

**A Status Review
of the
Mohave Ground
Squirrel**

(Spermophilus mohavensis)

March 1993

Department of Fish and Game

Wildlife Management Division

APPENDIX A: Petition From Kern County Department of Planning and Development Services to Delist the Mohave Ground Squirrel as a Threatened Species.

A PETITION TO THE STATE OF CALIFORNIA FISH AND GAME COMMISSION

For action pursuant to Section 670.1, Title 14, California Code of Regulations (CCR), and Sections 2072 and 2073 of the Fish and Game code, relating to listing and delisting endangered and threatened species of plants and animals,

I. SPECIES BEING PETITIONED:

Common Name: Mohave ground squirrel

Scientific Name: Spermophilus mohavensis

II. RECOMMENDED ACTION:

(Check the appropriate categories)

<input type="checkbox"/>	List	<input type="checkbox"/>	Change Status
<input type="checkbox"/>	as Endangered	from	<input type="checkbox"/>
<input type="checkbox"/>	as Threatened	to	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Delist		

III. AUTHOR OF PETITION:

Name: Kern County Department of Planning and Development Services

Address: 2700 "M" Street, Suite 100

Bakersfield, California 93301

Telephone Number: (805) 861-2615

I hereby certify that, to the best of my knowledge, all statements made in this petition are true and complete.

Signature: Ted Jan

Date: 11-19-91

PETITION TO THE STATE OF CALIFORNIA FISH AND GAME COMMISSION

SUPPORTING INFORMATION FOR SPECIES DELISTING

MOHAVE GROUND SQUIRREL (SPERMOPHILUS MOHAVENSIS)

(1) EXECUTIVE SUMMARY

The County of Kern is requesting the delisting of the Mohave ground squirrel (MGS) as a "threatened species" under the provisions of the California Endangered Species Act. This petition is being submitted in compliance with the delisting procedures specified in Section 670.1, Title 14, California Code of Regulations.

The California Endangered Species Act listing of the species as threatened is having a significant impact on the economic growth of eastern Kern County. The State Department of Fish and Game (DFG) has stated that the development of private lands inhabited by MGS will adversely affect the species (May 23, 1989, correspondence to the Kern County Department of Planning and Development Services). Efforts by private property owners to subdivide properties into residential homesites is being inhibited by DFG mitigation requirements that are inconsistent, unclear, cost prohibitive, and lack a clear scientific basis. Other forms of development activity which are important to the economic prosperity of eastern Kern County have also been delayed or stopped as a result of the State listing and resultant mitigation requirements. Since 1988, DFG began to actively comment on the potential loss of MGS habitat. Over 200 projects alone in Kern County have been recently affected by the listing. This listing is having an impact on a property owner's ability to use their land. These concerns were expressed by Supervisor Roy Ashburn in testimony presented at the Palm Springs Fish and Game Commission meeting on January 8, 1991.

This petition for delisting presents a comprehensive review of available literature and studies related to the MGS. It is clear from the scientific research conducted to date that the MGS was erroneously listed as "rare" in 1971 in the absence of adequate and conclusive scientific evidence. To date, there is a lack of scientific research on the population, range, density, behavior, taxonomic relationships and habitat preferences of the species.

A review of the history of the MGS listing process within the context of the scientific data available to the Fish and Game Commission in 1971, clearly shows that the species was prematurely listed without the availability of adequate population and habitat studies. The available scientific studies have yet to substantiate through comprehensive quantification research that the MGS and its habitat is threatened or in danger of extinction. In fact, recent studies have suggested that the range of the species and population densities are far greater than the conclusions of earlier studies. Studies conducted by the Bureau of Land Management (BLM) support the contention that large populations of MGS exist and their distribution ranges over an area which encompasses in excess of 7,000 square miles. This petition concludes that the preponderance of public lands managed by various federal agencies

provides substantial management benefit to assure the continued existence of the species.

(2) BACKGROUND TO SPECIES LISTING

In the absence of any public notice procedure other than the publication of a forthcoming meeting agenda, the Fish and Game Commission approved the adoption of Section 670.5 of the Fish and Game Code on May 21, 1971. This action listed the MGS as "rare." The "rare" classification denotes that while a species is not threatened with extinction, it is in such small numbers that it may become endangered if its environment is worsened.

It was noted in the May 21, 1971, Fish and Game Commission Minutes by Commissioner Fletcher that federal listing criteria were generally used in determining state listed species. These criteria were as follows:

- (a) The destruction, drastic modification or severe curtailment of a species habitat;
- (b) Over utilization for commercial or sporting purposes;
- (c) Effect on disease of predation; or
- (d) Other natural or manmade factors affecting the species continued existence.

Correspondence from the California Department of Agriculture was included as part of the record for this hearing which requested that the MGS and other specified rodents be omitted from listing since they are involved in crop depredation.

It is clear from the record that very little information was available in 1971 to make a quantitative scientific judgement that the MGS should be listed as "rare." The scientific reports available prior to the 1971 Fish and Game Commission meeting included only excerpts from general guides to squirrels or piecemeal observations on the behavior of ground squirrels (Merriam, 1889; Burt, 1936; Bartholomew and Hudson, 1960; Ingles, 1965). In the absence of comprehensive quantification studies and habitat preference analysis, it is not understood how the 1971 Commission and its staff was able to conclude that continued existence of the species was affected to such an extent that it necessitated listing as a "rare" species.

On January 1, 1985, all species listed as "rare" were classified as "threatened," pursuant to Fish and Game Code Section 2067. "Threatened" species are not presently threatened with extinction, but are likely to become endangered in the foreseeable future in the absence of special protection and management efforts.

(3) SPECIES DESCRIPTION

The MGS (Spermophilus mohavensis) is one of several species of desert ground squirrels which inhabit the western Mojave Desert region of California. 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 in color with white underparts. The species lives in underground burrows in which it spends approximately seven months of the year (usually from August to February) in estivation (underground hibernation). The skin is darkly melanistic to assist in thermoregulation.

The MGS eats fruits and seeds of desert plants. It is also known to feed on crops associated with farming activities. The species is known from available studies to occur in a widespread area including southwestern Inyo County, eastern Kern County, northwestern San Bernardino County, and northeastern Los Angeles County. This range encompasses an area in excess of 7,000 square miles. The MGS inhabits the creosote, Joshua tree, and shadscale plant communities which are widely dispersed in this region.

The MGS is a State-listed "threatened" species pursuant to the California Endangered Species Act. It is designated as a Category 2 species by the U.S. Fish and Wildlife Service. This means conclusive data on biological vulnerability and threat are not available to justify the federal listing as "threatened or endangered."

The first DFG Five-Year Status Report for MGS was prepared in 1987 as required by the California Endangered Species Act. In the report, DFG recommended to the Fish and Game Commission that the "threatened" classification be retained. Although some MGS studies were acknowledged during the preparation of the status report (Hafner and Yates, 1982; Aardahl and Roush, 1985), inadequate and inconclusive statements regarding the continued listing of the species were used. There is no conclusive scientific studies which have documented significant MGS habitat loss, adverse effects on population status, or other life history requirements.

The 1977 Wessman study recognized a substantial 1,800 square mile increase in the range of the MGS, yet no mention of this significant increase in the MGS habitat was acknowledged in the Five-Year Status Report. It is wondered why this significant increase in known habitat area would not provide a reasonable basis to demonstrate sufficient available habitat to delist the species.

It is interesting to note that Hafner and Yates question whether the MGS is even a separate distinct species. These scientists conducted genetic research which compared the round tail squirrel (Spermophilus tereticaudus) and the MGS. They share the same subgenus (Xerospermophilus) and the occurrence of speciation for the MGS is still unknown. In areas of contiguous habitat, these two squirrel families have interbred. Hafner and Yates concluded that insufficient evidence exists to substantiate conclusive scientific recognition of a separate MGS species. In the absence of conclusive scientific studies, the recognition of the MGS as a "threatened" species is premature and inappropriate.

(4) HABITAT REQUIREMENTS

As previously noted, the MGS inhabits a large desert region of California in excess of 7,000 square miles. The MGS occupies plant communities which are

dominated by either creosote (Larrea tridentata), Joshua tree (Yucca brevifolia), 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. Aardahl and Roush state that "large alluvial filled valleys with deeper fine to medium texture soils, absence of rock and vegetation classified as creosote bush scrub, shadscale scrub, and alkali sink appear to be the best habitat for the MGS."

Although field work has been accomplished to describe the habitat and local food habits of the MGS, there is little information on habitat preference and aboveground use. Little information exists on the comparisons of the use of one site with others in the same plant community or in different communities. It would seem prudent for these additional studies to be undertaken before a species is listed as "threatened."

In reviewing the habitat requirements of this species, it is important to note that much of the habitat range is under federal management by the Navy, Army, Air Force, or the Bureau of Land Management. For the entire known 7000 square mile habitat area, over 57 percent of the land is under federal management (see attached habitat range map). Within the unincorporated area of the Indian Wells Valley of Kern County, over 83 percent of the land or 237,730 acres is under federal management while the remaining acreage is under private ownership. With such a small percentage of private holdings, the encouragement of effective management practices by the federal government would seem to ensure substantial areas available for species propagation.

(5) DISTURBANCE/ABUNDANCE

Little scientific research has been conducted on the distribution and abundance of the MGS (Hoyt, 1972; BLM, 1974, 1989, 1990; Wessman, 1977; Aardahl and Roush, 1985). Hoyt's 1972 study on the abundance of the species was largely based on secondary information gained from interviews and museums with minimal live trapping. Hoyt is consistently referenced in the literature as noting a restricted species distribution yet the scope of his study was cursory in nature with many of the live trappings attempted during winter MGS estivation periods. Even Hoyt must conclude, "it is not possible at this time to make any exact or quantitative statements about the animal's present distribution or abundance . . . nor to decide whether the species is truly endangered (Hoyt, 1972. p. 7-8)." In 1974, the BLM Desert Planning Staff conducted biological surveys in the El Paso and Red Mountain Regions of eastern Kern and northern San Bernardino Counties. During these surveys, the known range of the MGS was extended west into the foothills of the southern Sierras and east to the vicinity of Harper Dry Lake and Searles Dry Lake.

Wessman's 1977 study of the distribution and habitat preferences of the MGS determined that the MGS occupied a range 1,800 square miles greater than the previous known MGS range. Zembal (1979) also noted significant populations of MGS in the Coso Hot Springs area and noted that the species utilized a variety of habitats.

A more contemporary comprehensive study of distribution and abundance was Aardahl and Roush's 1985 study which noted dramatically high populations and densities of the species. The study also noted that average relative population densities for the MGS and antelope ground squirrel (nonlisted species) for the study sites are similar. At nine of the 22 trapping sites, the total adjusted captures for the MGS exceeded those of the antelope ground squirrel.

BLM studies (1988 through 1990) prepared by Leitner reveal high population densities of MGS in the Coso Geothermal Resource Area. These studies are part of BLM's Coso Mohave Ground Squirrel Mitigation Program. These studies have provided some of the best data related to MGS hibernation habits. Estivation periods were shown to change year-to-year due to environmental changes such as the drought. The studies also show that females will control their habitat by not bearing any young to compete for limited food supplies during drought years. These studies suggest that past trapping surveys showing decreased numbers of squirrels may be erroneous in their conclusions due to estivation periods of greater duration resulting from environmental factors. These studies suggest that natural decreases in MGS populations may have nothing to do with habitat loss resulting from private development.

(6) NATURE AND DEGREE OF THREAT

The listing of the MGS as a "threatened" species lacks any basis in scientific fact. It is important to note that when the species was first listed in 1971, there was little quantitative scientific information available to make a judgement as to the nature or degree of threat to the species and its habitat. Prior to 1971, only excerpts from general guides to squirrels and behavioral studies were available (Bartholemew and Hudson, 1960; Ingles, 1965). In the absence of comprehensive population studies and evidence regarding historic numbers and preferred habitat, it is not understood how the 1971 Fish and Game Commission was able to conclude that the MGS be classified as "rare." Even the studies that were immediately subsequent to the 1971 listing were inconclusive and based on generalizations rather than scientific fact. Hoyt's study is such an example.

The more contemporary MGS studies of Wessman, Aardahl, and Roush and the recent BLM Coso Studies reference greater habitat ranges, increased population densities and greater habitat types than previously noted. The available research has yet to substantiate the need for species listing. The more recent studies support the delisting of the species. The existence of a large habitat range (in excess of 7000 square miles) also supports this conclusion.

As previously indicated, the more recent studies have shown that estivation in the MGS varies from year-to-year so that trapping surveys may not be accurate. The MGS may migrate for food and may not appear at the same location year after year. This has resulted in DFG no longer accepting trapping studies and indicating that any location within a wide range may be potential habitat (DFG correspondence dated, July 3, 1991). If this is the

case, why is the species "threatened" if any location may be future habitat? Could this be taken to mean that the MGS habitat area just expanded again?

Once again, the available information leads one to conclude that (1) the species was prematurely listed as rare without adequate scientific fact; (2) with a known range exceeding 7,000 square miles, the species is not confined to a relatively small and specialized habitat; (3) recent population studies have noted substantial populations of the MGS; and (4) with so much of the known habitat range being public lands, it is not understood why private land development activity has caused imminent danger to the continued existence of the species.

(7) CURRENT AND RECOMMENDED MANAGEMENT

The delisting of the MGS as a "threatened" species is long overdue. It is illogical to list a species with little or no scientific fact and then spend subsequent years trying to justify the listing through piecemeal studies. It is an unwarranted burden to the public to continue to attempt to justify the listing.

A variety of existing and proposed programs can adequately manage species habitat until such time that scientific studies actually merit the species listing. These programs include the following:

- (a) The California Environmental Quality Act (CEQA) is intended to ensure the long-term protection of the environment including wildlife. As the trustee agency for fish and wildlife resources, DFG reviews and comments on local agency CEQA documents. This program provides an opportunity for the DFG to review project-specific effects on wildlife such as the MGS.
- (b) The BLM is actively involved in the Coso MGS Mitigation Program. The studies developed by this program will provide a better understanding of the population, diversity, and behavior of the MGS. This program will provide the basis to better manage BLM and other federal lands.
- (c) Local Agency General Plan Land Use Programs provide another means to help in the management of MGS habitat. Much of the area within the four-county known habitat range of the MGS is designated for nonintensive development or open space use on the various jurisdiction's general plans. A jurisdiction's general plan provides a blueprint for future land uses. Open space and nonintensive land use designations would appear to complement the habitat requirements of the MGS.
- (d) If future comprehensive studies warrant the listing of the MGS, the County is preparing an Endangered Species Element of the General Plan which would advocate the preparation of comprehensive Habitat Conservation Plans to address State and federally listed endangered species.

- (e) Future coordination and development of land management programs with the BLM and military are possible to enhance and protect habitat for MGS. BLM is in the process of updating their management plans to address MGS habitat issues. The West Mojave Tortoise Plan will complement the effective management of MGS habitat. Edwards Air Force Base is initiating a joint land use study that could address habitat management practices for the MGS.

(8) SOURCES OF INFORMATION

Aardahl, J.B. and Rosh, "Relative Density Habitat Preference and Seasonal Activity Levels of the Mohave Ground Squirrel and White-tailed Antelope GS in Western Mohave Desert, California" Bureau of Land Management Riverside, CA (1985 Distribution)

Bartholomew, G.A. et al., "Bull Mus Comp Zoo 124:193-208" (1960 Aestivation in the Mohave Ground Squirrel)

Bureau of Land Management Leitner Study, "Coso Geothermal Resource Area" (1990)

Brown Berry, P., "Baseline and Monitoring Study of Mohave Ground Squirrel Habitat Buffer for Cerro Coso Community College" (1988)

Burt, W.H., "Notes on the Habits of the Mohave Ground Squirrel" J. Mamm 17:221-224 (1936)

Burt, W.H., "A Field Guide to the Mammals" Houghton Mifflin Company, Boston 289 pp. (1976)

Hafner, D.J. and T.C. Yates, "Systematic Status of the Mohave Ground Squirrel" J. Mamm 64(3): 397-404 (1983)

Hall, E.R., "Mammals of N. America" John Wiley and Sons, New York 1:1-600+ 90 (1976, 1959 reprint)

Hoyt, D.F., "Mohave Ground Squirrel Survey Department of Fish and Game Spec Wildlife Inventory Final Report" Project No. S-54-R-4 (1972)

Ingles, L.G., "Mammals of California and Its Coastal Waters" Stanford University Press, Stanford, California, 396 pp. (1961)

Recht, M.A., "The Biology of Mohave Ground Squirrel" Ph.D. dissertation UCLA (1977)

Wessman, E.V., "Distribution and Habitat Preferences of Mohave Ground Squirrel" Department of Fish and Game Wild Management Branch Administrative Report 77-5 (1977)

Zemal, R.C. et al., "Inventory of the Vascular Plants and Small Mammals of the Coso Hot Springs Area, China Lake" NWC ADPUB 79-202 (1979)

Zemal, R.C., "Observations on Mohave Ground Squirrel in Inyo County" J. Mamm 61(2):345-347 (1980)

11/6/91

F:TED:MGS91

APPENDIX B: Petition Form FGC-670.1 (3/90).

The specified format and content of this form must be included in any petition to list or delist a Threatened or Endangered species.

A PETITION TO THE STATE OF CALIFORNIA FISH AND GAME COMMISSION

For action pursuant to Section 670.1, Title 14, California Code of Regulations (CCR), and sections 2072 and 2073 of the Fish and Game Code, relating to listing and delisting endangered and threatened species of plants and animals.

I. SPECIES BEING PETITIONED:

Common Name: _____

Scientific Name: _____

II. RECOMMENDED ACTION:

(Check appropriate categories)

_____ List	_____ Change Status
_____ as Endangered	from _____
_____ as Threatened	to _____
_____ Delist	

III. AUTHOR OF PETITION:

Name: _____

Address: _____

Phone Number: _____

I hereby certify that, to the best of my knowledge, all statements made in this petition are true and complete.

Signature: _____

Date: _____

PETITION TO THE STATE OF CALIFORNIA FISH AND GAME COMMISSION
SUPPORTING INFORMATION FOR

Common Name

Scientific Name

1. EXECUTIVE SUMMARY

Provide a brief statement explaining why the petitioned action is being recommended. Include a brief summary of each section of the petition. If a species is being petitioned for listing, state why any one or a combination of the following factors (listed in Section 670.1, Title 14, CCR) threatens its survival.

- (1) Present or threatened modification or destruction of its habitat;
- (2) Overexploitation;
- (3) Predation;
- (4) Competition;
- (5) Disease; or
- (6) Other natural occurrences or human-related activities.

If a species is being recommended for delisting, indicate why State-listing is no longer warranted, and state why any one or a combination of the aforementioned factors no longer threatens its existence.

2. SPECIES DESCRIPTION, BIOLOGY AND ECOLOGY

Include pertinent information that is available on species identification, taxonomy and systematics, seasonal activity or phenology, reproductive biology, mortality/natality, longevity, growth rate, growth form, food habits, habitat relationships and ecological niche or ecological attributes, interactions with other species or special habitat requirements that may increase vulnerability of the species to certain natural or human-caused adverse impacts (e.g., obligate wetland or riparian habitat species, low birthrate, colonial species).

3. HABITAT REQUIREMENTS

Describe habitat features that are thought to be important to the species' ability to maintain viable population levels. Any or all of the following features may be included, as appropriate:

Plant community; edaphic conditions; climate; light; topography/microtopography; natural disturbance; interactions with other plants or animals; associated species; elevation; migration or movement corridors; wintering habitat; breeding habitat; foraging habitat; other habitat features.

For aquatic organisms, the following features may be included in addition to the above:

Water temperature; water flow patterns; stream gradient; water chemistry (dissolved oxygen, salinity, etc.); water depth; bottom type; cover type and availability; fish assemblage/community; aquatic plant abundance; other habitat features.

4. DISTRIBUTION

Delineate on appropriate maps the historic and present distribution (estimated if not known). Include one map of California showing general distribution, and U.S. Geological Survey topographical maps (or equivalent) of appropriate scale, for more detailed distribution information, including locations of occurrences, populations or portions of populations, as appropriate. Include historic and current distribution as documented by literature, museum records, Natural Diversity Data Base and other Department of Fish and Game records and testimony of knowledgeable individuals. All maps must be suitable for black and white reproduction and fully labeled, including borders, base map name, map scale and species name, and should not exceed 11" x 14" in size.

In the text indicate the percentage of historic distribution that is in existence and the rate of loss. If appropriate, indicate the number of extant occurrences, populations or portions of populations in California. Indicate whether the rate of loss is accelerating, and estimate when extinction would occur if current trends continue. Discuss the relationship between historic and current acreage and degree of habitat fragmentation. Describe the quality of the existing habitats in terms of ability to maintain viable populations with or without enhancement. For delisting, indicate how current distribution reflects recovery of the species since listing.

5. ABUNDANCE

Provide available historic and current population estimates/trends, densities, vigor, sex and age structures, and explanation of population changes relative to human-caused impacts or natural events. Compare current and historic abundance in terms of overall population size or size of occurrences, populations or portions of populations, as appropriate. Describe current population trends (with numbers and rate) and relate these to viable population numbers. Explain survey methodology used to arrive at numbers or estimates and what assumptions, if any, were involved.

6. NATURE AND DEGREE OF THREAT

Discuss the basis for the threats to the species or subspecies, or to each population, occurrence or portion of range (as appropriate) due to one or more of the following factors:

- (1) Present or threatened modification or destruction of its habitat;
- (2) overexploitation;
- (3) predation;
- (4) competition;
- (5) disease; or
- (6) other natural events or human-related activities.

Identify the direct, indirect and cumulative adverse impacts and discuss how these are contributing to the decline of the species. Indicate the immediacy of the threat and the magnitude of loss or rate of decline that has occurred to the present or is expected to occur without protective measures. Indicate whether or species is vulnerable to random catastrophic events. For delisting, state why any one or a combination of the aforementioned factors no longer threatens the existence of the species.

7. CURRENT MANAGEMENT

Describe any ongoing protective measures or existing management plans for the species or its habitat. Information on species or land management activities that are impacting populations or portions of the range and knowledge of proposed land use changes should be included. This may be best accomplished by discussing populations or portions of the range. A chart may be useful.

Include available information on any or all of the following:

- (1) Property ownership/jurisdiction for known populations or portions of the range;
- (2) current land use;
- (3) protective measures being taken, if any, and effectiveness of current management activities;
- (4) current research on the species;
- (5) existing management/recovery plans and the extent of their implementation;
- (6) proposed land use changes (include knowledge of forthcoming California Environmental Quality Act documents that may or should address impacts, and lead agencies involved); or
- (7) county general plans, federal and State agency plans/actions or other plans/actions that do address or should address the species.

8. RECOMMENDED MANAGEMENT/RECOVERY MEASURES

Describe activities that may be necessary to ensure future survival of the species after listing or delisting. Include recommendations for any or all of the following:

- (1) Activities that would protect existing populations (site maintenance, preserve design, establishment, etc.);
- (2) monitoring programs and studies;
- (3) needed amendments to existing management and land use plans, including county general plans;
- (4) agencies/organizations that should be involved in planning and implementing management and recovery actions;
- (5) other activities that would help protect existing habitat or ensure survival of the species;
- (6) how other sensitive species (listed and unlisted) may benefit from protection of this species;

- (7) how other species/habitats may be impacted by management and recovery activities for this species; or
- (8) at what point this species would be considered stable and sustainable.

9. INFORMATION SOURCES

Cite literature, available specimen collection records and other pertinent reference materials. Attach documents critical to the recommended action. Be sure to include recent status surveys. List names, addresses and telephone numbers of persons providing unpublished information and supporting the recommended action.

APPENDIX C: Memorandum From Department of Fish and Game to Fish and Game Commission Presenting the Recommendation on Petition to Delist the Mohave Ground Squirrel.

This recommendation was based on the Department's initial review to determine only whether the petition contained sufficient scientific information to demonstrate that the petitioned action was warranted.

Memorandum

To : Mr. Robert R. Treanor
Executive Director
Fish and Game Commission

Date : February 24, 1992

From : Department of Fish and Game

Subject : Commission Agenda Item -- April 2, and 3, 1992 Commission Meeting Re: Petition to Delist the Mohave Ground Squirrel as Threatened

The Department of Fish and Game has reviewed the petition transmitted with your memorandum of November 22, 1991 to delist the Mohave ground squirrel as Threatened. Pursuant to sections 2072.3 and 2073.5 of the Fish and Game Code and based upon the information contained in the petition, we have determined that the petition is not complete. It does not include sufficient scientific information to indicate that the petitioned action may be warranted. The petition should be rejected.

Section 2072.3 of the Fish and Game Code requires that a petition include sufficient scientific information on the following factors as the basis for its petitioned action: population trend, range, distribution, abundance, and life history of the species, the factors affecting the ability of the population (the species) to survive and reproduce, the degree and immediacy of threat, the impact of existing management efforts, suggestions for future management, and the availability and sources of information. A petition also must include information regarding the kind of habitat necessary for survival of the species and must include a detailed map showing distribution of the species.

The petition to delist the Mohave ground squirrel does not include any scientific information on population trend for the Mohave ground squirrel. The petition to delist the Mohave ground squirrel does not include sufficient scientific information on the following factors to indicate that the petitioned action may be warranted: range, distribution, abundance, factors affecting the ability of the species to survive and reproduce, degree and immediacy of threat, and impact of existing management efforts. The petition to delist the Mohave ground squirrel includes a range map, but it is not sufficiently detailed to accurately depict the range of the species.

The petition fails to fully satisfy the content requirements of petition form FGC 670.1 (3/90) as specified in Section 670.1(a), Title 14, California Code of Regulations. The content of the petition is incomplete, pursuant to Section 670.1(a), in that it does not include sufficient information to indicate that the petitioned action may be warranted. There is no discussion in the petition of changes in population of the Mohave ground squirrel over all or a portion of its range. There is no discussion of the effects of human-induced habitat fragmentation on the ability of the species to reoccupy habitat from which it has been extirpated. The impact of Federal land-use activities on Mohave ground squirrel populations is not presented in the petition. We found no discussion of the effects of highways and their

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rights of way (current or proposed) as barriers to movement of populations or as negative impacts to local population densities. There is no mention in the petition of whether the Mohave ground squirrel has been found to occupy soils, plant communities, or elevations not previously known. These and other aspects of the life history of the species, as well as known or potential impacts, must be described and quantified in any attempt to demonstrate that the status of the Mohave ground squirrel has changed.

Section 670.1(c), Title 14, California Code of Regulations provides that a species may be delisted "if the Commission determines that its continued existence is no longer threatened by any one or any combination" of the following factors: present or threatened modification or destruction of its habitat, overexploitation, predation, competition, disease, or other natural occurrences or human-related activities. The petition to delist the Mohave ground squirrel does not provide sufficient information to demonstrate that none of these factors continue to threaten the continued existence of the Mohave ground squirrel.

It is useful at this time to address some points presented in the petition to delist the Mohave ground squirrel. The petition presents three major points of view. These are as follows: 1) that the Mohave ground squirrel erroneously was listed as Rare in 1971; 2) that there has been a lack of scientific research on the population, range, density, behavior, taxonomic relationships, and habitat preferences of the species since 1971 to justify its listing; and 3) that the large amount of Federal land within the range of the Mohave ground squirrel provides substantial management benefit to assure the continued existence of the species.

In regard to the supposed erroneous listing, this argument is not relevant to the single issue at hand in the Department's review. That issue is whether the petition includes sufficient scientific information to indicate that delisting of the Mohave ground squirrel is warranted. However, we believe that it is important to note that there is no evidence in the written record of the Commission's action in 1971 to indicate that the Mohave ground squirrel received any more or less consideration for a designation of Rare than did other species of animals which received that designation.

In regard to the supposed lack of scientific research on the Mohave ground squirrel since 1971 which would justify its original listing, most of the field work that has been done over the years has had the primary purpose of documenting presence or absence of the species prior to the development of habitat. Research on aspects of life history or to determine factors which limit Mohave ground squirrel distribution or populations has not been the focus of this work. The petition itself reflects the lack of results from field research. Funds have been unavailable to the Department due to established priorities for limited monies for such work, for the purpose of obtaining information on life history and limiting factors, and for updating knowledge of the effects of habitat loss on the species.

In regard to the point of view that Federal agencies provide substantial benefit to the Mohave ground squirrel in their management, we believe that if benefit is derived it is incidental to other purposes in land management decisions. There is little specific

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management consideration given to the species on Federal lands sufficient to provide benefit over the long term. In addition, there are several proposed land-use actions or changes which could be detrimental to the continued existence of the Mohave ground squirrel. One of these is the western expansion of the troop training area of Fort Irwin.

The U.S. Fish and Wildlife Service is considering whether the Mohave ground squirrel may be deserving of protection under the Federal Endangered Species Act. In the Federal Register of November 21, 1991, the Service presented an updated compilation of animals that are being considered for possible addition to the Federal list of Endangered and Threatened species. The Mohave ground squirrel is included among the presented species. A designation of status trend for each species has been added to the compilation for the first time. The designation for the Mohave ground squirrel is "Declining," which is defined as "decreasing numbers and/or increasing threats."

The Department has determined, based on the best available biological information, that the Mohave ground squirrel continues to be threatened by modification and destruction of its habitat. The modification of habitat primarily is human-related, although the drought of the past five years is a natural occurrence which has contributed to diminishing the quality of habitat in much of the range of the Mohave ground squirrel. The rapid growth in the urban areas of Palmdale, Victorville, and Ridgecrest in recent years, and the lack of coordinated planning to provide for the continued existence of the species in or near these areas during this growth, is the major cause for our position that Threatened status should be retained.

Original Signed By
Howard A. Sarasohn for
Boyd Gibbons
Director

APPENDIX D: Copy of Public Notice Distributed by Department of Fish and Game
Inviting Comment on Petition to Delist the Mohave Ground Squirrel
and Requesting Scientific Information.

List of Parties To Whom Public Notice Was Sent.

DEPARTMENT OF FISH AND GAME

P.O. BOX 944209
SACRAMENTO, CA 94244-2090

(916) 324-8348

June 10, 1992

PUBLIC NOTICE

TO WHOM IT MAY CONCERN:

Pursuant to Section 2074.4 of the California Fish and Game Code (FGC), NOTICE IS HEREBY GIVEN that on April 2, 1992, the California Fish and Game Commission accepted a petition from the Kern County Department of Planning and Development Services to amend the official State list of endangered and threatened species (Section 670.2, 670.5, Title 14, California Code of Regulations) as follows:

<u>Species</u>	<u>Proposal</u>
Mohave Ground Squirrel (<i>Spermophilus mohavensis</i>)	Delist from Threatened

The California Endangered Species Act (FGC, Chapter 1.5; Section 2050 et seq.) requires that the Department of Fish and Game notify affected and interested parties that the Commission has accepted the petition for the purpose of receiving information and comments that will aid in evaluating the petition and determining whether or not the above proposal should be adopted by the Commission. The Department has 12 months to review the petition, evaluate the available information, and report back to the Commission whether the petitioned action is warranted (FGC 2074.6). The Department's recommendation must be based on the best scientific information available to the Department.

Therefore, NOTICE IS FURTHER GIVEN that anyone with data or comments on the taxonomic status, ecology, biology, life history, management recommendations, distribution, abundance, threats, habitat that may be essential for the species or other factors related to the status of the above species, is hereby requested to provide such data or comments to:

Natural Heritage Division
California Department of Fish and Game
1416 Ninth Street
Sacramento, California 95814

Responses received by October 1, 1992 will be included in the Department's final report to the Commission. If the Department concludes that the petitioned action is warranted, it will recommend that the Commission adopt the proposal. Following receipt of the Department's report, the Commission will allow a 45-day public comment period prior to taking any action on the Department's recommendation.

PUBLIC NOTICE
June 11, 1992
Page Two

NOTICE IS FURTHER GIVEN that the Mohave Ground Squirrel continues to receive the full protection of the California Endangered Species Act as a threatened species pursuant to FGC Section 2085 and does not undergo a candidacy period.

Sincerely,
~~COPY~~ Original

Signed by

Susan A. Cochrane

Susan A. Cochrane, Chief
Natural Heritage Division

PUBLIC NOTICE LIST

Mr. Richard Zembal
U.S. Fish and Wildlife Service
2730 Loker Avenue West
Carlsbad, California 92008

Mr. Steven Chambers
U.S. Fish and Wildlife Service
2140 Eastman Avenue, Suite 100
Ventura, California 93003

Mr. Dale Hall
U.S. Fish and Wildlife Service
911 N.E. 11th Avenue
Portland, Oregon 94232-4181

Mr. Jeffrey Aardahl
Death Valley National Monument
Death Valley, California 92328

Mr. Gerald Hillier
U.S. Bureau of Land Management
6221 Box Springs Boulevard
Riverside, California 92507

Mr. Lee Delaney
U. S. Bureau of Land Management
300 South Richmond Road
Ridgecrest, California 93555

Area Manager
U. S. Bureau of Land Management
150 Coolwater Lane
Barstow, California 92311

Mr. Tom Clark
U. S. Bureau of Land Management
150 Coolwater Lane
Barstow, California 92311

Mr. Ed Hastey
U. S. Bureau of Land Management
2800 Cottage Way
Sacramento, California 95825

Mr. Mark Sasaki
Environmental Office
Environmental Protection Division
California Energy Commission
1516 Ninth Street
Sacramento, California 95814

Ms. Karen Pluff
California Department of Parks and Recreation
8885 Rio San Diego Drive, Suite 270
San Diego, California 92108

Chief
Land Management and Conservation Division
State Lands Commission
1807 13th Street
Sacramento, California 95814

Mr. Thomas J. McGill
Environmental Project Office
Naval Air Weapons Station
U.S. Department of the Navy
China Lake, California 93555-6001

Major David E. Schnabel
Directorate of Engineering and Housing
National Training Center and Fort Irwin
Fort Irwin, California 92310-5000

Dr. Richard Friesen
Michael Brandman Associates
2530 Red Hill Avenue
Santa Ana, California 92705

Dr. Daniel A. Guthrie
Ecological Research Services
c/o Joint Science Department
Claremont College
Claremont, California 91711

Dr. Phillip V. Brylski
The Planning Center
1300 Dove Street, Suite 100
Newport Beach, California 92660

Dr. David Germano
3520 Sewell Street
Bakersfield, California 93312

Mr. Robert W. Stafford
The Planning Center
1801 Oak Street, #111
Bakersfield, California 93301

Ms. Deborah J. Clark
28972 Spadra Street
Barstow, California 92311

Mr. Stephen P. Tabor
4209 Lantados Street
Bakersfield, California 93307

Mr. Curt Uptain
CWESA
1758 N. Academy
Sanger, California 93657

Mr. Michael J. Starr
Department of Geography
University of California
405 Hilgard Avenue
Los Angeles, California 90024-1524

Ms. Valerie Vartanian
Department of Geography
California State University
18111 Nordhoff Street
Northridge, California 91330

Dr. Patricia Brown
658 Sonja Court
Ridgecrest, California 93553

Dr. Michael A. Recht
Department of Biology
California State University, Dominguez Hills
1000 E. Victoria Boulevard
Carson, California 90747

Dr. Joan Callahan-Compton
P.O. Box 3140
Hemet, California 92343

Dr. Michael J. O'Farrell
O'Farrell Biological Consulting
2912 N. Jones Boulevard
Las Vegas, Nevada 89108

Ms. Denise L. LaBerteaux
10375 Los Pinos Street
Onyx, California 93255

Mr. Mark Hagan
38703 20th Street E. #130
Palmdale, California 93550

Dr. Philip Leitner
School of Science
Saint Mary's College of California
P.O. Box 4507
Moraga, California 94575

Dr. George E. Lawrence
Pruett, Lawrence & Associates
Star Route 1, Box 2780
Tehachapi, California 93561

Dr. Callyn D. Yorke
15438 Ensenada Road
Green Valley, California 91350

Dr. Richard E. Fitzner
Battelle, Pacific Northwest Laboratories
P.O. Box 999
Richland, Washington 99352

Mr. Jim Geary
High Desert District
California Department of Parks and Recreation
4555 W. Avenue G
Lancaster, California 93536

Mr. Theodore A. Rado
3144 Celeste Drive
Riverside, California 92507

Mr. David Laabs
P.O. Box 8043
Santa Cruz, California 95060

Mr. Thomas E. Olson
Dames & Moore
175 Cremona Drive, Suite A-E
Goleta, California 93117

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Planning Department
City of Victorville
14343 Civic Drive
Victorville, California 92392

Chief Planner
Planning Department
City of Adelanto
P.O. Box 10
Adelanto, California 92301

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Environmental Coordinator
Department of Community Development
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44933 N. Fern Avenue
Lancaster, California 93534

Chief Planner
Planning Department
City of Palmdale
38306 9th Street East
Palmdale, California 93550

Chief Planner, Planning Department
City of Ridgecrest
100 W. California
Ridgecrest, California 93555

Chief Planner, Planning Department
County of San Bernardino
County Government Center
385 North Arrowhead Avenue
San Bernardino, California 92415-010

Mr. James Hertl
Director of Planning
Department of Regional Planning
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320 W. Temple
Los Angeles, California 90012

Chief Planner, Planning Department
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Independence, California 93526

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Department of Planning and Development
County of Kern
2700 M Street, Suite 100
Bakersfield, California 93301

Director, District 7
California Department of Transportation
120 S Spring Street
Los Angeles, California 90012

Director, District 8
California Department of Transportation
P.O. Box 231
San Bernardino, California 92401

Director, District 9
California Department of Transportation
P.O. Box 847
Bishop, California 93514

Mr. J. Paul Robinson, Chairman
Regional Planning Commission
County of Los Angeles
320 W. Temple
Los Angeles, California 90012

Ms. Ann Dennis
San Geronio Chapter
Sierra Club
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Mr. Dick Hingson
Angeles Chapter
Sierra Club
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Los Angeles, California 90020

Ms. Georgette Theotig
Kern-Kaweah Chapter
Sierra Club
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Bakersfield, California 93385

Mr. Jeff Van Ee
Toiyabe Chapter
Sierra Club
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California Natural Resources Federation
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Berkeley, California 94702

Dr. Gerald H. Meral
Planning and Conservation League
909 12th Street, Suite 203
Sacramento, California 95814

Mr. Richard Spotts
Defenders of Wildlife
1228 N. Street, #6
Sacramento, California 95814

Conservation Chair
Desert Protective Council
P.O. Box 4294
Palm Springs, California 92263

Conservation Chair
Desert Tortoise Council
P.O. Box 1738
Palm Desert, California 92210

Conservation Chair
Desert Tortoise Preserve Committee
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Ridgecrest, California 93556

Conservation Chair
Natural Resources Defense Council
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Los Angeles, California 90014

Mr. Steve McCormick
The Nature Conservancy
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Mr. Bruce Hamilton
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Conservation Chair
Sierra Club Legal Defense Fund
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San Francisco, California 94104

Mr. Norwood Robertshaw
The Trust for Public Land
116 New Montgomery Street, 4th Floor
San Francisco, California 94105

Mr. David Schaub
Resource Protection Division
California Department of Parks and Recreation
P.O. Box 942896
Sacramento, California 95814

Ms. Sylvia Colton, President
Eastern Sierra Audubon Society
P.O. Box 1435
Bishop, California 93514

Mr. Lloyd Brubaker, President
Kerncrest Audubon Society
P.O. Box 984
Ridgecrest, California 93556

Ms. Vivian Null, President
San Bernardino Valley Audubon Society
P.O. Box 1954
Wrightwood, California 92397

Mr. Ken Green, President
Pomona Valley Audubon Society
957 W. Harrison
Claremont, California 91711

Mr. James Wilson, Conservation Chair
Eastern Sierra Audubon Society
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Bishop, California 93514

Ms. Terry Middlemiss, Conservation Chair
Kerncrest Audubon Society
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Mr. Scott White, Conservation Chair
San Bernardino Valley Audubon Society
P.O. 183
Forest Falls, California 92339

Mr. Bruce Farnsworth, Conservation Chair
Pomona Valley Audubon Society
536 W. Whitcomb
Glendora, California 91740

Mr. Glenn Olson, Vice President

Western Region, National Audubon Society
555 Audubon Place
Sacramento, California 95825

Mr. W. R. Ostrander, Manager
Environmental Services
Southern California Edison
P.O. Box 800
Rosemead, California 91770

Ms. Patrice Davison
Field Representative
California Association of 4-wheel Drive Clubs
P.O. Box 22151
Riverside, California 92516

Ms. Dana Bell
Principal Legislative Officer
American Motorcycle Association, District 7
5764 Campo Way
Long Beach, California 90803
Ms. Shelia Massey
California Cattlemen's Association
1221 H Street
Sacramento, California 95814-1910

Mr. Glenn Roushe, Executive Director
California Mining Association
1010 11th Street
Sacramento, California 95814

Mr. Jay Wilson, Executive Vice-President
California Wool Growers Association
1221 H. Street, Suite 101
Sacramento, California 95814-1910

Environmental Control
Southern Pacific Railroad
1 Market Plaza
San Francisco, California 94105

Environmental Control
Union Pacific Railroad Company
5500 Ferguson
San Francisco, California 90022

Mr. E. J. Kuchinasky, Director
Santa Fe Railway
P.O. Box 7931
San Francisco, California 94120

Mr. Henry Hearn, Chief
Office of Environmental Planning,
Management and Compliance
AFFTC/DEV
Edwards AFB, California 93523-5000

Mr. Jack C. Parnell, Director
Department of Food and Agriculture
1220 N Street
Sacramento, California 95814

Mr. W. E. Schaefer, Deputy Director
California Department of Transportation
1120 N Street
Sacramento, California 95814

Dr. Glenn R. Stewart
Biological Sciences Department
California State Polytechnic University
Pomona, California 91768

County Board of Supervisors
San Bernardino County
County Government Center
385 North Arrowhead Avenue
San Bernardino, California 92415-0110

County Board of Supervisors
Inyo County
168 North Edwards
Independence, California 93526

County Board of Supervisors
Kern County
1415 Truxtun Avenue
Bakersfield, California 93301

APPENDIX E: Responses to Public Notice Regarding Petition to Delist the Mohave Ground Squirrel and Letters Sent to Fish and Game Commission.

The Department's Summaries of the Responses and Letters.

The Department received written responses from 19 individuals or organizations. These were as follows:

1. National Training Center and Fort Irwin
2. Curt Uptain
3. Michael A. Recht
4. George E. Lawrence
5. Joan R. Callahan
6. Michael Starr
7. Donald F. Hoyt
8. David J. Hafner
9. Patricia E. Brown
10. Michael J. O'Farrell
11. Philip Leitner
12. Denise L. LaBerteaux
13. The Desert Protective Council, Inc.
14. Jeffrey B. Aardahl
15. Kern-Kaweah Chapter, Sierra Club
16. Terry L. Yates
17. U.S. Fish and Wildlife Service
18. Thomas and Kathleen Stephens
19. California Energy Commission

In addition, the Department received copies of two letters sent to the Commission with comments on the petition. These were from the following:

20. Kerncrest Chapter, National Audubon Society
21. Carol Panlaqui

Rec'd NHD

JUL 21 1992



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
HEADQUARTERS, NATIONAL TRAINING CENTER AND FORT IRWIN
FORT IRWIN, CALIFORNIA 92310-5000

JUL 17 1992



Director of Public Works

Susan A. Cochran
Chief, Natural Heritage Division
California Department of Fish and Game
1416 Ninth Street
Sacramento, California 95814

Dear Ms. Cochran:

Reference Section 2074.4 for Mohave Ground Squirrel (Spermophilus mohavensis). While circumstantial evidence has been drawn from the fact that the Mohave Ground Squirrel (Spermophilus mohavensis) species habitat is suffering from increased development, this does not constitute scientific proof of its impending demise.

Additionally, sightings and captures of Mohave Ground Squirrel have given inconclusive evidence relative to the species status. Sightings on the National Training Center and Fort Irwin, have traditionally been infrequent and populations highly patchy, with low densities. Since this area constitutes the Northeast boundary of Spermophilus mohavensis range, environmental and ecological pressure could be expected to be greater. However, these same characteristics of highly patchy distribution with low density appear even in the center of the range.

It is the position of this command that evidence does not exist to support the continued listing of this species as "threatened".

If you require additional information, please contact me or Mr. Stephen Ahmann at (619) 386-3740.

Sincerely,

A handwritten signature in cursive script that reads "David E. Schnabel".

David E. Schnabel
Lieutenant Colonel,
Corps of Engineers
Director of Public
Works

1. Summary of letter from National Training Center and Fort Irwin, U.S. Army:

This letter cites the fact that the Mohave Ground Squirrel has "highly patchy distribution with low density" at Fort Irwin and "even in the center of the range", but then contradictorily concludes that "evidence does not exist to support the continued listing of this species as 'threatened'".



CWESA

CONSULTANTS IN WILDLIFE AND
ENVIRONMENTAL SERVICES AGENCY

(209) 875-5104

1758 N. ACADEMY • SANGER, CALIFORNIA 93657

4 September, 1992

John Gustafson
Nongame Wildlife Division
California Department of Fish and Game
1416 Ninth Street
Sacramento, CA. 95814

Dear John,

This letter constitutes my review of the Mojave ground squirrel delisting petition submitted to the California Department of Fish and Game on November 19, 1991. I have referenced specific statements that appear in the text and commented on these individually. Then, I have provided an evaluation of the merit of this petition. Please feel free to use this letter, or any excerpts, as you deem appropriate.

Page 1, Paragraph 2, Sentence 3. "Efforts by private property owners to subdivide properties into residential home sites is being inhibited by DFG mitigation requirements that are inconsistent, unclear, cost prohibitive, and lack a clear scientific basis."

Comment - I am sure that the subdividing of private properties are being delayed by the mitigation requirements for Mojave ground squirrels. However, I am not aware of a single proposed project that has not been completed due to the required mitigations. Further, the mitigation requirements established by CDFG are not inconsistent, unclear, cost prohibitive, and they do not lack a scientific basis. Although the mitigation requirements may not be identical from project to project, all projects are currently evaluated in a consistent manner. The methods used to evaluate properties and the resultant mitigation requirements have been standardized and are very clear.

Page 1, Paragraph 3, Sentence 1. "This petition for delisting presents a comprehensive review of available literature and studies related to the MGS."

Comment - Although most of the pertinent available literature has been incorporated and discussed in this petition, most of it has been misinterpreted, misquoted, or misrepresented. Clearly, the author of this petition either has a very minimal scientific background or wishes to twist the conclusions of certain studies.

Sentence 2. "It is clear from the scientific research conducted to date that the MGS was erroneously listed as "rare" in 1971 in the absence of adequate and conclusive evidence."

Comment - It is not "clear" that the MGS was erroneously listed. Given the information available at the time, the decision to list this species was a prudent one.

Sentence 3. "To date, there is a lack of scientific research on the population, range, density, behavior, taxonomic relationships and habitat preferences of the species."

Comment - This species has not been extensively studied. However, there is much more data available now than when the animal was first listed; much of the data were collected as a direct result of the species being listed. Information on behavior, population age structure, density, and survivorship is currently being gathered by Dr. Phillip Leitner at the Coso geothermal area; MGS behavior has been studied in the southern portion of its range by Dr. Tony Recht; the status of its taxonomic relationships with other squirrels is well known, and trapping conducted throughout its range as a result of its listing has increased our knowledge of its current distribution. There is a lack of knowledge relating to MGS habitat preferences on a specific basis. An accumulation of existing data is being prepared jointly between CDFG and BLM.

Page 1, Paragraph 4, Sentence 1. "A review of the history of the MGS listing process within the context of the scientific data available to the Fish and Game Commission in 1971, clearly shows that the species was prematurely listed without the availability of adequate population and habitat studies."

Comment - Although there were few studies available, all persons knowledgeable of the species were contacted and asked for their recommendations for listing of the species; much of the information known was not documented. In most, if not all cases, the Mojave ground squirrel experts agreed that the animal should be listed.

Sentence 2. The available scientific studies have yet to substantiate through comprehensive research that the MGS and its habitat is threatened or in danger of extinction."

Comment - Although there is a lack of robust research on this species, all available data support the contention that the species should be listed. Current information being prepared by the CDFG and BLM on the relative abundance of this species and the loss of its habitat since listing should support the continuation of listing.

Sentence 3. "In fact, recent studies have suggested that the range of the species and population densities are far greater than the conclusions of earlier studies."

Comment - This is not so. The known range has been modified since the original listing, but it has not been greatly expanded. In fact, a review of the current accepted range map may reveal a decrease in the known range of the MGS.

Sentence 4. "Studies conducted by the Bureau of Land Management (BLM) support the contention that large populations of MGS exist in excess of 7,000 square miles."

Comment - Although there may be some large populations of MGS which exist within a range of approximately 7,000 square miles, the more typical situation is small isolated, scattered populations.

Sentence 5. "This petition concludes that the preponderance of public lands managed by various federal agencies provides substantial management benefit to assure the continued existence of the species."

Comment - Although there are some relatively large blocks of public lands within the MGS range, most are small scattered parcels. Much of this land is not necessarily managed to the benefit of MGS. These public lands, as they now exist, will not provide the quality and expanse of relatively undisturbed lands necessary to support the species in perpetuity without isolating populations which could lead to local extirpations, the loss of genetic diversity and, eventually, potential speciation, if not complete extinction.

Page 2, Paragraph 2, Sentence 5. "Correspondence from the California Department of Agriculture was included as part of the record for this hearing which requested

that the MGS and other specified rodents be omitted from listing since they are involved in crop depredation."

Comment - Although MGS are involved in crop depredation, they do not cause any great damage to crops because of their limited numbers and patchy distribution.

Page 2, Paragraph 3. Entire paragraph. "It is clear...as a "rare" species."

Comment - As previously stated, there was little information available on MGS prior to 1971. However, the data that were available did support the listing of the MGS. However, this point is really mute. The situation now is that appropriate information currently exists to support the continued listing of MGS.

Page 3, Paragraph 3, Sentence 4. "There is no conclusive scientific studies which have documented significant MGS habitat loss, adverse effects on population status, or other life history requirements."

Comments - Although there are no documents available which identify this, all one needs to do is overlay the MGS range map with current aerial photographs and land use maps to see that a significant portion of the range has been lost or is in danger of being lost to development. This type of information should be available from the CDFG and BLM in the near future.

Page 3, Paragraph 4, Entire Paragraph. "The 1977 Wessman study...to delist the species."

Comments - Although the Wessman study recognized an increase in the MGS range, it did not constitute a significant increase given the broad approach used to produce range maps; they are best estimates determined by "connecting the dots" of outlying observation points. There are portions of the original range map that have been delineated as MGS habitat, which are probably not occupied by the species. An updated version of the MGS range is being prepared by the CDFG and BLM which will more accurately reflect what MGS experts consider to be its range. This is largely based upon recent trapping information and habitat types occupied by the species and is, again, a best estimate. It is interesting to note that whenever a previously unreported population of a listed species is found, some draw the immediate conclusion that the species is no longer in jeopardy or should no longer be protected.

Page 3, Paragraph 5, Sentences 1, 5, and 6. "It is interesting to note that Hafner and Yates question whether the MGS is even a separate distinct species. Hafner and Yates concluded that insufficient evidence exists to substantiate conclusive scientific recognition of a separate MGS species. In the absence of conclusive scientific studies, the recognition of the MGS as a "threatened" species is premature and inappropriate."

Comments - I seem to have misplaced my copy of Hafner and Yates, but from what I recall, they did not conclude that these two animals were inseparable. In fact, I believe that only a few genetic loci were identical and only in a few specimens examined. This must lead one to conclude that the two squirrels are separate species. Even if the two squirrels are more closely allied, the MGS is behaviorally and physiologically different from the round-tailed ground squirrel and should at least be considered a separate taxon (subspecies). There has been a precedent set with the San Joaquin kit fox where a subspecies has been listed, so the same could hold true for the MGS.

Page 4, Paragraph 1, Sentence 3. "It would seem prudent for these additional studies to be undertaken before a species is listed as "threatened"."

Comment - While it would be nice to have information available concerning habitat preferences and comparisons of site use within habitats and between habitats, this

information is not a prerequisite to determining if a species should be considered threatened. In fact, that type of information is more important when assessing appropriate habitat management techniques for a species.

Page 4, Paragraph 2, Entire Paragraph. "In reviewing the habitat...for species propagation."

Comments - Although there is a large amount of federally owned lands that are inhabited by MGS, these lands are not necessarily managed for the species. These public lands, as they now exist, will not provide the quality and expanse of relatively undisturbed lands necessary to support the species in perpetuity without isolating populations that could lead to local extirpations, the loss of genetic diversity and, eventually, potential speciation if not complete extinction.

Page 4, Paragraph 3, Sentence 4. "Even Hoyt must conclude...nor to decide whether the species is truly endangered."

Comments - Although Hoyt did conclude that available information was not adequate to make exact quantitative statements about the animals present distribution or abundance, he also recommended that "The Mojave ground squirrel be retained on the rare species list" and that "Studies be initiated immediately to more closely identify those areas reported to be populated by Mojave ground squirrel and how these can best be preserved (Hoyt 1972 pg. 8)." These statements reveal Hoyt's interpretation of the MGS situation at the time of his studies.

Page 5, Paragraph 1, Sentence 5. "The studies also show that females will control their habitat by not bearing any young to compete for limited food supplies during drought years."

Comments - This statement made by the author of the petition exhibits a very poor understanding of underlying biological principles. The females do not "control" their environment. Instead, they are responding to environmental conditions that are not favorable to the reproduction strategies of this species.

Page 5, Paragraph 1, Sentence 7. "These studies suggest that natural decreases in MGS populations may have nothing to do with habitat loss resulting from private development."

Comment - This is exactly correct. There are two factors to be considered here. One is the decrease in density or local extirpations of populations caused by environmental factors. It is presumed that as environmental factors once again become favorable in these areas, the animals will repopulate the areas. The other factor to be considered is the permanent loss of habitat due to development. This causes the local extirpation of populations with no chance for repopulation. These two factors are not related except as they combine to further threaten the species with extinction.

Page 5, Paragraph 2, Sentence 1. "The listing of the MGS as a "threatened" species lacks any basis in scientific fact."

Comments - This just isn't so. Although there is not a voluminous collection of data supporting the necessity of listing this species, the information that is available points to the need for listing. The simple lack of information related to the amount of effort expended to gather it supports the conclusion that the species is rare.

Page 5, Paragraph 3, Entire Paragraph. "The more contemporary studies...also supports this conclusion."

Comments - The studies referenced do not support the delisting of the species. Although these studies have shown that MGS are relatively abundant in some restricted areas, the results cannot be broadened and used to represent the entire range of the species. In fact, the multitude of trapping surveys that have resulted in negative results gives a better indication of the relative abundance and distribution of the species throughout its range.

Page 5, Paragraph 4, Entire Paragraph. "As previously indicated...area just expanded again?"

Comments - Again, this paragraph indicates that the author of the petition does not adequately understand the biology of the MGS. Dr. Leitner's studies have shown that MGS aestivation periods are tuned to environmental conditions, which may have affected the results of some trapping surveys. However, most of the trapping survey results are still probably valid. It has not been shown that MGS migrate for food! Additionally, local extirpations caused by environmental factors are responsible for MGS not appearing at the same location year after year, not that they are migrating. Where MGS persist, the same individuals are generally present (except for young, dispersing animals). CDFG no longer accepts trapping studies for several reasons. First, local extirpations may cause negative results in otherwise suitable, and typically inhabited habitat. This does not mean that the amount of habitat has increased when these areas are repopulated. Trapping studies are also not accepted any longer because of the patchily distributed nature of MGS. It is impossible to sample 100 percent of an area proposed for development and with the patchy distribution of MGS, animals may not be captured when, in fact, they inhabit an area in low numbers.

Page 6, Paragraph 1, Entire Paragraph. "Once again, the...existence of the species."

Comments - The species was not prematurely listed; all available information indicated that the MGS was threatened. Although MGS are not restricted to small specialized habitats, it does exist in isolated areas within its range. Further, populations tend to be low in density and small in size. Recent studies have not noted substantial increases in populations of MGS. They have just provided better information for several restricted sites in areas where MGS were previously known to occur. The development of private lands within the range of MGS will cause extirpations of some populations and isolate other populations. This would cause a decrease in genetic diversity and potentially cause speciation; it may also contribute to absolute extinction.

Page 6, Paragraph 2, Entire Paragraph. "The delisting of...to justify the listing."

Comments - Delisting of MGS is not long overdue. In fact, available data and the current local political climate suggest that it would be appropriate to petition the United States Fish and Wildlife Service to also list the species. Recent studies have not been conducted to try to justify continued listing; studies have primarily been conducted to more fully understand the biology of the animal and to determine appropriate mitigation for development projects, not to determine the population status.

Page 6, Paragraph 3, Entire Paragraph. "A variety of existing and proposed programs can adequately manage species habitat...These programs include..."

Comments - This entire paragraph is misleading. It suggests that the MGS (or its habitat) will be protected if delisting occurs. This is simply not the case. Most, if not all, of the protection measures listed in the paragraph would be eliminated if MGS were delisted. Contrary to what this paragraph states in its opening sentence,

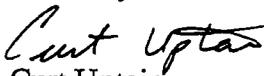
there are no programs that have been proposed to help protect the MGS if it is delisted.

This petition has been prepared based upon economic considerations alone. It contains absolutely no relevant biological information that would substantiate delisting. While it is true that there is a general lack of information concerning this species, it is not due to a lack of effort by wildlife agencies or biologists. The fact is that the animals are rare and information is, therefore, difficult to obtain. Most of the recent information that has been collected on MGS has been the direct result of the species being listed; if it is delisted, the accumulation of information would virtually cease. The petition proposes to delist the species until more information has been collected. Where will the resources come from to conduct those studies? Certainly not from the private sector. Private developments occurring within MGS habitat have a responsibility to assume part of the burden to protect this species, including conducting information gathering studies. The delisting of the MGS would release private developers of this responsibility.

The petition claims that adequate protection measures would remain in effect if the species were delisted. This is not the case. MGS would no longer be considered in CEQA documents; many of the proposed developments would not require a review above the County level. This would not be in the best interest of MGS protection. Further, Jurisdictional Plans, General Plans, and cooperative land management programs would not be required to address this species. Additionally, military bases would not be persuaded to consider this species in their management plans (even now they are not required to consider this species because it is not federally listed). Delisting of MGS would critically affect the long-term survival of the species.

If I can be of any further assistance, please let me know.

Sincerely,



Curt Uptain
Endangered species biologist

cc:MSE/ceu

2. Summary of letter from Curt Uptain:

This letter refutes many statements made in the petition to delist the Mohave Ground Squirrel and concludes that the petition "has been prepared based upon economic considerations alone. It contains absolutely no relevant biological information that would substantiate delisting."

Dr. John Gustafson
Nongame Bird and Mammal Section
Wildlife Management Division
California Department of Fish and Game
P.O. Box 944209
Sacramento, CA 94244-2090

September 7, 1992

Dear John:

I have read the petition from the County of Kern Department of Planning and Development Services concerning the Delisting of the Mohave Ground Squirrel (*Spermophilus mohavensis*) and I have the following comments to offer. My comments are given in reply by section heading.

(1) EXECUTIVE SUMMARY

The species was not "erroneously" listed as rare. Biologists trapping in the Mohave Desert rarely caught or saw this species. Few museums have adequate sample sizes because of this. See (2) BACKGROUND TO SPECIES LISTING below.

The statement that there is a lack of scientific research on the population, range, density, behavior, taxonomic relationships, and habitat preferences of the MGS is both misleading and patently false. Population and density estimates exist from work done by Leitner, myself and others. Behavior has been extensively addressed by Pengelley, Bartholomew, Adest, and myself. The taxonomic relationship of the subgenus *Xerospermophilus* has been addressed by Nadler and, more recently, Hafner and Yates (more on this later). Habitat preferences have been reported by Aardhal, Burt, Wessman, Leitner, myself and others.

The statement that the range and population densities are greater than the conclusions of previous studies is inaccurate. Although an increase in range has been reported the petition makes no notice of the massive loss of habitat (and squirrels) due to the development in the Palmdale-Lancaster-Rosamond-Mohave corridor and in the Adelanto-Victorville area. Recent studies by Leitner and myself suggest that population levels vary dramatically from north to south across the species range. It rains more in the northern part of the range than in the south. I have always maintained, based on field observations, that rainfall is a key factor in food productivity and hence population size because the squirrel will vary (as Smith and Johnson found with the Townsend Ground Squirrel, *Spermophilus townsendi*).

Delisting Petition Comments-Cont.

The study conducted by the BLM (Aardahl) has many flaws: insufficient trap days yields inaccurate ratios of Mohave to Antelope Ground Squirrels and the lack of trap sites, in the sothern and western part of the Mohave Desert where development has been extensive, fails to show the very low population levels in that part of the range.

The conclusion of the petition that the preponderance of public lands managed by various federal agencies provides substantial benefit to assure the continued existence of the species is false. The public lands are not really "managed" for wildlife preservation in any real sense of the word: extensive grazing by sheep and cattle is unmonitored and essentially uncontrolled while off-road vehicle activity continues to dissect and dissipate habitat. The petition ignores the extensive loss of habitat and damage to existing habitat in the western Mohave Desert due to massive population influx and the attendant construction and off-road and other recreational activities of man.

(2) BACKGROUND TO SPECIES LISTING

At the time I began my Dissertation research I had discussions with scientists who had worked with and/or trapped for the MGS; Bartholomew, Hudson, Pengelley, Mayhew, Hoyt, and Adest. All these individuals told of how difficult it was to find them and three of them told me that the MGS was not a good Dissertation project because the squirrels were not abundant, were discontinuous in distribution, limited to the selected habitats in the Mohave Desert and thus I would have a very difficult time finding enough squirrels to study for a project! As I began my Dissertation research in the western Mohave Desert I found their concerns to be valid. I found the populations to be discontinuous and small; when the sociobiologist Sherman called my major professor, Kavanau, to ask if it were possible to obtain several hundred squirrels for an experiment, Kavanau told him that I had not yet seen that many! Sherman, used to studying hundreds to thousands of animals at a time found this hard to believe and flew out here to have a look for himself. I showed him around; we found four squirrels that day. He went home unable to study the sociobiology of the MGS due to lack of sufficient numbers of the squirrels.

I believe that, given the current and future massive development of the Mohave Desert, and, given the reasons stated above, the Department's listing of the Mohave ground squirrel was a proper, justified, and appropriate course of action which should be maintained in place today.

Delisting Petition Comments-Cont.

(3) SPECIES DESCRIPTION

The statement that the U.S. Fish and Wildlife Service Listing as a Category 2 species means that conclusive data are not available to justify a federal listing is not wholly correct. The listing in this category means that sufficient justification exists to draw our attention to a species which is under threat.

The dramatic incursion of human development on the Mohave Desert is staggering. The loss of habitat due to housing development, roads, and recreational activities in the Palmdale-Lancaster-Rosamond-Mohave corridor and the Adelanto-Victorville areas is known to those of us who have worked on the desert for the last twenty years; documentation from the Landsat program will bear this out. Those of us who have worked on the desert have seen the effect of local rainfall on local populations. Rainfall is discontinuous and therefore productivity will vary accordingly. Populations of squirrels, lacking rainfall and subsequent productivity, will fail to reproduce. After several years the local population, small to begin with, may disappear. Under normal circumstances the return of rainfall within a few years would restore the local population. Development, if left unchecked, will usurp the habitat cutting off and isolating populations reducing repatriation and gene flow thus dramatically increasing the potential for extirpation.

The petition states that Hafner and Yates concluded that insufficient evidence exists to substantiate conclusive scientific recognition of a separate MGS species; that is a patently, outrageously, criminally false statement. Both the Nadler and Hafner and Yates reports state that the species is valid. The people who wrote the petition either cannot read english or are liars!

Hafner and Yates reported finding two loci shared by the MGS and the RTGS. This argument of hybridization does not invalidate the species. It only suggests a level of relatedness. When you consider that domestic dogs, coyotes, and wolves hybridize to a much greater extent than the MGS (the canids share some 70+ loci and are obviously closely related but recently separated--and nobody is suggesting that these three are the same species) the low level of hybridization reported for the MGS and RTGS supports Hafner and Yates (and Nadler's) conclusions that these are separate species.

Electrophoretic data are but one means of species determination.

Delisting Petition Comments-Cont.

Morphology and behavior are two others. The morphology is very distinct between these two species as is their behavior: The MGS is solitary whereas the RTGS is a social-colonial species. The behavioral differences between these two act as barriers which reduce contact and therefore separate them. (As an outside example, one could look at the relationships of the various species of *Epidonax* fly catchers. These birds cannot be discerned by humans using morphology or electrophoretics; the birds use reproductive behavior and song and do quite well, thank you!)

(4) HABITAT REQUIREMENTS

It is very difficult to compare different population estimates of the MGS in Shadscale, Creosote, and Joshua tree habitats because there has never been a concerted trapping program across the entire Mohave Desert. Trapping studies reveal some areas with viable populations, while others show no populations in existence. The distribution of MGS is clearly not uniform across its range on a year to year basis. Rainfall patterns vary; although somewhat more stable in the northern part of the range (Coso area) the southern parts are experiencing a severe drought and populations have become locally extinct. Even the Coso area appears to have had a local population become extirpated. It appears that the species depends on surviving local "seed" populations to re-establish broader distributions. It is imperative that the habitat remain contiguous to avoid isolation of gene flow!

The petition points out the extensive lands under federal "protection". The lack of BLM management of lands has been discussed previously; much of the military land is for training purposes. The land used for bombing, missile, or ground exercises may not be ideal habitat.

(5) DISTURBANCE/ABUNDANCE

Although studies conducted by Leitner suggest good population of MGS in the Coso area (where there is relatively abundant rainfall) he also reported that in one of his trapping areas the population disappeared apparently due to the drought! I have seen this happen at my own study site at Blue rock Butte. In the Luz MGS study that I conducted (with ERT) near Kramer Junction, the ratio of MGS to AGS, after 3,500 trap/days, was 1:8. Studies I conducted at a variety of sites across the Mohave Desert for the Department of Transportation suggest population numbers that were very low to none in the southern and western Mohave Desert (where the impact of the drought has been more significant).

Delisting Petition Comments-Cont.

After 22,500 trap/days the ratio of captured MGS to AGS was 1:45! Another way to look at this is to compare the number of days it took to capture a given (one) individual of a squirrel species: RTGS took 15 days, AGS took 26 days, and MGS took 1184 Days!!

Once again, although Wessman reported range extensions he did not report of the loss of habitat in the Palmdale-Mohave and Adelanto-Victorville areas.

(6) NATURE AND DEGREE OF THREAT

The listing of the species was completely appropriate given the nature of the findings of scarcity of those scientists who worked on local desert species. Their experience parallels my own.

Our current understanding is that rainfall patterns, which are unpredictable in nature, ultimately determine the plant productivity of population levels and existence of the MGS. However, The Mohave Desert is not similar to other types of ecosystems such as forests or grasslands (which have relatively uniform rainfall patterns). Uniform rainfall produces (all things being equal) uniform stable plant productivity which, in forests and grasslands, is observable to the eye. The Mohave desert is not like that; when there is no rain for several years populations may become locally extirpated. Given the vagaries of the weather in the fragile ecosystem of the Mohave Desert it is not possible to determine with pinpoint accuracy (especially in the southern and western Mohave Desert) the condition of local populations on a long term basis. A study done three years ago may not be valid depending on what has happened in the intervening years. Thus it becomes difficult to point to population status of the various areas with accuracy on a decade to decade basis: With the evidence of local extirpations before us a conservative approach is warranted.

(7) CURRENT AND RECOMMENDED MANAGEMENT

I believe that the evidence supports a maintenance of the current listing.

(a) The DFG continuously reviews the status of the MGS and feels that the listing is valid.

(b) The BLM Coso program supplies information only on the MGS status in the Coso area where the rainfall pattern is different than in the

Delisting Petition Comments - Cont.

southern Mohave Desert. Information on habitat loss, rainfall, and population levels in the southern and western portions of the Mohave Desert are not being addressed.

- (c) The western Mohave has been and continues to be extensively developed. How are we to maintain genetic viability of the species as the desert becomes fractionated by development?
- (d) By the time Kern County prepares an Endangered Species Element of the General Plan there will be no habitat left to protect.
- (e) The BLM is already understaffed and does not monitor adequately the activities on lands in its care. Livestock grazing and human recreational activities have taken their enormous toll on the habitat.

Michael A. Recht, PhD.

3. Summary of letter from Michael A. Recht:

This letter refutes a number of statements made in the petition to delist the Mohave Ground Squirrel and concludes that "I believe that the evidence supports a maintenance of the current listing [as a Threatened species]."

PRUETT, LAWRENCE & ASSOCIATES

BIOLOGICAL ASSESSMENTS

GEORGE E. LAWRENCE
19669 Banducci Road
Tehachapi, CA 93561
(805) 822-0214

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3616 View Street
Bakersfield, CA 93306
(805) 872-5662

SEP 15 1992

Rec'd NHD

Susan A. Cochrane, Chief, Natural Heritage Div.
California Department of Fish and Game
Sacramento, CA94244

Sept. 8 1992

Dear Susan,

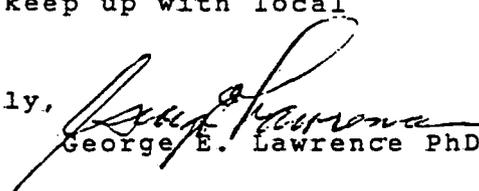
With respect to the request for data on the Mohave Ground Squirrel I have included the following comments that cover the period of Sherman trap live trapping from 1979 thru 1991. I am a former faculty member of Bakersfield College and did my graduate work at the MVZ. at U.C. Berkeley.

Home Range: Clearly the current distribution map of this species should be redrawn to reflect the absence of the species in the southwest part of the former range. Some 8000 trap days of daytime live trapping; & the modified map of the species distribution is included, but my records apply only to the Kern county segments.

Habitat reduction: Urbanization has significantly reduced the range of this species in the vicinity of Palmdale, Lancaster, Rosamond, Mojave, California City and Actis. Both residential growth and toxic waste disposal sites have displaced this CT. squirrel during the past several decades.

Management recommendation: Rather than delisting the Mojave Ground Squirrel, I would strongly urge the CDF&G staff to request that the species be moved up to the endangered status as it is currently experiencing a comparable population decline with the Desert tortoise in this part of the state. Biologically, the threats to these tetrapods are reducing the population numbers at a rate faster than the sporadic field workers are able to accurately keep up with local shifts in the current numbers.

Sincerely,


George E. Lawrence Ph.D.

George E. Lawrence

19669 Banducci, Tehachapi

MOHAVE GROUND SQUIRREL TRAPPING RECORDS

93561

List below the locations, dates and numbers of any Mohave ground squirrels (MGS) you have captured or seen. (If any have trapped in numerous locations and have several records, it may be easier to copy sections of your reports or record forms.) For locations, please include township, range and section.

FOLD PAPER SO MY ADDRESS SHOWS ON THE OUTSIDE AND TAPE OR STAPLE CLOSED.

DATE	LOCATION	TRAPPED/SIGHTED/ROADKILL	NUMBER
May 24, 1981	Sec. 28, T9N., R8W.	EAFB. San Bernardino Co.	Sighted 2 MGS.

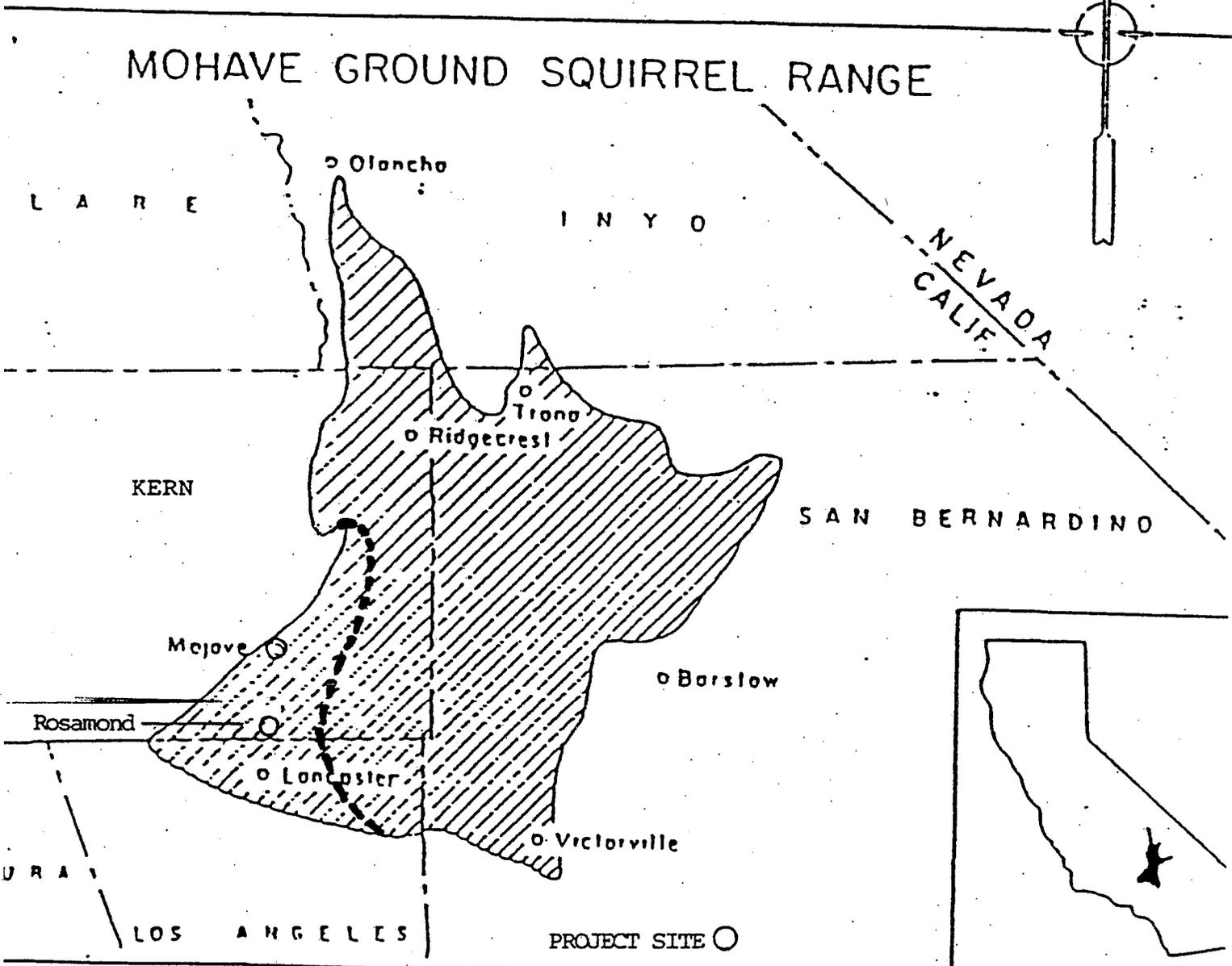
TRAPPING CONDUCTED, NO MOJAVE GROUND SQUIRRELS CAPTURED

DATE	LOCATION	TRAP Days
Nov. 1979	Sec. 18 T10N., R10W. EAFB. GE. site	5.
June 1980	Sec. 19 T10N., R12W. EAFB. Target site	5.
May 1987	Sec. 6. T31S., R38E. Cantil area	3
March 1988	Sec 29. T11N., R14W. Mojave Camelot	10.
Apr. May 1989	Sec 15. T10N., R12W. Soledad Mtn area	10
Mar-May 1989	Sec 17 T9N., T13 W. North Rosamond	10
Mar-May 1990	Sec 12. T10N., R13W. South of Mojave	10
Mar-May 1991	Sec 8. T32S., R38N. California City North	10
Mar-May 1990	Sec 22. T9N., R13W. Rosamond east	10
Mar-May 1990	Sec 25 T9N., R14W. Rosamond west	10

~~TRAPPING CONDUCTED, NO MGS OCCURRED~~

DATE	LOCATION	TRAP-DAYS
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Figure 8... Distribution area of the CT. Mojave Ground Squirrel range.



----- HABITAT REDUCTION IN RECENT KERN TRAPPING RECORDS.

4. Summary of letter from George E. Lawrence:

This letter states that "the current distribution map of this species should be redrawn to reflect the absence of the species in the southwest part of the former range." It points out that "[u]rbanization has significantly reduced the range of this species in the vicinity of Palmdale, Lancaster, Rosamond, Mojave, California City and Actis." The letter concludes that, rather than delisting the Mohave Ground Squirrel, the species should be "moved up [reclassified] to the endangered status as it is currently experiencing a comparable population decline with the Desert tortoise [sic]...."

P.O. Box 3140
Hemet, CA 92546
14 September 1992

Rec'd NHD
SEP 18 1992

Natural Heritage Division
California Department of Fish and Game
1416 Ninth Street
Sacramento, CA 95814

To Whom It May Concern:

I wish to comment on the Kern County Planning Department's recent petition to delist the Mohave ground squirrel (*Spermophilus mohavensis*).

The CDFG public notice dated 10 June 1992 did not include a copy of the petition, nor did it say where copies were available. The notice just asked for information on the Mohave ground squirrel. It's the petition itself that requires comment, however, so I obtained a copy from the Kern County Planning Department. I was interested in the petition because its very existence seemed to imply that a new study had been done. If someone was able to prove that the species isn't really threatened after all, it would be welcome news.

As it turns out, the petition package contains no new data at all. It is an impressive document if evaluated by the pound, but the actual petition is only eight pages long. The rest consists of copies of familiar publications and reports on the Mohave ground squirrel (apparently reproduced without permission of the copyright holders). The petition implies that those publications somehow support delisting, but they do not. For example:

- o A paper by Hafner and Yates is cited as evidence that the Mohave ground squirrel is not a separate species from the round-tailed ground squirrel (*Spermophilus tereticaudus*). In fact, the paper reached just the opposite conclusion! (I re-read the paper and also telephoned Dr. Yates, just to make sure.) But this argument makes no difference anyway, because the Endangered Species Act treats subspecies the same as full species.
- o The petition cites various population studies as evidence that the species is common. Of course, there were lots of Mohave ground squirrels on the sites described in those reports. The studies were done on those sites *because* the squirrels were there, and *because* they were amenable to trapping and observation. This proves nothing about the status of the species elsewhere. The petition could have cited hundreds of (very brief) reports on sites where the species was *not* found.
- o The petition complains that the 1987 Five-Year Status Report on the MGS did not mention the range extension reported by Wessman. On the contrary, the 1987 report cited Wessman's study, and the 1988 Annual Report included the expanded range map. But a species can occupy a fairly large geographic range and still be threatened, as witness the desert tortoise. (Will the tortoise be the target of the next petition?)

Despite these and other factual errors, I do not believe that the petition was intended to be misleading. The person who wrote it was not a biologist, and simply did not understand certain issues. But other statements in the petition are less easily explained. It claims, for example, that the proposed delisting would do no harm, because CEQA and various local programs would continue to protect the Mohave ground squirrel. Anyone versed in the CEQA process can tell you this is not true. If CEQA would effectively protect the species (and thereby limit development within its range), then who would benefit from delisting, and what is the purpose of the petition? Hundreds of nonlisted species meet the criteria in CEQA Article 20, Section 15380, Subsection (d); but in actual practice this has no effect. The biology section of an EIR normally contains a table of species in this category which could be impacted by the project--and that's it. For all but the largest and most controversial projects, the table is basically an obituary notice. And even if CDFG chose to protest such an EIR, wasn't there some recent ruling that bars them from filing suit?

The petition offers just one real argument for delisting--namely, the economic benefit to Kern County. I realize that California has economic problems, and it would be nice if these problems could be solved simply by pulling the plug on one species. But there is a lot more at stake here. If present trends continue, the majority of wildlife species in this State will one day qualify for the threatened and endangered list. The best way to avoid this scenario is to protect large areas as multi-species preserves, and *then* stop fiddling around with single-species clearance surveys. Yes, I know, this is hardly an original idea--but I don't see it happening, not on a large scale. The MSHCP concept is like the weather, in that (to coin a phrase) everybody talks about it but nobody does anything about it.

The petition alludes to a future HCP which will protect desert wildlife, including the Mohave ground squirrel--but on the implied condition that delisting must happen *first*. I have heard this reasoning before, and I didn't understand it then, either. This future world of sensitive wildlife management, with man and nature working hand in hand, sounds suspiciously like the Rapture. Maybe it's coming, and maybe it isn't; but meanwhile we must all take responsibility for our own actions, or face the consequences. If nobody wants to pay for an HCP now, why would this level of motivation increase, once the species is delisted and the legal requirement is removed? And if the Mohave ground squirrel is as common as the petition claims, why would it need this protection anyway?

Whether the Mohave ground squirrel is threatened today makes absolutely no difference. It's getting there; everything is. If the only mechanism available to protect large areas of the western Mojave desert is the threatened status of this one squirrel, then that status must be retained. But in case the law does not recognize such convoluted reasoning, I should add that, in my opinion, the Mohave ground squirrel is sufficiently threatened to warrant its continued listing. Although there is strong evidence for direct human impacts, these need not be proven in order to define a species as threatened. Biogeographic data suggest that the Mohave ground squirrel is succumbing to competitive exclusion, perhaps hastened by changes in climate and land use patterns. (Some of the authors cited in the Kern County petition reached this same conclusion.) This trend alone qualifies the species for listing under the fourth criterion stated in the petition, i.e., "other natural or man-made factors affecting the species' continued existence."

I have not done any MGS work for the private sector, so I cannot be accused of having a major financial stake in the outcome of this debate. I am, however, fully qualified to offer a biological opinion, and will forward my curriculum vitae on request. I maintain that it would set a dangerous precedent to delist a threatened species solely for economic reasons, and I urge the California Fish and Game Commission to reject this petition.

I am not quite finished. As the Commission surely knows, there is a serious problem with enforcement. If the effect of the California Endangered Species Act is simply to delay some projects, without ultimate benefit to the Mohave ground squirrel or to the people of California, then it makes no difference whether any species is listed or delisted. But this is *not* the fault of the law, nor justification for repealing it (or its Federal counterpart). The fault lies with the people who break it, and the ones who fail to enforce it. Biologists also must accept a share of the blame, to the extent that we have failed to develop adequate survey methods. Articles in recent APA newsletters have actively encouraged land owners to defy CDFG (see, for example, the September 1992 issue of *California Planner*). It is rumored that some developers, following this advice, have told CDFG to jump in the lake, and have gone ahead with their projects, but have not been prosecuted.

The MGS has well-known habits that make trapping studies difficult and unreliable, so biologists often cannot tell whether this species is present on a given project site or not. Developers who do not understand this problem often assume that we are being deliberately vague, when in fact we are being honest. One or two consultants have met this challenge by claiming that they can just look at a site and tell whether any Mohave ground squirrels live there, but this is not science; these people should be selling vacuum cleaners. A more constructive response to the dilemma was CDFG's new Cumulative Human Impact Evaluation procedure, which is a step in the right direction. But the CHIE method has received, at best, mixed reviews from biologists and developers alike.

The main problem is that no one really knows the habitat requirements of this species, so the Cumulative Impact Rating has no known relationship to the appropriate level of mitigation. Many people (notably the membership of APA and BIA) feel that, in order to ask for mitigation, you need some rational method of quantifying impacts. For the Mohave ground squirrel, we have only a circular definition: MGS habitat is desert land that has MGS living on it. And this leads us back to trapping surveys, which don't work. We need a better method.

(N.B. While I was writing this letter, I received a notice that the revised Cumulative Human Impact Evaluation method will be taught in a two-day workshop later this month, and that I must attend if I want to "retain my status as an evaluator." Maybe the new method is better than the old one. I'll find out, if my boss lets me miss two days of work.)

I will conclude my letter with two anecdotes. Biological consultants often are treated to rare glimpses of human nature. In the interest of fairness, these insights must be shared, not only with the Commission but with the public--particularly those members of the public who use the term "balanced environmental perspective" more than once a week. You understand the anger on one side of the debate, but not the other. You have the right and the responsibility to know both sides.

1. A couple of years ago, I attended a Mohave ground squirrel workshop sponsored by one of the desert cities. A developer spoke to the audience and explained that he would like to do MGS surveys on his property, and he was perfectly willing to pay mitigation fees, but he just couldn't find a qualified biologist who was available, or anyone who could tell him what he should do, because we were all booked up for months in advance. He said he was just about ready to abandon his projects altogether, which would be bad for the County, etc. This sounded reasonable, so I decided to relieve the obvious strain on my colleagues by applying for my own MOU. My application was approved, and my name was added to the list of MOU holders. I then called the developer who had given the talk, introduced myself, and said I would be pleased to do his MGS surveys on short notice and at competitive rates. He said he had never needed such a survey, but would keep my name in case he ever did. I then figured out that I had missed the whole point of his talk. He didn't want a solution, he wanted a problem. Problems often are more useful than solutions.

2. The head of a well-known Orange County consulting firm once called and asked me to write a negative MGS survey report, on desert property I had never seen, so that his friend could build some sort of factory. He promised to "make it worth my while," and eventually offered me the magnificent sum of \$100. (An MGS clearance survey, at that time, typically cost about \$4,000 and the result was never specified in advance.) I asked why he had selected me for this signal honor, and he replied that I sounded like an intelligent person who would listen to reason. After discussing the offer at sufficient length to be certain that I understood what he wanted, I hung up. Did I turn him in? *Moi?* How would I prove what he said, and what agency would be willing to prosecute him anyway? My name would be mud, and the guy would probably turn around and sue me for defamation of character or something.

I have one more thing to say to the building industry, and to the Kern County Planning Department, and to everyone who thinks the Mojave Desert would be a perfect place for a really big mall. We biologists do *not* spend our days strolling through daisy fields, having fun at your expense, finding new ways to take away your money and your property and your God-given right to destroy the ecosystem. We work hard to support our families, and we take a lot of crap from people who don't understand what we are doing; and as a result, sometimes we get tired, and sometimes we are guilty of tunnel vision. These same statements apply to you. With so much in common, can't we talk?

Sincerely,



Joan R. Callahan, Ph.D.
(AKA Joan Callahan-Compton)

5. Summary of letter from Joan R. Callahan:

This letter comments that "the petition package contains no new data at all", refutes a number of statements made in the petition, and offers the opinion of the writer that "the Mohave ground squirrel is sufficiently threatened to warrant its continued listing."

Rec'd NHD
SEP 30 1992

**NATURE BUFFS
ENVIRONMENTAL SERVICES**

Michael Starr & Valerie Vartanian
8820 Odessa Avenue
Sepulveda, CA 91343
(818) 892-0418

September 26, 1992

To: Natural Heritage Division
California department of Fish and Game
1416 Ninth Street
Sacramento, CA 95814

Subject: **Petition to delist the Mohave ground squirrel
(*Spermophilus mohavensis*)**

Introduction

I am a Ph.D. student in the Department of Geography at the University of California at Los Angeles. In conjunction with this institution, I hold a Memorandum of Understanding (MOU) with the California Department of Fish and Game (CDFG) to study the Mohave ground squirrel (MGS). In addition, I am an instructor for the CDFG's Cumulative Human Impact Evaluation (CHIE) of MGS habitat. As a result, during the last 3 years, I have conducted pilot trapping surveys at 10 locations and conducted 5 CHIE surveys within the western Mojave desert. The results of this field work, coupled with my research of the literature and regular contact with other biologists currently conducting MGS research, support the conclusion that the Mohave ground squirrel should not be delisted at this time.

With regard to the petition itself, the points made within the document that are intended to support the argument to delist the MGS fall into 3 main categories. The first is that protection of this species has negatively affected both economic growth in Kern County and individual property owner's ability to utilize their lands. This category is clearly irrelevant according to both the criteria of California's Endangered Species Act (CESA) and the California Fish and Game Commission's guidelines for the delisting process (FGC

760-1). The second category is that the MGS was "erroneously" listed as rare in 1971. In addition to the fact that this is not a relevant issue (their present condition is what must determine their current listing), the scientific studies cited by the petition have generally been misinterpreted and/or misrepresented. The third category is that "recent" studies suggest that MGS range and population densities have increased (or been shown to be larger than previously thought) and that as a consequence, the current amount of lands presently managed by public agencies is ample to protect MGS habitat. This argument is also flawed because the data cited are at best misleading or at worst incorrect and most of the work cited is over 10 years old. Further, less than 50% of MGS range is on public lands. Therefore, the petition itself does not adequately make the case for delisting the MGS.

The Petition's Use of Scientific Studies

The petition cites from a number of studies on the MGS to make 2 main points. The first is that given the lack of information on MGS range, population densities, habitat preference, etc., the species was "erroneously" listed in 1971. Though many would argue this premise (in fact all the MGS researchers responding at the time recommended listing), the issue is not relevant. Second, the petition uses the same argument, supplemented with more recent studies to support the contention that the problem of insufficient knowledge to list the MGS persists and that recent studies suggest that the species is in better shape than previously thought. However, these studies have either been misrepresented or misinterpreted to support this contention.

An example of the latter in support of the "erroneous" listing contention is the petition's citation of Hafner and Yates (1983). The petition states that based on these scientists genetic research, and their discovery that the MGS has interbred with round tail ground squirrels (*Spermophilus tereticaudus*) the petition concludes that "insufficient evidence exists to substantiate conclusive scientific recognition of a separate MGS species" (p. 3). This is both a misrepresentation of their work and a misstatement of their conclusion. In fact, Hafner and Yates found only one site of interbreeding with no species overlap along their shared boundaries ("a broad front of parapatry" p. 403). With regard to the issue of one vs two separate species, Hafner and Yates conclude: "In light of the chromosomal and electromorphic divergence observed between the

two taxa, and in lieu of a more detailed analysis of the genetic interactions of the taxa ... we retain full species recognition of *S. mohavensis*" (p. 403).

Another example of such misrepresentation is the petition's use of Hoyt's (1972) study to "show" that the apparent rareness and limited distribution of MGS is due to poor and/or limited study methods. The petition states that Hoyt utilized "minimal live trapping" during his survey with "many of the live trappings occurring during winter MGS estivation periods" (Petition p. 4). In fact, all of his trapping was done between March and June, 1972 and while it was limited in scope, the purpose was solely to survey sites known to have high populations (according to MGS researchers Bartholomew and Pengelly) previously. The very low number of animals trapped, leads Hoyt to recommend that the MGS "be retained on the rare species list" (p. 8).

Similarly, the petition cites the Wessman (1977) study that added 1800 sq mi to the known MGS range as proof that the species are in better condition with lesser threats to their habitat than the "rare" listing suggests. However, the petition fails to note that Wessman also suggested the removal of the area between the Lucerne Valley and the Victorville from the MGS range map and further suggested that this and additional habitat loss may be due to "agriculture and urban development" (p. 13). It should also have been noted that of the 24 new sites, 10 of them had only one MGS capture (total of 37 individuals at all 24 sites), suggesting low population densities. These facts (left out of the petition) led Wessman to also recommend that the MGS "should be retained on the state Rare Species List" (1977 p. i).

The petition goes on to cite Aardahl & Roush (1985) as a "more contemporary" study, not mentioning the fact that all the trapping was done in 1980 making population range and density data at least 12 years old (more on this point below). The petition notes that many of the sites had high MGS capture rates, in some cases exceeding those of the sympatric antelope ground squirrel (*Ammospermophilus leucurus*) captures (AGS), suggesting that since the latter aren't listed, the MGS should not be either. This, of course, ignores the fact that the AGS range throughout the Mojave, Sonoran, Great Basin and Chihuahuan Deserts, thus overlapping with the ranges of many other ground squirrels (as the round tail and the Townsends -- *S. tereticaudus*) while the MGS occurs only in the

western Mojave Desert and do not appear to overlap at all with the others. The petition also fails to note that these surveys were conducted after a number of wet seasons (good for annuals which would increase the MGS densities) and that Aardahl and Roush note a continuing "significant" loss of MGS habitat due to agriculture and urban development (p. 1).

The most recent work cited by the petition in this context is the ongoing research of Leitner and Leitner (1988 to present) in the Coso Basin. The petition states that these studies "reveal high population densities of the MGS" (p. 5) in this area suggesting again that the species is not threatened. Yet the petition fails to note the tremendous decrease in MGS captures at all 4 sites during the study period with a local extinction of MGS occurring at one site (and not recovering after last seasons rains; Leitner, pers comm to M. Starr). The petition also suggests that poor trapping protocol (mis-timing due to variable estivation cycles) may account for low numbers of MGS captured in other studies (again suggesting that the species is not rare). The petition fails to note that shorter trapping periods are due in large part to the lack of juvenile MGS activity in early summer, which in turn results from reduced reproduction by the MGS adults because of poorer environmental conditions. Therefore, poor trapping success continues to be an important indicator of reduced MGS numbers, especially in areas where previous MGS population data exists (as Coso Basin).

The Current Condition of the MGS: Recent Field Results and Continuing Threats to the Habitat.

More relevant to the delisting question is the current condition of the MGS throughout its range and of the current threat to its habitat. Most MGS researchers and biologists conducting small mammal trapping surveys for EIR's in the western Mojave Desert have reported very limited success regarding the MGS in recent years. Some question the significance of such results, citing the apparent trap-shyness of the MGS. However, such results become quite significant in areas that have previously been trapped successfully. One example is the work of Leitner and Leitner discussed above which showed no MGS reproduction on their sites in 1990 & 1991 and local extinction on one study plot.

Our spring 1990 trapping survey showed similar results. We trapped 8 different sites that season, 6 of which were follow-up surveys of

sites previously trapped successfully by Aardahl and Roush in 1980. We choose these sites because they represented 3 different vegetation communities and all 6 sites had had high MGS population densities (in 1980). However, during our surveys (which followed their methodology), we did not catch a single MGS (and only averaged one AGS per site) on any of the 8 sites and none were observed in any of these areas during the 3-day surveys. Like Hoyt in 1972, we found that areas with previously large MGS populations were no longer occupied. These results, when coupled with similar negative results, suggest that MGS populations throughout their range have been severely reduced (probably due in part to the recent drought), thus warranting continued listing.

One of my research questions is the effect of continued human activity on the MGS, especially in areas adjacent to urban development. While my research continues in this area, it is certainly clear that the rapid pace of development poses a significant threat to the MGS simply by the removal of potential and/or occupied habitat. In the last decade, population growth in the cities of the western Mojave Desert has averaged nearly 100% (ranging from a low of 30% for Barstow and Mojave to the highest rates of Victorville at 186% and Palmdale at an incredible 460%). Associated with such growth is an increase in supporting structures as new houses (up more than 50%), shopping malls (up 30%), roads etc. Together these land uses have resulted in a greater than 50% increase in the loss of open lands (amounting to hundreds of square miles). Worse, such growth is projected to continue well into the next century, fueled in part by the net outward migration from Los Angeles (see Allen 1990, Anderson 1990, U.S. Census Bureau). Clearly, such a continuing loss of habitat, particularly for a species endemic to this island-like area, poses a serious threat to its long term survival therefore warranting continued listing.

One final point needs to be made with regard to the range of the MGS. The petition suggests that the more than 7000 sq miles "occupied" by the MGS is more than enough to assure its long term viability. Unfortunately, the petition does not include the amount of land that has been lost due to agriculture and urban development, nor does it consider the potential future losses of this finite habitat. In addition, the petition seems to assume that the MGS are more or less evenly spread throughout this range. However, this species appears to only occupy a small percentage of this area at any given time (perhaps due to the uneven distribution of rainfall according to Dr.

Recht) and in relatively low population densities. As a consequence, large areas must be protected in order to assure that the critical combination of good habitat, minimum precipitation and the presence of MGS has a greater likelihood of continuously occurring at some point within the range. While public lands could address this need, the fact that less than 50% of the MGS range lies within such boundaries suggests that more needs to be protected.

Conclusion.

The Petition has not presented a well documented case in support of its desire to delist the MGS. All of the studies cited have been misrepresented to "support" this desire and yet a careful reading clearly shows that all of the studies concerned with population and distribution of this species support continued listing of the MGS and/or the fact that the MGS range continues to be threatened by agriculture and urban development. Current field studies suggest that the recent drought has severely reduced the already rare MGS throughout its range, a range that has been significantly reduced over the last 20 years (since the original listing) by the continuing onslaught of development. Given the island-like nature of the range of the MGS (surrounded by inhospitable habitat), and their wide but disjunct distribution, a large area must be preserved to protect them from further loss and to assure their long-term viability. This can only occur if the listing is maintained.

If I can be of further assistance in this matter, please feel free to contact me.

Sincerely,

A handwritten signature in cursive script that reads "Michael Starr". The signature is written in black ink and is positioned above the printed name.

Michael Starr

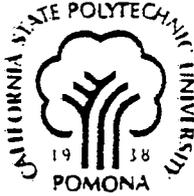
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6. Summary of letter from Michael Starr:

This letter comments on the legal irrelevance of the contention in the petition to delist the squirrel that the status of the Mohave Ground Squirrel as a Threatened species is causing a negative economic impact and that the squirrel was erroneously listed as Rare in 1971. The letter refutes many statements in the petition regarding the results of scientific studies and points out that the petition did not address the considerable loss of habitat in the last decade within the range of the squirrel.

The letter concludes that the petition "has not presented a well documented case in support of its desire to delist the MGS. All of the studies cited have been misrepresented to 'support' this desire and yet a careful reading clearly shows that all of the studies concerned with population and distribution of this species support continued listing of the MGS and/or the fact that the MGS range continues to be threatened by agriculture and urban development. Current field studies suggest that the recent drought has severely reduced the already rare MGS throughout its range, a range that has been significantly reduced over the last 20 years (since the original listing) by the continuing onslaught of development."



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October 1, 1992
Biological Sciences
College of Science

Susan A. Cochrane, Chief
Natural Heritage Division
California Department of Fish and Game
1416 Ninth Street
Sacramento, CA 95814

Dear Ms. Cochrane,

I am writing in response to your Public Notice of June 10, 1992 requesting comments on the proposed delisting of the Mohave Ground Squirrel (MGS). In 1972 I was employed by the California Department of Fish and Game to conduct a study of the status of the MGS. My report of that study ("Mohave Ground Squirrel Survey, DFG) is referred to in the Petition to the Fish and Game Commission to delist MGS. I have two comments to make.

In the petition (page 4) it is stated "...the scope of his study was cursory in nature *with many of the live trappings attempted during winter MGS aestivation periods.*" (Italics mine). I think this is a misrepresentation of the facts. As the Petition states, the aestivation period ends sometime in February. The trapping dates in my study were: Feb. 12, Feb. 19, Mar. 29, May 21, June 14, June 25. Additionally, the Petition states on Page 5 "Even the studies that were immediately subsequent to the 1971 listing were inconclusive and based on generalizations rather than scientific fact. Hoyt's study is such an example." I must strongly protest the allegation that my study was not based on scientific fact. I surveyed museums and trapped animals; these are valid scientific facts.

Secondly, I think that the total "habitat area" of 7,000 square miles referred to in the Petition could be a very serious over estimate of the potential habitat of the MGS. The survey of museum specimens which I reported in my study revealed that most of the animals that had been collected came from the perimeter of the species range. Rainfall isopleths for the Mohave Desert show that much more rain falls around the perimeter of the desert than falls in the central area. If the success of the species is causally linked to rainfall, perhaps via the production of annual plants, then the species will have a very patchy distribution and much of the "habitat area" will not be available to them because of insufficient rainfall.

I would like to suggest that there may be an unexploited source of useful information on this species which is available to your department. If you have issued collection permits for Antelope Ground Squirrels in the Mohave Desert, then these people should, at least occasionally, catch MGS if they are present in the same localities. If you were to write to these people, they might be able to supplement our understanding of the abundance of MGS. If I can be of any further assistance in addressing this issue, please contact me immediately.

Sincerely,


Donald F. Hoyt, Ph.D.
Professor of Biological Sciences

cc: J. Gustafson

7. Summary of letter from Donald F. Hoyt:

This letter is from a scientist who has conducted field studies of the Mohave Ground Squirrel and whose work (Hoyt 1972) was discussed in the petition to delist the squirrel. The letter refutes the analysis of Hoyt (1972) in the petition as well as the contention of the petition that the squirrel occupies 7000 square miles of habitat.

9 October 1992



NEW MEXICO
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HISTORY

Dr. John Gustafson
Nongame Bird and Mammal Section
Wildlife Management Division
Department of Fish and Game
P.O. Box 944209
Sacramento, CA 94244-2090

Dear Dr. Gustafson:

I appreciate this opportunity to comment upon the petition submitted by the Kern County Department of Planning and Development Services to delist the Mojave Ground Squirrel, *Spermophilus mohavensis*, which is currently listed as Threatened by your department, and is being considered for protection under the Federal Endangered Species Act. I find the petition to be an irresponsible distortion of the available literature, while the purportedly "scientific" arguments made in the petition to substantiate the robust health of the species display either a gross ignorance of or blatant disregard for basic biological principles.

I concur completely with the initial response from your department (dated 24 February 1992) to this petition. The petition lacks scientific information and credibility, and should have been rejected out of hand. I must seriously question the Fish and Game Commission's judgement in accepting this petition, and thereby shifting the burden of proof to your Department. I would hate to think that a commission charged with such an important responsibility would be politically or economically motivated. The motives of the petitioner are quite clear: this species is blocking economic development. In effect, acceptance of this petition begins to pull the teeth from the entire purpose of state and federal Endangered Species Acts by declaring that protected status ends when endangered or threatened species stand in the path of economic gain.

In addition to comments on specific aspects of the petition, I have enclosed a copy of my most recent manuscript (currently in press in the *Journal of Mammalogy*). This paper documents the small geographic range and probable low vagility of this species, and further indicates that there may well be other unique populations of plants and animals (as yet undiscovered) in this small corner of the Mojave Desert. It appears that the range of the Mojave Ground Squirrel marks the site of a cool, mesic desert refugium during the latest glacial-pluvial maximum, which ended 6,000 to 10,000 years

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ago. The system of lakes and interconnecting rivers that defined and delimited this refugium certainly isolated other species in addition to the Mojave Ground Squirrel, and wider-ranging surveys are necessary to detect these possibly cryptic forms before they are scoured from the desert by rapidly expanding urban development.

Specific Status of the Mojave Ground Squirrel.--The petition states (p. 3) that "Hafner and Yates question whether the MGS is even a separate distinct species" and that "Hafner and Yates concluded that insufficient evidence exists to substantiate conclusive scientific recognition of a separate MGS species." This is an absolute distortion that is completely contrary to our stated conclusions. We documented a consistent diploid number difference between *S. mohavensis* and *S. tereticaudus* (the Roundtailed Ground Squirrel), and found that the small amount of hybridization was restricted to a narrow, ecologically disturbed site. We concluded (1983:403) that "the degree of genetic intermixing documented here... is considered insufficient to substantiate full genetic introgression between the two species" and therefore recommended to "retain full species recognition of *S. mohavensis*."

We also noted in our paper that premating isolating mechanisms (ecological or behavioral) may keep the two species separate, and that the observed hybridization may be directly due to the severe disturbance of the Helendale site. Similar breakdown of premating isolating mechanisms have been observed in other mammals that have been displaced from their natural habitat and artificially forced together in and around agricultural fields.

The petitioners further "summarize" our 1983 paper as "occurrence of speciation for the MGS is still unknown." Again, this is a clear distortion of our paper, deliberately implying that species recognition is in doubt. Instead, we stated (1983:403) that "the limited geographic range of *S. mohavensis*...is [not] delineated by obvious orographic features" and that "if speciation in *S. mohavensis* and *S. tereticaudus* occurred via isolation in different desert refugia during glacial maxima, the locations of these refugia are unclear." We did not doubt that speciation had occurred; we simply did not know where or by what mechanism. My current article (in press) identifies the glacial-maxima isolating mechanism.

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These self-serving, deliberate distortions and misrepresentations of our article are deplorable. Are the other "citations" similarly twisted to the petitioner's point of view? I hope that in the future the Commission relies on the expertise already available in your department to screen out such obvious attempts to sabotage environmental protection for personal gain.

Size of Geographic Range.--The petitioners display gross ignorance regarding the relative size of a species' range, and lack any understanding of the differences between local population density and geographic range. By any measure (comparison with other mammal species, with other rodent species, with other squirrel species), the Mojave Ground Squirrel is restricted to a tiny geographic range. While 7,000 mi² may appear to be a large area to a developer with a bulldozer, it is not a large area for an entire species range. Furthermore, it is well known that the Mojave Ground Squirrel colonies are very precinctive and spotty within this already small range.

When considering massive habitat alteration and destruction (as is contemplated by the petitioners), the fact that isolated colonies display "dramatically high population and densities" is meaningless; whether high or low densities, the population will disappear along with the habitat. Rather, it is the geographic spread of colonies (small and precinctive in nature) and the entire species range (small in comparison with other species) that is important.

Vagility?--The petition inferentially cites a Department of Fish and Game correspondence that may state something to the effect that the Mojave Ground Squirrel "may migrate for food and may not appear at the same location year after year." (I am not certain if the petitioners were intending to cite this information from that correspondence, or, if so, if this is another distortion; frankly, I have no reason to accept the veracity of anything the petitioners state.) My most recent study indicates an extremely low vagility for this species (an average movement of about 5 meters per year). If migration is indeed this low, then extirpation of a colony could require many years before recolonization, underscoring the spotty and uneven distribution of colonies within the available range.

Protection(?) on Federal Land.--The petitioner implies that Mojave Ground Squirrels will gain protection even after

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delisting by virtue of the large percentage of their range that is managed by federal agencies, particularly the armed forces. My observations of bombing ranges and military lands has generally agreed with this, but only in a relative sense: repeated bombing, strafing, microwave experimentation, and pounding by tanks and ground transports are not as bad as off-road vehicle races or housing developments for native species. Explosives attacks aside, can you imagine the impact on a hibernating colony of squirrels that is overrun (literally) by hundreds of tanks on maneuver? Not only would many individuals be immediately killed and burrow systems (usually occupied sequentially by generations of squirrels) be collapsed, but the ground is compacted and vegetation scoured, making the outlook for the few survivors bleak indeed. And if migration is not really a feasible alternative, then another colony is extirpated. As for the BLM-administered lands, I have witnessed the effects of the large off-road vehicle races which are permitted by the BLM: the soil compaction and vegetative damage are incredible in severity and longevity.

In closing, I sincerely hope that the Commission simply made a mistake in accepting this petition in the first place, and that your Department will be able to reject the petition for delisting. Further, I encourage your Department to use what meager funding is available to conduct surveys in this small corner of the Mojave Desert in order to detect other, possibly cryptic unique populations and species that are deserving and in dire need of protection from land developers. When I conducted field work at the Helendale site, where the two species of ground squirrels were hybridizing, I worked around cultivated fields and patches of tumbleweed, next to tract housing and sprinkler-fed bluegrass lawns. Most native vegetation was gone, replaced by blowing sand, weeds, or crops. I certainly hope that this is not the fate of the Mojave Desert.

If I can be of any further assistance, please do not hesitate to call or write to me. Again, thank you for this opportunity to comment on the petition.

Sincerely,



David J. Hafner, Ph.D.
Curator, Vertebrate Zoology

8. Summary of letter from David J. Hafner:

This letter is from a scientist who has conducted field studies of the Mohave Ground Squirrel and has made a determination about its taxonomy. His work (Hafner and Yates 1983) was discussed in the petition to delist the squirrel. The letter finds the petition "to be an irresponsible distortion of the available literature" and refutes the analysis of Hafner and Yates (1983) in the petition as well as other statements from the petition.

October 30, 1992

Dr. John Gustafson
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California Department of Fish and Game
1416 Ninth Street
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Dear Dr. Gustafson,

I was shocked that the Fish and Game Commission voted in April to accept a delisting petition for the Mojave ground squirrel based upon economic needs rather than scientific information. I was further appalled to learn that the burden of proof for the delisting petition has been placed on the overworked Fish and Game staff rather than the petitioners. After reading the petition, I realized that they have misquoted the scientific literature and taken portions out of context. As a scientist that has studied the squirrel since 1978, I feel the need to comment on the petition. I imagine that some of the following comments have already surfaced in CDFG staff meetings, but please excuse any redundancy.

1. The subjective opinion of a "widespread" or "large" range of 7,000 square miles is small in a biological sense for a rodent. Only a percentage of that area is occupied habitat, as rocky hillsides, flat playas, roads and developed areas are not suitable.
2. Since the listing in 1971, the range of the species has been reduced, principally through development in the Indian Wells and Antelope Valleys and the Hesperia/ Victorville areas. Furthermore, this development has splintered the range of the squirrel, so that breeding populations are isolated and may be in jeopardy. It should be noted that the flat land with loose soil most preferred by developers is also prime MGS habitat. This loss of viable habitat is not compensated for by the 1977 study of a "substantial 1800 square mile increase in the range of the MGS", of which only a fraction is occupied habitat.
3. Whether or not the listing of "rare" was valid in 1971, the MGS is definitely "threatened" now due to "the destruction, drastic modification, or severe curtailment of a species habitat". They are "likely to become endangered in the foreseeable future in the absence of special protection and management efforts". The petitioners state that the listing of the MGS lacks any basis in "scientific fact", however their evidence is based on generalizations rather than "scientific fact". The burden of proof for delisting should rest with the petitioners and require them to fund the critical studies to substantiate their claims.

Any recent trapping studies including those at Cerro Coso College and Coso Hot Springs show a decline in MGS populations. The studies called for in page 4, paragraph 2 should be undertaken before any delisting is considered.

4. Only two rather than "several" species of ground squirrels do not inhabit the Western Mojave Desert, the Mojave and the antelope ground squirrels. The round-tailed and the Mojave overlap slightly near the eastern edge of MGS range, but even the finding of a hybrid does not mean that the species are not distinct. The hybrid was probably infertile, and the round-tailed and MGS are both physically and behaviorally distinctive.

5. The main concern of the petitioners is that the MGS listing restricts the right of property owners to use their land and is inhibiting the economic growth of east Kern County. Actually the current economic picture is not conducive to development and the MGS has been a scapegoat. They fail to note that MGS habitat is also desert tortoise habitat. Will they next take on the tortoise? Biological issues should not be settled on economic expediencies.

6. The petitioners state that if the MGS were delisted it would still receive legal protection. Under current management recommendations, if the MGS were delisted, it would not be protected by CEQA, or need to be addressed in any mitigation requirements or HCPs. Open space and nonintensive land use in any general plan do not protect MGS if grazing, mining and ORV use continue. This is also true on BLM and military lands that are not managed with wildlife values as the priority.

In closing, it is chilling indeed to consider that the fate of the Mojave ground squirrel or any of our native wildlife should depend on decisions based on short-term economic gain for relatively few people. I realize that some development is inevitable, but it should proceed with constraints based on knowledge of the environmental impacts. A stewardship ethic for the land and its wildlife is necessary, so that future generations do not inherit an impoverished ecosystem. Man can build many things on the land, but he cannot create species that have been extinguished. Please contact me if I can be of any further assistance.

Sincerely,



Patricia E. Brown, Ph.D.
Research Associate
Department of Biology
U.C.L.A.

9. Summary of letter from Patricia E. Brown:

This letter points out that the petition to delist the Mohave Ground Squirrel has "misquoted the scientific literature and taken portions out of context." The letter refutes a number of statements made in the petition.

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23 December 1992

Dr. John Gustafson
Wildlife Management Division
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RE: DELISTING PETITION -- MOHAVE GROUND SQUIRREL

Dear John:

As per your request, I am providing my professional opinion on the Petition to Delist the Mohave ground squirrel (MGS) and the memo from Department of Fish and Game to the Fish and Game Commission. First, with respect to the memo to the Commission, I concur with the conclusion that the petition should be rejected. Indeed, there was not a huge body of knowledge concerning the biology of MGS at the time of listing. In fact, there is a paucity of information extant to date. However, certain facts are known that would imply that a correct decision to list was made in the past and overwhelmingly speaks for the continued listing.

This species occurs over a wide variety of habitats within its range and appears to be behaviorally dominant over the sympatric, more widespread antelope ground squirrel. Having examined a number of populations within the geographic and habitat range of the species, I began to suspect in 1988 that species might be less limited in occupied acreage and numbers than previously thought. Inasmuch as the species is physiologically restricted to a narrow time window for above ground activity, I felt that the timing and generally superficial nature of past surveys simply missed occupied habitat. Since 1988, southern California has experienced a record drought which appears to have had a significant deleterious effect on MGS populations.

Pipeline related surveys yielded spotty information that past populations, specifically in the Kramer Hills area, were no longer extant. However, timing of the checks made the results questionable.

The drought has effectively been ended for native biota for most of southern California with the intense rains of March 1991 and the

Dr. John Gustafson
23 December 1992
Page 2

subsequent wet winter of 1991-92. As part of a trap comparison study for small mammals in general, I wished to include information on diurnal species and hoped to include the sensitive MGS. An intensive trapping effort was conducted at a known locality at Edwards AFB in April 1992, after the base biologist confirmed that MGS had been sighted above ground. This specific locality was selected because of the large number of MGS found in 1988; the habitat was the most diverse examined during that time. It was felt that although MGS had been found in all habitats examined for the Gravity Wave project, the most diverse site would probably act as the best refuge under inclement conditions. No MGS were trapped or observed during the April 1992 effort. Temperature and plant phenology suggested that MGS should be above ground and in an active reproductive state.

In retrospect, I believe that large extirpations have occurred during the recent drought throughout the species range. Desert ground squirrels appear to have a limited reproductive potential and as environmental conditions improve, it may take a prolonged period of time to recover and recolonize previously occupied habitat. Public lands that experience ORV and sheep grazing will be in poor state for native species even under good weather conditions. I suspect that some areas experiencing localized extirpation may never be recolonized because of expanding human impacts to historically occupied habitat.

There is no question that we know very little about the biology of this species but all indications point to increasing loss of habitat and fragmentation within the occupied range. No one has sufficient biological information to conclude otherwise.

If I may provide further information, please contact me.

Sincerely,



Michael J. O'Farrell, Ph.D.
Principal/Terrestrial Ecologist

10. Summary of letter from Michael J. O'Farrell:

This letter primarily describes the writer's field experiences in the habitat of the Mohave Ground Squirrel which resulted in his concluding that "large extirpations have occurred during the recent drought throughout the species [sic] range" and that "some areas experiencing localized extirpation may never be recolonized because of expanding human impacts to historically occupied habitat." The letter states that "certain facts are known that would imply that a correct decision to list [the squirrel as Rare] was made in the past and overwhelmingly speaks for the continued listing." Further, "all indications point to increasing loss of habitat and fragmentation within the occupied range. No one has sufficient biological information to conclude otherwise."



Biology

December 26, 1992

Natural Heritage Division
California Department of Fish and Game
1416 Ninth Street
Sacramento, CA 95814

Gentlemen:

I wish to provide the California Department of Fish and Game (CDFG) with scientific information regarding the status of the Mohave ground squirrel (Spermophilus mohavensis), a species currently listed as "Threatened" by the State of California. This information is presented in response to the Public Notice dated June 10, 1992 requesting input for the preparation of a CDFG recommendation on the petition from Kern County Department of Planning and Development Services proposing that the Mohave ground squirrel be removed from the official State list of endangered and threatened species.

I am a Professor of Biology at Saint Mary's College of California. I have conducted research on the ecology and population biology of California mammals for the past 30 years. I have had the opportunity to study the biology of the Mohave ground squirrel (MGS) since 1979. My field studies have been conducted in the Coso region of southwestern Inyo County, in the northwest corner of the geographic range of this species. I attach a complete list of the reports that my co-workers and I have prepared which present data regarding the biology of the MGS.

I will first comment on the "Supporting Information" submitted by Kern County Department of Planning and Development Services with its delisting petition dated Nov. 19, 1991. Sections (5) and (6) of this document contain a number of inaccurate and inappropriate references to the studies carried out under my direction since 1988 in the Coso region. I would like to provide clarification as follows:

(1) The Coso MGS investigations are misidentified as "BLM studies" and the annual reports are not listed under "Sources of Information" in Section (8). In fact, the Coso Grazing Exclusion Monitoring Study has been funded by California Energy Company, Inc. under terms of an agreement among three agencies: U. S. Navy China Lake Naval Air Weapons Station, Bureau of Land Management Ridgecrest Resource Area, and CDFG.

(2) It is misleading to state that the Coso study has documented "high population densities of MGS". Since this is the first investigation that has established population densities for the species, we have no basis for judging whether these values are "high" or "low" relative to past conditions or to other parts of the MGS range. The only valid conclusion is that the Coso study has shown densities to vary greatly between the four study sites in any given year and to fluctuate drastically between years at each study site.

(3) The Coso study has not shown that the MGS estivation period changes from year to year in response to environmental variables such as rainfall. Only in one year (1990) did we attempt to establish the timing of entry into estivation through the use of radiotelemetry. Therefore, our data do not allow valid conclusions about year to year variability in the estivation period in the Coso region. While our study suggests that adult MGS at Coso enter estivation earlier than reported by Recht (1977) for a population in the southwest corner of the range, our results should not be used to discredit trapping studies conducted at other locations.

(4) The Coso study has not shown migration or movement of MGS from one location to another in response to differences in food resources. However, we have documented the complete elimination of an MGS population at one of the four Coso study sites, probably as a result of drought conditions. The species was present at this location in 1988 and has not reappeared through the 1992 field season. Thus, MGS populations are susceptible to local extirpation as a result of natural environmental fluctuations.

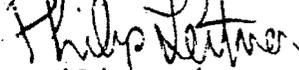
(5) In general, I would like to emphasize that the Coso Grazing Exclosure Monitoring Study was not designed to investigate whether the MGS should or should not appear on the State of California list of endangered and threatened species. The study was designed to test the hypothesis that elimination of livestock grazing can result in improvement of the carrying capacity of MGS habitat. Since this is a long-term study, it can document variation in the abundance of MGS over several years in natural habitat, but these data are not directly relevant to the delisting question.

Finally, I would like to comment on the delisting issue itself. It is clear from existing data and particularly from the results of the Coso Grazing Exclosure Monitoring Study, that MGS abundance in natural habitats can vary greatly from year to year. On a given site, a population can decline drastically and even become locally extirpated under severe drought conditions. Given a period of years with adequate rainfall, the species will presumably re-establish itself on the site. This kind of fluctuation in abundance has been going on for thousands of years. Field studies that focus on temporal changes in MGS numbers in

relatively undisturbed natural habitats are unlikely to help determine whether the species should or should not be listed as "Threatened".

I would be happy to respond to any further questions or data requests regarding the Mohave ground squirrel and its biology. Please contact me if you require additional information.

Sincerely,



Philip Leitner
Professor of Biology
Saint Mary's College

(510) 631-4441

LIST OF REPORTS

Leitner, Philip. 1980. Survey of small mammals and carnivores in the Coso Geothermal Study Area. Report IV in Field Ecology Technical Report on the Coso Geothermal Study Area, a Rockwell International Environmental Monitoring & Services Center (Newbury Park, CA) report submitted to the U.S. Bureau of Land Management, Bakersfield District (Bakersfield, CA) under Contract No. YA-512-CT8-216.

Leitner, Philip and Barbara Malloch. 1989. First year baseline report, Coso Grazing Exclosure Monitoring Study, Coso Known Geothermal Resource Area, Inyo County, California. Prepared for McClenahan and Hopkins Associates, San Mateo, CA. 69 pp. + appendices.

Leitner, Philip and Barbara Malloch. 1990. Second year baseline report, Coso Grazing Exclosure Monitoring Study, Coso Known Geothermal Resource Area, Inyo County, California. Prepared for McClenahan and Hopkins Associates, Bethesda, MD. 96 pp. + appendices.

Leitner, Philip, Barbara M. Leitner, and John Harris. 1991. Third year baseline report, Coso Grazing Exclosure Monitoring Study, Coso Known Geothermal Resource Area, Inyo County, California. Prepared for McClenahan and Hopkins Associates, Bethesda, MD. 73 pp. + appendices.

Leitner, Philip and Barbara Malloch. 1992. Mohave ground squirrel study in the Coso Grazing Exclosure, Coso Known Geothermal Resources Area, Inyo County, California. Prepared for McClenahan and Hopkins Associates, Inc., San Mateo, CA, under contract to U.S. Navy, China Lake Naval Air Weapons Station, China Lake, CA, with funding provided by California Department of Fish and Game.

LITERATURE CITED

Recht, Michael Anthony. 1977. The biology of the Mohave ground squirrel, Spermophilus mohavensis; home range, daily activity, foraging and weight gain and thermoregulatory behavior. University of California, Los Angeles, Ph.D. dissertation. 117 pp.

11. Summary of letter from Philip Leitner:

This letter is from a scientist who has conducted field studies of the Mohave Ground Squirrel, beginning in 1979. One report on his work (Leitner and Leitner 1990) was miscited in the petition to delist the squirrel as "Bureau of Land Management Leitner Study 1990" and was discussed in the petition. The letter points out that the petition contains "a number of inaccurate and inappropriate references to the studies [on the squirrel] carried out under my direction since 1988 in the Coso region." The letter refutes the analysis of Leitner and Leitner (1990) in the petition and points out that "the Coso grazing Exclosure Monitoring Study was not designed to investigate whether the MGS should or should not appear on the State of California list of endangered and threatened species." Finally, the letter emphasizes that changes in numbers of the squirrel over time do not determine whether the species should be listed as Threatened.

Denise L. LaBerteaux
10375 Los Piños Street
Onyx, CA 93255
(619) 378-3021

30 December 1992

Dr. John Gustafson
Nongame Bird and Mammal Section
Wildlife Management Division
Department of Fish and Game
P. O. Box 944209
Sacramento, CA 94244-2090

Dear Dr. Gustafson:

I would like to take this opportunity to comment on the petition to delist the Mohave Ground Squirrel (Spermophilus mohavensis) as a State-threatened species.

First, from paragraph 2 of the Executive Summary, the County of Kern's motivation to delist the Mohave Ground Squirrel (MGS) is not based on biological information, but is based solely on economic concerns in the eastern portion of the County. The County of Kern has not clearly demonstrated that the threats to the MGS populations have slowed or that the abundance of MGS has increased since the species was listed in 1971. On the contrary, the threats have dramatically increased over the last 20 years. The threats to MGS are destruction, drastic modification, and severe curtailment of its habitat primarily due to human encroachment into the range of MGS. Biologists who petitioned Fish and Game Commission to list MGS saw these threats to the habitat 20 years ago. As long as human population growth rate remains above zero, encroachment into its habitat will proceed. Populations of MGS may have already disappeared in the extreme southern portion of its range (i. e., Lucerne Valley area), and populations between Lancaster/Palmdale area east to Adelanto/Victorville area are in intimate danger of disappearing as human populations centers expand. If this species is not continued to be protected under the California Endangered Species Act, long term survival of MGS will be in serious jeopardy through severe habitat loss and fragmentation.

The petition points out (Section 1, Paragraph 4) that "public lands managed by various federal agencies provide substantial management benefit to assure the continued existence of the species." To date, federal agencies managing lands within the range of MGS, that is, Bureau of Land

Management and Department of Defense, have no formal management policies regarding California State-listed species. The Department of Defense (DOD) has not studied the cumulative impacts of its projects on MGS, but DOD continues to destroy pieces of its habitat while carrying out its primary mission of national defense. Even federally listed species aren't totally protected on military lands; in time of war, DOD needs not comply with the National Environmental Policy Act. In addition, future federal land management practices may severely impact MGS. For example, National Training Center at Ft. Irwin proposes to "take over" a large portion of Naval Air Weapons Station (NAWS), China Lake. Current land practices in this area under NAWS management may not be significantly impacting MGS habitat. However, Ft Irwin's land practices (tank maneuvers) will severely impact MGS habitat in this area. County of Kern is naive in stating that federal management practices provide substantial management benefit to assure the continued existence of the species when the future of public lands is so uncertain.

The petition describes MGS (Section 3, Paragraph 1) as being one of several species of ground squirrels inhabiting the western Mojave Desert. On the contrary, MGS is one of only three ground squirrels native to the western Mojave, the others being Antelope ground squirrel and round-tailed ground squirrel. In fact, the round-tailed ground squirrel is primarily an eastern Mojavean species. Beechey ground squirrels occasionally occur in the West Mojave, invading from areas west of the Sierra Nevada. More importantly to note, however, is the fact that the Mohave ground squirrel is the only ground squirrel species endemic to the western Mojave Desert. MGS's endemic status warrants its continued protection.

The petition states (Section 5, Paragraph 1) that little scientific research has been conducted on the distribution and abundance of MGS. The Department of Fish and Game issues Memoranda of Understanding to biologists to conduct research on MGS. Hence, it should have records on the number of scientific (trapping) studies that have been conducted over the last 20 years. In addition to those areas where MGS were captured, the Department should identify those areas where no MGS were captured, especially during non-drought years. This information may show a patchy distribution of MGS and can be used to refine the range map of MGS. In the studies cited in the petition (Section 5), areas chosen to trap ground squirrels were not randomly selected; some sites were chosen on basis of proximity to known Mohave ground squirrel range and habitat while others were chosen because they potentially supported good populations of MGS (Leitner's studies, for example). Hence, to ever imply that there are high population densities throughout its range is not substantiated.

The petition states (Section 5, Paragraph 4) that Leitner's studies "suggest that natural decreases in MGS populations may have nothing to do with habitat loss resulting from private development." Leitner's studies are conducted in a human-restricted, undeveloped area. Hence, one cannot compare his populations with those in developed areas.

Two important factors are influencing the existence of the Mohave ground squirrel. One is natural, the other is not. First, this species is endemic to the West Mojave Desert, occurring no where else in the world. The range is small compared to other species in the Mojave and to similar species in California. According to Hafner (Hafner, D. J. 1992. Speciation and persistence of a contact zone in Mojave Desert ground squirrels, subgenus Xerospermophilus, Journal of Mammalogy 73:770-778.), the northwestern Mojave Desert may be viewed as a unique desert refugium; may harbor several endemic species, such as the Mohave ground squirrel; and, thus, may, in itself, warrant protection. Hence, Mohave ground squirrels are confined to a relatively small and unique area. Second, the range of the Mohave ground squirrel is shrinking everyday as habitat is destroyed by human influences. Cities continue to expand into the range of MGS. Just as cities expand, rural communities expand as more and more people escape city living. But the destruction of habitat is not just confined to city limits or the boundary of one's property. There is a zone of influence around each city and dwelling where habitat is modified or destroyed and where Mohave ground squirrels are killed by off-road vehicles, feral dogs and cats, illegal garbage dumping, and illegal dumping of toxic substances. Hence, nonintensive development or open space use designation on cities' general plans will not compliment habitat requirements for MGS, as suggested by the petition (Section 7, Subsection C). Such "small island" habitats will not insure the continued existence of the Mohave ground squirrel over time.

The following is a list of human-related factors threatening the Mohave ground squirrel:

1) The increasing human population centers of

Adelanto	Helendale	Oro Grande
Apple Valley	Hesperia	Palmdale
Baldy Mesa	Inyokern	Phelan
Barstow	Lancaster	Quartz Hill
Boron	Lenwood	Ridgecrest
California City	Lucerne Valley	Rosamond
Desert Lake	Mojave	Silver Lakes
El Mirage	North Edwards	Victorville

- 2) military activities on Naval Air Weapons Station, China Lake; National Training Center, Ft Irwin; and Edwards Air Force Base;
- 3) small and large scale ore mining operations;
- 4) geothermal development;
- 5) off-highway vehicles;
- 6) roads and highways;
- 7) utility corridors;
- 8) solar and wind energy farms; and
- 9) private land development in unincorporated areas.

The Department of Fish and Game should compile or request the following information:

- 1) map range of MGS in 1971 (calculate acres);
- 2) map range of MGS in 1991 (calculate acres);
- 3) calculate acres of habitat lost since 1971;
- 4) map predicted range of MGS in 2011 if growth rate remains identical to 1971-1991 rate;
- 5) map areas where MGS were not trapped in scientific studies, as well as where they were trapped, to show possible patchy distribution;
- 6) request official policies regarding State-listed species on the three military bases within MGS range; and
- 7) request acres of habitat lost during the last 20 years on military facilities.

I would now like to propose a question to the Fish and Game Commission. If you vote to delist the Mohave ground squirrel in 1993, as human encroachment into the West Mojave Desert continues (and it will continue),

at what point will the Mohave ground squirrel again warrant protection? Will it be when the habitat is so fragmented that the chance of finding and establishing a preserve for its long term survival slim to none? Isn't it the policy of the State of California that "state agencies, boards, and commissions shall seek to conserve endangered species and threatened species...[Fish and Game Code 2055]" and to "...protect, restore, and enhance any endangered species or any threatened species and its habitat...and to acquire lands for habitat for these species [Fish and Game Code 2052]?" If the habitat is reduced and severely fragmented, where will the State find land suitable for the continued existence of Mohave ground squirrels?

If you have any questions regarding these comments, please feel free to call me at (619) 378-3021. Thank you for your attention.

Sincerely,

A handwritten signature in cursive script that reads "Denise L. LaBerteaux". The signature is written in dark ink and is positioned above the printed name.

Denise L. LaBerteaux

12. Summary of letter from Denise L. LaBerteaux:

This letter states that "the County of Kern's motivation to delist the Mohave Ground Squirrel (MGS) is not based on biological information, but is based solely on economic concerns in the eastern portion of the County. The County of Kern has not clearly demonstrated that the threats to the MGS populations have slowed or that the abundance of MGS has increased since the species was listed in 1971. On the contrary, the threats have dramatically increased over the last 20 years." Further, "[i]f this species is not continued to be protected under the California Endangered Species Act, long term survival of MGS will be in serious jeopardy through severe habitat loss and fragmentation." The letter goes on to refute a number of statements made in the petition to delist the squirrel and to list "human-related factors" which threatened the squirrel.



THE DESERT PROTECTIVE COUNCIL INC.

A NON-PROFIT ORGANIZATION

To safeguard for wise and reverent use by this and succeeding generations those desert areas of unique scenic, scientific, historical, spiritual and recreational value and to educate by all appropriate means children and adults to a better understanding of the desert.

Elden Hughes
14045 Honeysuckle Lane
Whittier, CA 90604

310 941-5306

January 6, 1993

Dr. John Gustafson
Nongame Bird and Mammal Section
Wildlife Management Division
California Department of Fish and Game
1416 Ninth Street
Sacramento, CA 95814

Dr. Dr. Gustafson:

Reference is made to the petition to delist the Mojave Ground Squirrel. We were not on the mailing list for comments and we ask that we be put on distribution for any such comments in the future and that you accept our comments at this time.

The Kern County petition to Delist the Mojave Ground Squirrel is deeply flawed. The arguments are economic and not scientific and repeatedly acknowledge their lack of science. The statement that distribution is over 7,000 square miles is grossly misleading. It is equivalent to saying that the distribution of palm trees found on a few islands in the ocean include all the square miles of ocean between the islands.

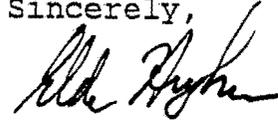
The petition ignores the cumulative effects of offroad vehicles, mining, grazing and other "uses" of the habitat. Literally, the habitat is being cut into islands that may well be too small to remain viable habitat. Continued and unmitigated development can be a major factor cutting the habitat into smaller and smaller islands. Without the listing, unmitigated development would be automatic.

The petition assumes that public lands managed by federal agencies are managed to benefit the Mojave Ground Squirrel. This simply is not true. Example: The habitat map includes the tank training areas on Ft. Irwin. Tank training is not management to benefit the Mojave Ground Squirrel.

The 1990 federal listing of the desert tortoise described loss of habitat as a major influencing factor. Most of the habitat of the Mojave Ground Squirrel is shared by the tortoise.

The petitioners have presented no reasonable basis for delisting the Mojave Ground Squirrel.

Sincerely,



Elden Hughes
Executive Director

13. Summary of letter from The Desert Protective Council, Inc.:

This letter states that the petition to delist the Mohave Ground Squirrel is "deeply flawed. The arguments are economic and not scientific and repeatedly acknowledge their lack of science." The letter refutes several statements made in the petition and points out that the "1990 federal listing of the desert tortoise described loss of habitat as a major influencing factor. Most of the habitat of the Mojave [sic] Ground Squirrel is shared by the tortoise." The letter concludes that the "petitioners have presented no reasonable basis for delisting" the squirrel.



United States Department of the Interior

NATIONAL PARK SERVICE
DEATH VALLEY NATIONAL MONUMENT
DEATH VALLEY, CALIFORNIA 92328

IN REPLY REFER TO:

N16

January 7, 1992

Dr. Roy A. Woodward
Nongame Section Coordinator
Wildlife Management Division
Department of Fish and Game
P.O. Box 944209
Sacramento, CA 92444-2090

Dear Dr. Woodward:

I apologize for the delay in responding to your request for my comments on the petition to delist the Mohave ground squirrel. At the same time I appreciate the opportunity to offer my opinion on the petition to delist based on knowledge I have of the distribution and habits of this species.

I believe the petition to delist resulted from the experiences of some land owners/developers in a relatively small area of eastern Kern County when they proposed land development within the range of the Mohave ground squirrel. I am not aware of widespread support for the delisting of this species. A delisting action by the Commission at this time would result in an accelerated loss of habitat for the species on both private and federally managed lands due to the lifting of the restrictions that are now in place which are designed to limit the loss of the habitat through mitigation and compensation.

The range of this species is the smallest of any of the ground squirrels in North America. There is sufficient evidence to state that a considerable amount of the former habitat of this species has been lost due to development in the Antelope, Fremont, Indian Wells and Victor Valleys. In the early part of this century, ground squirrels were systematically eliminated with poisoned grain by the Los Angeles Agricultural Commission office in the Antelope Valley. An accurate account of the total loss of habitat for this species should be developed and taken into consideration when responding to the petition to delist.

I have reviewed both the petition to delist the species and the Department of Fish and Game review of the petition. I find statements in each document that I support as well as those that I disagree with.

The petition to delist is generally accurate regarding the administrative history concerning this species. The petition also properly documents the recent findings regarding the range occupied by this animal that were the result of studies by Wessman in 1977 and Aardahl and Roush in 1980. However, the petition does not contain any scientific or factual information regarding the present day population

levels of the Mohave ground squirrel, nor the trend in habitat condition since the 1971 listing.

A major weakness in the petition argument for delisting is the absence of any factual information regarding the amount of suitable habitat within the geographic range of the species. Another weakness lies in the fact that there is no evaluation of the future losses of habitat that may occur within important habitat due to community growth, mining, utility projects, military uses, etc.

I believe the Department should have recognized the significant studies of the distribution of this species conducted by the Bureau of Land Management in the California Desert Conservation Area in the review of the petition to delist, as well as in the periodic reviews made of the species. These investigations greatly expanded our basic knowledge of this species. They were conducted by biologists of the Bureau of Land Management beginning with the wildlife inventories in the Red Mountain and El Paso Planning Units in 1974 and 1975, the studies by Wessman in 1977 which documented the species occupied a range 1800 square miles greater than what was known at the time of the 1971 listing, and those by Aardahl and Roush in 1980 that documented the abundance and widespread occurrence of the species in the western Mojave between Ridgecrest, California City and Barstow. To be specific, it is not true that most of the field work conducted since the listing in 1971 has been related to determining the presence or absence of the species prior to development projects. The level of effort and amount of useful data gathered by the Bureau of Land Management in the above distribution and abundance studies was not related to development projects; it was obtained to enhance agency understanding of the distribution of a State-listed species for conservation purposes.

The Department, in reviewing the petition, could have rejected the petition on the grounds that it did not present a convincing case for delisting due to the absence of supporting data or factual information. The author of the petition simply referred to studies conducted by others. Again, I emphasize the technical weaknesses of the petition as described in the above paragraphs.

Land managers and biologists participating with the Bureau of Land Management in the conservation of habitat for the desert tortoise in the Western Mojave Coordinated Resource Management Plan would agree that the Mojave ground squirrel, which occupies habitat within much of the area occupied by the tortoise, will benefit from the protection that will be provided the tortoise when the plan is implemented. Such long term protection for this species within a majority of its range can only come about through implementation of the plan. Implementation will take a very long time and the degree of success in conserving the habitat cannot be predicted at this time.

Subsequent to the 1985 report prepared by Aardahl and Roush on the distribution and abundance of the Mohave ground squirrel, the Bureau of Land Management requested that the Department of Fish and Game review the report and data presented and formally meet with the

agency's managers and biologists to jointly determine if the listing status of the species was proper in light of the new information gathered. To the best of my recollection, the Department responded in writing to the Bureau and, unfortunately, there never was a cooperative, interagency review of the status of the squirrel.

I believe a cooperative evaluation of the status of this animal with the federal land managing agencies is a high priority. I don't believe the biological status of the animal in addition to the petition to delist can be properly addressed with the current level of understanding of this species. Answers to the following questions would be key to understanding the true status of this species:

1. How much of the original habitat of this species has been lost due to development, impacts from multiple land uses (recreation, grazing, etc.)?
2. What areas within the species range are suitable habitat, and what areas are essential to the perpetuation of this species (i.e., what are the most important habitat areas and are they large enough to support minimum viable populations in times of drought, disease, competition with other species and livestock, predation, etc.?)
3. To what degree have habitat areas been isolated from main populations through habitat fragmentation?
4. Are land management uses, plans and decisions that affect the essential habitats and populations throughout the range of this species compatible with its long term survival?

Some critics of the listing suggest that I advocated delisting in the report I prepared along with Paul Roush. This is not the case. I was a strong advocate of a cooperative evaluation of the listing by the Department of Fish and Game and the Bureau of Land Management because of the new findings in the distribution and abundance of the Mohave ground squirrel based on studies by Wessman and Aardahl and Roush. In my opinion a critical review of the listing was in order because the new data revealed the range and abundance was so much greater than what was known in 1971.

My recommendations to the Department and the Commission in this matter are:

1. Maintain the current listing to conserve the species and its habitat until a more thorough, interagency review is completed.
2. Conduct a critical, professional review of the status of the species based on all data. This review should be conducted by biologists and managers from the Department of Fish and Game and the Bureau of Land Management.
3. Determine what data needs to be acquired to properly determine the biological status of this species; fund and implement studies

to provide the needed information.

4. Provide the Commission with a thorough status review and make a final recommendation regarding the petition to delist after the necessary studies are completed.

5. If the listing is upheld, designate critical habitat for conservation of the species in cooperation with the federal land managing agencies and local governments controlling large blocks of undeveloped habitat within the specie's range (e.g., California City).

In summary, I believe there is insufficient biological information at this time for the Department and the Commission to act on the petition to delist the Mojave ground squirrel. A proper decision can be made when the essential information is in hand.

If you have any questions regarding my opinions and recommendations do not hesitate to contact by telephone. I can be reached at (619) 786-3250. Thank you for the opportunity to participate in this matter.

Sincerely,



Jeffrey B. Aardahl
Chief, Resources Management Division

cc: BLM - Ridgecrest and Barstow Area Offices

14. Summary of letter from Jeffrey B. Aardahl:

This letter is from a scientist who has conducted field studies of the Mohave Ground Squirrel and whose work (Aardahl and Roush 1985) was discussed in the petition to delist the squirrel. The letter states that "I believe the petition to delist resulted from the experiences of some land owners/developers in a relatively small area of eastern Kern County when they proposed land development within the range of the Mohave ground squirrel. I am not aware of widespread support for the delisting of this species. A delisting action by the Commission at this time would result in an accelerated loss of habitat for the species on both private and federally managed lands due to the lifting of the restrictions that are now in place which are designed to limit the loss of the habitat through mitigation and compensation."

The letter further states that a "major weakness in the petition argument for delisting is the absence of any factual information regarding the amount of suitable habitat within the geographic range of the species. Another weakness lies in the fact that there is no evaluation of the future losses of habitat that may occur within important habitat due to community growth, mining, utility projects, military uses, etc."

The writer notes that he found statements with which he agrees and with which he disagrees in both the petition and the Department's February 1992 recommendation to the Commission on the petition. In regard to a statement by the Department, he writes that "it is not true that most of the field work conducted since the listing in 1971 has been related to determining the presence or absence of the species prior to development projects. The level of effort and amount of useful data gathered by the Bureau of Land Management in the above distribution and abundance studies was not related to development projects; it was obtained to enhance agency understanding of the distribution of a State-listed species for conservation purposes."

The letter recommends that a cooperative State/federal effort be undertaken to establish the "true status" of the squirrel by addressing specific questions on amount of habitat loss, suitable habitat, essential habitat, fragmentation of habitat, and land uses. The letter further recommends that the current listing of the squirrel be maintained until a "thorough, interagency review is completed" by the Department and the BLM, that studies be implemented to determine the "biological status" of the squirrel, that a final recommendation on delisting be made to the Commission after studies are completed, and that critical habitat be designated if the listing is maintained.

The writer concludes that "there is insufficient biological information at this time" for making a decision to delist the squirrel.

SIERRA CLUB



KERN-KAWEAH CHAPTER

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JAN 13 1993

Rec'd NHD

Georgette Theotig
P.O. Box 49
Tehachapi, Calif. 93581

January 8, 1993

Susan A. Cochran, Chief
Natural Heritage Division
California Department of Fish and Game
1416 Ninth Street
Sacramento, Calif. 95814

Dear Ms. Cochran:

The following are the comments of the Kern-Kaweah Chapter of the Sierra Club regarding the status of the Mohave Ground Squirrel (*Spermophilus mohavensis*). We are aware that on April 2, 1992, the California Department of Fish and Game Commission accepted a petition from the Kern County Department of Planning and Development Services to amend the State endangered and threatened species list to read as follows: "Mohave Ground Squirrel (*Spermophilus mohavensis*)- Delist from Threatened." While our comments are being presented after the October 1, 1992 deadline, we hope they can be accepted into the Department's final report to the Commission.

After reading the Memorandum (February 24, 1992) presented by Boyd Gibbons, and based upon our own information, we must strongly oppose the acceptance of this petition to delist the Mohave Ground Squirrel as threatened. The submitted petition is incomplete and must be rejected for the following reasons:

1) The petition does not include sufficient scientific information on several factors required from Section 2072.3 of the Fish and Game Code: population trend, range, distribution, abundance, factors affecting the ability of the population to survive and reproduce, degree and immediacy of threat, and the impact of existing management efforts.

2) The petition fails to fully satisfy the content requirements of petition form FGC 670.1, as specified in Section 670.1(a), Title 14, California Code of Regulations, which requires sufficient information to indicate that the petitioned action may be warranted. There is no discussion of changes in population, effects of human-induced habitat fragmentation on the ability of the species to reoccupy habitat from which it has been extirpated, the impact of Federal land-use activities on populations, the effects of highways and their rights of way (current or proposed) as barriers to population movements or as negative impacts to local population densities, and whether this species has been found to occupy soils, plant communities, or elevations not previously known.

3) The petition fails to address the requirements of Section 670.1 (c), Title 14, California Code of Regulations, which provides that a species may be delisted "if the Commission determines that its continued existence is no longer threatened by any one or any combination" of several factors.

4) We are aware of the several points presented in the petition to delist the Mohave Ground Squirrel. One in particular was that great areas of Federal land within the range of the Mohave Ground Squirrel already provide substantial management benefit to assure the continued successful existence of the species. There is insufficient management consideration given to this species to provide benefit over the long term.

5) Last, the U.S. Fish and Wildlife Service, in their updated compilation of animals that are being considered for possible addition to the Federal list of Endangered and Threatened species in the Federal Register of November 21, 1991, included the Mohave Ground Squirrel as a candidate, with a designation of "Declining."

We believe that the Mohave Ground Squirrel continues to be a threatened species due to modification and destruction of habitat. Rapid growth on a grand scale in the Western Mojave region, especially in the Palmdale, Victorville, and Ridgecrest areas, is a major contributing factor to the decline of this species. The continued protection of the Mohave Ground Squirrel equates to a healthy and intact desert ecosystem, of which this species is an integral part. The successful existence of each plant and animal strengthens the rich biodiversity of the Mojave Desert. Therefore, we strongly urge the Fish and Game Commission members to reject the petition and retain the threatened status of the Mohave Ground Squirrel.

We very much appreciate this opportunity to comment on this important issue.

Sincerely,

Georgette Theotig
Georgette Theotig,
Chairwoman

cc: Congressman William Thomas

15. Summary of letter from Kern-Kaweah Chapter, Sierra Club:

This letter states that "we must strongly oppose the acceptance of this petition to delist the Mohave Ground Squirrel", and points out that the petition does not meet the requirements of the Fish and Game Code and Title 14, California Code of Regulations that sufficient scientific information must be presented in a petition to support the petitioned action. The letter concludes that the squirrel "continues to be a threatened species due to modification and destruction of habitat. Rapid growth on a grand scale in the Western Mojave region, especially in the Palmdale, Victorville, and Ridgecrest areas, is a major contributing factor to the decline of this species."



The University of New Mexico

Department of Biology
Albuquerque, NM 87131
Telephone 505: 277-3411

10 January, 1993

Dr. John Gustafson
Nongame Bird and Mammal Section
Wildlife Management Division
Department of Fish and Game
P.O. Box 944209
Sacramento, California 94244-2090

Dear Dr. Gustafson:

I have read the arguments submitted by the Kern County Department of Planning and Development Services in support of delisting the threatened Mohave Ground Squirrel, Spermophilus mohavensis, in California. As far as I am able to ascertain from the petition, the major reasons for requesting that the species be delisted are that 1) the species was incorrectly listed, 2) scientific data on the species are lacking, and 3) sufficient federal land exists within the species range to provide ample protection. I find none of these arguments compelling, and in fact think that their reason number two argues against such a conclusion.

Determination of when to list a species as threatened is never easy, especially if the goal is to afford protection early enough to avoid extinction. In the case of the Mohave Ground squirrel, it appears to me that your department made the appropriate decision to list when you did. None of the "evidence" provided by the petition to delist provides evidence

that your decision to list this species was erroneous. On the contrary, the authors of this petition appear to be unaware of what constitutes a threat to evolutionary units and it is therefore not surprising that they see protection of this ground squirrel as nothing more than an obstacle to further development of this region. The fact is that they lack a case based on any new information, and they have misinterpreted previous published data. For example, they cite a paper by Hafner and Yates (1982) as evidence that S. mohavensis may not be a "good" species. This paper, in fact, suggests just the opposite. The two nominal species examined in that study maintain genetic distinctness throughout their ranges and only hybridize along a narrow zone of disturbed habitat in California. Those data argue against introgressive hybridization and suggest that the Mohave Ground Squirrel is a distinct species even using the more conservative Biological Species concept. It should be noted, however, that the endangered species act, does not require biological species status to afford full protection under the act but frequently protects endangered subspecies as well. The Mohave Ground Squirrel is clearly a distinct evolutionary unit compared to the Roundtailed Ground Squirrel, and should be protected if it is threatened as is suggested by all data currently available.

The fact that information is lacking on many aspects of the basic biology of this species is also not valid grounds for delisting the species. This is probably the only reason it has not been transferred to federal listing but does not provide logical support for the argument that is implied by the petitioners that this is evidence supporting an erroneous listing. In fact, most species that are now listed federally as endangered were in this same category of needing further population level studies. The current listing by California of this species simply provides protection so that more information can be obtained, an effort that may well prevent the species from becoming endangered. The argument that more information is needed, at this point, argues for, not against, continued protection.

The contention of the petitioners that the species occupies a large geographic range and that enough land exists on federal portions of the species range to afford protection appears as another attempt to misrepresent the truth. As species ranges go for similar sized small mammals, the range of the Mohave Ground Squirrel is extremely small. In addition, no data are provided to support the contention that reducing the

range of the species even further to support development will ensure survival of the species. The data that are available from other successful species of ground squirrels suggests that more space, not less, are needed to ensure the success of the species.

In conclusion, I recommend rejection of this petition but agree that further study of the species would be valuable. I would further recommend that more survey and inventory work should be conducted ASAP in this region. My suspicion is that the reduced range and threatened status of this ground squirrel is indicative of a greater problem and may suggest that the entire ecosystem is endangered. The lack of concern for the loss of biological diversity in this region by those wanting to exploit it suggests that conservation efforts should be greatly enhanced. Your decision to list this species is correct and should remain in effect until substantial compelling, scientific evidence to the contrary are found. I hope these comments will be useful in your appraisal of this situation.

Sincerely,

A handwritten signature in black ink, appearing to read "Terry L. Yates". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

Dr. Terry L. Yates
Curator of Mammals
University of New Mexico

16. Summary of letter from Terry L. Yates:

This letter is from a scientist who has conducted field studies of the Mohave Ground Squirrel and has made a determination about its taxonomy. His work (Hafner and Yates 1983) was discussed in the petition to delist the squirrel. The letter refutes the analysis of Hafner and Yates (1983) in the petition and points out that lack of information on many aspects of the basic biology of the squirrel is "not valid grounds for delisting the species." The letter recommends rejection of the petition by the Commission and concludes that the "reduced range and threatened status of this ground squirrel is indicative of a greater problem and may suggest that the entire ecosystem is endangered. The lack of concern for the loss of biological diversity in this region by those wanting to exploit it suggests that conservation efforts should be greatly enhanced."



United States Department of the Interior



FISH AND WILDLIFE SERVICE

FISH AND WILDLIFE ENHANCEMENT

Ventura Field Office
2140 Eastman Avenue, Suite 100
Ventura, California 93003

January 19, 1993

Dr. Roy Woodward
Wildlife Management Division
California Department of Fish and Game
1416 Ninth Street
Sacramento, California 95814

Subject: Status of the Mohave Ground Squirrel

To whom it may concern:

This letter has been prompted by recent conversations with California Department of Fish and Game (Department) staff and other participants in the development of the coordinated management plan for the western Mojave Desert. The Fish and Wildlife Service (Service) is concerned that misperceptions regarding the Federal listing process and the biology of the Mohave ground squirrel (*Spermophilus mohavensis*) may adversely influence the proposed delisting of the species by the California Fish and Game Commission.

The petition from the County of Kern cites the Mohave ground squirrel's Federal status as a category 2 candidate to support its contention that there is insufficient information to justify its listing as a threatened species. As defined at 50 CFR Part 17, category 2 candidates are those "(t)axa for which information now in possession of the Service indicates that proposing to list as endangered or threatened is possibly appropriate, but for which conclusive data on biological vulnerability and threat(s) are not currently available to support proposed rules."

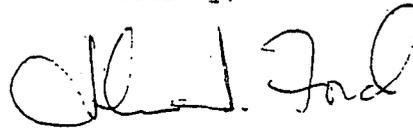
The Service has not conducted an in-depth review of the distribution of the Mohave ground squirrel. However, because of our involvement with the desert tortoise (*Gopherus agassizii*), which is listed by both the State of California and the United States as threatened, we are well aware of the land uses and habitat loss, degradation, and fragmentation, resulting from ongoing urban development and multiple use of private and public lands, that have occurred and continue to occur in the western Mojave Desert. Simply stated, the Service is concerned that existing conditions in the western Mojave Desert are such that the long-term viability of plant and animal species whose ranges are restricted to this area, like the Mohave ground squirrel, cannot be adequately ensured. To reflect this concern, the most recent animal candidate review describes the status of the Mohave ground squirrel as "declining."

Because of limited funding and staff, the Service has been unable to fully monitor and pursue listing proposals for all of the numerous candidate species

in California. We have chosen to devote our efforts to the development of a large-scale management plan for the western Mojave Desert, which, if implemented, should aid the recovery of the desert tortoise, the Mohave ground squirrel, and other sensitive species in that region. If the coordinated management plan meets its biological objectives, the Service may be able to forego proposals to list individual species throughout the western desert.

In conclusion, the Service is not aware of any information regarding the Mohave ground squirrel's range or biological vulnerability that indicates the species should be removed from the State list of endangered and threatened species, or dropped from consideration for Federal listing. We hope this letter assists you in understanding the Service's position with regard to the status of the Mohave ground squirrel. If you have any questions, please contact Ray Bransfield of my staff at (805) 644-1766.

Sincerely,

A handwritten signature in dark ink, appearing to read "John I. Ford". The signature is fluid and cursive, with a large initial "J" and "F".

John I. Ford
Acting Field Supervisor

17. Summary of letter from U.S. Fish and Wildlife Service:

This letter refutes the contention in the petition to delist the Mohave Ground Squirrel that the squirrel's federal status as a category 2 candidate species means there is insufficient information to justify its State listing as Threatened. The letter points out that the Fish and Wildlife Service views the status of the squirrel as declining, but that the Service has chosen to pursue efforts for development of a large-scale management plan for the western Mojave Desert (a reference to the West Mojave Coordinated Management Plan) rather than to propose the squirrel as a federal Threatened or Endangered species at this time. The letter concludes that "the Service is not aware of any information regarding the Mohave ground squirrel's range or biological vulnerability that indicates the species should be removed from the State list of endangered and threatened species, or dropped from consideration for Federal listing."

2817 Owens Peak Road
Inyokern, CA 93527
February 7, 1993

Dr. John Gustafson
Nongame Bird and Mammal Section
Wildlife Management Division
Department of Fish and Game
P. O. Box 944209
Sacramento, CA 94244-2090

Dear Dr. Gustafson:

As a resident and property owner of the Mojave Desert, I would like to comment on the Kern County Department of Planning and Development Services petition to delist the Mojave Ground Squirrel (MGS). We urge the Commission not to delist the MGS.

The petition states that "conclusive data on biological vulnerability and threat are not available to justify the Federal listing as 'threatened or endangered'". The California Department of Fish and Game has the data which shows that the MGS is threatened. There is no data to suggest that the species is any less threatened now than when it was listed.

This petition is the product of a few short-sighted, ignorant people who are not willing to put forth the effort to properly plan land use. The ~~Mojave~~ West Mojave Coordinated Management Plan will allow use of private land while preserving enough of our desert wildlands to allow unique species like the MGS to survive. But it will require work to complete and implement this plan.

The fact that a unique species, endemic to the Mojave Desert is threatened with extinction indicates that a

unique habitat is being severely damaged. This is obvious to local residents. Even with the recent recession, desert habitat continues to be destroyed or damaged by development, roads, off-highway vehicles, mining, utility corridors, and military operations. These threats will continue, and many will increase; How many species of animals and plants will we use if we fail to protect them? It is in the interest of Californians (including those of us who own land) to protect the wildlife of our state. We have entrusted ~~this~~ the California Department of Fish and Game with the responsibility to provide this protection. To delist the MGS would be to violate public trust and to fail to perform the Department's duty. Do not delist the MGS until data demonstrates that it is no longer threatened.

Sincerely,

Thomas and Kathleen Stephens

Inyokern, CA

Copies to:

Fish and Game Commission
P.O. Box 944209
Sacramento, CA 94244-2090

Roy Ashburn
Kern County Supervisor
400 N. China Lake Blvd.
Ridgecrest, CA 93555

18. Summary of letter from Thomas and Kathleen Stephens:

This letter urges the Commission to not delist the Mohave Ground Squirrel and deplores the motivation of the petitioner in submitting the petition. The letter cites the concern of residents in the western Mojave Desert that "a unique habitat is being severely damaged" by human activities.

Memorandum

Date : March 19, 1993

Telephone: ATSS ()
()

To : Natural Heritage Division
California Department of Fish and Game
1416 Ninth Street
Sacramento, CA 95814

From : California Energy Commission
1516 Ninth Street
Sacramento 95814-5512

Subject : PETITION TO DELIST THE MOHAVE GROUND SQUIRREL AS THREATENED

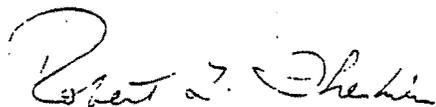
The California Energy Commission's (CEC) Energy Facilities Siting and Environmental Protection Division Biology Staff have reviewed the request for comments on the delisting of the Mohave ground squirrel (Spermophilus mohavensis) as Threatened. Our views which follow are based upon experience we have gained while evaluating the effects of power plant and transmission line projects on the Mohave ground squirrel and the monitoring of impact mitigation.

The known range of the Mohave ground squirrel is approximately 7,000 square miles and that over 57 percent of that area is under federal management by the Navy, Army, Air Force, or the Bureau of Land Management. During the CEC's licensing of four energy development projects affecting the range of the Mohave ground squirrel, it does not appear that federal lands were being managed with consideration focused on long-term conservation and benefit to the Mohave ground squirrel. Any management action or consideration directed toward Mohave ground squirrels appear to be incidental to other mandated federal management plans, probably because the squirrel is not a federally protected species.

The CEC Biology Staff has found there is a lack of scientific research on the population, range, density, behavior, taxonomic relationships, and habitat preferences of the species. We are unaware of sufficient new scientific information to indicate that changes in the population of the Mohave ground squirrel over all or over a portion of its range have improved. There is minimal information concerning the increasing effects of human-induced habitat fragmentation, habitat losses and degradation and that these effects will be slowed, eliminated, or rectified in the

Natural Heritage Division
March 19, 1993
Page 2

future to allow the species to reoccupy habitat from which it has been extirpated. This lack of information does not support changing its listing at this time. We encourage and recommend aggressive scientific investigation and the implementation of habitat conservation plans that will assure the continued existence of the Mohave ground squirrel throughout its range.



ROBERT L. THERKELSEN, Deputy Director for
Energy Facilities Siting and
Environmental Protection

RLT/RLA:nwb

cc: John Gustafson, CDFG

19. Summary of letter from California Energy Commission:

This letter refutes the contention in the petition to delist the Mohave Ground Squirrel that federal lands provide substantial long-term management and benefit to the squirrel. The letter states that "[a]ny management action or consideration directed toward Mohave ground squirrels appear to be incidental to other mandated federal management plans, probably because the squirrel is not a federally protected species." Further, "[w]e are unaware of sufficient new scientific information to indicate that changes in the population of the Mohave ground squirrel over all or over a portion of its range have improved. There is minimal information concerning the increasing effects of human-induced habitat fragmentation, habitat losses and degradation and minimal [information] that these effects will be slowed, eliminated, or rectified in the future to allow the species to reoccupy habitat from which it has been extirpated. This lack of information does not support changing its listing at this time."

Kerncrest Chapter National Audubon Society

P.O. Box 984
Ridgecrest, CA 93555

January 27, 1993

Fish & Game Commission
P.O. Box 944209
Sacramento CA 94244-2090

Re: Mojave Ground Squirrel de-listing

Gentlemen;

We urge you to not de-list the MGS. It's Threatened status is warranted and should not be changed.

We are especially concerned that the effort to de-list is based on economics, not scientific data. You are mandated to consider only scientific data, not anything else, and especially not something as short-sighted as economic gain for a few individuals.

To prove that alternate protections exist, the petition quotes that "public lands managed by various federal agencies provide substantial management benefit to assure the continued existence of the species." They do not. Military bases by and large ignore environmental needs, and are exempt from any such consideration in time of war. Ground activities, especially tanks at Ft. Irwin are especially destructive to any ground dweller, animal or plant. BLM has, until quite recently, promoted human use and abuse type activities, not the protection of native species.

The rapid cumulative effects of rural development, even when homes are seemingly widely spaced on acreage has a widespread ripple effect on surrounding natural desert. New desert dwellers blade clear their acreage, their children play and move dirt and ride bikes and ATVs on a wide area of land adjacent to their own. Pet cats and dogs root out and kill wildlife as well as disturb habitats. New and wider dirt roads are created along with bypasses and short cuts that create either no more desert, or small islands of surviving vegetation that has no use to native species. Noise and the presence of humans and their attendant influences disturb the more sensitive species like MGS, burrowing owls, Le Conte thrashers and kit foxes, as well as destroying the delicate top soil and plant communities. The MGS is losing habitat at a greater and greater rate.

This species is endemic to the western Mojave Desert. That means, if you have forgotten, that it is found nowhere else in the world. And not the whole Mojave, the Western part only. Implications of high population densities in the petition are just that, implications. Guesswork, speculation. That is not very scientific.

So, if you de-list, then what happens in the near future when it becomes abundantly clear that it needs listing again? Will there be suitable habitat still available? Will there be money available to mount a costly recovery campaign?

Scientific data is the key. Where is the petitioner's new scientific data to substantiate their claim? All they are doing is using someone else's data and mis-interpreting it, as you are no doubt receiving letters about.

De-listing is not warranted and is not the cure-all it seems to be to the petitioners. There are other, broader matters to be dealt with here and MGS is only one of the first to test these. There are other species already feeling the effects of rapid, willy-nilly development and human disregard and they will be joining the MGS with needs of their own to be protected. The more fragmented the the habitat, the more tedious and costly the recovery. Start now to plan for future needs of the native desert inhabitants. The handwriting is on the wall.

Thank you for your consideration,

Sincerely,



Terri Middlemiss, Conservation Chair

cc; Roy Ashburn, National Audubon - Western Regional Office

20. Summary of letter from Kerncrest Chapter, National Audubon Society:

This letter urges the Commission to not delist the Mohave Ground Squirrel and expresses concern that "the effort to de-list is based on economics, not scientific data." The letter refutes the contention in the petition that federal lands provide substantial long-term management and benefit to the squirrel. The letter cites the cumulative effects of rural development in the desert on animals, plants, and soils, and deplors the lack of sufficient scientific information in the petition. The letter concludes that delisting is not warranted and that the squirrel is only one of many species of the desert which will need to be specially protected.

Feb. 9, 1993

Fish & Game Commission
P.O. Box 944209
Sacramento, CA 94244-2090

Dear Sirs,

I would like to express my strong support for continued listing of the Mojave ground squirrel. Until the developers, business interests and city governments will provide the money necessary to fund the research necessary to de-list the animal, I see no reason not to continue its status.

I have been a land and home owner in this Valley for 32 years and am fully prepared to support economic costs which may be entailed by listing. I would like to point out that your duty is to make your decision based on biological grounds not economic.

Sincerely,

✓ Carol Panlaqui

C. Panlaqui
748 West Dolphin
Ridgecrest CA 93555

21. Summary of letter from Carol Panlaqui:

This letter expresses "strong support for continued listing of the Mojave [sic] ground squirrel" and states that, as a landowner in the Ridgecrest area, the writer is "fully prepared to support economic costs which may be entailed by [the continued] listing [of the species]."