

5-YEAR REVIEW

Fresno kangaroo rat (*Dipodomys nitratooides exilis*)

GENERAL INFORMATION

Species: Fresno kangaroo rat (*Dipodomys nitratooides exilis*)

Date listed: January 30, 1985

Federal Register (FR) citation: 50 FR 4222 (Service 1985)

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

Species overview:

Kangaroo rats are small fossorial rodents that eat seeds that they carry in fur-lined cheek pouches (Service 1985, p. 4223). Fresno kangaroo rats are the smallest of the three San Joaquin kangaroo rat (*Dipodomys nitratooides*) subspecies (Service 2010, p. 2) and have the smallest range (Service 2020a, p. 2). Fresno kangaroo rats historically reside on the alkali plains and open grasslands from Merced County to the northern border of Kings County, California (Service 2010, p. 2). They do not cache stores of seeds in larders like larger kangaroo rat species, and they forage throughout the year (Service 1998, p. 99). Heermann's kangaroo rats (*Dipodomys heermanni*), a co-occurring species, compete with San Joaquin kangaroo rats, and this competition may limit populations of the smaller Fresno kangaroo rat, particularly where space and resources are limited (Service 2020a, pp. 6–7; Tennant and Germano 2013, p. 262).

Most recent status review:

[Service] U.S. Fish and Wildlife Service. 2020b. 5-Year Review: Fresno kangaroo rat (*Dipodomys nitratooides exilis*). U.S. Fish and Wildlife Service, Sacramento, California. 6 pp.

We did not recommend a status change in the 2020 status review.

FR notice citation announcing this status review:

[Service] U.S. Fish and Wildlife Service. 2024. Endangered and Threatened Wildlife and Plants; Initiation of 5-Year Status Reviews for 59 Pacific Southwest Species. Federal Register 89:83510–83514.

We did not receive information from the public regarding Fresno kangaroo rat in response to the notice.

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 this review on October 16, 2024. In addition, we requested information regarding the status of the Fresno kangaroo rat from the California Department of Fish and Wildlife (Department) since the last known detection of the species was on lands owned and managed by the Department. We also performed a literature search, obtained data from an occurrence search of the California Natural Diversity Database (Diversity Database) maintained by the Department, and reviewed information from our own files, including a search for any 10(a)(1)(A) recovery permits and projects for which consultation under Section 7 of the Endangered Species Act has been initiated. There is limited new information about the subspecies since the last status review.

Distribution and abundance:

The last observation of a Fresno kangaroo rat in the wild occurred in 1992 when a male was trapped at the Alkali Sink Ecological Reserve (Service 2020a, p. 2). Across State Route 180 from the reserve is the Alkali Sink Conservation Bank, where the subspecies was last detected in 1981 and 1985 (Service 1998, p. 97). Small mammal trapping was last conducted at both sites in 2018, and only Heermann's kangaroo rats were detected (R. O'Leary, Department, *in litt.* 2025, pp. 1–2).

Extant populations of the Fresno kangaroo rat may exist on private lands adjacent to the Alkali Sink Ecological Reserve that have not been surveyed due to access constraints (Service 2010, p. 7; Service 2020b, p. 2). Three Diversity Database occurrences (#14, 20, and 21), known solely from museum records, are presumed extant in the Diversity Database but are likely extirpated due to conversion of the lands to agriculture prior to the subspecies' listing. The lands surrounding a fourth Diversity Database occurrence (#22), also known solely from a museum record, were mostly converted to agriculture, but some grassland habitat remains in the area where a population could persist (Diversity Database 2024, p. 13).

San Joaquin kangaroo rats were documented at two sites on Naval Air Station Lemoore (Lemoore), located in Kings and Fresno counties, in the 1980s (Lemoore 2014, Chapter 3, p. 47). It was unknown at that time if these were Fresno kangaroo rats, the closely related Tipton kangaroo rat (*Dipodomys nitratoides nitratoides*), or a hybrid of the two subspecies (Lemoore 2014, Chapter 3, p. 46). A later genetic and morphometric study indicates that these more closely resemble Fresno kangaroo rats (Colon 2021, p. 1; Patton et al. 2019, p. 12). Annual monitoring at one site, a former motocross site, from 2000 through 2013 estimated that the kangaroo rat population grew between 2000 and 2006 following vegetation management, including weeding and prescribed burning to remove nonnative plants and thatch, and seeding of desirable plant species (Colon 2021, p. 2). However, the population declined following a prolonged drought lasting until 2009 (Colon 2021, p. 2). The most recent trapping survey of the area in 2021 did not capture any kangaroo rats or identify signs of kangaroo rat presence, and biologists estimate that the habitat is low quality (Colon 2021, pp. 3, 5). If Fresno kangaroo rats occur outside of Lemoore, they are unlikely to recolonize the installation without active efforts to manage habitat for the species.

Approximately 9.5 miles southeast of where the Fresno kangaroo rats were captured at Lemoore and located off the installation at the intersection of Highway 41 and Jackson Avenue, there is suitable habitat with evidence of kangaroo rat use (Colon 2021, pp. 4–5). This area is located along the northern extent of the historical Tulare Lake Basin where there is uncertainty regarding the subspecies identification between Fresno and Tipton kangaroo rats (Patton et al. 2019, p. 2; Cypher 2025, pers. comm.). The lake basin may have formed the southern boundary of the Fresno subspecies' historical range (Patton et al. 2019, pp. 2, 12), although changes in the lake levels during drought periods may have allowed the Fresno and Tipton subspecies to intermingle (Cypher 2025, pers. comm.). The California Department of Transportation completed a construction project in 2013 at the intersection of Highway 41 and Jackson Avenue (Transportation 2018, p. 1). As part of their minimization measures (Service 2012, pp. 3–4), they trapped and relocated a single female San Joaquin kangaroo rat that was identified as the Tipton subspecies (Quad Knopf 2013, entire). The California Conservation Genomics Project has included the San Joaquin kangaroo rat, along with other kangaroo rat species, in their planned studies to understand regional diversity (Genomics Project 2025, entire). Results from these studies may better inform our understanding of the taxonomy of the occurrences in the area surrounding Lemoore.

Threats:

At the time of listing, the primary threat to the Fresno kangaroo rat was identified as habitat conversion to agriculture (Service 1985, p. 4223). Secondary threats included drought and competition with the Heermann's kangaroo rat, both of which likely contributed to extirpation of the subspecies in marginal habitat areas, and inappropriate livestock grazing (Service 1985, p. 4224). The 2010 status review identified the additional threats of illegal rodenticide use and climate change (Service 2010, p. 13). These threats continue to act on the habitat areas where Fresno kangaroo rats were previously detected.

Pesticides may also negatively impact the subspecies. The Environmental Protection Agency (Agency) released the final biological evaluations assessing the effects of labeled use of three neonicotinoid pesticides on listed species (Agency 2022a, entire; Agency 2022b, entire; Agency 2022c, entire). The three pesticides (clothianidin, imidacloprid, and thiamethoxam) are registered for use on a variety of agricultural crops; there are also some non-agricultural applications. The Agency's final biological evaluations determined that there is a potential for the three pesticides to adversely affect the subspecies (Agency 2022a, pp. 4, Appendix 4, p. 1; Agency 2022b, pp. 2, Appendix 4-1; Agency 2022c, pp. 3, Appendix 4, p. 1). Pesticides may directly impact Fresno kangaroo rats when consumed through treated seeds and invertebrates and indirectly impact the subspecies by reducing availability of invertebrate prey. The Agency anticipates releasing amended proposed interim decisions.

Recovery criteria:

Recovery criteria for downlisting and delisting the Fresno kangaroo rat are described in the Recovery Plan for Upland Species of the San Joaquin Valley, California (Service 1998, p. 182). Downlisting criteria for the Fresno kangaroo rat have not been met, thus, delisting criteria are not assessed here (Table 1).

Table 1. Downlisting criteria for Fresno kangaroo rat, status as of the 2010 5-year review (Service 2010, pp. 15–16), and current assessment.

Downlisting criteria	2010 Status	2025 Status
<p>1. Secure and protect from incompatible use all occupied habitat on public or conservation lands at three or more distinct sites, each no less than about 950 acres of useable habitat.</p>	<p>Not met.</p>	<p>Not met. The status remains as described in the 2010 status review (Service 2010, p. 15). Public or conservation lands on which the Fresno kangaroo rat has been known to occur include Lemoore, lands on which the Alkali Sink Conservation Bank was later established, and the Alkali Sink Ecological Reserve. The most recent genetic analyses indicate that the San Joaquin kangaroo rats detected at Lemoore were more likely to be the Fresno subspecies (Patton et al. 2019, p. 12). The subspecies was last detected in the Alkali Sink Conservation Bank area in 1985 and on the Alkali Sink Ecological Reserve in 1992. Useable habitat on these lands could contribute toward meeting this criterion if future studies and surveys verify that the subspecies occurs on these lands.</p>
<p>2. Management plans, approved by the Service, are implemented for all inhabited areas identified as important to continued survival. The plans include survival of the species as an objective.</p>	<p>Not met.</p>	<p>Not met. The management plan for the Alkali Sink Conservation Bank does not include objectives for Fresno kangaroo rat, so the plan does not contribute to meeting this criterion. The Alkali Sink Ecological Reserve does not have a current management plan (O’Leary <i>in litt.</i> 2025, p. 1). Lemoore has a management plan that includes managing lands for the subspecies (Lemoore 2014, Chapter 1, p. 15); however, since 2015, management activities have been limited and there have been discussions with installation managers, the Service, and the Department to end monitoring and management requirements (Colon 2021, p. 3). Without management, it is unlikely that habitat for the subspecies can be maintained on any publicly owned conservation lands.</p>
<p>3. Population densities in three or more populations do not fall below one kangaroo rat per acre and have a mean density of four or more per acre during one precipitation cycle.</p>	<p>Not met.</p>	<p>Not met. Currently, there are no known populations of the Fresno kangaroo rat.</p>

Conclusion:

After reviewing the best available scientific information, we conclude that the Fresno kangaroo rat remains an endangered subspecies. The evaluation of threats affecting the subspecies under the factors in 4(a)(1) of the Endangered Species Act and analyses of the status of the subspecies in our 2010 and 2020 status reviews remain an accurate reflection of the subspecies’ current status.

RECOMMENDATIONS FOR FUTURE ACTIONS

Here we propose habitat conservation and ecological research recommendations to aid in the recovery and conservation of the Fresno kangaroo rat. All but the first of these recommendations were discussed in our previous status review (Service 2020b, p. 3) and remain valid.

1. Prioritize genetic research and studies of any captured kangaroo rats in the Lemoore area near Highway 41 and Jackson Avenue and the northern edge of the historical Tulare Lake Basin to elucidate the taxonomic identity of San Joaquin kangaroo rats in this area and the boundaries of the Fresno and Tipton kangaroo rat subspecies ranges.
2. Continue land management activities at Lemoore to maintain suitable habitat and monitor for the Fresno kangaroo rat. Recolonization may occur if there are active efforts to manage habitat for the subspecies.
3. Comprehensively survey all remaining habitat within the range of the Fresno kangaroo rat, particularly areas that are adjacent to previously documented populations. Large parcels with suitable habitat have not been surveyed due to access constraints. Extant populations may exist on these lands and finding a population is critical if the subspecies is to recover.
4. If a viable population of Fresno kangaroo rats is located, protect and manage those parcels of occupied alkali sink scrub and grassland habitat. Consider developing a captive breeding and relocation program to reestablish populations throughout the range on other protected habitats.

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Approve _____ Date _____

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