ALASKA DEPARTMENT OF FISH AND GAME
DIVISION OF WILDLIFE CONSERVATION
PO Box 25526
Juneau, AK 99802-5526

Alaska Department of Fish and Game
Wildlife Restoration Grant

GRANT NUMBER: AKW-10 Wildlife Restoration FY2016

PROJECT NUMBER: 1.0

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

PERIOD: July 1, 2015 – June 30, 2016

PROJECT LOCATION: Statewide

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

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

Region-wide:

Region I: Units 1, 2, 3, and 5

Activity 1: Provide information to state and federal regulatory processes on moose management.

Accomplishments: Information on moose harvest and management was provided to state and federal regulatory bodies as requested.

Activity 2: Monitor harvest through analysis of registration, Tier II, and drawing permit data (including collection of incisors for aging and photos of antlers.)

Accomplishments: All moose hunts in Region I require hunters to obtain a registration, draw, or Tier II permit. We monitored hunter interest through issuing permits and documented hunter effort and harvest through the required permit reporting process. We collected lower jaws to extract teeth for aging and in areas with antler restrictions photographed antlers of harvested moose. Teeth were sent to a lab, and ages were reported back to DWC. Data and photos were archived in area offices.

Activity 3: Collect anecdotal information about Region I moose populations through contacts with hunters.

Accomplishments: As often as possible regional managers engaged hunters in conversation to gather anecdotal information about the hunt and population.

Activity 4: Conduct aerial surveys to assess sex and age composition of moose in key management areas of the region.

Accomplishments: Winter 2015-16 was unusually warm with little snow during late fall and early winter. However, regional managers were able to fly surveys in the Haines, Gustavus, and Yakutat areas.

Activity 5: Conduct calf production surveys as time and budget allow.

Accomplishments: Demographic information was recorded during aerial surveys.

Activity 6: Conduct moose browse surveys and habitat analysis on discreet moose winter ranges throughout Region I.

Accomplishments: Browse surveys were conducted in the Gustavus area.

Activities by Unit:

Unit 1A

Activity 1: Conduct one aerial sex and age composition survey in the Unuk and Chickamin drainages annually if conditions allow.

Accomplishments: A lack of snow cover made aerial surveys impossible.

Unit 1B

Activity 1: Conduct one sex and age composition survey in the Stikine River drainage if conditions allow.

Accomplishments: A lack of snow cover made aerial surveys impossible.

Activity 2: Obtain age estimates of harvested moose by tooth section.

Accomplishments: We collected lower jaws from moose harvested in Unit 1B to extract teeth for aging. Teeth were sent to a lab, and ages were reported back to DWC.

Activity 3: Collect information on age and antler architecture of all harvested moose to evaluate current antler restrictions.

Accomplishments: We photographed antlers of harvested moose and compared antler architecture with age to evaluate the current management strategy.

Unit 1C

Activity 1: Conduct at least one sex and age composition survey each of the Berners Bay, Taku River, Endicott/St. James Bay, and Gustavus Forelands populations.

Accomplishments: We only had a short window of acceptable survey conditions and elected to survey the Gustavus population.

Activity 2: Monitor habitat conditions on the Gustavus Forelands by ground surveys of willow browse, using standard counts of number of leaders, amount of annual production, and level of browsing by moose.

Accomplishments: We conducted spring browse surveys in Gustavus.

Activity 3: Monitor radiocollared moose in Gustavus and Berners Bay to provide insight into pregnancy status, twinning rate, survival, and use radio collared animals to estimate sightability during aerial surveys.

Accomplishments: We monitored radiocollared moose in Gustavus and Berners Bay, but focused data collection on the Gustavus population.

Activity 4: Obtain age estimates of harvested moose by tooth section.

Accomplishments: We collected lower jaws from moose harvested in Unit 1C to extract teeth for aging. Teeth were sent to a lab, and ages were reported back to DWC.

Activity 5: Collect information on age and antler architecture of all harvested moose in Gustavus to evaluate current antler restrictions.

Accomplishments: We photographed antlers of harvested moose and compared antler architecture with age to evaluate the current management strategy.

Unit 1D

Activity 1: Do at least one sex and age composition survey of the Chilkat Valley population.

Accomplishments: We only had a short window of acceptable survey conditions, but were able to survey the Chilkat Valley population.

Activity 2: Monitor habitat conditions in the Chilkat Valley by ground surveys of willow browse, using standard counts of number of leaders, amount of annual production, and level of browsing by moose.

Accomplishments: No activity during this report period.

Activity 3: Obtain age estimates of harvested moose by tooth section.

Accomplishments: We collected lower jaws from moose harvested in Unit 1D to extract teeth

for aging. Teeth were sent to a lab, and ages were reported back to DWC.

Activity 4: Collect information on age and antler architecture of all harvested moose to evaluate current antler restrictions.

Accomplishments: We photographed antlers of harvested moose and compared antler architecture with age to evaluate the current management strategy.

Unit 2

Activity 1: Document reported moose sightings in Unit 2.

Accomplishments: No sightings were reported during this period.

Unit 3

Activity 1: Opportunistically collect anecdotal information about moose populations of Mitkof, Wrangell, Kupreanof, and adjacent islands.

Accomplishments: As often as possible the Petersburg Area Management Biologist engaged hunters in conversation to gather anecdotal information about the Unit 3 hunt and population.

Activity 2: Obtain age estimates of harvested moose by tooth section

Accomplishments: We collected lower jaws from moose harvested in Unit 3 to extract teeth for aging. Teeth were sent to a lab, and ages were reported back to DWC.

Activity 3: Collect information on age and antler architecture of all harvested moose to evaluate current antler restrictions.

Accomplishments: We photographed antlers of harvested moose and compared antler architecture with age to evaluate the current management strategy.

Unit 5

Activity 1: Conduct at least one sex and age composition survey each for the Yakutat Forelands, Nunatak Bench, and Malaspina Forelands populations.

Accomplishments: We only had a short window of acceptable survey conditions, but were able to survey the Yakutat Forelands, Nunatak Bench, and Malaspina Forelands populations.

Activity 2: Conduct moose population estimate surveys in cooperation with the USFS during fall and winter.

Accomplishments: US Forest Service did not participate in the survey during this reporting period.

Activity 3: Obtain age estimates of harvested moose by tooth section.

Accomplishments: We collected lower jaws from moose harvested in Unit 3 to extract teeth for aging. Teeth were sent to a lab, and ages were reported back to DWC.

Submitted by: Tom Schumacher, Management Coordinator

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

Regionwide:

ACTIVITY : Prepare biennial regional moose management reports.

Moose management report was drafted and submitted for publication in 2014. Staff continue to collect information for preparation of future reports. The department is transitioning to a 5-year report and plan. The next report will be published in 2016.

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

Surveys were completed in selected hunt areas within individual GMUs. See unit specific activities.

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

These are standard activities accomplished in each office. See unit specific activities.

ACTIVITY : Provide information to state and federal regulatory processes on moose management.

Staff routinely interact with federal staff and discuss management of moose relative to the respective regulatory systems. Staff prepared information for presentation to the state Board of Game meeting in 2015.

ACTIVITY : Pursue a reassignment of Kalgin Island from Unit 16B to Unit 15.

During the reporting period, the boundaries of Unit 15 were modified through Board of Game action to include Kalgin Island. This change is effective as of July 1, 2016.

Activities by Unit:

Unit 6

ACTIVITY 1: Moose composition surveys could not be completed due to inadequate snow.

Moose population surveys could not be completed this year due to lack of snow. However, a recruitment survey was flown in 6B and 6C. By survey completion, 166 moose were observed in Unit 6B, 70% of the last population estimate (RY14) of 227 moose. Twelve of these moose were

calves and 154 were adults. Using these numbers, 8 calves: 100 Adults (c:A) were observed or 7% calves. In Unit 6C 424 moose were observed, 70% of the last population estimate (RY14) of 609 moose. Using these numbers, 11 calves: 100 Adults (c:A) were observed (9% calves).

Twinning surveys performed in Unit 6C as part of a long term assessment of twinning rates as an indicator of habitat degradation. We observed 122 moose, of which 27 were parturient cows. Of these cows, 14 had one calf at heel and 13 had twins at heel. Although this sample size is less than ideal to be considered representative, a 48% twinning rate was observed. Twinning surveys have been performed between 2007 and 2015 and have generated estimates of 42-76% twin calves.

ACTIVITY 2: Issued 198 registration permits for a total harvest of 34 moose. General season harvest tickets were used by 54 hunters which took 22 moose from areas open to them.

Units 7&15

ACTIVITY 1: Survey conditions were poor to nonexistent for the Kenai Peninsula during this reporting period due to lack of snowfall. Composition surveys were conducted in units 15A and 15C. No surveys were conducted in units 15B and 7. The bull:cow ratio for 15A remained stable at 33:100 and the calf:cow ratio decreased to 18:100. The bull:cow ratio in 15C increased to 46:100, but this sample is likely biased high due to a lack of snow outside of rutting areas. The calf:cow ratio decreased to 23:100 but is likely biased low for the same reason.

ACTIVITY 2: Hunter harvest and participation remained at the higher levels reached from the last regulation change. Two hundred and twenty-one bulls were taken during the general season, with an additional 36 moose taken by drawing permits, and 13 animals harvested under the federal subsistence season. One thousand nine hundred and sixty hunters reported as participating during the general season and an additional 91 individuals are known to have participated in the state and federal permit hunts.

ACTIVITY 3: Skilak Loop Wildlife Management Area: provide opportunities to view moose in cooperation with Kenai National Wildlife Refuge. No explicit activities were conducted to aid in moose viewing. The Skilak Loop Wildlife Management Area remained closed to moose hunting.

ACTIVITY 4: No population (GSPE) surveys were conducted during the reporting period due to below normal snow fall and poor survey conditions.

Unit 14C

ACTIVITY 1: No moose surveys were flown this year due to lack of snow cover which resulted in very poor survey conditions.

ACTIVITY 2: 115 moose were harvested during the reporting period including 31 cows and 84 bulls.

Submitted by: Cynthia M. Wardlow

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

Region III Units 12, 19, 20, 21, 24, 25, 26B, and 26C

Region wide Activities

1. Prepare biennial moose management reports.

Compiled information and wrote 14 draft 5-year Moose Management Reports and Operational Plans for Units 19, 20, 21, 24, 25, 26B, and 26C. These operational plans will be completed in FY17.

2. Monitor harvest and analyze harvest data.

Monitored harvest of Unit 20D moose during 20 days of general season, and 15 days of hunting in 20D permit hunts.

Fairbanks: Collected via moose harvest reports, entered into WinfoNet database, analyzed in Microsoft Excel.

Galena: Monitored harvest and analyzed data for 7 GMUs.

McGrath: Moose harvest was monitored using harvest reporting on registration hunts, tier II hunts, general season hunts and mortuary moose take.

NEAK: Monitored harvest via general harvest tickets in Units 25A, B, and D and via Tier II permits in Unit 25D. The season was closed in Unit 26B and C because there was no harvestable surplus.

Tok: Monitored moose harvest during a 15-day season in most of Unit 12 and 20E, and a 28 to 30-day season in the remainder of Unit 12, using mandatory harvest reports.

3. Monitor natural mortality and analyze natural mortality data.

Delta: Natural mortality events were recorded when opportunistically observed in Unit 20D and we *assessed the level of natural mortality in composition data collected via GSPE surveys.*

Fairbanks: Assessed level of natural mortality in composition data collected via GSPE surveys.

Galena: Monitored mortality and analyzed data in Units 21B, 21C, 21D, and 24.

McGrath: Moose calf survival was monitored in unit 19D from late May until June 30.

NEAK: *Monitored natural mortality*.

Tok: Conducted radio tracking flights throughout the year to track movements, productivity, and mortality of radiocollared cows in Unit 20E.

4. Provide moose management information to state and federal regulatory processes.

Regionwide: Communicated and coordinated with and attended meetings of 15 local Fish and Game Advisory Committee, the Alaska Board of Game, 2 Federal Regional Advisory Councils, the Federal Subsistence Board, numerous local village councils, Native corporations, and the Wrangell-St. Elias Subsistence Resource Commission about moose management and to review and analyze regulation proposals for the Alaska Board of Game and the Federal Subsistence Board.

5. Capture moose to deploy radio collars and collect information on movements, productivity, and/or morality.

Fairbanks: Captured 60 short-yearling moose to assess nutritional condition.

Galena: Captured 60 moose calves and collected data on movements via 11 radiotracking flights. Conducted 1 collar retrieval flight.

McGrath: 64 Moose calves were captured in Unit 19D in coordination with research staff.

Tok: Conducted 1 capture event (3 days) in Unit 20E for adult cows.

6. Conduct geospatial population estimation, trend, composition, or riparian zone minimum direct count surveys to determine status, trend, productivity, and mortality of moose.

Unit 20D: The Unit 20D North GSPE survey was conducted over 46 hours of flight time by 1 biologist and two technicians in 2 planes over a 3,174 square mile survey area. Aerial twinning surveys were conducted during the last week of May during 14 hours of survey time.

Unit 20A (high-intensity GSPE) and Unit 20B (low-intensity GSPE) population estimates and composition to assess productivity, recruitment, and adult bull escapement.

Galena: Conducted 1 GSPE survey in Unit 24B in cooperation with FWS and BLM, 2 Trend Count Area surveys in 21D, 1 Twinning survey in 21D and 1 Twinning survey in 24D. In cooperation with FWS and BLM, conducted 10 Trend Count Area surveys in Units 24A, 21D, and 21B and 2 twinning surveys in 21D.

McGrath: GSPE surveys were conducted in a portion of Unit 19D (1,118 mi^2) and a portion of Unit 21E (4,094 mi^2).

NEAK *A geospatial population estimate was conducted in eastern Unit 25D during early winter 2015. A sightability trial was also conducted. An aerial moose survey along the riparian zone was conducted in Unit 26B during March 2016.*

Tok: Conducted a geospatial population survey within the 2,241 mi^2 Taylor Corridor survey area in southern Unit 20E. A GSPE survey could not be completed in Unit 12 due to inadequate conditions. Completed a twinning survey in southern Unit 20E by utilizing radiocollared and randomly observed cows with calves.

7. Conduct hunter check stations.

Operated Koyukuk River checkstation and checked 348 hunters. In cooperation with FWS operated Nowitna checkstation and checked 117 hunters.

The Status of Alaska Moose and Factors Influencing Their Populations in Region IV

Region wide Activities:

ACTIVITY 1: Prepare biennial regional moose management reports.

Biennial moose management reports were not due during this reporting period however operational planning did commence and the related reports will be due in 2016.

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

Unit 9: Lack of snow precluded composition surveys in Unit 9. Four radio collars were deployed in cooperation with USFWS.

Unit 11: A composition survey was flown during early December. Bulls: 67, Cows: 133, Calves: 30, Total: 230.

Unit 13: Composition surveys were flown during November in 8 distinct count areas. Bulls: 1,130, Cows: 3,569, Calves: 796, Total: 5,495.

Unit 14 A&B: Twinning surveys were conducted in the Knik River portion of 14A during May and early June. The twinning rate for moose was determined to be 26%.

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

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

Unit	Male	Female	Unknown	Total Harvest
Unit 9	92	0	0	92
Unit 11:	35	0	2	37
Unit 13	1,007	6	1	1,014
Unit 14A	545	569	5	1,119
Unit 14B	95	0	0	95
Unit 16	582	2	0	584
Unit 17:	285	10	1	296

Activities by Unit:

Unit 14A&14B:

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

No GSPEs were completed in Unit 14A or 14B in 2015 due to inadequate weather.

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

Formal disease surveillance was discontinued on moose in the fall of 2013 but does occur on an opportunistic basis.

Unit 16:

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

No GSPEs were completed in Unit 16 in 2015 due to inadequate weather. The population estimate for Unit 16B is 7,400 $\pm$ 1,525 moose.

Unit 17

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

We were unable to conduct a spring population estimation survey in any portion of Unit 17 due to lack of snow.

We did moose twinning surveys in late May and early June in a portion of Unit 17C. Over the course of three flights, 134 cow moose were observed, 19 with calves, and 9 of these with twins, for a twinning rate of 47%.

Submitted by: Todd A. Rinaldi, Region IV Management Coordinator

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

Region wide Activities:

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:

Conduct fall aerial sex and age composition surveys and calf production surveys in selected portions of Unit 18.

We conducted fall survey in the Kuskokwim drainage in November and December 2015. We observed 623 classified in three days of flying. There were 146 bulls (34.7%), 275 cows and 202 calves.

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 spring twining surveys on the Yukon River and Kuskokwim Rivers in late May 2016. In five days of flying we observed a total of 174 cows accompanied by calves. Twinning rates were 27 %(n=51) in the Lowest Yukon area, 28 %(n=40) in the Andreafsky area, 15 %(n=46) in the Paimiut area, and 46% (n=37) in the Kuskokwim area.

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 were not able to fly a GSPE survey during this reporting year due to poor snow conditions.

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.

A fall composition count was conducted in this area in late 2015 (see above) so other surveys were not needed.

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

Anecdotal evidence suggests the moose populations are increasing on the Goodnews and Kanektok drainages.

Monitor overall hunting activity through hunter check stations, harvest reporting, hunter contacts, and field observations.

We analyzed general season harvest reports and found that 676 moose were reported taken in Unit 18 in the Yukon drainage and along the coast. Hunters also reported harvesting 9 moose in the Kanektok River drainage and 15 in the Goodnews River drainage. We contacted moose hunters opportunistically throughout the year. Harvest was 152 moose in RM615 in RY15.

Monitor other mortality factors through public contacts and field observations.

Both black and brown bears are regularly seen during spring twinning surveys in close proximity to cow moose with calves. We received fewer reports from hunters/trappers and the public regarding wolf kills than in the past several years.

Assess habitat quality through browse surveys and field observations.

A browse removal study was completed in April 2016 in the Kuskokwim count area. The results of this study are still being analyzed.

Capture adult or short yearling moose to attach radio collars, assess body condition in relation to habitat quality, and collect samples for disease and contaminant profiles. (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 performed during this reporting period.

Monitor distribution, movement, and dispersal of collared moose using radio telemetry data and aerial survey observations.

We have periodically monitored the 23 cow moose that have been fitted with radio collars. We collected data on the location of the moose as well as the presence of a calf or calves. In May 2016, 7 of the 19 cows observed had calves with them, three of those were twins.

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

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.

Use incentive programs and/or 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 have written numerous newspaper articles, New Releases and PSA's to encourage harvest reporting and explain why it is important.

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; the Bethel AC, the Lower Yukon AC, the Central Bering Sea AC and the Y-K Delta Regional Advisory Council meeting.

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.

We followed-up on the April 2013 public meeting in the community of Quinhagak to make progress towards a moose management strategy in this area.

UNIT 22:

Conduct a geospatial population estimation (GSPE) survey or a riparian zone minimum direct count survey in a portion of Unit 22 to monitor trends in population size, sex/age composition, and recruitment.

A GSPE survey was conducted in Unit 22B West of the Darby Mountains (West) and Unit 22C February-March , 2016. The observable moose estimate for Unit 22B West was 728 moose (90% CI: 609-847). Recruitment was estimated as 14% short yearlings. A Sightability Correction Factor (SCF) of 1.16 (SE=0.069) was estimated for Unit 22B West by resampling intensively surveyed sample search units. The corrected estimate of total abundance in Unit 22B West was 844 (90% CI: 680-1007). The observable moose estimate for Unit 22C was 354 moose (90% CI: 306-403). Recruitment was estimated as 19% short yearlings.

Complete trend area surveys, sex and age composition surveys, or other aerial surveys (where appropriate in Unit 22) 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 portions of Units 22C and 22B West during the reporting period. In Unit 22C, we classified 213 moose and found 28 bulls:100 cows and 20 calves:100 adults. In Unit 22B West, we classified 222 moose and found 41 bulls:100 cows and 20 calves:100 adults.

Spring recruitment surveys were not completed. Staff availability was limited by the completion of survey and inventory activities in Unit 23 .

Monitor human and natural mortality factors affecting the population.

Human harvest was monitored through the harvest ticket/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 Unit 22B.

Evaluate hunting mortality by analyzing all moose harvest data.

Hunt reports were received for 2 bull fall registration hunts (RM840 including hunt areas: Unit 22C, Unit 22B west of the Darby Mountains, Unit 22D Kuzitrin River drainage, and Unit 22D Southwest, and RM841 in the central portion of Unit 22A), 1 antlered bull winter registration hunt (RM843 in Unit 22B west of the Darby Mountains), 1 nonresident bull registration hunt (RM855 in a portion of Unit 22D and Unit 22E) and a fall nonresident bull draw hunt (DM845 in a portion of Unit 22B). 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 181 moose (Unit 22A-35, 22B-39, 22C-15, 22D-72, 22E-20). The Department documented 167 moose in 2014-2015, 155 moose in 2013-2014 and 182 moose in 2012-2013 through similar reporting methods.

Improve harvest reporting through public education and improved communication and by conducting Community-based Harvest Assessments.

The importance of harvest reporting was emphasized to registration permit recipients, village license vendors, and hunters in Unit 22 communities. Public service

announcements were posted in Nome and all residents of Unit 22 were notified by radio announcements. In May of 2016 a community-based Harvest Assessment was completed in Brevig Mission, Teller and White Mountain by the Division of Subsistence. Data analysis is currently ongoing and results are not available. 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.

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

Hunting regulations were evaluated at an annual Advisory Committee meeting and an annual Regional Advisory Council meeting.

Use incentive programs and/or 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 Advisory Committee meetings, federal Regional Advisory Council meetings, and the annual Reindeer Herders Association meeting to improve public understanding of harvest reporting and status of moose populations.

UNIT 23:

Conduct geostatistical population estimation surveys, distribution surveys, sex and age composition surveys, and calf survival counts where appropriate to monitor trends in population density, sex and age composition, and recruitment.

A geospatial population census was conducted during this reporting period in the Unit 23 Selawik Survey area during March 2016. Density of adult moose was 0.14 moose/mi^2 and the calf:adult ratio was 14:100.

The population estimate survey was a joint effort between NPS, USFWS, and ADF&G.

Perform twinning surveys (calf production surveys) to monitor changes in habitat quality.

Scheduling conflicts prevented twinning surveys this year.

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: 469 hunters reported taking 165 moose through the statewide harvest ticket system and the registration permit system. Community-based Harvest Assessments were not conducted in Unit 23 this year. Previous Community-based Harvest Assessments suggest residents of Unit 23 have taken 400-425 moose annually during recent years, substantially more than indicated by harvest ticket hunt reports. Nonresident hunters (43 hunters reported) harvested 20 moose.

Community-based Harvest Assessments were completed by Division of Subsistence in Kotzebue in Unit 23, and in Point Hope in nearby neighboring Unit 26A. Data analysis is currently ongoing and results are not available.

Continue the Unit 23 User Issues planning process to minimize user-group conflicts in relation to biological parameters of moose.

Staff participated in the May 2016 meeting of the Unit 23 User Issues working group. Summary information for this user-group is posted at ADF&G website: http://www.adfg.alaska.gov/index.cfm?adfg=plans.unit23

Use incentive programs and/or 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. Public Service Announcements were recorded for radio broadcast to help educate the hunters about regulations and acquiring the necessary permits. This year, harvest reports were actively pursued by staff and nearly 100% compliance was achieved.

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

A lower Noatak brown bear abundance survey was completed in May 2016 in cooperation with NPS.

Incidental observations of bear, wolves, and other wildlife species were recorded during moose surveys during March 2016. Due to small sample size, no additional analysis was completed.

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

Locations of moose mortalities were noted during GSPE census surveys in March 2016, but no site visits were completed due to determine cause of death.

Unit 26A:

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 survey techniques to estimate the moose population trend in Unit 26A.

We conducted an annual trend count and recruitment survey of the core moose habitat in Unit 26A on 4-6 April 2016. We counted a total of 158 moose in the trend count area. There were 122 adults and 36 short yearlings (23%) that had survived the winter. This was an increase in both adult moose and recruitment compared with recent previous spring surveys.

Conduct a yearly fall aerial sex and age composition survey of the Colville River population.

We were unable to complete this survey in 2015 due to low snow coverage. In 2014, we conducted a fall sex and age composition survey from 5–9 November. We found 26 bulls, 61 cows, 7 calves for a total of 94 moose. The bull:cow ratio was 42B:100C. Calves were 7.4% of the population with a calf:cow ratio of 12CA:100C

Conduct spring, summer, and fall radio telemetry surveys to examine calf production and survival and adult distribution and mortality rates.

Due to the aging nature of the collared sample, we discontinued monitoring of collared moose in this population.

Monitor predator populations and other mortality factors by conducting wolf population surveys, logging bear and wolf observations during moose surveys, and through field observations and public contacts.

> We observed 6 wolves and 0 wolverines in the core moose habitat during the spring trend count of 2016. Wolves were encountered at a rate of 1.0 wolves/hr of aerial survey,

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

> We did not observe or examine any moose mortalities in this reporting period.

Evaluate quantity and quality of moose browse in portions of Unit 26A.

> Preliminary analysis of previously collected browse samples indicate comparatively low digestible protein for Colville River browse samples.

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

> Drawing hunts have remained closed due to low population status. Hunt report information indicates that 2 bulls and 1 cow were harvested by resident hunters by harvest ticket in Unit 26A.
>
> Community-based Harvest Surveys were completed by Division of Subsistence in Barrow and other North Slope villages. Data analysis is currently ongoing and results are not available.

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. We developed and completed the moose Operational Report and Plan.

Submitted by: Tony Gorn, Region V Management Coordinator