

**Alaska Department of Fish and Game  
State Wildlife Grant**

**Grant Number:** T-21 **Segment Number: 1**  
**Project Number:** 6.0  
**Project Title:** Golden Eagle Occupancy and Productivity in Interior Alaska.  
**Project Duration:** 16 April 2011 – June 30, 2014  
**Report Due Date:** September 1, 2014  
**Principle Investigator:** Travis Booms, ADF&G  
**Project Location:** Dry Creek area of the Alaska Range, Interior Alaska

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**I. PROBLEM OR NEED THAT PROMPTED THIS RESEARCH**

Among the primary recommendations in Alaska's Comprehensive Wildlife Conservation Strategy (CWCS) is identifying and filling information gaps on Alaska's species and their habitats (p. 148-151). Such information gaps exist for Golden Eagles and this project will fill these basic gaps for Interior Alaska. Further, Arthur and Prugh (2010) have identified important population dynamics and relationships in the food web made-up of Golden Eagles, snowshoe hares, coyotes, and Dall's sheep. However, we are just beginning to understand these complex relationships and additional work beyond the first 10-yr. hare cycle is need to better understand how hares affect population dynamics of eagles and other predators. Last, given recent changes to the implementation of the Bald and Golden Eagle Protection Act, government agencies will need accurate estimates of annual Golden Eagle production to administer and allocate permits and a better understanding of inter-continental movements of Golden Eagles. Because this information is not available for most of Alaska, this effort will be one of the few to provide the information needed to facilitate permitting and Golden Eagle conservation and contribute to an effort to mark more eagles to help assess the origin of birds that may be permitted for take in the lower 48 states.

**II. REVIEW OF PRIOR RESEARCH AND STUDIES IN PROGRESS ON THE PROBLEM OR NEED**

Arthur and Prugh (2010) describe previous research in this area. This project attempted to continue Arthur and Prugh's (2010) work and add additional years of data to extend the study beyond 10 years to capture the ecological dynamics of a second snowshoe hare population crash.

**III. APPROACHES USED AND FINDINGS RELATED TO THE OBJECTIVES AND TO PROBLEM OR NEED**

Golden Eagle surveys were conducted by the Project Leaders or Cooperators, all of whom are qualified and experienced in surveying for Golden Eagles from a helicopter. Surveys were conducted using a Robinson R44 helicopter as was done previously in this area and following McIntyre (2002) and Anderson (2007). We conducted helicopter-based surveys of 57 historical Golden Eagle nest sites in late April 2011 and again in July 2011 to estimate eagle occupancy and productivity. The productivity survey was replicated again in July 2012 at the 57 sites, but no feather sampling was attempted.

This study area proved unexpectedly difficult to survey and access to collect molted feathers was challenging. Relatively few feathers were collected in 2011 and no young were accessible to sample. Further, the method used to concurrently survey sheep by the co-PI changed from helicopter to fixed-wing surveys in subsequent years, making the eagle surveys more expensive than originally planned. Finally, the co-PI, Steve Arthur, resigned in the summer 2013, resulting in a loss of personnel capacity to accomplish the field work in 2013 and subsequent years.

For these reasons, we wish to close this project early. Although we did collect two additional years of data that will be used in future analyses and publications, the sample size from the two years is insufficient to warrant independent reports and publications. We did further our understanding of eagle population dynamics by documenting two additional years of occupancy and productivity data and abundance in this study area and by marking individual eagles for future recaptures through non-invasive genetic sampling.

**IV. MANAGEMENT IMPLICATIONS**

Results from the 2011 and 2012 field efforts supported findings and recommendations described in Arthur and Prugh (2010). Essentially, snowshoe hares play a pivotal role in influencing the population dynamics of sheep and golden eagles. When snowshoe populations are high, eagle productivity is likewise high, resulting in increased eagle predation on sheep lambs. This has direct implications for setting harvest limits for proper management of sheep populations. The eagle abundance data obtained during this work will also be used in a statewide eagle population estimate, which will be used to help manage the take of Golden Eagles and subsequent mitigation in Alaska and the lower 48 states.

**V. SUMMARY OF WORK COMPLETED ON JOBS**

Federal Aid funds were used to support salary and helicopter charter time in 2011 and 2012. In both years, 57 eagle nest sites were surveyed to assess occupancy and productivity. Objectives 2 and 3 were not fully accomplished because of the reasons described above. However, these data will be used in future analyses following Arthur and Prugh (2010).

**I. PUBLICATIONS**

None.

**II. ADDITIONAL FEDERAL AID-FUNDED WORK NOT DESCRIBED ABOVE THAT WAS ACCOMPLISHED ON THIS PROJECT**

None.

**III. Significant deviations:** None.

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