

5-YEAR REVIEW

Short Form Summary

Species Reviewed: Northern Idaho Ground Squirrel (*Uroditellus brunneus*)

Current Classification: Threatened

FR Notice announcing initiation of this review: U.S. Fish and Wildlife Service. 2016. Endangered and threatened wildlife and plants; initiation of 5-year status reviews of 76 species in Hawaii, Oregon, Washington, Montana, and Idaho. Federal Register 81(29):7571-7573.

Lead Region/Field Office:

Region 1/ Idaho Fish and Wildlife Office, Boise, Idaho.

Name of Reviewer(s):

Greg Burak, Idaho Fish and Wildlife Office, Fish and Wildlife Biologist

Tracy Melbihess, Idaho Fish and Wildlife Office, Chief of Classification and Recovery

Kathleen Hendricks, Idaho Fish and Wildlife Office, Assistant Field Supervisor

Gregory Hughes, Idaho Fish and Wildlife Office, State Supervisor

Methodology used to complete this 5-year review:

This review was conducted by staff of the Idaho Fish and Wildlife Office (IFWO) of the U.S. Fish and Wildlife Service (USFWS), beginning on February 12, 2016. The review was based on a review of current, available information since the last 5-year review for the northern Idaho ground squirrel (NIDGS) in 2011 (Burak 2011, entire). The evaluation conducted by Greg Burak, Fish and Wildlife Biologist, was reviewed by the IFWO Chief of Classification and Recovery. The document was then reviewed by the Assistant Field Supervisor for Endangered Species before submission to the State Supervisor for approval.

Application of the 1996 Distinct Population Segment (DPS) Policy:

The NIDGS is not listed as a DPS.

Background:

For information regarding the species listing history and other facts, please refer to the USFWS Environmental Conservation On-line System (ECOS) database for threatened and endangered species (http://ecos.fws.gov/tess_public).

Review Analysis:

No new threats nor significant new information regarding the species' biological status have become available since the last 5-year review conducted in September 2011 (Burak 2011, entire). Threats identified in the last status review remain the same. One potential threat to the species, sylvatic plague (*Yersinia pestis*), has been more intensively researched since the last 5-year status review, but definitive results are not conclusive at this time (Goldberg et al. 2017, p. 7). New actions that have been implemented or updated since 2011 are described below.

New taxonomic information

In 2012, the NIDGS was identified as a distinct species, *Urocitellus brunneus* (Hoisington-Lopez et al. 2012, entire; Helgen et al. 2009, entire). Subsequently, in 2015, the Service revised the taxonomy of the species under the Endangered Species Act through a rulemaking in the Federal Register (80 FR 35860). The NIDGS's former subspecies, the southern Idaho ground squirrel, is recognized as *Urocitellus endemicus*. This change in taxonomy does not result in the change of the range of the taxon as it was listed.

Monitoring

The Idaho Department of Fish and Game NIDGS recovery coordinator developed a new long-term monitoring design for the species in 2013 (Evans Mack et al. 2013, entire). This more efficient and effective monitoring design was needed since it had become difficult to survey all known occupied sites under the previous monitoring approach (Evans Mack et al. 2013, p. 1). Compared to the previous site-based surveys, the new monitoring design is a layered approach that combines grid-based line-transect distance sampling within a patch occupancy framework to provide a statistically valid, repeatable approach for estimating population size and trends every year for a time frame of 20-30 years (Evans Mack et al. 2013, p. i).

Utilizing this new survey design, monitoring results for the past 3 years document an increase of NIDGS from an estimated 968 to 2,659 animals, unadjusted for detection probability (Evans Mack and Jaquish 2014, p. i; Wagner and Evans Mack 2016, p. i). Despite the change in survey methodology in 2013, monitoring results since 2011 indicate an apparent increasing trend, despite a dip in 2014 (Figure 1; Evans Mack 2016, p. 6). As reference, the 2010 population estimate reported in the last 5-year status review was 1,560 animals, which was based on previous survey methodology that modeled population results from intensive-monitoring trap sites and squirrels detected on surveys (Evans Mack 2010, p. 6; Burak 2011, p. 6).

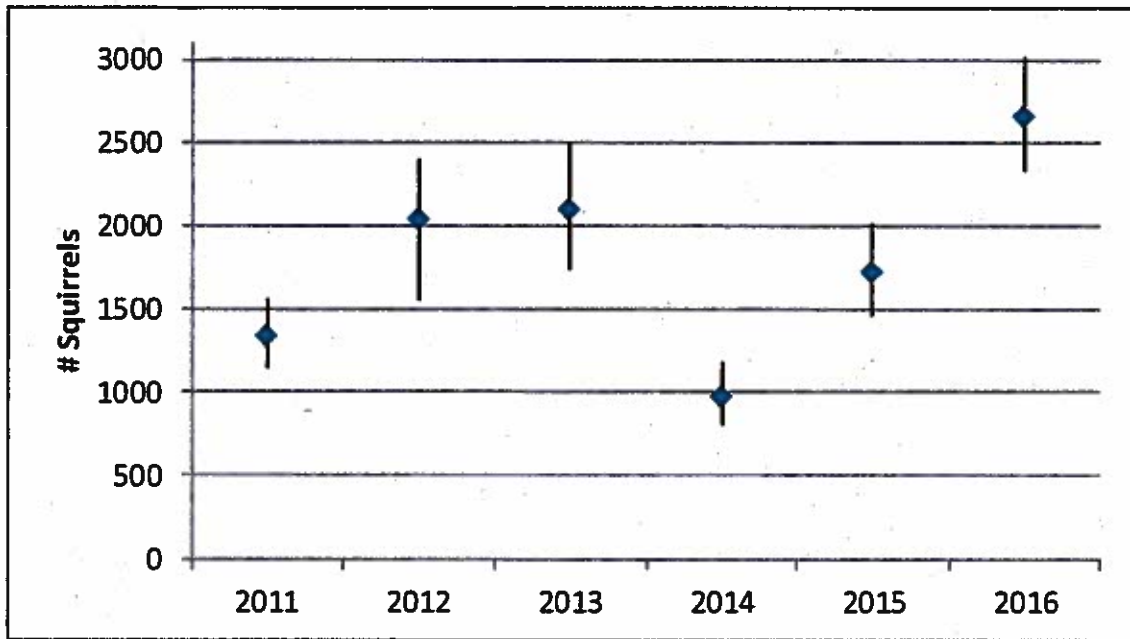


Figure 1. Northern Idaho Ground squirrel population estimates from program DISTANCE using varying survey methods during 2011-2016 (taken out of Evans Mack 2016, p. 6).

Research

Several NIDGS research projects have been initiated since the last 5-year review. The U.S. Geological Survey's Idaho Cooperative Fish and Wildlife Research Unit at the University of Idaho is conducting research on the potential effects of forest restoration and sylvatic plague on the species (Goldberg et al. 2017, entire). The forest restoration component of this research is still in the pre-treatment phase, while the plague research treatments have been ongoing since 2014 (Goldberg et al. 2017, pp. 7-9).

The primary forest restoration research objectives are to evaluate NIDGS demography and other response variables by comparing the effectiveness of 1) forest thinning followed by prescribed fire, and 2) prescribed fire only. These variables include the size and location of NIDGS colonies in response to forest treatments, hibernacula locations, reproductive output, pre-hibernation body mass, overwinter survival, and natal recruitment. Final results will be available after the treatment phase is completed (Goldberg et al. 2017, p. 7). Additionally, this work is providing information on poorly understood aspects of the species' natural history, including NIDGS movements across landscapes through time, and hibernation activity and timing.

The objective for the sylvatic plague research is to determine whether plague reduces survival of NIDGS and/or sympatric species (i.e. species overlapping in distribution that may encounter one another; Goldberg et al. 2017, p. 9). Sympatric species included in this research are yellow-pine chipmunks (*Tamias amoenus*), deer mice (*Peromyscus maniculatus*), montane voles (*Microtus montanus*), and Columbian ground squirrels (*Urocitellus columbianus*), a native species considered to be a competitor to NIDGS

(Sherman and Yensen 1994, pp. 7-8). Research to date has provided preliminary indication that plague may be present within the range of NIDGS and may be reducing survival of the species, along with chipmunks and Columbian ground squirrels; additional research is needed to verify the validity of early results (Goldberg et al. 2017, pp. 7 and 24; Conway in litt. 2016). In addition to the main objectives, ectoparasites and loads (i.e. number of ectoparasites found on animals) are being characterized for these species.

Habitat Restoration

Since 2011, the U.S. Forest Service (USFS) Payette National Forest thinned approximately 291 hectares (ha) (720 acres (ac)), and treated approximately 1,544 ha (3,815 ac) with prescribed fire (USFS in litt. 2017). This work was carried out to maintain and enhance occupied NIDGS habitat, and to improve potential habitat that may be adjacent to, or link, occupied habitat patches (USFS in litt. 2017). Additional information gained from ongoing research on the effects of forest restoration on NIDGS will allow for a more refined quantification of NIDGS responses to habitat treatments in the future (Goldberg et al. 2017, p. 8).

In September 2014, the USFS issued a Record of Decision for the Lost Creek-Boulder Creek (LCBC) Landscape Restoration Project (USFS 2014, entire). The LCBC project encompasses approximately 32,375 ha (80,000 ac) in the western portion of the New Meadows Ranger District of the Payette National Forest, within the range of the NIDGS. As part of this project, understory thinning and prescribed fire will be used to improve habitat conditions for the species within and up to ¼ mile outside of occupied NIDGS habitat (Priority #1 Areas). In habitat that was modeled as potentially suitable for NIDGS, but is located outside of occupied areas (Priority #2 Areas), treatments will be identical, but occur after Priority #1 Areas are completed. Potential movement and dispersal corridors may also be treated in Priority #2 Areas to increase connectivity between occupied sites (USFS 2014, p. 11). These treatments have the potential to improve suitable habitat conditions for the species across a large portion of its range, thereby addressing the primary threat to the species (meadow invasion from conifer encroachment) at landscape scales.

Private Land Conservation

Since 2011, one of the largest privately held lands containing NIDGS changed ownership twice. In the spring of 2016, Potlatch Forest Holdings Inc. sold their lands to Southern Pine Plantations (SPP; Idaho Statesman in litt. 2016a). Later that summer, SPP sold those same lands to another private buyer (Idaho Statesman in litt. 2016b). In the past, the Idaho Department of Fish and Game has held a Memorandum of Agreement with the previous landowner (Potlatch Forest Holdings) to carry out NIDGS conservation actions on their lands (Idaho Department of Fish and Game and Potlatch in litt. 2008). In January, 2017 a letter was sent from the IFWO to the present landowner informing them of the presence of NIDGS on their property, along with the previous monitoring and research efforts carried out on these lands (USFWS in litt. 2017). It is unknown at this time what type of land management activities the new owner will undertake on their property.

The existing OX Ranch Safe Harbor Agreement (SHA) remains in effect until 2019, with the associated Section 10(a)(1)(A) permit in effect for an additional 5 years until 2024 (USFWS 2009, entire). This large SHA, which encompasses 3,150 ha (7,783 ac) of enrolled lands, continues to provide valuable habitat for the largest known populations of northern Idaho ground squirrels, while also providing access for continued annual monitoring and research on the species (USFWS 2009, entire; Wagner and Evans Mack 2016, entire; Goldberg et al. 2017, entire). The Schwisow low-effect Habitat Conservation Plan (HCP), signed in 2007, is a 25-year permit issued by the USFWS for the development of an area approximately 0.81 hectares (2 acres) in size (USFWS 2007, entire). No other conservation agreements have been initiated since the last 5-year status review was completed in 2011.

Smaller parcels of lands containing NIDGS colonies remain available for development, though we do not have specific information on how much land occupied by NIDGS may have been developed since the last 5-year status review. In addition, while we do not know how much private land occupied by NIDGS is presently for sale, a review of real estate listings in proximity to known NIDGS colonies shows multiple (15-20) parcels for sale, primarily near New Meadows and Round Valley (Burak in litt. 2017). Since approximately half of the currently known sites occupied by NIDGS occur on private land lacking some form of long-term protection, the long-term conservation of private lands containing NIDGS continues to be a recovery priority (Evans Mack in litt. 2010, p. 5; Wagner and Evans Mack 2016 p. 11)

Predator Control

Limited mammalian predator (i.e. badger (*Taxidea taxus*)) and competitor (i.e. Columbian ground squirrels) control to benefit NIDGS has occurred since the last 5-year status review, and the effectiveness of these efforts in relation to NIDGS is still currently unknown. Blood samples were taken from a portion of predators and screened for the presence of sylvatic plague in an ongoing effort to investigate whether sylvatic plague is present in the mammalian community within the NIDGS range (Conway in litt. 2016).

Analysis Summary

Several conservation actions have been implemented or updated by the U.S. Forest Service, Idaho Department of Fish and Game, and the U.S. Geological Survey since the last 5-year status review. These include updating and implementing new annual survey methods, research, and habitat restoration implementation and planning. However, overall NIDGS are not secure from threats, particularly the primary threat of habitat loss (i.e. meadow invasion by conifers). Additionally, the threat of the development of private land continues in a portion of their range. While research on potential effects of sylvatic plague is ongoing, results are preliminary, and it is therefore difficult to determine whether sylvatic plague constitutes a threat to NIDGS at this time.

Recovery Criteria

The 2003 final Recovery Plan for the NIDGS contains 4 recovery criteria. In addition, the Recovery Plan targets a total effective population of greater than 5,000 individuals (USFWS 2003, entire).

1. Of the 17 potential metapopulations that have been identified within the probable historical distribution, there must be at least 10 metapopulations, each maintaining an average effective population size of greater than 500 individuals for 5 consecutive years.

The new long-term monitoring program (see *Monitoring* section) provides an overall population estimate through a grid-based line-transect sampling design that annually surveys a portion (approximately 57%) of available cells considered to be currently occupied. Thus, while each annual effort only surveys portions of metapopulations, over 3 consecutive years all portions are surveyed (Evans Mack et al. 2013, entire). The associated patch occupancy component of the new monitoring design provides a longer term measure of occupancy over the entire range. In other words, the existing monitoring approach does not provide annual total estimates at the metapopulation level as was done under the previous monitoring approach, but it does provide an overall population estimate and trend, with patch occupancy providing information of occupancy distribution over time. However, because metapopulation areas are large, it would be possible to post stratify the survey data by metapopulation area during the analysis phase and obtain estimates at the metapopulation level.

Even though we do not presently estimate annual population size at the metapopulation level, monitoring data indicates we do not meet this recovery criterion. In addition, the 2016 total NIDGS population was estimated at 2,659 individuals, 3,590 individuals if adjusted for detection probability (Wagner and Evans Mack 2016, p. i). Therefore, the total effective population target (5,000 individuals) has not been met.

2. The area occupied by a minimum of 10 potential metapopulation sites must be protected. In order for an area to be deemed protected, it must be: (1) owned or managed by a government agency with appropriate management standards in place, (2) managed by a conservation organization that identifies maintenance of the subspecies as the primary objective for the area or, (3) on private lands with a long-term conservation easement or covenant that commits present and future landowners to the perpetuation of the subspecies.

As stated in the previous 5-year status review, 13 of the 17 metapopulations identified in the Recovery Plan are in Federal ownership, or in a combination of Federal, State, and/or private ownership (Burak 2011, p. 4). This remains the same.

3. Plans have been completed for the continued ecological management of habitats for a minimum of 10 potential metapopulation sites.

As stated in the previous 5-year status review, 2 of the 17 metapopulations have a prescribed fire plan developed, while 1 metapopulation has a conservation plan drafted (Burak 2011, p. 4). This remains the same.

4. A post-delisting monitoring plan covering a minimum of 10 potential metapopulation sites has been completed and is ready for implementation.

A post-delisting monitoring plan has not been developed given that the above criteria have not been achieved. Regardless, the new long-term monitoring method for NIDGS (see *Monitoring* section) may provide the basis for this post-delisting monitoring plan requirement if the species is delisted.

In summary, the recovery criteria have not been met for the NIDGS. In the last 5-year review it was recommended that the 2003 Recovery Plan be revised (Burak 2011, p. 20), though a revision has not been completed or initiated since that time. The reasons for the revision as identified in the previous 2011 5-year status review remain valid, and thus revising the Recovery Plan remains a recommended future action.

Recommendations for Future Actions:

1. Continue habitat treatments for NIDGS to address the primary threat to the species – loss of meadow habitat due to conifer forest encroachment.
2. Explore and initiate conservation options on private lands.
3. Revise the Recovery Plan based on recommendations outlined in the 2011 5-year status review.
4. Continue funding the NIDGS coordinator position located with the Idaho Department of Fish and Game.
5. Continue annual NIDGS population monitoring utilizing the long-term monitoring plan developed by Evans Mack et al. (2013, entire).
6. Revise the existing suitable habitat model for the species, initially developed in 2007, utilizing recently collected annual monitoring and habitat data (Crist and Nutt 2008, entire).

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U.S. FISH AND WILDLIFE SERVICE
SIGNATURE PAGE for 5-YEAR REVIEW of the
Northern Idaho Ground Squirrel (*Urocitellus brunneus*)

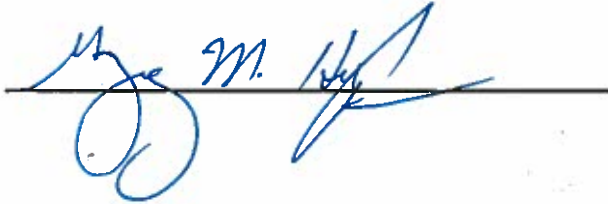
Pre-1996 DPS listing still considered a listable entity? _____NA_____

Recommendation resulting from the 5-year review:

- Delisting
- Reclassify from Endangered to Threatened status
- Reclassify from Threatened to Endangered status
- No Change in listing status

New Recovery Priority Number: 2C (species, high degree of threat, high recovery potential).

State Supervisor, Idaho Fish and Wildlife Office



Date 3/21/17