5-YEAR REVIEW
Fresno Kangaroo Rat (*Dipodomys nitratoides exilis*)

GENERAL INFORMATION:

Species: Fresno Kangaroo Rat (*Dipodomys nitratoides exilis*)
Date listed: January 30, 1985
FR citation(s): 50 CFR 4222
Classification: Endangered

State Listing:
The Fresno kangaroo rat was listed as a rare species by the State of California on June 27, 1971, and reclassified as endangered on October 2, 1980.

BACKGROUND:

Most recent status review:

[Service]. 2010. Fresno Kangaroo Rat (*Dipodomys nitratoides exilis*). 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service, Sacramento Fish and Wildlife Office, Sacramento, California. 22pp.[CLICK HERE TO VIEW DOCUMENT].

FR Notice citation announcing this status review:

[Service]. 2019. U.S. Fish and Wildlife Service. Endangered and Threatened Wildlife and Plants: Initiation of 5-Year Status Reviews of 58 Species in California, Nevada, and the Klamath Basin of Oregon. Federal Register 84:36116-36118. [CLICK HERE TO VIEW DOCUMENT]

ASSESSMENT:

Information acquired since the last status review: This 5-year review was conducted by the U.S. Fish and Wildlife Service's (Service) Sacramento Fish and Wildlife Office. Data for this review were solicited from interested parties through a Federal Register notice announcing the review and the opening of a 60-day public comment period on July 26, 2019. The Service did not receive any comments regarding the Fresno kangaroo rat. We conducted a search for new and updated literature and conducted a review of our own files. We also requested data or information from the California Department of Fish and Wildlife, Service Refuge staff, academic researchers who study endangered and sensitive species in the San Joaquin Valley, as well as private consultants who monitor San Joaquin Valley kangaroo rats.

Species Information:
Kangaroo rats (Genus: *Dipodomys*) are small mammals in the family Heteromyidae which move rapidly by hopping on their hind legs (Bartholomew and Caswell 1951; Grinnell 1921). Kangaroo rats are adapted for bipedal locomotion, possessing elongated hind limbs, a long tail, a short neck and large head (Service 1985). San Joaquin kangaroo rats (*Dipodomys nitratoides*) are small compared to other kangaroo rats within their range. They have the smallest range of any kangaroo rat species in North America, occupying only the southern portion of the San Joaquin Valley (Patton *et al.* 2019),

and have four, rather than five, toes on their hind feet (Service 1998). The Fresno kangaroo rat (*Dipodomys nitratoides exilis*), one of three San Joaquin kangaroo rat subspecies, is currently listed as endangered under the Endangered Species Act (Act)(Service 1985; here we will refer to the Fresno kangaroo rat as a species for ease of reference). The Fresno kangaroo rat and the Tipton kangaroo rat (*Dipodomys nitratoides nitratoides*) occupy the eastern portion of the San Joaquin Valley; the Tipton kangaroo rat is also listed as endangered under the Act (Service 1985; Service 1988). The short-nosed kangaroo rat (*Dipodomys nitratoides brevinasus*), which occupies the western side of the Valley, is not federally-protected, but is a Species of Special Concern in the state of California (CDFW 2019).

There are currently no known, extant populations of Fresno kangaroo rat. The species has not been positively identified in the wild since 1992, when one male Fresno kangaroo rat was trapped at the Alkali Sink Ecological Reserve (Reserve) (Service 2010). Since that time, there have been several attempts to locate the Fresno kangaroo rat at the Reserve and surrounding area, but none have been successful (Cypher *in litt.* 2019; Halstead *in litt.* 2019; Halstead & Associates, 2017). Suitable habitats exist on private lands adjacent to Alkali Sink Ecological Reserve that have not been surveyed and it is possible that extant populations remain undetected (Cypher *in litt.* 2019).

Taxonomy:
As mentioned previously, the Fresno kangaroo rat is one of three recognized subspecies of the more widely spread San Joaquin kangaroo rat (*Dipodomys nitratoides*)(Best 1991). Comments received prior to the final listing in 1985 suggested that the Fresno kangaroo rat might not be a taxonomically valid entity, and therefore, listing would not be appropriate (Service 1985). Commenters maintained that the Fresno kangaroo rat might be the same subspecies as the Tipton kangaroo rat (Service 1985). However, there was no scientific evidence to support this claim, and the Service has maintained the position that it is a valid listable entity, based on the available scientific information (Service 1985; Service 1998; Service 2010).

A recent study has confirmed there are significant morphological differences which distinguish the three subspecies described above (Patton *et al.* 2019). The genetic relationship between the three taxa were also analyzed using available DNA, but results were inconclusive. Researchers were unable to find significant haplotype variation across the range of the San Joaquin kangaroo rat to determine sub-specific partitioning at the genetic level (Patton *et al.* 2019). Due to the limitations of sample size and molecular extraction techniques the genetic data neither confirm nor refutes the status of the three existing subspecies within the San Joaquin kangaroo rat lineage (Patton *et al.* 2019). Currently, evidence from morphological characteristics across the range of the San Joaquin kangaroo rat is strong enough to support the classification of three distinct subspecies (Patton *et al.* 2019). Based on available science during the time of this review, Fresno kangaroo rats and Tipton kangaroo rats are morphologically distinct and remain separate listable entities under the Act.

Conservation:
Recovery Permits
Recovery permits, also referred to as 10(a)(1)(A) permits, allow scientists to take listed species as a means to ultimately contribute to the recovery of the listed species. The data acquired from some actions covered under recovery permits (e.g., occurrence, abundance, distribution, etc.) allow the Service to make informed decisions for the species that will enhance their survival and recovery. Recovery permits can be issued for activities which directly aid the recovery of a species, such as captive breeding, reintroductions, habitat restoration, removal or reintroduction of threats, and educational programs. The Service's recovery permitting program aids in the conservation of listed

species by ensuring permittees have adequate field experience and qualifications for conducting activities with the target listed species and, for most species, ensures that permittees are following standardized protocols while surveying. The recovery permitting application process ensures that scientific proposals are crafted using the recommended actions laid out in the Recovery Plan for the target species. There is currently protocol level guidance for conducting Fresno kangaroo rat surveys: https://www.fws.gov/sacramento/es/Survey-Protocols-Guidelines/Documents/SFWO%20Final%20San%20Joaquin%20K-Rat%20Trapping%20Protocol-2013.pdf.

Recovery permits have been issued to conduct surveys in suitable habitat for the Fresno kangaroo rat (Cypher in litt. 2019; Halstead *in litt.* 2019; Halstead and Associates 2017); however, these surveys have all been negative.

Conclusion:
Although the species has not been seen in the wild since 1992, it is possible extant populations remain undetected on private land. Therefore, after reviewing the best available scientific information, we conclude that the Fresno kangaroo rat remains an endangered species. The evaluation of threats affecting the species under the factors in 4(a)(1) of the Act and analysis of the status of the species in our 2010 5-year review remains an accurate reflection of the species' current status.

RECOMMENDATIONS FOR FUTURE ACTIONS:

1. *Comprehensively survey and trap all remaining habitat within the range of the Fresno kangaroo rat and locate any remaining populations or population remnants:* Habitat exists within the range of the Fresno kangaroo rat which has not been comprehensively surveyed to confirm species' occupancy. Access has been denied to researchers on several large parcels of lands with appropriate habitat (Tennant pers. comm. 2019). Therefore, it is possible extant populations still exist on appropriate habitats which have not been surveyed and locating an extant population is imperative to the conservation of the species (Service 2010).

2. *Protect additional parcels of alkali sink scrub and grasslands within the Fresno kangaroo rat range (Service 1998); particularly any parcels on which Fresno kangaroo rats are discovered:* If a viable Fresno kangaroo rat population is located through trapping efforts (described above), protection and conservation of that population will be essential for the survival of the species. Some habitat within the range of the species has been protected with the establishment of the Alkali Sink Conservation Bank (Service 1998; Vance 2016). The Alkali Sink Conservation bank was established in 2016 on lands within the historical range of the Fresno kangaroo rat (Vance 2016). No Fresno kangaroo rats have been detected on site and no banking credits were issued for the species, but this bank could have valuable habitat appropriate for the species in the future.

3. *Captive breeding and relocation efforts:* If an extant Fresno kangaroo rat population is located, captive breeding and relocation efforts to protected habitats should be considered to reestablish populations throughout the range.

4. *Continue to manage protected alkali sink scrub habitat for Fresno kangaroo rats:* Habitat management is needed to maintain appropriate habitat for the Fresno kangaroo rat (Service 2010).

Field Supervisor, Sacramento Fish and Wildlife Office

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