

Area	De Tour	Gros Cap	Any harbor
Harbor Movage	N/A	N/A	998

(c) Area 8 (Undesignated Waters):

Service	Lake Superior
Six-Hour Period	\$608
Docking or Undocking	578

§ 401.420 [Amended]

- 5. In § 401.420—
 - a. In paragraph (a), remove the text “\$119” and add, in its place, the text “\$127”; and remove the text “\$1,867” and add, in its place, the text “\$1,989”;
 - b. In paragraph (b), remove the text “\$119” and add, in its place, the text “\$127”; and remove the text “\$1,867” and add, in its place, the text “\$1,989”; and
 - c. In paragraph (c)(1), remove the text “\$705” and add, in its place, the text “\$751”; and in paragraph (c)(3), remove the text “\$119” and add, in its place, the text “\$127”, and remove the text “\$1,867” and add, in its place, the text “\$1,989”.

§ 401.428 [Amended]

- 6. In § 401.428, remove the text “\$719” and add, in its place, the text “\$766”.

Dated: August 11, 2010.

Dana A. Goward,

Acting Director, Marine Transportation Systems Management, U. S. Coast Guard.

[FR Doc. 2010-20544 Filed 8-16-10; 4:15 pm]

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DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[Docket No. FWS-R8-ES-2010-0052; 92220-1113-0000C5]

Endangered and Threatened Wildlife and Plants; 12-Month Finding on a Petition To Remove the Stephens’ Kangaroo Rat From the Federal List of Endangered and Threatened Wildlife

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Notice of 12-month petition finding.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), announce a 12-month finding on a petition to remove the Stephens’ kangaroo rat (*Dipodomys stephensi*) from the Federal List of Endangered and Threatened

Wildlife under the Endangered Species Act of 1973, as amended. After a review of the best available scientific and commercial information, we find that delisting the Stephens’ kangaroo rat is not warranted at this time. However, we ask the public to submit to us any new information that becomes available concerning the threats to the Stephens’ kangaroo rat or its habitat at any time. This information will help us monitor and encourage the conservation of this species.

DATES: The finding announced in this document was made on August 19, 2010.

ADDRESSES: This finding is available on the Internet at <http://www.regulations.gov> at Docket Number FWS-R8-ES-2010-0052. Supporting documentation we used in preparing this finding is available for public inspection, by appointment, during normal business hours at the U.S. Fish and Wildlife Service, Carlsbad Fish and Wildlife Office, 6010 Hidden Valley Road, Carlsbad, CA 92011. Please submit any new information, materials, comments, or questions concerning this finding to the above street address.

FOR FURTHER INFORMATION CONTACT: Jim Bartel, Field Supervisor, Carlsbad Fish and Wildlife Office (*see ADDRESSES*); by telephone at 760-431-9440; or by facsimile at 760-431-9624. If you use a telecommunications device for the deaf (TDD), please call the Federal Information Relay Service (FIRS) at 800-877-8339.

SUPPLEMENTARY INFORMATION:

Background

Section 4(b)(3)(B) of the Endangered Species Act of 1973, as amended (Act; 16 U.S.C. 1531 *et seq.*), requires that, for any petition to revise the Federal List of Endangered and Threatened Wildlife and Plants that contains substantial scientific or commercial information that delisting the species may be warranted, we make a finding within 12 months of the date of receipt of the petition. In this finding, we will determine that the petitioned action is: (1) Not warranted, (2) warranted, or (3)

warranted, but the immediate proposal of a regulation implementing the petitioned action is precluded by other pending proposals to determine whether species are endangered or threatened, and expeditious progress is being made to add or remove qualified species from the Federal List of Endangered and Threatened Wildlife and Plants. Section 4(b)(3)(C) of the Act requires that we treat a petition for which the requested action is found to be warranted but precluded as though resubmitted on the date of such finding, that is, requiring a subsequent finding to be made within 12 months. We must publish 12-month findings in the **Federal Register**.

Previous Federal Actions

We listed Stephens’ kangaroo rat as endangered on September 30, 1988 (53 FR 38465). We published a draft recovery plan for the Stephens’ kangaroo rat on June 23, 1997 (62 FR 33799; Service 1997, pp. 1-71), but it has not been finalized. The draft recovery plan provides recovery guidance and a benchmark for delisting the species (Service 1997, p. 53), consisting of:

- (1) Establishment of a minimum of five reserves, one of which is ecosystem-based, in western Riverside County, California, that encompass at least 6,675 hectares (ha) (16,500 acres (ac)) of occupied habitat that are permanently protected, funded, and managed; and
- (2) Establishment of two ecosystem-based reserves in San Diego County, California, one in the Western Conservation Planning Area and one reserve in the Central Conservation Planning Area, which are permanently protected, funded, and managed.

Neither criteria have been met at this time. Discussion of the criteria and their applicability are discussed in the *Recovery Planning and Implementation* section below.

On May 1, 1995, we received a first petition, dated April 26, 1995, from the Riverside County Farm Bureau (RCFB) requesting that the Stephens’ kangaroo rat be removed from the Federal List of Endangered and Threatened Wildlife (in other words, delisted) under the Act.

The petition included supporting information stating that there were original data errors and that the assumptions used by the Service resulted in underestimating the numbers and range of the species and overestimating the amount of habitat lost. We acknowledged the receipt of the petition in a letter to the RCFB, dated June 12, 1995. On August 13, 1997, the RCFB sent us an inquiry regarding the status of the delisting petition and requesting clarification as to whether we had the funds or staff to respond with a 90-day finding on the petition. We sent a letter to the RCFB on August 26, 1997, stating that we were unable to review the petition and publish our 90-day finding due to limited resources. We also provided the RCFB with additional information concerning our Listing Priority Guidance for Fiscal Year 1997.

On February 25, 2002, we received a second petition from Mr. Robert Eli Perkins, without reference to his affiliation, dated February 22, 2002, to delist the Stephens' kangaroo rat. We sent a letter acknowledging the receipt of the second petition to Mr. Perkins on August 6, 2002. The second petition was nearly identical to the petition submitted by the RCFB in 1995, in that the 2002 petition provided the same information and requested the same action. We treated the second petition as a re-submittal of the first petition rather than a formal second petition.

On April 21, 2004, we announced our 90-day finding that the petition presented substantial information to indicate that the petitioned action may be warranted (69 FR 21567), and we initiated a status review of Stephens' kangaroo rat under section 4(b)(3)(A) of the Act. We also announced our

intention to complete a 5-year review of the status of the species as required under section 4(c)(2)(A) of the Act. We requested scientific and commercial data and other information regarding the status of and threats to Stephens' kangaroo rat.

The Riverside County Farm Bureau filed a complaint on December 14, 2009 (CV 09-09162 CBM (OPx)) citing our failure to publish a 12-month finding on their petition to delist Stephens' kangaroo rat. We reached a settlement agreement with the plaintiffs on May 7, 2010, in which we agreed to submit to the **Federal Register** a 12-month finding on the plaintiff's petition by July 30, 2010.

This notice constitutes the 12-month finding on the February 25, 2002, petition (which we treated as a re-submittal of the May 1, 1995, petition) to delist the Stephens' kangaroo rat.

Species Information

Species Description and Taxonomy

Stephens' kangaroo rat (*Dipodomys stephensi* Merriam) is a small, nocturnal mammal. Kangaroo rats are more closely related to squirrels than mice or rats and constitute a distinct group of rodents belonging to the family Heteromyidae. Kangaroo rats are burrow-dwelling, seed-eating animals that inhabit arid and grassy habitats in western North America. They are characterized by furred, external cheek pouches used for transporting seeds; large hind legs for rapid, bi-pedal, saltatorial (leaping) locomotion; relatively small front legs; long tails; and large heads.

Stephens' kangaroo rat was first described as *Perodipus stephensi* based on a specimen collected near Winchester, Riverside County, California (Merriam 1907, p. 78). As part

of a major study of kangaroo rats in California, Grinnell (1919, p. 203; 1922, p. 7) found no good grounds for retaining the genus *Perodipus*. As a consequence of these findings, Grinnell (1921, p. 95) published the currently recognized name *Dipodomys stephensi*. The Integrated Taxonomic Information System (ITIS 2010, TSN 180247) and more recent checklists continue to recognize *Dipodomys stephensi* as a distinct species (Baker *et al.* 2003, p. 13; Bisby *et al.* 2010).

Geographic Range and Status

Stephens' kangaroo rat typically occurs at lower elevations in flat or gently rolling grasslands of the dry inland valleys west of the Peninsular Ranges of southern California, in western Riverside and northern and central San Diego Counties (Grinnell 1922, p. 67; Lackey 1967a, p. 315; Bleich 1973, p. 46; Bleich and Swartz 1974, pp. 208-210; O'Farrell *et al.* 1986, pp. 187-189; O'Farrell and Uptain 1989, p. 1; Pacific Southwest Biological Services, Inc. 1993, pp. 4-36; Ogden Environmental and Energy Services Co, Inc. (Ogden) 1997, p. 3). This historical range is small for rodents in general, and particularly for kangaroo rats (Price and Endo 1989, p. 294). At the time of listing in 1988, the Stephens' kangaroo rat's geographic range was reported as encompassing the Perris, San Jacinto, and Temecula Valleys in western Riverside County (Temecula Valley was mistakenly reported as located in San Diego County), and the San Luis Rey Valley in San Diego County (53 FR 38465). At listing, Stephens' kangaroo rat was known from 11 general areas, and, currently, Stephens' kangaroo rat is found in 15 areas (*see* Table 1 below).

TABLE 1—GEOGRAPHICAL AREAS OF KNOWN STEPHENS' KANGAROO RAT POPULATIONS AT LISTING (1988) AND AT PRESENT (2010)

	At listing	At present
Riverside County		
Kabian Park	known	considered nonviable.
Lake Mathews/Estelle Mtn	known	extant.
Lake Skinner/Domenigoni Valley	known	extant.
Motte Rimrock	known	extant.
Potrero Valley	known	extant.
San Jacinto/Lake Perris	known	extant.
Steele Peak	known	extant.
Sycamore Canyon/March Air Force Base (AFB)*	known	extant, Sycamore Canyon portion considered nonviable.
Corona/Norco	unknown	considered nonviable.
Anza/Cahuilla (i.e., Silverado Conservation Bank)	unknown	extant.
San Diego County		
Lake Henshaw	known	extant.

TABLE 1—GEOGRAPHICAL AREAS OF KNOWN STEPHENS' KANGAROO RAT POPULATIONS AT LISTING (1988) AND AT PRESENT (2010)—Continued

	At listing	At present
Ramona Grasslands	unknown	extant.
Rancho Guejito	unknown	extant.
MCBCP (Camp Pendleton)	known	extant.
Fallbrook	known	extant.

* The SKR Management Area on the former March AFB is not a reserve at this time (2010).

Populations of Stephens' kangaroo rat continue to persist in areas throughout the species' native range, despite fragmentation. Since listing, additional populations have been found near Corona/Norco and Anza/Cahuilla (*i.e.*, Silverado Conservation Bank) in western Riverside County, and Rancho Guejito and Ramona Grasslands in San Diego County, extending distribution records to the northwest, east, and south of areas known at the time of listing (Montgomery 1990, p. 3; Montgomery 1992, p. 3; Pacific Southwest Biological Services, Inc. 1993, pp. 4–39; Ogden 1997, p. 11). Although discovered after listing, it is likely the four additional populations were extant at the time of listing and were detected as a result of more focused surveys and consultations subsequent to listing. The populations identified after 1988 (subsequent to our listing of the species) are located near the periphery of the Stephens' kangaroo rat's known range at the time of listing and are considered new records of occurrence and not a range expansion of the Stephens' kangaroo rat.

To date, no rangewide assessment has been conducted to estimate the population size and indices of abundances (*e.g.*, minimum number alive index for Stephens' kangaroo rat across the species' range). Surveys for Stephens' kangaroo rat necessary to derive useful population estimates are difficult to conduct due to their nocturnal habits and limited time above ground (see Biology section below). In fact, very few studies have focused on the distribution of habitats and populations throughout the animal's range (Thomas 1975, p. 1; O'Farrell and Uptain 1989, p. 1), and much of the distributional information is in the form of unpublished presence or absence survey reports at particular sites from short-term live-trapping studies provided to landowners or public agencies (Price and Endo 1989, p. 294). More recent information has come from localized area-specific survey reports such as from Anza/Cahuilla and Potrero Valleys (Western Riverside Multiple Species Habitat Conservation Plan Biological Monitoring Program, April 2009). Because live-trapping

methodologies vary and result in different capture probabilities, survey results across studies are difficult to interpret in terms of population estimates. However, such methodologies are useful for determining occupied habitat and detecting changes in species distribution.

Suitable Stephens' kangaroo rat habitat has been mapped and categorized using a variety of different classification schemes, including categories such as occupied, potentially occupied, and probably occupied. Although mapping of "occupied" habitat has been the most common method used for assessing the status of Stephens' kangaroo rat, it can be problematic, as not all areas have been mapped, and most areas have not been mapped over time to obtain information about trends in the extent of habitat occupied. More detailed and consistent survey information is needed to determine useful accurate and defensible estimates of populations and demographic trends for the Stephens' kangaroo rat rangewide (Diffendorfer and Deutschman 2003, p. 6).

For this 12-month status review and finding, we identified all areas occupied by Stephens' kangaroo rat at any point in time since the species was listed in 1988. Characterizations of these areas form the basis of our understanding of the known distribution of extant occurrences of Stephens' kangaroo rat throughout its range. We refer to these areas collectively as the "baseline Stephens' kangaroo rat occupied habitat" throughout this finding. The total baseline Stephens' kangaroo rat occupied habitat mapped for Riverside and San Diego Counties is 22,221 ha (54,909 ac). We consider this to be the most current and best available scientific information regarding the known distribution of occurrences and habitat of Stephens' kangaroo rat throughout the species' range. In the past, when conducting habitat and mapping exercises we have used a 100-meter grid to delineate habitat. Because of improved mapping techniques, for this baseline occupied habitat exercise, we mapped the areas as accurately as possible by more directly approximating

the delineation of habitat areas rather than using a 100-meter grid to map habitat areas. We also digitized current data and information available to us from survey monitoring reports not previously available. We acknowledge that, due to varied mapping precision and accuracy, as well as data and resource constraints, there may be discrepancies between this and previous habitat acreage assessments.

Biology

Stephens' kangaroo rat constructs burrows to serve as sleeping quarters and nesting sites (Bleich 1973, p. 73). Burrows of Stephens' kangaroo rat are frequently found clustered in burrow complexes (Brock and Kelt 2004, p. 52). Burrow depths range between 23 and 46 centimeters (cm) (9 and 18 inches (in)), and multiple burrow openings may be adjoined. Burrow complexes consist of a network of tunnels connecting multiple entrances (Thomas 1975, p. 38; O'Farrell 1990, p. 78), with tunnel pathways corresponding to surface runways (O'Farrell and Uptain, 1987, p. 34). Individuals typically emerge from their burrows after sunset; they may be active at any time of night. However, O'Farrell (*pers. comm.* 1986) has observed that Stephens' kangaroo rats spend very little time (less than 1 hour) above ground each day and, when they are above ground, they move quickly between points.

Kangaroo rats, including Stephens' kangaroo rat, are primarily granivores (seed-eaters) and when above ground, spend most of their time moving about the surface, alternating between periods of locomotion with stops to extract seeds. Seeds are extracted from the soil by digging with their forefeet and balancing on their hind legs (Reichman and Price 1993, p. 541), by direct clipping of seed stalks and extracting seeds from the felled seed heads of fruit (Reichman and Price 1993, p. 542), or by harvesting seeds directly from fruit that lie within 15 to 20 cm (5.9 to 7.9 in) of the ground (Reichman and Price 1993, p. 543). Stephens' kangaroo rats often store large quantities of seeds, which they initially collect in their external cheek pouches and then transfer and

bury in burrows or surface caches for later consumption (Reichman and Price 1993, p. 543; Goldingay *et al.* 1997, p. 49). Seed caching may enable species of *Dipodomys* to survive during temporary shortages of food (Reichman and Price 1993, p. 543) or extreme seasonal fluctuations in food availability (Morgan and Price 1992, p. 2260). Although seeds are their primary food source, green vegetation and insects appear to be important seasonal food and water sources (Reichman and Price 1993, p. 540). Surface activity for Stephens' kangaroo rat changes through the year, reflecting seasonal rainfall and subsequent vegetative productivity (O'Farrell and Clark, 1987, p. 10). Previous studies on Stephens' kangaroo rat indicate that late spring to early summer breeding results in peak population recruitment in August (Lackey 1967b, p. 625; Bleich 1977, p. 1; O'Farrell and Clark 1987, p. 11).

The average litter size for the Stephens' kangaroo rat ranges from 2.7 to 2.8 individuals (Lackey 1967b, p. 625; Price and Kelly 1994, p. 815). The timing of breeding for Stephens' kangaroo rat is highly variable, with reproduction likely triggered by the growth of vegetation subsequent to winter rain (McClenaghan and Taylor 1993, pp. 642–643; Price and Kelly 1994, p. 813). Studies on Stephens' kangaroo rat indicate a late spring to early summer breeding season (Bleich 1977, p. 1; McClenaghan and Taylor, p. 636), although females on occasion may remain reproductive until late fall as long as food resources are adequate (McClenaghan and Taylor 1993, pp. 642–643; Price and Kelly 1994, p. 813). Observations suggest the possibility for multiple litters during favorable conditions (O'Farrell and Clark 1987, p. 11).

Studies have estimated average Stephens' kangaroo rat survivorship in the wild to be between 4.5 to 6.6 months, with some individuals living for as long as 19 months (McClenaghan and Taylor 1991, p. 12; Price and Kelly 1994, p. 815). However, these estimates are probably low due to the limited timeframe of the studies and the inability to distinguish between actual mortality and emigration. Adults appear to have higher survival rates than subadults.

Home ranges for Stephens' kangaroo rat vary according to physical habitat features, season, food availability, population density, and gender. Efforts to characterize the home range size or movements of Stephens' kangaroo rat have primarily relied on live trapping (Thomas 1975, p. 7), or a combination of live trapping and radio telemetry, to

characterize movement patterns (Kelly and Price 1992, p. 4; Price *et al.* 1994b, p. 931). Estimates for mean home ranges within a population vary between 0.02 and 0.13 ha (0.05 and 0.32 ac) (Thomas 1975, p. 49; Kelly and Price 1992, pp. 19–20). Home ranges generated from live-trapping data are likely to be underestimates for this species (Kelly and Price 1992, p. 12), because the presence of live traps likely changes how the Stephens' kangaroo rat moves within its home range.

Stephens' kangaroo rat is generally considered highly sedentary (Price *et al.* 1994b, p. 935), but in one instance, Price *et al.* (1994b, pp. 933–935) recorded an individual moving over 1.0 km (0.6 mi) between trapping grids. The median maximum distance moved by Stephens' kangaroo rat individuals between capture sites was within 29 m (96 ft) of the initial point of capture, with 18 m (58 ft) as the median distance moved between the first and last monthly home-range center (for individuals captured in 2 or more months). Juveniles and adults were found to maintain a home-range center of 30 m (98 ft) (Price *et al.* 1994b, p. 935). Males are more mobile than females, and lactating females are especially sedentary; dispersal distances are similar for adults and juveniles. O'Farrell (1993, p. 12) found that 40 percent of the population was mobile at any one time and, in contrast to Price *et al.* (1994b, pp. 933–935), observed some movements in excess of 396 m (1,300 ft) (O'Farrell 1993, p. 66). Dispersal distances are usually less than 500 m (1,641 ft) (Price *et al.* 1994, p. 936).

Habitat and Ecosystem

General habitat conditions for Stephens' kangaroo rat are described in the literature (Bleich 1977, p. 8; Lackey 1967, p. 331; Price *et al.* 1991, p. 180; Goldingay and Price 1997, p. 715; Service 1997, pp. 9–11). Studies have variously characterized habitat occupied by this species as “sparse vegetation, level or rolling topography, and soil that is neither extremely dense nor largely sand” (Lackey 1967, p. 318) or as consisting of annual grasslands with sparse cover of perennial shrubs (Price and Endo 1989, p. 294). The term “grassland” is a generalization of this species' preferred vegetation community; the Stephens' kangaroo rat appears to have a higher affinity for vegetation communities dominated by herbaceous plants (forbs) with a low density of grasses than for a vegetation community dominated by grasses (O'Farrell and Clark 1987, p. 10; O'Farrell and Uptain 1987, p. 9).

Stephens' kangaroo rat prefers grassland communities dominated by forbs rather than by annual grasses, as annual forbs provide critical greens in the spring, furnish temporary cover, produce large seeds, and rapidly disintegrate after drying, resulting in substantial patches of bare ground (O'Farrell and Uptain 1989, p. 7; O'Farrell and Clark 1987, p. 10) that provide suitable conditions for the species' specialized mode of locomotion (Bartholomew and Caswell 1951).

Stephens' kangaroo rat reaches its highest densities in grassland communities dominated by forbs and characterized by moderate to high amounts of bare ground, moderate slopes, and well-drained soils (O'Farrell and Uptain 1987, pp. 35, 36; O'Farrell 1990, p. 80; Anderson and O'Farrell 2000, p. 12). Stephens' kangaroo rat has been found on 36 types of well-drained soils, and more than 125 soil types (Service 1996, p. 6) that are capable of supporting annual grasses mixed with forbs and shrub species.

Genetics

Genetic variability within and between populations of Stephens' kangaroo rat has been investigated based on allozyme (protein) variation (McClenaghan and Truesdale 1991 pp. 5–6, McClenaghan 1994, p. 12) and through DNA analysis (Metcalf *et al.* 2001, p. 1239). Analysis of allozyme variation indicates populations on Marine Corps Base Camp Pendleton (MCBCP) in San Diego County are genetically similar to populations in western Riverside County (McClenaghan 1994, p. 25). In contrast, mitochondrial DNA analysis (mtDNA) of 16 populations across the range of Stephens' kangaroo rat found a higher degree of genetic differentiation (derived characteristics) between occupied locations (Metcalf *et al.* 2001, p. 1239) than found by the above-referenced allozyme studies. Metcalf *et al.*'s (2001, p. 1238) results infer that gene flow might be restricted between three hypothesized regions of potential differentiation: North (corresponds to northwestern and northeastern Riverside County), central (corresponds to central western Riverside County), and south (corresponds to north and central San Diego County), and particularly between the south region and the north and central regions. However, based on inconclusive sample sizes from each population (2 to 5 individuals per population), geographic restriction in gene flow advanced by Metcalf *et al.* (2001, p. 1241) should be considered preliminary.

Recovery Planning and Implementation

Section 4(f) of the Act directs us to develop and implement recovery plans for listed species. We published a draft recovery plan for Stephens' kangaroo rat on June 23, 1997 (62 FR 33799) and requested public comment on that draft plan for 60 days, ending August 22, 1997. We have not yet prepared a final recovery plan.

Section 4(f) of the Act requires the Service to develop and implement recovery plans for the conservation and survival of endangered and threatened species, unless we find that such a plan will not promote the conservation of the species. The Act directs that, to the maximum extent practicable, we incorporate into each plan: (1) Site-specific management actions that may be necessary to achieve the plan's goals for conservation and survival of the species; (2) objective, measurable criteria that, when met, would result in a determination, in accordance with the provisions of section 4 of the Act, that the species be removed from the list; and (3) estimates of the time required and the cost to carry out the plan. However, revisions to the List of Endangered and Threatened Wildlife (adding, removing, or reclassifying a species) must reflect determinations made in accordance with section 4(a)(1) and 4(b) of the Act. Section 4(a)(1) of the Act requires that the Secretary determine whether a species is endangered or threatened (or neither) because of one or more of five threat factors. Therefore, recovery criteria must indicate when a species is no longer endangered or threatened by the five factors. In other words, objective, measurable criteria, or recovery criteria, contained in recovery plans must indicate when an analysis of the five threat factors under section 4(a)(1) of the Act would result in a determination that a species is no longer endangered or threatened. Section 4(b) requires the determination made under section 4(a)(1) as to whether a species is endangered or threatened because of one or more of the five factors be based on the best available scientific and commercial data.

Thus, while recovery plans are intended to provide guidance to the Service, States, and other partners on methods of minimizing threats to listed species and on criteria that may be used to determine when recovery is achieved, they are not regulatory documents and cannot substitute for the determinations and promulgation of regulations required under section 4(a)(1) of the Act. Determinations to remove a species from the List of Endangered and

Threatened Wildlife made under section 4(a)(1) of the Act must be based on the best scientific and commercial data available at the time of the determination, regardless of whether that information differs from the recovery plan.

In the course of implementing conservation actions for a species, new information is often gained that requires recovery efforts to be modified accordingly. There are many paths to accomplishing recovery of a species, and recovery may be achieved without all criteria being fully met. For example, one or more criteria may have been exceeded while other criteria may not have been accomplished. The Service may judge, however, that, overall, the threats have been minimized sufficiently, and the species is robust enough to reclassify the species from endangered to threatened or perhaps delist the species. In other cases, recovery opportunities may have been recognized that were not known at the time the recovery plan was finalized. These opportunities may be used instead of methods identified in the recovery plan.

Information on the species may be learned that was not known at the time the recovery plan was finalized. The new information may change the extent that criteria need to be met for recognizing recovery of the species. Overall, recovery of species is a dynamic process requiring adaptive management, planning, implementing, and evaluating the degree of recovery of a species that may, or may not, fully follow the guidance provided in a recovery plan.

Thus, while the recovery plan provides important guidance on the direction and strategy for recovery, and indicates when a rulemaking process may be initiated, the determination to remove a species from the List of Endangered and Threatened Wildlife is ultimately based on an analysis of whether a species is no longer endangered or threatened. The following discussion provides a brief review of recovery planning for Stephens' kangaroo rat, as well as an analysis of the recovery criteria and goals as they relate to evaluating the status of the species.

The draft recovery plan identified a proposed recovery strategy based on the conservation of two types of reserves for the Stephens' kangaroo rat:

(1) Ecosystem-based reserves that are not isolated from large expanses of natural habitat and are anticipated to retain their biological diversity, thus needing only low levels of management; and

(2) Non-ecosystem-based reserves that are biologically isolated for the most part from large expanses of natural habitat and are anticipated to lose biological diversity, thus needing high to intensive levels of management.

The proposed recovery strategy recognized the importance of conserving both types of reserves (i.e., sufficient habitat) to maintain genetic and phenotypic diversity, to conserve representative populations of the species, and to provide redundancy in conserved populations to protect against catastrophic events that could extirpate the species from a significant portion of its range (Service 1997, pp. 48–49; see Factor A, D, and E discussions below). While this strategy for the conservation and recovery of Stephens' kangaroo rat is, in concept, still applicable and reflective of the approach the Service has used to guide conservation of Stephens' kangaroo rat, the recovery criteria and objectives as outlined in the 1997 draft recovery plan have not been revised to reflect information provided during public comment or to incorporate new and updated information generated since then. In addition, the goals and recovery criteria are ecosystem-based, and, while this approach generally addresses threats to the species, it does not provide explicit detail or guidance on determining whether threats have been ameliorated. Because ecosystem-based recovery actions are likely insufficiently detailed to address current and emerging threats (see Factor A and E discussions below), especially given new scientific information, this suggests the need to reevaluate the recovery strategy and criteria for Stephens' kangaroo rat. In addition to current conservation efforts, additional management approaches may be needed to maintain sufficient habitat requirements for the species' long-term survival. Further, the draft recovery plan's criteria do not identify population or demographic goals that would indicate that actions to ameliorate specific threats have been effective in ensuring the persistence of Stephens' kangaroo rat throughout its range in the foreseeable future. Despite the limitations discussed above, we consider the draft recovery plan to serve as an important document that sets out conservation goals for Stephens' kangaroo rat.

As discussed earlier, the 1997 draft recovery plan recommended the following objectives and criteria for delisting the Stephens' kangaroo rat (Service 1997, p. 53):

(1) Establishment of a minimum of five reserves, of which one is ecosystem-based, in western Riverside County that

encompass at least 6,675 ha (16,500 ac) of occupied habitat that are permanently protected, funded, and managed (refer to *Western Riverside County—Stephens' Kangaroo Rat Habitat Conservation Plan (HCP)* under Factor A below); and

(2) Establishment of two ecosystem-based reserves in San Diego County, one in the Western Conservation Planning Area and one reserve in the Central Conservation Planning Area, that are permanently protected, funded, and managed (refer to *San Diego County* sections under Factor A below).

The goal of Criterion 1, conserving at least 6,675 ha (16,500 ac), is linked to addressing the primary threat of habitat loss through urbanization. Criterion 2 is linked to threat of habitat loss and fragmentation and deleterious effects of small population size for the Stephens' kangaroo rat through conserving the geographic distribution, and phenotypic and genetic diversity, of the species across its known range.

Criterion 1

The primary objective identified in the draft recovery plan is to protect and maintain sufficient populations and habitat of the Stephens' kangaroo rat to allow the removal (delisting) of this species from the Federal List of Threatened and Endangered Wildlife under the Act (Service 1997, p. 52). At the time of listing, the primary threat to the Stephens' kangaroo rat was direct habitat loss due to urban and agricultural development. The goal of Criterion 1, conserving at least 6,675 ha (16,500 ac), is linked to addressing the primary threat of habitat loss through urbanization. However, because smaller, more isolated, non-ecosystem-based reserves were expected to be inherently unstable due to their configurations and current or future isolation from surrounding natural habitat due to the then existing or anticipated development, they were expected to require intensive management (Service 1997, p. 54). Additionally, establishing a minimum of three ecosystem-based conservation units (Service 1997, p. 54), one ecosystem-based conservation unit in western Riverside County (Criterion 1) and two in San Diego County (Criterion 2, *see below*) was thought appropriate to address the deleterious effects of diminishing biological diversity associated with small, biologically isolated reserves. Because western Riverside County was the area where Stephens' kangaroo rat was most threatened by existing and future urbanization, the maintenance of habitat quality and suitability there was considered essential for the

conservation of this species (Service 1997, p. 49).

Since drafting Criterion 1 in 1997, we have worked with private landowners and local, State, and Federal partners to develop and implement actions to reduce threats and provide for the long-term conservation of the Stephens' kangaroo rat. The primary mechanism for implementing recovery actions for the Stephens' kangaroo rat has been through a regional habitat conservation plan in western Riverside County called the Riverside County Habitat Conservation Agency's Habitat Conservation Plan for the Stephens' Kangaroo Rat in Western Riverside County (the HCP) (*see Western Riverside County—Stephens' Kangaroo Rat Habitat Conservation Plan (HCP)* below). Through this regional HCP (and other cooperative management agreements and conservation plans), a Stephens' kangaroo rat core reserve system, plus additional lands for the benefit of Stephens' kangaroo rat, is now dedicated to the conservation of the Stephens' kangaroo rat in western Riverside County.

Based on our analysis of baseline Stephens' kangaroo rat occupied habitat within the western Riverside County HCP area (Service 2010; *see* Table 2 below), the Stephens' kangaroo rat core reserves (not including the Potrero Valley or March Air Force Base portion of the Sycamore Canyon/March Air Force Base Reserve) encompass 4,971 ha (12,568 ac) of baseline occupied habitat. Including Potrero Valley lands, 5,911 ha (14,606 ac) is currently in conservation within western Riverside County. Although management is required, Potrero Valley lands could serve to meet the ecosystem-based reserve portion of this criterion. These protected areas of baseline occupied habitat capture the geographic distribution of Stephens' kangaroo rat within western Riverside County. While the acquisition of lands in Stephens' kangaroo rat core reserves has largely ameliorated the threats of habitat loss due to urban development identified at the time of listing, Criterion 1 also specifies that these reserves be permanently protected, funded, and managed to maintain habitat suitability and ensure the long-term survival of Stephens' kangaroo rat. These components of Criterion 1 have yet to be fully implemented (*see* following discussion and *Western Riverside County—Stephens' Kangaroo Rat Habitat Conservation Plan (HCP)* section below).

Endowments for management of four of the core reserves (Lake Mathews/ Estelle Mountain, Lake Skinner/ Domenigoni Valley, Motte Rimrock, and

Potrero Valley) and for Sycamore Canyon Wilderness Park are provided either through the Metropolitan Water District of Southern California, the HCP, or the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP). The 1997 draft recovery plan indicated intensive management of non-ecosystem-based reserves in western Riverside County would be required, but the draft plan did not identify specific goals or objectives to assess the effectiveness of management and to evaluate the response of populations of Stephens' kangaroo rat to management actions. As discussed under the Factor A analysis below, recent surveys (dates range from 1991 to 2006) indicate that the amount of occupied habitat on some of the Stephens' kangaroo rat core reserves has decreased over time, and monitoring efforts are not yet sufficient to determine Stephens' kangaroo rat population trends within the 5,911 ha (14,606 ac) of conserved baseline occupied habitat. This indicates that current management may not be effective and that further monitoring is needed to evaluate the effectiveness of ongoing conservation efforts. Therefore, we conclude that the primary goal of Criterion 1 for delisting as described in the 1997 draft recovery plan has not yet been fully met.

Criterion 2

Criterion 2 for delisting recommends the establishment of two ecosystem-based reserves, one in western and one in central San Diego County that are permanently protected, funded, and managed. The draft recovery plan defines an ecosystem-based reserve as "not isolated from large expanses of natural habitat" and needing "only minimal management due to the integrity of the natural system."

Criterion 2, similar to Criterion 1, was meant to address the threat of habitat loss to the Stephens' kangaroo rat and to conserve the geographic distribution, and phenotypic and genetic diversity, of the species. Criterion 2 is linked to the threat of habitat loss and fragmentation and to the deleterious effects of small population size for the Stephens' kangaroo rat through conserving the geographic distribution, and phenotypic and genetic diversity, of the species across its known range. Since the draft recovery plan was written, additional populations have been discovered in Ramona Grasslands and Rancho Guejito (*see* Geographic Range and Status section above). Additionally, Criterion 2 was developed to guard against the deleterious effects of diminishing biological diversity associated with

small, biologically isolated reserves (*see* Small Geographic Range and Population Size under Factor E below) by establishing larger ecosystem-based reserves.

The 1997 draft recovery plan did not, however, identify an acreage requirement in its definition of an ecosystem-based reserve. Rather, the draft plan indicated that ecosystem-based reserves should be surrounded by large expanses of natural habitat, which would allow them to retain their biological diversity and require only minimal management to promote the relatively rapid recovery of Stephens' kangaroo rat in the wild (Service 1997, p. 49). Based on our analysis of baseline Stephens' kangaroo rat occupied habitat in San Diego County (Service 2010), only populations of Stephens' kangaroo rat at Lake Henshaw, at Rancho Guejito, or on Camp Pendleton and Detachment Fallbrook are likely large enough or are surrounded by sufficient natural habitat to meet this criterion, and currently none of these areas are permanently protected and managed (*see* discussion under Factor A below).

The Stephens' kangaroo rat occupied habitat and surrounding natural lands on Camp Pendleton and Detachment Fallbrook may meet the intent of the draft recovery plan for an ecosystem-based reserve in western San Diego County. However, as discussed below under our Factor A analysis below, most areas of known Stephens' kangaroo rat occupied habitat are threatened by habitat degradation from encroachment of nonnative grasses and succession to more shrub-dominated communities, and even the largest Stephens' kangaroo rat populations may not be sustained over the long term without high to intensive management. Thus, we conclude that the criterion to establish ecosystem-based reserves that are protected, funded, and managed within western or central San Diego County has not been met.

Our review of the recovery criteria from the draft recovery plan for Stephens' kangaroo rat indicates that while both types of reserves have been established that help to ameliorate the threat of urban development, the criteria have not been fully met because management necessary to maintain habitat suitability is not yet in place. We also conclude that while the criteria appropriately indicate the need for habitat protection and intensive management of reserves, they are outdated and no longer adequately address the current threats to the species discussed below.

Summary of Information Pertaining to the Five Factors

Section 4 of the Act (16 U.S.C. 1533), and its implementing regulations (50 CFR 424), set forth procedures for adding species to, removing species from, or reclassifying species on the Federal Lists of Endangered and Threatened Wildlife and Plants. Under section 4(a)(1) of the Act, a species may be determined to be endangered or threatened based on any of the following five factors:

- (A) The present or threatened destruction, modification, or curtailment of its habitat or range;
- (B) Overutilization for commercial, recreational, scientific, or educational purposes;
- (C) Disease or predation;
- (D) The inadequacy of existing regulatory mechanisms; or
- (E) Other natural or manmade factors affecting its continued existence.

We must consider these same five factors in delisting a species. We may delist a species according to 50 CFR 424.11(d) if the best available scientific and commercial data indicate that the species is neither endangered nor threatened for the following reasons:

- (1) The species is extinct;
- (2) The species has recovered and is no longer endangered or threatened; or
- (3) The original scientific data used at the time the species was classified were in error.

In making this finding, information pertaining to the Stephens' kangaroo rat in relation to the five factors provided in section 4(a)(1) of the Act is discussed below. In making our 12-month finding on the petition we considered and evaluated the best available scientific and commercial information.

The petition did not contain substantial information regarding the biological status of Stephens' kangaroo rat or provide significant new information as to current or future threats to the species. Additionally, the petition did not provide a comprehensive review of the status of the species or provide evidence suggesting that the original listing was in error.

Factor A. The Present or Threatened Destruction, Modification, or Curtailment of Its Habitat or Range

The 1988 listing rule identified widespread habitat loss and a fragmented distribution of the species due to historical agriculture practices and urban development as primary threats to the Stephens' kangaroo rat (53 FR 38465, September 30, 1998). We considered urban and agricultural

development, grazing, and off-highway vehicles (OHVs) to be significant and potentially rangewide threats to the long-term persistence of Stephens' kangaroo rat at that time. These threats continue for Stephens' kangaroo rat predominantly through habitat modification and curtailment impacts, compared to direct habitat loss.

The 2002 petition did not present any significant new information regarding the present or threatened destruction, modification, or curtailment of habitat and range of the species.

Habitat Destruction and Modification by Urbanization and Land Use Conversion

The habitat and range of Stephens' kangaroo rat has been reduced over time. The species likely once occurred throughout annual grassland or sparse coastal sage scrub communities of the Perris and San Jacinto Valleys and up adjoining washes in southern California. As flat lands were developed or converted into agriculture, the species likely became isolated to low rolling hills and level ridge tops. With the arrival of Spanish ranchers and agrarian practices (*i.e.*, before 1938), native perennial bunchgrass vegetation was replaced by annual grasslands and ever since (*i.e.*, in the later portion of the 20th century) has been increasingly replaced by degraded annual grasslands (*see* Factor E discussion below). Price and Endo's (1989, p. 299) study revealed that the species suffered severe habitat loss and fragmentation throughout a core area of its range over the past century, due primarily to agricultural and urban development. In addition, O'Farrell and Uptain's (1989, p. 5) assessment of the population and habitat status of the Stephens' kangaroo rat throughout most of its range, which was available just after the 1988 listing, corroborated the threats from habitat loss and fragmentation to the species. They found that about 58 percent of previously known populations were extirpated due to human development and that many of the extant populations remained only in small and isolated areas. The petition asserted that we grossly over exaggerated the amount of habitat lost. However, the petitioner did not provide, and we do not possess, any new scientific or commercial data indicating that our original estimates of habitat loss were overestimations or were made in error.

In the 1988 final listing rule, we estimated the amount of suitable habitat (but not necessarily occupied habitat) for the Stephens' kangaroo rat prior to 20th-century agriculture was 124,775 ha (308,195 ac) in western Riverside County (53 FR 38467; Price and Endo

1989, p. 296). By 1984, the quantity of suitable habitat was reduced by approximately 60 percent to 50,518 ha (124,779 ac) (Price and Endo 1989, p. 296; 53 FR 38467). No similar estimates of reduction of suitable habitat for Stephens' kangaroo rat were available for San Diego County at that time, but we surmise a roughly equivalent magnitude of loss occurred concomitantly in San Diego County, given land use conversion to agriculture in the early 20th century throughout the grasslands of southern California.

Habitat modification and fragmentation involves both reduction in size and increased isolation of habitats. Most extant populations of Stephens' kangaroo rat were considered isolated from one another at the time of the species' 1988 listing and that pattern of fragmentation has been reinforced due to ongoing urbanization and land use conversions. Occupied Stephens' kangaroo rat sites, especially in the western portions of the range, have become increasingly isolated by surrounding urban and agricultural development. In some cases, occupied sites may be too fragmented to sustain viable populations of Stephens' kangaroo rat (Burke *et al.* 1991, pp. 28–29), suggesting that conservation of these smaller isolated populations may require enlarging patches of suitable habitat or connecting patches via conservation corridors. Similar to habitat loss, habitat fragmentation affects the persistence of populations or a species within habitat fragments (Wilcove *et al.* 1986, pp. 237–238, 246–252; Morrison *et al.* 1992, pp. 43–47; Noss *et al.* 1997, pp. 99–103; *see* Factor E discussion below).

Further, direct conversion of habitat by discing, burning, plowing, and grading, and wildfire suppression fuel reduction activities associated with human use and agricultural practices across the range of the species, can result in habitat degradation of suitable and occupied sites for Stephens' kangaroo rat. Deep discing may destroy the burrows of Stephens' kangaroo rat and degrade remaining vegetation. Although in some instances the open nature of plowed fields and farm access roads has been shown to encourage occupancy by the Stephens' kangaroo rat where fields are located near or adjacent to occupied habitat, we have little additional information to evaluate the potential frequency of reoccupation of abandoned agricultural lands or persistence of populations on abandoned agricultural lands. Moore-Craig (1984, p. 5) found that Stephens' kangaroo rats may recolonize a field within 8 months after cessation of cultivation. Although the threat of habitat loss and modification from agriculture land conversion was considered less severe than the threat of habitat loss from urbanization at the time of listing (because Stephens' kangaroo rats were found to reinvade plowed fields if the agricultural usage was abandoned (Thomas 1975, p. 46; 53 FR 38467)), the regularity and persistence of these recolonization events by Stephens' kangaroo rat on converted fields remains unknown. Information on the frequency of reoccupation of abandoned agricultural lands, long-term persistence of these populations on abandoned agricultural lands following a recolonization event, or the persistence of these lands as occupied habitat will require longer

term and directed investigations. Regardless, agricultural practices may still provide a persistent source of nonnative vegetation and therefore remain an ongoing threat to suitability of habitat for Stephens' kangaroo rat that warrants future studies rangewide.

We estimated the baseline, from which to gauge recent impacts, Stephens' kangaroo rat occupied habitat for Riverside and San Diego Counties to be 22,221 ha (54,909 ac). Of that baseline, a total of 68 percent (15,059 ha/37,211 ac) is within Riverside County and 32 percent (7,162 ha/17,698 ac) is in San Diego County. As of 2006, a total of 1,433 ha (3,537 ac) of baseline Stephens' kangaroo rat occupied habitat was lost directly to development (*see* Table 2 below) in western Riverside and San Diego Counties. Though 1,414 ha (3,492 ac) were developed in Riverside County from 1984 to 2006 (Service 2010), impacts from direct habitat loss to urban development have mostly been ameliorated due to existing conservation efforts (*see Recovery Planning and Implementation* above, and Factor A and D discussions). In San Diego County, little baseline Stephens' kangaroo rat occupied habitat has been developed (19 ha/46 ac), although the potential for impact due to direct urban development remains high, especially if conservation efforts are not guaranteed (*see* Factor A and D discussions). Relative to previous discussions, it is important to note that not all baseline Stephens' kangaroo rat occupied habitat (22,221 ha/54,909 ac) is still currently occupied, and this represents only a small subset of the estimated amount of suitable habitat (50,518 ha/124,779 ac) for Stephens' kangaroo rat indicated in the 1988 listing rule.

TABLE 2—AMOUNT OF STEPHENS' KANGAROO RAT HABITAT OCCUPIED, DEVELOPED, AND CONSERVED IN RIVERSIDE AND SAN DIEGO COUNTIES

Location	Total area ha (ac)	BOH ¹ ha (ac)	BOH lost to development ha (ac)	BOH conserved ha (ac)
Riverside County	1,890,263 (4,670,942)	15,059 (37,211)	1,414 (3,492)	6,275 (15,507)
Within the HCP ²	223,470 (552,206)	12,568 (31,057)	1,071 (2,649)	4,971 (12,283)
Within MSHCP ³	509,050 (1,257,889)	15,059 (37,211)	1,413 (3,492)	4,213 (526)
Potrero Valley	3,694 (9,128)	940 (2,323)	0	940 (2,323)
Johnson Ranch	272 (671)	1.9 (4.8)	0	1.9 (4.8)
Anza/Cahuilla	778 (1,922)	202 (500)	0	150 (370)
San Diego County	1,096,758 (2,710,148)	7,162 (17,698)	19 (46)	1,510 (3,932)
Lake Henshaw	NA	4,331 (10,702)	2.5 (6.3)	0
Ramona	NA	67 (166)	0	67 (166)
Rancho Guejito	NA	1,224 (3,024)	0	0
Camp Pendleton	50,692 (125,262)	422 (1,043)	0.1 (0.2)	422 (1,043)
Detachment Fallbrook	3,606 (8,910)	1,118 (2,762)	16 (39)	1,102 (2,722)

¹ Baseline Stephen's kangaroo rat occupied habitat (BOH).

² Western Riverside County Habitat Conservation Plan for the Stephens' Kangaroo Rat (HCP).

³ Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP).

⁴ All lands under MSHCP, not just Additional Reserve Lands (ARL) lands.

Conservation Efforts

Several habitat conservation plans and other planning documents have been developed and implemented in western Riverside and San Diego Counties since 1988. These plans include: The Western Riverside County Habitat Conservation Plan for the Stephens' Kangaroo Rat (the HCP) and the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) in Riverside County, as well as the proposed San Diego North County Multiple Species Conservation Plan (North County MSCP), Marine Corps Base Camp Pendleton's (MCBCP) Integrated Natural Resources Management Plan, and the Naval Weapons Station Seal Beach (NWSSB) 'Detachment Fallbrook' Integrated Natural Resources Management Plan, all in San Diego County. Additional local conservation plans and partnerships or active management agreements in both Counties are ongoing within and outside the regional habitat conservation plans.

In western Riverside and San Diego Counties, existing conservation planning efforts have slowed the rate of unregulated loss of habitat to urban development and agricultural

development. Currently, 36 percent, or 7,882 ha (19,477 ac) of the total baseline Stephens' kangaroo rat occupied habitat rangewide is conserved through regional habitat conservation plans and conservation easements. Although the intensity and magnitude of the threat from direct habitat loss for Stephens' kangaroo rat has been greatly diminished through ongoing implementation of habitat conservation plans and conservation processes in western Riverside County, and to a lesser extent in San Diego County, both habitat modification and curtailment are currently impacting the species. In considering the limitations and inadequacies (see Factor D discussion below) of ongoing efforts to implement or maintain adaptive management practices (not specifically mandated by a habitat conservation plan's terms and conditions), the duration and extent of habitat degradation and decreasing habitat quality remains a rangewide threat to the Stephens' kangaroo rat. Following is a discussion of the regional plans in effect and what they provide and do not provide regarding ongoing threats of habitat destruction and modification by urbanization and land use conversion.

Western Riverside County—Stephens' Kangaroo Rat Habitat Conservation Plan (HCP)

Since the 1988 listing of the Stephens' kangaroo rat, publicly reviewed, regional habitat conservation planning under section 10(a)(1)(B) of the Act has guided recovery for the Stephens' kangaroo rat, especially in western Riverside County. The HCP in western Riverside County provides for protection of "core reserves" and adaptive management of Stephens' kangaroo rat habitat in order to ameliorate impacts to the species from habitat fragmentation and degradation associated with development. The seven core reserves for the Stephens' kangaroo rat were assembled from a combination of State and federally owned lands, lands already in conservation (e.g., in open space preserves or through conservation easements), lands acquired by the Riverside County Habitat Conservation Agency (RCHCA), and other cooperative partnerships (Table 3); Potrero Valley was added as a core reserve on December 29, 2003, and March Air Force Base was removed through an authorized land exchange (see Factor D discussion below).

TABLE 3—AREA CONSERVED BY CORE RESERVES UNDER THE STEPHENS' KANGAROO RAT HABITAT CONSERVATION PLAN (HCP) IN 1996. NOTE: POTRERO VALLEY WAS ADDED TO CORE RESERVE DESIGN LATER AND IS NOT INCLUDED IN TOTAL AT DESIGNATION IN 1996; 270 HA (667 AC) OF SYCAMORE CANYON REMAINS IN CONSERVATION BUT IS CONSIDERED NONVIABLE

HCP Core Reserve	In hectares	In acres
Lake Skinner/Domenigoni Valley	5,325	13,158.
Lake Mathews/Estelle Mountain	4,550	11,243.
San Jacinto/Lake Perris	4,424	10,932.
Sycamore Canyon/March Air Force Base	1,013	2,502.
Steele Peak	709	1,753.
Potrero Area of Critical Environmental Concern (ACEC)	403	995.
Motte Rimrock Reserve	258	638.
[Potrero Valley Reserve]	[approx 3,694]	[approx 9,128].
Total at designation in 1996	16,682	41,221.

Initiated with the "Short-Term" HCP in 1990, and continued with the approval in 1996 of the "Long-Term" HCP (which is the document we refer to as the HCP in this finding), the HCP was primarily envisioned to address the need to minimize loss of known occupied Stephens' kangaroo habitat in key localities (identified as "Study Areas" in the Short-Term HCP) and implemented as the seven core reserves in 1996.

On May 2, 1996, we completed an intra-agency biological opinion and issued an Incidental Take Permit for a 30-year term for the HCP under section 10(a)(1)(B) of the Act. The HCP required

the conservation of 6,070 hectares (15,000 ac) of Stephens' kangaroo rat occupied habitat in seven core reserves within the 216,083-ha (533,954-ac) plan area and authorized, under section 10(a)(1)(B) of the Act, the loss of all of the remaining occupied Stephens' kangaroo rat habitat for development (6,070 hectares (15,000 acres)) (RCHCA 1996, p. S-6). The Western Riverside County Habitat Conservation Agency (RCHCA), along with eight member jurisdictions (Cities of Corona, Hemet, Lake Elsinore, Moreno Valley, Murrieta, Perris, Riverside, and Temecula), and unincorporated areas within the plan, are permittees.

Near the time of permit issuance, the HCP core reserve boundaries (i.e., within the conserved 16,682 ha/41,221 ac) included 5,042 ha (12,460 ac) of Stephens' kangaroo rat occupied habitat, as reported by RCHCA (1996, p. S-9). In a biological opinion dated May 2, 1996, it was estimated that 11,307 acres of occupied Stephens' kangaroo rat occupied habitat fell within the seven core reserve boundaries. There is no dataset currently available to reliably quantify occupied habitat for Stephens' kangaroo rat within the core reserves; RCHCA, after years of incomplete monitoring efforts, developed a reserve-wide monitoring protocol in July 2006,

but it was suspended in 2007 (RCHCA 2007, p. 12). A newly revised monitoring protocol has been developed and is currently being implemented in four of the reserves in 2010 (Lake Skinner/Domenigoni Valley, Potrero Valley, Potrero ACEC, and San Jacinto/Lake Perris); adoption of the monitoring protocol is anticipated on the other core reserves in 2011 (Lake Mathews, Steele Peak, Motte Rimrock, and at Sycamore Canyon Wilderness Park) (Gail Barton pers. comm., May 2010).

The largest four core reserves (Lake Mathews/Estelle Mountain, San Jacinto/Lake Perris, Lake Skinner/Domenigoni Valley, and Potrero Valley) protect several different habitat types and provide for multiple species in addition to Stephens' kangaroo rat. Each of these core reserves therefore contains significantly more acreage than the baseline Stephens' kangaroo rat occupied habitat. In 1996, there was the recognition that the major Stephens' kangaroo rat populations across the species' range would remain fragmented and functionally isolated from one another due to existing urban development and topographic conditions that precluded restoration of natural connections once present under historical conditions. Thus, core reserves were expected to retain biological diversity across the known range of Stephens' kangaroo rat, and were anticipated to require intensive active management (Service 1997, p. 54).

Although losses to species and habitat were anticipated, and we stated such losses might reduce the viability of remaining populations, we determined in our biological opinion that permanent management of Stephens' kangaroo rat habitat to be conserved provided a reasonable assurance that Stephens' kangaroo rat populations within the HCP area would persist, and that implementation of the HCP was not likely to jeopardize the continued existence of the Stephens' kangaroo rat (Service 1996, p. 15). Issuance of the permit allowed the permanent loss of 50 percent of Stephens' kangaroo rat occupied habitat within the HCP area and the loss of 31 percent of the occupied habitat rangewide (Service 1996, p. 10).

Surveys indicate that some of the baseline occupied habitat within core reserves is no longer occupied by Stephens' kangaroo rat. Two core reserves with the largest amount of Stephens' kangaroo rat occupied habitat (Lake Mathews/Estelle Mountain (1,726 ha (4,264 ac)) and San Jacinto/Lake Perris (1,473 ha (3,640 ac))) experienced a decrease of 244 ha (602 ac) of

Stephens' kangaroo rat occupied habitat by 2001 (RCHCA 2002, p. 1). Stephens' kangaroo rat is considered extirpated from 80 ha (197 ac) of the San Jacinto Wildlife Area due to degradation of habitat (Service GIS Data 2007, based on Paulek 2002, p. 2). Between 1990 and 1996, development at Kabian Park (466 ha (1,153 ac) of occupied habitat known at 1988 listing) resulted in significant habitat fragmentation and its elimination from core reserve designation. Measures to minimize the authorized take under the section 10 permits acknowledged conserving many of the largest remaining populations within the western Riverside portion of the range. The conservation strategy for the HCP was to capture a large enough habitat base within which Stephens' kangaroo rat populations could naturally expand and contract in response to environmental variability with the core reserves. Key was proper monitoring and management to conserve Stephens' kangaroo rat within the system of isolated reserves, and maintaining essential connectivity within and between reserves for the long-term maintenance of the ecosystem captured within the reserves (Service 1996, p. 13).

Recent surveys (dates range from 1991 to 2006) indicate that the amount of occupied habitat on some of the Stephens' kangaroo rat core reserves has decreased over time, and that monitoring efforts may still not be sufficiently detailed to provide a reliable estimate of population sizes (and thereby amount of occupied habitat) across all reserves within the HCP (RCHCA 2007, p. 11; Diffendorfer and Deutschman 2003, p. 6). Further, recent annual reports from the HCP state that there are insufficient funds to maintain adequate boundary fencing or patrols around the core reserves (RCHCA 2008), suggesting the lack of enforcement ability (albeit voluntary) in some areas within the HCP area.

In 2003, lands within the Sycamore Canyon/March Air Force Base core reserve, including a 405 ha (1,000 ac) area known as the Stephens' kangaroo rat Management Area (SKR Management Area), were released from the core reserve for urban development. On August 27, 2009, the Center for Biological Diversity and San Bernardino Valley Audubon Society filed a complaint against the Service [Case No. 09-ev-1864 JAH POR (filed 8/27/09, S.D. Cal.)], alleging that the release of the SKR Management Area triggered the consultation requirements of section 7 of the Act, constituted a major Federal action significantly affecting the quality of the human environment requiring

appropriate environmental review under the National Environmental Policy Act (42 U.S.C. 4321 *et seq.*), and was a material change to the HCP requiring a formal amendment to the section 10(a)(1)(B) permit. On April 22, 2010, a settlement agreement was filed with the Court, in which the Service agreed to rescind its December 29, 2003 approval of the release of the SKR Management Area. Upon the Service rescinding the release of the SKR Management Area, the SKR Management Area would be restored as a preserve under the HCP and would be subject to the restrictions applicable to preserve lands under the section 10(a)(1)(B) permit and the HCP. However, the settlement agreement has not been approved by the Court and is not currently in effect. Additionally, other parties filed motions to intervene in the lawsuit, and those motions are currently pending before the Court. Therefore, the conservation status of, and the threat of potential loss or destruction of the habitat in, the SKR Management Area is currently unknown. We believe that, regardless of the pending Court decision, the long-term recovery of the Stephens' kangaroo rat is neither compromised nor significantly enhanced by returning the SKR Management Area to the core reserve system.

Western Riverside County—Western Riverside County MSHCP

Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) is a large-scale, multi-jurisdictional habitat conservation plan that addresses 146 listed and unlisted covered species, including Stephens' kangaroo rat, within a 510,000-ha (1.26 million-ac) plan area. Within the MSHCP area plan, there are sixteen County of Riverside Area Plans. The Service issued an incidental take permit on June 22, 2004 (Service 2004), under section 10(a)(1)(B) of the Act to 22 permittees under the MSHCP for a period of 75 years. The Western Riverside County Stephens' Kangaroo Rat HCP (see above) covers approximately 216,084 ha (533,954 ac) within the central portion of the MSHCP area and remains its own distinct habitat conservation plan. Thus, the MSHCP Conservation Area is 140,426 ha (347,000 ac) of existing natural and open space areas referred to as Public/Quasi-Public Lands (*e.g.*, State and County Park lands, Federal lands) within western Riverside County for the listed and unlisted species and complemented by an approximately 61,916 ha (153,000 ac) of new conservation lands ("Additional Reserve

Lands, or ARL"). The species-specific objectives for Stephens' kangaroo rat under the MSHCP are consistent with the requirements of the HCP to maintain a minimum of 6,070 ha (15,000 ac) of occupied Stephens' kangaroo rat habitat within the core reserves established by the HCP, and to expand the existing core reserves established by the HCP (see Factor D discussion below). Through cooperative management of these existing conserved lands in Western Riverside County (as provided for in the MSHCP's implementing agreement (IA); MSHCP IA, p. 57) a total of 7,875 ha (19,458 ac) of occupied Stephens' kangaroo rat habitat over the 75-year term of the MSHCP permit will be conserved when the MSHCP is fully implemented. We concluded in our biological opinion that implementation of the MSHCP was not likely to jeopardize the continued existence of the Stephens' kangaroo rat because of the avoidance, minimization, and mitigation measures, and associated monitoring and management incorporated into the MSHCP and for the conservation objectives set forth in the IA (Service 2004, p. 311). Based on the distribution of the Stephens' kangaroo rat and protection and management of the MSHCP Conservation Area, we concluded that habitat loss as described in the MSHCP would not result in an appreciable reduction in the numbers, reproduction, or distribution of the species throughout its range (Service, p. 311).

Although the precise configuration of the 61,916 ha (153,000 ac) of Additional Reserve Lands is neither mapped nor precisely identified in the MSHCP, textual descriptions within the bounds of a 125,453-ha (310,000-ac) Criteria Area that is interpreted through time as implementation of the MSHCP proceeds are expected. Based on the provisions of the MSHCP, Additional Reserve Lands of specific conservation value to Stephens' kangaroo rat will likely be added to these core reserves: Lake Mathews/Estelle Mountain, 519 ha (1,281 ac); Lake Skinner/Domenigoni Valley, 406 ha (1,003 ac); San Jacinto/Lake Perris, 56 ha (140 ac); Motte Rimrock, 41 ha (102 ac); Steele Peak, 292 ha (721 ac); and Potrero ACEC, 59 ha (146 ac). Beyond the already 6,276 ha (15,507 ac) of conserved habitat in western Riverside County, we expect that the ongoing implementation of the MSHCP will conserve an additional 1,501 ha (3,709 ac) of the baseline Stephens' kangaroo rat occupied habitat, including 1,246 ha (3,079 ac) that are linked to the existing reserves and 255 ha (630 ac) in a new reserve near Anza

(Service 2010). The additional conservation of occupied habitat adjacent to the existing reserves and the addition of one new reserve will enhance the long-term viability of Stephens' kangaroo rat populations within western Riverside County.

Through 2008, 130 ha (323 ac), or 9 percent, of the Additional Reserve Lands (ARL "gains") that are linked to the Stephens' kangaroo rat core reserves have been acquired and conserved under the MSHCP (Service 2010). The MSHCP provides for monitoring and management on its Additional Reserve Lands, an increased level of monitoring on the core reserves established under the HCP, and the potential for acquisition of non-Stephens' kangaroo rat occupied habitat that abuts some Stephens' kangaroo rat populations near the edge of the reserves, thus providing a buffer to the effects of surrounding urbanization (see Factor D discussion below).

Additional Reserve Lands, both within and outside the MSHCP boundary, include habitat linked (*i.e.*, within 500 meters (1,640 ft)) to the existing Stephens' kangaroo rat core reserves (1,373 ha (3,393 ac)) and add one additional core area in the Anza/Cahuilla Valleys, which encompasses the Silverado Mitigation Bank (261 ha (645 ac)), and incorporates smaller scattered habitat patches throughout the MSHCP Conservation Area (541 ha (1,336 ac)) (Dudek 2003, Table 9–2, p. 9–96; Service 2004, p. 309; Service 2008a, p. 1). Additional Reserve Lands, which include baseline Stephens' kangaroo rat occupied habitat within 500 m (1,640 ft) of the Stephens' kangaroo rat core reserves, enhance the probability of long-term Stephens' kangaroo rat persistence within western Riverside County and are thus important to the recovery of the species.

Norco Hills, adjacent to the Santa Ana River in the City of Norco, was found to be occupied after the species was listed in 1988, and included approximately 405 ha (1,000 ac) of occupied and potentially occupied habitat (Dudek and Associates 2003, p. M–203). The Norco Hills population was considered to be important to the conservation of Stephens' kangaroo rat, but by 2004, the Norco Hills area was reduced by approximately 46 percent to an estimated 185 ha (457 ac) of highly fragmented habitat due to ongoing or pending development projects (Service 2004, p. 304). Offsite conservation to address these impacts was primarily concentrated at the Wilson Valley and Silverado Mitigation Banks. Subsequent to this development, the Norco Hills area was considered to no longer have

long-term conservation value for the species, and as a result, it was discounted as a targeted area of conservation in the western Riverside County planning process.

The threat of direct habitat loss of Stephens' kangaroo rat habitat in western Riverside County from large-scale development (intense urbanization and land use conversion) is no longer the predominant threat to the species as stated in the final listing rule (53 FR 38465, September 30, 1988). Most, but not all, proposed projects in western Riverside County are limited to that permitted under either the HCP or the MSHCP. However, as the HCP and MSHCP do allow for continued, regulated development in Stephens' kangaroo rat occupied habitat, implementation of proposed and future development projects under the HCP and MSHCP will continue to result in the destruction and modification of Stephens' kangaroo rat habitat (suitable or occupied) within the plan areas. Additionally, successful management of the reserves is pivotal in avoiding declines in the Stephens' kangaroo rat populations within the core reserves and within the MSHCP plan area. Connectivity and proper monitoring and management were, and remain, essential to the long-term viability of the Stephens' kangaroo rat.

In summary, western Riverside County accounts for 68 percent, or 15,059 ha (37,211 ac), of total baseline occupied habitat mapped for this species. Of this, 6,276 ha (15,507 ac), or 41 percent, is currently held in conservation, and the remaining 59 percent has previously been impacted by urban development or may be subject to future loss, modification, or fragmentation from urban development.

San Diego County—Lake Henshaw and Ramona Grasslands

A majority of Stephens' kangaroo rat occupied habitat in central and north San Diego County is not conserved currently. The lands supporting Stephens' kangaroo rat population at Lake Henshaw are managed for water conservation by a local government agency, the Vista Irrigation District, and although they are likely to remain underdeveloped to protect the watershed and delivery potential of the agency's mission, to our knowledge there is no active management specifically targeting Stephens' kangaroo rat conservation; we currently know of no projects that would result in development or destruction of the Stephens' kangaroo rat habitat owned by the District. Studies indicate that this site likely supported the largest

remaining contiguous population of Stephens' kangaroo rat within the species' entire range, with an estimated 4,600 ha (11,367 ac) of suitable habitat occupied (O'Farrell and Uptain 1987, p. 10). The current status of this population is unknown and we are aware of no surveys in this area since 1990.

Currently conserved areas on public lands within San Diego County include Ramona Grasslands and Ramona Airport. Approximately 67 ha (166 ac) of baseline Stephens' kangaroo rat occupied habitat in the Ramona Grasslands have been conserved through efforts by local jurisdictions, by conservation organizations (The Nature Conservancy and others), or through a combination of public and private ventures. There remain a few pockets of development anticipated in Ramona Grasslands within baseline Stephens' kangaroo rat occupied habitat.

San Diego County—Military Lands and Integrated Natural Resources Management Plans (INRMPs)

Based on a recent analysis (Service 2010), we estimated approximately 1,540 ha (3,805 ac) of baseline Stephens' kangaroo rat occupied habitat on military lands at Marine Corps Base Camp Pendleton (MCBCP) and Naval Weapons Station Seal Beach Detachment Fallbrook (NWSSB Detachment Fallbrook, or "Detachment Fallbrook") are conserved through conservation planning agreements. This accounts for approximately 20 percent of the baseline Stephens' kangaroo rat occupied habitat in San Diego County. Both military installations have integrated natural resources management plans (INRMPs) and management actions specific to Stephens' kangaroo rat. INRMPs are based, to the maximum extent practicable, on ecosystem management principles and provide for the management of Stephens' kangaroo rat and its habitat while sustaining necessary military land uses.

MCBCP adopted an INRMP in 2001 that was revised in 2007 (Marine Corps 2007, pp. 4–1 to 4–117), and the U.S. Navy completed an updated INRMP for Detachment Fallbrook in 2006 (U.S. Navy 2006, pp. 4–1 to 4–130). These INRMPs are largely ecosystem-based, except where biological opinions under section 7 of the Act direct species-specific actions. The Service and Marine Corps are in consultation under section 7 of the Act on the Marine Corps' programmatic upland plan to avoid and minimize the effects of their activities on federally listed upland species, including Stephens' kangaroo rat, but

the plan is currently not finalized. We anticipate that the species-specific conservation benefits for Stephens' kangaroo rat will outweigh all anticipated incidental take from various military training and facility management activities. Detachment Fallbrook's INRMP incorporated Stephens' kangaroo rat management practices described in the Wildland Fire Management Plan (U.S. Navy 2003), which underwent formal consultation with the Service (Service 2003, FWS–SD–3506.3). In addition to implementation of conservation and mitigation measures resulting from section 7 consultations, INRMPs, Range and Training Regulations (RTRs), and other planning documents serve to protect the species and its habitat on MCBCP and Detachment Fallbrook. Species-specific direction to guide ongoing Stephens' kangaroo rat conservation and management can be limited, as INRMPs may be superseded by the military's obligation to ensure readiness of the Armed Forces and are subject to discretionary funds and planning.

Land uses on MCBCP and Detachment Fallbrook pose a threat to Stephens' kangaroo rat habitat in localized areas where intense training, construction, or foot/off-highway vehicle traffic degrades, modifies, or fragments habitat. Current land use also increases risks of nonnative introduction and expansion, and soil compaction, which may threaten Stephens' kangaroo rat in portions of the military installations. Although adequately avoided and minimized, impacts to known occupied Stephens' kangaroo rat habitat may occur. Ongoing and potential threats to Stephens' kangaroo rat populations on MCBCP include project construction, military training activities (including off-road vehicle exercises), domestic cat predation, and successional processes (Service 1988; Price *et al.* 1995; Tetra Tech, Inc. 1999).

A Stephens' kangaroo rat monitoring program was implemented at Camp Pendleton from 1996 to 2002 (Montgomery *et al.* 1997, pp. 1–8; Montgomery 2005b, pp. 1–27), and updated in 2004 by the U.S. Geological Survey (Brehme *et al.* 2006, p. 3). The updated monitoring program is designed to assess trends in the amount of occupied habitat on the MCBCP and guide Stephens' kangaroo rat habitat management activities carried out under the INRMP.

Since the 1988 listing, the Marine Corps has formally consulted on military construction project impacts to about 14 ha (34 ac) of occupied or suitable Stephens' kangaroo rat habitat

on MCBCP. As a result, the Marine Corps committed to offset the projected temporary and permanent impacts by establishing and managing the 21.5-ha (53.1-ac) SKR Management Area in the Juliet training area. Management of this site to maintain open habitat preferred by the Stephens' kangaroo rat is achieved through periodic burning with prescribed burn practices. This site is not set aside as a habitat preserve and therefore may be subject to subsequent training-related impacts over time.

It remains uncertain how ongoing military training affects Stephens' kangaroo rat on MCBCP. Training may be compatible with Stephens' kangaroo rat to some extent by promoting areas with limited vegetative cover, but training may also negatively affect Stephens' kangaroo rat by compacting soils, crushing burrows or individuals, or promoting invasive plants that degrade suitability of habitat for Stephens' kangaroo rat. Since the 1988 listing, the Marine Corps has instituted Range and Training Regulations that restrict ground-disturbing activities, off-highway vehicle use, and other training activities within occupied Stephens' kangaroo rat habitat (Marine Corps 2002). These restrictions are likely to have reduced incidence of Stephens' kangaroo rat mortality, disturbance, injury, or habitat degradation caused by training activities, although we anticipate some impact is probably occurring at a low rate.

Similar monitoring efforts for Stephens' kangaroo rat have been conducted at Detachment Fallbrook from 1990 to 1991 (Service 1993, p. 6), 2001 to 2002 (Montgomery *et al.* 2005, p. 3), and 2002 to 2007 (U.S. Navy 2006a, p. 1–4; U.S. Navy 2007). Since the 1988 listing, about 40 ha (99 ac) of occupied or suitable Stephens' kangaroo rat habitat has been impacted by various construction projects at Detachment Fallbrook (Service 1995, 2003). Most impacts related to construction projects have been offset by habitat enhancement at appropriate locations throughout Detachment Fallbrook. These sites, however, are not set aside as habitat preserves and therefore may be subject to subsequent impacts over time. An additional 25 ha (63 ac) of occupied and 35 ha (86 ac) of suitable Stephens' kangaroo rat habitat have been impacted by fire control actions (Service 1995, 2003).

Successional processes may be reducing the amount of available Stephens' kangaroo rat habitat on Detachment Fallbrook, thereby negatively affecting the Stephens' kangaroo rat population there. Removal of agriculture and military training

activities, reduced grazing, and lower fire frequencies may all have contributed to the filling in of open habitat suitable for Stephens' kangaroo rat, although quantification of this habitat loss and identification of processes involved have not been adequately studied. Because successional processes have been identified as negatively affecting Stephens' kangaroo rat, disturbances, including wildfires, prescribed fire, ungulate grazing, and mechanical vegetation reduction (discing), that open up habitat or remove above-ground vegetation in areas with soils suitable for Stephens' kangaroo rat may prove beneficial to this species.

San Diego County—North County Multiple Species Conservation Plan (MSCP) Planning Area and Rancho Guejito

A draft North County MSCP plan has the potential to contribute to the recovery of the Stephens' kangaroo rat in north San Diego County, excluding on military lands. A planning agreement for the North County MSCP plan is signed; the agreement may afford limited protection to Stephens' kangaroo rat and its habitat from discretionary development and construction impacts (NCCP Planning Agreement No. 2810–2007–00205), although these conservation measures cannot be assured because the proposed actions have been neither permitted nor proven effective. Rancho Guejito, which falls within the North County MSCP planning area, is privately owned and has approximately 1,219 ha (3,012 ac) of baseline Stephens' kangaroo rat occupied habitat. Recently, Rancho Guejito has been proposed for development. The Service and San Diego County have entered into discussions with the landowners of Rancho Guejito to address the conservation and development issues related to Stephens' kangaroo rat habitat. Rancho Guejito currently remains subject to ongoing development pressures.

Habitat Destruction and Modification by Nonnative Ungulates

Grazing (and associated impacts from crushing of burrows, trampling of habitat and soil compaction, introduction of nonnative grasses, and conversion to less suitable vegetation types) has historically impacted Stephens' kangaroo rat and its habitat rangewide. Grazing of grasslands associated either with commercial grazing activities or with grazing practices associated with habitat management activities (*i.e.*, under

management plans specific to habitat conservation plans) has been, and remains, a land use practice in western Riverside and San Diego Counties. These two forms of grazing have potential for differential impacts to Stephens' kangaroo rat.

Grazing for commercial practice has been reduced significantly by urban development and fragmentation and from the change to dry land and citriculture farming. At the time of the 1988 listing, commercial grazing was conducted at high densities using both sheep and cattle, occurred year round, and was not managed for species conservation value for Stephens' kangaroo rat. Commercial grazing has since been reduced, and where such grazing still exists, impacts have been lessened compared to when the species was listed.

Grazing that is managed for the purpose of improving habitat quality for Stephens' kangaroo rat is currently practiced and is limited to certain geographic areas within Stephens' kangaroo rat occupied habitat. This form of grazing follows specific methodologies to avoid or significantly reduce any negative impacts for Stephens' kangaroo rat (*e.g.*, limited number of grazing animals, typically sheep; short duration (1 to 2 day consecutive maximum); and conducted in only certain seasons). Managed grazing practices are used by RCHCA at Lake Mathews/Estelle Mountain and Lake Skinner, and by the Bureau of Land Management and RCHCA at Steele Peak. Grazing is allowed on Federal lands at Detachment Fallbrook to control nonnative grasses or as a means of fire suppression (*e.g.*, fire breaks). Cattle grazing, however, has been temporarily halted on Detachment Fallbrook beginning in 2004. Although cattle grazing is projected to be re-initiated in 2010 (C. Wolf, Detachment Fallbrook, pers. comm. to M. Pavelka CFWO, May 11, 2009), lack of grazing in the interim has probably contributed to increasingly dense grasslands on Detachment Fallbrook that have inhibited Stephens' kangaroo rat's growth and movement. To offset the temporary loss of the beneficial aspects of cattle grazing, the Navy recently has conducted limited mechanical vegetation reduction activities to benefit Stephens' kangaroo rat on Detachment Fallbrook (Navy 2008a, b).

Commercial grazing for purposes other than habitat or vegetation management may still occur in some situations on private lands. Between 1987 and 1990, land management changes and a reduction in grazing pressure at the Lake Henshaw site

appeared to promote a shift in the vegetation type that led to an estimated 90 percent decrease in the Stephens' kangaroo rat population (O'Farrell 1990, p. 81; O'Farrell, 1997, p. 31). Mostly due to the reduction in commercial grazing pressures, which in some cases was detrimental to habitat and in other cases was beneficial, we now consider grazing to no longer be a rangewide threat to Stephens' kangaroo rat, assuming grazing is adequately managed.

Habitat Destruction and Modification by Other Nonnative Species

Conversion of native vegetation to nonnative annual grassland is a potentially rangewide, high magnitude threat to Stephens' kangaroo habitat. Increased dominance of nonnative plant species, especially dense thatch-forming grasses and *Lepidium latifolium* (perennial peppergrass, or pepperweed) reduces habitat suitability, by reducing the abundance of forb-dominated grassland habitat preferred by this species, and by reducing necessary open bare-ground habitat. Similarly, the invasion of native perennial grasses (through land use practices) or conversion to dense stands of coastal sage scrub through natural succession can make the habitat less suitable for Stephens' kangaroo rat over time.

Several invasive, nonnative and native grasses can reduce or otherwise degrade Stephens' kangaroo rat habitat if they become established at high densities (O'Farrell and Uptain 1989, p. 7), because their plant materials do not rapidly break down after dying. The nonnative grasses *Schismus barbatus* (common Mediterranean grass) and *Vulpia myuros* (foxtail fescue) do not negatively influence habitat for Stephens' kangaroo rat, presumably because they do not form persistent dense mats like other nonnative grass species (*e.g.*, *Bromus* spp. (brome)) (O'Farrell 1993a, p. 6; O'Farrell 1997, p. 18). Consequently, natural or artificial disturbances that remove or prevent the development of dense ground cover or succession of grassland communities to later stage shrub communities may be beneficial to Stephens' kangaroo rat (Price *et al.* 1994a, p. 9; O'Farrell 1997, p. 30). Nonetheless, too much disturbance (*e.g.*, severe fire intensity and excessive trampling) may be detrimental (Tetra Tech 1999, pp. 2–15; Haas and O'Farrell 2006, p. 34), particularly if a high proportion of individuals from a population perish from these disturbances. Thus, to maintain habitat suitability and occupancy by Stephens' kangaroo rat, in areas dominated by nonnative grasslands, regular management to

reduce grass density and thatch buildup is necessary.

Studies suggest that, when properly managed, certain disturbance activities such as grazing, brush removal, and natural and human-caused fires may reduce the threat of habitat modification from nonnatives and help to maintain the open habitat preferred by Stephens' kangaroo rat. Fire has been shown to be both beneficial and detrimental to Stephens' kangaroo rat. Price *et al.* 1995 (p. 15) found that at Lake Perris, populations of Stephens' kangaroo rat respond positively to fire-induced habitat alterations of areas less than 1 ha (2.8 ac). Additionally, patchiness on a relatively small spatial scale facilitates recolonization because immigration sources are nearby. Disturbance associated with fire may reduce thatch produced by nonnative species and contribute to the maintenance of bare ground required by the species (Price *et al.* 1995, p. 56). Prescribed fires can be employed to reduce invasive, nonnative and native plants; however, because most of the Stephens' kangaroo rat habitat is near urban and suburban areas in western Riverside County, use of prescribed fire is problematic and often incompatible with urban and suburban land uses.

There is concern that conversions of occupied habitat from forb-dominated grasslands, suitable for Stephens' kangaroo rat, to perennial bunch-grass-dominated grasslands, less suited to Stephens' kangaroo rat, have occurred throughout the species' range. Current and future active management may be required to maintain suitable forb-dominated grassland and avoid vegetation conversion or succession, such as the vegetation changes that occurred at Lake Henshaw. O'Farrell (1990, pp. 80–81) suggests that, unless intensive and sustained management is undertaken to avoid this type of habitat conversion and degradation to perennial bunch-grass-dominated grasslands or dense stands of coastal sage scrub, lower densities of Stephens' kangaroo rat will occur. Fragmentation of populations will result as patches of habitat become unsuitable, and will render Stephens' kangaroo rat populations much more vulnerable to extirpation. Currently, the Lake Henshaw site is not being managed to control nonnatives; however, with proper control of nonnatives, the Lake Henshaw site could represent approximately 5,100 ha (12,602 ac) of potentially occupied habitat, which would make it the largest, most contiguous, and potentially the most viable population of Stephens' kangaroo rat rangewide.

The main effect of invasive species is the decrease in habitat quality and available forage for Stephens' kangaroo rat. Some habitat may be lost due to nonnative (and native) grass invasion or coastal sage scrub conversion resulting in unsuitable habitat for the Stephens' kangaroo rat. Presumably a certain amount of invasive species is tolerable when held in check with disturbance activities such as certain grazing regimes, brush removal, and managed fires, but further investigations as to what frequency and intensity and degree of applicability are both ongoing and needed to determine the long-term benefit to Stephens' kangaroo rat. Currently, there is little active management of habitat occurring across the range of the species. The maintenance of habitat conditions that Stephens' kangaroo rat requires is essential for the conservation of this species (Service 1997, p. 49).

Habitat Destruction and Modification by Off-Highway Vehicles (OHVs)

At the time of the 1988 listing, OHV use was described as a factor that potentially reduces habitat suitability (53 FR 38467, September 30, 1988). OHVs directly damage plant communities, as well as the soil crust and the burrow systems of ground-dwelling species such as Stephens' kangaroo rat, thereby degrading the species' habitat (Bury *et al.* 1977, p. 16). Trespassing by OHVs negatively impacts Stephens' kangaroo rat at Steele Peak, Lake Mathews, and San Jacinto core reserves, and results in degradation of habitat. OHV trespassing and other encroachments, such as illegal trash dumping, trespassing on foot, vandalism, and encroachment by neighboring landowners, have been reported as a chronic problem (RCHCA 2001a, p. 9; RCHCA 2002a, p. 10; RCHCA 2004a, p. 10; RCHCA 2004b, p. 10; RCHCA 2006, p. 10). Efforts to curtail these activities have been limited and have not been successful due to lack of support for adequate patrols, limited available funding, differing land use policies of landowners within the core reserves, and lack of law enforcement capabilities by the reserves' managers. Overall, we consider OHV use to remain a threat to Stephens' kangaroo rat.

Summary of Factor A

At the time of listing, the major threat to Stephens' kangaroo rat habitat was rangewide loss, degradation, and fragmentation of habitat due to urban and agricultural development. However, since the species' 1988 listing, conservation measures, such as the

development and successful implementation of habitat conservation plans, have reduced the magnitude of the threat of habitat loss due to urban and agricultural development throughout most of the range of the Stephens' kangaroo rat. Assembly of the core reserves under the HCP considered the isolation of small fragments of Stephens' kangaroo rat habitat at known localities at the time of listing. The successful implementation of habitat conservation plans has resulted in a total of 36 percent of baseline Stephens' kangaroo rat occupied habitat being conserved and protected from the threat of loss to urban development. However, urban development pressures remain on a significant portion of baseline occupied habitat within the range of Stephens' kangaroo rat.

We specified grazing as a significant rangewide threat to Stephens' kangaroo rat in the 1988 final listing rule (53 FR 38465). Since then, there has been a reduction in large-scale commercial grazing operations throughout the range of the species. As such, the impacts of grazing have been reduced across the range of the species such that now we do not consider grazing to be a rangewide threat. In some cases, moderate levels of grazing appear to be beneficial to Stephens' kangaroo rat habitat by maintaining an open vegetation structure, which is preferred by the species.

Most areas currently occupied by Stephens' kangaroo rat are threatened by habitat degradation from encroachment of nonnative grasses or loss of habitat due to the natural succession to more shrub-dominated communities. Invasion of nonnative grasses alter both the structure and composition of Stephens' kangaroo rat habitat by filling in open spaces and excluding forbs. This is a current and rangewide threat that is addressed by existing conservation plans (habitat conservation plans and integrated natural resources management plans) to manage for nonnative grasses and to reduce impacts to Stephens' kangaroo rat to ameliorate the effects on nonnative grasses. But, at this point in time, these plans are not managing sufficiently large areas to counteract the threat.

OHV use, with its resultant habitat degradation and loss, continues to be a threat to Stephens' kangaroo rat habitat. OHVs have negatively impacted Stephens' kangaroo rat at Steele Peak, Lake Mathews, and San Jacinto core reserves, and efforts to curtail illegal trespassing and other encroachments have had limited success. Inadequate boundary fencing and patrols around the core reserves have been attributed to

limited funding (RCHCA 2008, p. 13). OHV trespass on public and private lands is a known to threaten Stephens' kangaroo rat rangewide, but we do not currently know the magnitude of this threat.

Based on our review of the best scientific and commercial information, we conclude that Stephens' kangaroo rat habitat continues to be threatened by habitat degradation from urban development, nonnative species, and OHVs now and in the foreseeable future throughout the Stephens' kangaroo rat's range.

Factor B. Overutilization for Commercial, Recreational, Scientific, or Educational Purposes

In the 1988 listing rule (53 FR 38465), the Service did not identify threats from overutilization. The petition did not provide information regarding this factor, and we do not have any new information to indicate that overutilization of any kind is a threat to Stephens' kangaroo rat now or in the foreseeable future.

Factor C. Disease or Predation

The 1988 final listing rule (53 FR 38465) stated that populations occupying fragmented habitat, such as Stephens' kangaroo rat, could be more easily extirpated from unpredictable natural catastrophes, such as disease outbreaks (53 FR 38468). However, at the time of listing, disease was not identified as a threat to Stephens' kangaroo rat, nor did the petition provide any information regarding this factor. We have no new information that suggests disease is a threat or would become a threat to the species in the foreseeable future.

In the 1988 listing rule, we did not find the threat from predation to be significant. However, we did express concern that predation of Stephens' kangaroo rat from domestic and feral cats on reserves adjacent to urban neighborhoods could increase as a result of urbanization (53 FR 38467). Fragmentation of habitat likely promotes higher levels of predation by urban-associated animals (e.g., domestic cats) as the interface between occupied habitat and developed areas is increased. In addition, domestic cat densities along the boundaries of urban and natural areas can be artificially high where cat owners, by providing food, elevate cat populations far beyond carrying capacity (Crooks and Soule 1999, p. 565). Densities of domestic and feral cats are likely high near several core reserves near urban areas in western Riverside County and may require an active management approach

to minimize predation and ensure that populations of Stephens' kangaroo rat on core reserves remain viable. Currently, there is no active management in place to eliminate or reduce potential predation from feral or domestic cats in western Riverside or San Diego Counties. To our knowledge, predation from feral or domestic cats is not known to be a significant threat to Stephens' kangaroo rat populations in San Diego County because the four extant populations exist in rural areas where feral or domestic cat densities are likely very low.

Summary of Factor C

We did not identify disease as a threat to Stephens' kangaroo rat in the final listing rule, nor did the petitioner provide any new substantive information. Based on our review of the best available scientific and commercial information, we found no evidence that disease is now or will become in the foreseeable future a threat to Stephens' kangaroo rat. We consider predation by feral and domestic cats to be a threat to the Stephens' kangaroo rat rangewide, and in particular in western Riverside County, now and in the foreseeable future.

Factor D. The Inadequacy of Existing Regulatory Mechanisms

At the time of listing in 1988, regulatory mechanisms that afforded some protection for Stephens' kangaroo rat included: (1) California Endangered Species Act (the species was listed by California as threatened in 1971); (2) California Environmental Quality Act; (3) land acquisition and management by Federal, State, or local agencies or by private groups and organizations; and (4) local laws and regulations (53 FR 38465).

In the 1988 listing rule (53 FR 38468), we found that inadequate regulatory mechanisms place Stephens' kangaroo rat at risk. The status of regulatory mechanisms with an impact on Stephens' kangaroo rat has changed significantly since listing, with the addition of habitat conservation plans and agreements that conserve habitat occupied by Stephens' kangaroo rat. The petitioner asserts that, because of the extensive habitat preservation by the Riverside County Habitat Conservation Agency, delisting the species is warranted at this time. However, we believe that while habitat conservation plans provide significant species and habitat protection towards the recovery of the Stephens' kangaroo rat, significant threats remain that warrant the species' protection under the Act. The State and Federal regulatory

mechanisms that aid in the conservation of the Stephens' kangaroo rat are described below.

State Protections

California Endangered Species Act (CESA)

Under provisions of the CESA, the California Fish and Game (CFG) Commission listed the Stephens' kangaroo rat as threatened in 1971. CESA includes prohibitions forbidding the "take" of Stephens' kangaroo rat (Chapter 1.5, Section 2080, CFG code). However, sections 2081(b) and (c) of CESA allow California Department of Fish and Game (CDFG) to issue incidental take permits for State-listed endangered and threatened species if:

- (1) The authorized take is incidental to an otherwise lawful activity;
- (2) The impacts of the authorized take are minimized and fully mitigated;
- (3) The measures required to minimize and fully mitigate the impacts of the authorized take are roughly proportional in extent to the impact of the taking on the species, maintain the applicant's objectives to the greatest extent possible, and are capable of successful implementation;
- (4) Adequate funding is provided to implement the required minimization and mitigation measures and to monitor compliance with and the effectiveness of the measures; and
- (5) Issuance of the permit will not jeopardize the continued existence of a State-listed species.

As a delisted species, Stephens' kangaroo rat would continue to be protected by the CESA which affords protection at the State level for endangered and threatened species.

California Environmental Quality Act (CEQA)

CEQA is the principal statute mandating environmental assessment of projects in California. The purpose of CEQA is to evaluate whether a proposed project may have an adverse effect on the environment and, if so, to determine whether that effect can be reduced or eliminated by pursuing an alternative course of action or through mitigation. CEQA applies to projects proposed to be undertaken or requiring approval by State and local public agencies (http://www.ceres.ca.gov/topic/env_law/ceqa/summary.html). CEQA requires disclosure of potential environmental impacts and a determination of "significant effects" if a project has the potential to reduce the number or restrict the range of a rare or endangered plant or animal; however, projects may move forward if there is a statement of

overriding consideration. If significant effects are identified, the lead agency has the option of requiring mitigation through changes in the project or to decide that overriding considerations make mitigation infeasible (CEQA section 21002). Protection of listed species such as Stephens' kangaroo rat through CEQA is, therefore, dependent upon the discretion of the lead agency involved.

In the absence of its Federal status as an endangered species, CEQA has the potential to contribute to the protection of Stephens' kangaroo rat, but such protection is not assured since lead agencies are given discretion over whether to require impact minimization or mitigation measures. While CEQA requires the consideration of effects to Stephens' kangaroo rat and whether those effects can be reduced or eliminated, projects that adversely affect Stephens' kangaroo rat may still move forward. CEQA does not provide an adequate regulatory mechanism in the absence of listing under the Act to ensure effects to Stephens' kangaroo rat and its suitable or occupied habitat are avoided, reduced, or eliminated.

Natural Community Conservation Plans (NCCPs)

The NCCP program is a cooperative effort involving the State of California and numerous private and public partners to protect regional habitats and species. The primary objective of NCCPs is to conserve natural communities at the ecosystem scale while accommodating compatible land use, including urban development (<http://www.dfg.ca.gov/habcon/>). Natural Community Conservation Plans help identify and provide for the regional or area-wide protection of plants, animals, and their habitats, while allowing compatible and appropriate economic activity. Many NCCPs are developed in conjunction with habitat conservation plans prepared under the Act, including the HCP and the MSHCP. The HCP and the MSHCP are NCCP/habitat conservation plans. If the Stephens' kangaroo rat was delisted, the existing NCCPs, and the protections they provide, would remain in effect.

Federal Protections

Endangered Species Act of 1973, as Amended (Act)

Upon listing as endangered on September 30, 1988 (53 FR 38465), Stephens' kangaroo rat received benefit from the protections of the Act, which includes the prohibition against take and the requirement for interagency consultation for Federal actions that

may affect the species. Section 9 of the Act prohibits the take of endangered wildlife without special exemption. The Service generally extends these prohibitions through regulations for threatened wildlife. The Act defines "take" as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct (16 U.S.C. 1532(19)). Our regulations define "harm" to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering (50 CFR 17.3). Our regulations also define "harass" as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns, which include, but are not limited to, breeding, feeding, or sheltering (50 CFR 17.3).

Section 7(a)(1) of the Act requires all Federal agencies to utilize their authorities in furtherance of the purposes of the Act by carrying out programs for the conservation of endangered species and threatened species. Section 7(a)(2) of the Act requires Federal agencies to ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of listed species or adversely modify their critical habitat. Thus, listing the Stephens' kangaroo rat provided a variety of protections, including the prohibition against take and the conservation mandates of section 7 for all Federal agencies. These procedures and protections would not be required if we delisted Stephens' kangaroo rat, and significant reductions in recovery effort and protection would likely result. As a delisted species, Stephens' kangaroo rat would continue to be protected by the Lacey Act (18 U.S.C. 42 *et seq.*, and 16 U.S.C. 3371 *et seq.*), which prohibits trade in wildlife and plants that have been illegally taken, possessed, transported, or sold.

Under section 10(a)(1)(B) of the Act, the Service may issue "incidental take" (*i.e.*, taking of endangered species that is incidental to, but not the purpose of, carrying out of an otherwise lawful activity, 50 CFR 402.02) permits for listed animal species to non-Federal applicants, which provide exemptions to the take prohibitions under section 9 of the Act. To qualify for an incidental take permit, applicants must develop, fund, and implement a Service-approved habitat conservation plan that, among other requirements, details measures to minimize and mitigate the impact of such taking to listed species.

Issuance of an incidental take permit by the Service is subject to the provisions of section 7 of the Act; thus, the Service is required to ensure that the actions to be covered by the habitat conservation plan are not likely to jeopardize the species or result in the destruction or adverse modification of critical habitat. As discussed under the Factor A discussion, there are two existing incidental take permits for Stephens' kangaroo rat. If the Stephens' kangaroo rat was delisted, the existing HCPs, and the protections they provide, would remain in effect. The HCP and the MSHCP are discussed below.

HCP (Western Riverside County)

The development of the Riverside County Habitat Conservation Agency's Habitat Conservation Plan for the Stephens' Kangaroo Rat in Western Riverside County (the HCP) was in response to the threat of habitat loss due to rapid urban and agricultural development in western Riverside County. The boundaries of the HCP encompass an area of approximately 216,084 ha (533,954 ac) located within western Riverside County and bordered on the north by the San Bernardino County line and on the south by the San Diego County line. The area is generally defined as territory west of the San Jacinto Mountains with National Forest Lands flanking the western and eastern boundaries (Cleveland and San Bernardino National Forests, respectively) (RCHCA 1996, p. 31). Core reserve areas are not protected in perpetuity under the HCP; however, the core reserves will be protected through the term of the permit, which expires in 2026. When the HCP's initial 30-year term expires in 2026, the permittees have expressed their intention to process an amendment to the MSHCP to allow coverage for the Stephens' kangaroo rat throughout the MSHCP's area. Additionally, the HCP's core reserves are included within the Conservation Area under the MSHCP. Therefore, we anticipate a continued conservation benefit to the species even after the HCP expires. The primary threat identified in the 1988 listing rule, habitat destruction from urban and agricultural development resulting in isolated habitat patches has been largely ameliorated or addressed in Riverside County through the creation of the core reserve system and the implementation of the overarching habitat conservation plans.

MSHCP (Western Riverside County)

The Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) contains species-specific

objectives for Stephens' kangaroo rat that augment the core reserve design system set forth in the HCP, which was the key document intended for the long-term conservation strategy for the Stephens' kangaroo rat. Incidental take of Stephens' kangaroo rat had already been permitted consistent with the HCP within the HCP boundary (or fee area). Additional terms and conditions within the MSHCP Conservation Area set forth three Objectives including: conservation of an additional 1,214 ha (3,000 ac) of Stephens' kangaroo rat occupied habitat, and that 30 percent of the total occupied habitat conserved within the MSHCP and HCP's areas would be maintained at a population of medium or higher density (*i.e.*, 5 to 10 individuals per hectare) with no single core area accounting for more than 30 percent of the conservation target (WRMESHCP 2003, p. M-198). Recent scientific data indicates that these species-specific objectives may have not been met in terms of density or occupancy estimates either within the minimum two Core Areas outside the existing HCP boundary (WRMESHCP 2009, pp. 18-20), or, as previously discussed, within the HCP plan area (HCP core reserves), as no reliable density estimates are available to date. Until the species-specific objectives are met within the MSHCP plan area, threats due to habitat loss and fragmentation remain. Furthermore, while these threats are largely ameliorated within the plan boundary, the MSHCP is inadequate to address these threats rangewide.

Sikes Act

The Sikes Act (16 U.S.C. 670a) authorizes the Secretary of Defense to develop cooperative plans for conservation and rehabilitation programs, and to establish outdoor recreation facilities on military installations. The Sikes Act also provides for the Secretaries of Agriculture and the Interior to develop cooperative plans for conservation and rehabilitation programs (INRMPs, described below) on public lands under their jurisdiction. While the Sikes Act of 1960 was in effect at the time of the Stephens' kangaroo rat's 1988 listing, it was not until the Sikes Act's 1997 amendment (Sikes Act Improvement Act) that Department of Defense (DOD) installations were required to prepare integrated natural resources management plans (INRMPs). Consistent with the use of military installations to ensure the readiness of the Armed Forces, INRMPs provide for the conservation and rehabilitation of natural resources on military lands. They incorporate, to the maximum

extent practicable, ecosystem management principles and provide the landscape necessary to sustain military land uses. While the implementation of INRMPs is subject to funding availability, they address the conservation of natural resources on military lands and can be an added conservation tool in promoting the recovery of endangered and threatened species, and other fish and wildlife resources, present on military lands.

The U.S. Marine Corps and the U.S. Navy have contributed to recovery efforts for Stephens' kangaroo rat on military lands in San Diego County through management and monitoring of Stephens' kangaroo rat populations. The Stephens' kangaroo rat populations at MCBCP and NWSSB Detachment Fallbrook are addressed under existing INRMPs and specific management and monitoring of these populations is a reasonable expectation; however, there is concern that Stephens' kangaroo rat occupied habitat may be reduced to less than one-third of the habitat identified in our baseline analysis (see Factor A discussion above). If the Stephens' kangaroo rat were no longer listed under the Act, we would expect management actions specific to maintaining Stephens' kangaroo rat populations at Camp Pendleton and Detachment Fallbrook to receive lower priority within their respective INRMPs. Although these INRMPs would likely continue to provide a benefit to the Stephens' kangaroo rat through the protection and management of habitat, these benefits would be subject to military funding allocations that generally give higher priority to management issues for endangered and threatened species (U.S. Marine Corps 2007, pp. 1-3).

National Environmental Policy Act (NEPA)

NEPA (42 U.S.C. 4321 *et seq.*) requires all Federal agencies to formally document, consider, and publicly disclose the environmental impacts of major Federal actions and management decisions significantly affecting the human environment, including natural resources. NEPA documentation is provided in an environmental impact statement, an environmental assessment, or a categorical exclusion, and may be subject to administrative or judicial appeal. In cases where that analysis reveals significant environmental effects, the Federal agency must propose mitigation alternatives that would offset those effects (40 CFR 1502.14 and 1502.16). These mitigations usually provide some protection for listed species. However,

NEPA does not require that adverse impacts be fully mitigated, only that impacts be assessed and the analysis disclosed to the public.

Summary of Factor D

Although various State and Federal laws provide some protection for Stephens' kangaroo rat and its habitat, the Act is currently the primary law providing protection for Stephens' kangaroo rat since its listing as a federally endangered species in 1988. Existing regulatory mechanisms have not protected the species from further losses of populations and habitat.

The primary tool for conserving the species has been the 1996 Riverside County Habitat Conservation Agency's Habitat Conservation Plan for the Stephens' Kangaroo Rat in Western Riverside County (the HCP); however, the monitoring and management protocols and practices are incomplete. The 2004 Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) has the potential to enhance the long-term persistence of Stephens' kangaroo rat within western Riverside County, but as a multi-species plan, it has dynamic conservation objectives and priorities, and in terms of the provisions addressing Stephens' kangaroo rat, the MSHCP has not been fully implemented at this time. The San Diego North County MSCP is still in draft form, and therefore assures no protection to the species at this time.

On military lands, integrated natural resources management plans (INRMPs) address the conservation of natural resources, including Stephens' kangaroo rat, and can be an added conservation tool in promoting the recovery of the species. Management practices under active INRMPs do provide guiding principles for preserving Stephens' kangaroo rat and its habitat while sustaining necessary military land uses.

In spite of the existing regulatory mechanisms, Stephens' kangaroo rat continues to be impacted by habitat modification and fragmentation due to urban and agricultural development, nonnative species, off-highway vehicles (OHVs), and the potential impacts associated with climate change. Current threats may be reduced or eliminated to insignificance through implementation of habitat conservation plans when appropriate adaptive management procedures are fully implemented. In summary, we conclude that significant rangewide threats remain and, absent the protections of the Act, the existing regulatory mechanisms (CEQA, CESA, NCCP, and NEPA) do not provide sufficient protections to provide for the long-term persistence of Stephens'

kangaroo rat now and in the foreseeable future.

Factor E. Other Natural or Manmade Factors Affecting the Species' Continued Existence

At listing, habitat for Stephens' kangaroo rat was severely reduced and fragmented by development and related activities in western Riverside County (53 FR 38467, September 30, 1988). At that time, we identified the following as Factor E threats: Nonnative grass succession (now discussed under Factor A, above), use of rodenticides, reduction in habitat size (now discussed as fragmentation under Factor A, above), and increased vulnerability to unpredictable catastrophic events due to small population size. After the 1988 listing, we identified climate change as a new threat to the species. Current Factor E threats impacting Stephens' kangaroo rat include rodenticides, small population size, and impacts of climate change.

Rodenticides

Pocket gophers (*Thomomys bottae*), California ground squirrels (*Spermophilus beecheyi*), and nonnative rodents are sometimes considered nuisance species on public and private lands. These species are sometimes targeted for control through use of anticoagulant rodenticides. Stephens' kangaroo rats use burrow networks of pocket gopher (*Thomomys bottae*) and California ground squirrels (*Spermophilus beecheyi*) (Michael Brandman Associates 1989, p. 7), and are thus at risk of being unintentionally poisoned by anticoagulant rodenticides meant to target nuisance species.

Baits containing anticoagulants are placed in and around burrows and may also be consumed by nontarget species, including Stephens' kangaroo rats. Use of rodenticides may have affected Stephens' kangaroo rat at State recreation areas that had rodent control programs and possibly at other locations where known Stephens' kangaroo rat populations have inexplicably disappeared. Direct ingestion of rodenticides at bait stations by Stephens' kangaroo rats can be ameliorated in part from the use of elevated bait stations (Whisson 1999, p. 176), and the baiting of traps during daylight hours when kangaroo rats are inactive. However, poison bait that falls to the ground or that is cached at ground level by targeted species still poses a threat to Stephens' kangaroo rat if ingested during nocturnal foraging or encountered in use of abandoned burrows.

To the best of our knowledge California State Parks (California Department of Parks and Recreation) no longer use rodenticides for rodent control within the Lake Perris State Recreation Area (Kietzer 2010). While we do not know the magnitude of the threat of rodenticide exposure, we do consider rodenticide use a rangewide threat to the Stephens' kangaroo rat as the second-generation anticoagulants (brodifacoum, bromadiolone and difethialone) are commonly used as rodenticides targeting rats, mice, ground squirrels and other rodents and are found in many over-the-counter pest control products (Erickson and Urban 2004, pp. ii, 1). Based on an evaluation of the ecological risks associated with the use of bait products containing rodenticide active ingredients, the Environmental Protection Agency (EPA) is classifying many bait products as restricted-use pesticides. This will limit their use to certified applicators who have had sufficient training to know when and how to use the products to reduce the risk of nontarget organism exposure. EPA is also requiring modified and tamper-resistant bait stations, which are expected to reduce overall nontarget wildlife exposures and resulting adverse effects (Erickson and Urban 2004). These risk reduction measures should lower the potential for exposure now and in the future in both urban and rural areas adjacent to lands where Stephens' kangaroo rat overlaps with nuisance species (e.g., at Lake Perris Reserve and in Ramona Grasslands) and near private agricultural lands, such as orchards and rangelands.

Small Geographic Range and Population Size

The best available scientific data suggest that Stephens' kangaroo rat is extant within a relatively restricted range within western Riverside and northern San Diego Counties. Small geographic range has been identified as the most important single indicator of elevated extinction risk in mammals (Purvis *et al.* 2000, p. 1949; Cardillo *et al.* 2006, pp. 4157–4158; Cardillo *et al.* 2008, p. 1445). The inherent vulnerability associated with small geographic range is due to the fact that a single localized threat, whether it is manmade (e.g., development) or environmental (e.g., increased and intense precipitation), can potentially impact the entire distribution of the species, resulting in an increased probability of extinction. Price and Endo (1989, p. 299) and O'Farrell and Uptain (1989, p. 5) verified that the majority of remaining Stephens'

kangaroo rat populations occur in small, isolated areas (habitat patches) and are fragmented from a wider historical distribution.

Although fragmentation does not necessarily lead to extinction of a species within a habitat patch, small populations in small habitat patches have an increased likelihood of extinction and are increasingly affected by their surroundings (e.g., edge effects such as physical effects differing at the boundaries of a patch and the interior of a patch) (Noss and Cooperrider 1994, pp. 51–54). Isolation compounds risks associated with small population size, because it reduces the chance that populations will naturally recover through immigration of dispersing individuals from nearby populations (Hanski 1994, p. 132), as has been documented for several Stephens' kangaroo rat populations (O'Farrell and Uptain 1989, p. 5; Shultz *et al.* 1991, p. 12). Theoretical predictions and empirical evidence indicate that smaller populations such as are found with Stephens' kangaroo rat tend to have higher mortality rates and reduced reproductive output, leading to demographic fluctuations and an increased susceptibility to environmental catastrophes (Lande 1988, pp. 1456–1458; Lacy 1997, p. 321; Frankham *et al.* 2002, pp. 24, 32). Small populations have a higher probability of extinction than larger populations, as their low abundance renders them susceptible to inbreeding, losses of genetic variability, and demographic problems (Lande 1988, p. 1455).

While populations of Stephens' kangaroo rat are small, we do not have any information regarding genetic fitness of any populations. A general principle of conservation biology states that a species' long-term persistence is dependent upon its capacity to adapt to changes in environmental conditions, competition, predation, disease risk, and parasites. Maintenance of genetic diversity helps to ensure that a species' adaptive capabilities are maintained (Caughley 1994, pp. 217–221; Frankham and Ralls 1998, p. 441). Results of previous studies regarding the genetic variability within and between populations of Stephens' kangaroo rat are conflicting, and further investigation is required to better understand the adaptive capabilities of Stephens' kangaroo rat and its ability to persist.

Population viability models were developed to recommend the minimum viable population sizes for Stephens' kangaroo rat needed to sustain the species at a 95 percent probability (Burke *et al.* 1991, p. 1). The model developed by Burke *et al.* (1991, pp.

27–28) is the most recent quantitative assessment of Stephens' kangaroo rat population viability and provides probabilities of Stephens' kangaroo rat persistence for intervals of 50 and 100 years. However, this model relies upon the fundamental assumption that the extent of suitable habitat at each site will not decrease throughout the duration of the 50- and 100-year intervals, and precipitation was modeled over 50-, 100-, and 200-year timeframes based on precipitation during the previous century. Given the significant advances in climate change science and the emerging threat of changes of precipitation regimes due to climate change, newer studies with a refined methodology are needed to determine an effective population size for Stephens' kangaroo rat.

Climate Change

Since the 1988 listing of Stephens' kangaroo rat, ongoing, accelerated climate change has been identified as a potential threat to species and ecosystems in the United States (IPCC 2007). The Intergovernmental Panel on Climate Change (IPCC) concluded that warming of the climate system is unequivocal (IPCC 2007, p. 5). Current climate change predictions for terrestrial areas in the Northern Hemisphere include warmer air temperatures, more intense precipitation events, and increased summer continental drying (Field *et al.* 1999, pp. 2–3; IPCC 2007, p. 9).

The general prediction for climate change impacts suggest increased frequency of extreme weather events (*i.e.*, heat waves, droughts, and floods) (IPCC 2007). Stephens' kangaroo rat may respond well after increased precipitation events in the short term, because increased precipitation results in more forbs for seed production. However, if increased intensity of precipitation events favor the increased persistence or an expansion in distribution of annual nonnative grasses, which are less preferred by Stephens' kangaroo rat, then these extreme weather events may negatively affect the species and its habitat. However, there is no substantive information as to how the changes in regional climate patterns (*i.e.*, frequency and intensity of precipitation) will affect Stephens' kangaroo rat or its habitat; predictions are based on continental-scale general models (*e.g.*, precipitation estimates) that do not yet account for localized consequences, including land use and land cover change effects on climate or other regional phenomena.

While we recognize that climate change is an important issue with

potential effects to listed species and their habitats, we currently do not have specific information to make meaningful predictions regarding climate change effects to the Stephens' kangaroo rat or its habitat.

Summary of Factor E

Impacts to Stephens' kangaroo rat by Factor E threats have changed little since the species' 1988 listing. Although reduced, the threat from rodenticide use remains rangewide. Small population size continues to affect this species throughout its range and exacerbates the effects of other threats, making Stephens' kangaroo rat susceptible to stochastic events. Although it is uncertain how climate change will affect Stephens' kangaroo rat or its habitat, modeling predictions suggest more extreme weather events, which could impact the extent of suitable habitat or induce stresses on the species. Therefore, based on our review of the best available scientific and commercial information, we find other natural or manmade factors, including rodenticides, impacts of climate change, and small population size, threaten the continued existence of the Stephens' kangaroo rat now and in the foreseeable future.

Finding

An assessment of the need for a species' protection under the Act is based on threats to that species and the regulatory mechanisms in place to ameliorate impacts from these threats. As required by the Act, we considered the five factors in assessing whether the Stephens' kangaroo rat is endangered or threatened throughout all or a significant portion of its range. We examined the best scientific and commercial information available regarding the past, present, and future threats faced by the Stephens' kangaroo rat. We reviewed the May 1, 1995, and February 25, 2002, petitions; comments and information received after publication of our 90-day finding (69 FR 21567, April 21, 2004); information available in our files; and other available published and unpublished information. We also consulted with recognized experts on Stephens' kangaroo rat and its habitat and with other Federal and State agencies.

In considering what factors might constitute threats, we must look beyond the mere exposure of the species to the factor to determine whether the species responds to the factor in a way that causes actual impacts to the species. If there is exposure to a factor, but no response, or only a positive response, that factor is not a threat. If there is

exposure and the species responds negatively, the factor may be a threat and we then attempt to determine how significant a threat it is. If the threat is significant, it may drive or contribute to the risk of extinction of the species such that the species warrants listing as endangered or threatened, as those terms are defined by the Act. This does not necessarily require empirical proof of a threat. The combination of exposure and some corroborating evidence of how the species is likely impacted could suffice. The mere identification of factors that could impact a species negatively is not sufficient to compel a finding that listing is appropriate; we require evidence that these factors are operative threats that act on the species to the point that the species meets the definition of endangered or threatened under the Act.

The primary threats identified in the 1988 listing rule (53 FR 38465), habitat destruction from urban and agricultural development resulting in isolated habitat patches, has been largely ameliorated through the implementation and design of the core reserve system (through the HCP), through ongoing land acquisitions and easements, and with other conservation plans and efforts (MSHCP and INRMPs). Significant areas of habitat have been protected in western Riverside County and San Diego Counties since the species was listed. Populations in San Diego County that are on privately held lands may enhance the survival and recovery of the species, including some habitat under permanent conservation supporting the Ramona Grasslands population. The Stephens' kangaroo rat population at Camp Pendleton/ Detachment Fallbrook in San Diego County is covered by active INRMPs that include actions to provide for the long-term conservation of the Stephens' kangaroo rat on Federal military lands.

In spite of these conservation gains, significant threats to Stephens' kangaroo rat in Riverside and San Diego Counties remain. There has been loss, fragmentation, and degradation of Stephens' kangaroo rat habitat in the past, and we have identified information indicating that Stephens' kangaroo rat habitat continues to be threatened by fragmentation and degradation associated with urban development (*see* Factor A) in western Riverside and San Diego Counties. This habitat degradation is associated with the lack of boundary security at some of the core reserves, which allows trespass, OHV use, and trash dumping, and the lack of appropriate management (such as fire suppression) to prevent invasive species or succession to shrub-

dominated communities. Lands currently or historically dedicated to agricultural activities likely continue to serve as a source of invasive, nonnative plants. Encroachment of nonnative grasses and succession to more shrub-dominated communities threaten Stephens' kangaroo rat habitat throughout the species' range by filling open spaces and reducing the presence of forbs (Factor A).

While existing data are not adequate to estimate population size, within the existing core reserves in western Riverside County or in San Diego County, surveys indicate that the amount of Stephens' kangaroo rat occupied habitat may be in decline in localities within both counties. Latest survey data indicate that Camp Pendleton, Detachment Fallbrook, and Lake Henshaw, in addition to previous declines in habitat populations, may have suffered declines in the amount of Stephens' kangaroo rat occupied habitat. Predation (Factor C) and rodenticide (Factor E) continue to threaten the species and may contribute additively to other threats affecting this species. Existing regulatory mechanisms, absent the protections of the Act, provide insufficient certainty (Factor D) that efforts needed to address long-term conservation of the species will be implemented or that they will be effective in reducing the level of threats to the Stephens' kangaroo rat throughout its range. Therefore, we find that, in absence of the Act, the existing regulatory mechanisms are not adequate to conserve Stephens' kangaroo rat throughout its range in the foreseeable future.

In conclusion, we have carefully assessed the best scientific and commercial information available regarding the past, present, and future threats faced by this species. Our review of the information pertaining to the five threat factors does not support a conclusion that the threats have been sufficiently removed or their imminence, intensity, or magnitude have been reduced to the extent that the species no longer requires the protections of the Act. Therefore, we find the Stephens' kangaroo rat is in danger of extinction, or likely to become so within the foreseeable future, throughout all or a significant portion of its range and does not warrant delisting at this time.

We request that you submit any new information concerning the status of, or threats to, the Stephens' kangaroo rat to our Carlsbad Fish and Wildlife Office (see ADDRESSES) whenever it becomes available. New information will help us

monitor the Stephens' kangaroo rat and encourage its conservation.

References Cited

A complete list of references cited in this document is available on the Internet at <http://www.regulations.gov> and upon request from the Carlsbad Fish and Wildlife Office (see ADDRESSES).

Authors

The primary authors of this notice are the staff members of the Carlsbad Fish and Wildlife Office.

Authority: The authority for this action is section 4 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Dated: August 6, 2010.

Wendi Weber,

Acting Director, Fish and Wildlife Service.

[FR Doc. 2010-20518 Filed 8-18-10; 8:45 am]

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DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[Docket No. FWS-R4-ES-2010-0057; 92220-1113-0000-C3]

RIN 1018-AX23

Endangered and Threatened Wildlife and Plants; Establishment of a Nonessential Experimental Population of Endangered Whooping Cranes in Southwestern Louisiana

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Proposed rule.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), propose to reintroduce whooping cranes (*Grus americana*), a federally listed endangered species, into habitat in its historic range in southwestern Louisiana with the intent to establish a nonmigratory flock that lives and breeds in the wetlands, marshes, and prairies there. We propose to classify the flock as a nonessential experimental population (NEP) according to section 10(j) of the Endangered Species Act of 1973 (Act), as amended. Releases will be within the historic breeding area in southwestern Louisiana near White Lake in Vermilion Parish. This proposed rule provides a plan for establishing the NEP and provides for allowable legal incidental take of whooping cranes within the defined NEP area. The objectives of the reintroduction are to advance recovery of the endangered whooping crane. No conflicts are

envisioned between the reintroduction and any existing or anticipated Federal, State, Tribal, local government, or private actions such as oil/gas exploration and extraction, aquacultural practices, agricultural practices, pesticide application, water management, construction, recreation, trapping, or hunting.

DATES: We request that you send us comments on the proposed rule and the draft environmental assessment by the close of business on October 18, 2010, or at the public hearings. We will hold public informational open houses from 6 p.m. to 7 p.m., followed by public hearings from 7 p.m. to 9 p.m., on September 15 and 16, 2010, at the locations within the proposed NEP area identified in the ADDRESSES section.

ADDRESSES: *Written comments:* You may submit comments on the proposed rule by one of the following methods:

- *Federal eRulemaking Portal:* <http://www.regulations.gov>. Search for Docket No. FWS-R4-ES-2010-0057 and follow the instructions for submitting comments.

- *U.S. mail or hand-delivery:* Public Comments Processing, Attn: FWS-R4-ES-2010-0057; Division of Policy and Directives Management; U.S. Fish and Wildlife Service; 4401 N. Fairfax Drive, Suite 222; Arlington, VA 22203.

We will post all information received on the proposed rule on <http://www.regulations.gov>. This generally means that we will post any personal information you provide us (see the Public Comments Procedures section below for more details).

You may submit comments on the draft environmental assessment (EA) by one of the following methods:

- *E-mail to:* LouisianaCranesEA@fws.gov.

- *U.S. mail or hand-delivery:* Lafayette Field Office, U.S. Fish and Wildlife Service, 646 Cajundome Boulevard, Suite 400, Lafayette, LA 70506.

Please see the draft EA for additional information regarding commenting on that document.

Copies of Documents: The proposed rule and EA are available by the following methods. In addition, comments and materials we receive, as well as supporting documentation used in preparing this proposed rule, will be available for public inspection:

(1) You can view them on <http://www.regulations.gov>. In the Search Documents box, enter FWS-R4-ES-2010-0057, which is the docket number for this rulemaking. Then, in the Search panel on the left side of the screen, select the type of documents you want