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

Annual PROGRESS REPORT SHELL AND INSTRUCTIONS
The purpose of this report is to summarize significant findings and their management implications for the entire project. This template is based on Federal Aid reporting requirements as found in the Federal Aid Handbook, Chapter 11
http://wsfrprograms.fws.gov/subpages/toolkitfiles/fah52211.pdf

Alaska Department of Fish and Game
State Wildlife Grant

Grant Number: T-13-1

Project Number: 1.0

Project Title: Habitat modeling and diet of Yellow-billed Loons in northern Alaska

Project Duration: August 25, 2008 – June 30, 2012

Report Period: August 25, 2013 – August 24, 2014

Report Due Date to HQ: September 30, 2014

Partner: University of Alaska Fairbanks, Institute of Arctic Biology & School of Fisheries and Ocean Sciences

---

I. PROBLEM OR NEED THAT PROMPTED THIS RESEARCH

Yellow-billed loons were a candidate species under the Endangered Species Act and development activities on the North Slope were a possible threat to the species.

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

This study examines the habitat use and diet of breeding yellow-billed loons on the North Slope of Alaska. Past distribution models for yellow-billed loons, based on remotely sensed data (Stehn *et al.* 2005, Earnst *et al.* 2006), have identified important landscape factors influencing distribution, but models generally over-predicted loon occupancy. Empirical data measured in the field has the potential to enhance past models (Stehn *et al.* 2005) and our understanding of loon breeding ecology. Because the distribution of fish prey likely will be important in determining the distribution of yellow-billed loons, we will first examine how fish species are distributed across the landscape. We will then use molecular techniques to resolve what prey items may be important in the diet of yellow-billed loons during breeding. Next, we will examine past distribution models for yellow-billed loons (Stehn *et al.* 2005, Earnst *et al.* 2006). Using

new survey data on breeding distribution we will cross-validate previous models and refine models using field data from the interior arctic coastal plain, such as information on fish distribution and lake characteristics. Lastly, we will create distribution models for yellow-billed loons on the Colville River Delta using an independent dataset from this region. This will allow us to determine whether the species-environment relationship is similar between the two regions.

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

This study examines the habitat use and diet of breeding yellow-billed loons on the North Slope of Alaska. Past distribution models for yellow-billed loons, based on remotely sensed data (Stehn *et al.* 2005, Earnst *et al.* 2006), have identified important landscape factors influencing distribution, but models generally over-predicted loon occupancy. Empirical data measured in the field has the potential to enhance past models (Stehn *et al.* 2005) and our understanding of loon breeding ecology. Because the distribution of fish prey likely will be important in determining the distribution of yellow-billed loons, we will first examine how fish species are distributed across the landscape. We will then use molecular techniques to resolve what prey items may be important in the diet of yellow-billed loons during breeding. Next, we will examine past distribution models for yellow-billed loons (Stehn *et al.* 2005, Earnst *et al.* 2006). Using new survey data on breeding distribution we will cross-validate previous models and refine models using field data from the interior arctic coastal plain, such as information on fish distribution and lake characteristics. Lastly, we will create distribution models for yellow-billed loons on the Colville River Delta using an independent dataset from this region. This will allow us to determine whether the species-environment relationship is similar between the two regions.

IV. MANAGEMENT IMPLICATIONS

The findings marginally assisted with the not warranted finding by the FWS. Fish distribution and occupancy modeling results should be of high interest to managers in the design of fish sampling protocols for the North Slope. Industry permitting issues that require knowledge of fish species composition in various lakes and ponds will benefit greatly from this work.

V. SUMMARY OF WORK COMPLETED ON JOBS FOR LAST SEGMENT PERIOD ONLY *Briefly describe how Federal Aid funds were spent on each active job, listing the results achieved during only this segment period (1 paragraph each). If a job was not accomplished as planned, very briefly tell why.*

Less than 1K of funds were expended by the university during the past year per the Reimbursable Services Agreement. Approximately 13K in funds remain with the Department to close out the project. The Department is using nonfederal funds to manage this project.

Some aspects of the project have not been completed. Specifically, the analysis of the ConocoPhillips data from the Colville River was not completed and was hampered by the lack of an agreement between the university, ConocoPhillips, and the US Geological Survey. This agreement was begun a number of years ago and it was only recently signed and the data transferred to the university.

VI. PUBLICATIONS - *yes, various by the University; none by the Department.*

I. ADDITIONAL FEDERAL AID-FUNDED WORK NOT DESCRIBED ABOVE THAT WAS ACCOMPLISHED ON THIS PROJECT DURING THIS SEGMENT PERIOD

None.

II. RECOMMENDATIONS FOR THIS PROJECT

Develop a Reimbursable Services Agreement with the university to expend the remaining funding and develop a final report.

Prepared by: Kim Titus

Date: 29 October 2014