

**Stephens' Kangaroo Rat**  
**(*Dipodomys stephensi*)**

**5-Year Review:**  
**Summary and Evaluation**



*Photo by Brendan Himelright, USFWS*

**U.S. Fish and Wildlife Service**  
**Carlsbad Fish and Wildlife Office**  
**Carlsbad, California**

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## 5-YEAR REVIEW

### Stephens' Kangaroo Rat (*Dipodomys stephensi*)

#### GENERAL INFORMATION

**Species:** Stephens' Kangaroo Rat (*Dipodomys stephensi*)

**Date listed under the Endangered Species Act:** September 30, 1988

**Federal Register citation:** Service 1988 (53 FR 38465)

**Classification:** Threatened

**Reclassified in 2022** (87 FR 8967)

**Recovery Plan:** Draft, June 23, 1997. Draft Recovery Plan for the Stephens' Kangaroo Rat.

**Recovery Priority Number:** 11 (Moderate degree of threat, low recovery potential, species).

#### BACKGROUND

Under the Endangered Species Act of 1973, as amended (Act; 16 U.S.C. 1531 *et seq.*), the U.S. Fish and Wildlife Service (Service), referred to as “we” in this document, maintain lists of endangered and threatened wildlife and plant species (referred to as the List) in the Code of Federal Regulations (CFR) at 50 CFR 17.11 (for wildlife) and 17.12 (for plants). Section 4(c)(2)(A) of the Act requires us to review each listed species' status at least once every 5 years.

**Most Recent Status Review:** Service 2021. Species Report for the Stephens' kangaroo rat (*Dipodomys stephensi*) Version 1.2. Prepared by the Carlsbad Fish and Wildlife Office, Carlsbad, California. xii + 121 pp.

We initiated the previous status review for Stephens' kangaroo rat on June 18, 2018 (Service 2018, entire). A species report was completed in 2020 and informed a proposed a downlisting to threatened status and our previous 5-year review. The species report was revised in 2021 and the downlisting rule published on February 17, 2022 (Service 2022, entire).

**Federal Register Notice Announcing this Status Review:** On October 16, 2024, we published a *Federal Register* notice announcing initiation of the 5-year review of this species, and the opening of a 60-day period to receive information (Service 2024, pp. 83510 – 83514). We received three comments regarding the Stephens' kangaroo rat.

**Species Overview and Habitat:** The Stephens' kangaroo rat is a small, nocturnal mammal and is considered medium in size for the *Dipodomys* genus (Bleich 1977, p. 1). The Stephens' kangaroo rat is described as having dusky cinnamon buff overfur, pure white underfur, and a white lateral line on the tail, with five toes present on the hind foot, a tail with a long black tuft that is 1.45 times the length of head and body (bicolored and crested), and several distinguishing cranial features (Ingles 1965, pp. 228–229; Bleich 1977, p. 1). Total external length is 10.9 to 11.8 inches (in) [277 to 300 millimeters (mm)] and adult body weight averages 2.37 ounces (oz) [67.26 grams (g)] (Bleich 1977, p. 1). There are no size differences (dimorphism) between sexes (Best 1993, p. 203).

The Stephens' kangaroo rat is primarily associated with open, annual grassland (O'Farrell and Uptain 1987, p. 44). Typical habitat consists of native and nonnative annual herbs [e.g., gold fields (*Lasthenia sp.*) and filaree (*Erodium cicutarium*)], and native and nonnative grasses [e.g., foxtail fescue (*Vulpea megalura*), great brome (*Bromus diandrus*), red brome (*B. madritensis* subsp. *rubens*), and wild oat (*Avena fatua*)] (Bleich 1973, p. 61; Bontrager 1973, p. 70; Service 1993, pp. 14–15). The Stephens' kangaroo rat is also found in sparse coastal sage scrub habitat where perennial species such as encelia (*Encelia farinosa*), coastal sagebrush (*Artemisia californica*), and California buckwheat (*Eriogonum fasciculatum*) occur (Moore-Craig 1984, p. 6, Table 2), with an average cover of about 9 percent (Moore-Craig 1984, p. 7), as well as on formerly cultivated land (Moore-Craig 1984, pp. 2, 5).

The Stephen's kangaroo rat appears to prefer intermediate seral stage (secondary succession) plant communities that are maintained by disturbance (e.g., fire, grazing, and agriculture) (O'Farrell 1990, p. 81); however, dense grasses are avoided and areas with high cover of nonnative grasses (e.g., *Bromus diandrus*) and forbs can exclude the Stephens' kangaroo rat from otherwise suitable habitat (O'Farrell 1990, p. 80; Service 1997, p. iii; Shier 2009, p. 4).

## ASSESSMENT

### Information Acquired Since the Last Status Review

This 5-year review was conducted by the Service's Carlsbad Fish and Wildlife Office. Data for this review were solicited from the public and interested parties through a *Federal Register* notice announcing this review on October 16, 2024 (Service 2024, pp. 83510–83514). We also contacted the U.S. Navy, U.S. Marine Corps, Riverside County Habitat Conservation Agency (RCHCA), Conservation Biology Institute (CBI), San Diego Zoo Wildlife Alliance (SDZWA), U.S. Geological Survey (USGS), Bureau of Land Management (BLM), the California Department of Fish and Wildlife (CDFW) (Region 6), and the Western Riverside County Regional Conservation Authority (WRC RCA), to request any data or information we should consider in our review. Additionally, we conducted a literature search and reviewed information in our files.

## SUMMARY OF NEW INFORMATION SINCE 2020

### Distribution and Abundance

Since the last species assessment in 2020 we received additional survey/monitoring reports as well as information from species experts. The results indicate the species and subsequent threats are still present at all known occurrences throughout the range. Table 1 below summarizes the updated occurrence names with the last year observed, with 19 occurrences that we consider extant or presumed extant. Occurrences were considered extant with observations within the past 10 years and presumed extant when the species had not been detected for over 10 years, but the habitat remained intact and was determined to be sufficient to support the species. The 19 occurrences identified in this assessment are not new areas identified since the latest status review in 2020, but some locations were grouped and renamed based on the suitable habitat modeled by CBI. CBI updated their habitat suitable model and estimates 237,855 acres (ac) [96,256 hectares (ha)] of total modeled habitat (Figure 1).

**Table 1. Current Status of the Stephens' Kangaroo Rat.**

County	Occurrences	Name from 2020 Assessment	Modeled Habitat (acreage)	Last Year Observed	Status of Occurrence
Riverside	Lake Perris	Lake Perris/San Jacinto	13,139	2023	Extant
Riverside	Sycamore Canyon and March AFB	Sycamore Canyon and March Air Force Base & March Preserve	4,028	2019	Extant
Riverside	Beaumont	<i>No equivalent name</i>	4,613	2013	Presumed Extant
Riverside	Banning	<i>No equivalent name</i>	2,040	2013	Presumed Extant
Riverside	Potrero Valley	Potrero Valley	2,157	2017	Extant
Riverside	San Jacinto Wildlife Area – Potrero Unit	<i>No equivalent name</i>	4,187	2023	Extant
Riverside	Arlington Heights	<i>No equivalent name</i>	217	2009	Presumed Extant
Riverside	Lake Mathews	Lake Mathews, Motte Rimrock, and Steele Peak	34,309	2023	Extant
Riverside	Warm Springs	<i>No equivalent name</i>	531	2011	Presumed Extant
Riverside	Canyon Lake	<i>No equivalent name</i>	162	2014	Presumed Extant
Riverside	Sun City	<i>No equivalent name<sup>1</sup></i>	1,142	2022	Extant
Riverside	Lake Skinner	Lake Skinner/Dominigoni Valley & Sage/Wilson Valley	71,113	2023	Extant
Riverside	Cahuilla Reservation	<i>No equivalent name</i>	11,982	2022	Extant
Riverside	Elder Creek	<i>No equivalent name</i>	440	2006	Presumed Extant
San Diego	Camp Pendleton	Camp Pendleton	7,094	2023	Extant
San Diego	NWS Fallbrook	Fallbrook and Naval Weapons Station Seal Beach Detachment Fallbrook	4,605	2023	Extant
San Diego	Warner Springs	Lake Henshaw/ Warner Springs	20,667	2023	Extant
San Diego	Rancho Guejito	Rancho Guejito	5,854	2020	Extant
San Diego	Ramona Grasslands	Ramona Grasslands	8,572	2022	Extant

<sup>1</sup> Potentially connected with Kabian Park (noted as “likely extirpated” in Service 2021, Table 1 and Figure 1, p. 5-7)

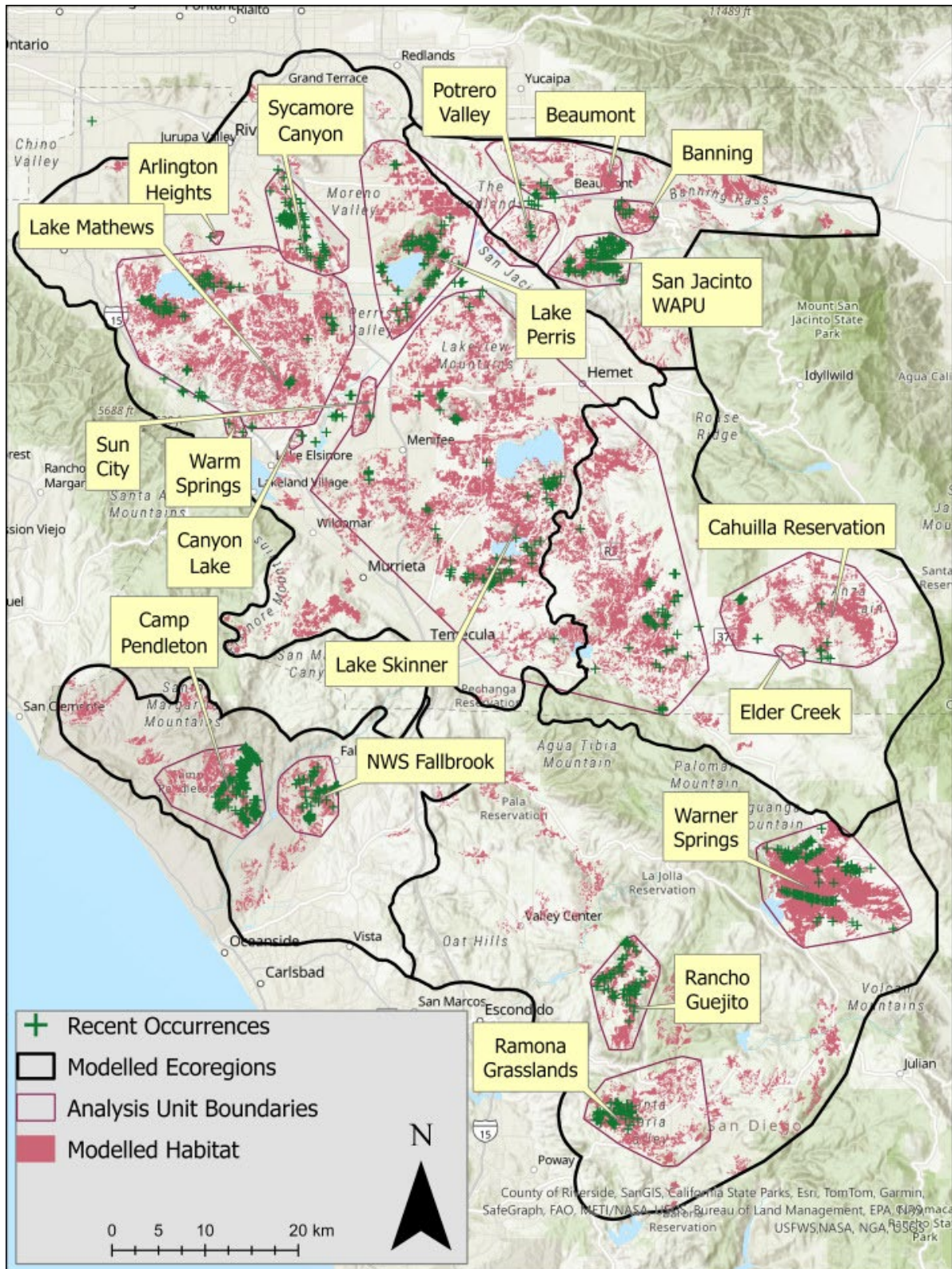


Figure 1. Modeled Habitat and Current Distribution of the Stephens' Kangaroo Rat. Recent Occurrences are observations from 2004 to 2023.

Abundance and trend data have been collected by RCHCA and analyzed by CBI as part of the rangewide monitoring effort for the prior 3 years starting in 2022 (Table 2; CBI 2025, entire). Preliminary results indicate that Stephens' kangaroo rats are more prevalent in preserves managed for the subspecies, however, abundance declines have been observed following high rainfall years (CBI 2025, p. 10). Heavy rainfall is thought to flood burrows and decrease habitat quality with an increase in dense grass. This results in a subsequent buildup of thatch and decreases the amount of bare ground that the species is shown to select for. Both findings indicate the importance of effective vegetation management to maintain Stephens' kangaroo rat abundance and distribution, especially after wet years. Over the past 3 years, density and occupancy have fluctuated, with abundance decreasing during the unusually wet 2023 season; occupancy and unique captures were observed to bounce back during the drier 2024 season. Occupancy ranged from 34.2 to 51.8 percent among randomly selected survey cells throughout the rangewide study.

**Table 2. Summary of 2022-2024 Stephens' Kangaroo Rat Rangewide Monitoring Results.<sup>2</sup>**

Statistic	2022	2023	2024
Total Sample Cells Surveyed	81	79	73
Revisits	-	48	44
New Sample Cells	-	31	29
Sample Cells with K-rat sign and trapped	55	34	42
Sample Cell with Confirmed SKR	42	27	32
Total Unique SKR Captures	160	81	187
Percent Occupancy	51.8	34.2	43.8
Max Captures per Cell	10	9	18
Average Unique Captures per Occupied Cell	3.8	3.0	5.8

<sup>2</sup>Table from the rangewide monitoring report created by CBI (2025, p. 3).

### Recent Conservation Efforts

Since the last status assessment in 2020, rangewide monitoring efforts spearheaded by RCHCA have continued and include surveys in areas where Stephens' kangaroo rat were previously reported as well as new discovery surveys informed by the CBI habitat suitability model. The survey efforts have also helped to refine the habitat suitability model that is used in the rangewide monitoring. CBI is planning for future translocation efforts to expand the current distribution and is evaluating the recently conserved (2020) Stallcup Preserve in San Diego County.

### Summary

The predominant threats described below still exist even with recent conservation successes that have occurred since the last status review in 2021. Ongoing threats include habitat fragmentation, habitat loss, habitat modification (conversion of native vegetation), habitat destruction (off highway vehicles (OHVs), nonnative ungulates, fire suppression), predation, rodenticides,

wildfire, and climate change impacts. These ongoing threats have limited recovery gains such that our understanding of the status of the species has not substantially changed. There are currently 19 occupied occurrences across the range, with an estimated 237,855 acres (ac) [96,256 hectares (ha)] of modeled habitat. Over the past 3 years, density and occupancy have fluctuated, with abundance decreasing during the unusually wet 2023 season which decreased bare ground. Occupancy and unique captures were observed to bounce back during the drier 2024 season when vegetation buildup was lower and more bare ground was available. Overall, occupancy of survey plots ranged from 34.2 to 51.8 percent across the 3 years surveyed.

## **Threats**

Current threats are consistent with threats described in the 2021 species report which included habitat fragmentation, habitat loss, habitat modification (conversion of native vegetation), habitat destruction (OHVs, nonnative ungulates, fire suppression), predation, rodenticides, wildfire, and climate change impacts. These threats act together to further reduce resiliency of these fragmented populations making continued management in the foreseeable future necessary.

## **Summary of Threats**

Many of the extant occurrences are conserved on properties managed to varying degrees by U.S. Navy, U.S. Marine Corps, RCHCA, BLM, County of San Diego, CDFW, and WRC RCA. Habitat fragmentation is becoming an increasingly important threat to monitor and manage, especially in the south where translocation efforts may be necessary to increase genetic diversity for long term sustainability of these occurrences (Shier *et al.* 2021, p. 11). Continued adaptive management with regards to Stephens' kangaroo rat habitat will be an important part of improving Stephens' kangaroo rat densities and occupancy in conserved areas to counteract reduction in bare ground caused by thatch buildup, especially with uncertain climatic futures. While there have been recovery successes lowering impacts of some threats, threats across the landscape have not substantially changed since the 2020 status review.

## **CONCLUSION**

When listed as endangered in 1988, there were roughly 15 geographical areas occupied by the Stephen's kangaroo rat, although 4 were not detected until after listing (Table 1; Service 1988, p. 51205). The efforts to manage and conserve habitat has been successful and have maintained occupancy at all occurrences since the last status review in 2020. The species is now extant or presumed extant at 19 occurrences based on rangewide survey efforts occurring between 2004 and 2023.

Continuing to monitor the genetic health of fragmented occurrences, especially in San Diego County, is an important metric to assess impacts from isolation and helps plan for any potential genetic rescues that may be needed in the future. The new information and updated occurrence status does not substantially alter the species' status or the results of our five-factor analysis in the 2020 assessment. Therefore, we conclude that Stephens' kangaroo rat remains a federally threatened species and recommend no change in listing status.

## RECOMMENDATIONS FOR FUTURE ACTIONS

The recommended actions listed below are to be initiated over the next 5 years to reduce threats to the Stephens' kangaroo rat. We recognize that conservation of this taxon will require cooperation and coordination with partners to minimize impacts from current threats and aid with future restoration efforts.

1. Coordinate with conservation organizations, and Federal, State, and private landowners to identify opportunities for conservation of habitat for the Stephens' kangaroo rat. This includes habitat restoration, ongoing management to address threats, discovery surveys, and the use of translocations to augment and reestablish populations where appropriate, particularly in San Diego County.
2. Coordinate with conservation organizations, and Federal, State, and private landowners to identify opportunities for conservation of habitat for the Stephens' kangaroo rat. This includes habitat restoration, ongoing management to address threats, discovery surveys, and the use of translocations to augment and reestablish populations where appropriate, particularly in San Diego County.
3. Increase collaboration on rangewide monitoring efforts and accessibility to help support the rangewide monitoring program, especially at locations in San Diego County.
4. Improve collaboration on appropriate vegetation management techniques where necessary, including grazing (conservation grazing vs intensive grazing) and prescribed burns to improve habitat quality while limiting potential negative impacts from these management tools.
5. Improve communication and collaboration between land managers in different jurisdictions to disseminate best management practices (For example, future translocation efforts), funding opportunities, or other useful findings that may be beneficial for recovery.
6. Continue genetic monitoring to evaluate the need for genetic rescue at known occupied occurrences to determine and track possible impacts from fragmentation and to inform any potential future translocation efforts.
7. Improve and/or establish relationships with private landowners in attempts to broaden the areas that can be potentially surveyed.

## REFERENCES CITED

- Best, T.L. 1993. Patterns of morphologic and morphometric variation in heteromyid rodents. Pp. 197–235 in *Biology of the Heteromyidae* [Genoways, H.H. and J.H. Brown, eds.]. Special Publication 10, The American Society of Mammalogists.
- Bleich, V.C. 1973. Ecology of rodents at the United States Naval Weapons Station Seal Beach, Fallbrook Annex, San Diego County, California. M.A. Thesis, California State University, Long Beach, California. 102 pp.
- Bleich, V.C. 1977. *Dipodomys stephensi*. *Mammalian Species* 73:1–3. Published by The American Society of Mammalogists.
- Bontrager, D.R. 1973. Rodent ecology of the Santa Rosa Plateau, Riverside County, California. M.A. Thesis, California State University, Long Beach, California. 123 pp.
- [CBI] Conservation Biology Institute. 2025. Stephens' Kangaroo Rat 2022-24 Monitoring Report to RCHCA Board. pp. 10.
- Ingles, L.G. 1965. *Mammals of the Pacific States; California, Washington, Oregon*. Stanford University Press, Stanford, California
- Moore-Craig, N.A. 1984. Distribution and habitat preference of Stephens' kangaroo rat on the San Jacinto Wildlife Area. Senior undergraduate thesis, University of California, Riverside, California.
- O'Farrell, M.J. and C.E. Uptain. 1987. Distribution and aspects of the natural history of Stephens' kangaroo rat (*Dipodomys stephensi*) on the Warner Ranch. San Diego Co., California. *Wasmann Journal of Biology* 45:34–48.
- O'Farrell, M.J. 1990. Stephens' kangaroo rat: natural history, distribution, and current status. Pp. 78–84 in *Endangered wildlife and habitats in southern California* [P.J. Bryant and J. Remington (eds.)]. *Memoirs of the Natural History Foundation of Orange County*, Newport Beach, California.
- Shier, D. 2009. Behavioral ecology and translocation of the endangered Stephens' kangaroo rat (*Dipodomys stephensi*): Annual Report for the period June 2008 to December 2008. San Diego Zoo Institute for Conservation Research, Escondido, California.
- Shier, D., Navarro, A.Y., Tobler, M., Thomas, S.M., King, S.N.D., Mullaney, C.B., Ryder, O.A. 2021. Genetic and ecological evidence of long-term translocation success of the federally endangered Stephens' kangaroo rat. *Conservation Science and Practice* 3:e478.
- [Service] U.S. Fish and Wildlife Service. 1988. *Endangered and Threatened Wildlife and Plants; Determination of Endangered Status for the Stephens' Kangaroo Rat*. Fish and Wildlife Service, Interior. Final Rule. September 30, 1988. *Federal Register* 53: 38465.

- [Service] U.S. Fish and Wildlife Service. 1993. Stephens' kangaroo rat study, Naval Weapons Station, Fallbrook Annex, San Diego County, California. Prepared for U.S. Navy Southwestern Division, Naval Facilities Engineering Command, San Diego, California. Dated July 1993.
- [Service] U.S. Fish and Wildlife Service. 1997. Draft recovery plan for the Stephens' kangaroo rat (*Dipodomys stephensi*). U.S. Fish and Wildlife Service, Region 1, Portland, Oregon. April 1997. 71 pp.
- [Service] U.S. Fish and Wildlife Service. 2021. Species Report for the Stephens' kangaroo rat (*Dipodomys stephensi*). Version 1.2, August 2021. U.S. Fish and Wildlife Service, Pacific Southwest Region, Sacramento, California. xii + 121 pp.
- [Service] U.S. Fish and Wildlife Service. 2022. Reclassification of Stephens' Kangaroo Rat from Endangered To Threatened With a Section 4(d) Rule; February 17, 2022. Federal Register 89: 83510-83514.
- [Service] U.S. Fish and Wildlife Service. 2024. Endangered and Threatened Wildlife and Plants; Initiation of 5-year Status Reviews of 59 Pacific Southwest Species; October 16, 2024. Federal Register 85: 50991–51006.

**FIELD OFFICE APPROVAL**

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Approved

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