FAX COVER SHEET

20 pages
(including cover)

To: WO-ES [illegible]
PATRICK LEONARD

From:

U.S. Fish and Wildlife Service

Wendi Weber
Chief, Division of Listing
and Candidate Conservation

Pacific Regional Office
911 N.E. 11th Avenue
Portland, OR 97232
phone 503-231-6131 fax 503-231-6243

Message: Pebble 'Desert cymopterus'
VENTURA FWO lead

California Native Plant Society

FISH AND WILDLIFE SERVICE

APR 0 1 2002

RECEIVED
VENTURA, CA

- fax DC
- e-mail CNO
- draft letter of
- receipt

March 29, 2002

Ms. Gail Norton
Secretary of the Interior
Department of the Interior
Washington, D.C. 20240

Ileene Anderson representing the California Native Plant Society and Daniel Patterson representing the Center for Biological Diversity hereby formally petition to list the Desert Cymopterus (*Cymopterus deserticola*) as endangered pursuant to the Endangered Species Act, 16 U.S.C. 1531 et seq. (hereafter referred to as "ESA") because it is endangered in a significant portion of its range (i.e. the western Mojave Desert, California). This petition is filed under 5 U.S.C. 553 (e) and 50 CFR 424.14 (1990), which grants interested parties the right to petition for issue of a rule from the Assistant Secretary of the Interior.

Petitioners also request that Critical Habitat be designated for the desert cymopterus concurrent with the listing, pursuant to 50 CFR 424.12, and pursuant to the Administrative Procedures Act (5 U.S.C. 553).

Due to the fact that very few desert cymopterus remain in the west Mojave Desert, that the desert cympoterus has suffered declines in recent years, that habitat destruction is ongoing and impending, and that this species is not being included in the West Mojave Habitat Conservation Plan as per 61FR7457, we appeal for listing and critical habitat

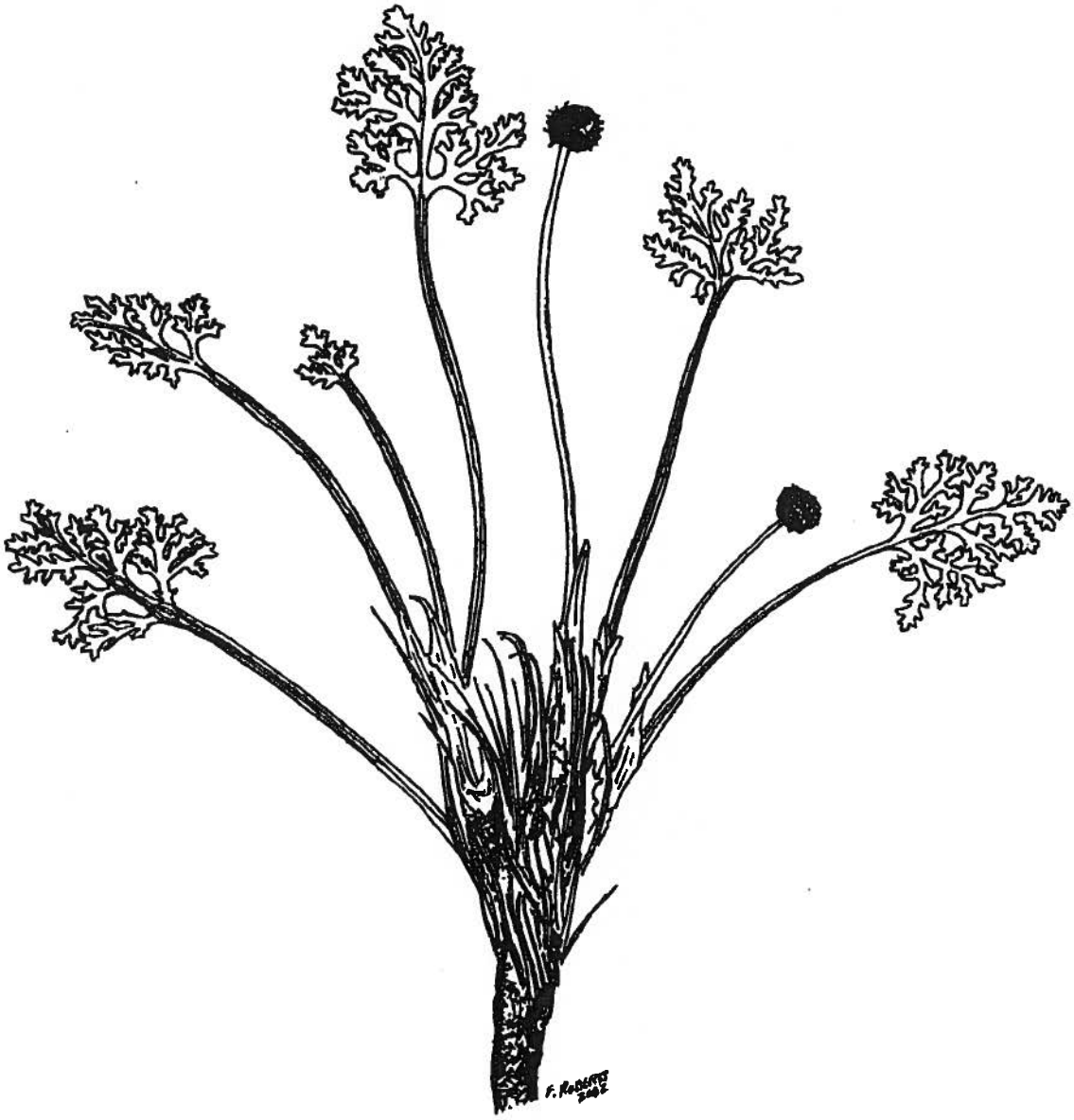
Petitioners understand that this petition action sets in motion a specific process placing definite response requirements on the U.S. Fish and Wildlife Service and very specific time constraints on those responses.

Petitioners

Ileene Anderson received an M.S. in biology from the California State University, Northridge and is currently the Southern California Botanist with the California Native Plant Society. The mission of the California Native Plant Society is to increase the understanding and appreciation of California's native plants and conserve them in their natural habitats through education, science, advocacy, horticulture and land stewardship.

Daniel Patterson is the Desert Ecologist for the Center For Biological Diversity. He has also spent many years studying the ecology of desert species in the field. The Center for Biological Diversity is dedicated to protecting imperiled species and their habitats in western North America and the Pacific Islands. Combining scientific research, public organizing and strategic litigation, the Center has attained Endangered Species Act protection for over 100 species and has protected millions of acres of land and thousands of miles of rivers.

Petition to List the Desert Cymopterus (*Cymopterus deserticola* Brandegee) as Endangered and Designate Critical Habitat



March 29, 2002

Petition to the United States Department of Interior Fish and Wildlife Service

Species Being Petitioned:

Scientific Name: *Cymopterus deserticola*
Common Name: Desert cymopterus
Plant Family: Apiaceae (Carrot family)

Historic State(s) of occurrence: California
Current State(s) of occurrence: California

Current Federal Status: Species of Concern

Recommended Action: List as Endangered and Designate Critical Habitat

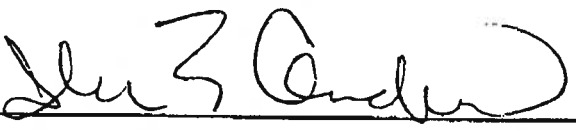
Author of Petition:

Name:	Ileene Anderson
	California Native Plant Society
Address:	2733 Cardwell Place
	Los Angeles, CA 90046-1201
Telephone:	(323) 654-5943
	(323) 650-4620 (FAX)
Email:	ieanderson@earthlink.net

Additional Contact:

Name:	Daniel Patterson – Desert Ecologist
	Center for Biological Diversity
Address:	P.O. Box 493 92549
	Idyllwild, CA 92549
Telephone:	(909) 659-6053 ext. 306
	(909) 659-2484 (FAX)
Email:	dpatterson@biologicaldiversity.org

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

Signature: 

Date: March 29, 2002

Table of Contents

Classification and Nomenclature 3

Legal or Formal Status 3

Description 3

Geographical Distribution 4

Environment and Habitat 6

Population Biology/Ecology 7

Current Land Ownership and Management Responsibilities 7

Evidence of Threats to Survival 9

A. The present or threatened destruction, modification or curtailment of its habitat or range 9

B. Overutilization for commercial, recreational, scientific or educational purposes 10

C. Disease or predation 10

D. The inadequacy of existing regulatory mechanisms 11

E. Other natural or manmade factors affecting its continued existence 13

Bibliography 14

List of Herbarium Specimens 16

Figure 1. Side View of the Desert Cymopterus in Flower 5

Figure 2. Desert Cymopterus in Flower and Fruit 5

Table 1. Known Mappable Occurrences/Locations of *Cymopterus deserticola* 17

Attachments

Map 1 – Southern Range

Map 2 – Northern Range

Classification and Nomenclature

Scientific Name: *Cymopterus deserticola* Brandegee Univ. Calif. Pub. Bot 6:168 (1915)
Family: Apiaceae (Umbelliferae): Carrot Family - Dicot
10 species in this genus in California (Constance, 1993)
Type Specimen: Collected May 13, 1915, K. Brandegee s.n.: UC.
Common Name: Desert Cymopterus
CNPS Taxon Code: CYDE

Legal or Formal Status

Federal: Species of Concern; BLM Sensitive; formerly a federal Category 1 candidate for listing. It was removed as a Category 1 candidate in February of 1996 by the U.S. Fish and Wildlife Service solely on the basis that it "occurs within the area being addressed by the West Mojave Coordinated Management Plan, which will function as a multi-species habitat conservation plan and this action will alleviate many of the threats to the species" (61FR7457). However, the taxon has been "dropped" from the list of species in the West Mojave Coordinated Management Plan and Habitat Conservation Plan (West Mojave, 1/23/02).

State (California): S2.2, G2 (CDFG 2001)

CNPS: List 1B, RED Code 3-2-3 (CNPS 2001)

Description

Desert cymopterus is an early flowering, small, perennial herb. This long-lived perennial has long, slender, deep tap roots with one to many leaves arising from the below-ground stem-root crown. The above-ground part of the leaf is highly dissected, grayish green and hairless. Small purple flowers are clustered in compact, globular heads at the tip of leafless peduncles that exceed the leaves.

This acaulescent perennial herb reaches generally 15 cm (6 in.) in height at flowering. Petioles are about as long or longer than the leaf blades, but typically most of the petiole is underground. Perennating buds are located at this stem-root crown (Charlton 1993b, Smithsonian Institution 1978). Petioles range in length from 4-10 cm. and the leaf blades from 2-6.5 cm. The leaf blades are oblong-ovate, and ternate 2-pinnately dissected with 1-4 segments (Constance 1993). A slightly longer leaf blade 4-8 cm. was documented on Edwards Air Force Base (EAFB) in 1977 (Smithsonian Institution, 1978). In 1995, an exceptionally wet year in the desert, the mean above ground petiole length (n=>1000 plants) was 5 cm. and the mean blade length was 6.3 cm. (Tetra Tech 1995). The inflorescence has peduncles that are equal to or greater

than the leaves. The globose and congested umbel supports rayless, purple corollas (Figure 1). The fruits range from 5-7 mm and are oblong-ovate to wedge-shaped Figure 2). The fruit ribs are unequal with a 3-5 oil tubes per rib interval. The chromosome number is 2n=22 (Constance 1993).

The only other member of the carrot family that occurs within the range of the desert cymopterus and might be confused with it is desert parsley (*Lomatium mohavense*). Although desert carrot also has highly dissected leaves in a basal cluster similar to desert cymopterus, the parsley's leaves are covered with fine hairs and its flowers are arranged in compound umbels (Constance 1993).

Geographical Distribution

The desert cymopterus was first described by Thomas Brandegee in 1915 based on material (UC624106) collected near Kramer Junction (northeast of EAFB). A total approximately 14,800 plants of desert cymopterus have located in 25 areas, all within the western Mojave desert (CNDDB 2002, BLM 2001 and Tetra Tech 1995). The southeastern-most range of the species is documented in Apple Valley and near Rabbit Springs in San Bernardino County (see Herbarium specimens JEPS 15950, Dudley 238095, Dudley 123287, and CAS 293115), although none of these locations have been successfully located recently despite the general area being well botanized (S. Boyd, personal communication). The most recent record in this area is from 1941 (CAS 293115) and is confirmed extirpated (Moe 1988).

The current extant range includes Rodgers Dry Lake basin, the Harper Lake Basin and the Cuddeback Lake basin and the Superior Dry Lake Basin. The total extant range extends approximately 50 miles (80 km) east-west and 35 miles (56 km) north-south. Table 1 includes all of the documented populations in the west Mojave area (BLM 2001) and Figures 1, 2 and 3 locate populations on maps.

The area that supports the greatest number of individuals is the Rogers Dry Lake Basin. The populations in this watershed are widely separated and dispersed, extending from the Kramer Hills to Rosamond (also known historically as Muroc [Durham 1998]) Dry Lake, approximately 56 km (35 miles) east-west, and from Peerless Valley to just south of Rogers Dry Lake, about 30 km (19 miles) north-south. Within this watershed, most of the populations occur on EAFB, where approximately 14,093 plants were counted or estimated over 592.7 ha throughout the base in 67 survey areas (Tetra Tech 1995), including eight previously documented populations from 1988 (Moe 1988, CDFG 2001) and two historic collections (UC566841 and PC296427, both from Muroc). 1995 was a particularly advantageous year for this taxon, although no surveys for the desert cymopterus were conducted outside of EAFB and within the species range that year. The other nine locations in this watershed occur north of EAFB in the area of Peerless Valley (LACMNH 470612, RSA248687, CAS 603590, and RSA 470613, all from the same site off Claymine Road, associated with #6), north west of Kramer Junction (#7-13) and in the Kramer Hills(#16). Less than 200 plants have been cumulatively documented from these nine locations (BLM 2001). Four historic collections (UC624106, UC1083872, UC1179533 and Dudley 419782) were documented to occur in or near Kramer, but no other site specific details are available on the specimen labels, although Dudley 419782 may be an early



Figure 1. Side View of the Desert Cymopterus in Flower (DTPC 2000)

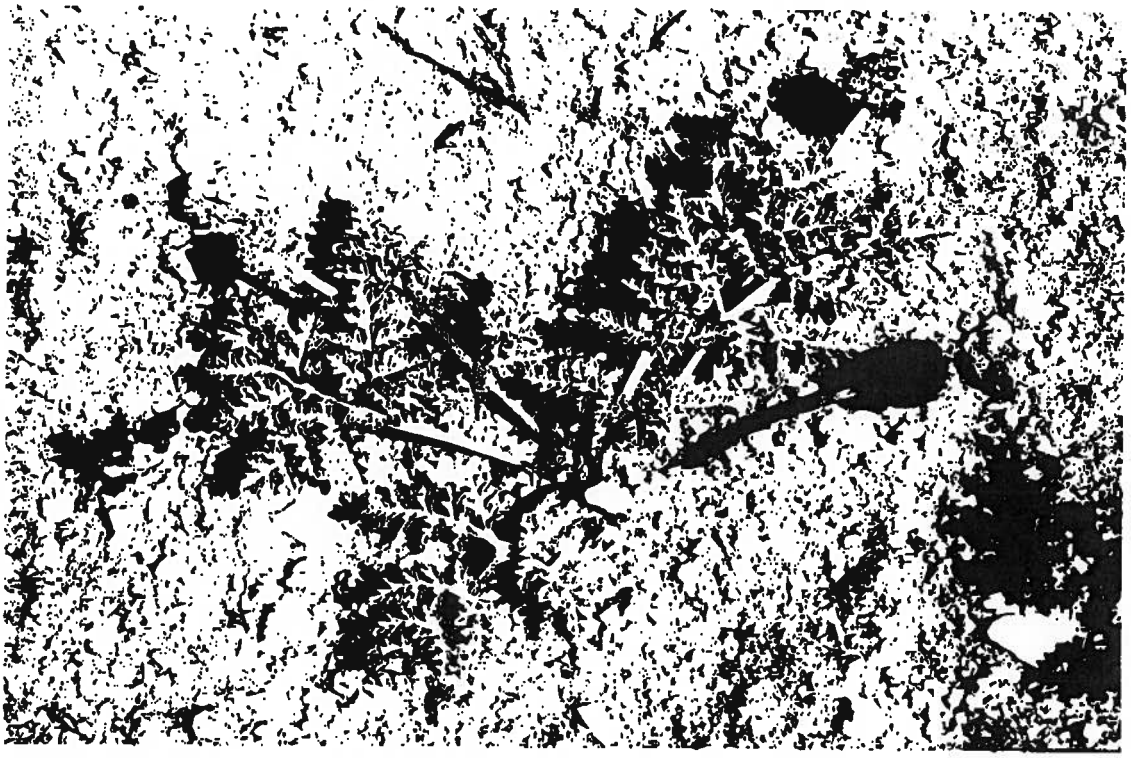


Figure 2. Desert Cymopterus in Flower (right) and Fruit (left and top right). (DTPC 2000)

collection at site #7. This watershed contains 97.7% of the known plants of the desert cymopterus. The number and density of populations on EAFB make this area a core location and essential for conservation of the species.

Harper Dry Lake watershed occurrences ring the north, east and south side of the dry lake. Six locations support at a maximum 200 plants in total in this watershed (BLM 2001) and are described as follows: Moe found "several dozen plants" north of the playa in 1992. In 1989, Bagley and Hetzler found two locations south of the playa, and recensused them for two subsequent years (CDFG 2001). These two sites had great fluctuations in populations during the three years of surveys. For example, Site 14 (on map) had 4 plants in 1989, 19 plants in 1990 and 12 plants in 1991. In 2000, LaRue located one location of 9 plants west of Hinkley Road (UCR114939). In 2001, Walker documented two locations east of Hinkley Road (BLM 2001). About 12 km (7.5 mi) separate the westernmost Harper Lake sites from the nearest Rogers Lake site (Bagley 1998). This watershed contains 1.4% of the known plants of the desert cymopterus.

In the Cuddeback Dry Lake watershed, all four occurrences of the desert cymopterus occur northeast and east of the lake. Henry documented less a total of 25 plants at three locations in 1988 (CDFG 2001 and UC1549319). Connor located over 40 plants in 2001 (BLM 2001). Approximately 27km (17 mi) separates the Cuddeback Lake sites from the nearest Harper Lake site, and about 40 km (25 mi) separates them from the nearest Rogers Lake site (Bagley 1998). This watershed contains 0.6% of the known plants of the desert cymopterus.

A range extension to the east was located in 2001 by Silverman and Cione in the Superior Valley Watershed, northeast of the eastern Superior Lake. 40 plants in a single location were counted (BLM 2001). This site occurs approximately 25 km (16 mi.) from the nearest Harper Lake site and 43 km (27 mi.) from the nearest Cuddeback Lake site. This watershed contains 0.3% of the known plants of the desert cymopterus.

Environment and Habitat

Desert cymopterus grows on loose sandy soils in Joshua tree woodland, saltbush scrub and Mojavean desert scrub communities in the western Mojave desert between 2000 and 3000 feet in elevation (Bagley 1989). The sandy soils are often found in alluvial fans and basins or in swales or stabilized sand fields, or occasionally on sandy slopes. The plants may prefer areas of blow sand on bedrock with groundwater flow (D. Charlton, pers. comm.). Desert cymopterus is typically found in very low density in the interspaces between shrubs, along with a diversity of annual species. Common shrub associates include creosote bush (*Larrea tridentata*), Joshua Tree (*Yucca brevifolia*), several species of shrubby saltbush (*Atriplex canescens, A. confertifolia, A. polycarpa, A. spinifera*), burrobush (*Ambrosia dumosa*), goldenhead (*Acamptopappus sphaerocephalus*), winter fat (*Krascheninnikovia lanata*), and cheesebush (*Hymenoclea salsola*).

Typically, population sizes are small, highly dispersed and low in density, except for several of the survey areas on EAFB. This taxon typically grows in the cool moist conditions of winter and early spring, and goes dormant as the warmer weather progresses in April and May (Bagley 1998).

Population Biology/Ecology

Limited data are available on the population biology/ecology of this species. Reports of population fluctuation occur in the records, and one correlation may be related to precipitation: in dry years, some plants produce one to a few small leaves and no flowers. In very dry years, it is possible that plants stay dormant through the growing season (Bagley 1998). In 1995, a year of ample precipitation that fell at regular intervals throughout the winter and spring is thought to have produced the large numbers and robust morphology documented at EAFB (Tetra Tech 1995). However in 1998, another large rainfall year, the populations in Peerless Valley and near Harper Lake did not show increased numbers or robust morphology (I. Anderson, pers. obs.), so precipitation timing versus actual precipitation may determine the reproductive success of the species. Regardless, it appears that episodic events allow for seed production and presumably subsequent recruitment.

Little or no seed production has been observed at a number of sites in several different years (Bagley 1998, Charlton 1993b, Moe 1988). When seed was produced it occurred in the exceptional year of 1995, and yet only 51% of the plants produced seed (Bagley 1998). Only one accession of 30 seeds from 1992 is located at the Rancho Santa Ana Botanic Garden Seed Bank. Because of the small sample size, no germination studies have occurred for this species (M. Wall pers. comm.). The large seeds have not been studied for viability, longevity in seedbank and predation. Little is known about reproduction and recruitment of this species, and no information on pollination has been documented (Bagley 1998, R. Hartman, pers. comm.).

Current Land Ownership and Management Responsibilities

Of the approximately 14,603 plants documented to occur – the total is calculated as the sum of the largest numbers of plants present at each site (some sites were sequentially recensused over several years) - approximately 14,093 (97%) at 67 sites occur on Department of Defense lands, 310 (2%) at 11 sites occur on BLM lands, and approximately 200 (1%) at 8 sites occur on private lands.

EAFB has delineated numbers and distribution of the desert cymopterus on base (Charlton 1993b, Moe 1988, Smithsonian Institution 1978, Tetra Tech 1995), and reports the largest numbers of plants, at the greatest densities known within the species range. The 14, 093 plants were located in 67 survey sites on 592.7 hectares (Tetra Tech 1995). EAFB cites "mission supremacy" as the determining factor to not participate in the West Mojave Planning effort (I. Anderson pers. obs. at West Mojave Plan meetings). The Draft Edwards Air Force Base Integrated Natural Resources Management Plan (INRMP) 2001 identified the desert cymopterus as a species of concern, but no conservation strategies or areas are even addressed for this species. Additional studies were initially denied funding because "the species being studies is not a federally listed species..."(EAFB 2000). Subsequently, additional requests for funding cymopterus surveys have been requested, but the requests remain unfunded. Clearly EAFB recognizes that it has jurisdiction over the largest number and therefore the most viable populations, but still neglects to prepare any management plan for the species, or provide any conservation strategy for the core area of the species. In fact, the West Mojave Plan team determined that the desert cymopterus conservation

cannot be assured without the participation in a conservation strategy by EAFB (BLM 1/23/02).

The locations on BLM and private lands make up only 3% of the species occurrences at 19 sites. Currently, BLM does not manage any areas for desert cympoterus conservation, although they do recognize the plants as BLM Sensitive and considers impacts under the NEPA process. The Cuddeback Lake Watershed locations (#18, #19 and #21) are classified as Multiple-Use Class (MUC) L (Limited) which "are managed to provide generally lower-intensity, carefully controlled multiple use of resources, while ensuring that sensitive values are not significantly diminished" (BLM 1980). The locations in Harper (#2, #4, #14, and #15), and Rogers (#16) Dry Lakes watersheds are all on BLM lands designated as MUC M (Moderate), which "provides for a wide variety or present and future uses such as mining, livestock grazing, recreation, energy and utility development." (CDCA 1980). It should be noted that location #1, in the Superior Valley was also in MUC M until the land was withdrawn from BLM jurisdiction and transferred to DOD jurisdiction as part of the Fort Irwin Expansion effort. Location # 6 occurs on BLM lands designated as MUC U (Unclassified) and may be subject to land exchange under this designation (BLM 1980). With regards to multiple uses that are permitted by the BLM in the areas where the locations occur, the Cuddeback Lake Watershed locations (#18, #19 and #21) occur within the Pilot Knob grazing allotment, that is currently not being grazed, and within an area designated as "potentially valuable for oil and gas" (BLM 1980). The Superior Valley (#1) is located within the active Superior Valley sheep allotment, where the current Standards and Guidelines for Rangeland Health are not being met due to OHV activity (BLM 1998). Harper Dry Lake locations #2 and #4 are outside of the Harper Lake grazing allotment, but where issues of trespass to the east (where the locations occur) has been problematic (BLM 1998). These same locations (#2 and #4) are within an area designated as "potentially valuable for oil and gas" (BLM 1980). Rogers Dry Lake location #16 is within the Buckhorn Canyon grazing allotment that has been excluded from grazing since 1991because of desert tortoise conflicts. Rogers Dry Lake #6 is located within the active Bissell sheep allotment, where impacts from sheep grazing have been noted in the past (see section Evidence of Threats to Survival A and D). This location is also within an area designated as "potentially valuable for oil and gas" (BLM 1980).

None of the private lands are managed for conservation of the desert cymopterus. Locations #7 through #13 are within a designated utility corridor (BLM 1980) that is jointly managed by local jurisdictions and the BLM. These locations are the result of surveys for a linear energy project. At least five pipelines (the All-American, the El Paso, the Mojave-Kern, the PGE and the Southern California Gas) are located within this right of way. Currently, the Kern River 2003 Expansion Project is also proposed to use this corridor, and desert cymopterus surveys for this project are to be performed this spring 2002. Location #17 is partially on private land where sheep grazing occurs.

Under current management in all jurisdictions, no mechanism for conservation of this species is in place.

Evidence of Threats to Survival

Summary of the status and threats of the five Factors in Section 4 of the ESA.

A. The present or threatened destruction, modification or curtailment of its habitat or range.

The southeastern range of the desert cymopterus, (locations #5 and #26 and Herbarium specimens JEPS 15950, Dudley 238095, Dudley 123287, and CAS 293115) have already been extirpated. Moe (1988) documented the Apple Valley location (#5 [Dudley 123287 and CAS 293115]) extirpated due to urbanization and OHV activities. The Rabbit Springs location from 1915 (#26 [JEPS 15950]) and Dudley 238095 have not been subsequently located, despite frequent collecting in the area (S. Boyd, personal communication) and are presumed extirpated.

In the Rogers Dry Lake watershed, one threat to a majority of the extant species occurrences (97%) is habitat alteration and destruction due to military activities on EAFB. Currently, this taxon is being impacted on EAFB by the cleanup of the Propulsion Directorate Plume of groundwater contamination (EAFB 1998) that underlies one of the documented study sites for desert cymopterus in the Tetra Tech report (1995). It is known to support 3,241 plants (approximately 20% of the total species population). The project includes the drilling and construction of five pumping wells on the cympoterus site and extraction of contaminated groundwater. An additional 10 -15 wells may be added later to facilitate water extraction. Once treated, the water will be diverted to evaporation ponds, not back into the aquifer. Effects of this massive change in hydrology and surface impacts to the habitat may imperil the persistence of this large population area, and effects were not evaluated for this species in the environmental documentation because it is not a listed species. Additionally, the draft INRMP (2001) fails to address any avoidance strategy, mitigation strategy or conservation strategy for activities that impact the desert cymopterus. This lack of any management or conservation strategy by EABF and ongoing projects that affect this species result in grave uncertainty of the future of populations on EAFB. Because EAFB is the core area for the desert cymopterus, this failure to assure conservation of the desert cymopterus jeopardizes the long-term survival of the desert cymopterus.

Grazing poses another documented threat in this watershed. While no scientific evidence about the effects of stock grazing on desert cymopterus is found in the literature, sheep grazing has been documented to have directly impact two sites. In 1991, all aboveground plant material was eliminated at location #6 (CNDDB 2002). Although grazing is not permitted on EAFB, a research study site for this species was entirely eliminated by trespass sheep in 1994 on EAFB (Bagley 1998). Harper Dry Lake locations #2 and #4, outside of the Harper Lake grazing allotment, are sites where issues of trespass have been problematic (BLM 1998). Additionally trampling/disturbance of the sandy soils and soil crusts (cryptobiotic soils) also disrupts the ecological processes of the habitat by altering water holding capacities, resistance to wind erosion and changing the composition of the plant taxa found within the community. The west side of highway 395 supports locations #6, and #8 through #13 on a patchwork of mostly private and some public lands, and all are grazed by sheep when enough forage is produced. East of 395, the Pilot Knob grazing allotment is

currently not grazed, and the base property owners are requesting permanent retirement of the allotment. Permanent retirement could be achieved through the West Mojave Plan, but is not guaranteed at this time. Under current management, the allotment could be grazed if the allotment was leased to another base property owner and an application was submitted to graze.

The single population in the Superior Dry Lake watershed is threatened with extirpation by the proposed expansion of Fort Irwin, where large-scale tank maneuvers will severely impact the taxon, its habitat and ecological processes. Congress passed legislation for the withdrawal of 134,592 acres of public lands for Department of Defense use in December 2001. The Army will be completing a supplemental Environmental Impact Statement/Environmental Impact Report (SEIS/EIR) by 2003. The Superior Valley will be part of the preferred alternative, based on public scoping meeting proposals presented on 2/19, 2002 in Riverside, California.

Utility construction has also impacted desert cymopterus and its habitat in the southern portion of the Harper Dry Lake watershed and the northern portion of Rogers Dry Lake in the BLM designated utility corridor and adjacent sites (Bagley 1998). Multiple projects include construction in utility corridors of transmission lines and pipelines (All American, El Paso, Mojave-Kern, PGE and Southern California Gas Company). Although avoidance measures were implemented, plants were impacted. No actual record of how many plants were impacted could be located, because no requirement for documentation was required under the NEPA/CEQA process. No mitigation other than avoidance occurred from these projects. Developments within the designated utility corridors that run through the desert cymopterus' range, like the Kern River Pipeline expansion, threaten the six locations (#7-#13) on private lands west of Kramer Junction between Highway 58 and EAFB. The re-alignment and widening of State Highway 58 also poses threats to the desert cymopterus habitat.

OHV impacts to desert cymopterus habitat in the Superior Valley have been documented by BLM's Rangeland Assessment process, where the current Standards and Guidelines for Rangeland Health are not being met due to OHV activity (BLM 1998).

The Cuddeback Lake Watershed locations (#18, #19 and #21) and Rogers Dry Lake #6 have increased potential for impact from oil/gas development, based on the nations increasing need for domestic sources of oil/gas.

Location #6 is also available for Land Tenure Adjustment, potentially sending another site out of public domain.

B. Overutilization for commercial, recreational, scientific or educational purposes

No commercial or recreation overutilization for the species is known at this time. Because of its extreme rarity, inappropriate collection for scientific or educational purposes could be a threat to the species. Rogers Dry Lake #6 has had impacts from four voucher specimen collections over five years.

C. Disease or predation

Grazing by sheep is a documented threat (see Section A). The plant is semi-succulent, which makes it attractive forage to a variety of animals. High levels of leaf predation have been observed in two studies on EAFB in areas not grazed by livestock (Bagley 1995, Charlton 1993b). Leaf herbivory has been noted at other sites as well (Bagley 1998, I. Anderson, pers. obs.). Predation is likely due to a variety of herbivores such as black-tailed jackrabbits, brush rabbits, ground squirrels, kangaroo rats, mice, desert tortoise, caterpillars, and beetles (Bagley 1998). Predation on this taxon appears to be preferential – above ground plant material is consumed while other surrounding annual and perennial species are not (I. Anderson, pers. obs.). No specific disease threats have been reported for this species.

D. The inadequacy of existing regulatory mechanisms

Although the plant occurs within the area being addressed by the West Mojave Coordinated Management Plan (WMP), which will function as a multi-species Habitat Conservation Plan (HCP) and section 7 consultation for the desert tortoise and other species within the planning area, the desert cymopterus is "dropped" (no longer included) because the species can not have a viable conservation strategy without military participation - "military assurances needed" (West Mojave Plan 1/23/2002). In order for an adequate conservation strategy to be assured, EAFB needs to guarantee a level of conservation. However, EAFB indicates that their "mission supremacy" bars them from 1) committing any long-term conservation of lands for the desert cymopterus, or 2) participating in the West Mojave planning effort. Additionally, the complete failure of their INRMP to address conservation needs for this species results in the desert cymopterus continuing to lack any meaningful conservation strategy, despite the fact that was a Category 1 candidate species prior to 1996 and that threats to the species are on the rise. Previous reliance on the West Mojave planning effort, as identified in the Federal Register notice of February 1996, to conserve this species is not longer a possibility.

Although the WMP effort is still in the pre-draft stages, the resulting HCP may result in no additional conservation for the desert cymopterus despite the fact that locations #2 through #4, #14 and #16 through #21 occur within the area proposed as the Fremont-Kramer and Superior – Cronese Desert Wildlife Management Areas (DWMA's) and locations #7 through #13 occur in an area proposed as the interim North Edwards Conservation Area (BLM 2001). Under the current proposal as of 3/6/02, these DWMA's and Conservation Area may limit (cap) development to 1% of the total area. However, these proposals do not guarantee the conservation of the desert cymopterus for several reasons:

1) Grazing, mining and alternative energies (solar and wind) are likely to be exempt from the disturbance limit within the DWMA's, so effectively there truly is no cap on development;
2) Signatory entities to the HCP may "opt out" of coverage of certain species, including the desert cymopterus. "Opting-out" could be advantageous to some of the signatories because, under current state and federal laws, there is no mandate to protect the desert cymopterus. This action will further shift the species toward jeopardy;

3) The interim North Edwards Conservation Area, which would provide some conservation for desert cymopterus locations # 7 through #13, is actually proposed to conserve the Barstow woolly sunflower (*Eriophyllum mohavense*), not the desert cymopterus. If no signatory requests "coverage" of for the Barstow woolly sunflower under the HCP, the interim North Edwards Conservation will not be implemented, and any conservation benefit to the desert cymopterus would not occur;
4) Because the DWMA's are conservation areas for the desert tortoise (*Gopherus agassizi*), locations of cymopterus within these areas may benefit from "tortoise" conservation. However, even with a 1% cap on disturbance, the acreage where the desert cymopterus occurs within the DWMA is around 800 acres (assuming that locations #2-4 and #20 occur on 100 acres, which is a generous acreage estimate based on known densities). Eight hundred acres is much less than the allowed development 1% cap allowed in the two DWMA's, so again, no real conservation goal is achieved for the desert cymopterus. Because many of the public lands occurrences are located in areas "potentially valuable for oil and gas" and within a designated utility corridor, significant impacts will occur to the desert cymopterus, despite being within the DWMAs..

Without a conservation strategy specifically for the desert cymopterus included in the West Mojave Plan, the other conservation strategies will not provide any assurances of species persistence. A conservation strategy based only on public/private lands (non-DOD lands) will jeopardize the desert cymopterus' existence as well, because populations on those lands only include 3% of the known plants.

EAFB recognizes that is has the largest number (97%) and most viable populations of desert cymopterus, but still neglects to develop a management plan, implement management actions, or seriously consider it under the NEPA process, as evidenced by the recent construction of water extraction pumps and evaporation ponds. EAFB currently provides no educational briefing and no signs/fencing indicating population boundaries. So even if troops wanted to avoid impacts to the species, they wouldn't be able to due to lack of diligence on the part of the EAFB to provide the pertinent information. The designated Critical Habitat for desert tortoise (USFWS 1994) on EAFB overlaps approximately (10) of the 67 surveyed polygons where desert cymopterus were found, including approximately 950 plants (Tetra Tech 1995). It does not overlap the densest desert cymopterus locations in the northeast section of EAFB. Tortoises require "sandy-gravel" (USFWS 1994), while the desert cymopterus is found in loose sandy soils in alluvial fans and basins or in swales or stabilized sand fields, or occasionally on sandy slopes. Finally, EAFB's total failure to address conservation needs for the desert cymopterus in the draft INRMP is capricious and negligent. If the populations on EAFB are not at least partially conserved, the continued persistence of the desert cymopterus will be jeopardized.

The desert cymopterus is not yet State listed. However, even if it were, State laws do not provide substantial protection from activities conducted by non-State agencies or landowners. After the Department of Fish and Game notifies a landowner that a State-listed plant grows on his or her property, State law requires only that the landowner notify the agency "at least 10 days in advance of changing the land use to allow salvage of such plant" (Chapter 1.5 ss 1913 of the Fish and Game code). Based on

the lack of knowledge about the transplantability of the desert cymopterus, state-listing would not guarantee the species survival.

E. Other natural or manmade factors affecting its continued existence

Its extremely limited distribution and relatively small numbers of individuals makes populations the desert cymopterus vulnerable to stochastic extinction. Significant recruitment appears to occur only occasionally, most likely influenced by climate, coupled with available seedbank reserves. Given the extreme irregularity under which these conditions may occur in the desert, ensuring that seed set occurs whenever biologically possible is essential to the continued survival of this species.

Bibliography:

Abrams, L.R. 1951. Illustrated Flora of the Pacific States, Vol III. Stanford University Press. Pp. 275

Bagley, M.
1991. Survey Results for Three Rare Mojave Desert Plants. Prepared for U.S. Fish and Wildlife Service, Ventura Office (contract # 11430-1-1780).
1998. Species Account – Desert Cymopterus. Prepared for West Mojave Coordinated Management Plan Team, 9 pgs.

Boyd, Steve. Personal Communication 3-19-02. Rancho Santa Ana Botanic Garden, Herbarium Curator.

Brandegee, T.S. 1915 *Cymopterus deserticola*. Univ. Calif. Publ. Bot. 6:168

Bureau of Land Management (BLM)
1980. California Desert Conservation Area Plan. 159 pgs.
1988. .California Desert District (CDD) Allotment Assessment Report – 8/5/98. 12 pgs.
2001. Updated West Mojave Records for desert cympoterus – 10/15/01. 5 pgs
2002. West Mojave Plan 1/23/02. Changes in Species Coverage under Incidental Take Permits. Handout to Task Group 1, January 23, 2002.Table 1.

California Department of Fish and Game 2002. Natural Diversity Data Base (CNDDB). RareFind Element Occurrence Reports.

California Native Plant Society (CNPS).
1978. Status Report for *Cymopterus deserticola*. Sacramento. 3 pgs.

2001. Inventory of Rare and Endangered Plants, Sixth Edition. Sacramento, CA. 388 pgs.

Charlton, Dave 1993. Characterization Study of Desert Cymopterus Populations, Edwards Air Force Base, California. Prepared by Computer Sciences Corp. for the Air Force Flight Test Center, Environmental Management Office, Edwards Air Force Base, CA.

Charlton, Dave. Personal Communication.

Constance L. 1993. Apiaceae. In : Hickman, J.C. (ed.) 1993. The Jepson Manual – Higher Plants of California. University of California Press, Los Angeles. Pp. 144-145

Dames and Moore. 1993. Mead/McCullough – Victorville/Adelanto Transmission Project, 1993. Sensitive Plant Survey Results for California. Prepared for the City of Los Angeles, Dept. of Water and Power, Los Angeles, CA.

Durham, David 1998. California's Geographic Names: A Gazetteer of Historic and Modern Names of the State.

Edwards Air Force Base (EAFB)
2001 Draft Edwards Air Force Base Integrated Natural Resources Management Plan (INRMP), August 2001.

2000 Record Report for Project # FSPM013145, August 9, 2000 2 pgs.

1998 Propulsion Directorate Plume Next in Line for Cleanup. In Report to Stakeholders. August- September 1998. Pgs.3 and 10.

ENSR Consulting and Engineering. 1989. Final Biological Baseline Report for the Luz SEGS XI and XII Project Area, Harper Lake, California. Prepared by ENSR, Ft. Collins, CO for Luz Finance and Development Corp., Los Angeles, CA.

Harris, Glenn. Personal Communication 1998. BLM Biologist, Ridgecrest Field Office.

Hartman, Ronald. Personal Communication. University of Wyoming, Laramie (Author of Cymopterus Section in the Flora of North America). February 2, 2002.

Mathias, Mildred E. Studies in the Umbelliferae. III. Ann. Missouri Bot. Gard. 17: 213-476.

Moe, L. Maynard 1988. California Native Species Field Survey Forms and Element Occurrence Evaluation Forms for *Cymopterus deserticola.* On file with the Natural Diversity Data Base. California Dept. of Fish and Game, Sacramento, CA

Smithsonian Institution. 1978. Interim Technical Report: Endangered and Threatened Plants of Edwards, Elgin and Tyndal AFB. Prepared for the U.S. Air Force under AFOSR contract F44620-75-C-0052. March 1978.

Tetra Tech, Inc. 1995. Inventory and Population Characterization Study of Desert Cymopterus on Edwards Air Force Base, California. December 1995.pgs. 67.

U.S. Fish and Wildlife Service (USFWS).

1994. Desert Tortoise (Mojave Population) Recovery Plan. Prepared for Regions 1,2 and 6 of the U.S. Fish and Wildlife Service, Region 1 – Lead Region, Portland, Oregon. June 1994. Pgs. 73 + Appendices.

1996. Endangered and threatened species: Notice of reclassification of 96 candidate taxa. Federal Register 61(40): 7457-7463. Feb. 28, 1996.

List of Herbarium Specimens

Herbarium	Number	Location	Collector	Date
University of California Berkeley	UC173143	Unknown	K. Brandegee	5/1/1913
University of California Berkeley	UC624106	Kramer	K. Brandegee	5/1913
University of California Berkeley	JEPS15950	Rabbit Springs, San Bernardino County	S. B. Parish	4/24/1915
California Academy of Sciences	Dudley 238095	Between Victorville & Deadman's Point, San Bernardino Co.	S.B. Parish	4/25/1915
California Academy of Sciences	Dudley 123287	5 mi. SE of Victorville, San Bernardino County	I.M. Johnston	5/17/1920
University of California Berkeley	UC566841	Muroc, Kern County	R. Hoerl	4/1/1932
Rancho Santa Ana Botanic Gardens	Pomona College 296427	N End of Muroc Dry Lake	L. Yaussy	5/2/1937
California Academy of Sciences	CAS 293115	5 mi. SE of Victorville, San Bernardino Co.	H.D. Ripley & R.C. Barneby	4/19/1941
University of California Berkeley	UC1083872	Kramer Station, San Bernardino County	M. E. Mathias	4/8/1957
University of California Berkeley	UC1179533	Kramer, San Bernardino County,	P. H. Raven	3/21/1958
California Academy of Sciences	Dudley 419782	1 mi. S of Kramer, San Bernardino Co.	P. H. Raven	3/21/1958
Rancho Santa Ana Botanic Gardens	LA County Museum of Natural History 470612	1.5 mi W on dirt road to fossil diggings off Claymine Rd.	C. Davidson	3/26/1973
Rancho Santa Ana Botanic Gardens	RSA 248687	1.5 mi W on dirt road to fossil diggings off Claymine Rd.	C. Davidson	3/31/1973
California Academy of Sciences	CAS 603590	1.5 mi. W on dirt road to fossil diggings off Claymine Rd., Boron Dry Lake region, 17 mi. E of Mojave, Kern Co.	C. Davidson	3/31/1973
Rancho Santa Ana Botanic Gardens	RSA 470613	1.5 mi. W on dirt road to fossil diggings off Claymine Rd.	R. Gufstafson	2/29/1976
University of California Berkeley	UC1549319	Cuddeback Lake, San Bernardino	M. A. Henry	3/30-4/13/1988
University of California, Riverside	UCR 114939	NE Harper Dry Lake, T11N, R3W, Sec 9, NW/4.	S. Dougherty	3/30/2000

No specimens at University of Las Vegas – Wes Niles, pers. comm.

APR-10-2002 10:17 FWS ECOLOGICAL SERV FAX NO. 3023210243 P. 19

Table 1. Known Mappable[1] Occurrences/Locations of *Cymopterus deserticola.*

LOCATION NUMBER	DATE	LOCATION	NOTES	WATERSHED	OWNERSHIP	REFERENCE
1	4/30/01	Superior Valley, W. of SBM, near boundary of China lake and Ft Irwin, within expansion area T31S, R47E, Sec.4	40 plants; Dave Silverman and Nancy Cione (no estimate of acreage)	Superior Valley	BLM/Pvt.	BLM 2001
2	4/23/01	6 mi. N. Hinkley, E of Hinkley Rd. T11N, R3W, Sec.22	50 plants; Jessica Walker (no estimate of acreage)	Harper Dry Lake	BLM	BLM 2001
3	4/?/2000	8 mi. N Hinkley, W of Hinkley Rd. T11N R3W, Sec.9	9 plants; Ed LaRue (no estimate of acreage) (UCR 114939)	Harper Dry Lake	Pvt.	BLM 2001
4	3/26/01	10 mi. N of Hinkley. E of Black Mtn. T12N R3W, Sec.35	1 plant; Jessica Walker (no estimate of acreage)	Harper Dry Lake	BLM	BLM 2001
5	04/19/41	5 mi. SE of Victorville along Highway 18 T5N, R3W, Sec. 17	Ripley & Barnaby on 305.4 acres (123.6 ha.) - Area Now Urbanized (CAS 293115 and Dudley 123287)	Apple Valley - Extirpated	Pvt.	NDDB 10
6	5/?/91	1.5 mi. W. of Clay Mine Rd. T11N, R8W, Sec.4	130 plants; Dave Charlton; on 3.1 acres (1.3 ha.); 6/91 Bagley found all plants eaten by sheep. (LACMNH470612, RSA248687, CAS603590, RSA 470613)	Rogers Dry Lake	BLM/Pvt.	NDDB9
7	5/6/91	Kramer Cemetery, 0.5 mi. S. of Hwy 58. T10N,R7W, Sec.2	Mark Bagley & Scott Hetzler; on approximately 5 acres (2 ha.) (Dudley4197827)	Rogers Dry Lake	DOD	NDDB1
8	4/23/91	NW of Kramer Junction, T10N, R7W, Sec. 2	10 plants; Dwerlkotte (no estimate of acreage)	Rogers Dry Lake	Pvt.	BLM 2001
9	4/23/91	NW of Kramer Junction, T10N, R7W, Sec. 4	2 plants; Dwerlkotte (no estimate of acreage)	Rogers Dry Lake	Pvt.	BLM 2001
10	4/23/91	NW of Kramer Junction, T10N, R7W, Sec. 5	34 plants; Dwerlkotte (no estimate of acreage)	Rogers Dry Lake	Pvt.	BLM 2001
11	4/23/91	NW of Kramer Junction, T10N, R7W, Sec. 6	1 plant; Dwerlkotte (no estimate of acreage)	Rogers Dry Lake	Pvt.	BLM 2001
12	4/23/91	NW of Kramer Junction, T10N, R8W, Sec. 1	1 plant; Dwerlkotte (no estimate of acreage)	Rogers Dry Lake	Pvt.	BLM 2001
13	4/23/91	NW of Kramer Junction, T10N, R7W, Sec. 2	1 plant; Dwerlkotte (no estimate of acreage)	Rogers Dry Lake	Pvt.	BLM 2001
14		2 mi. E of Harper Lake Rd.,	4 plants (1989), 19 (1990), 12 (1991); M.			

		5 mi. N of Hawes Airport, T10N, R4W, Sec.4	Bagley & S. Hetzler; on approximately 5 acres (2ha.).			
15	6/5/91	1.2 mi. E of Harper Lake Rd. T10N, R4W, Sec. 4	78 plants (1989), 15 (1990), 4 (1991); M. Bagley & S. Hetzler; on 30.3 acres (12.3 ha.).	Harper Dry Lake	BLM	NDDB15
16	3/26/87	1.5 mi. S. of Kramer Hills, T10N, R6W, Sec. 35	2 plants (1987), 0 (1988); Maynard Moe; on approximately 5 acres (2 ha.).	Rogers Dry Lake	Unk.	NDDB16
17	4/18/92	1 mi. N of NW end of Harper Lake, T12N, R4W	several dozen plants; Maynard Moe; on approximately 321 acres (130 ha.).	Harper Dry Lake	Unk.	NDDB17
18	4/13/88	1.2 mi. NE of N tip of Cuddeback Lake, T30S, R42E, Sec. 11	1 plant; Mary Ann Henry; on 9.7 acres (3.9 ha.). (UC1549319)	Cuddeback Dry Lake	BLM	NDDB18
19	3/30/88	2.5 mi. NE of N tip of Cuddeback Lake, T30S, R42E, Sec. 18	<10 plants; Mary Ann Henry; on 9.6 acres (3.9 ha.). (UC1549319)	Cuddeback Dry Lake	BLM	NDDB19
20	4/13/88	3 km. E of Cuddeback Lake, T30S, R43E, Sec. 18	15 plants; Mary Ann Henry; on 12.9 acres (5.2 ha.). (UC1549319)	Cuddeback Dry Lake	BLM	NDDB20
21	4&5/2001	NE of Cuddeback Lake, Pilot Knob Allotment, T29S, R43E, Sec. 12	>40 plants; Michael Connor (no estimate of acreage).	Cuddeback Dry Lake	BLM	BLM 2001
22	1995	Northwest Edwards AFB	180 plants on 11.87+ ha. at 7 sites	Rogers Dry Lake	DOD	Tetra Tech 1995
23	1995	Northeast Edwards AFB	12,548 plants on 574.8 ha. At 15 sites	Rogers Dry Lake	DOD	Tetra Tech 1995
24	1995	Southwest Edwards AFB	1,428 plants on 209.15 ha. At 32 sites	Rogers Dry Lake	DOD	Tetra Tech 1995
25	1995	Southeast Edwards AFB	127 plants on 27+ ha. At 12 sites	Rogers Dry Lake	DOD	Tetra Tech 1995
	1977	Edwards AFB, <.25 mi. E of Kern Co. line, T10N, R7W, Sec. 33 NW qtr.	very few plants (1977), 0 (1988); Heckard and Moe	Rogers Dry Lake	DOD	NDDB3 Included in 1995 studies above
	3/24/88	W of Rich Rd., T10N, R8W, Sec. 20, 21, 28 & 29	Very few plants (1977), 65 (1988); Maynard Moe	Rogers Dry Lake	DOD	NDDB4 Included in 1995 studies above
	3/18/88	SE corner of Rogers Lake, T9N, R9W, Sec. 3, NW Qtr.	Very few plants (1977), 18 (1988); Maynard Moe	Rogers Dry Lake	DOD	NDDB5 Included in 1995 studies above
	3/18/88	S end of Rogers Lake, T9N, R10W, Sec. 36, NW Qtr.	Very few plants (1977), 24 (1988); Maynard Moe	Rogers Dry Lake	DOD	NDDB6 Included in 1995 studies above
	3/18/88	SW end of Rogers Lake, 9N, 10W Sec. 23, E Half	Very few plants (1977), 0 (1988); Maynard Moe	Rogers Dry Lake	DOD	NDDB7 Included in 1995 studies above
	3/19/88	N end of Rogers Lake, T10N, R9W, Sec. 4	>1 (1937); 0 (1988); Maynard Moe	Rogers Dry Lake	DOD	NDDB8 Included in 1995 Studies above
		0.8 km W of Kern/San Bernardino				

APR-10-2002 TUE 03:10 PM FWS ECOLOGICAL SERV FAX NO. 5032310243 P. 21

		County lines; 3.5 km N or Kern/Los Angeles County lines. 9N, 7W, Sec. 20, S half.				1995 Studies above
	3/24/88	2 km E of Jackrabbit Hill, along road to Haystack Butte. 9N, 8W Sec. 25 W half.	54 plants (1981); 14 (1988); Maynard Moe	Rogers Dry Lake	DOD	NDDB13 Included in 1995 Studies above
26	4/24/15	Rabbit Springs	Unknown number of plants; S. B. Parish (JEPS15950)	Rabbit Springs	Pvt.	Herbarium specimen

[1] Voucher specimens UC173143, UC624106, Dudley238095, UC586841, PC296427, UC1083872, UC1179533 and Dudley419782 did not have specific location information to be point-mapped, however they all occur within the historic (mapped) range of the species.

APR-16-2002 TUE 09:18 AM FWS ECOLOGICAL SERV FAX NO. 5032310243 P. 22