ALASKA DEPARTMENT OF FISH AND GAME
DIVISION OF WILDLIFE CONSERVATION
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MUSKOXEN
ANNUAL SURVEY AND INVENTORY

STATE: Alaska

GRANT AND SEGMENT NO. W-33-8

PROJECT NO. 16.0

PERIOD: July 1, 2009 – June 30, 2010

PROJECT LOCATION: Statewide (Region III and V)

PROJECT TITLE: Muskoxen S&I

The Status of Muskox and Factors Influencing Their Populations

Region III:

Regionwide Activities:

ACTIVITY 1: Monitor harvest and analyze harvest data.

Did not monitor harvest because the season was closed.

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

Research project monitored natural mortality and analyzed and shared data.

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 in June 2010 (17%).

ACTIVITY 2: Review information obtained by the U.S. Fish and Wildlife Service (FWS) on population size, and sex and age composition in Unit 26C, and on movements of radio-collared animals.

No muskoxen were in Unit 26C during the report period.

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

No radiocollars deployed in FY10 due to poor weather.

ACTIVITY 4: Conduct a census.

In cooperation with research project, estimated population of approximately 150 adults.

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

Region V:

Regionwide 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.

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 June 2009 we counted 541 muskox on Nelson Island. These censuses were flown using a fixed-winged aircraft so the animals were classified as bulls, cows, 2-year-olds or calves. In October 2009 we counted 567 muskox on Nunivak Island using fixed-wing aircraft.

ACTIVITY 2: Monitor the population size, distribution, and dispersal of muskox onto the mainland through 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 in the winter of 2009 and 2010.

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; 21 were bulls and 14 were cows. Seventy-three muskox were harvested on Nunivak Island during this period; 44 bulls and 29 cows.

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

We discussed muskox at the Lower Kuskokwim, Central Bering Sea and Lower Yukon 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: 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, we did not hold any public meetings where muskox were discussed during the reporting period.

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 2010).

Staff completed a distance sample muskox survey technique to estimate abundance of Seward Peninsula muskox. The count estimated 3120 (95% CI: 2669 to 3692) 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:

52 (95% CI: 30 to 98) in Unit 22B east of the Darby Mountains,
456 (95% CI: 369 to 581) in Unit 22B west of the Darby Mountains,
480 (95% CI: 390 to 610) in Unit 22C,
285 (95% CI: 229 to 368) in Unit 22D Kuzitrin River Drainage,
137 (95% CI: 105 to 199) in Unit 22D Southwest,
532 (95% CI: 440 to 659) in Unit 22D Remainder,
1,092 (95% CI: 913 to 1331) in Unit 22E, and
193 (95% CI: 148 to 270) in Unit 23SW, west of the Buckland River Drainage.

The previous census, completed in 2007, found 2,688 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.

In March and April 2010 we used an R-44 helicopter to conduct an age/sex composition survey in Units 22B, 22D, 22E, and 23SW. We observed 215 muskoxen in Unit 22B and classified 36 bulls 4-years-old or older (17%), 7 3-year-old bulls (3%), 12 2-year-old

bulls (6%), 98 cows 4-years-old or older (46%), 21 3-year-old cows (10%), 8 2-year-old cows (4%), 30 yearlings (13%) and 3 muskoxen were unclassified (1.4%). We observed 259 muskoxen in Unit 22D and classified 68 bulls 4-years-old or older (26%), 18 3-year-old bulls (7%), 12 2-year-old bulls (5%), 105 cows 4-years-old or older (41%), 22 3-year-old cows (8%), 9 2-year-old cows (3%), 23 yearlings (9%) and 2 muskoxen were unclassified (1.0%). We observed 363 muskoxen in Unit 22E and classified 84 bulls 4-years-old or older (23%), 17 3-year-old bulls (5%), 19 2-year-old bulls (5%), 137 cows 4-years-old or older (38%), 27 3-year-old cows (7%), 22 2-year-old cows (6%), 53 yearlings (15%) and 3 muskoxen were unclassified (1.0%). We observed 157 muskoxen in Unit 23SW and classified 18 bulls 4-years-old or older (11%), 4 3-year-old bulls (3%), 5 2-year-old bulls (3%), 66 cows 4-years-old or older (42%), 29 3-year-old cows (18%), 13 2-year-old cows (8%), 17 yearlings (11%) and 5 muskoxen were unclassified (3.0%). Also, we used an R-44 helicopter to conduct an age/sex composition survey in Units 22E during an additional time periods (August 2009), with the following results:
August 2009. We observed 282 muskoxen in Unit 22E and classified 39 bulls 4-years-old or older (14%), 8 3-year-old bulls (3%), 21 2-year-old bulls (7%), 42 cows 4-years-old or older (36%), 12 3-year-old cows (10%), 5 2-year-old cows (4%), 15 yearlings (13%), 19 calves (16%), and 0 muskoxen were unclassified (0.0%).

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 March and April.

Muskoxen were not captured during the March/April period; this work has been rescheduled to October 2010 when up to 20 animals will captured.

Seasonal movements of previously collared muskoxen were monitored using biweekly 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.

One collared adult female died during the 2009 calendar year, and no collars failed or were missing during the radio-tracking interval yielding an estimated 4% annual mortality rate 95% C.L. (0.11% to 21.95% n=23). This is lower than the previous estimate based on 3 mortalities of collared adult females during the 2008 calendar year (9% annual mortality rate; 95% C.L. (1.07% to 28.04%; n=23). 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 less than 1% of the Seward Peninsula population as of 2010, 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 4: 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 compared with hunter assessment of the age of the harvested animal based on horn development.

ACTIVITY 5: 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 have 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 6: 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 success rates of permitees, as follows: 55% success in the RX099 hunt which included Unit 22C, 22D Southwest, and 22D Kuzitrin Drainage (48 of 88 permits); 69% success in the RX104 hunt which included Unit 22D Remainder and Unit 22E (47 of 68 permits), 67% success in the RX105 hunt which included Unit 22B (14 of 21 permits), and 63% success in the RX106 hunt which included Unit 23SW, west of the Buckland River drainage (17 of 27 permits).

Drawing hunts were administered in Units 22C, 22D, 22E, and 23SW and success rates were determined, as follows: 100% success in Unit 22C (2 of 2 permits); 100% in Unit 22D (7 of 7 permits); 93.75% in Unit 22E (15 of 16 permits), and 100% in Unit 23 SW (1of 1 permit).

ACTIVITY 7: 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 8: 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 9: 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 completed a hard copy muskox identification booklet for use by hunters and wildlife viewers during the reporting period, and will be available to the public in 2010.

Units 23NW and 26A:

ACTIVITY 1: Census muskox and evaluate population sex/age composition at least once every 3 years in Unit 23NW**.**

A minimum count of muskoxen in the Cape Thompson population was completed in January and February. The traditional count area contained 296 muskoxen.

ACTIVITY 2: Coordinate with researchers from Region 3 to census and conduct muskox composition surveys in eastern Unit 26A (ANWR population).

Biologists from the Fairbanks ADFG office are conducting a study of total numbers, mortality, composition, and health assessment of the ANWR population. There was a fairly high level of calf and adult mortality due of bear predation and other causes. There was a high level of disease among the animals that were sampled. In Unit 26A there are a small and varying number of groups along the Colville River and a group of 15 adults and 8 calves northwest of Teshekpuk Lake in 2010.

ACTIVITY 3: Conduct muskox distribution surveys periodically (every 2-3 years) in selected portions of Unit 26A to document range expansion of the population.

We surveyed high probability areas in the western portion of Unit 26A during June and July of 2009. We found 108 muskoxen (81 adults and 27 calves). In addition we found that a group on the upper Colville River had increased from 27 muskoxen (21 adults and 6 calves) in 2009 to 33 muskoxen (26 Adults and 7 calves) in 2010. These counts indicate an eastward expansion of the Cape Thompson Population into Unit 26A.

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: Six Tier II muskoxen (TX107) permits were issued during the reporting period and six hunters reported hunting; 3 hunters each took a bull muskox. One additional muskox was harvested illegally.

Unit 26A: All muskox hunts were closed in 2006 in Units 26A and 26B due to declining numbers and remained closed during 2009-2010.

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 2009 finding 39 bulls(4 year and older):100 cows(3 year and older) and again in March 2010 finding 68 bulls(4 year and older):100 cows(3 year and older). These data are not directly comparable and the change in observed bull cow ratios likely demonstrates the decreased sightability of bulls in summer. For this reason, composition surveys will be conducted in the spring in the future. ADF&G also provided data from the February 2010 minimum count to NPS to facilitate exchange of population information.

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 Muskox Working Group 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.

ACTIVITY 9: Evaluate whether muskox population growth will adversely affect resident reindeer and caribou populations.

In both Units 23 and 26A we noted and photographed several instances of caribou and muskoxen grazing peacefully in close proximity to each other. We noted reports by local residents of muskoxen displacing caribou.

Submitted by: Peter Bente, Survey and Inventory Coordinator, Region V