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

ANNUAL SURVEY AND INVENTORY

STATE: Alaska **GRANT AND SEGMENT NO.** W-33-10

PROJECT NO. 16.0

PERIOD: July 1, 2011 – June 30, 2012

PROJECT LOCATION: RIII and RV

PROJECT TITLE: The Status of Alaska Musk Ox and Factors Influencing their Populations.

REPORT DESCRIPTION: This performance report describes musk ox survey and inventory activities. Activities are listed by game management unit.

Region III Activities:

ACTIVITY 1: Prepare a muskox management report.

Completed preparation of muskox management report.

ACTIVITY 2: Monitor natural mortality and analyze natural mortality data.

Monitered and analyzed natural mortality including three adult muskoxen killed by brown bears in April 2012 and additional calves also killed by brown bears.

ACTIVITY 3: Provide muskox management information to State and Federal regulatory processes

Provided information to 2 State fish and game advisory committees, the Alaska Board of Game, and 2 Federal regional advisory councils.

Activities by Unit:

Unit 26B and 26C:

ACTIVITY 1: Determine distribution and percent calves in Unit 26B during June.

Determined distribution of muskox groups in Unit 26B during June via radiotracking flights; and determined preliminary percent calves.

ACTIVITY 3: Capture approximately 5 muskox to deploy radiocollars and maintain an adequate sample size of collared animals for surveys

No muskoxen captured due to weather; 175 muskoxen classified in April 2012 resulting in 41 bulls > 3 years old:100 cows > 2 years old and 31 yearlings:100 cows > 2 years old.

ACTIVITY 4: Conduct a census.

Conducted a census in April 2012, and observed 191 muskoxen.

Submitted by: Roy A. Nowlin, Region III Management Coordinator

Region V Activities:

ACTIVITY 1: Provide information to State and Federal regulatory processes on muskox management.

Area management staff reviewed State and Federal regulatory proposals, attended regulatory process meetings, and presented muskox information to the State Board of Game, State Fish and Game Advisory Committees, Federal Subsistence Board, and Federal Subsistence Regional Advisory Councils.

Activities by Unit:

Unit 18:

ACTIVITY 1: Conduct annual aerial censuses of the Nunivak and Nelson Island populations to estimate population size and determine age-sex composition.

In October 2011, we counted 452 musk ox on Nunivak Island using fixed-wing aircraft. No survey was conducted on Nelson Island during this reporting period. This census were flown using a fixed-winged aircraft so the animals were classified as mature bulls, cows, long yearlings or calves.

ACTIVITY 2: Monitor the population size, distribution, and dispersal of musk ox onto the mainland through location of radio-collared animals, aerial surveys, harvest reporting, contacts with the public, and field observations.

We talked with residents, local pilots and USFWS personnel about incidental sightings of muskox on the mainland for this reporting period. A minimum count of 98 was established on Unit 18 mainland.

ACTIVITY 3: Monitor hunting and other mortality factors through harvest reporting, contacts with the public, and field observations.

Thirty-five muskox were harvested on Nelson Island during the report period; 20 were bulls and 15 were cows. Thirty-six musk ox were harvested on Nunivak Island during this period; 31 bulls and 5 cows.

ACTIVITY 4: Work with local Advisory Committees, village representatives, and other agencies to promote the establishment of a huntable musk ox population on the mainland.

We discussed muskox at the Lower Kuskokwim and Central Kuskokwim Advisory committee meetings.

ACTIVITY 5: Work with local residents to rescue stranded muskoxen as needed and reduce kills of nuisance animals.

No work was completed toward this activity during this reporting period because the discussion on stranded muskox was not brought up during the meetings.

ACTIVITY 6: Capture, collect samples, and radiocollar female muskoxen in Unit 18 to determine body condition and disease profiles and to determine seasonal movements of mixed sex-age groups. Up to 10 animals will be captured and collared in March and April. (All animal capture activities will follow the protocols established in the ADF&G Division of Wildlife Conservation "Animal Welfare Policy" and its wildlife capture and restraint manual.)

No capture work was conducted during this reporting period due to lack of availability of capture aircraft (R44 helicopter).

ACTIVITY 7: Continue to develop and utilize the ongoing cooperative muskox management plans (such as the Nelson *Island Muskox Herd Cooperative Management Plan*) in cooperation with the public and other agencies.

Except for Advisory Committee meetings, during the reporting period we did not hold any public meetings where muskoxen were discussed.

Units 22 and 23SW (the portion of Unit 23 west of and including the Buckland River drainage):

ACTIVITY 1: Census muskox and evaluate population sex/age composition at least once every 2 years (next census scheduled for 2012).

January to April 2012. We used fixed wing aircraft to estimate muskox numbers on the Seward Peninsula. Staff completed a distance sample muskox survey technique to estimate abundance of Seward Peninsula muskox. The count estimated 2223 (95% CI: 1971 to 2660) in the area of the Unit 22 and 23SW west of and including the Buckland River drainage. The abundance estimates for individual subunits throughout the Seward Peninsula are:

84 (95% CI: 58 to 139) in Unit 22A north of the Unalakleet River,
80 (95% CI: 49 to 150) in Unit 22B east of the Darby Mountains,
380 (95% CI: 332 to 452) in Unit 22B west of the Darby Mountains,
289 (95% CI: 247 to 355) in Unit 22C,
208 (95% CI: 169 to 279) in Unit 22D Kuzitrin River Drainage,
77 (95% CI: 58 to 108) in Unit 22D Southwest,
344 (95% CI: 298 to 414) in Unit 22D Remainder,
431 (95% CI: 362 to 549) in Unit 22E,
222 (95% CI: 171 to 319) in Unit 23SW, west of the Buckland River Drainage,
110 (95% CI: 84 to 159) in Unit 23SE, east of the Buckland River Drainage.

The previous census, completed in 2010, found 3120 muskox in Unit 22 and Unit 23SW.

ACTIVITY 2: Conduct on-ground age/sex composition surveys during March/April and/or summer months to determine population structure and yearling recruitment in selected portions of the Seward Peninsula.

March and April 2012. We used an R-44 helicopter to conduct an age/sex composition survey in Units 22A, 22B, 22C, 22D, 22E, 23SW, and 23SE. We observed 1447 muskoxen in 89 groups and classified 216 bulls 4-years-old or older (15%), 84 3-year-old bulls (6%), 76 2-year-old bulls (5%), 574 cows 4-years-old or older (40%), 164 3-year-old cows (11%), 108 2-year-old cows (7%), 169 yearlings (12%) and 56muskoxen were unclassified (4%). This is the first survey staff collected composition data from the entire muskox population. Previous surveys collected data from only 1-3 subunits annually.

ACTIVITY 3: Capture, collect samples, and radiocollar female muskoxen in Units 22B, 22C, and 22D to determine body condition and disease profiles and to determine seasonal movements of mixed sex-age groups. Up to 10 animals will be captured and collared in either November or March/April. (All animal capture activities will follow the protocols established in the ADF&G Division of Wildlife Conservation "Animal Welfare Policy" and its wildlife capture and restraint manual.)

Muskoxen were not captured during the reporting period. The next scheduled capture project is October 2012.

ACTIVITY 4: Monitor distribution, and movements of musk ox through location of radio-collared animals, aerial surveys, harvest reporting, contacts with the public, and field observations.

Seasonal movements of previously collared muskoxen were monitored using weekly fixed-wing aircraft telemetry flights; however several flights were missed due to poor flying weather common along the southern Seward Peninsula coast. During winter, collar locations were associated with wind-swept ridge-tops free of deep snow. After snow-melt and during calving, muskoxen were observed at down-slope locations in proximity to lush, and more fertile, river bottoms where browse included grasses and willows exposed from melting snow and ice. Telemetry flights found that radiocollared muskoxen increased their movements throughout the summer as collared muskoxen moved seasonally between Units 22DSW, 22C, 22B, and 22D Remainder. These movements support census results that suggest muskoxen groups make annual movements between subunits and managers should consider a broader based geographical approach to hunt management if human harvest patterns allow.

Six adult female muskox died during the 2011 calendar year, and no collars failed or were missing during the radio-tracking interval yielding an estimated 22% annual mortality rate 95% C.L. (8.60% to 42.26% n=27). Mortality estimates of adults are likely conservative from the perspective of the population because the collared cohort, adult females, is likely to have higher survival rate than any other age-sex grouping.

This small sample of collared muskoxen represents approximately 1% of the Seward Peninsula population as of 2012, and is not randomly distributed throughout the population, so localized events such as icing, or different predator regimes may preclude the use of this mortality rate as representative of the entire population. Lastly, the selection of animals for capture is not truly random, as obviously injured or diseased animals were intentionally not selected.

ACTIVITY 5: Examine dead muskoxen to look for causes of death, disease, mineral deficiencies, and contaminants.

Staff visited both radio collared and non collared muskox and collected samples to look for causes of death. Muskox carcasses are quickly scavenged on the Seward Peninsula so samples are not always possible to collect. Staff determined that one radio collared muskox in Unit 22C died from brown bear predation.

ACTIVITY 6: Collect tooth samples from muskox harvested in Unit 23 Southwest to help determine age-structure of harvested animals.

Hunters voluntarily submit tooth samples. These samples are cataloged and will be used to assess the age of the harvested animals.

ACTIVITY 7: Participate in Seward Peninsula Muskox Cooperators Group meetings and facilitate exchange of information and ideas between agencies and user groups.

The Seward Peninsula Muskox Cooperators Group has not met since January 2008. Information related to on-going hunt management has been made available to the Cooperators Group (through the Chair) and another meeting will likely occur in the future.

ACTIVITY 8: Monitor hunting and other mortality factors through harvest reporting, contacts with the public, and field observations.

Hunting was by Tier I subsistence permits in Units 22B, 22C, 22D, 22E, and 23SW. We monitored Tier I hunts and issued emergency orders to close seasons in Unit 22C and eastern portions of Unit 22D (RX099), and western portions of Unit 22D (RX104). Drawing hunts were administered in Units 22D and 22E, but emergency orders were not issued because harvest is limited by the number of permits issued to hunters in the draw process.

The 2011 harvest quota for Seward Peninsula muskox hunts was 134 muskox and hunters harvested 111 muskox or 83% of the quota.

ACTIVITY 9: Work with local reindeer herders to identify and minimize conflicts between reindeer and muskoxen in an effort to conserve muskoxen and allow for population growth and expansion.

Activities related to reindeer herding occurred in Units 22 and 23SW. Nome staff provided information for the annual Reindeer Herders Association meeting.

ACTIVITY 10: Encourage cooperation and sharing of information among agencies and users of the resource in developing and executing management and research programs.

Nome staff works closely with BLM and NPS staff to coordinate management activities. Staff attended Seward Peninsula Regional Advisory meetings and reported on muskox population status and hunt administration.

ACTIVITY 11: Provide hunter orientation materials for registration and drawing permit muskox hunters in Units 22/23SW.

Department staff used in-person and telephone interviews and web-based orientation information on the ADF&G website to provide hunters and the public with muskox identification, sex and age classification and hunting information. Staff distributed a previously completed hard copy muskox identification booklet for use by hunters and wildlife viewers during the reporting period; it is available to public from ADF&G offices.

Units 23NW, and 26A:

ACTIVITY 1: Survey muskox and evaluate population sex/age composition at least once every 3 years in Unit 23NW and southwestern western Unit 26A (Cape Thompson population)**.**

The Cape Thompson population (Unit 23 NW) was not completely surveyed during this sampling period. However, the traditional sampling area was sampled by ADF&G and NPS using distance sampling techniques slightly modified from the Seward Peninsula survey of 2010 and the Cape Thompson population estimate of 2011. The traditional count area estimate was 220 (95% CI 174-309) muskoxen.

ACTIVITY 2: Assist with census projects and conduct muskox composition surveys in eastern Unit 26A (ANWR population).

Biologists from the Fairbanks ADFG office are continuing to look at total numbers, mortality, composition, and health of the ANWR population in Units 26A, 26B, and 26C. The population has virtually disappeared in Unit 26C and has declined in Units 26A and

26B due of bear predation and other causes. The Department has instituted a bear control program to try to arrest this decline. In Unit 26A there were a small and varying number of groups along the Colville River and a group of 23 adults and 8 calves northwest of Teshekpuk Lake in 2012.

ACTIVITY 3: Examine dead muskoxen to look for causes of death, disease, mineral deficiencies, and contaminants.

Three illegally taken muskoxen were sampled and examined in Unit 26A during 2010-2011, but no dead muskoxen or carcasses were found or sampled in Units 23 NW and 26A in 2011-2012.

ACTIVITY 4: Collect tooth samples from muskox harvested in Unit 23 Northwest to help determine age-structure of harvested animals.

Hunters voluntarily submit tooth samples. These samples are compared with hunter assessment of the age of the harvested animal based on horn development.

ACTIVITY 5: Monitor hunting and other mortality factors through harvest reporting, contacts with the public, and field observations.

Unit 23: Seven Tier II muskoxen (TX107) permits were issued (one extra due to application falsification) during the reporting period and five hunters reported hunting; 4 hunters took a bull muskox and one hunter mistakenly harvested a cow.

Unit 26A: All muskox hunts were closed in 2006 in Units 26A and 26B due to declining numbers and remained closed during 2011-2012.

ACTIVITY 6: Use public education to improve understanding of the conservation value of hunting regulations and obtain better harvest data through increased harvest reporting.

We talked to students, hunters and other individuals regarding hunting, wildlife management, and conservation of muskoxen in Units 23 and 26A.

ACTIVITY 7: Encourage cooperation and information exchange among agencies and muskox user groups to develop and implement management objectives.

Unit 23: ADF&G and NPS conducted cooperative composition surveys in August 2011 finding 33 bulls (4 year and older):100 cows (3 year and older) and again in March 2012 finding 23 bulls(4 year and older):100 cows(3 year and older). Composition surveys will be conducted only in the spring in the future.

Unit 26A: We assisted staff from ADF&G Region 3 to conduct the muskox study in Units 26A and 26B. We worked with the North Slope Borough Fish and Game Management Committee to make recommendations for management decisions.

ACTIVITY 8: Record sightings of muskoxen to monitor range use and expansion.

Numerous observations of muskoxen, including latitude and longitude as well as group size, were recorded during wildlife surveys and other activities in Units 23 and 26A. Widely scattered mixed sex/age groups of muskox observed far from their 'core' range suggest muskox are slowly expanding into previously unused range.

Submitted by: Peter Bente, Survey and Inventory Coordinator, Region V
Date: 1 September 2012