

The Smithsonian Book of  
**North American  
Mammals**



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## Stephens's kangaroo rat | *Dipodomys stephensi*

This colorful kangaroo rat inhabits level or gently sloping topography at elevations of 85–850 meters in portions of western Riverside, southern San Bernardino, and northern San Diego counties, California. Extensive loss of habitat has left only isolated populations; it is one of several species in the genus *Dipodomys* threatened with extinction in California as a result of agricultural and urban development. Pleistocene fossils similar to *D. stephensi* are known from Orange County, California.

Stephens's kangaroo rat is a nocturnal, burrowing rodent that eats seeds of annual forbs. It may spend only about an hour outside its burrow each night. It is solitary, and will fight furiously when placed with other members of the species. Other adult kangaroo rats are tolerated only for brief periods during the mating season.

*Dipodomys stephensi* has an external, fur-lined cheek pouch on either side of the mouth. Its tail is 1.5 times the length of the head and body, bicolored, and crested. The hind feet are long and adapted for hopping, and the front feet are small and specialized for gathering and manipulating food and for burrowing. *D. stephensi* is capable of surviving without free water for short periods of time, because it can acquire water from its food and can conserve water, but body mass drops significantly during long periods without water.

Breeding occurs from late spring to mid-summer. In years with greater than average rainfall, females may produce two



*Dipodomys stephensi*

litters, and females born early in the year may mature and produce their first litters by the end of the summer. When there is little rainfall, reproduction may be suspended and survivorship may be low. Females build elaborate nests during the week before parturition and produce an average of 2.7 young per litter. The neonates are naked, pink, and have facial vibrissae that are 5 mm long. A gray pigmentation develops on the dorsal surfaces of the head, body, and tail by 2–3 days of age. By 9–10 days of age, the pelage is dark brown on the dorsal and lateral surfaces of the body, the young start to crawl out and around the nest, and begin scratching behind the ear with the hind foot. When disturbed, the young make rapid, high-pitched squeaking sounds. Their ears open in 10–11 days and their eyes open in 14 days. Young reach about 90 percent of adult size in 2 months. Molt to adult pelage begins at an age of 3 months.

Stephens's kangaroo rat inhabits sparsely-vegetated annual grassland and coastal sage-scrub communities. Each site occupied by one of these kangaroo rats consists of a well-developed

network of trails connecting burrow openings. Most surface activity appears to be restricted to runways, areas around burrow entrances, and sandbathing sites. Burrows are up to 45 centimeters in depth (usually 21–23 cm) in gravelly and sandy soils, or these kangaroo rats may use abandoned burrows of pocket gophers and California ground squirrels. The subterranean network of tunnels mirrors the surface network of trails and provides ready access to all portions of an individual's range, providing protection, especially from aerial predators such as owls.

Monthly population densities can vary from 7 to 52 individuals per hectare, but average 20–36 individuals per hectare throughout the year. Peaks in numbers of *D. stephensi* occur in

late spring and early summer, following peaks in reproductive activity in spring. Late summer, autumn, and winter are typically periods of declining or low density. Reproductive activity and change in density are closely associated with seasonal patterns of precipitation. Home ranges vary from 420 to 1,600 square meters and are generally about 570–970 square meters.

Deer mice are the most common mammals found in association with Stephens's kangaroo rats. San Diego pocket mice, agile and Dulzura kangaroo rats, and desert woodrats, may also occupy the same habitat. Predators include snakes, barn owls, long-eared owls, foxes, coyotes, and domestic dogs and cats. The only parasites reported from this species are chiggers.

*T. L. Best*

### Size

No significant sexual dimorphism

Total length: 280–300 (284) mm (males);

277–295 (282) mm (females)

Length of tail: 165–180 (172) mm (males);

164–175 (172) mm (females)

Weight: 45–73 (62) g

### Identification

Compared with *D. merriami*, which has four toes on each hind foot, *D. stephensi* has five toes

on each hind foot and is larger. Compared with *D. agilis* and *D. simulans*, the only other five-toed kangaroo rats that occur in its range, *D. stephensi* has much smaller ears and usually occupies more open habitats.

### Recent Synonyms

*Dipodomys cascus*

*Perodipus stephensi*

### Other Common Names

Bonsall relict kangaroo rat

### Status

Endangered

### References

*Mammalian Species* 73; Burke et al., 1991