   |                |                      |                              |                            | Bulls   | Cows | Unk | Total |
|                          | 2011              | 80             | 41                   | 57                           | 43                         | 19      | 0    | 1   | 20    |
|                          | 2012              | 80             | 40                   | 60                           | 40                         | 19      | 0    | 0   | 19    |
| DM571/<br>RM572          | 2003              | 202            | 29                   | 61                           | 39                         | 30      | 24   | 0   | 54    |
|                          | 2004              | 255            | 28                   | 70                           | 30                         | 22      | 32   | 0   | 54    |
|                          | 2005              | 194            | 34                   | 83                           | 17                         | 10      | 10   | 0   | 20    |
|                          | 2006              | 143            | 41                   | 76                           | 24                         | 9       | 11   | 0   | 20    |
|                          | 2007              | 131            | 44                   | 68                           | 32                         | 14      | 9    | 0   | 23    |
|                          | 2008              | 134            | 10                   | 70                           | 30                         | 13      | 0    | 0   | 13    |
|                          | 2009              | 131            | 32                   | 74                           | 26                         | 14      | 8    | 0   | 22    |
|                          | 2010              | 131            | 26                   | 70                           | 30                         | 18      | 10   | 0   | 28    |
|                          | 2011              | 138            | 36                   | 72                           | 28                         | 10      | 12   | 0   | 22    |
|                          | 2012 <sup>c</sup> | 111            | 30                   | 84                           | 16                         | 4       | 8    | 0   | 12    |

<sup>a</sup> Regulatory year begins 1 July and ends 30 June, e.g., regulatory year 2003 = 1 July 2003–30 June 2004.

<sup>b</sup> TM = Tier II permit, RM = registration permit, DM = drawing permit.

<sup>c</sup> Closed by emergency order 10 September.

Table 4. Unit 16B moose hunter<sup>a</sup> residency and success, Alaska, regulatory years<sup>b</sup> 2003–2012.

| Regulatory year   | Successful                  |                   |             |     |           | Unsuccessful                |                   |             |     |       | Total hunters |
|-------------------|-----------------------------|-------------------|-------------|-----|-----------|-----------------------------|-------------------|-------------|-----|-------|---------------|
|                   | Local resident <sup>c</sup> | Nonlocal resident | Nonresident | Unk | Total (%) | Local resident <sup>c</sup> | Nonlocal resident | Nonresident | Unk | Total |               |
| 2003              | 9                           | 88                | 1           | 1   | 99 (24)   | 20                          | 281               | 3           | 5   | 309   | 408           |
| 2004 <sup>d</sup> | 7                           | 75                | 0           | 3   | 85 (20)   | 29                          | 300               | 6           | 5   | 340   | 425           |
| 2005 <sup>d</sup> | 3                           | 59                | 0           | 0   | 62 (16)   | 17                          | 293               | 2           | 3   | 315   | 377           |
| 2006 <sup>e</sup> |                             |                   |             |     |           |                             |                   |             |     |       |               |
| 2007 <sup>e</sup> |                             |                   |             |     |           |                             |                   |             |     |       |               |
| 2008 <sup>e</sup> |                             |                   |             |     |           |                             |                   |             |     |       |               |
| 2009 <sup>d</sup> | 7                           | 91                | 0           | 2   | 100 (23)  | 22                          | 305               | 0           | 6   | 333   | 433           |
| 2010 <sup>d</sup> | 8                           | 89                | 0           | 0   | 97 (25)   | 23                          | 270               | 2           | 3   | 298   | 395           |
| 2011              | 3                           | 93                | 9           | 4   | 109 (22)  | 16                          | 355               | 7           | 5   | 383   | 492           |
| 2012              | 4                           | 64                | 17          | 0   | 85 (20)   | 26                          | 284               | 35          | 0   | 345   | 430           |

<sup>a</sup> Does not include individuals participating in permit hunts.

<sup>b</sup> Regulatory year begins 1 July and ends 30 June, e.g., regulatory year 2003 = 1 July 2003–30 June 2004.

<sup>c</sup> Unit 16 residents.

<sup>d</sup> No general nonresident open season.

<sup>e</sup> No general open season.

Table 5. Unit 16B moose harvest chronology<sup>a</sup> by month, Alaska, regulatory years<sup>b</sup> 2003–2012.

| Regulatory<br>year | August |       | September |      |       |       |       | Unknown | Total |
|--------------------|--------|-------|-----------|------|-------|-------|-------|---------|-------|
|                    | 20–26  | 27–31 | 1–7       | 8–14 | 15–20 | 21–25 | 26–30 |         |       |
| 2003 <sup>c</sup>  |        |       | 15        | 28   | 47    | 1     | 2     | 6       | 99    |
| 2004 <sup>c</sup>  |        |       | 12        | 22   | 47    | 1     | 1     | 2       | 85    |
| 2005 <sup>c</sup>  |        |       | 7         | 21   | 32    | 1     |       | 1       | 62    |
| 2006 <sup>d</sup>  |        |       |           |      |       |       |       |         |       |
| 2007 <sup>d</sup>  |        |       |           |      |       |       |       |         |       |
| 2008 <sup>d</sup>  |        |       |           |      |       |       |       |         |       |
| 2009 <sup>e</sup>  | 2      | 4     | 11        | 24   | 58    |       |       | 1       | 100   |
| 2010 <sup>e</sup>  | 4      | 2     | 8         | 39   | 43    |       |       | 1       | 97    |
| 2011 <sup>f</sup>  | 2      | 5     | 8         | 24   | 37    | 29    |       | 3       | 108   |
| 2012 <sup>f</sup>  | 5      | 1     | 5         | 30   | 16    | 23    |       | 5       | 85    |

<sup>a</sup> Does not include harvest from permit hunts.

<sup>b</sup> Regulatory year begins 1 July and ends 30 June, e.g., regulatory year 2003 = 1 July 2003–30 June 2004.

<sup>c</sup> Open season = 1 September–20 September (spike fork 50).

<sup>d</sup> No general open season.

<sup>e</sup> Open season = 20 August–20 September (spike fork 50).

<sup>f</sup> Open season = Residents: 20 August–25 September (spike fork 50); Nonresidents: 25 August–15 September (spike fork 50).

Table 6. Unit 16B percent transport methods of successful moose hunters<sup>a</sup>, Alaska, regulatory years<sup>b</sup> 2003–2012.

| Regulatory<br>year | Transport method (%) |       |      |                     |             |     |                    |         |     |          |
|--------------------|----------------------|-------|------|---------------------|-------------|-----|--------------------|---------|-----|----------|
|                    | Airplane             | Horse | Boat | 3- or 4-<br>wheeler | Snowmachine | ORV | Highway<br>vehicle | Airboat | Unk | <i>n</i> |
| 2003               | 56                   | 1     | 16   | 14                  | 1           | 1   | 5                  | 1       | 5   | 99       |
| 2004               | 63                   | 0     | 15   | 12                  | 0           | 1   | 5                  | 0       | 4   | 85       |
| 2005               | 63                   |       | 19   | 13                  |             |     | 1                  | 1       | 1   | 62       |
| 2006 <sup>c</sup>  |                      |       |      |                     |             |     |                    |         |     |          |
| 2007 <sup>c</sup>  |                      |       |      |                     |             |     |                    |         |     |          |
| 2008 <sup>c</sup>  |                      |       |      |                     |             |     |                    |         |     |          |
| 2009               | 59                   | 3     | 19   | 12                  | 0           | 2   | 4                  | 0       | 1   | 100      |
| 2010               | 56                   | 1     | 27   | 7                   | 1           | 3   | 3                  | 0       | 2   | 97       |
| 2011               | 62                   | 6     | 19   | 4                   | 0           | 3   | 5                  | 0       | 1   | 109      |
| 2012               | 64                   | 5     | 19   | 7                   | 0           | 1   | 1                  | 2       | 1   | 85       |

<sup>a</sup> Does not include harvest from permit hunts.

<sup>b</sup> Regulatory year begins 1 July and ends 30 June, e.g., regulatory year 2003 = 1 July 2003–30 June 2004.

<sup>c</sup> No general open season.