

FEDERAL AID ANNUAL RESEARCH 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-20

SEGMENT NUMBER: 5

PROJECT NUMBER: 36.0

PROJECT TITLE: Evaluation of intensive management programs in Alaska during harvest regulatory years 2003-2016

PROJECT DURATION: 1 July 2016–30 June 2017

REPORT DUE DATE: 1 September 2017

PRINCIPAL INVESTIGATOR: Thomas F. Paragi

COOPERATORS: Adam J. Craig, Rob A. DeLong, John W. Merickel, Jen K. Roach

WORK LOCATION: Statewide

I. SUMMARY OF WORK COMPLETED THIS SEGMENT ON JOBS IDENTIFIED IN ANNUAL WORK PLAN

OBJECTIVE 1/JOB/ACTIVITY (a): Describe time series of biological, environmental (e.g., weather, fire, habitat), and harvest parameters of prey and predators for each Intensive Management (IM) program using available data from when the first abundance estimates were reported in consistent presentation formats that incorporate estimates of variance when statistically-based sampling occurred.

The PI and cooperators met in May to review progress in data compilation and decide on standards and format for documentation and storage of data and analytical output. We decided that use of the Division's internal Structured Query Language (SQL) Server would be most efficient for storing data and providing access to those data for queries and analysis. Analytical staff will utilize Software R and ArcGIS to conduct queries and analyses of those spatial and harvest data. DeLong will write a script for Paragi to upload Survey and Inventory (S&I) and other miscellaneous time series information from spreadsheet compilations to a relational database in the SQL Server environment.

Paragi and Merickel discussed format and documentation needs for the biological data to facilitate estimates of variance where sampling occurred and graphic display. They identified data sets for the GeoSpatial Population Estimator (GSPE) that would allow replication of original abundance and composition estimates for IM areas plus adjacent areas that might serve as non-treatment comparisons.

JOB/ACTIVITY (c) Describe reported harvest of caribou and moose and reported take of black bears, brown bears, and wolves statewide by game management unit (GMU) as a context for interpreting caribou and moose harvest and trends statewide and the relative contribution from IM programs.

Harvest reporting biases unrelated to IM activities (treatment effects) may confound interpretation of trends in hunter participation, harvest, and kill success rate. We reviewed the findings and recommendations of Schmidt et al. (2015) on sources of bias in harvest reporting for moose that might be addressed during the query for moose and caribou harvest.

Paragi summarized issuance of predator control permits to the public by regulatory year and IM program to verify program activity and characterize degree of public participation and tallied bear and wolf take by harvest and predator control in the annual IM reports. He provided black bear and brown bear control tallies to statistics technicians in Regions III and IV to verify coding of take method in the database of bear hide sealing. He asked technicians to ensure a consistent coding term for denoting predator control by agency and for coding predator control take by snare (snaring was not added to sealing certificates until RY2012, thus has been reported by method as “other,” requiring a separate entry in the notes field). Review and corrections are nearing completion. The harvest and predator control query for the IM evaluation will occur when bear coding corrections have been completed. For all species, data extracted by the query will be archived as a snapshot in time from the “live” SQL database so our analysis can be replicated in posterity.

Roach and Paragi have been developing a geodatabase in ArcGIS to document temporal and spatial changes in IM areas authorized for predator control and in areas of liberalized harvest of predators often spatially associated with IM areas. Together these regulatory boundaries define areas of predator removal opportunity by the public. Boundaries and activity conditions were verified from Board of Game notes, codified regulations, hunting and trapping regulation booklets, issued permits, and conversations with staff. Coding fields were derived to allow queries by area, regulatory year, program activity, and type of activity. The geodatabase structure will be replicated in the SQL environment to facilitate queries in this project, but a parallel structure will be maintained in ArcGIS to allow other internal users access once the project is completed. The beta structure was created from 2003-06 (the more complicated years of regulatory change) in ArcGIS and will be completed for 2007-2016 in SQL.

JOB/ACTIVITY (d) Estimate caribou and moose hunting effort and kill per unit effort from GMUs along the road and ferry system to discern spatial shifts before and during IM programs and the effects of regulatory changes on harvest.

The Schmidt et al. (2015) analysis overlaps our intended evaluation period but ended in 2006, which is when “failure to report” reminders were more consistently sent to hunters. We will watch for a potential increase in the reporting rate for both successful and unsuccessful hunters after 2006 (systematic positive bias). We also queried the reported harvest of moose and caribou from selected regulatory years and IM programs expected to show a range of situations. We used this to gauge degree of non-reporting (blanks in database) for days hunted and for reporting area hunted at the precision of uniform coding unit (UCU) to “minor specific” for successful and unsuccessful hunters. Blank fields occurred at a relatively low rate, but rate varied among programs, so we will use the raw data and not attempt to estimate missing variables, which require additional statistical assumptions. Where queries of prey or predator take by the public might be applied specific to predator control areas with boundaries that do not coincide with UCU boundaries, we will assign the reported take proportionally by the area of a UCU within the predator control area.

JOB/ACTIVITY (e): Describe a time series for each IM program that includes S&I and IM costs and staff time.

Paragi summarized IM costs and associated staff time from the 2017 IM reports to the Alaska Board of Game through Fiscal Year 2016 (Regulatory Year 2015). The final summary for the evaluation period will be completed in spring 2018 when costs ending 30 June 2017 are tallied in the next report. (See Job f for discussion of S&I costs.)

JOB/ACTIVITY (f): Approximate the marginal cost of harvested caribou and moose produced in IM programs within the resolution of cost data and necessary qualifications of accounting and economic principles.

Estimating marginal cost was to be attempted by using the S&I expenditures in IM project areas as “fixed” costs and IM expenditures as “variable” costs to gauge the marginal cost increment for harvest beyond that which was produced through S&I expenditures only. Upon closer examination, Paragi found that actual S&I expenditures are not tracked at the IM project level in annual performance reports to Federal Aid or by DWC admin staff or regional management coordinators. S&I budgeting could be an approximation of salary and operations cost allocation for comparison with IM expenditures, but mid-year fiscal re-allocations would introduce error (e.g., when costly surveys are not done because of poor weather). Given the limitations described for cost reporting resolution, for the final report I will summarize IM costs from annual reports to the Board of Game and describe cost approximation methods.

JOB/ACTIVITY (j): Update the IM literature review on the ADFG website.

Paragi coordinated an update of the IM literature citations posting on the DWC website as an outreach resource since 2011. He contacted predator-prey researchers among the 5 regions for contributions and provided the update to HQ staff in January 2017. He will continue to obtain and review pertinent literature on predator-prey dynamics and ungulate harvest in boreal ecosystems and public policy evaluation.

II. SIGNIFICANT DEVIATIONS AND/OR ADDITIONAL FEDERAL AID-FUNDED WORK NOT DESCRIBED ABOVE THAT WAS ACCOMPLISHED ON THIS PROJECT DURING THIS SEGMENT PERIOD

None.

III. PUBLICATIONS

None.

V. RECOMMENDATIONS FOR THIS PROJECT

We will complete data compilation and begin analysis in FY 2018.

VI. LITERATURE CITED

Schmidt, J.I., K.A. Kellie, and F.S. Chapin III. 2015. Detecting, estimating, and correcting for biases in harvest data. *Journal of Wildlife Management* 79:1152-1162.

PREPARED BY: Thomas F. Paragi

DATE: 19 July 2017