

Progress Report: Deep Creek Watershed Pygmy Rabbit Project

Prepared by:

Randy T. Larsen – Research Associate
Daniel F. Bentley—M.S. Candidate
Janet E. Lee—M.S. Candidate
Dr. Jerran T. Flinders - Principal Investigator

Prepared for:

Alison Rogers, Project Coordinator,
Natural Resource Conservation Service (NRCS)

Reporting Period:

July 2006 through September 2006

This report is a summary of research activities conducted during the third quarter of 2006 on the Deep Creek Watershed Pygmy Rabbit (*Brachylagus idahoensis*) Project. A no-cost extension was agreed to by all parties and granted during the second quarter of 2006 that should keep research active through December 31, 2006 at which point additionally funding as part of the implementation phase would be required to continue efforts. A much larger and more detailed report complete with maps, etc. will be available at the end of December 2006 or first part of January 2007. Consequently, this report should be considered a brief summary of third quarter activities in anticipation of more substantive document at the end of the fourth quarter. Highlights of this report include continued habitat sampling, commencement of density estimates via pellet plot counts and other activities outlined below.

Transects:

Sampling in predicted pygmy rabbit habitat in areas highlighted by the overlay of vegetation type, soil characteristics, and slope (as well as some assessment in areas deemed by the GIS map as unsuitable to test the accuracy of the model) has been the focus of the last couple of quarters. These transects involve carefully walking through

areas of seemingly suitable habitat looking for pygmy rabbits as well as burrows and fecal pellets—key indicators of pygmy rabbit occurrence. Burrows are classified into four categories of activity outlined by Rachlow and Whitam (2004) and then separately reclassified into eight categories described by (Ulmschneider et al. 2004). No new areas seemingly occupied by pygmy rabbits were detected this quarter leaving discovery of evidence of pygmy rabbits to a handful of areas on the west side despite sampling in all parts of the watershed. Several of the sites do not appear to be currently active and confirmation of pygmy rabbits via remote cameras has occurred in only two areas suggesting a reduced distribution from historic time. A map detailing areas searched, results, etc. will be available in the final report.

Remote Cameras:

Burrows detected during walk transects are monitored with remote cameras. Burrow densities in several areas of predicted suitable habitat within the watershed are very high. Several species of animals including pygmy rabbits appear to use these burrows and there is preliminary evidence that classification of these burrows using both Rachlow and Witham's (2004) or Ulmschneider et al's. (2004) criteria is somewhat inaccurate in predicting the current utilization of burrows by pygmy rabbits. Consequently, we have employed remote cameras placed at burrow sites as a primary detection tool (Eveline Sequin, University of Nevada Reno personal communication) to document with photographic evidence the occurrence of pygmy rabbits within the watershed. Remote cameras are also used to verify the presence or absence of pygmy rabbits in comparison to burrow classification. Dual classification of burrows coupled

with evaluative data from remote cameras should allow for refinement of census techniques and burrow classification schemes.

We have surveyed burrows for several hundred more camera hours this quarter—bringing the project commencement-to-date total to over 10,000 camera hours.

Photographed wildlife include the following species: black-tailed jackrabbit (*Lepus californicus*), cottontail (*Sylvilagus* sp.), coyote (*Canis latrans*), badger (*Taxidea taxus*), long-tailed weasel (*Mustela frenata*), kangaroo rat (*Dipodomys* sp.), least chipmunk (*Eutamias minimus*), pygmy rabbit (*Brachylagus idahoensis*), sage sparrow (*Amphispiza belli*) and an unidentified lizard. In addition this quarter we photographed sage thrashers (*Oreoscoptes montanus*) at multiple burrow entrances coincident with a hot spell during the summer (appendix I). Additional notable documentation includes several pictures of cottontail rabbits with ear damage consistent with parasites and/or disease (appendix I).

Several pictures taken this quarter (appendix I), along with pictures from the last two quarters are images of pygmy rabbits. The most recent photos were taken at burrow complexes located south of Ibapah and west of the highway as well as several from the recently discovered area around greasewood springs (see second quarter report). We will continue to evaluate the areas where these photographs were taken and monitor burrows throughout the watershed in an effort to map pygmy rabbit distribution within the study area, identify limiting factors, and make appropriate management recommendations over the next few months prior to completion of the final report. Investigation to date, however, suggests a very low density population extant in only two locations indicative of a more precarious position for pygmy rabbits within the watershed relative to more robust populations in other areas of Utah and the Intermountain West.

Geographic Information System (GIS) Based Mapping:

One of the major accomplishments in 2005 was completion of the predictive map depicting suitable pygmy rabbit habitat within the watershed. The predictive map is based on three layers depicting vegetation, slope, and soils data. The overlay of these three layers has excluded large areas of the watershed that are now considered unsuitable to pygmy rabbits as well as highlighted areas where these leporids could occur. Use of this map as a primary tool for the discovery of pygmy rabbits is ongoing and efforts are being continued to refine the map as well as check its accuracy. To date the map has been very beneficial and has helped us to locate potential suitable habitat eventually leading to the discovery of pygmy rabbits in two separate locations. Final completion of the predictive map, along with measures of its accuracy will be available next quarter with completion of the final report for the planning phase.

Habitat Sampling:

Habitat sampling is concluding with the focus of this quarter the summarization and statistical evaluation of collected data. Data collection was conducted from random points in both occupied and unoccupied habitat and the following measurements taken originating from each point: slope, GPS location, aspect, distance habitat edges, vertical obscuration, horizontal obscuration, canopy cover (line transects extending 15 meters in each direction), distance to nearest shrub, shrub density, understory percentage and composition, and others. Horizontal and vertical obscuration are measured with cover boards according to described methodology (Bunnell et al. 2004). In addition, soil samples are taken at each point at both a depth of one inch and six inches. These detailed measurements should allow for meaningful comparisons between both occupied and

unoccupied habitat within the watershed as well as comparisons of habitat within the study area to habitat across the state where more robust populations of pygmy rabbits occur.

Preliminary results suggest expected differences (higher sagebrush canopy cover, taller shrubs, etc.) differentiate between occupied and unoccupied habitat within the watershed and that occupied habitat compares favorably to occupied habitat in other areas of the state. Preference for tall and high density big sagebrush (*Artemisia tridentata*) has been noted by other researchers (Green and Flinders 1980a, 1980b, Dobler and Dixon 1990, Gahr 1993, Gabler 1997, Katzner and Parker 1997, Oliver 2004, Heady and Laundre' 2005), as well as a negative correlation between greasewood and rabbit density (Conde 1982). Greasewood within the watershed appears to have invaded historic sagebrush communities and now occupies much of the low elevation areas where historic rabbit populations were found.

We continue to work toward completion of stated objectives. As outlined above, available funding will expire by December 31, 2006 at which point a summary report will document efforts during the planning phase. Continued research would require funding of the implementation phase.

Literature Cited:

- Bunnell, K. D., J. T. Flinders, D. L. Mitchell, and J. H. Warder. 2004. Occupied and unoccupied sage grouse habitat in Strawberry Valley, Utah. *Journal of Range Management* **57**:524-531.
- Conde, L. L. 1982. Comparative ecology of pygmy rabbits and blacktailed jackrabbits in southcentral Idaho. Brigham Young University, Provo, UT.
- Dobler, F. C., and K. R. Dixon. 1990. The pygmy rabbit *Brachylagus idahoensis*. Pages 111-115 in J. A. Chapman and J. E. C. Flux, editors. Rabbits, Hares and Pikas: Status Survey and Conservation Action Plan. International Union for Conservation of Nature and Natural Resources, Gland, Switzerland.
- Gabler, K. I. 1997. Distribution and habitat requirements of the pygmy rabbit (*Brachylagus idahoensis*) on the Idaho National Engineering and Environmental Laboratory. Idaho State University, Pocatello, Idaho.
- Gahr, M. L. 1993. Natural history, burrow habitat and use, and home range of the pygmy rabbit (*Brachylagus idahoensis*) of sagebrush flat, Washington. University of Washington.
- Green, J. S., and J. T. Flinders. 1980a. *Brachylagus idahoensis*. Pages 1-4 in Mammalian Species. The American Society of Mammalogists.
- Green, J. S., and J. T. Flinders. 1980b. Habitat and dietary relationships of the pygmy rabbit. *Journal of Range Management* **33**:136-142.
- Heady, L. T., and J. W. Laundre'. 2005. Habitat use patterns within the home range of pygmy rabbits (*Brachylagus idahoensis*) in southeastern Idaho. *Western North American Naturalist* **65**:490-500.
- Katzner, T., and K. L. Parker. 1997. Vegetative characteristics and size of home ranges used by pygmy rabbits (*Brachylagus idahoensis*) during winter. *Journal of Mammalogy* **78**:1063-1072.
- Oliver, G. V. 2004. Status of the pygmy rabbit (*Brachylagus idahoensis*) in Utah. United States Department of the Interior, Bureau of Land Management, Utah State Office.
- Rachlow, J., and J. Witham. 2004. Evaluation of census techniques for pygmy rabbits. Project Completion Report R-1-6-0214, Department of Fish and Wildlife Resources.
- Ulmschneider, H., D. Hays, H. Roberts, J. Rachlow, T. Forbes, J. Himes, E. Sequin, M. Haworth, T. Katzner, A. Kozlowski, R. Rauscher, and P. Lauridson. 2004. Surveying for pygmy rabbits (*Brachylagus idahoensis*). Pages 1-24 in.

Appendix I (Photos from the 3rd Quarter 2006).



Pygmy rabbit from Deep Creek Watershed



Weasel from same burrow as above.



Badger from same burrow



Sage Thrasher from same burrow photographed during hot part of summer



Ear damage likely attributable to disease and/or parasites