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Mammals**



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Fresno kangaroo rat | *Dipodomys nitratoides*

Dipodomys nitratoides occurs at elevations of about 50–800 meters in the San Joaquin and adjacent valleys of California. Its range has been greatly reduced by destruction of its natural habitat.

The Fresno kangaroo rat is nocturnal, does not hibernate, and is solitary except during estrus. When two or more indi-

viduals are placed together, fighting ensues. They stand on their hind feet, sniff, leap, and attempt to kick and bite each other. Responses between males and females change cyclically as the female passes through estrus. Nonvocal communication includes tooth-chattering and foot-drumming. Vocalizations include growls, squeals, and low grunts.



Although kangaroo rats are good swimmers, *D. nitratoides* is notably averse to getting wet. When Fresno kangaroo rats get wet, they immediately rub and roll in a dusty place to dry themselves. The tail is groomed by rapidly running it through the front paws as they are held against the mouth.

The Fresno kangaroo rat is one of the smallest members of the genus. The upperparts are yellowish-brown and the underparts are white. There is little difference in pelage shade between juveniles and adults, but there is a difference in the texture of the coat; the pelage of juveniles is finer than that of adults. Adults molt throughout the year, but most molt from July through October. The new coat can be distinguished by its darker color. The Fresno kangaroo rat is adapted for bipedal locomotion; the tail, which helps it balance, is 1.48 times the length of the head and body.

The breeding season primarily is from December to August. The gestation period is 32 days, average litter size is 2.3 (usu-



Dipodomys nitratoides

ally two), and average mass at birth is 4.0 g. On the day preceding the birth of a litter, the female generally is quite active. Both nest building and food caching are carried on to great lengths. These activities remain intense for 1–2 days after parturition. In caring for the young, the female crouches over them, keeping her back arched to prevent crushing them. This allows the young to nurse while they are kept warm. The mother retrieves young that have wandered out of the nest by picking them up by a fold of skin with her incisors. The young are well developed at birth, except for the teeth. Lower incisors appear at 4 days and upper incisors appear at 7 days. Adult mass is attained in 2.5–3 months. Eyes open at 10–11 days, ears open at 8–9 days, and pelage is complete when the young are 6–10 days old. There is active grooming among siblings at 14 days, the weaning period is 21–24 days, and young first leave the burrow at about 14–18 days.

Generally, *D. nitratoides* inhabits arid, often strongly alkaline, plains sparsely clothed with grass and in places saltbush. Typical vegetation includes grasses and herbs, with Mormon tea in the Panoche Valley being replaced in the San Joaquin Valley by more xerophytic shrubs.

Burrows usually are at the base of some low bush, and runways, worn in the grass, often lead from a burrow to neighboring clumps of vegetation. Burrow entrances are 6–8 centimeters in diameter and occur in a variety of soil conditions. The area occupied by a burrow system varies from about 2 by 2 meters to 3.5 by 3.5 meters. Surface openings are either slanting or vertical and vary in number. Openings in use may show no newly excavated soil for long periods of time. When digging, *D. nitratoides* stands firmly on its hind legs, which are spread well apart, and scratches rapidly with the front feet. The soil is pushed back under the body and then sent flying backwards with several strong kicks of the hind legs. As the burrow becomes deeper, the soil accumulates and gets in the way. When this happens, the animal turns around, comes out of the opening, and pushes the soil a little with the front feet. Then it turns and starts down the burrow, kicking backward to scatter soil away from the opening. Each trip moves the soil farther away and in a different direction, resulting in a more or less fan-shaped distribution of loose soil around the burrow opening.

The Fresno kangaroo rat is a granivore. It feeds on seeds of annuals and shrubs such as saltbush. In the spring, early rains cause the growth of grasses and herbs that form a food source. The dampness of the soil may influence the locus and amount of food caching: Fresno kangaroo rats store food in small pit caches made in the walls of the burrow system, where seeds can be kept dry enough to keep them from sprouting or molding.

Mammals occurring in the same habitat as *D. nitratoides* include desert cottontails, black-tailed jackrabbits, California ground squirrels, San Joaquin antelope squirrels, pocket go-

phers, giant kangaroo rats, California pocket mice, San Joaquin pocket mice, southern grasshopper mice, deer mice, and western harvest mice. Predators include rattlesnakes, barn owls, bobcats, badgers, long-tailed weasels, coyotes, and kit foxes. Ectoparasites include chiggers, ticks, and fleas. Internal parasites include protozoans and cestodes.

Size

Males are slightly larger than females.

Total length: 215–253 (240) mm (males);

211–250 (235) mm (females)

Length of tail: 141 mm (males); 137 mm (females)

Weight: 44 (40–53) g

Identification

Several other species of kangaroo rats occur within or near the range of *D. nitratooides*.

D. merriami is not sympatric, but is similar morphologically. Its white lateral tail stripes are always broader than the dark dorsal one,

and the dark ventral tail stripe is narrower or almost lacking, whereas in *D. nitratooides* the dark dorsal and ventral tail stripes are broader than the white lateral tail stripes. *D. ingens*, *D. panamintinus*, *D. heermanni*, and *D. microps* have five toes on the hind foot instead of four as in *D. nitratooides*; they also are much larger.

Other Common Names

San Joaquin kangaroo rat

Status

Endangered

Much of the habitat of *D. nitratooides* has been destroyed by farming activities. This species is not able to maintain its burrow systems and live in areas under irrigation and cultivation.

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Subspecies

Dipodomys nitratooides brevinasus, western San Joaquin and adjacent valleys, California
Dipodomys nitratooides exilis, northeastern San Joaquin and adjacent valleys, California
Dipodomys nitratooides nitratooides, eastern and southeastern San Joaquin and adjacent valleys, California

References

Mammalian Species 381; Culbertson, 1946