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CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE

MOHAVE GROUND SQUIRREL SURVEY GUIDELINES

(January 2003; revised July 2010, October 2016)

Unless a certain circumstance¹ applies, the Department of Fish and Wildlife (Department) requires a survey to be undertaken for the Mohave ground squirrel (*Xerospermophilus mohavensis*) on a project site if the proposed site has potential habitat of this species and the presence of the species on the project site is unknown. Potential habitat is land supporting desert shrub vegetation² within or adjacent to the geographic range³ of the species. A project is an action that results in temporary or permanent removal or degradation of potential habitat. The Department considers a project site to be an area of land controlled by the project proponent, including but not limited to the portion proposed for removal or degradation of potential habitat. The Department considers a project site to be occupied by the Mohave ground squirrel, if an individual of this species is observed, or is captured on any sampling grid, on the project site.

The Department intends for these survey guidelines to apply to projects that would negatively affect ≤180 acres or to linear projects ≤ 5 miles in length. For projects of larger scale, the Department requires special survey protocol(s) to be developed through its consultation with either the project proponent or the local lead agency (if appropriate) or both entities.

For projects of the appropriate scale, each survey shall adhere to the following conditions:

1. Studies that include trapping for the Mohave ground squirrel shall be authorized by a Memorandum of Understanding (MOU) or Letter Permit issued by the Wildlife Branch of the Department, or by other permit as determined by the Department, and shall be undertaken only by a qualified biologist. A qualified biologist is a biologist who has demonstrated pertinent field experience in capturing and handling ground squirrels or other small mammals in desert/arid communities and who has been permitted by the Department to work without supervision. Each biologist setting traps, opening traps containing captured animals, or handling captured animals must be named in the MOU or Letter Permit as an authorized person, whether qualified or not to work without supervision.
2. Visual surveys to determine Mohave ground squirrel activity and habitat quality shall be undertaken during the period of 15 March through 15 April. All potential habitat on a

1 A survey is not necessary in the circumstance that the project proponent prefers to assume that the Mohave ground squirrel is present on the project site and applies for a California Endangered Species Act incidental-take permit (Fish and Game Code Section 2081b) requiring mitigation and compensation.

2 Examples of desert shrub vegetation that is known to provide habitat for the Mohave ground squirrel include (but are not limited to) Mojave Creosote Bush Scrub, Mojave Mixed Woody Scrub, and Desert Saltbush Scrub as described in Holland 1986.

3 Because the limits of the geographic range are not known precisely, surveys may be required in areas up to five miles outside the currently-accepted geographic range boundary.

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project site shall be visually surveyed during daylight hours by a biologist who can readily identify the Mohave ground squirrel and the white-tailed antelope squirrel (*Ammospermophilus leucurus*).

3. If visual surveys do not reveal presence of the Mohave ground squirrel on the project site, standard small-mammal trapping grids shall be established in potential Mohave ground squirrel habitat. The number of grids will depend on the amount of potential habitat on the project site, as determined by the guidelines presented in paragraphs 4 and 5 of these guidelines.
4. For linear projects (for example, highways, pipelines, or electric transmission lines), each sampling grid shall consist of 100 Sherman live-traps (or equivalent; the minimum length of any trap is 12 inches) arranged in a rectangular pattern, 4 traps wide by 25 traps long, with traps spaced 35 meters apart along each of the four trap lines. At a minimum, one sampling grid of this type shall be established in each linear mile, or fraction thereof, of potential Mohave ground squirrel habitat along the project corridor.
5. For all other types of projects, one sampling grid consisting of 100 Sherman live-traps (or equivalent; the minimum length of any trap is 12 inches) shall be established for each 80 acres, or fraction thereof, of potential Mohave ground squirrel habitat on the project site. The traps shall be arranged in a 10 x 10 grid, with 35-meter spacing between traps.
6. Each sampling grid shall be trapped for a minimum five consecutive days. If no Mohave ground squirrel is captured on a sampling grid on the project site in the first five-consecutive-day term, each sampling grid shall be sampled for a SECOND five-consecutive-day term. If no Mohave ground squirrel is captured during the second five-consecutive-day term, each sampling grid shall be sampled for a THIRD five-consecutive-day term. The FIRST trapping term shall begin and be completed in the period of 15 March through 30 April. If a SECOND term is required, it shall begin at least two weeks after the end of the first term, but shall begin no earlier than 01 May, and shall be completed by 31 May. If a THIRD term is required, it shall begin at least two weeks after the end of the second term, but shall begin no earlier than 15 June, and shall be completed by 15 July. All trapping shall be conducted during appropriate weather conditions, avoiding periods of high wind, precipitation, and low temperatures (<50°F or 10°C).
7. For projects requiring two or more sampling grids, capture of a Mohave ground squirrel on any grid will establish presence of the species on the project site.
8. A maximum 100 traps shall be operated by each qualified biologist. Each trap shall be covered with a cardboard A-frame or equivalent non-metal shelter to provide shade. Trap and shelter orientation shall be on a north-south axis. All traps shall be opened within one hour of sunrise and may be closed beginning one hour before sunset. Traps shall be checked at least once every four hours to minimize heat stress to captured animals. When

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traps are open, temperature shall be measured at a location within the sampling grid, in the shade, and one foot (approx. 0.3 meters) above the ground at least once every hour. Traps shall be closed when the ambient air temperature at one foot above the ground in the shade exceeds 90°F (32°C). Trapping shall resume on the same day after the ambient temperature at one foot (approx. 0.3 meters) above the ground in the shade falls to 90°F (32°C) and shall continue until one hour before sunset. Suggested baits are mixed grains, rolled oats, or bird seed, with a small amount of peanut butter.

9. A qualified biologist shall complete the Survey and Trapping Form, which is found on the last page of these guidelines. This biologist, or the lead agency for the project, shall submit the completed form to the appropriate Department office (see page 4) with the biological report on the project site.
10. The Department may allow variation on these guidelines, with the advance written approval of the appropriate regional habitat conservation planning office (see page 5). Such variations could include biologically-appropriate modification of the trapping dates or changes in grid configuration that would enhance the probability of detecting Mohave ground squirrels. Any variation which concerns trapping or marking methods must be incorporated into the MOU or permit that authorizes the work.
11. If a survey conducted according to these guidelines results in no capture or observation of the Mohave ground squirrel on a project site, this is not necessarily evidence that the Mohave ground squirrel does not exist on the site or that the site is not actual or potential habitat of the species. However, in the circumstance of such a negative result, the Department will stipulate that the project site harbors no Mohave ground squirrel. This stipulation will expire one year from the ending date of the last trapping on the project site conducted according to these guidelines.

Literature Cited

Holland, R. F. 1986. Preliminary descriptions of the terrestrial natural communities of California. Nongame Heritage Program report. California Department of Fish and Game (Sacramento), 156 pages.

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CONTACTS

A. For information on obtaining an MOU or on the type of experience that a qualified biologist must have, contact the following:

Scott D. Osborn
Wildlife Branch, Nongame Wildlife Program
Department of Fish and Wildlife
1812 Ninth Street
Sacramento, CA 95811
(916) 324-3564
scott.osborn@wildlife.ca.gov

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Department of Fish and Game e-mail:
sosborn@dfg.ca.gov
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B. For information on project review and conservation planning by the Department, as these activities regard the Mohave ground squirrel, contact the following:

(for Kern County)
Habitat Conservation Planning
San Joaquin Valley and Southern Sierra Region
Department of Fish and Wildlife
1234 E. Shaw Avenue
Fresno, California 93710
telephone: (559) 243-4005

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(for Los Angeles County)
Habitat Conservation Planning
South Coast Region
Department of Fish and Wildlife
4949 View Ridge Avenue
San Diego, California 92123
telephone: (858) 467-4201

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(for Inyo and San Bernardino counties)
Habitat Conservation Planning
Eastern Sierra and Inland Deserts Region
Department of Fish and Wildlife
407 West Line Street
Bishop, California 93514
telephone: (760) 872-1171

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Mohave Ground Squirrel (MGS) Survey and Trapping Form (photocopy as needed)

PART I - PROJECT INFORMATION (use a separate form for each sampling grid)

Project name: _____ Property owner: _____

Location: Township _____; Range _____; Section _____; ¼ Section _____

Quad map/series: _____ UTM coordinates: _____
GPS coordinates of trapping-grid corners

Acreage of Project Site: _____ Acreage of potential MGS habitat on site: _____

Total acreage visually surveyed on project site: _____ Date(s): _____
visual surveys

Visual surveys conducted by: _____
names of all persons by date (use back of form, if needed)

Total acres trapped: _____ Number of sampling grids: _____

Trapping conducted by: _____
names of all persons by sampling term and sampling grid (use back of form, if needed)

Dates of sampling term(s): FIRST _____ SECOND _____ THIRD _____
if required if required

PART II - GENERAL HABITAT DESCRIPTION (use back of form, if needed)

Vegetation: dominant perennials: _____

other perennials: _____

dominant annuals: _____

other annuals: _____

Land forms (mesa, bajada, wash): _____

Soils description: _____

Elevation: _____ Slope: _____

PART III - WEATHER (report measurements in the following categories for each day of visual survey and each day of trapping; using 24-hour clock, indicate time of day that each measurement was made; use a separate blank sheet for each day)

Temperature: AIR minimum and maximum; SOIL minimum and maximum; Cloud Cover: % in AM and % in PM; Wind Speed: in AM and in PM