

**Alaska Department of Fish and Game
Division of Wildlife Conservation
2007**

Distribution, movements, and survival of muskoxen in northeastern Alaska

Stephen M. Arthur

**Research Annual Performance Report
1 July 2006–30 June 2007
Federal Aid in Wildlife Restoration
Grant W-33-5
Project 16.10**

This is a progress report on continuing research. Information may be refined at a later date.

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**FEDERAL AID
ANNUAL RESEARCH PERFORMANCE REPORT**

ALASKA DEPARTMENT OF FISH AND GAME
DIVISION OF WILDLIFE CONSERVATION
PO Box 115526
Juneau, AK 99811-5526

PROJECT TITLE: Distribution, movements, and survival of muskoxen in northeastern Alaska

PRINCIPAL INVESTIGATOR: Stephen M. Arthur

COOPERATORS: None

FEDERAL AID GRANT PROGRAM: Wildlife Restoration

GRANT AND SEGMENT NR.: W-33-5

PROJECT NR.: 16.10

WORK LOCATION: Central North Slope

STATE: Alaska

PERIOD: 1 July 2006 – 30 June 2007

I. PROGRESS ON PROJECT OBJECTIVES SINCE PROJECT INCEPTION

This project is only 1 year old.

II. SUMMARY OF WORK COMPLETED ON JOBS IDENTIFIED IN ANNUAL PLAN THIS PERIOD

JOB/ACTIVITY 1: Estimate annual birth rates for muskox cows.

Nine adult muskox cows were captured and radiocollared during late March 2007. No muskox died as a direct result of capture activities. In addition to 11 muskox already collared, a total of 20 cows were monitored during spring and summer 2007. These cows represented 8 groups. Muskox in these groups were classified according to age and sex during early April, when there were approximately 70 adult cows in the population. Repeated observations of muskox groups during spring indicated that at least 28 calves were born, and minimum estimated parturition rate was 40%. In addition, blood samples were obtained from 5 muskox captured in late March, 2 (40%) of which were pregnant based on serum progesterone levels.

JOB/ACTIVITY 2: Estimate annual calf recruitment through late June.

Number of calves was assessed by aerial radiotracking muskox groups and with a ground-based age/sex composition survey conducted in mid June. At this time, 15 calves were present, representing 46% of the minimum estimated number of births.

JOB/ACTIVITY 3: Determine rates and causes of mortality of muskox during April–June.

Muskox groups were observed by aerial radiotracking approximately weekly during April–mid June and the numbers of adults and calves were recorded. Two calves died soon after birth in April. One of these was necropsied, and found to have severe pneumonia. The other was scavenged before samples could be obtained, but cause of death was not predation. Thirteen other calves disappeared during periods when grizzly bears were present near the groups. During April, 2 recently-collared adult cows and one uncollared bull were found dead, apparently killed by bears. One other collared cow was apparently killed by a bear during May, and 2 collared cows and 1 uncollared subadult bull were found dead due to disease and/or poor nutrition. In addition, eyewitnesses reported that 3 newborn (<2 days old) calves were killed by a single bear near Deadhorse during late May.

JOB/ACTIVITY 4: Evaluate relative importance of mortality of adult cows vs. calves.

Survival and productivity data were collected for use in future population models.

JOB/ACTIVITY 5: Monitor movements of muskox to evaluate habitat use and range fidelity.

Muskox locations were recorded during weekly radiotracking flights. GPS collars were not utilized as originally planned, because funding for this work was not available.

JOB/ACTIVITY 6: Determine effective methods for monitoring muskox abundance using aerial surveys.

Data on distribution and movements of muskox groups will be used to determine the most effective design and timing for aerial surveys.

JOB/ACTIVITY 7: Analyze and publish results.

No activity during this period.

III. ADDITIONAL FEDERAL AID-FUNDED WORK NOT DESCRIBED ABOVE THAT WAS ACCOMPLISHED ON THIS PROJECT DURING THIS SEGMENT PERIOD

Blood and tissue samples from captured muskox and from carcasses of muskox that died were analyzed for occurrence of various pathogens and concentrations of trace minerals. Pathogens found or suspected include *Chlamidiophila*, *Pasturella trehalosi*, *Brucella*, Parapox virus, Parainfluenza3, and Bovine Viral Diarrhea. In addition, concentrations of copper were found to be low and 1 cow that died showed symptoms of cobalt deficiency.

IV. PUBLICATIONS

None.

V. RECOMMENDATIONS FOR THIS PROJECT

Increased monitoring of radiocollared muskox and the collection of additional blood and tissue samples for disease and nutritional analyses are needed to ascertain the relative

importance of disease, nutrition, and predation as potential causes of the declining muskox population in Units 26B and 26C.

VI. **APPENDIX**

None

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APPROVAL DATE: _____