

IDAHO DEPARTMENT OF FISH AND GAME

Virgil Moore, Director

Project F15AF00964
Amendment 3

Southern Idaho Ground Squirrel

Final Progress Report



Performance Period
10 July 2015 to 30 June 2018

Compiled and edited by: Bill Bosworth

September 2018
Boise, Idaho

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**FEDERAL AID IN WILDLIFE RESTORATION
ANNUAL PROJECT PERFORMANCE REPORT**

1. State: Idaho

Grant number: F15AF00964 Amend 3

Grant name: Southern Idaho Ground Squirrel Conservation

2. Report Period: 01 July 2015 to 30 September 2018

Report due date: 28 September 2018

3. Location of work: Payette, Gem, and Washington counties, southwest Idaho

4. Objectives

- a) Continue to monitor status of Southern Idaho Ground Squirrel (SIDGS) populations.
- b) Characterize flea loads on SIDGS.
- c) Describe the small mammal community sympatric with SIDGS populations.
- d) Collect and sequence genetic samples from 2 study sites.

5. If the work in this grant was part of a larger undertaking with other components and funding, present a brief overview of the larger activity and the role of this project.

Work conducted toward Objective 4d is contributing to an evaluation of Idaho Ground Squirrels being led by University of Idaho. The University of Idaho-led evaluation is designed to characterize gene flow between the Northern Idaho Ground Squirrel (*Urocitellus brunneus*) and SIDGS (*U. endemicus*) and reveal additional information pertaining to identification of management units and conservation priorities.

6. Describe how the objectives were met.

Continue to monitor status of SIDGS populations.

We sampled ground squirrel populations at 5 sites distributed in the core range of SIDGS, which includes portions of Washington, Payette, and Gem counties, Idaho. We captured ground squirrels in Tomahawk wire live traps baited with a grain-based bait. We marked each captured squirrel with a PIT tag, except juvenile squirrels <ca. 100 g were marked with a numbered ear tag placed in each ear. We captured and tagged 271 squirrels over 2 field seasons. We recorded 172 recapture events, some representing multiple recaptures of trap-attracted individuals. A single animal captured during the first field season was recaptured during the second field season.

We also conducted driving transects, partially repeating surveys completed during 2013-2014. The survey area was determined on the basis of our 2014 distribution model (Svancara and Bosworth 2014). Survey transects were along 15 predetermined road routes. Surveys

were conducted every 0.5 miles along each route, and comprised counts of visual and vocalization detections during a 5-minute-per-site survey interval within a radius of 100 m from the survey point. Multiple observers conducted independent surveys at each site to develop detection histories for the purpose of estimating detection rate, which was anticipated to be <1 and vary with survey conditions, surveyor, and site structure. SIDGS were detected in 221 of the 651 surveys completed during 2017.

Characterize flea loads on SIDGS.

We collected fleas from squirrels following methods in Biggins et al. (2010), which involved combing fleas from anesthetized squirrels. We collected 2920 fleas over the course of the study, representing an average of 6-7 fleas per animal (maximum = 50). Previous anecdotal observations and attempts to recover fleas during previous mark-recapture studies had lead researchers to conclude that SIDGS individuals did not typically have many, if any, fleas.

Describe the small mammal community sympatric with SIDGS populations.

We sampled nocturnal rodents at 4 survey sites using Sherman live traps. We captured 86 deer mice, 6 Great Basin pocket mice, and 6 harvest mice. 85 fleas were sampled from these animals following Biggins et al. (2010).

Collect and sequence genetic samples from 2 study sites.

Initial SIDGS capture rates were very low, so we expanded genetic sampling to all 5 sites to ensure a sufficient sample size for genomic analysis. We used oral swabs to collect genetic material from a subset of captured SIDGS, targeting a sample of 30 samples at high-density sites and >20 samples at lower density sites. We collected 114 genetic samples among 5 sites. These samples were provided to University of Idaho for sequencing and including in analysis for their study of population genetics for the northern Idaho/southern Idaho species group.

7. Discuss differences between work anticipated in grant proposal and grant agreement, and that actually carried out with Federal Aid grant funds.

Object 4b, characterizing flea loads on SIDGS, was initially intended to describe not only the quantities of fleas but also the diversity of the flea fauna. The foundational information leading to investigation of flea populations included the premise that SIDGS typically have few fleas, based on anecdotal observations and opportunistic attempts to collect fleas by researchers familiar with the species. Through our work, we have consistently found fleas on SIDGS, often at moderate to high numbers per animal. We have collected almost 3000 fleas. Considering that flea identification is challenging and that we have encountered much larger numbers of fleas than anticipated, characterizing the diversity of fleas and the temporal or spatial distribution of flea taxa is beyond the budget of this project. All fleas collected will be maintained in a specimen collection to assure availability if additional investigation is called for.

8. List any publications or in-house reports resulting from this work.

None

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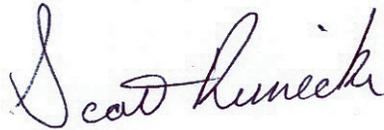
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