

LATE-WINTER MOOSE RECRUITMENT SURVEY

MAYO AREA

11-13 MARCH 2003



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MAYO AREA
11-13 MARCH 2003**

**Yukon Fish and Wildlife Branch
SR-03-09**

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SUMMARY

- ❖ We conducted a late-winter recruitment survey of moose using a Super Cub aircraft in the Mayo area on March 11-13, 2003. The main purpose of this survey was to estimate the proportion of calves in the population at the end of winter.
- ❖ We counted 89 moose, of which 14 were calves. Based on these sample counts, we estimated that about 16% of the population were calves. This is higher than the 15% long-term average in the Mayo area. Yukon moose populations with about 15% calves are generally stable.
- ❖ The majority of moose observations were located in burns that occurred in the past twenty years.

INTRODUCTION

This report summarises the results of the late-winter recruitment survey of moose in the Mayo area, including parts of the Mayo, Ddhaw Ghro, Lower Macmillan, and Upper Klondike Highway Moose Management Units (see Map 1), conducted on March 11-13, 2003. The main purpose of this survey was to estimate the proportion of calves in the population, at the end of winter. The Yukon Fish and Wildlife Branch has monitored populations of moose in the Mayo area since the mid-1970s using a variety of methods in an effort to monitor their health.

Previous Surveys

Late-winter recruitment surveys were conducted in the Mayo area in 1989 (see Map 1; results in Larsen, Markel & Ward 1989), and from 1993 to 1999 (see Map 1; results in Ward and Larsen 1994, Ward and Larsen 1995, and Yukon Fish and Wildlife Branch file reports). The intent of these surveys was to provide us with a measure of annual calf survival, which affects population trend from year to year. We cannot calculate estimates of abundance from these surveys.

We conducted 30-block “low-intensity” aerial surveys of moose in the Mayo Moose Management Unit in March 2001 (see Map1; results in Fraser, O’Donoghue & Westover 2001), and in March 2002 (see Map 1; results in O’Donoghue & Sinnott 2003). While the main purpose of these surveys was also to estimate calf survival, this survey method also allows us to estimate abundance.

Our last survey of moose in the Mayo area during early winter, which is the best time of year to estimate abundance, was in 1998, using the stratified random block method (results in Yukon Fish and Wildlife Branch file reports).

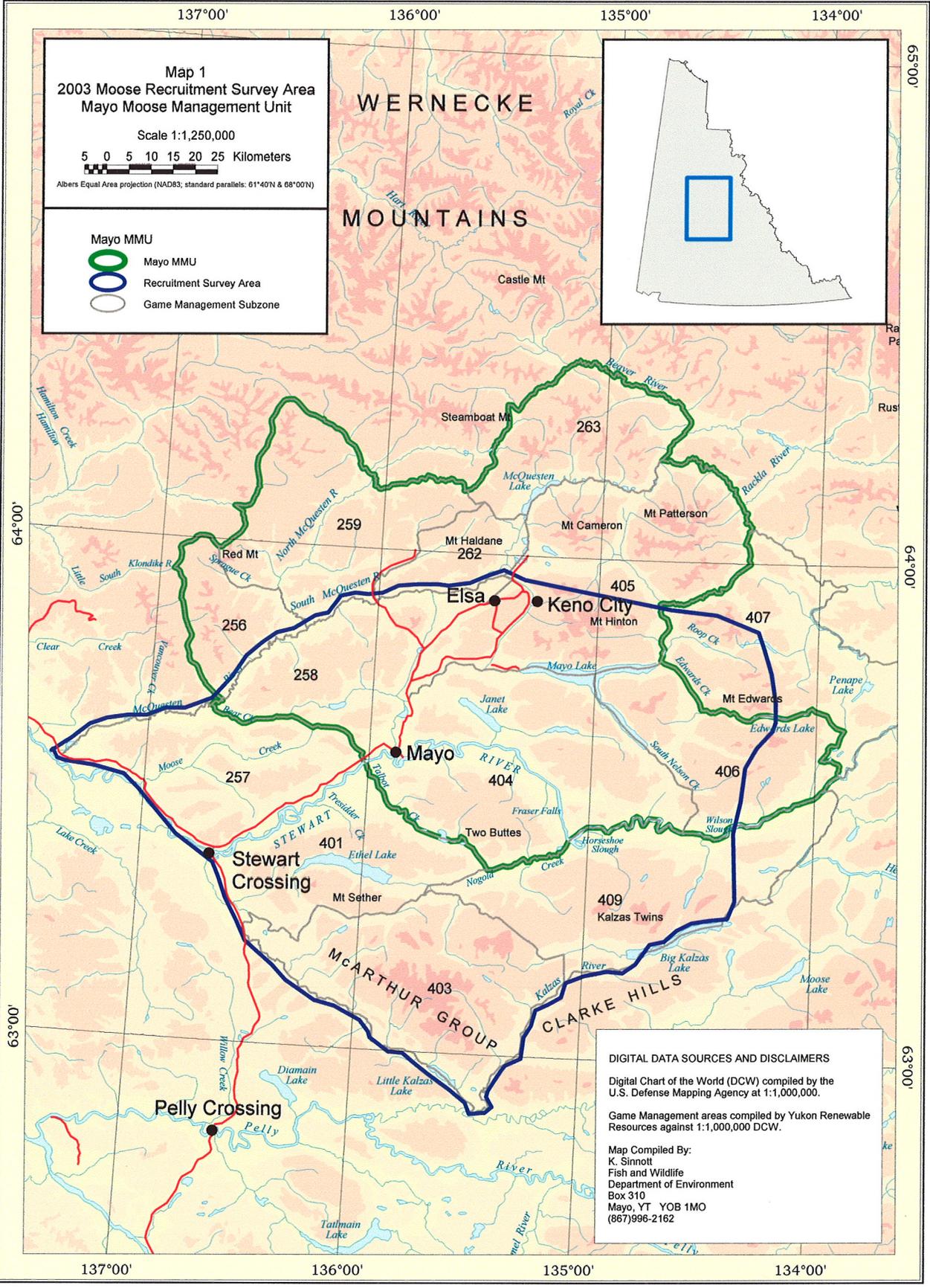
Community Involvement

Residents of the Mayo area have consistently placed a high priority on monitoring the health of the local moose population. This was emphasised in the Integrated Big Game Management Plan for the Mayo Region in 1993-1996, the Integrated Wildlife Management Plan for the Nacho Nyak Dun Traditional Territory for 1997-2000, and again in the 2002-2007 Community-Based Fish and Wildlife Management Plan for the Nacho Nyak Dun Traditional Territory. All these plans were developed cooperatively by the Mayo District Renewable Resources Council, the First Nation of Nacho Nyak Dun, and the Yukon Fish and Wildlife Branch.

Map 1
2003 Moose Recruitment Survey Area
Mayo Moose Management Unit

Scale 1:1,250,000
 5 0 5 10 15 20 25 Kilometers
 Albers Equal Area projection (NAD83; standard parallels: 61°40'N & 68°00'N)

- Mayo MMU**
-  Mayo MMU
 -  Recruitment Survey Area
 -  Game Management Subzone



DIGITAL DATA SOURCES AND DISCLAIMERS

Digital Chart of the World (DCW) compiled by the U.S. Defense Mapping Agency at 1:1,000,000.

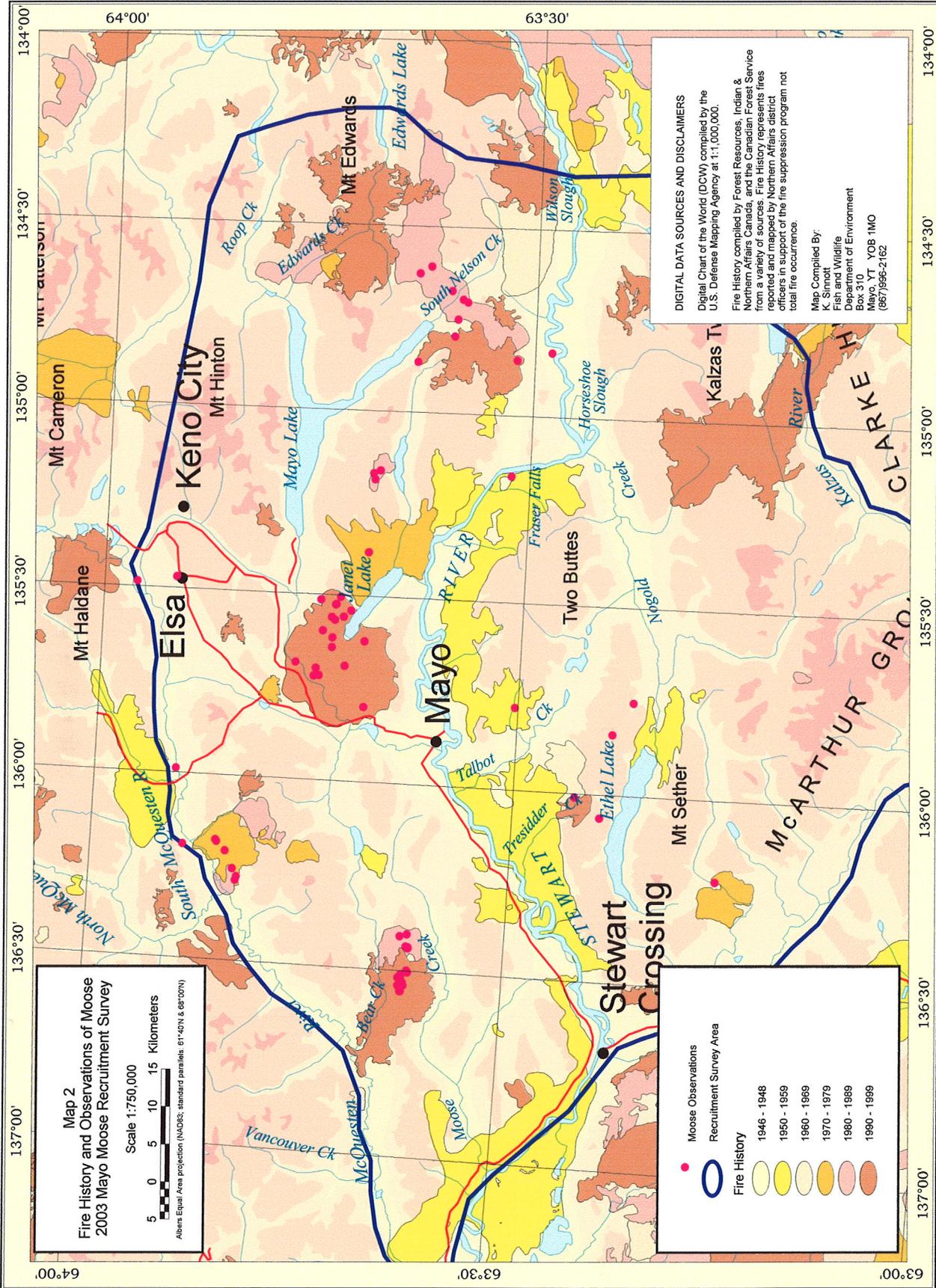
Game Management areas compiled by Yukon Renewable Resources against 1:1,000,000 DCW.

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STUDY AREA

The Mayo recruitment survey area is within the Mayo, Lower Macmillan River, and Upper Klondike Highway Moose Management Units (see Map 1). The northern boundary runs from the mouth of the McQuesten River, up river to Hansen Lakes, and over to Tiny Island Lake. The eastern border runs roughly south from there to Big Kalzas Lake. The southeastern border runs from Big Kalzas Lake down the Kalzas River to the Macmillan River, and the southwestern border follows the Little Kalzas River, Crooked Creek, and the Stewart River back to the mouth of the McQuesten River.

Most of the study area is considered suitable moose habitat, except for large water bodies and land over 1,524 m (5,000 feet) in altitude. The study area consists mostly of rolling hills and plateaus, dissected by numerous creeks, in the drainages of the Stewart, Macmillan, and McQuesten Rivers. Most of the area is forest-covered with black and white spruce, lodgepole pine, aspen, and paper birch. Willow and dwarf birch shrub habitats, alpine tundra, and unvegetated rocky areas typify the higher plateaus, scattered throughout the study area, and the mountainous areas in the northeastern (the Keno Hill area) and southern (MacArthur Range) parts of the survey area. Old and recent burns occur throughout the study area (see Map 2), and these vary in quality as moose habitat. The most recent large fires were a 141 km² burn east of Mayo Lake and a 90 km² burn around Conservative Ridge (north of Moose Creek) in 1998, a 73 km² burn south of the Nelson Arm on Mayo Lake and a 279 km² burn west of Big Kalzas Lake in 1994, and a 183 km² burn north and west of Janet Lake in 1990.



METHODS

Due to budget constraints this year, we did not repeat the 30-block low-intensity moose survey that we conducted in the Mayo area in 2001 and 2002. Instead, we conducted a moose recruitment survey based on the methods and survey area used in the late-winter surveys of 1993-1999. While we were unable to calculate abundance, as is possible with a 30-block aerial survey, we were still able to estimate the proportion of calves in the population.

Late-winter moose recruitment surveys are sometimes described as "high grading" surveys, as we focus our search areas where we expected to find concentrations of moose. The location of each group of moose was recorded with a GPS. Moose were classified as adults or calves. No attempt was made to distinguish between yearlings and older age classes or between bulls and cows.

We used Super Cubs because of their maneuverability and low air speed. Typically, we flew about 130-160 kilometres per hour and 100 metres above ground level. Flight lines were carefully recorded on both the survey map and with a handheld GPS.

WEATHER AND SNOW CONDITIONS

The weather and snow conditions were generally good for this survey. Temperatures ranged from - 39°C to - 13°C. We were able to fly on all days, although we were restricted to shorter days because of high winds one day, and cold temperatures the next day. All three days were windy and had bright light conditions. Tracking was difficult, as the most recent snowfall was about ten days prior to the start of the survey. The overall snow depths in the survey area were mostly below normal this winter; at the beginning of March, snow depths ranged from about 55 percent of normal in Mayo to 115 percent of normal on Galena Hill near Elsa. The average for the whole Stewart River basin was estimated to be 91 percent of normal (D.I.A.N.D. 2003).

RESULTS AND DISCUSSION

Coverage

Over the three days, our total search time was 11.2 hours. We concentrated our flying along the McQuesten and Stewart River valleys, up creek draws, along ridgelines, and through old burns (see Map 3). An additional 7.1 hours was needed to ferry back and forth to Mayo, and between Mayo and Whitehorse.

Observations of Moose

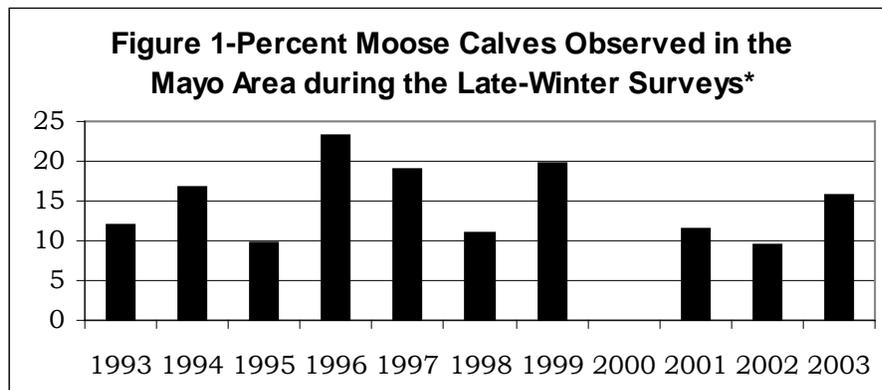
We counted a total of 89 moose, 75 of them adults and 14 of them calves (see Table 1). We did not try to determine the sex of most adults because the bulls had dropped their antlers. We observed an average of 0.13 moose per minute.

Table 1. Observations of moose during the March 2003 Mayo Moose Recruitment Survey.

Observations	Total
Number of Bulls	0
Number of Cows	14
Number of Unidentified Adults	61
Number of Calves	14
Total	89

Ages of Moose

Sixteen percent of the moose counted were calves. This is higher than the 15% generally needed to replace adults dying in the population. Survival of calves in the Mayo area has been variable since 1993, with a long-term average of 14.8% calves in the population (see Figure 1).



* No data were collected in late winter, 2000. In 2001 and 2002, we could also calculate estimates of the total percentages of calves in the population—13% and 12%, respectively—because of revised survey methods.

Distribution and Abundance of Moose

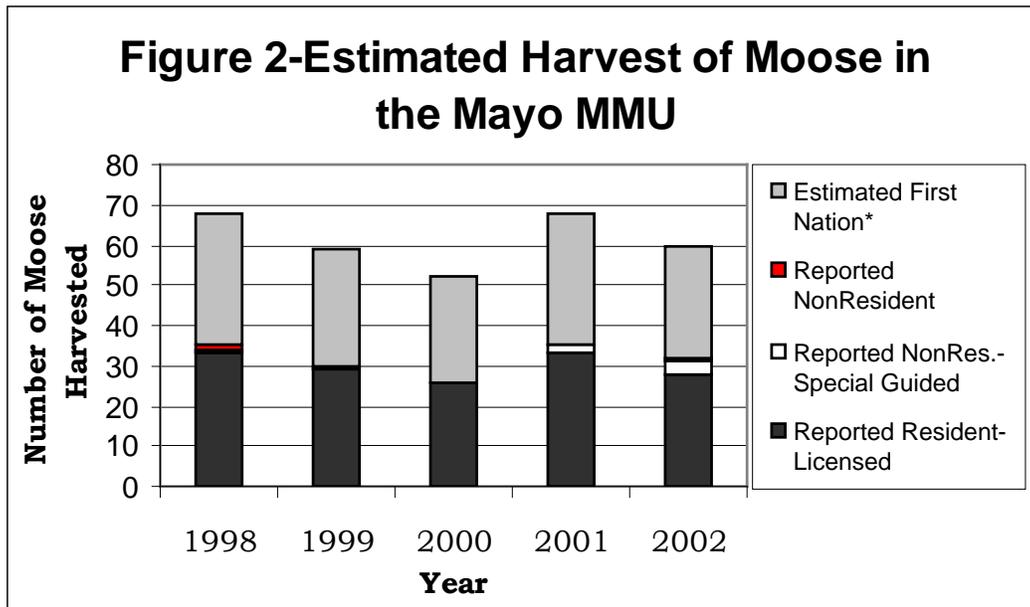
This is the second year in a row in which moose were more widely distributed than was the case two years ago, when more were concentrated near rivers and creek bottoms. Snow depths were similar to last year, and they were considerably less than the long term-average. We spotted most moose in old burns, and on mid- and lower slopes along rivers and creek valleys (see Map 2).

The main purpose of late-winter surveys is to give us estimates of recruitment, or the proportion of calves surviving through their first year. Unlike our new survey method, which separates high and low quality habitat blocks, we cannot calculate abundance of moose when conducting recruitment surveys.

Late-winter surveys, such as we conducted this year, will be used primarily to gather information about recruitment, and we will rely on early-winter surveys for our best estimates of abundance. The next early-winter survey of moose in the Mayo area is planned in 2006 (Mayo Moose Management Unit). We will also conduct a late-winter survey to measure recruitment again next year in 2004.

Harvest

The reported harvest of moose by licensed hunters in the Mayo Moose Management Unit, during the last 5 years for which we have complete records (1998 to 2002), averaged about 32 moose per year (see Figure 2). We don't have complete harvest data from First Nation hunters. For the purpose of estimating total harvest levels though, we can assume that harvest by First Nation hunters is about equal to that by resident licenced hunters—based on local knowledge, this is probably approximately the case. Using our latest estimates of moose density from early-winter surveys, we estimate that the annual harvest is presently at about 3.5% of the total moose population in the Mayo Moose Management Unit. This is near the recommended maximum allowable harvest rate of 4% for this area. Given that we do not have complete data on harvest by First Nation hunters, these estimates of harvest may not be accurate. This does, however, point out the need for gathering good harvest data in this area so we can make sure that harvest remains within sustainable limits.



* For the purpose of estimating total harvest levels, we can assume that harvest by First Nation hunters is about equal to that by resident licenced hunters.

CONCLUSIONS AND RECOMMENDATIONS

- ❖ Moose recruitment in the Mayo area in 2003 was slightly higher than the level generally considered necessary to maintain stable numbers. Annual calf survival has varied considerably in the Mayo area and the longer-term average from 1993 to 2003 appears adequate.
- ❖ Harvest of moose in the Mayo area is likely near the maximum recommended allowable rate.
- ❖ We should continue to monitor the status and harvest of the moose population in the Mayo area closely.

Acknowledgments

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