FEDERAL AID
ANNUAL PERFORMANCE REPORT

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

MOOSE
ANNUAL SURVEY AND INVENTORY

STATE: Alaska **GRANT AND SEGMENT NO.** W-33-7

PROJECT NO. 1.0

PERIOD: 1 July 2008 – 30 June 2009

PROJECT LOCATION: Statewide

PROJECT TITLE: The Status of Moose and Factors Influencing Their Populations

REPORT DESCRIPTION: This performance report describes moose survey and inventory activities. Regionwide activities are listed before specific activities by game management unit.

The Status of Moose and Factors Influencing Their Populations in Region I

Regionwide Activities:

ACTIVITY 1: Monitor the harvest through analysis of registration, Tier II, and drawing permit data including collection of incisors for aging and photos of antlers.

Unit 1A: 2 bull moose were taken along the Unuk River drainage.

Unit 1B: 27 incisors and 27 antler photos were obtained from 27 bulls harvested. Information on days of effort, and location of successful and unsuccessful hunts was collected from all hunters via permit hunt reports.

Unit 1C: 62 moose (52 bulls, 10 cows) were harvested. Hunter effort was collected from all hunters via their permit hunt reports. Incisors were collected for aging from all but a few of the moose, and antler photos were taken of most of the bulls.

Unit 1D: 30 bulls were harvested. Hunter effort and harvest data was collected from all hunters via their permit hunt reports. Incisors, antler measurements, antler point counts, and antler photos were collected from each of the harvested bull moose.

Unit 3: 34 bulls were harvested, incisors and 34 antler photos were obtained from 34 bulls harvested. Seven of the bulls were taken under the newly initiated "any-bull" draw hunt. Information on days of effort, and location of successful and unsuccessful hunts was collected from all hunters via permit hunt reports.

Unit 5: 44 bull moose (35 in 5A, 9 in 5B) were harvested throughout the unit. Hunter effort and harvest data was collected from all hunters in unit 5A via their joint state/federal permit hunt reports, and in 5B via their state registration permit hunt report. Incisors were collected from all harvested bull moose.

ACTIVITY 2: Collect anecdotal information about Region I moose populations through contacts with hunters.

Staffs in Douglas and those in the outer offices of Haines and Yakutat discussed moose management with hunters during the permitting process as well as when hunters dropped off their moose jaws and/or hunt reports. In addition, Douglas staff spent time in the field at Gustavus and Haines during the moose hunts to collect samples and to interact with hunters and to discuss moose populations and moose management. Douglas staff attended Advisory Committee meetings in Juneau, Haines, Yakutat, and Gustavus to discuss moose management issues. Staff also conducted public meetings in Haines and Gustavus to specifically address moose management issues.

Staff in the Petersburg area office discussed moose management and the status of the Unit 1B and 3 moose herd with Fish and Game Advisory Committee members in Petersburg and Wrangell, and hunters from Petersburg, Wrangell, Kake and other communities. During fall 2008, staff collected anecdotal information on the number of bulls, cows, and calves observed by hunters during the moose hunting season by way of a question on the RM038 moose registration permit hunt report.

ACTIVITY 3: Conduct aerial surveys to assess sex and age composition of moose in key management areas of the region.

Sex and age composition was attained in Unit 1B, 1C (Gustavus and Berners Bay), 1D, and 5A.

Unit 1B: A single population survey was conducted of the Stikine River drainage. A total of 127 moose, including 21 calves were observed.

Unit 1C: Population surveys were conducted in Gustavus (133 moose: 9 calves, 124 unidentified sex) and Berners Bay (33 moose: 3 bulls, 3 calves, 22 cows, 5 unidentified sex).

Unit 1D: 210 moose: 25 bulls, 23 calves, 22 cows, 140 unidentified sex and age.

Unit 5A: composition surveys of a subsample of moose were conducted: survey 1, 94 moose (67 cows, 23 bulls, 4 calves), survey 2, 221 moose (166 cows, 24 bulls, 31 calves).

ACTIVITY 4: Conduct calf production surveys as time and budget allows.

Unit 1C: Productivity surveys were conducted in Gustavus for the sample of 42 collared cow moose. Both ground tracking and helicopter tracking were used to locate the animals and determine if they had a calf.

Unit 1D: No calf production surveys were conducted in the Petersburg Area due to sightability problems associated with leaf-out of vegetation.

Activities by Unit:

Units 1C

ACTIVITY 1: Capture and radio collar moose in Gustavus and Berners Bay.

Moose were captured and handled at both Gustavus and in Berners Bay in fall 2008 and spring 2009. Efforts were made to keep the sample of moose at Gustavus at about 40

animals, and in Berners Bay at about 30 animals. Rump fat was measured as an indices of body condition, and blood was taken for disease screening as well as for pregnancy testing during the spring capture period.

ACTIVITY 2: Conduct browse surveys in Berners Bay and the Gustavus Forelands.

Browse surveys were not conducted at either location during this report period due to lack of staff to complete workload.

Unit 1D

ACTIVITY 1: Establish browse transects in the Chilkat River Valley and conduct browse surveys to determine browse availability, utilization, and temporal changes.

Browse surveys were conducted at three sites known to be used by moose during the winter in the Chilkat River drainage.

Submitted by: Neil Barten, Region I Management Coordinator

The Status of Moose and Factors Influencing Their Populations in Region II

Regionwide:

ACTIVITY 1: Prepare biennial regional moose management reports.

The next biennial moose management report is due to DWC HQ on 1 June 2010.

ACTIVITY 2: Conduct aerial sex and age composition surveys in all units to determine status, trend, productivity, and mortality of moose.

Unit 6: Modified Gasaway survey conducted in two of four management areas.

Unit 7 & 15: No composition surveys were conducted in Units 7, 15A, or 15B due to budget constraints. One composition survey was flown in Unit 15C and tallied 537 moose, a bull:cow ratio of 13:100, and 8% calves.

Unit 9: No composition surveys were conducted in 2008 due to unfavorable weather conditions.

Unit 11: No composition surveys were flown in 2008 due to increased aircraft costs.

Unit 13: Composition surveys were flown during November in eight count areas. A total of 4,481 moose were classified as 1,011 bulls, 2,907 cows and 563 calves.

Unit 14A & 14B: Surveys were completed in 14A in November of 2008. The population estimate was 6,613 moose with a bull:cow ratio of 23:100, and a calf:cow ratio of 42:100. No surveys were completed during this period in 14B due to time and budget constraints.

Unit 14C: A composition count completed in Twentymile/Portage/Placer count areas found 191 moose, including 40 bulls, 121 cows, 30 calves. The bull:cow ratio was 33:100 and the calf:cow ration was 25:100. A composition count completed in

Eklutna/Thunderbird count areas found 48 moose, including 15 bulls, 26 cows, and seven calves. The bull:cow ratio was 58:100 while the calf:cow ratio was 27:100.

Unit 16: On-going 16B natality and recruitment studies, started in 2005, indicate calf production remains high. In 2008, of the 63 collared cows that gave birth, 32 had a single calf and 31 cows had twins. At a minimum, 91 calves were born for a calf to cow ratio of 144:100.

Unit 17: No aerial sex and age compositions surveys for moose were conducted because insufficient snow precludes fall moose surveys in this area.

ACTIVITY 3: Monitor the moose harvest through field observations, hunter harvest reports and contact with hunters.

Unit 6: We awarded 298 permits and 456 hunters reported going afield, including general season hunts. They reported killing 130 moose, 108 of them bulls.

Unit 7 & 15: The preliminary harvest for the general season was 370 bulls, with and additional 33 moose taken on drawing permits. Three-thousand-and-46 hunters participated during the general season.

Unit 9: Hunters reported taking 107 moose, all bulls.

Unit 11: One-hundred-twenty-four hunters reported killing 24 moose, 23 of them bulls.

Unit 13: In the general season, 3,586 hunters reported taking 616 moose, three of them cows. In the Tier II hunt, 131 hunters reported taking 62 moose, all bulls.

Unit 14A & 14B: In the general season, hunters reported taking 354 moose in 14A, including 349 bulls, four cows and one of unknown gender. In 14B, the harvest was 49 moose, all of them bulls. In the drawing hunts, 157 moose were taken, five of them bulls.

Unit 14C: The season consisted of 15 drawing hunts, two registration hunts and a general season. A total of 443 hunters reporting taking 122 moose; 85 bulls, 36 cows and one of unknown gender.

Unit 16: The general season harvest in 16A was reported as 90 moose, all bulls. No moose were reported taken in 16B as there was no open season. In the 16B Tier II hunt, 114 moose were reported taken, all bulls. In the registration hunts, 29 moose were taken, 16 bulls and 13 cows.

Unit 17: A total of 1,251 permits were issued with 1,230 hunters reporting going afield. They took 353 moose, all bulls.

Activities by Unit:

Unit 6

ACTIVITY 1: Conduct a moose population survey (modified Gasaway) in select areas.

Completed modified Gasaway surveys in two of four management areas (430 sq. mi.). Except for percent calves in the population, these surveys were flown too late to determine composition. Gasaway surveys completed in Unit 6A(west) resulted in 275 moose with 7% calves; and in Unit 6C in 353 moose with 19% calves. Aerial surveys indicated a twinning rate of 55%.

Unit 14A&14B

ACTIVITY 1:Conduct a fall moose population survey (GSPE) in select areas.

Surveys were completed in 14A in November of 2008. The population estimate was 6,613 moose with a bull:cow ratio of 23:100, and a calf:cow ratio of 42:100. No surveys were completed during this period in 14B due to time and budget constraints.

ACTIVITY 2: Monitor moose population for diseases including Chronic Wasting Disease (CWD).

Road-killed moose were sampled randomly for CWD, as well as animals killed near game farms.

Unit 14C

ACTIVITY 1: Conduct a fall moose population survey (modified Gasaway) on Fort Richardson and Elmendorf Air Force Base in cooperation with the military.

A modified Gasaway census estimated the population at 474 moose with 140 bulls, 290 cows, 44 calves for a bull:cow ratio of 48:100 cows, and a cow:calf ratio of 15:100.

Unit 15A (Skilak Loop Wildlife Management Area)

ACTIVITY 1: Provide opportunities to view moose in cooperation with Kenai National Wildlife Refuge.

No explicit activities were conducted to aid in moose viewing. The Kenai National Wildlife Refuge and ADF&G, along with the Board of Game, have agreed to limit hunting in the Skilak Loop Wildlife Management Area in order to reduce conflicts with viewers.

Unit 15

ACTIVITY 1: Conduct fall moose population survey (GSPE) in select areas.

No population surveys were conducted due to budgetary constraints.

Unit 16

ACTIVITY 1: Conduct a fall moose census (GSPE) in select areas.

Aerial surveys were completed in both the northern and middle portions of Unit 16B and composition counts were completed for two trend areas in the southern portion of 16B. In northern 16B the population was estimated at 917 moose with a bull:cow ratio of 57.9:100 and a calf:cow ratio of 12:100. In the middle portion, the population was estimated at 2,446 moose with a bull:cow ratio of 54:100 and a calf:cow ratio of 21:100. A population estimate could not be completed for the southern portion of Unit 16B, however, for the two trend areas the bull:cow ratio was 78:100 and the calf:cow ratio was 18:100 Time and budget restraints kept us from completing a survey in GMU 16A.

Unit 17

ACTIVITY 1: Conduct a spring moose population survey (modified Gasaway or VerHoef) in select areas.

A spring population estimation survey was conducted in western Game Management Unit 17B (Mulchatna River drainage).

Submitted by: Gino DelFrate, Region II Management Coordinator

The Status of Moose and Factors Influencing Their Populations in Region III

Regionwide Activities:

ACTIVITY 1: Monitor harvest and analyze harvest data.

Monitored preliminary harvest of 4,016 moose during general season and registration and drawing permit hunts and analyzed harvest data.

ACTIVITY 2: Monitor natural mortality and analyze mortality data.

Monitored natural mortality and analyzed mortality data.

ACTIVITY 3: Provide information to State and Federal regulatory processes on moose management.

Provided information to 15 State fish and game advisory committees, the Alaska Board of Game, and 2 Federal regional advisory councils and the Federal Subsistence Board.

Activities by Unit:

Unit 12

ACTIVITY 1: Conduct a moose population estimation survey in the western and northern portions of Unit 12.

Completed population estimation surveys in a 2,845 mi^2 area in the western and north portions of Unit 12, which was combined with the Tetlin NWF 2008 survey data, resulting in a population estimate of 4,350-5,640 moose and a bull:cow ratio of 52 bulls:100 cows.

Unit 19

ACTIVITY 1: Conduct trend area and moose population estimation surveys.

Conducted trend area/composition surveys in Unit 19A in late October 2008 in the Aniak area and sampled 51 moose (26 moose/hr), including 2 yearling bulls, 1 set of twins, 23 calves:100 cows, and 42 bulls:100 cows.

Conducted trend area/composition surveys in Unit 19A in November 2008 in the Holitna area and sampled 117 moose (33 moose/hr), including 9 yearling bulls, 3 sets of twins, 27 calves:100 cows, and 34 bulls:100 cows.

ACTIVITY 2: Conduct spring calf twinning surveys.

Attempted spring calf twinning surveys in May-June 2009 in Unit 19A, but poor weather and forest fires prevented completion.

ACTIVITY 3: Determine movements and distribution of radiocollared moose.

Did not conduct radio telemetry flights due to other priorities.

ACTIVITY 4: Conduct snow depth aerial surveys.

Conducted snow depth aerial surveys between November 2008 and May 2009.

Unit 20A

ACTIVITY 1: Conduct geostatistical population estimation surveys.

Conducted geostatistical population estimation surveys, estimating 12,537 moose.

ACTIVITY 2: Conduct spring calf twinning surveys.

Conducted May twinning surveys (15%, n = 164).

ACTIVITY 3: Conduct browse utilization surveys.

Sampled 37 browse use plots in 20A foothills.

ACTIVITY 4: Monitor nutritional condition by capturing and weighing calves.

Captured and weighed 71 calves during March, with 1 capture mortality.

Unit 20B

ACTIVITY 1: Conduct a geospatial population estimation or trend area surveys.

Conducted geostatistical population estimation surveys, with a point estimate of 17,954 moose.

ACTIVITY 2: Conduct spring calf twinning surveys.

Conducted May twinning surveys (2%, n = 51).

ACTIVITY 3: Monitor nutritional condition by capturing and weighing calves.

Captured and weighed 26 calves during March 2009, with 1 capture mortality.

Unit 20D

ACTIVITY 1: Conduct a Geo-Statistical population estimate.

Conducted a Geo-Statistical population estimate in southern Unit 20D, resulting in a population estimate of 5,006 observable moose.

ACTIVITY 2: Conduct moose browse surveys to assess habitat quality and condition.

No moose browse surveys were conducted because funding was not available.

ACTIVITY 3: Conduct spring calf twinning surveys.

Conducted a spring moose calf twinning surveys, resulting in an 11.1% twinning rate.

Unit 20E

ACTIVITY 1: Conduct moose population estimation surveys in the eastern, central and western portions of the unit.

Completed population estimation surveys in a 4,630 mi^2 area in southern Unit 20E, resulting in a population estimate of 2,790-3,510 moose and a bull:cow ratio of 60 bulls:100 cows.

ACTIVITY 2: Conduct spring twinning surveys.

Conducted a moose twinning survey in southwest Unit 20E, resulting in a twinning rate estimate of 41%.

Unit 21A and 21E

ACTIVITY 1: Conduct trend area and moose population estimation surveys.

Conducted trend area/composition surveys in Unit 21A in November 2008 and sampled 39 moose (13.0 moose/hr), including 3 yearling bulls, no twins, 8 calves:100 cows, and 54 bulls:100 cows.

Conducted trend area/composition surveys in Unit 21E in November 2008 and sampled 186 moose (57 moose/hr), including 28 yearling bulls, 10 sets of twins, 37 calves:100 cows, and 62 bulls:100 cows.

Conducted a GSPE moose population estimation survey in Unit 21E in Feb-Mar 2009 and estimated 6,218 moose ± 17% (5,147-7,288) at 90% CI in a 5070 mi^2 area.

ACTIVITY 2: Conduct spring calf twinning surveys.

Conducted spring calf twinning surveys in May 2009 and found 50% twins in 21E.

ACTIVITY 4: Conduct snow depth aerial surveys.

Completed no snow depth surveys, due to other priorities.

Unit 21B

ACTIVITY 1: Conduct population estimation or trend area surveys.

In cooperation with USFWS and BLM, estimated 2,317 moose in a 8,565 mi^2 population estimation survey, counted 150 moose in the Nowitna Mouth Trend Count Area (TCA), 170 moose in the Nowitna/Sulatna confluence TCA, and 144 moose in the Deep Creek TCA.

Unit 21C

ACTIVITY 1: Conduct trend area surveys.

Funding not available to conduct surveys.

ACTIVITY 2: Conduct a hunter check station on the Koyukuk River.

In combination with Units 21D and 24, registered 417 hunters at a check station on the Koyukuk River and checked 201 moose.

Unit 21D

ACTIVITY 1: Conduct fall trend area surveys.

In cooperation with USFWS, counted 1,270 moose in the Three Day Slough TCA, 505 in the Dulbi River TCA, 427 moose in the Koyukuk River Mouth TCA, 252 moose in the Squirrel Creek TCA, 136 moose in the Kaiyuh Slough TCA, and 354 moose in the Pilot Mountain Slough TCA.

ACTIVITY 2: Conduct spring twinning surveys.

In cooperation with USFWS, counted 239 cow:calf pairs in the 21D and 24 twinning surveys.

ACTIVITY 3: Conduct a hunter check station on the Koyukuk River.

In combination with Units 21C and 24, registered 417 hunters at a check station on the Koyukuk River and checked 201 moose.

Unit 24

ACTIVITY 1: Conduct fall trend area surveys.

In cooperation with USFWS, estimated 872 moose in a 2,715 mi^2 population estimation survey, counted 509 moose in the Huslia Flats TCA, 724 moose in the Treat Island TCA, and 99 moose in the Middle Fork TCA.

ACTIVITY 2: Conduct spring twinning surveys.

In cooperation with USFWS, counted 239 cow:calf pairs in the 21D and 24 twinning surveys.

ACTIVITY 3: Operate a hunter check station on the Koyukuk River.

In combination with Units 21C and 21D, registered 417 hunters at a check station on the Koyukuk River and checked 201 moose.

Units 25A, 25B and 25D

ACTIVITY 1: Conduct a geostatistical population estimation surveys or composition surveys.

Conducted two Geo-Spatial Population Estimator (GSPE) surveys in GMU 25D; in 25D east, moose density estimated at 0.13 (±26%) moose/mi^2 and bull, yearling bull, and calves:100 cows estimated at 44, 0, and 36, respectively; in 25D west, moose density estimated at 0.35 (±16%) moose/mi^2 and bull, yearling bull, and calves:100 cows were estimated at 52, 7, and 34, respectively.

Units 26B and 26C

ACTIVITY 1: Conduct riparian zone minimum direct count surveys.

Conducted a riparian zone minimum direct count survey in April 2009, with 564 moose including 47 calves observed.

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

The Status of Moose and Factors Influencing Their Populations in Region V

Regionwide Activities:

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

Area management staff reviewed State and Federal regulatory proposals, attended regulatory process meetings, and presented moose 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 fall aerial sex and age composition surveys and calf production surveys in selected portions of Unit 18.

No work was completed toward this activity during this reporting period due to limited snow cover in October and November.

ACTIVITY 2: Conduct spring aerial surveys (trend area surveys, distribution surveys, or calf production surveys) in selected portions of Unit 18 to assess population trend and recruitment.

We flew four days of spring twining surveys on the Yukon River in late May 2009. Extensive flooding from Saint Mary's to Paimiut changed moose distribution during calving to the point moose were difficult to find during these surveys. In the lowest part of the Yukon we observed a 47% twinning rate.

ACTIVITY 3: Conduct geostatistical population estimation surveys, (regular) population estimation surveys, riparian zone minimum direct count surveys, or other appropriate census techniques, to estimate the size of moose populations in selected portions of Unit 18.

We attempted to conduct a GSPE survey in January/February 2009 in the Lower Kuskokwim count area and in a new count area that includes the tributaries of the Kuskokwim. Weather in that time period did not allow us to complete the survey to the point of generating an estimate.

ACTIVITY 4: Conduct fall and/or midwinter trend area surveys or distribution surveys of the Kuskokwim River and its major drainages to assess the status and estimated size of the Kuskokwim River population.

No work was completed toward this activity during this reporting period due to poor snow conditions throughout the unit.

ACTIVITY 5: Monitor moose numbers, distribution, and utilization of the smaller drainages in Unit 18 through trend area surveys, distribution surveys, public contacts, and field observations.

Numerous contacts with the public indicate that moose population in the Kuskokwim drainage has increased during this report period. In the Kwethluk River drainage we assisted USFWS staff in collaring 32 moose in April 2009. During this activity we observed many more moose than had previously been sighted in this area.

Public contacts and incidental field observations on the Yukon River drainage indicate a relatively stable moose population in the Paimiut Count Area and a rapidly increasing moose population in the Lowest Yukon Count Area.

ACTIVITY 6: Monitor overall hunting activity through hunter checkstations, harvest reporting, hunter contacts, and field observations.

We analyzed harvest reports and found that 433 moose were reported taken in Unit 18 in the Yukon drainage. Hunters also reported harvesting 2 moose in the Kanektok River drainage and 12 in the Goodnews River drainage. We contacted moose hunters opportunistically throughout the year.

ACTIVITY 7: Monitor other mortality factors through public contacts and field observations.

We observed wolf-killed moose carcasses and observed wolves during moose calving surveys. We received reports from hunters/trappers and the public regarding wolf kills, particularly along the Yukon River drainage near Ohogamiut and Russian Mission, and in the Kilbuck Mountains Residents from Russian Mission downriver to Emmonak were concerned that unusually deep snow and higher wolf numbers would .

ACTIVITY 8: Assess habitat quality through browse surveys and field observations.

No work was completed toward this activity during the reporting period because department biologists were assigned to other S&I activities.

ACTIVITY 9: Work with the Association of Village Council Presidents (AVCP), Kuskokwim Native Association (KNA), The Kuskokwim Corporation (TKC), U.S. Fish and Wildlife Service (FWS), Unit 19 and 21A/E area biologist, affected Advisory Committees, local moose hunters, and other users to resolve conflicts between upriver and downriver uses.

Much of the upriver-downriver conflicts along the Yukon River have been resolved as moose populations in the downriver areas have become established and grown. Along most of the Kuskokwim River, we have implemented a moose hunting moratorium that we anticipate will result in similar moose population growth and expansion which should alleviate the conflicts there in a similar fashion. We also fielded numerous questions regarding hunting moose upriver on the Kuskokwim.

ACTIVITY 10: Continue educational efforts toward increasing moose populations in the smaller drainages in Unit 18.

Along with the USFWS, we cooperatively held a meeting in Goodnews Bay on August 21, 2008 to discuss the current populations and management of moose in the Goodnews River drainage. This included discussing the new registration hunt that occurred in the fall of 2008.

ACTIVITY 11: Use public education to improve understanding of hunting regulations and the value of conserving moose populations, and to obtain better harvest data through increased harvest reporting.

We helped teach the sections of Hunter Education that deal with Wildlife Management and tailored those sections to reflect local issues and moose management. We also prepared PSA’s and newspaper articles to inform and educate the public about harvest reporting requirements and reasons for harvest reporting.

ACTIVITY 12: Implement the cooperative moose management strategy for the Kuskokwim River moose population with participation from the Lower Kuskokwim Advisory Committee, the Yukon Delta National Wildlife Refuge (YDNWR), and interested local groups and communities.

> We attended and presented information at several public meetings including: Lower Kuskokwim Advisory Committee meeting (November 2008); Y-K Delta Regional Advisory Council meetings (October 2008 and March 2009).

ACTIVITY 13: Develop an ongoing cooperative moose management strategy for the moose population within the Togiak Refuge portion of Unit 18 with local village leaders, members of the Central Bering Sea Advisory Committee, the Regional Advisory Council, the Togiak National Wildlife Refuge (TNWR), and interested local groups and communities.

> The Unit 18 communities of Goodnews Bay and Platinum and other agency participants agreed to a strategy to encourage moose to colonize the Goodnews River drainage and the portion of Unit 18 south of the Goodnews River drainage during this reporting period. We participated in a meeting on August 21, 2008 with the villages of Goodnews Bay and Platinum to talk about current status of moose populations and strategies for management in the future.

Unit 22:

ACTIVITY 1: Conduct a geostatistical population estimation survey or a riparian zone minimum direct count survey in a portion of the unit to monitor trends in population size, sex/age composition, and recruitment.

> Poor weather and flying conditions prohibited completion of a geostatistical population estimate in Units 22B West and 22C during the reporting period. Population estimates in these areas will be attempted again in February 2010.

ACTIVITY 2: Complete trend area surveys, sex and age composition surveys, or other aerial surveys (where appropriate) during late fall and early spring to provide an index of moose population status and trends, sex and age composition, and yearling recruitment.

> Staff completed fall composition surveys in Units 22B, 22C, and 22D during the reporting period. In Unit 22B staff classified 122 moose and found 34 bulls:100 cows; in Unit 22C staff classified 211 moose and found 11 bulls:100 cows; in Unit 22D staff classified 174 moose and found 33 bulls:100 cows.
>
> In March 2009, Department staff completed spring recruitment trend counts in Units 22C and 22D. In Unit 22C, including portions of the Cripple, Sinuk, Penny, Snake, Nome, Flambeau, and Eldorado river drainages, staff classified 335 moose and found 12calves:100 adults and 11% recruitment. In eastern Unit 22D, including portions of the Pilgrim, Kougarok, and Kuzitrin river drainages, staff classified 700 moose and found 7calves:100 adults and 6% recruitment.

ACTIVITY 3: Complete twinning surveys during May and June in Units 22B and 22C to assess parturition rates, calf survival and early season recruitment rates.

> Twinning surveys in Units 22B and 22C were not attempted due to cancelled census in Activity 1 resulting in incomplete population data for the twinning survey area.

ACTIVITY 4: Monitor human and natural mortality factors affecting the population.

Human harvest was monitored through the harvest/registration permit reporting system and community-based harvest assessment surveys. No surveys were attempted to determine natural mortality rates of Seward Peninsula moose. Anecdotal evidence indicates bear predation on moose calves is depressing moose populations in much of the unit, specifically in areas of Units 22A, 22B, and 22D.

ACTIVITY 5: Evaluate hunting mortality by analyzing all moose harvest data.

Hunt reports were received for a bull fall registration hunt (RM840 including hunt areas: Unit 22C, Unit 22B west of the Darby Mountains, Unit 22D Kuzitrin River drainage, and Unit 22D Southwest), an antlered bull winter registration hunt (RM849 including Unit 22B west of the Darby Mountains), a nonresident bull registration hunt (RM842 in a portion of Unit 22D), and 2 anlterless fall registration hunts (RM850 and RM852 in Unit 22C). Harvest from other areas of the Unit was monitored by harvest ticket report cards. Total reported harvest for Unit 22 during the reporting period was 179 moose (Unit 22A-17, 22B-27, 22C-61, 22D- 59, 22E-15). The Department documented 199 moose in 2007-2008, and 175 harvested moose in 2006-2007 through similar reporting methods.

ACTIVITY 6: Improve harvest reporting through public education and improved communication and by conducting Community-based Harvest Assessments in selected villages.

The importance of harvest reporting was emphasized to registration permit recipients, village license vendors, and hunters at village meetings in Nome, Shishmaref, Wales, Brevig Mission, Teller, White Mountain, Golovin, Elim, Koyuk, and Unalakleet. Public service announcements were posted in Nome and residents of Unit 22 villages were notified by radio announcements. Compliance with reporting requirements has improved in the registration hunts in the Nome area; however village surveys remain a more effective method of obtaining village harvest data.

ACTIVITY 6: Evaluate hunting regulations and recommend changes, if necessary, for conservation purposes.

Hunting regulations were evaluated at an annual Advisory Committee meeting, a Seward Peninsula Muskox Cooperators meeting, a Regional Advisory Council meeting, and an annual Reindeer Herder meeting. Recommended changes will be addressed at the November 2009 Board of Game meeting.

ACTIVITY 7: Use public education to improve understanding of hunting regulations and the value of conserving moose populations, and to obtain better harvest data through increased harvest reporting.

Staff attended state Advisory Committee meetings, federal Regional Advisory Council meetings, a Seward Peninsula Muskox Cooperators meeting, and the annual Reindeer Herders' meeting to improve public understanding of game management.

ACTIVITY 8: Evaluate moose browse in portions of Unit 22 for indications of over utilization of winter habitat.

Moose browse surveys were not completed in Unit 22 because department biologists were assigned to other S&I activities.

ACTIVITY 9: Investigate causes of tooth cracking and breakage in Seward Peninsula moose.

Moose jaws were not collected during the reporting period. Results from previous years' collection efforts are pending.

Unit 23:

ACTIVITY 1: Conduct geostatistical population estimation surveys, sex and age composition surveys, and calf survival counts where appropriate in the unit to monitor trends in population density, sex and age composition, and recruitment.

A geospatial population census was conducted during this reporting period in that portion of the Seward peninsula referred to as Unit 23 SW in late March/Early April 2009. Density of adult moose was 0.16 moose/mi2 and the calf: adult ratio was 8:100.

Sex and age composition data was collected using a geospatial approach in the Selawik Drainage in November 2008. The population sex ratio were 54 Bulls:100 Cows. The population age ratio was 18 calves :100 Cows.

Both the population estimate in Unit 23 SW and the Composition surveys in the Selawik Drainage were joint efforts between NPS, USFWS, and ADFG.

ACTIVITY 2: Monitor hunting activity and harvests through the statewide harvest ticket system, Community-based Harvest Assessments, public contacts and field observations.

We monitored hunting activity and harvests through the statewide harvest ticket, registration permit and drawing permit systems and community-based harvest assessments. 320 hunters reported taking 107 moose through the statewide harvest ticket system and the registration permit system. Community-based harvest assessments suggested residents of Unit 23 have taken 400-425 moose annually during recent years, substantially more than indicated by harvest ticket hunt reports.

ACTIVITY 3: Use public education to improve understanding of hunting regulations and the value of conserving moose populations, and to obtain better harvest data through increased harvest reporting.

We spoke with many local and nonlocal hunters to improve the accuracy of moose harvest data. Radio Public Service Announcements were recorded to help educate the hunters about regulations and acquiring the necessary permits.

Unit 26A:

ACTIVITY 1: Survey unit-wide riparian zones and other suitable areas of willow habitat, using trend area surveys, riparian zone minimum direct count surveys, or other appropriate census techniques to estimate the moose population trend in Unit 26A.

We conducted a riparian zone trend area survey of moose in Unit 26A on 8-12 April 2009. We counted a total of 364 moose. There were 356 adults and 8 short yearlings that had survived the winter (2 %), including 0 sets of twins.

ACTIVITY 2: Conduct a fall aerial sex and age composition survey of the Colville River population.

We conducted a fall sex and age composition survey from 31 October - 2 November 2008. We observed 293 moose, including 92 bulls (63 bulls:100 cows), 147 cows, and 54 calves (37 calves:100 cows, 18%). There were 2 sets of twins. Antler spreads were

estimated and 21 % were less than 30 inches, 14 % were 30-39 inches, 17 % were 40-49 inches, 25 % were 50-59 inches, and 23 % were over 60 inches.

ACTIVITY 3: Capture, weigh, measure, collect samples from and attach radio collars to female yearling moose to provide information on body condition and disease profiles and to determine seasonal movements of moose. Up to 21 yearling moose will be captured and radiocollared.

In June 2009 we captured, measured, sampled, and radiocollared 20 adult female moose. Adults, instead of yearlings, were captured due to change in moose population and low availability of yearling moose in the study area. There were no capture mortalities during collaring activities.

ACTIVITY 4: Monitor predator populations by logging bear and wolf observations during moose surveys and other mortality factors through field observations and public contacts.

We observed 30 wolves, 3 bears, 2 wolverines, and 8 lynx during the spring trend area count of 2009.

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

We examined and collected samples from several dead moose that were found during the trend area count in April, calving surveys in June, and a cow and calf that died near the Umiat runway.

ACTIVITY 6: Develop updated population objectives in cooperation with the public and other agencies.

We worked with the North Slope Borough Fish and Game Management Committee to discuss population and management objectives.

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