

2005 AERIAL MOOSE SURVEY
DENALI NATIONAL PARK AND PRESERVE

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Abstract

We estimated the number of moose (*Alces alces*) in the Cantwell and Yentna areas in Denali National Park and Preserve. The 1,023 km² (395 mi²) Cantwell area was surveyed from 28 November through 1 December 2005. In the Cantwell area we observed 257 moose during the aerial survey. Overall density was 0.25 moose/km² (0.65 moose/ mi²). The calf:bull:cow ratio was 19:47:100. We estimated that 82% of cows were without calves, 17% of cows had 1 calf, and 1% of cows had 2 calves present. The 1,918 km² (740 mi²) Yentna area was surveyed from 28 November through 1 December 2005. In the Yentna area we observed 41 moose during the aerial survey and estimated (\pm 90% confidence interval [CI]) 42 ± 4 moose for the entire survey area. Overall density was 0.02 moose/km² (0.06 moose/ mi²). The calf:bull:cow ratio was 11:40:100. We estimated that 93% of cows were without calves, 3.6% of cows had 1 calf, and 3.8% of cows had 2 calves present.

Introduction

This project is part of the long term monitoring program at Denali National Park & Preserve. Denali is part of the larger Central Alaska Network (CAKN) monitoring program and follows protocols developed by that program. Information generated by this program is used in management decisions relative to park resource preservation, improving our understanding of taiga and tundra ecosystems in interior Alaska, and representing an intact, naturally-functioning subarctic site in broad-based monitoring networks. This report describes accomplishments made in FY2005 to aid in determining moose population status and trends in Denali. The objective of this aerial survey was to estimate the number of moose in two areas of Denali National Park & Preserve.

Study Area

The survey was conducted on the south side of the Alaska Range Mountains within Denali National Park & Preserve. The Cantwell survey area was bounded roughly by the West Fork Chulitna river and the park boundary on the south, the Parks Highway on the east, and roughly the 3500 ft. contour on the north and west. The Cantwell study area totaled 1,023.3 km² (395.1 mi²). The Yentna survey area was bounded roughly by the park boundary on the east and south, and roughly the 3500 ft. contour on the north and west. The study area included the East and West Forks of the Yentna river and Fourth of July creek drainages. The Yentna study area totaled 1,917.6 km² (740.4 mi²).

Methods

We used a spatial moose survey estimation method developed by Ver Hoef (2000b, 2000c) to survey for moose in the study area. Moose survey units were based on a statewide grid utilizing GIS technology to lay out the sample units. The north-south boundaries are based on even increments of latitude (2 minutes, starting at 0) and the east-west boundaries are based on even increments of longitude (5 minutes, starting at 0). Each sample unit is approximately 15.3 km² (5.91 mi²). Because all units in the Cantwell area were surveyed the units were not stratified. Without stratification the Geo Technique (ADF&G, 2004) population estimate could not be calculated for this area nor could confidence intervals for the Gasaway (1986) population estimate be determined. Sample units in the Yentna area were stratified into one of two density strata (high or low) based stratification flights conducted prior to the survey on 21 and 26 November. Population estimates and ratios for

the Yentna survey data were analyzed using Geo Technique (ADF&G, 2004). All estimates for the Yentna survey are reported with \pm 90% confidence interval.

Results and Discussion

Cantwell Area

The Cantwell survey was conducted from November 28 through December 1, 2005. Snow conditions were generally good throughout the survey area. We surveyed 66 units which comprised 1023 km² or 100% of the study area.

We observed 257 moose during the survey. The calf:bull:cow ratio was 19:47:100. Calves, bulls, and cows represented 12%, 28%, and 60% of the population, respectively. We estimated that 82% of cows were without calves, 17% of cows had 1 calf, and 1% of cows had 2 calves present. Overall estimated moose density was 0.25/km² (0.65 moose/mi²). Moose density in this area has been declining since the 1980's but estimated density for this survey is similar to that calculated for the area in 2003.

Yentna Area

The Yentna survey was conducted from November 29 through December 1, 2005. Snow conditions were good throughout the survey area. In the Yentna area we surveyed 112 units (12 high, 108 low) which comprised 1790 km² (93%) of the study area.

We observed 41 moose in the area and estimated 42 ± 4 moose. The calf:bull:cow ratio was 11:40:100. Calves, bulls, and cows represented 7%, 27%, and 66% of the estimated population, respectively. We estimated that 93% of cows were without calves, 3.6% of cows had one calf, and 3.8% of cows had 2 calves present. Overall estimated moose density for the Yentna area was 0.02 moose/ km² (0.06 moose/mi²). Moose density in this area has been declining since the 1980's. This year's estimated density is substantially lower than that for the last survey conducted in this area in 1996 (0.5 moose/mi²).

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Figure 1. 2005 Denali National Park and Preserve Moose Survey, Cantwell units.

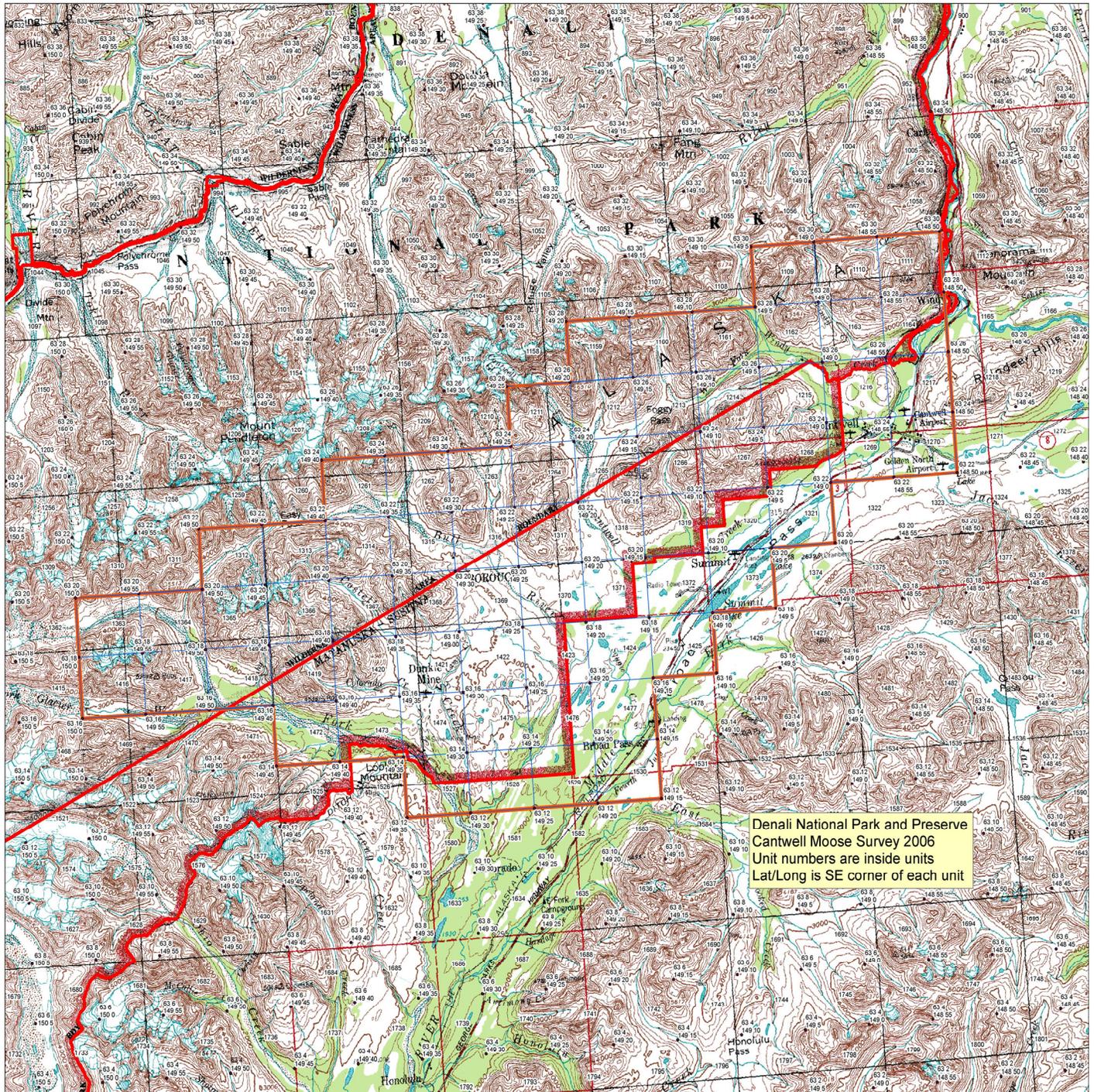


Figure 2. 2005 Denali National Park and Preserve Moose Survey, Yenta units.

