

SECTION 7 GUIDELINES - Snake River Basin Office
Southern Idaho Ground Squirrel (Candidate Species)
(Spermophilus brunneus endemicus)

I. BACKGROUND

Legal Status

The southern Idaho ground squirrel (*Spermophilus brunneus endemicus*) (SIDGS) is a candidate species under the Endangered Species Act of 1973, as amended (Act) (61 FR 7596).

Species Description

Originally considered to be one species, the Idaho ground squirrel is currently comprised of two subspecies - the northern (*S. b. brunneus*) and southern (*S. b. endemicus*) (Yensen 1991). The SIDGS is a small terrestrial, burrowing mammal, with a mean length of 241 millimeters (mm) (9.5 inches (in.)) for males and 235 mm (9.4 in.) for females (Yensen 1991). The pelage of the SIDGS is noticeably paler in color than that of the northern Idaho ground squirrel, a feature attributable to different soil conditions (Yensen 1985; Yensen 1991).

Additionally, the baculum (penis bone) of the SIDGS is generally larger than its northern counterpart (Yensen 1991). Genetic differentiation between the two subspecies has also been confirmed using enzyme analyses and DNA protein sequencing, which analyze blood constituents to determine genetic differences (Gill and Yensen 1992; Sherman and Yensen 1994).

Species Distribution/Abundance

The southern Idaho ground squirrel occurs in an area about 30 x 70 kilometers (km) (19 x 43 miles) extending from Emmett, Idaho, northwest to Weiser, Idaho and the surrounding area of Squaw Butte, Midvale Hill, and Henley Basin in Gem, Payette, and Washington Counties (Yensen 1991). Its range is bounded on the south by the Payette River, on the west by the Snake River, and on the northeast by lava flows with little soil development (Yensen 1991). The range of SIDGS formally extended further north as far as Goodrich, Idaho in Adams County (Yensen 1980; Yensen 1991). However, recent studies have shown a severe decline in the number of occupied population sites in the northern part of their range.

The population of SIDGS was estimated at around 40,000 in 1985 (Yensen 1999). Surveys indicate a precipitous decline in squirrel populations since then, and a 1999 survey of 145 of 180 known historical population sites indicated that only 53 sites (37 percent) were still occupied (Yensen 1999). Furthermore, 52 of the 53 occupied sites had what Yensen (1999) characterized as “remarkably low levels of activity”, with activity decreasing from south to north. Of the sites sampled in Gem County, 58 percent still had squirrels, whereas only 46 percent in Payette County, and 27 percent in Washington County were active (Yensen 1999).

Surveys conducted by Yensen (2000a) in the spring of 2000, found active burrows at only one of 35 sites surveyed, and no individuals were seen. Additional surveys by the Idaho Department of Fish and Game produce 30 new SIDGS population sites (Yensen and Haak 2000). A total of 219 sites are now known, although squirrel activity is low. A current estimate places the total population between 2,000 and 4,500 individuals (Yensen 2001).

Life History

The southern Idaho ground squirrel spends much of its time underground. Adults emerge from seasonal torpor in late January or early February, depending on elevation and micro-habitat conditions (Yensen and Sherman 1997). As with other small-eared ground squirrels in the Northwest, adults have a relatively short above ground active season, lasting only four to five months. Ground squirrels are diurnally active (Sherman 1989), with most activity occurring in daylight. Most of this time is spent reproducing and foraging before the long seasonal torpor begins (Moroz *et al.* 1995; Yensen and Sherman 1997; Sherman 2000). Females breed within the first few days of emerging from torpor, and young are born about three weeks later. Juveniles emerge from the nest burrow in about 50 days. All age groups of the SIDGS cease above ground activity by late June or early July to begin torpor.

Habitat

Southern Idaho ground squirrels are found in the lower elevation shrub/steppe habitat of the Weiser River Basin. They inhabit an area once dominated by big sagebrush (*Artemisia tridentata*), bitterbrush (*Purshia tridentata*), and a variety of native forbs and bunchgrasses (Yensen 1991). Soils are typically granitic sands and clays formed by the Boise Mountains. Prescott and Yensen (1999) suggest that these squirrels prefer areas with a high percentage of native cover types, especially areas with big sagebrush. However, some non-native features may enhance their survival as well, specifically alfalfa fields, haystacks, or fence lines. The predominant vegetation was formerly big sagebrush-bunchgrass-forb associations, with bitterbrush found in the sandier locations (Yensen 2000b). The preferred complex of vegetation has dramatically declined or changed, with much of the former vegetative structure now replaced by non-native annuals.

Threats

A number of factors have contributed to the decline of the species, or pose significant threats to future populations. They include:

- habitat destruction and modification
- reduction in the nutritive value of available forage
- recreational shooting
- vulnerability to disease and predation

- competition with Columbian ground squirrels (*Spermophilus columbianus*)
- isolated populations highly susceptible to extirpation

Land ownership

The southern Idaho ground squirrel occurs on private property, and lands managed by the Bureau of Land Management (BLM) and Idaho Department of Lands (IDL). Of the 219 population sites identified by Yensen (2000a, b) and Yensen and Haak (2000), approximately 85 percent (186) were on private lands, 12 percent (26) were BLM, and 3 percent (7) were under the jurisdiction of IDL.

References

- Gavin, T. et al. 1999. Population genetic structure of the northern Idaho ground squirrel. *Journal of Mammalogy* 80:156-168.
- Gill, A.E., and E. Yensen. 1992. Biochemical differentiation in the Idaho ground squirrel. *Spermophilus brunneus* (Rodentia: Sciuridae). *Great Basin Naturalist* 52:155-159.
- Moroz, P., S. Jeffries, F. Gordon, A. Hansen, W. Owen, J. Rohlman, C. Lunte, R. Howard, C. Harris, and L. Lewis. 1995. Idaho ground squirrel *Spermophilus brunneus brunneus* habitat conservation assessment, conservation strategy. Idaho Interagency Conservation/Prelisting Effort. 18 pp.
- Prescott, D.J., and E. Yensen. 1999. Habitat variables correlated with presence of southern Idaho ground squirrels, *Spermophilus brunneus endemicus*. 19 pp.
- Sherman, P.W. 2000. Distribution and behavior of Washington ground squirrels in Central Washington. Unpublished report, Cornell University, Ithaca, N.Y. 13 pp.
- Yensen, E. 1980. Population status of the Idaho ground squirrel. A publication of the Center for Research, Grants, and Contracts. Boise State University. 9 pp. + appendices.
- _____. 1985. Taxonomy, distribution, and population status of the Idaho ground squirrel. Status Report prepared for the U.S. Fish and Wildlife Service. 41 pp.
- _____. 1991. Taxonomy and distribution of the Idaho ground squirrel. *Spermophilus brunneus*. *Journal of Mammalogy* 72:583-600.
- _____., and P. Sherman. 1997. Mammalian species: the Idaho ground squirrel, *Spermophilus brunneus*. *Journal of the American Society of Mammalogists*. N. 560, pp. 1-5.
- _____. 1999. Population survey of the southern Idaho ground squirrel, *Spermophilus brunneus endemicus*. A report for the U.S. Fish and Wildlife Service, Snake River Basin Office. 16 pp.
- _____. 2000a. Conservation survey of three species of western "small-eared" ground squirrels. A report for the U.S. Fish and Wildlife Service, Snake River Basin Office. 19 pp. + list of

locations.

_____. 2000b. Additional surveys for southern Idaho ground squirrels, Spermophilus brunneus endemicus. A report for the U.S. Fish and Wildlife Service, Snake River Basin Office. 9 pp. + localities.

_____, and B. Haak. 2000. Population survey of the southern Idaho ground squirrel. BLM Challenge Cost Share Project; Agreement No. 203. Boise, Idaho. 16 pp.

Contacts

Eric Yensen, mammalogist, Albertson's College of Idaho, Caldwell, Idaho. (208) 459-5335.

Ray Vizgirdas, mammalogist, U.S. Fish and Wildlife Service, 1387 S Vinnell Way, Room 368, Boise, Idaho 83709. (208) 378-5249.

Rich Howard, biologist, U.S. Fish and Wildlife Service, 1387 S Vinnell Way, Room 368, Boise, Idaho 83709. (208) 378-5243.

**SOUTHERN IDAHO GROUND SQUIRREL
SURVEY AND INVENTORY GUIDELINES**
U.S. Fish and Wildlife Service
Snake River Basin Office

The majority of historical and known occupied populations occur within private lands, the remainder of the population, which equates to roughly ten percent of known localities, occurs within either the Bureau of Land Management Lands or the State of Idaho Lands. These recommended guidelines describe protocols for conducting inventories for the southern Idaho ground squirrel (SIGS) and describe the minimum standards for reporting results. At this time the Service recommends utilizing these survey guidelines within Adams, Gem, Payette, and Washington counties. Suitable soils exist within Ada, Boise, and Canyon counties but SIGS have not been recorded in these counties but could still be present.

The Service will use the information outlined below:

- 1) to assist in determining whether proposed project(s) may affect the species, and
- 2) to evaluate the direct, indirect, and cumulative effects associated with the project(s) under consideration.

Field surveys/inventories should be conducted in a manner that will locate the species. Field inventories should be conducted by qualified biologist(s) familiar with SIGS. The field investigator(s) should:

1. Surveys should be conducted by walking or otherwise closely scrutinizing potential SIGS habitat looking for diagnostic sign such as burrows, tracks, scat, feeding residues, and/or other sign. It should be performed by a trained biologist familiar with conducting small mammal surveys and inventories, and familiar with the life history and ecology of SIGS.
2. Surveys should be conducted at the time of year when the species is active and there is the greatest opportunity for positive visual confirmation. Typically the period of time is during March and April due to the activity level of SIGS being higher and vegetation should still be low enough not to hinder observation.

Known populations range in size from 1 to 50 squirrels. Because of their low densities, squirrels may not be seen during a “quick” one-time only survey. Therefore, several visits shall be necessary.

In some instances, a survey may incorporate a live-trapping component because the species may be present in very low densities over a large area.

Once captured, the investigator will clip a sampling of hair from the dorsal portion of the rump

and save as a voucher for future verification

Surveys conducted in potential habitat before the species emergence in spring and after all aboveground activities have ceased in late summer and into fall, may not be considered sufficient by the FWS. The exception, however, would be where the individual conducting the survey has a demonstrated proficiency in identifying SIGS sign (e.g., burrows, tracks, scats, etc.)

Vegetation, soil, and/or ortho-topo maps should be reviewed prior to initiating any field surveys to provide the investigator a clearer picture as to where to survey for the species. However, simply reviewing these maps should not be construed as a means to disqualify an area as “not potential habitat” without field surveys to help substantiate this call. The Service has generated a soils map that identifies various soil types that historical populations have occupied or current populations now occupy. Survey Investigators should consider soil and vegetative conditions when conducting surveys in potential or historical habitat.

7. A report that contains the results of field survey should be submitted to the Snake River Basin Office (SRBO). This report should include at a minimum:
 - a. a description of the biological setting, including plant community (forb to grass ratio), topography, soils, potential habitat and cover, and an evaluation of other environmental conditions, such as slope and aspect
 - b. a map of the project location with a legal description of the site (showing scale, orientation, project boundaries, parcel size, and quadrangle name)
 - c. survey dates and survey methodology(ies) used
 - d. maps showing the specific route(s) traveled or live-trap placement within the survey area
 - e. a comprehensive list of all small mammal species observed, detected, and occurring on the project site for each habitat type
 - f. current and historic land uses of the habitat(s) and degree of site alteration

II. Presence of SIGS off-site on adjacent parcels, if known:

- g. an assessment of the biological significance or ecological quality of the project site in a local and regional context

- h. names and qualifications of all surveyors
8. If target species is(are) found, the following information should also be included in the report:
 - a. a map showing the Federally listed species distribution as it relates to the proposed project.
 - b. an estimate of the number of individuals of SIGS per unit area; identify areas of high, medium and low density of target species over the project site (if possible), and provide acres of occupied habitat of SIGS. Investigators could provide color slides or photos of SIGS or representative habitats to support information or descriptions contained in reports.
 - c. the degree of impact(s), if any, of the proposed project as it relates to the occupied (or potential unoccupied) habitat of SIGS.
 9. Document findings of the species by submitting copies of field notes to the FWS and/or Forest Service, as appropriate. Documentation of determinations and/or voucher specimens (i.e., hair samples)¹ may be useful in cases of taxonomic ambiguities, habitat or range extensions.
 10. Report as an addendum to the original survey, any change in abundance and distribution of the SIGS in subsequent years. Project sites with inventories older than 1 year from the current date, or conducted outside the time period of the species aboveground activities, will likely need additional surveys. Investigators should consult with the Service to assess whether additional surveys are needed.
 11. Adverse or unforeseen conditions may prevent investigator(s) from determining the presence of and/or identifying SIGS. Disease, fires, or predation, may influence the presence or identification of SIGS in any year. In some cases, additional surveys in subsequent years may be required. Investigator(s) should discuss such conditions, if applicable, for SIGS and/or project sites.
 12. Consult the SRBO's Section 7 guidelines for additional species-specific information on threats, potential habitat, etc.

Protocol for Evaluating Project Effects

If a project is determined to not be ground disturbing in nature, will not directly affect individuals

¹Live-trapping SIGS and voucher specimens of Federally listed species should NOT be conducted UNLESS the surveyor possesses a valid scientific collecting permit issued by the Service

or burrows, or will not affect the natural vegetative conditions on a project site then a project may be determined as having no effect.

If a project is ground disturbing or will change the current vegetative components in abundance, density, or composition then additional analysis is warranted to determine if a project will result in a no effect, may affect not likely to adversely affect, or may affect likely to adversely affect.

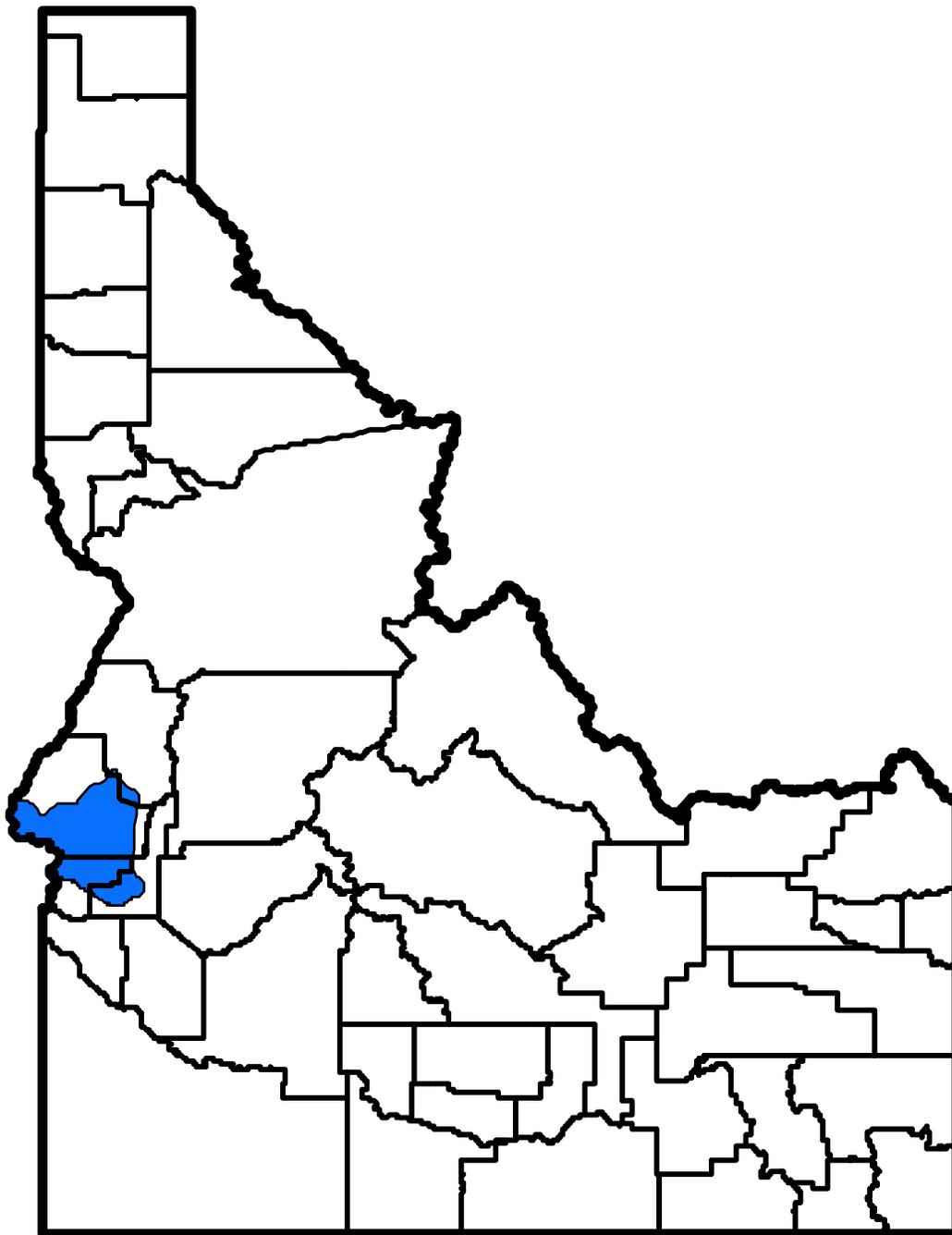


Figure 1 - SIGS. Shaded area indicates the primary area of conservation interest for the southern Idaho ground squirrel.