



# Sensitive Species of the Santa Ana Watershed



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

There are 19 species of kangaroo rat, many of which are endemic to California. This small mammal of the rodent family (Heteromyidae) looks quite similar to other kangaroo rat species, with a large head, external cheek pouches, a long tufted tail, and long rear legs used for jumping. It is distinguished from some other kangaroo rats in that it has five toes instead of four, and a grizzled appearance to the tail's dorsal stripe. The Stephens' kangaroo rat (SKR) measures 11 to 12 inches with an average weight of 2.3 ounces (Fed.Reg. 1988). The SKR is active year-round, but only at night (nocturnal), and is not known to

migrate or move seasonally. They live in self-constructed or abandoned pocket gopher (*Thomomys bottae*) burrows. This species is known to be aggressively solitary (DFG 2003), but recent studies have shown a propensity of burrow sharing (Brock *et al.* 2004). Other studies have suggested that when kangaroo rats are removed from an area, the habitat undergoes a type-change from grassland to a shrub-dominated habitat, suggesting that the SKR may be an important keystone species for grassland landscapes (Dudek 2002). The kangaroo rat is unique among mammals because of its ability to survive with out free water. They obtain their water by oxidative and metabolic processes, not drinking (Jameson 2004).

### Habitat

This mammal prefers a gently rolling topography of sparse grasslands, or California buckwheat (*Eriogonum fasciculatum*) and California sagebrush (*Artemisia californica*) associated shrublands with no more than 30% perennial cover. As a fossorial (burrowing) mammal, soil type is of extreme importance to SKR habitat, and they are not found in sandy or hard-packed soils (Zemba and Davenport 1989; Fed.Reg. 1988).

### Status and Distribution

The SKR has suffered widespread habitat loss from continuing development and agricultural activities. The California Department of Fish and Game (CDFG) listed the Stephen's kangaroo rat as threatened in 1971, and is currently considering raising its status to endangered. The United States Fish and Wildlife Service (FWS) lists this species as endangered (1988). The California Natural Diversity Database ranks this species as endangered. This ranking system describes endangered as a species that has only 1000 to 3000 known individuals, occupies 2,000 to 10,000 acres, and/or has only 6 to 20 EO's (element observations). An "EO" indicates the presence of a resident population (CDFG 2003). The County of Riverside adopted an SKR Habitat Conservation Plan in 1996, which has been included in the Multiple Species Habitat Conservation Plan (MSHCP) for western Riverside County. The MSHCP has identified "core areas" to be preserved for this species which include Lake Matthews-Estelle Mountain, Motte-Rimrock Reserve, Lake Skinner-Domenigoni Valley, San Jacinto Wildlife Area-Lake Perris, Sycamore Canyon-March Air Reserve Base, Steele Peak, and Potrero ACEC (Dudek 2002).

The Steven's kangaroo rat is endemic to California and only occurs in the Perris, San Jacinto, San Luis Rey and Temecula Valleys (Zemba and Davenport 1989). Within the Santa Ana watershed, this mammal occurs in the San Jacinto, Temescal, and Perris Valleys, Norco-Corona Hills, and Lake Matthews (Dudek 2000; pers. obs.). SAWA biologists have encountered SKR in Temescal, Mockingbird Canyon (unconfirmed), and at the March SKR Preserve.

## **Threats**

The SKR's current, small geographic range of approximately 1,100 square miles alone makes it worthy of endangered status. Historically, the SKR inhabited 500,000 acres of continuous open space. Over 90% of SKR habitat has been lost (Bragg 1995) and now this species only occurs in small, isolated patches that are not connected eliminating the possibility of dispersal. These small populations are vulnerable to stochastic events, such as a disease, flood and fire, as well as increased human disturbance, any of which could cause local extinction.

In addition to the threats of habitat loss, fragmentation, and other human disturbance, there are two recent political issues that threaten the long-term survival of the SKR. The first issue is a petition by the Riverside County Farm Bureau to de-list the SKR that is under consideration by the USFWS as part of the 5-year review (USFWS 2004). The second issue is the recent decision to "trade-out" one of the MSHCP core areas. The March SKR Preserve has been abandoned by the USFWS and will soon be developed, eliminating the entire population on-site. To trade-out a preserve that was set aside in perpetuity for prior impacts to the SKR, not only eliminates one of the few populations left, but also sets a bad precedence for current and future conservation measures.

## **Research and Management Needs**

It is apparent that the future of this endangered species is quite uncertain. Complete protection of any remaining habitat that is suitable for the SKR is key. Responsible parties must conduct proper management of current preserves and core areas, and if possible these areas should be re-connected, where appropriate, to avoid further isolation and allow dispersal. Agricultural activities and development in SKR-occupied habitat should be avoided.

As a "neighbor", we should avoid further human disturbance (i.e. trampling, off-road use, clearing vegetation, and development) to the habitat where the SKR lives. Additional research is imperative to increase life history data on this species.

## **SAWA Contact**

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## **References**

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## **Photo Credit**

Karen Kitland. Retrieved on 12/10/2003 from <http://www.ecoregion.ucr.edu/photos/dist1.jpg>