

Perognathus flavescens. By R. Richard Monk and J. Knox Jones, Jr.

Published 17 May 1996 by the American Society of Mammalogists

Perognathus flavescens Merriam, 1889

Plains Pocket Mouse

Perognathus fasciatus flavescens Merriam, 1889:11. Type locality "Kennedy [Cherry Co.], Nebraska."

Perognathus apache Merriam, 1889:14. Type locality Keams Canyon, "Apache [= Navajo] County, Arizona."

Perognathus copei Rhoads, 1894:404. Type locality "Staked Plains near Mobeetie [Wheeler Co.], Texas."

Perognathus flavescens: Osgood, 1900:20. First use of specific name combination.

Perognathus gypsi Dice, 1929:1. Type locality "White Sands, 12 miles southwest of Alamogordo, Otero County, New Mexico."

CONTEXT AND CONTENT. Order Rodentia, Suborder Sciuromorphi, Infraorder Myomorpha, Superfamily Geomyoidea, Family Heteromyidae, Subfamily Perognathinae. The genus *Perognathus*, as currently understood, contains nine species (Williams et al., 1993); two of these, *fasciatus* and *flavescens*, constitute the *P. fasciatus* group (Williams, 1978a).

Eight subspecies of *P. flavescens* are recognized (Reed and Choate, 1986b; Williams, 1978a) as follows (but see Hoffmeister, 1986, who treated *P. apache* as a distinct species):

P. f. apache Merriam, 1889:14, see above (*cleomophila* Goldman a synonym).

P. f. caryi Goldman, 1918:24. Type locality "8 miles west of Rifle, Garfield [= Garfield] County, Colorado."

P. f. cockrumi Hall, 1954:589. Type locality "4 1/2 mi. NE Danville, Harper Co., Kansas."

P. f. copei Rhoads, 1894:404, see above.

P. f. flavescens Merriam, 1889:11, see above.

P. f. melanotis Osgood, 1900:27. Type locality "Casas Grandes, Chihuahua, Mexico" (*gypsi* Dice a synonym).

P. f. perniger Osgood, 1904:127. Type locality "Vermilion [Clay Co.], South Dakota."

P. f. relictus Goldman, 1938:495. Type locality "Medano Springs Ranch, 15 miles northeast of Mosca, San Luis Valley [Alamosa Co.], Colorado (altitude 7,600 feet)."

DIAGNOSIS. *Perognathus flavescens* is among the small to medium sized species of *Perognathus* (Fig. 1). Races on the Great Plains are generally smaller than those of intermountain areas at similar latitudes. The ears are relatively small and the postauricular patches are smaller and less conspicuous than in some congeners (*P. flavus*, for example). The tail is relatively short (<100% length of head and body) and nonpenicillate (Williams, 1978a, and citations therein). The auditory bullae are closely abutting anteriorly and are medium in size for *Perognathus* (Fig. 2); the interparietal is relatively broad and strap-like.

GENERAL CHARACTERS. Pelage is soft, not spiny. There is considerable geographic variation in pelage color; several subspecies are based on such variation (Williams, 1978a). In general, however, dorsal color ranges from dark ochraceous buff heavily suffused with blackish hairs to pale ochraceous lightly mixed with dusky hairs. The lateral line is dark ochraceous to pale yellowish; the undersides are white except that they are the same color as the lateral line, or nearly so, in dark-colored northeastern races (*cockrumi* and *perniger*). The tail is slightly darker above than ventrally. Mice from the White Sands area of New Mexico are nearly white to almost yellowish in dorsal color (Benson, 1933).

Ranges of average external and cranial measurements (in mm, sample sizes in parentheses) of western subspecies (*apache*, *caryi*, *melanotis*, and *relictus*; Williams, 1978a) are: total length, 124.8-140.7 (460); length of tail, 58.2-68.3 (460); length of hind foot,

17.6-18.6 (476); length of ear, 6.1-7.0 (378); greatest length of skull, 21.94-23.92 (434); occipitonasal length, 21.83-23.74 (432); interorbital breadth, 5.10-5.37 (462); length of nasals, 7.79-8.74 (458); length of maxillary tooththrow, 3.07-3.42 (472); bullar length, 7.73-8.80 (456); and bullar width, 12.10-13.08 (448). Ranges in average cranial measurements (in mm), except for occipitonasal length, of 170 mice representing the eastern races (*cockrumi*, *copei*, *flavescens*, and *perniger*; Reed and Choate, 1986b) are: greatest length of skull, 20.89-21.80; interorbital breadth, 4.82-5.12; length of nasals, 6.91-7.25; length of maxillary tooththrow, 2.81-2.97; bullar length, 6.35-7.21; and bullar width, 11.18-12.16. Weights of 22 males from Minnesota averaged 9.7 g, whereas those of eight females averaged 7.9 g (Bailey, 1929). Weights of 48 adults also from Minnesota ranged from 6.9 to 11.5 g (Hibbard and Beer, 1960), whereas those of 17 adults from Texas ranged from 8.1 to 10.7 g (Pesaturo et al., 1990).

There is considerable non-geographic variation in the cusps of p4/P4 (Williams, 1978a). In fact, this variation is much greater than that which provides the basis for descriptions of some fossil taxa of heteromyids (D. F. Williams, in litt.).

DISTRIBUTION. Eastern subspecies of the plains pocket mouse are found from the Mississippi River in eastern Minnesota generally southwestward through northern and western Iowa, most of Nebraska, northwestern Missouri, central and western Kansas, and western parts of Oklahoma and Texas, and westward and southward through much of the Dakotas and into southeastern Wyoming and eastern Colorado (Fig. 3). The western subspecies occur in parts of western Colorado, eastern Utah, northeastern and southeastern Arizona, western and central New Mexico, and the northern part of the Mexican state of Chihuahua (Hall, 1981; Jones et al., 1991; Reed and Choate, 1986b; Williams, 1978a). The only known fossil occurrence of this species is from late Pleistocene deposits in Papago Springs Cave, Santa Cruz Co., Arizona (Skinner, 1942).

FORM AND FUNCTION. The baculum has a bulbous base that is "wider than high and the tip turns up to form an obtuse angle with the shaft" (Burt, 1960:40-41). The baculum of an adult measured 7.0 mm long and had a base 1.0 mm in height. Illustrations of the glans penis and baculum are included in Hoffmeister (1986). Females have two pairs of inguinal and one pair of pectoral mammae (Bailey, 1927).

Guard hairs from the shoulder region average 6.2 mm (5.8-6.6 mm) in length and 0.050 mm in width (Homan and Genoways,

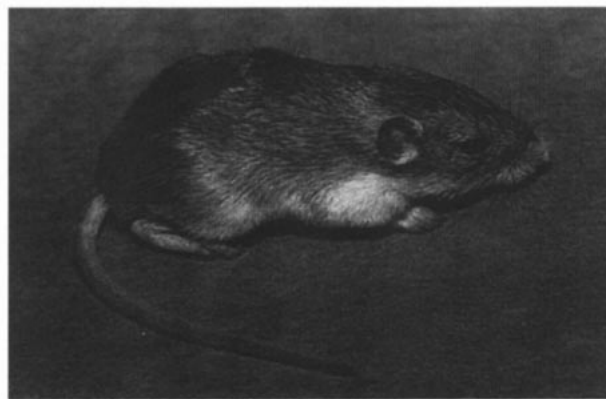


FIG. 1. *Perognathus flavescens copei* from Hale County, Texas. Note reduced postauricular patches. Photograph by R. W. Manning.

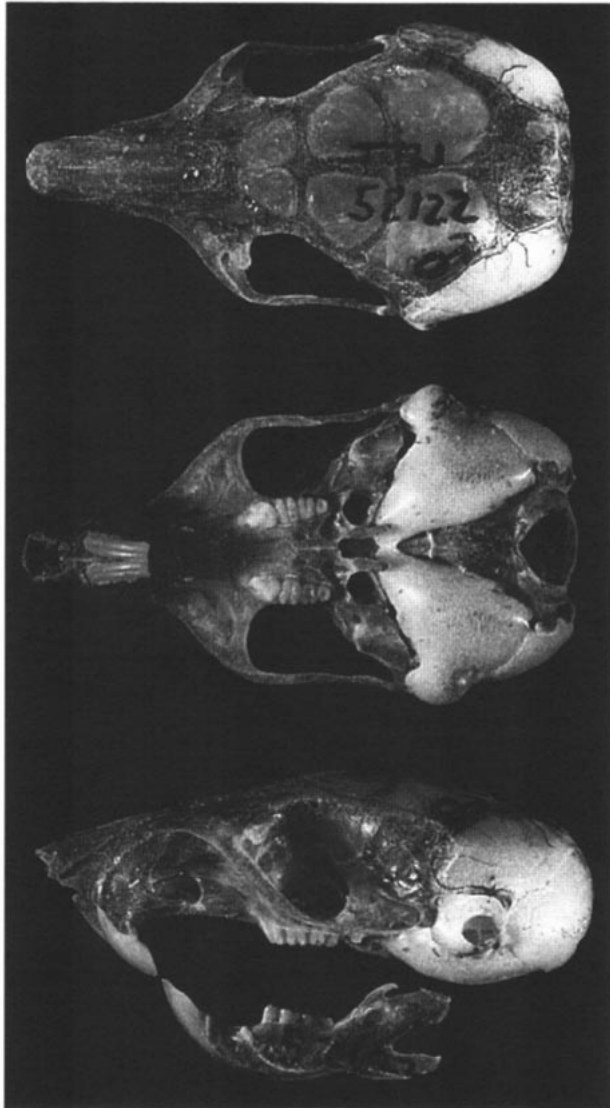


FIG. 2. Dorsal, ventral, and lateral views of cranium, and lateral view of right mandible, of *Perognathus flavescens copei* (Texas Tech University 52122, male) from Lamb County, Texas. Greatest length of skull is 21.8 mm. Photographs by N. L. Olson.

1978). The base of each hair is straight and the shaft widens rapidly, but the tip tapers gradually. Hairs are oval in cross section; medulla cells are flattened and are arranged three across in irregular rows. We are unaware of any studies of molt in this species.

REPRODUCTION AND ONTOGENY. Evidence from throughout the range of *P. flavescens* suggests that females usually bear at least two litters annually, one in late spring and another in midsummer, and may have three. Pregnant females have been captured as early as May (Hoffmeister, 1986), and juveniles have been taken from May to October. The possibility of a late spring to early summer lull in reproductive activity has been suggested. A report of three nonpregnant females caught in early July in South Dakota that had placental scars, but showed no other signs of sexual activity, supports this suggestion (Wilhelm et al., 1981). The number of fetuses/litter ranges from two to seven, with a mean between four and five (Bailey, 1927; Bailey, 1929; Davis, 1974; Hibbard and Beer, 1960; Hoffmeister, 1986; Jones, 1964; Pesaturo et al., 1990; Reed and Choate, 1986a; Wilhelm et al., 1981).

Little has been recorded concerning reproductive condition in males. In northwestern Texas, length of testes of adults ranged from 3 to 6 mm in May, 4 to 6 mm in June, 5 to 7 mm in July, 3 to 6 mm in September, and were 3 mm (abdominal) in two animals taken in October (Pesaturo et al., 1990).

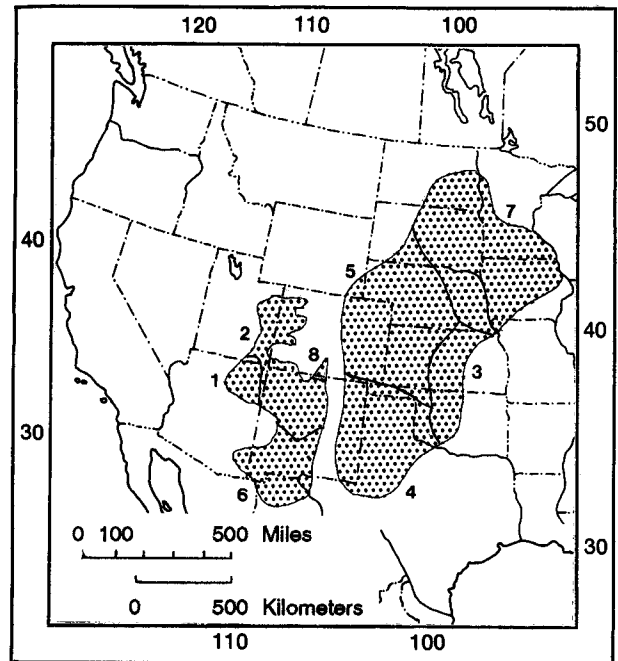


FIG. 3. Distribution of *Perognathus flavescens*; 1, *P. f. apache*; 2, *P. f. caryi*; 3, *P. f. cockrumi*; 4, *P. f. copei*; 5, *P. f. flavescens*; 6, *P. f. melanotis*; 7, *P. f. penniger*; 8, *P. f. relictus*. Modified from Hall (1981).

ECOLOGY. Throughout its range, *Perognathus flavescens* is generally confined to areas of sandy or sandy-loam soil. In contrast, *P. flavus* and *P. fasciatus* usually occur on harsher or harder soils, respectively. In the western part of the range, plains pocket mice "are usually limited to loose, sandy soils and dunes with a sparse vegetational cover" (Williams, 1978a:11-12). Eastwardly, the plains pocket mouse has been described (Reed and Choate, 1986b:227) as "most common where soil is sandy . . . , and its distribution thus may be discontinuous." Reports by a variety of collectors from Minnesota, North Dakota, and Iowa to Arizona and Trans-Pecos Texas almost invariably associate *P. flavescens* with sandy substrates (Armstrong, 1972; Bailey, 1927; Bailey, 1929; Blair, 1939; Brown and Metz, 1966; Caire et al., 1990; Douglas, 1963; Easterla, 1967; Fichter, 1939; Hoffmeister, 1986; Jones, 1964; Jones and Lee, 1962; Jones et al., 1983; Martin and Preston, 1970; Moore, 1930; Pitts and Choate, 1988; Reed and Choate, 1986a; Wilhelm et al., 1981). Several authors attest to the fact that the species occasionally occupies non-sandy habitats. For example, Harris (1965) took specimens of *P. f. relictus* in New Mexico "in well developed pinyon-juniper woodlands, on rocky, brushy hillsides, and in other such atypical places" (reported in Findley et al., 1975:164), and Blair (1939:114) found this species "on rocky, brushy ravine slopes" in Oklahoma. In Wyoming, Maxwell and Brown (1968:152) found *P. flavescens* in sage-grass and yucca-grass communities "with variable soil types and bare soil surface where the height of dominant vegetation exceeded 20 inches." Williams, (1978a:12) reported *P. [flavescens] apache* to be "common and widespread on a variety of substrates" in the Uintah Basin of Utah. In northwestern Texas, individuals were trapped on sandy substrates where sand sage (*Artemisia filifolia*), yucca (*Yucca* sp.), skunkbrush (*Rhus aromatica*), sunflowers (*Helianthus* sp.), mid-grasses, and some weeds prevailed (Pesaturo et al., 1990).

At Lacreek National Wildlife Refuge, Bennett Co., South Dakota, where the distribution of *Perognathus flavescens* abuts that of its close relative *P. fasciatus*, the former was "found mainly in the sand hills region along the southern boundary of the refuge but [was] present also in other relatively sandy habitats." *P. fasciatus*, on the other hand, was trapped "in transitional upland habitats," where "bare soil was present between clumps of vegetation. The soil was not as sandy as that in habitats farther south, where *P. flavescens* was trapped" (Wilhelm et al., 1981:16). Further, Fleharty and Navo (1983:375) report that "cornfields provide suitable habitat for resident populations of . . . *P. flavescens*" in western Kansas.

Other small mammals frequently associated with *P. flavescens* include *Sylvilagus audubonii*, *Geomys bursarius*, *Perognathus flavus*, *P. penicillatus*, *Chaetodipus hispidus*, *Dipodomys merriami*, *D. ordii*, *Reithrodontomys megalotis*, *R. montanus*, *Peromyscus leucopus*, *P. maniculatus*, *Onychomys leucogaster*, and *Sigmodon hispidus* (Benson, 1935; Caire et al., 1990; Jones and Lee, 1962; Pesaturo et al., 1990; Schmidly and Packard, 1968).

The home range of plains pocket mice has been reported to range from 0.06 acre (0.02 ha) to 0.12 acre (0.05 ha) with 150 feet (47 m) being the longest reported movement in 24 h (Hibbard and Beer, 1960). The burrow has been described (Bailey, 1927:122) as having "a little mound of sand like a small gopher hill, and, whether freshly made or old, the entrances to the burrows are invariably closed." Mounds, which are not typical of all burrows, are about 4 inches (10 mm) in diameter (Hibbard and Beer, 1960). In the Texas Panhandle, "burrows are commonly excavated beneath clumps of Spanish bayonet or prickly pear, the entrances usually so distributed as to open from under the plant in all directions" (Davis, 1974: 172). The burrow system contains separate chambers for nesting and food storage (Jones et al., 1983). A burrow in Kansas, to which a mouse was trailed, was described as follows: "The entrance to the burrow was beneath litter in a stand of sunflowers. The burrow was not plugged when the mouse entered, but the mouse plugged it at the surface and again about 140 cm down the tunnel at a depth of 15 cm. This burrow contained [a] food cache . . . about 40 cm from its terminus. The burrow was about 240 cm in length, reached a depth of more than 50 cm, and, with the exception of the area around the cache, was about the diameter of an index finger" (Reed and Choate, 1986a:87, 89). The area of the cache was about 5 cm in diameter.

Like other pocket mice, *Perognathus flavescens* is a granivore. Its diet has been deduced primarily from cheekpouch contents and from seeds and fruits found in underground caches. In Minnesota, for example, seeds of wild buckwheat (*Polygonum convolvulus*), sedge (*Carex* sp.), foxtail (*Setaria glauca* and *S. viridis*), and spiderwort (*Tradescantia* sp.) were found to be of prime importance as food items, but seeds of puccoon (*Lithospermum* sp.), sweetclover (*Melilotus* sp.), switchgrass (*Panicum* sp.), ragweed (*Ambrosia* sp.), knotweed (*Polygonum ariculare*), vetch (*Vicia* sp.), and sandbur (*Cenchrus* sp.) also were cached (Hibbard and Beer, 1960). In New Mexico, animals had croton (*Croton* sp.) and ryegrass (*Lolium* sp.) in their cheekpouches (Bailey, 1932). On a sand sage prairie in Kansas, corn, Polygonaceae, *Setaria* sp., and *Lithospermum* sp. made up more than 80% of biomass in cheekpouch contents, whereas Texas croton (*Croton texensis*) and narrowleaf puccoon (*Lithospermum incisum*) made up 93.5% of biomass of seeds removed from an excavated food cache (Reed and Choate, 1986a); caloric content of seeds in the cache totaled 356,335 calories, enough food for about 35 days (Reed, 1987). Lemen and Freeman (1985), in their fluorescent tracking studies of small mammals, observed that *P. flavescens* regularly climbed stalks of *Carex* to obtain fruiting heads. This mouse is trapped easily using rolled oats or a mixture of rolled oats and commercial birdseed as bait.

Plains pocket mice consume free water in captivity, but it is not known to what extent they do so in the wild. Only one of two plains pocket mice kept in captivity took free water, but only after "it stuck its nose and front feet into the water and then licked the water off its front feet. It did not appear to know how to drink water" (Hibbard and Beer, 1960:93). Two individuals kept in captivity by Reed and Choate (1986a:87) "consumed water when it was provided. However, they rubbed their faces in the sand after each drink to remove the excess [water] from their fur." Moreover, it was noted by Bailey (1927:123), that "in a dry, furnace-heated house, they become very thirsty and eagerly suck water from saturated cotton or drink from a small dish." It is reported that individuals of both this species and *P. fasciatus* can live in captivity about 6 weeks on totally dry seeds, but that after that time, weight loss and a generally unnatural appearance were observed unless water was supplied to them (Bailey, 1923). The same mice eagerly ate snow which was sprinkled into their container. From this, it may be assumed that in the wild these pocket mice occasionally lick dew or eat green vegetation as a means of maintaining body fluids. However, a plains pocket mouse kept in captivity for more than 3 years was never given water, and only rarely received green food (D. F. Williams, in litt.).

Great-horned owls (*Bubo virginianus*; Czaplewski, 1976) and barn owls (*Tyto alba*; Pesaturo et al., 1989) have been reported to

prey on *P. flavescens*. Additional predators almost certainly include snakes, other raptors, and small carnivores. We know of no reports of parasites from this pocket mouse.

BEHAVIOR. *Perognathus flavescens* is inactive above ground during the colder months of the year (late autumn until early spring), and probably hibernates throughout its range. The earliest record in the year is of a male taken on 22 March in Minnesota where these mice become active "as soon as the frost is out of the ground enough so they can dig" (Bailey, 1929:160). Latest known dates of capture are 11 November in Kansas (Reed and Choate, 1986a) and 29 December in western Texas (Pesaturo et al., 1990). Males may emerge in spring before females (Hoffmeister, 1964).

Perognathus flavescens is regarded as a permissive hibernator (Hibbard and Beer, 1960; Morrison and Ryser, 1962). Plains pocket mice store food for the winter months but accumulate little fat; individuals evidently hibernate through much of the winter, but awaken periodically to feed (Hibbard and Beer, 1960; Morrison and Ryser, 1962). Activity of two captive females varied with ambient temperature (Beer, 1961). Between 20° and 25°C, these mice were active; between 10° and 15°C, one of the animals usually was lethargic and the other occasionally so; and at 5°C, both animals were in a deep torpor and were cold to the touch. It is possible that the plains pocket mouse can become torpid on a daily basis in response to energetic problems (Reed, 1987), as does its close relative *P. flavus* (Wolff and Bateman, 1978).

Plains pocket mice may forage above ground on cloudy, overcast days, as an individual has been caught between 800 and 1500 on such a day Hoffmeister (1986). On the other hand, Williams (1978a:7) observed that, at night, "moonlight severely curtailed surface activity."

In a test of swimming ability of several species of pocket mice, *P. flavescens* was found to have poor body coordination and was judged to be an ineffective swimmer (Schmidly and Packard, 1968). Individuals had difficulty maintaining a horizontal position, fatigued quickly, and frequently sank, leaving only the tip of the nose above water.

GENETICS. The karyotype of *Perognathus flavescens* is described by Williams (1978b:602) as being similar to that of *P. fasciatus* "except for the sex chromosomes and the absence of observable minute arms on the acrocentric chromosomes." The diploid number is 44 and the fundamental number is either 48, as in *P. fasciatus*, or 50; all other species of the genus *Perognathus* have higher numbers of each. There are three banded and 18 unbanded autosomal chromosomes; the X is a large submetacentric, and the Y is a small submetacentric (Williams, 1978b). *Perognathus flavescens apache*, recognized for many years as a distinct species, has an identical karyotype except for the X and Y chromosomes, which are large and medium-sized submetacentrics, respectively (Williams, 1978b).

REMARKS. *Perognathus* is derived from the Greek words *pera*, which means pouch, and *gnathus*, which means jaw. This refers to the fur-lined cheekpouches found in this genus. The species name *flavescens* comes from a Latin word meaning yellowish.

Perognathus flavescens originally was named as a subspecies of *P. fasciatus* (Merriam, 1889). Osgood (1900) elevated *flavescens* to specific rank when he revised the pocket mice. Merriam (1889) also described *Perognathus apache* from Arizona, which Osgood (1900) recognized and which was regarded as a valid species until Williams (1978a) reduced it and its geographic races to subspecies of *P. flavescens*.

However, in his recent major treatise of Arizona mammals, Hoffmeister (1986) did not recognize *apache* as conspecific with *flavescens*. Hoffmeister (1986:269) gave several reasons why he thought submerging *P. apache* under *P. flavescens* was inappropriate, concluding that "I am not convinced at this time that this relationship [between the two nominal taxa] is close enough to warrant regarding them as one species."

LITERATURE CITED

- ARMSTRONG, D. M. 1972. Distribution of mammals in Colorado. Monograph of the Museum of Natural History, The University of Kansas, 3:1-415.
- BAILEY, B. 1929. Mammals of Sherburne County, Minnesota. Journal of Mammalogy, 10:153-164.

- BAILEY, V. 1923. Sources of water supply for desert animals. *Scientific Monthly*, 17:66-86.
- . 1927. A biological survey of North Dakota. *North American Fauna*, 49:1-226.
- . 1932. Mammals of New Mexico. *North American Fauna*, 53:1-412.
- BEER, J. R. 1961. Hibernation in *Perognathus flavescens*. *Journal of Mammalogy*, 42:103.
- BENSON, S. B. 1933. Concealing coloration among some desert rodents of the southwestern United States. *University of California Publications in Zoology*, 40:1-7.
- . 1935. A biological reconnaissance of Navajo Mountain, Utah. *University of California Publications in Zoology*, 40:439-455.
- BLAIR, W. F. 1939. Faunal relationships and geographic distribution of mammals in Oklahoma. *The American Midland Naturalist*, 22:85-133.
- BROWN, L. N., AND D. METZ. 1966. The first record of *Perognathus flavescens* in Wyoming. *Journal of Mammalogy*, 47:118.
- BURT, W. H. 1960. *Bacula of North American mammals*. Miscellaneous Publications of the Museum of Zoology, University of Michigan, 113:1-76.
- CAIRE, W., J. D. TYLER, B. P. GLASS, AND M. A. MARES. 1990. *Mammals of Oklahoma*. University of Oklahoma Press, Norman, 567 pp.
- CZAPLEWSKI, N. J. 1976. Vertebrate remains in great horned owl pellets in Nebraska. *Nebraska Bird Review*, 44:12-15.
- DAVIS, W. B. 1974. The mammals of Texas. *Texas Parks and Wildlife Department Bulletin*, Austin, 41:1-294.
- DICE, L. R. 1929. Descriptions of two new pocket mice and a new woodrat from New Mexico. *Occasional Papers of the Museum of Zoology, University of Michigan*, 203:1-4.
- DOUGLAS, C. L. 1963. Apache pocket mouse found in Mesa Verde National Park, Colorado. *The Southwestern Naturalist*, 8:173-179.
- EASTERLA, D. A. 1967. First specimens of plains pocket mouse from Missouri. *Journal of Mammalogy*, 48:479-480.
- FICHTER, E. 1939. The dusky pocket mouse in Iowa. *Journal of Mammalogy*, 20:377.
- FINDLEY, J. S., A. H. HARRIS, D. E. WILSON, AND C. JONES. 1975. *Mammals of New Mexico*. University of New Mexico Press, Albuquerque, 360 pp.
- FLEHARTY, E. D., AND K. W. NAVO. 1983. Irrigated cornfields as habitat for small mammals in the Sand Sage Prairie Region of western Kansas. *Journal of Mammalogy*, 64:367-379.
- GOLDMAN, E. A. 1918. Five new mammals from Arizona and Colorado. *Proceedings of the Biological Society of Washington*, 31:21-25.
- . 1938. A new pocket mouse from Colorado. *Journal of Mammalogy*, 19:495-496.
- HALL, E. R. 1954. A new subspecies of pocket mouse from Kansas. *University of Kansas Publications Museum of Natural History*, 7:587-590.
- . 1981. *The mammals of North America*. John Wiley & Sons, New York, 1:1-600 + 90.
- HARRIS, A. H. 1965. The origin of the grassland amphibian, reptilian, and mammalian faunas of the San Juan-Chaco River drainage. Ph. D. dissert., University of New Mexico, Albuquerque, 160 pp.
- HIBBARD, E. A. AND J. R. BEER. 1960. The plains pocket mouse in Minnesota. *Flicker*, 32:89-94.
- HOFFMEISTER, D. F. 1964. Unusual sex ratios in winter and spring-taken pocket mice (*Perognathus*) in the Southwest. *The Southwestern Naturalist*, 9:252-254.
- . 1986. *Mammals of Arizona*. The University of Arizona Press, Tucson, 602 pp.
- HOMAN, J. A., AND H. H. GENOWAYS. 1978. An analysis of hair structure and its phyletic implications among heteromyid rodents. *Journal of Mammalogy*, 59:740-760.
- JONES, J. K., JR. 1964. Distribution and taxonomy of mammals of Nebraska. *University of Kansas Publications, Museum of Natural History*, 16:1-356.
- JONES, J. K., JR., AND M. R. LEE. 1962. Three species of mammals from western Texas. *The Southwestern Naturalist*, 7:77-78.
- JONES, J. K., JR., R. W. MANNING, AND J. R. GEOTZE. 1991. Noteworthy records of seven species of small mammals from west-central Texas. *Occasional Papers, The Museum, Texas Tech University*, 143:1-4.
- JONES, J. K., JR., D. M. ARMSTRONG, R. S. HOFFMANN, AND C. JONES. 1983. *Mammals of the northern Great Plains*. University of Nebraska Press, Lincoln, 379 pp.
- LEMEN, C. A., AND P. W. FREEMAN. 1985. Tracking mammals with fluorescent pigments: a new technique. *Journal of Mammalogy*, 66:134-136.
- MARTIN, R. E., AND J. R. PRESTON. 1970. The mammals of Harmon County, Oklahoma. *Proceedings of the Oklahoma Academy of Science*, 49:42-60.
- MAXWELL, M. H., AND L. N. BROWN. 1968. Ecological distribution of rodents of the High Plains of eastern Wyoming. *The Southwestern Naturalist*, 13:143-158.
- MERRIAM, C. H. 1889. Revision of the North American pocket mice. *North American Fauna*, 1:1-36.
- MOORE, A. W. 1930. Six Utah mammal records. *Journal of Mammalogy*, 11:87.
- MORRISON, P., AND F. A. RYSER. 1962. Hypothermic behavior in the hispid pocket mouse. *Journal of Mammalogy*, 43:529-533.
- OSGOOD, W. H. 1900. Revision of the pocket mice of the genus *Perognathus*. *North American Fauna*, 18:1-72.
- . 1904. Two new pocket mice of the genus *Perognathus*. *Proceedings of the Biological Society of Washington*, 17:127.
- PESATURO, R. J., R. W. MANNING, AND J. K. JONES, JR. 1989. Small mammals captured by barn owls in Lamb County, Texas. *The Texas Journal of Science*, 41:433-434.
- PESATURO, R. J., J. K. JONES, JR., R. W. MANNING, AND C. JONES. 1990. Mammals of the Muleshoe Sandhills, Bailey, Hale, and Lamb counties, Texas. *Occasional Papers, The Museum, Texas Tech University*, 136:1-32.
- PITTS, R. M., AND J. R. CHOATE. 1988. The plains pocket mouse in eastern Kansas. *Prairie Naturalist*, 19:263.
- REED, K. M. 1987. Caloric content of an excavated food cache of *Perognathus flavescens*. *The Texas Journal of Science*, 39:191-192.
- REED, K. M., AND J. R. CHOATE. 1986a. Natural history of the plains pocket mouse in agriculturally disturbed sand sage prairie. *Prairie Naturalist*, 18:79-90.
- . 1986b. Geographic variation in the plains pocket mouse (*Perognathus flavescens*) on the Great Plains. *The Texas Journal of Science*, 38:227-240.
- RHOADS, S. N. 1894. Descriptions of new species of North American mammals with remarks on species of the genus *Perognathus*. *Proceedings of the Academy of Natural Sciences of Philadelphia*, 46:404-412.
- SCHMIDLY, D. J., AND R. L. PACKARD. 1968. Swimming ability in pocket mice. *The Southwestern Naturalist*, 12:480-482.
- SKINNER, M. F. 1942. The fauna of Papago Springs Cave, Arizona, and a study of *Stoecoceros*; with three new antilocaprine from Nebraska and Arizona. *Bulletin of the American Museum of Natural History*, 80:143-220.
- WILHELM, R. B., J. R. CHOATE, AND J. K. JONES, JR. 1981. *Mammals of Lacreek National Wildlife Refuge, South Dakota*. Special Publications, The Museum, Texas Tech University, 17:1-39.
- WILLIAMS, D. F. 1978a. Systematics and ecogeographic variation of the Apache pocket mouse (Rodentia, Heteromyidae). *Bulletin of the Carnegie Museum of Natural History*, 10:1-57.
- . 1978b. Karyological affinities of the species groups of silky pocket mice (Rodentia: Heteromyidae). *Journal of Mammalogy*, 59:599-612.
- WILLIAMS, D. F., H. H. GENOWAYS, AND J. K. BRAUN. 1993. Taxonomy. Pp. 38-196, in *Biology of the Heteromyidae* (H. H. Genoways and J. H. Brown, eds.) Special Publication, The American Society of Mammalogists, 10:1-719.
- WOLFF, J. O., AND G. C. BATEMAN. 1978. Effects of food availability and ambient temperature on torpor cycles of *Perognathus flavus* (Heteromyidae). *Journal of Mammalogy*, 59:707-716.

Editors for this account were ALICIA V. LINZEY, GUY N. CAMERON, KARL F. KOOPMAN, and ELAINE ANDERSON. Managing Editor was ALICIA V. LINZEY.

R. R. MONK AND J. K. JONES, JR.*, DEPARTMENT OF BIOLOGICAL SCIENCES AND THE MUSEUM, TEXAS TECH UNIVERSITY, LUBBOCK, TEXAS 79409, * DECEASED.