

## FIVE-YEAR STATUS REPORT

I. COMMON NAME: Mohave Ground Squirrel  
SCIENTIFIC NAME: Spermophilus mohavensis  
CURRENT CLASSIFICATION: Threatened

II. RECOMMENDED ACTION:

Retain Threatened classification

III. SUMMARY OF REASONS FOR RECOMMENDED ACTION:

Retention of the Threatened classification for the Mohave Ground Squirrel (MGS) is warranted, based on the current knowledge of habitat loss within the known range and based on the need for knowledge regarding population status, reproductive biology, habitat use, and other life history requirements.

IV. NATURE AND DEGREE OF THREAT:

The major threat to the continued existence of the MGS continues to be the destruction or degradation of its habitat. The MGS is a resident in several plant communities of the Mojave Desert. "Because of continuing development of sections of the western Mojave Desert, the status and well-being of the Mojave (sic) ground squirrel have emerged as an environmental concern associated with commercial and agricultural developments and construction of new energy facilities" (Hafner and Yates 1982).

Aardahl and Roush (1985) report that "[s]ignificant loss of habitat for the Mohave ground squirrel has occurred on private lands due to urban and agricultural development. Much habitat loss has occurred in the Antelope Valley, Victorville-Apple Valley-Hesperia area, western Fremont Valley, Harper Lake basin and Rose Valley and along the Mojave River between Barstow and Victorville." These authors do not cite the habitat loss which has occurred on public lands administered by the U.S. Bureau of Land Management (BLM), U.S. Navy (at China Lake Naval Weapons Center), U.S. Army (at Fort Irwin), and U.S. Air Force (at Edwards Air Force Base). Of particular concern on these lands is the mining, development of energy facilities, recreational vehicle use, and grazing by livestock permitted by the BLM, and the military operations conducted as "war games" at Fort Irwin. There is no quantified documentation of these impacts.

As with any species which occupies more or less continuous habitat over a large area, the MGS suffers from piecemeal loss of habitat and resulting isolation of populations.

The question of the impact on the MGS through the use of rodenticides within its range has been raised recently. It is not known whether the MGS is being impacted by such use.

#### V. HISTORIC AND CURRENT DISTRIBUTION:

The MGS is resident in the western Mojave Desert. It occurs in southwestern Inyo County (from the vicinity of Olancho southward), eastern Kern County (from the longitude of the town of Mojave eastward), northeastern Los Angeles County (from the vicinity of Lancaster northward and eastward), and northwestern San Bernardino County (from Victorville northward and northeastward).

#### VI. HISTORIC AND CURRENT ABUNDANCE:

There is no estimate of historic population size. As with most small mammals, the population numbers of the MGS probably change significantly over time as climatic factors vary. Several recent studies (Aardahl and Roush 1985, Hoyt 1973, Leitner 1980, Wessman 1977, Zembal *et al.* 1979) have determined relative densities in local areas, but there is little information on actual abundance figures for the MGS at particular sites and no comparison of abundance at such sites from year to year or among sites throughout the range. M. Recht (pers. commun.) comments that one difficulty in establishing abundance of the MGS at a site is that abundance varies from year to year with rainfall (primarily). Local rainfall amounts and timing can result in large differences in the numbers of the MGS from one year to the next.

#### VII. SPECIES DESCRIPTION AND BIOLOGY:

The MGS is a member of the mammalian Family Sciuridae, a large family which includes ground squirrels, marmots, chipmunks, and tree squirrels.

The MGS "is cinnamon-gray with a short tail that is dusky above and white beneath" (Burt and Grossenheider 1976). The underparts are white as well. M. Recht (pers. commun.) states that juveniles of the MGS have cinnamon-colored pelage and molt to the gray pelage as they mature. He comments that MGS hairs are multi-banded at the tips, to help adjust energy uptake or loss via absorbance/albedo of the animal. The skin is darkly melanistic to assist in thermoregulation.

As with all ground squirrels, the MGS lives in underground burrows. The MGS spends about seven months of the year, from August to February, underground in estivation. This behavior is presumably to avoid a period when food is scarce. M. Recht (pers. commun.) states that entrance into estivation may begin from July to September, with August to September being typical. Emergence from estivation ranges from January to March, with late January to February being typical.

The MGS eats fruits and seeds of desert plants. Recht (1977) documented the use of plants of 10 genera including most notably Lycium, Coreopsis, Amsinckia, and Salsola. Zembal and Gall (1980) observed the MGS eating

fruits and harvesting seeds of the Joshua Tree (Yucca brevifolia). The animals were observed carrying seeds into burrows.

A recent taxonomic study by Hafner and Yates (1982, 1983) has resulted in the retention of Spermophilus mohavensis as a full biological species.

#### VIII. HABITAT REQUIREMENTS:

The MGS occupies plant communities which are dominated by either Creosote (Larrea tridentata), Joshua Tree, or Shadscale (Atriplex confertifolia). In each of these community-types, the habitat is characterized by much open ground among the perennial shrubs or Joshua trees. Zembal et al. (1979) found that the MGS very rarely occurred in steeply-sloping or rocky terrain. Aardahl and Roush (1985) state that "[l]arge alluvial-filled valleys with deeper fine to medium texture soils, absence of rock (desert pavement) and vegetation classified as Creosote Bush Scrub, Shadscale Scrub, and Alkali Sink appear to be the best habitat for both the antelope and Mohave ground squirrels."

Although some field work has been done to describe the habitat and local food habits of the MGS, there is little information on habitat preference and use throughout the active (above-ground) period of the MGS at local sites; and no information exists on comparisons of the use of one site with others in the same plant community or in different communities. The MGS has a patchy distribution throughout its range. Why some areas are occupied and other areas, which to the human eye are similar, are not occupied is a problem for investigation. M. Recht (pers. commun.) believes that at least a partial explanation is that unequal rainfall distribution (from year to year and area to area) results in little or no vegetational productivity at some sites. This situation apparently prevents successful reproduction for the MGS, and the repetition over several years may result in local extirpation of the MGS.

#### IX. CURRENT AND RECOMMENDED MANAGEMENT:

There is little current management coordination or planning for the MGS. Because it is not classified as an Endangered or Threatened species by the federal government, the MGS is virtually ignored in federal agency decisions involving wildland alterations on public lands. Although it is BLM policy to consider state-classified Endangered or Threatened species in such decisions, in actual practice, the MGS has not been seriously considered when the BLM reviews permit applications for pipeline rights-of-way and other uses of public lands. The issue of impacts to the MGS from projects on BLM land remains in need of resolution. The BLM has proposed that it and the Department of Fish and Game (DFG) jointly review the status of the MGS (Aardahl and Roush 1985).

As we stated above (III. SUMMARY OF REASONS FOR RECOMMENDED ACTION), the DFG believes that retention of the Threatened classification for the MGS is warranted, in the absence of information on population status

throughout its range, reproductive biology, habitat use (including that of disturbed habitat), and other life history requirements such as longevity, dispersal, food habits, and interaction with antelope squirrels. Furthermore, our knowledge of the piecemeal loss of habitat and continuing degradation of other habitat bolsters the argument to retain the Threatened classification.

Because uncertainty does exist (in the absence of studies which would provide information) about the vulnerability of the MGS to extirpation within portions of its range, the DFG will not propose that the MGS be classified as a federal Endangered or Threatened species at this time.

The MGS is listed as a Candidate 2 species on the latest federal notice of review of vertebrate species. This listing means that the U.S. Fish and Wildlife Service (FWS) considers that the MGS may be eligible for classification as an Endangered or Threatened species.

The advantage of a federal classification of Endangered or Threatened for the MGS is that federal agencies which permit, finance, or do projects would be required to avoid or compensate for impacts to the MGS and its habitat. In addition, the habitat on non-federal lands would have a measure of protection under the federal Endangered Species Act, if an action to destroy or alter MGS habitat on these lands required federal approval, funding, or a permit. No such habitat protection is available under the California Endangered Species Act.

The chief management needs in conservation of the MGS are protection of habitat by public agencies, intensive field studies to discover unknown aspects of the life history of the species, and a program of habitat preservation. A concept which has been discussed among those persons interested in MGS conservation is the establishment of preserves in public ownership in various areas of the Mojave Desert. The discussion has not progressed beyond an initial stage. Thus the number, size, and plant community types of such preserves is yet to be decided. However, as M. Recht (pers. commun.) has pointed out, preserves established for the MGS must be large enough to overcome local extirpations of the species due to variation in rainfall, and to overcome effects of genetic isolation of local populations.

Restoration of degraded habitat, through the control of livestock grazing and recreational vehicle use along with the planting of known preferred plants of the MGS (as reported by Recht 1977), is also needed.

A recovery plan which would incorporate elements of the management needs discussed herein should be prepared.

In summary, the management needs of the MGS in priority are as follows:

1. Protection of habitat which currently supports the MGS through positive consideration of the species by the BLM and military departments in review of proposed wild land alterations.
2. Permanent protection of habitat which supports the MGS by establishing a series of preserves in public ownership.

3. Determination of the status of the MGS, in terms of distribution and numbers, throughout its range during one or two field seasons; and periodic surveys (at least every five years) to repeat the status determination.
4. Studies to determine various aspects of the life history of the MGS, including food habits and habitat use, throughout its range and in all occupied plant communities.
5. Preparation of a recovery plan which would incorporate the elements of protection and restoration of habitat, establishment of preserves, and surveys and studies.
6. Restoration of degraded habits by controlling grazing and recreational vehicle use on public lands, and planting with preferred plants.
7. Investigation of the impacts of rodenticides on the MGS.

X. SOURCES OF INFORMATION:

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XI. REPORT PREPARED BY:

Nongame Bird and Mammal Section  
Wildlife Management Division  
California Department of Fish and Game

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XII. CONTACT FOR FURTHER INFORMATION:

John R. Gustafson  
Nongame Bird and Mammal Section  
916-322-1260

XIII. DRAFT REPORT REVIEWED BY:

Michael A. Recht  
Department of Biology  
California State University, Dominguez Hills  
Carson, CA