FEDERAL AID FINAL PERFORMANCE REPORT

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

Alaska Department of Fish and Game
Wildlife Restoration Grant

GRANT NUMBER: AKW-7

PROJECT 2.0

PROJECT TITLE: Statewide Intensive Management for Moose Populations Identified as Important for Providing High Levels of Harvest for Human Consumptive Use and Predators Influencing Moose Population Status

PROJECT DURATION: April 1, 2015–June 30, 2018

REPORT DUE DATE: September 28, 2018

PRINCIPAL INVESTIGATOR:
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COOPERATORS: N/A

WORK LOCATION: Game Management Units 19D, 20A, 20B, 21E, 24B

I. PROGRESS ON PROJECT OBJECTIVES DURING LAST SEGMENT

OBJECTIVE 1: Conduct more frequent and more robust surveys to estimate the population size and composition (bulls, cows and calves) of moose to evaluate if IM treatments are successful.

ACCOMPLISHMENTS:

In FY16, we conducted Geospatial Population Estimator (GSPE) surveys during November in Unit 19D East Bear Control Focus Area and the Unit 24B Upper Koyukuk Management Area. Two other surveys were planned for spring in Unit 19A but were not accomplished due to unsatisfactory survey conditions. Household harvest survey of 40–80 households were conducted annually during the life of this grant in Alatna and Allakaket of Unit 24B. Survey questions related to catch-per-unit-effort (hours per hunt trip, miles traveled per hunt trip, cost per hunt trip).

In FY17, A GSPE survey was attempted during November in the Unit 19D East Bear Control Focus Area, Units 20A, Unit 20B, and the Unit 24B Upper Koyukuk Management Area, but surveys were not conducted because conditions were not adequate due to a lack of snow. We

had planned to use this project's funding to conduct sightability correction factor flights and to more intensively survey these areas than would have occurred using normal S&I funding.

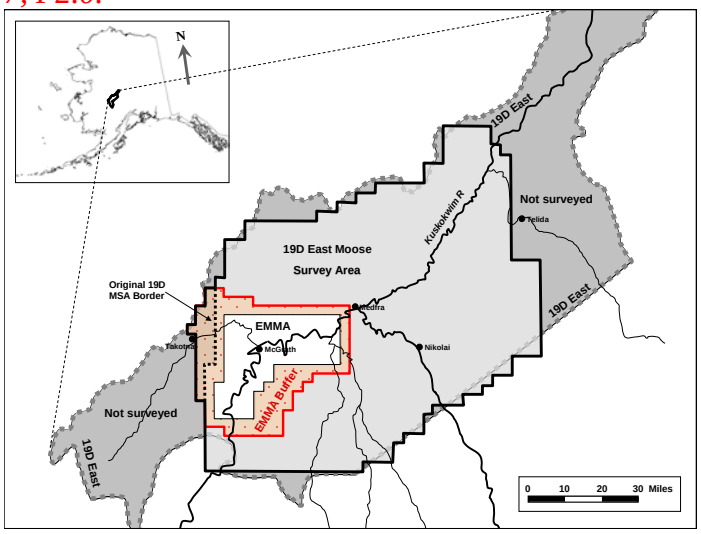
GSPE surveys were conducted in all of Unit 19A during 28 February – 9 March 2017. The survey was divided into 3 areas; 19A west, 19A central, and 19A east. The west, central and east survey areas were treated as independent surveys with separate estimates and associated standard errors. Funding from this project permitted us to sample 300 sample units, using 7 fixed wings and a helicopter. While a low intensity survey was planned under normal survey & inventory activities in 19A east, this project's funding allowed us to sample the Bear Control Focus Area in 19A east at a high intensity to get an independent estimate of the moose population in this area and to estimate the moose population in the Wolf Control Focus Area as an analysis area within 19A east. Additional survey units were also added in 19A west to achieve a higher intensity sampling protocol to achieve a more precise estimate. In addition, sightability correction factor flights were conducted by following the sightability of 57 radiocollared moose in 19A central and 19A east during the survey, which is also more intense than standard survey and inventory activities. No comparable baseline data are available because surveys conducted during previous routine S&I activities do not compare with these large areas, methods, and intense survey protocol.

A harvest survey of 40–80 households was conducted during October 2016 in Alatna and Allakaket of Unit 24B. Survey questions related to catch-per-unit-effort (hours per hunt trip, miles traveled per hunt trip, cost per hunt trip).

FY2018

- In Unit 19D East, a GSPE survey without SCF was accomplished in the "remainder of the Unit 19D East moose survey area", which surrounds the portion of 19D East surveyed under AKW-23 P1.73. The AKW-7, P2.0 GSPE survey included 125 sample units, which provided a larger sample size when added to the AKW-23 P1.73 survey, providing more robust statistics to improve the accuracy and precision of the moose population estimate in Unit 19D East.

  Figure 1. Unit 19D East, denoted in dark grey with a dashed grey border; the area outlined in red was surveyed under AKW-23, P1.73; the area in light grey was surveyed under AKW-7, P2.0.



- In Unit 24B, an additional 79 sample units (SUs) were surveyed under AKW-7, P2.0 to provide more robust statistics to improve the accuracy and precision of the low-intensity GSPE estimate obtained using 51 SUs under AKW-23 project 1.0.
- In Unit 20B, an additional 85 sample units were surveyed under AKW-7, P2.0 to provide more robust statistics to improve the accuracy and precision of the low-intensity GSPE estimate obtained using 100 SUs under AKW-23 project 1.0.
- A harvest survey of 40–80 households was conducted during October 2017 in Alatna and Allakaket of Unit 24B. Survey questions related to catch-per-unit-effort (hours per hunt trip, miles traveled per hunt trip, cost per hunt trip). This is the final year of annual household harvest surveys for this study. Data analysis and results are pending.

OBJECTIVE 2: Estimate calf production, survival and causes of mortality using radio collars and or camera collars to determine if a) calf mortality can be reduced to meet IM population and/or harvest objectives or b) to evaluate the effects of the IM treatment.

ACCOMPLISHMENTS:

- In FY16, we deployed 60 radio collars on moose calves in Unit 24B and completed 12 tracking flights throughout the year. Calf mortality study were conducted in Unit 19D, beginning in May. In that survey, 64 calves were radiocollared to determine survival and cause of death. Results are pending. Hair was collected, when present, at calf kill sites. However, the calf mortality study is still ongoing and thus the hair has not yet been submitted for DNA analysis.
- FY2017 and FY2018, this objective was not planned or accomplished.

OBJECTIVE 3: Estimate adult moose survival rates using radio collars to evaluate the effects of the IM treatment.

ACCOMPLISHMENTS:

- In FY2017, to assess moose mortality in the predation control area of Unit 24B, radiotracking flights for 129 radiocollared moose were conducted on April 9 & 30, June 3, July 1 & 28, September 3, October 1, November 1, and December 11 of 2016 and on January 25 and March 13 of 2017.
- In FY2018, this objective was not planned or accomplished.

OBJECTIVE 4: Monitor moose nutritional status to evaluate the influence of nutrition on moose population status and evaluate IM population objectives.

ACCOMPLISHMENTS:

- In FY2016, during 1-5 March 2016, we captured 60 short-yearlings in Unit 20A. Fifty-nine of which were weighed (n=30 females and 29 males). Twinning survey was conducted in Unit 19D during May. We observed a twinning rate ranging 4% to 18%.

- In FY2017, we captured and weighed 60 short yearling (10 month old) moose in Unit 20B during March 6-11, 2017. In the MFMA we captured 30 moose (16 male, 14 females) and in Central Unit 20B we captured 30 moose (19 males, 11 females).

- In FY18, in Unit 20B, during 6–10 March 2018, we captured short yearling (10-month old) moose using a contracted Robinson R-44 helicopter and a Capture© dart gun and 1cc Capture© darts. Two fixed winged aircraft piloted by a contract pilot and an ADF&G biologist were used to spot animals for the capture. We captured a total of 56 moose (16 males and 14 females in Minto Flats Management Area and 12 males and 14 females in Central Unit 20B). After analysis, results will be published at http://www.adfg.alaska.gov/index.cfm?adfg=librarypublications.wildlifepublications&sort=all&species=Moose&publicationtype=Species+Management+Report+%28and+Plan%29&submit=Search.
- In Unit 21E, a total of 41 adult female moose were captured during 22–27 March 2018 to assist with locating parturient moose for twinning surveys. The snow was very deep with 32–40" at most locations. Twining surveys were conducted on 1 June 2018 by ADF&G staff for 5.5 hours. Data from ADF&G flights and Innoko National Wildlife Refuge flights will be combined to assess parturition and twinning rates. These data will be used in the future to evaluate the moose population status and trend and evaluate population objectives. After analysis, results will be published at http://www.adfg.alaska.gov/index.cfm?adfg=librarypublications.wildlifepublications&sort=all&species=Moose&publicationtype=Species+Management+Report+%28and+Plan%29&submit=Search.

OBJECTIVE 5: Monitor forage abundance and utilization to evaluate browse abundance and quality and determine habitat capability to develop reasonable IM population objectives.

- FY2015–FY2018: Not planned or accomplished in Region III.

OBJECTIVE 6: Investigate and monitor wolf, black bear and brown bear abundance relative to defined IM objectives.

- In FY16, we attempted to estimate black bear harvest rates. However, no radiomarked bears were harvested in the study area during the report period.

- Wolf surveys in AKW-23, P14.0 were not planned or accomplished in any subunit of Unit 24. Under objective 2 for AKW-23, P14.0, we accomplished, attempted, or waited for weather to conduct aerial wolf population estimation or minimum count surveys in Units 12, 19, 20, and 21, but not Unit 24.

    - In FY17, A Minimum Count Wolf Survey was conducted on 4–9 April 2017 in a 4,752 mi^2 portion of Unit 24B. Tracking and light conditions were adequate to obtain a sample necessary to determine that a minimum number of wolves were present in the area that includes the predation control area.
    - In FY18, in Unit 24B during 22–26 March 2018, we conducted an aerial minimum wolf count survey in a 4,752 mi^2 area that included the Kanuti National Wildlife Refuge and an area west of the refuge identified as the Upper Koyukuk Intensive Management area with 2 experienced wolf contract survey pilots. The survey area included 297 sample units (SUs) of approximately 16 mi^2 (4 mi. x 4 mi.), which was last surveyed in 2017. Pilots logged 60.2 hours of search time, with approximately 11.2 hours of ferry time. Search intensity was

approximately 0.76 min./mi^2. Because our search intensities were less than 0.8 min./mi^2 and transects were greater than 1.5 mi., we determined this to be a minimum wolf count according to Gardner and Pamperin (2014).

OBJECTIVE 7: Report findings in appropriate scientific and popular publications.

In FY2016–FY2018, the division developed and submitted annual reports to the Board of Game on predator control programs that were funded in part by this grant. The following annual reports can be found at http://www.adfg.alaska.gov/index.cfm?adfg=intensivemanagement.programs by selecting the program link, or at http://www.adfg.alaska.gov/index.cfm?adfg=librarypublications.wildlifepublications&sort=all&title=annual+report+to+the+Alaska+board+of+game&submit=Search

- Annual Report to the Alaska Board of Game on Intensive Management for Moose with Wolf, Black Bear, and Grizzly Bear Predation Control in Game Management Unit 19A. February 2017. February 2016, February 2017, and February 2018.

- Annual Report to the Alaska Board of Game on Intensive Management for Moose with Wolf, Black Bear, and Grizzly Bear Predation Control in Game Management Unit 19D East. February 2017. February 2016, February 2017, and February 2018.

- Annual Report to the Alaska Board of Game on Intensive Management for Moose with Wolf Predation Control in Game Management Unit 24B. February 2017. February 2016, February 2017, and February 2018.

- Operational Plan for Intensive Management of Moose in Game Management Unit 21E during Regulatory Years 2017–2022. February 2017. February 2016, February 2017, and February 2018.

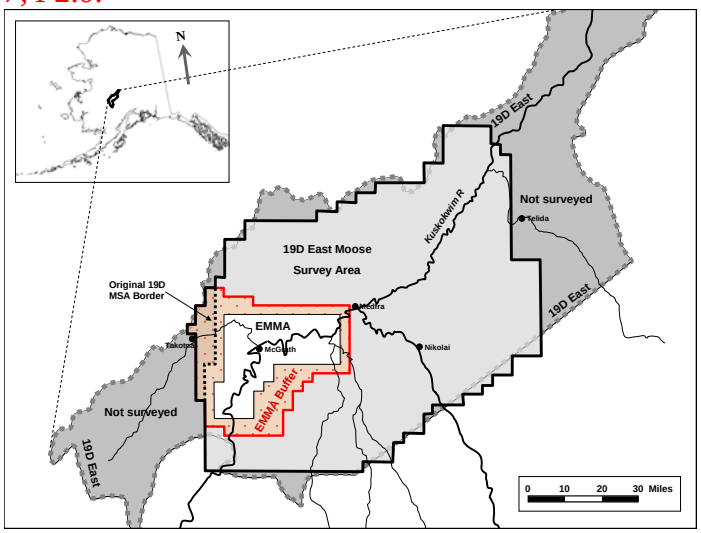
II. SUMMARY OF WORK COMPLETED ON JOBS IDENTIFIED IN ANNUAL PLAN THIS PERIOD (FY2018)

OBJECTIVE 1: Conduct more frequent and more robust surveys to estimate the population size and composition (bulls, cows and calves) of moose to evaluate if IM treatments are successful.

ACCOMPLISHMENTS: FY2018

- In Unit 19D East, a GSPE survey without SCF was accomplished in the "remainder of the Unit 19D East moose survey area", which surrounds the portion of 19D East surveyed under AKW-23 P1.73. The AKW-7, P2.0 GSPE survey included 125 sample units, which provided a larger sample size when added to the AKW-23 P1.73 survey, providing more robust statistics to improve the accuracy and precision of the moose population estimate in Unit 19D East.

Figure 1. Unit 19D East, denoted in dark grey with a dashed grey border; the area outlined in red was surveyed under AKW-23, P1.73; the area in light grey was surveyed under AKW-7, P2.0.



- In Unit 24B, an additional 79 sample units (SUs) were surveyed under AKW-7, P2.0 to provide more robust statistics to improve the accuracy and precision of the low-intensity GSPE estimate obtained using 51 SUs under AKW-23 project 1.0.
- In Unit 20B, an additional 85 sample units were surveyed under AKW-7, P2.0 to provide more robust statistics to improve the accuracy and precision of the low-intensity GSPE estimate obtained using 100 SUs under AKW-23 project 1.0.
- A harvest survey of 40–80 households was conducted during October 2017 in Alatna and Allakaket of Unit 24B. Survey questions related to catch-per-unit-effort (hours per hunt trip, miles traveled per hunt trip, cost per hunt trip). This is the final year of annual household harvest surveys for this study. Data analysis and results are pending.

OBJECTIVE 2: Estimate calf production, survival and causes of mortality using radio collars and or camera collars to determine if a) calf mortality can be reduced to meet IM population and/or harvest objectives or b) to evaluate the effects of the IM treatment.

ACCOMPLISHMENTS: FY2018

- Not planned or accomplished.

OBJECTIVE 3: Estimate adult moose survival rates using radio collars to evaluate the effects of the IM treatment.

ACCOMPLISHMENTS: FY2018

- Not planned or accomplished.

OBJECTIVE 4: Monitor moose nutritional status to evaluate the influence of nutrition on moose population status and evaluate IM population objectives.

ACCOMPLISHMENTS: FY2018

- In Unit 20B, during 6–10 March 2018, we captured short yearling (10-month old) moose using a contracted Robinson R-44 helicopter and a Capture© dart gun and 1cc Capture© darts. Two fixed winged aircraft piloted by a contract pilot and an ADF&G biologist were used to spot animals for the capture. We captured a total of 56 moose (16 males and 14 females in Minto Flats Management Area and 12 males and 14 females in Central Unit 20B). After analysis, results will be published at http://www.adfg.alaska.gov/index.cfm?adfg=librarypublications.wildlifepublications&sort=all&species=Moose&publicationtype=Species+Management+Report+%28and+Plan%29&submit=Search.
- In Unit 21E, a total of 41 adult female moose were captured during 22–27 March 2018 to assist with locating parturient moose for twinning surveys. The snow was very deep with 32–40" at most locations. Twining surveys were conducted on 1 June 2018 by ADF&G staff for 5.5 hours. Data from ADF&G flights and Innoko National Wildlife Refuge flights will be combined to assess parturition and twinning rates. These data will be used in the future to evaluate the moose population status and trend and evaluate population objectives. After analysis, results will be published at http://www.adfg.alaska.gov/index.cfm?adfg=librarypublications.wildlifepublications&sort=all&species=Moose&publicationtype=Species+Management+Report+%28and+Plan%29&submit=Search.

OBJECTIVE 5: Monitor forage abundance and utilization to evaluate browse abundance and quality and determine habitat capability to develop reasonable IM population objectives.

ACCOMPLISHMENTS: FY2018

- Not planned or accomplished in Region III.

OBJECTIVE 6: Investigate and monitor wolf, black bear and brown bear abundance relative to defined IM objectives.

ACCOMPLISHMENTS:

FY2018

- In Unit 24B during 22–26 March 2018, we conducted an aerial minimum wolf count survey in a 4,752 mi^2 area of Unit 24B that included the Kanuti National Wildlife Refuge and an area west of the refuge identified as the Upper Koyukuk Intensive Management area with 2 experienced wolf contract survey pilots. The survey area included 297 sample units (SUs) of approximately 16 mi^2 (4 mi. x 4 mi.), which was last surveyed in 2017. Pilots logged 60.2 hours of search time, with approximately 11.2 hours of ferry time. Search intensity was approximately 0.76 min./mi^2. Because our search intensities were less than 0.8 min./mi^2 and transects were greater than 1.5 mi., we determined this to be a minimum wolf count according to Gardner and Pamperin (2014).

OBJECTIVE 7: Report findings in appropriate scientific and popular publications.

ACCOMPLISHMENTS: FY2018

Results of the data collected under this project are published in the 5-year moose management reports as part of the *species management reports and plans (SMRPs)* for moose and wolf. Current reports are being compiled. When available, published reports and plans will be located at http://www.adfg.alaska.gov/index.cfm?adfg=librarypublications.wildlifepublications&sort=all&species=Moose&publicationtype=Species+Management+Report+%28and+Plan%29&submit=Search

In FY18, the division developed and submitted annual reports to the Board of Game on predator control programs that were funded in part by this grant. The following annual reports can be found at http://www.adfg.alaska.gov/index.cfm?adfg=intensivemanagement.programs by selecting the program link, or at

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- Annual Report to the Alaska Board of Game on Intensive Management for Moose with Wolf, Black Bear, and Grizzly Bear Predation Control in Game Management Unit 19A. February 2018.

- Annual Report to the Alaska Board of Game on Intensive Management for Moose with Wolf, Black Bear, and Grizzly Bear Predation Control in Game Management Unit 19D East. February 2017. February 2018.

- Annual Report to the Alaska Board of Game on Intensive Management for Moose with Wolf Predation Control in Game Management Unit 24B. February 2017. February 2018.

- Operational Plan for Intensive Management of Moose in Game Management Unit 21E during Regulatory Years 2017–2022. February 2017. February 2018.

III. SIGNIFICANT DEVIATIONS AND/OR ADDITIONAL FEDERAL AID-FUNDED WORK NOT DESCRIBED ABOVE THAT WAS ACCOMPLISHED ON THIS PROJECT DURING THIS SEGMENT PERIOD Minor deviations are described above under objectives 1 and 4. Game management units in which all work is described are unchanged since the initial grant was submitted. Specific jobs and activities are unchanged. However, the timeline of jobs and activities were not as expected for FY2018. Evaluation of these activities indicated that it was prudent to conduct these activities to increase our knowledge of the effects of IM on these populations when conditions were conducive for accomplishing these activities. Specifically,

a) Under objective 1, we had expected to conduct Sightability Correction Factor (SCF) trials in Units 24B and 20B to increase accuracy of GSPE surveys. Instead, we surveyed additional sample units (SUs) in those GSPE surveys (which not only increase accuracy like the SCF trials, but unlike SCF trials also increases precision of the estimate) rather than conduct SCF trials. We did this because the logistics of SCF trials became too difficult to accomplish on a reliable basis. Because additional aircraft with specialized equipment and observers and pilots with additional skills were not needed to survey additional SUs, these additional SUs provided data needed to conduct more robust surveys to estimate the population size and composition (bulls, cows and calves) of

moose to evaluate if IM treatments are successful. Because adding SUs to GSPE surveys is often less costly in terms of manpower and specialized expertise needed than conducting SCF trials, GSPE surveys can often be conducted more intensively (more SUs) or more frequently (during more years).

b) Under objective 4, we continued to radiocollar moose in Unit 21E to assist with monitoring of moose nutritional status to evaluate the influence of nutrition on moose population status and evaluate IM population objectives. In order to obtain a more robust sample size during twinning surveys, we radiocollared adult female moose before the calving season. Twinning surveys were also completed in Unit 21E on 1 June (5.5 hours).

c) Under objective 6, we conducted wolf minimum counts in Unit 24B. Wolf surveys in Unit 24B were conducted according to the Region III plan to evaluate the effectiveness of previous wolf control under Intensive Management in Unit 24B. We mistakenly understood that these were to be completed under AKW-7, P2.0 and did not realize they were not on the timeline for AKW-7, P2.0. No wolf surveys in Unit 24 were conducted under AKW-23, P14.0 because the intent was to evaluate effects of wolf control.

USFWS approved an amendment to decrease the grant duration, ending the grant on June 30, 2018. After extensive investigation by DWC and USFWS staff into performance reporting and financial accounting of the 5-year AKW-7 Intensive Management award for projects Caribou 1.0, Moose 2.0, and Deer 3.0, it was determined it is in the State's best interest to cease work on and terminate the entire AKW-7 award, first Caribou on Dec. 1, 2017, and then moose and deer projects on June 30, 2018.

IV. PUBLICATIONS The following annual reports can be found at http://www.adfg.alaska.gov/index.cfm?adfg=intensivemanagement.programs by selecting the program link, or at http://www.adfg.alaska.gov/index.cfm?adfg=librarypublications.wildlifepublications&sort=all&title=annual+report+to+the+Alaska+board+of+game&submit=Search

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- Operational Plan for Intensive Management of Moose in Game Management Unit 21E during Regulatory Years 2017–2022. February 2017. February 2016, February 2017, and February 2018.

V. RECOMMENDATIONS FOR THIS PROJECT

- Project closed

- Continued wolf surveys in Unit 24 will occur under AKW-23, P14.0, as indicated in the FY2019 project statement for AKW-23, P14.0.

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