

Washington Ground Squirrel Surveys of the Lakeview Recreation Area

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Introduction

The Bureau of Land Management (BLM) and the Washington Natural Heritage Program (WNHP) share concern about the conservation status of the Washington ground squirrel (*Spermophilus washingtoni*). While there has been no systematic, range-wide survey for the species, ground squirrels have disappeared from a number of sites in the last 20 years. Washington ground squirrels have been recorded at various places on the Lakeview Recreation Area (LRA) since 1988. The project goal was to collect current comprehensive information on their presence by surveying known sites for continued occupancy and surveying the entire LRA for previously unknown sites.

The BLM and WNHP entered into an agreement to carry out this project. The following report is in fulfillment of BLM purchase order L09PX01467. Thank you to the Bureau of Land Management and Jason Lowe of the Spokane Office for funding this project.

Methods

In April and May of 2010, I surveyed for the LRA for Washington ground squirrels. Survey protocol consisted of spending a minimum of two hours walking through each legal section, looking for and surveying appropriate Washington ground squirrel habitat. All areas of a section larger than about five acres were surveyed for suitable habitat. Areas of deeper soil are the most likely habitat and received special attention. During surveys, I recorded ground squirrel sign. Sign consisted of burrows of about 50 millimeters (mm) in diameter, scat of 6-18 mm in length, calls, or sightings of animals. Since I can no longer hear ground squirrel calls with an unaided ear, I carried a bat detector and used it to make ground squirrel calls audible.

Surveyed areas were recorded in the field on paper maps and later digitized.

Locations of ground squirrel sign were recorded with a Geographic Positioning System (GPS) and downloaded to the Department of Natural Resources (DNR) geographic information system (GIS). Since the purpose of this project was to determine the distribution of ground squirrels on LRA rather than to gather detailed information on abundance, I did not count numbers of burrows but estimated them within a radius of about 10 meters. At most locations, after finding about five burrows, I recorded a point and continued surveying.

I worked one day in the field with Nancy Williams (BLM biologist), comparing survey techniques and calibrating my methods.

Results and Discussion

Surveys were performed between 20 April and 2 June 2010. The contiguous part of the LRA was surveyed. Some small areas were probably missed, but coverage was relatively thorough. While working with MS Williams, it was obvious that she heard ground squirrels I was not hearing with the bat detector. I detected perhaps 20% of the animals that she heard. During this time, we were in the two known areas of activity in the southern part of the LRA. I was able to identify and delimit these areas of activity by finding burrows and scat, by detecting animals with the bat detector, and by seeing animals. Given this level of success, I am confident that few, if any, large concentrations of ground squirrels such as these escaped my notice. Small areas of activity may have been missed, but I am confident that the results of this project would not have differed greatly if I have been able to hear calling ground squirrels.

I found Washington ground squirrel activity at several sites, all in the southern part of the LRA. These sites are recorded in Figure 1 and Table 1. Sites 1 and 2 are much more extensive than the points recorded in this file. Since these sites are well known and surveyed by others, I only noted one point in each area, rather than performing more detailed surveys. In 2010, activity was recorded by Nancy Williams, Rich Finger (Washington Department of Fish and Wildlife), or me for about 200 m north and west of my points. At Site 3 about five burrows and some scat were found, but an intensive search found no other sign. The points recorded at sites 4 - 19 reflect the area of activity. The area was surveyed intensively and while some small areas of activity may be present beyond the mapped points, the recorded points encompass the area of greatest use.

Site 20 is a previously unknown area of activity. About five burrows and a few scat were found. While a few burrows more may be present, the surrounding area was thoroughly searched within a radius of about 50 meters. This area does not support a large number of animals.

No confirmed Washington ground squirrel sign was found anywhere else on the LRA. Small mammal burrows were widespread and abundant in places. Some of these burrows may have been large enough for ground squirrel use, but no ground squirrel scat was found. Most burrows had large concentrations of scat that was far too small for ground squirrels. Washington ground squirrel have been confirmed in the past from T22N R32E Sec. 10. This area was searched intensively, but no sign of current occupancy was found.

One ground squirrel was seen in a previously unknown location away from the LRA. It was seen crossing Washington Highway 21 in Marlin Hollow, in T23N R32W, Sec. 26, NW ¼ of NW ¼. I spent about two hours searching road ditches for burrows, scat, or other sign but found none.

Data Management

Data management followed the methodology developed by the Natural Heritage Network and used by the WNHP in all of our work. Sites at which Washington ground squirrel sign was found were mapped as points (Figure 1) and then lumped into polygons where known burrows are less than 1,000 m apart. These points are assumed to be close enough that the animals might

have regular interactions. Where records are not close enough to suggest regular interaction, they were left as points. These points and polygons are called Source Features and are shown in Figure 2.

Source Features are further combined into Element Occurrences (EOs) (Figure 2). EOs are the basis of Natural Heritage methodology; a functional unit that may be managed for conservation or considered in the environmental review process. They usually represent populations of plants or animals or units of plant communities. EO boundaries are drawn based on the assumptions that animals within an occurrence are not genetically isolated from each other. They can be expected to interbreed, directly or indirectly. For ground squirrels, Natural Heritage methodology, supported by the literature, assumes that sites more than 5,000 m apart with no Source Features in between are separate EOs. The ground squirrel sites recorded by this project appear to represent two separate populations (EOs). The northern records (EO1) within the LRA are within 1,200 m of each other. The Marlin Hollow record is less than 5,000 m of these points and so is mapped as part of EO1. Among the southern records (EO2), no site is more than 1,200 m from another site.

There are no known Washington ground squirrel records between these EOs. Few, if any undiscovered large populations of ground squirrels are likely to be present although small numbers may exist. Land around the LRA has not been systematically surveyed. In the past, ground squirrels have been found at several points south of the LRA. Habitat that appears to be suitable still exists there and elsewhere adjacent to the LRA. Discovery of ground squirrels in these areas could enlarge these current EOs, and discovery of Washington ground squirrels between the known sites within the LRA could join the two current EOs into one.

Conclusions and Recommendations

Sites hosting relatively large numbers of Washington ground squirrels are relatively conspicuous. The large sites surveyed during this project covered 100 acres or more. A trained observer can easily recognize a site by the distribution and structure of burrows, presence of distinctive scat, and presence of ground squirrels during the active season. These sites are not, however, recognizable from a distance. An observer must actually be on or within a few tens of meters of the site to see sign or hear ground squirrels. Sites are also somewhat transitory, moving tens or hundreds of meters over a number of years and becoming completely inactive in some circumstances. Sites hosting smaller numbers of animals, such as the Highway 21 site found during this project, are much harder to detect. They are probably not stable over a number of years and may represent only transient single animals. They may, however, be important sources of colonists or may act as foundations for larger colonies.

The cryptic, transient nature of Washington ground squirrel sites means that surveys must cover large areas at relatively high levels of intensity and be repeated at intervals. Significant areas of public and private land around LRA have not been surveyed recently or at all. Other tracts of BLM land in the area have also not been surveyed completely. A concentrated effort of a year or two could accomplish those surveys. A compliment to broad scale, intensive surveys would be establishment of a citizen science survey. A network of local observers, operating through local

science teachers or naturalists could be useful for monitoring known sites and providing leads for new sites.

Washington ground squirrel records are found in a number of locations in a variety of formats. BLM, WDFW, and DNR all had records used in generating the Element Occurrences in Figure 2. These EOs summarize all available data and provide a list of all sources. Production of a set of EOs covering a particular ownership or the entire range of the Washington Ground Squirrel would be a logical next step in reviewing the status of this animal.

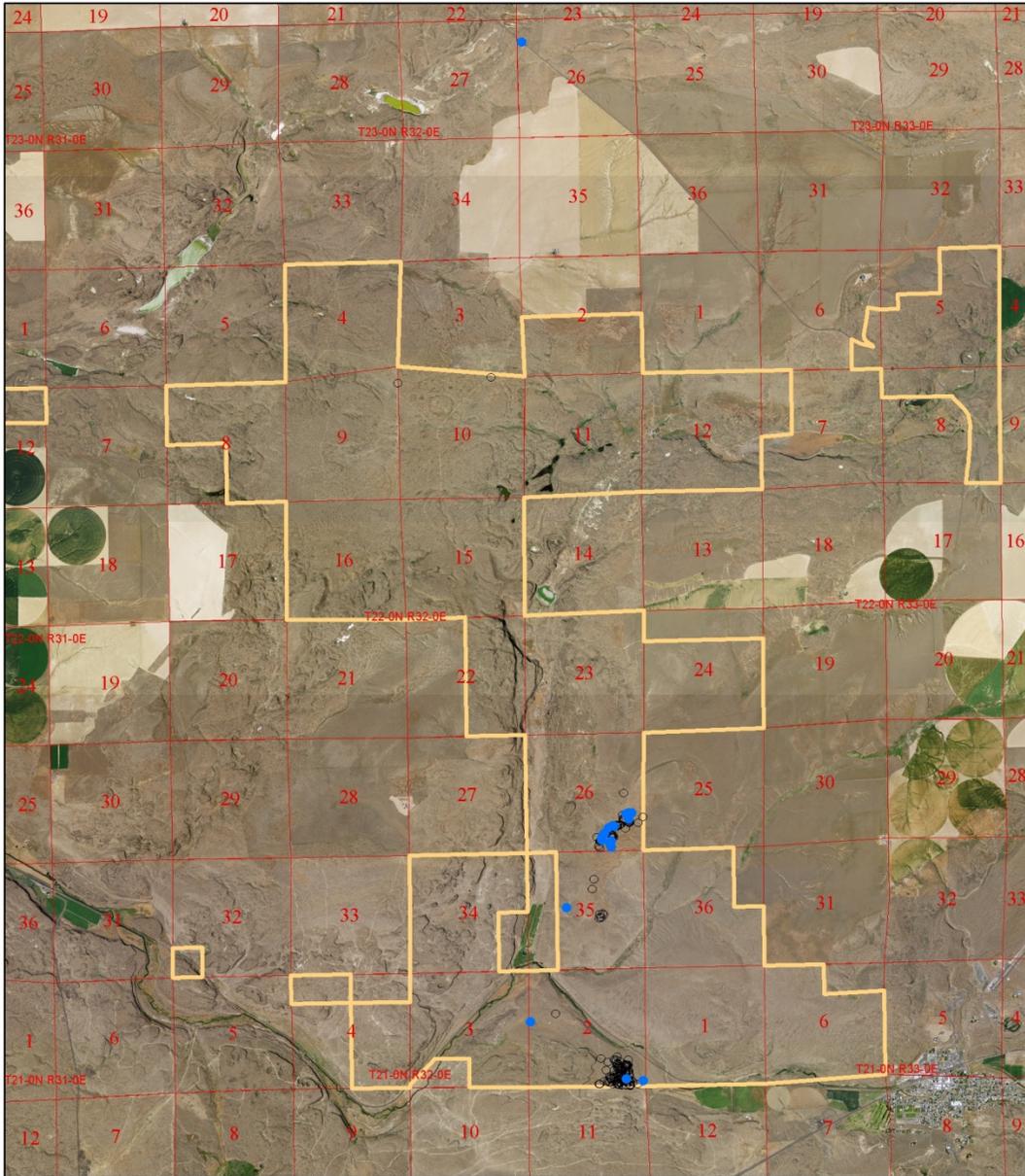
Table 1. Evidence of Washington ground squirrels.

Site Number#	Evidence	Source Feature Number*	EO Number*
01	20+ burrows, fresh scat, animals seen, heard	17026	2
02	20+ burrows, fresh scat, animals heard	17026	2
03	~ 5 burrows, old scat	17025	2
04	1 animal seen	17024	2
05	5+ active burrows	17024	2
06	possible burrow	17024	2
07	possible burrow but old	17024	2
08	call	17024	2
09	burrows, scat, call	17024	2
10	burrow, scat	17024	2
11	burrows, scat	17024	2
12	possible burrow	17024	2
13	1 seen	17024	2
14	active burrow	17024	2
15	5+ burrows, call	17024	2
16	5+ burrows, scat	17024	2
17	5+ burrows, scat	17024	2
18	5+ burrows, fresh scat	17024	2
19	5+ burrows, fresh scat	17024	2
20	5+ burrows, scat	17024	2
21	Animal seen crossing road	17029	1

See Figure 1

* See Figure 2

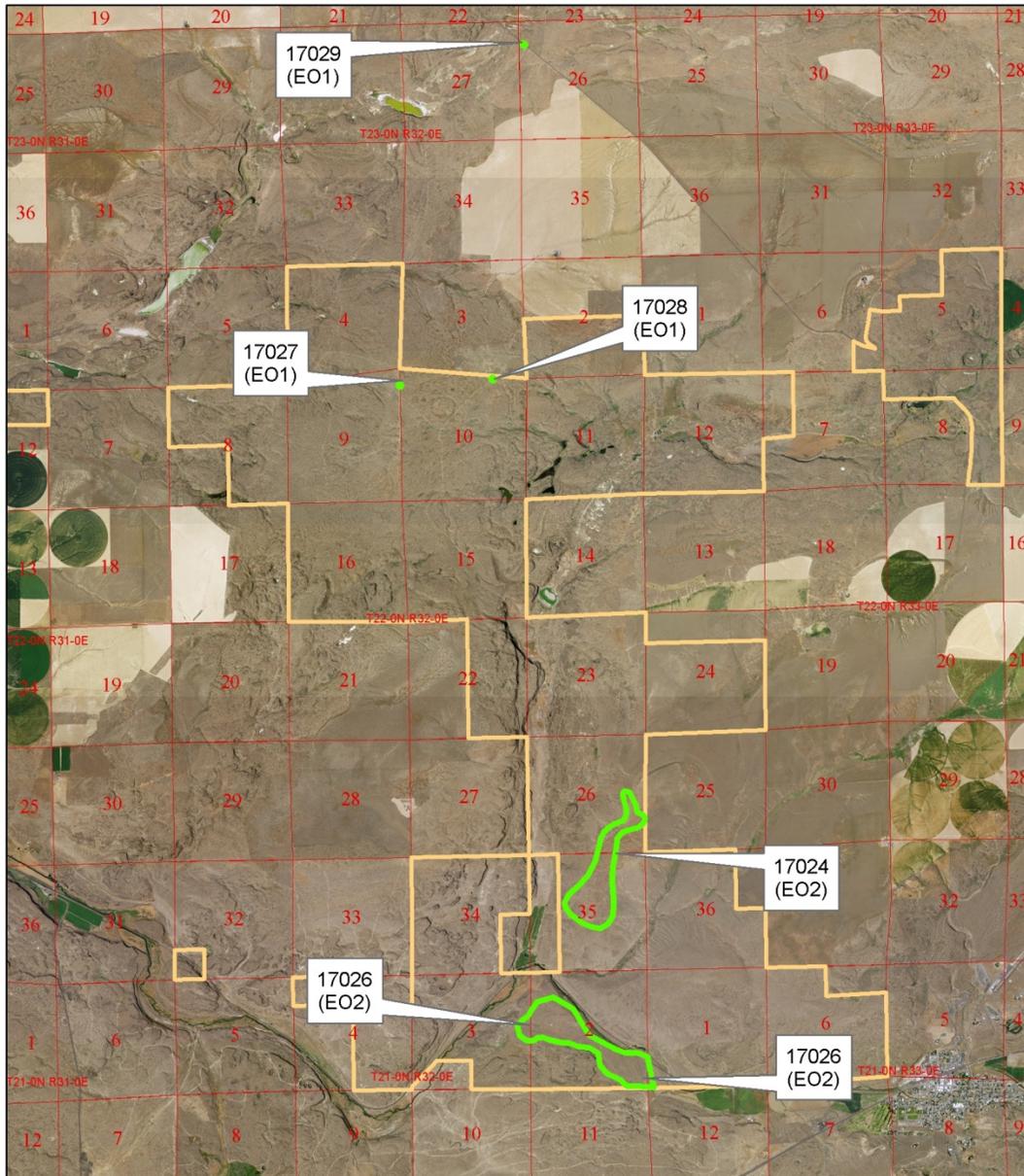
Figure 1. Washington Ground Squirrels Locations on the Lakeview Recreation Area



GIS cover for ground squirrel locations is in Spwa_Locations_DNR10.shp.

- BLM Lakeview Area
- Points from this project
- Locations from other work

Figure 2. Source Features and Element Occurrences for Washington Ground Squirrels on the Lakeview Recreation Area



GIS covers for Source Features Occurrences are in Spwa_EOs_DNR10.shp.
 Tabular data are in Spwa_EOs_DNR.pdf.