

**MOOSE
ANNUAL SURVEY AND INVENTORY**

STATE: Alaska

GRANT AND SEGMENT NO. W-33-8

PROJECT NO. 1.0

PERIOD: July 1, 2009 – June 30, 2010

PROJECT LOCATION: Statewide (Regions I, II, III, and V)

PROJECT TITLE: Moose S&I

The Status of Moose and Factors Influencing Their Populations

Region 1

Regionwide Activities:

ACTIVITY 1: Moose management reports were submitted for all game management units during this reporting period.

Moose management report completed.

ACTIVITY 2: 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: 3 bull moose were taken along the Unuk River drainage.

Unit 1B: 42 incisors and 42 antler photos were obtained from 42 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: 51 bull moose 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. All 14 bulls taken at Gustavus were checked for antler configuration due to the newly implemented spike fork 50" or 3 brow tine antler restriction hunt.

Unit 1D: 18 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: 63 bulls were harvested, incisors and 63 antler photos were obtained from 63 bulls harvested. Information on days of effort, and location of successful and unsuccessful hunts was collected from all hunters via permit hunt reports.

Unit 5: 50 bull moose 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 3: 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, Juneau 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 2009, 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 4: 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 1C (Gustavus and Berners Bay), 1D, and 5A.

Unit 1B: Survey conditions did not allow for a survey during this report period.

Unit 1C: Population surveys were conducted in Gustavus and Berners Bay (51 moose: 12 bulls, 4 calves, 20 cows, 15 unidentified sex).

Unit 1D: 183 moose: 38 bulls, 27 calves, 110 cows, 8 unidentified sex and age.

Unit 5A-Yakutat forelands: 283 moose: 0 bulls, 25 calves, 23 cows, and 235 unknown sex and age.

ACTIVITY 5: Conduct calf production surveys as time and budget allows.

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

Unit 1C: Productivity surveys were conducted in Gustavus for the sample of 39 collared cow moose. Both ground tracking and helicopter tracking were used to locate the animals and determine if they had a calf.

Activities by Unit:

Unit 1B: Monitor the impacts of liberalized antler restrictions in the unit.

The 2009 season was the first year of the liberalized season where moose with 2 brow tines on a side were legal for harvest. This resulted in an increased harvest in Unit 1B from 27 in 2008 to 42 in 2009.

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 2009 and spring 2010. 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 to determine availability, utilization and temporal changes in Berners Bay and the Gustavus Forelands.

Browse surveys were conducted at Gustavus during this report period.

Unit 1D:

ACTIVITY: 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.

Unit 3:

ACTIVITY: Monitor the impacts of liberalized moose antler restrictions in the unit.

The 2009 season was the first year of the liberalized season where moose with 2 brow tines on a side were legal for harvest. This resulted in an increased harvest in Unit 3 from 33 in 2008 to 63 in 2009.

Submitted by: Neil Barten, Region I Management Coordinator

Region II: GMU 14C

Regionwide:

Activity: Prepare biennial regional moose management reports.

Moose management report completed.

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

Unit 6: Completed modified Gasaway surveys in two of four management areas (450 sq. mi.). Surveys completed in Unit 6B resulted in 200 moose with 16% calves; and in Unit 6C in 350 moose with 17% calves.

Unit 9: Surveys were not completed due to a inclement weather and lack of pilot availability.

Unit 11: No composition surveys were flown in 2009 due to increased aircraft costs.

Unit 13: Composition surveys were flown during November and December in 9 distinct count areas. Bulls: 1,105, Cows: 3,340, Calves, 779, Total: 5,224.

Unit 7 & 15: One composition survey in Unit 15A tallied 86 moose, a bull:cow ratio of 86:100, and 8% calves. Three composition surveys in Unit 15B tallied 164 moose, a bull:cow ratio of 51:100, and 7% calves. Two composition surveys in Unit 15C tallied 426 moose, a bull:cow ratio of 13:100, and 14% calves. No surveys were flown in Unit 7 due to budget constraints.

Unit 14C: No surveys were conducted due to inclement weather.

Unit 16B: On-going natality and recruitment studies, started in 2005, indicate that calf production remains high. The results for 2009 indicate that of the 35 collared cows monitored that gave birth, 14 cows gave birth to a single calf and 20 cows gave birth to twins for a twinning rate of 20/34 or 59%. A total of 54 calves at a minimum were born for a calf to cow ratio of 159 calves / 100 cows.

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

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

Unit 6: Issued 376 permits to 492 hunters for a total harvest of 135 moose.

Unit 7 & 15: The preliminary harvest for the general season was 419 bulls taken with and additional 44 moose taken on drawing permits. 2951 hunters participated during the general season.

Unit 11: Issued 111 permits to 111 hunters for a total of 36 moose, 34 males, 0 females and 2 unknown.

Unit 9: Preliminary reports indicate that 309 hunters participated in the Unit 9 hunt, and they report harvesting 117 bull moose.

Unit 13: Issued 3692 permits to 3604 hunters for a total of 730 moose, 725 males, 2 females and 3 unknown.

Unit 14 A & B: The preliminary Unit 2009–10 general season harvest was:

14A	Males	404	Females	4	Unknown	6	Total	414
14B	Males	77	Females	0	Unknown	2	Total	79

The preliminary Unit 2007–08 harvest by drawing permits was:

14A	Males	7	Females	209	Unknown	0	Total	216
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Unit 14C: 116 moose were harvested in 2009 from 14C.

Unit 16: The preliminary Unit 2009–10 harvest was:

16A	Males	115	Females	0	Unknown	1	Total	116
16B	Males	98	Females	0	Unknown	2	Total	100

The preliminary Unit 2009–10 harvest by Tier II permit was:

16B	Males	82	Females	0	Unknown	2	Total	84
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Unit 17: A total of 1,258 hunters reported they hunted for bull moose in Unit 17, and reported taking 328 moose.

Activities by Unit:

Unit 6:

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

Completed modified Gasaway surveys in two of four management areas (450 sq. mi.). Surveys completed in Unit 6B resulted in 200 moose with 16% calves; and in Unit 6C in 350 moose with 17% calves.

Unit 14A&14B:

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

Unit 14 A & B: Surveys were completed in GMU 14B in November of 2009. The results are a population estimate of 1662 moose with a bull: 100 Cow ratio of 34, and a calf: 100 cow ratio of 18. Composition surveys were completed during November in GMU 14A. A bull: 100 Cow ratio of 24.7 and a calf: 100 Cow ratio of 48.9 was recorded.

Activity: Monitor moose population for diseases including Chronic Wasting Disease.

Samples were collected from road killed moose as time permitted. In addition, a few moose heads collected from the road kill program were forwarded on to USDA APHIS for further sampling.

Unit 14C:

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

No surveys were conducted due to inclement weather.

Unit 15A (Skilak Loop Wildlife Management Area):

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

No explicit activities were conducted to aid in moose viewing.

Unit 15:

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

A GSPE was conducted in March, 2010 and estimated 2195 moose in Unit 15C.

Unit 16:

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

Aerial surveys were completed in 16A and a composition count was completed in the middle portion of 16B. The population of 16A was estimated at 2574 with a bull: 100 cow ratio of 25.76 and a calf: 100 cow ratio of 29.4. In the middle portion of unit 16B the bull: 100 cow ratio was estimated at 38.8 and the calf: 100 cow ratio was 18.9. Time and budget restraints kept us from completing surveys in the northern or southern portions of 16B.

Units 17:

Activity: Conduct a spring moose population survey (modified Gasaway or GSPE) in select areas.

A population estimation survey was conducted in western Game Management Unit 17B (upper Nushagak River drainage) in March 2010.

Region II: GMU 17

Regionwide:

ACTIVITY 1: Prepare biennial regional moose management reports.

Prepared GMU 17 portion of biennial moose management report.

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

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 17: A total of 1,258 hunters reported they hunted for bull moose in Unit 17, and reported taking 328 moose.

Activities by Unit:

Unit 17

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

A population estimation survey was conducted in western Game Management Unit 17B (upper Nushagak River drainage) in March 2010.

Submitted by: Mark Burch

Date: 30 August 2010

Region III

Regionwide Activities:

ACTIVITY 1: Monitor harvest and analyze harvest data.

Monitored preliminary harvest of 3,713 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 19:

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

Conducted composition–trend surveys in eastern Unit 19A in Nov 2009 and sampled 129 moose (20 moose/hr), including 36 calves:100 cows, and 51 bulls:100 cows.

Conducted composition–trend surveys in Unit 19C near Farewell in Nov 2009 and sampled 245 moose (134 moose/hr), including 25 calves:100 cows, and 53 bulls:100 cows.

Conducted a GSPE moose population estimation survey in western Unit 19A in Mar 2010 and estimated 1130 observable moose \pm 15% at 90% CI in a 3,445 mi² area.

ACTIVITY 2: Conduct spring calf twinning surveys.

Conducted a spring calf twinning survey in eastern Unit 19A in late May 2010, finding only 4 cows with litters, including 2 sets of twins.

ACTIVITY 3: Conduct snow depth aerial surveys.

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

Unit 20A:

ACTIVITY 1: Conduct geostatistical population estimation surveys.

Conducted geostatistical population estimation surveys, estimating 15,677 moose.

ACTIVITY 2: Conduct spring calf twinning surveys.

Conducted May twinning surveys (10%, $n = 154$).

ACTIVITY 3: Conduct browse utilization surveys.

Did not conduct browse utilization surveys due to lack of personnel.

Unit 20B:

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

Conducted geostatistical population estimation surveys, with a point estimate of 20,173 moose with a 1.21 sightability correction factor.

ACTIVITY 2: Conduct spring calf twinning surveys.

Conducted May twinning surveys (3%, $n = 29$).

ACTIVITY 3: Monitor nutritional condition by capturing and weighing 30 calves.

Captured and weighed 30 calves in Minto Flats during March 2009, with no capture mortality.

Unit 20C, 20F, and 25C:

ACTIVITY 1: Conduct a geostatistical population estimate.

Did not conduct a geostatistical population estimate due to lack of funding.

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 4,633 observable moose.

ACTIVITY 2: Conduct spring calf twinning surveys.

Conducted a spring moose calf twinning surveys, resulting in an 11.7% twinning rate.

Unit 20E:

ACTIVITY 1: Conduct moose population estimation surveys.

Completed population estimation surveys in a 4,630 mi² area in southern Unit 20E resulting in a population estimate of 3,485-4,414 moose and a bull:cow ratio of 58 bulls:100 cows.

ACTIVITY 2: Conduct spring twinning surveys.

Conducted a moose twinning survey in southwest Unit 20E to evaluate nutritional condition of habitat for moose, resulting in a twinning rate estimate of 22%.

Unit 21A and 21E:

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

Conducted composition–trend surveys in Unit 21A in Nov 2009 and sampled 118 moose (23 moose/hr), including 40 calves:100 cows, and 64 bulls:100 cows.

Conducted composition–trend surveys in Unit 21E in Nov 2009 and sampled 153 moose (27 moose/hr), including 18 calves:100 cows, and 32 bulls:100 cows.

ACTIVITY 2: Conduct spring calf twinning surveys.

Conducted a spring calf twinning survey in 21A and found only one cow with a set of twins.

Conducted a spring calf twinning survey in Unit 21E during late May 2010 and found 33 cows with calves and of these, 18 cows had twins (55% twinning rate).

ACTIVITY 4: Conduct snow depth aerial surveys.

Completed no snow depth surveys.

Unit 21B:

ACTIVITY 1: Conduct population estimation or trend area surveys.

In cooperation with USFWS counted 166 moose in the Nowitna Mouth Trend Count Area (TCA) and 173 moose in the Nowitna/Sulatna confluence TCA.

Unit 21C:

ACTIVITY 1: Conduct a hunter check station on the Koyukuk River.

In combination with Units 21D and 24, registered 522 hunters at a check station on the Koyukuk River and checked 222 moose.

Unit 21D:

ACTIVITY 1: Conduct fall trend area surveys.

In cooperation with USFWS, counted 1151 moose in the Three Day Slough TCA, 534 in the Dulbi River TCA, 478 moose in the Koyukuk River Mouth TCA, 278 moose in the Squirrel Creek TCA, 180 moose in the Kaiyuh Slough TCA, and 345 moose in the Pilot Mountain Slough TCA.

ACTIVITY 2: Conduct spring twinning surveys.

In cooperation with USFWS, counted 244 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 522 hunters at a check station on the Koyukuk River and checked 222 moose.

Unit 24:

ACTIVITY 1: Conduct fall trend area surveys.

In cooperation with USFWS, counted 693 moose in the Huslia Flats TCA and 689 moose in the Treat Island TCA.

ACTIVITY 2: Conduct spring twinning surveys.

In cooperation with USFWS, counted 244 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 522 hunters at a check station on the Koyukuk River and checked 222 moose.

Units 25A, 25B and 25D:

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

Conducted one Geo-Spatial Population Estimator (GSPE) survey in GMU 25D centered on the village of Beaver, resulting in estimates of 0.41 ($\pm 16\%$) moose/mi² and bull, yearling bull, and calves:100 cows estimates of 33, 5, and 37, respectively.

Units 26B and 26C:

ACTIVITY 1: Conduct riparian zone minimum direct count surveys.

Conducted a riparian zone minimum direct count survey in April 2010, with preliminary data indicating 421 moose including 33 calves observed.

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

Region V

Regionwide Activities:

ACTIVITY 1: Prepare biennial regional moose management reports.

A moose management report was prepared during this reporting period.

ACTIVITY 2: 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.

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 twinning surveys on the Yukon River in late May 2010. In three days flying we observed a total of 62 cows that had calves. In the Paimiut Survey Area the twinning rate was 50% and in the Lowest Yukon Survey Area the twinning rate was 59%.

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 2010 in the Lower Kuskokwim count area and in a new count area that includes the tributaries of the Kuskokwim. We started the GSPE survey, however, snow was nearly absent from the intended survey area and weather did not allow us to complete the survey to the point of generating a population 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. Previously (April 2009) in the Kwethluk River drainage, we assisted USFWS staff in collaring 32 moose and 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. Local residents from Russian Mission downriver to Emmonak were concerned that unusually deep snow and higher wolf numbers would affect moose.

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 the Lower Kuskokwim River, we have implemented a quota-based registration permit moose hunt and the advent of hunting opportunity has helped alleviate the conflicts between user groups. We also fielded numerous questions regarding hunting moose upriver on the Kuskokwim River.

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

Along with the USFWS, we continue to provide summary information at meetings arranged by villages, Advisory Committees, and Regional Advisory Councils.

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; Y-K Delta Regional Advisory Council meetings.

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 continue the 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.

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.

A geospatial moose census was completed in Unit 22B and Unit 22C. The Unit 22C census estimate is 663 moose (+/-17% at 90% C.I.), and the calf: adult ratio is 20 calves: 100 adults. The density (0.40/mi²) remained unchanged from 2007. The Unit 22B West census estimate is 570 moose (+/-26% at 90% C.I.), and the calf: adult ratio is 10 calves:100 adults. The density (0.23./mi²) remained unchanged from 2004.

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 22C during the reporting period. We classified 268 moose and found 13 bulls: 100 cows and 19 calves: 100 adults.

Spring recruitment surveys were not completed during the reporting period, because a geostatistical population estimate survey was completed in Unit 22B and 22C.

ACTIVITY 3: 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 4: 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 antlerless fall registration hunts (RM850 and RM852 in Unit 22C). Harvest from other areas of the Unit was monitored by harvest ticket report cards (GM000). Total reported harvest for Unit 22 during the reporting period was 192 moose (Unit 22A-18, 22B-42, 22C-36, 22D- 76, 22E-20). The Department documented 179 moose in 2008-2009, and 199 harvested moose in 2007-2008 through similar reporting methods.

ACTIVITY 5: 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 a biennial Board of Game meeting, an annual Advisory Committee meeting, an annual Regional Advisory Council meeting, and an annual Reindeer Herder meeting. There were no changes to moose regulations during the reporting period.

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 a Board of Game meeting, Advisory Committee meetings, federal Regional Advisory Council meetings, 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.

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 the portion of Unit 23 known as the Upper Noatak (Noatak Drainage north of the Kaluktavik) in early April 2010. Density of adult moose was 0.03 moose/mi² and the calf: adult ratio was 12:100.

Sex and age composition data was collected using a geospatial approach in the portion of the Seward Peninsula known as Unit 23 SW in October and November 2009. The population sex ratio were 53 Bulls:100 Cows. The population age ratio was 4 calves :100 Cows.

Both the population estimate in the Upper Noatak and the Composition surveys in Unit 23 SW were joint efforts between NPS, USFWS, BLM, 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. 380 hunters reported taking 145 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. This year, reports were aggressively pursued and near 100% compliance was achieved.

ACTIVITY 4: Evaluate moose browse in portions of Unit 23 to assess quantity, quality, and over-browse conditions in seasonal habitats available to moose.

Twinning surveys were performed in the Lower Kobuk Delta from Late May to Mid June to serve as an indicator of habitat quantity and quality. An 18% (95% CI 8-27) twinning rate was observed. This indicates that there are no current glaring concerns regarding habitat in that area.

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 19-20 April 2010. We counted a total of 265 moose. There were 260 adults and 5 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 25 - 26 October 2009. We observed 219 moose, including 85 bulls (71 bulls:100 cows), 119 cows, and 15 calves (13 calves:100 cows, 7%). There were 2 sets of twins. Antler spreads were estimated and 8 % were less than 30 inches, 5 % were 30-39 inches, 34 % were 40-49 inches, 41 % were 50-59 inches, and 12 % were over 60 inches.

ACTIVITY 3: Capture, measure, collect samples from and attach radio collars to female adult moose to provide information on body condition and disease profiles and to determine seasonal movements of moose. Up to 21 moose will be captured and radiocollared. If short yearlings are in adequate numbers, up to 6 female yearlings may be captured, measured, weighed, and collared.

We captured, measured, sampled, and radiocollared 20 adult female moose on April 22-23, 2010. 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 9 wolves, 3 bears, 3 wolverines, and 4 lynx during the spring trend area count of 2010.

ACTIVITY 5: Vegetation surveys will be conducted to determine the quantity and quality of browse species in the survey area.

We analyzed data that was obtained in a standard browse quantity survey in April 2009 where browse samples were collected from 20 random and 20 systematic plots along the Colville, Anaktuvuk, and Chandler Rivers. We counted how many browse plants of each species there were and the degree of browsing on each plant. We found that there was a 12% browse removal rate, which is similar to other parts of the state with moderate browsing and twinning rates.

We also collected samples to assess the quality of browse that moose in Unit 26A are eating in late winter, at green-up, at peak growth, and at senescence of the plants. These samples are being analyzed for leaf nitrogen, digestible proteins, and tannin-protein precipitation capacity. These samples are currently being analyzed.

ACTIVITY 6: 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 and calving surveys in June. These samples are currently being analyzed.

ACTIVITY 7: 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.

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