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# JOURNAL OF MAMMALOGY

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## A NEW SPECIES OF *PEROMYSCUS* (RODENTIA: MURIDAE) FROM COAHUILA, MEXICO

M. RAYMOND LEE AND DAVID J. SCHMIDLY

**ABSTRACT.**—A new species of *Peromyscus* occurring in central Coahuila, México, is named and described. Characters of the skull, skin, phallus, and karyotype are discordant regarding its relationship within the genus. Grayish coloration, long tail, large auditory bullae, and small phallus are distinctive.

In January 1970, a small lot (15 to 20 animals) of live *Peromyscus* (tentatively identified as *P. difficilis*, *P. melanophrys*, and *P. pectoralis*) collected in Coahuila and Zacatecas, México, was shipped to the University of Illinois by Dr. R. J. Baker of Texas Tech University, Lubbock. Chromosomes of these mice confirmed the tentative identifications with the exception of four specimens. Conventional karyograms of these four individuals were virtually indistinguishable from those of some populations of *P. boylii* (*P. b. rowleyi*, *P. b. utahensis*, and *P. b. boylii*; see Lee et al., 1972) and *P. crinitus* (Hsu and Arrighi, 1968). The logical identity of these specimens, based on their karyotype and general geographic origin, was *P. boylii*. Characters of the skins and skulls, however, strongly argued against this assignment. Further study of these specimens indicated that they belonged to a species of *Peromyscus* not previously known. Subsequently, 10 additional specimens were found in the collections of the Museum of Natural History, University of Kansas, which are referable to the new species named and described below.

### ***Peromyscus hooperi*, new species**

**Holotype.**—Adult male; skin and skull; no. 53,848 University of Illinois, Museum of Natural History (UIMNH); 2.5 mi W, 21 mi S Ocampo, 3,500 ± ft, Coahuila, México; 16 December 1953; obtained by Robert W. Dickerman; original no. 2,157.

**Geographic range.**—Insofar as known, central Coahuila from the Sierra del Pino in the north, south-southeastward in a narrow band to El Gorrión, near the Zacatecan border.

**Diagnosis.**—A species of *Peromyscus* of uncertain affinities, exhibiting characters of both the subgenera *Haplomylomys* and *Peromyscus*. Size medium for the genus; tail long (see Table 1) and bicolored with hair short throughout length; upper parts grayish; premaxillae extending posteriorly slightly beyond nasals; auditory bullae large; mesolophs (mesolophids) absent from first two upper and lower molars. Glans penis small but relatively wide with long protractile tip; baculum long and slender. Deploid chromosome number 48; one large and two small pairs of biarmed autosomes, remainder of autosomes large to small acrocentrics, X-chromosome assumed to be large biarmed element, Y unknown.

**Etymology.**—For his contributions to the knowledge of the systematics of the genus *Peromyscus*, it is our sincere pleasure to name this species in honor of Professor Emmet T. Hooper.

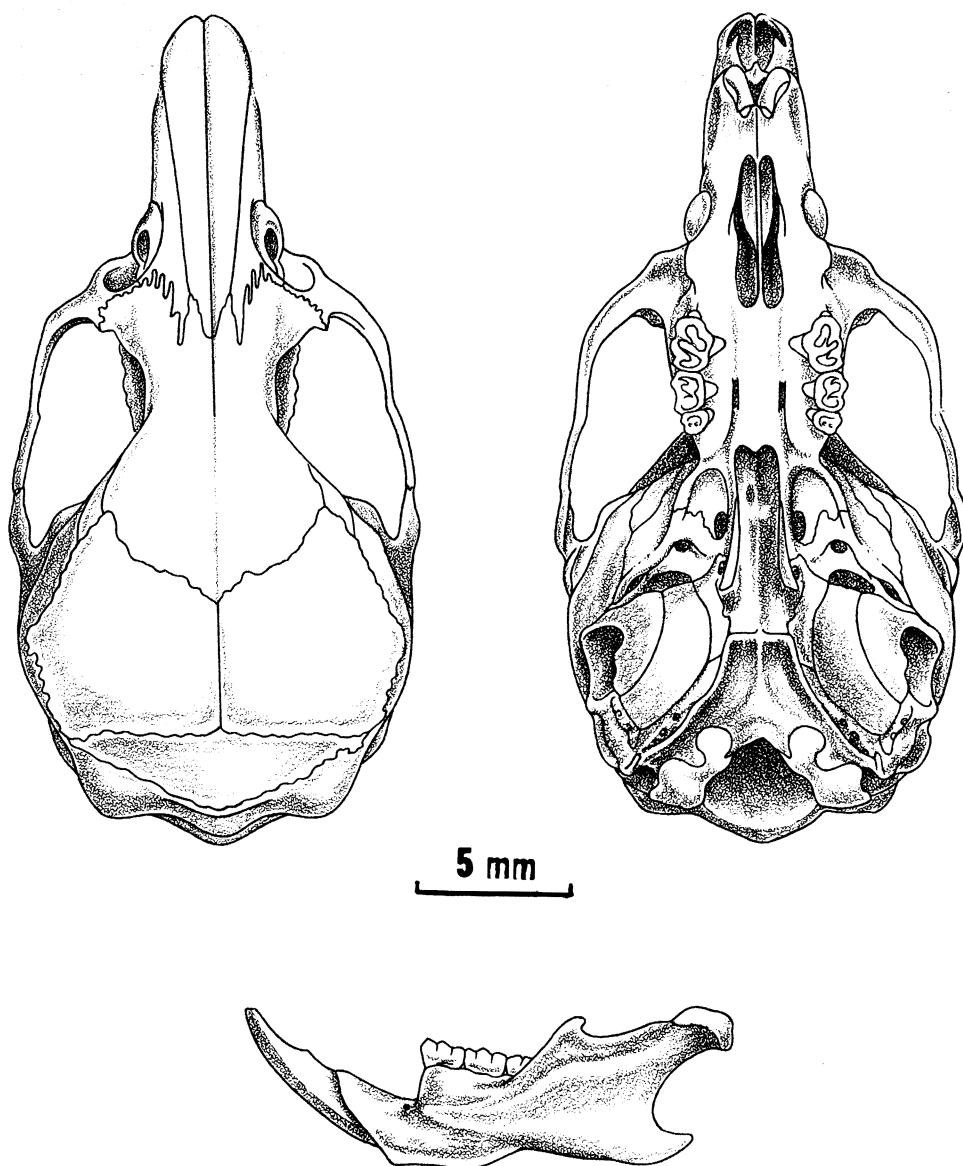


FIG. 1.—Dorsal (left) and ventral (right) views of the skull and lateral (bottom) view of the dentary of *Peromyscus hooperi*. Specimen no. 44,946 UIMNH.

*Description.*—External and cranial measurements (in millimeters, mm) of the holotype of *P. hooperi* are as follows: total length, 211; length of tail, 118; length of hind foot, 22; length of ear, 21; greatest length of skull, 26.65; basilar length (from anterior edge of alveolus of incisor), 21.95; length of nasals, 10.05; length of rostrum, 9.70; mastoid breadth, 11.85; zygomatic breadth, 13.20; depth of skull, 9.65; length of palate, 4.15; length of palatine foramen, 5.00; length of maxillary toothrow, 4.00; length of auditory bulla (greatest distance from anterior to posterior margin of the bulla), 5.10; breadth of auditory bulla (greatest distance across the widest portion of the bulla), 3.85.

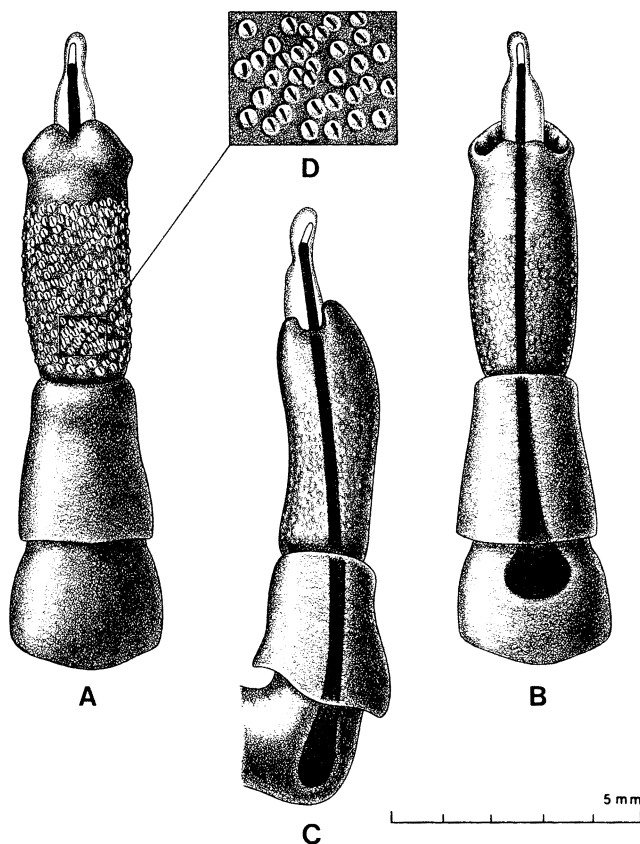


FIG. 2.—Phallus of *Peromyscus hooperi* (a) dorsal opaque view, (b) ventral translucent view, (c) lateral translucent view, (d) enlargement of surface showing tubercles. Epidermal veil covering protractile tip not shown. Illustration somewhat schematic and based largely on specimen no. 56,653 KU.

Coloration of upper parts including face and top of head grayish with faint to moderate wash of brown; combined colors near Drab Gray (capitalized color terms after Ridgway, 1912) and superficially reminiscent of grayish juvenile pelage in some species of *Peromyscus*; lateral line faint and near Light Buff or Pale Ochraceous Buff to near Ochraceous Buff (the darker shades seen in specimens from El Gorrión); underparts pale cream (hairs grayish basally); tail bicolored in 12 of 13 specimens, light grayish brown above and whitish below; hind feet and lower legs whitish. Summer and winter pelages indistinguishable.

Skull as shown in Fig. 1; premaxillae extending posteriorly slightly beyond nasals; auditory bullae large. Molars lacking mesolophs and mesolophids. Hyoid resembles that of *P. eremicus* (see Sprague, 1941) but entoglossal process of basihyal slightly more prominent and trochanter better developed.

Of the three phalli we have for study of *P. hooperi*, two (KU 56,653, KU 56,654) were well reconstituted using the procedures of Hooper (1958) and Lidicker (1968). A third specimen (KU 58,901) was dissected from a fluid preserved mouse that had undergone partial decomposition. All three agree in size and proportions. Measurements (taken according to Hooper, 1958) of one subadult (with adult-size testes) and two adults are (in mm), respectively, as follows: length glans, 6.7, 6.8, 7.2; width glans, 2.2, 2.2, 2.4;

TABLE 1.—Means  $\pm$  2 SE, and ranges (given in parentheses) for selected measurements of three species of *Peromyscus*; sample sizes are given in parentheses following each scientific name.

Total length	Tail length	Greatest length of skull	Length of nasals	Length of rostrum	Mastoid breadth	Length maxillary toothrow
<i>P. eremicus</i> (14)						
187.57 $\pm$ 4.12 (175–205)	97.14 $\pm$ 3.17 (85–105)	25.26 $\pm$ .26 (24.40–25.95)	8.82 $\pm$ .18 (8.30–9.35)	8.88 $\pm$ .20 (8.40–9.60)	11.05 $\pm$ .12 (10.70–11.55)	3.82 $\pm$ .08 (3.50–4.00)
<i>P. merriami</i> (17)						
197.12 $\pm$ 3.25 (186–208)	103.88 $\pm$ 2.60 (94–112)	25.82 $\pm$ .26 (24.85–26.75)	9.04 $\pm$ .14 (8.60–9.85)	9.23 $\pm$ .12 (8.85–9.90)	11.44 $\pm$ .13 (10.95–12.00)	4.10 $\pm$ .07 (3.90–4.35)
<i>P. hooperi</i> (5)						
213.60 $\pm$ 3.26 (210–218)	115.80 $\pm$ 4.35 (111–123)	26.72 $\pm$ .35 (26.15–27.25)	10.15 $\pm$ .26 (9.70–10.40)	9.96 $\pm$ .23 (9.70–10.30)	11.59 $\pm$ .18 (11.35–11.85)	3.89 $\pm$ .09 (3.75–4.00)

length protractile tip, 2.0, 2.0, 2.3; length baculum, 10.4, 11.1, 11.3; length cartilaginous tip, 0.44, 0.33, 0.44. Proximal two-thirds of body of glans invested with short spines or tubercles; these are largest and most sparsely distributed near the prepuce and decrease in size and increase in density distally. Cartilaginous tip of baculum curved dorsad. Phallus as shown in Fig. 2.

Mammae thought to be two inguinal pairs (based on dry study skins). A female captured on 16 May contained four small embryos (two in each uterine horn). Another taken the preceding day may (?) have been in lactation (? = collector's notation). Measurements of testes of three males captured on 16 December were 13 by 7, 15 by 8, and 15 by 8 mm.

*Comparisons.*—In cranial and external characters *P. hooperi* resembles *P. eremicus* and *P. merriami* more than any other two species. *Peromyscus hooperi* differs from *merriami* (occurring in Sonora and Sinaloa, about 500 miles west of the known range of *hooperi*) in greater total length and longer tail, skull, nasals, and rostrum (see Table 1). Also the auditory bullae are much more inflated. The resemblance to *eremicus*, common throughout Coahuila, is almost as great. The smallest adult of *hooperi* has a total length of 210 mm and a skull 26.15 mm long in contrast to the largest corresponding measurements of 205 and 25.95 mm in 100 adults of Coahuila-taken *eremicus*. Length of nasals in *hooperi* ranges from 9.7 to 10.4 mm but from only 8.3 up to 9.4 mm in *eremicus*. The upper parts of *hooperi* are grayish rather than ochraceous or buffy, as in *eremicus* and *merriami*.

From both *eremicus* and *merriami* the karyotype of *hooperi* differs in having 52 instead of 92 autosomal arms (latter number reported by Lawlor, 1971, see Fig. 3). The conventional karyotype of *P. hooperi* appears identical to those of *P. banderanus* (Lee and Elder, in press), *P. crinitus*, *P. simulus* (Carleton, in press), and some widely distributed populations of *P. boylii* (*P. b. boylii*, *utahensis*, *rowley*, Lee et al., 1972; and certain populations of *P. b. levipes*, Schmidly and Schroeter, 1974).

The unique characters of the phallus do not indicate a close phyletic relationship of *P. hooperi* with *P. eremicus* or *P. merriami* as do cranial and external features. The long, delicate baculum is like that of *boylii*. The short, relatively wide body of the glans resembles a diminutive version of that structure in *eremicus* and *merriami*. The protractile tip of the glans and the cartilaginous extension of the baculum (features unlike those of members of *Haplomylomys*) resemble those structures in some species of the *maniculatus* division (of Hooper, 1958) in the subgenus *Peromyscus*. The distal margin of the main body of the glans is unusual with a pronounced dorsal cleft between two lobelike flaps; there is a broadly rounded ventral flap. These flaps are less pronounced than the lappets of several species of *Peromyscus*. The ratio of length of



FIG. 3.—Karyogram of *Peromyscus hooperi* from El Gorrión, Coahuila (UIMNH 44,946). X-chromosome assumed.

the body of the glans (total length of glans minus length of protractile tip) to length of baculum, is distinctively small.

**Habitat.**—Most places where *P. hooperi* has been collected appear to fall within the Grassland Transition floral zone of Muller (1947:48). This vegetation type is interposed between the Chihuahuan Desert Shrub below and Montane Chaparral above. Conspicuous plants of the Grassland Transition are *Yucca* sp., *Nolina* sp., and *Dasylirion* sp., interspersed with various grasses (for details see Baker, 1956). At 2.5 mi W, 21 mi S Ocampo, 3,500 feet (ft), Coahuila, Robert W. Dickerman obtained six specimens in the “*Yucca-Dasylirion* association at the base of the Sierra de la Madera.” Other small mammals taken at this place were *Dipodomys nelsoni* (3 specimens) and *Onychomys torridus* (1). The localities of capture for each of the four other specimens of *P. hooperi* range in elevation from 4,000 ft (at 8 mi N, 25 mi W Cuatro Ciénegas) to 6,200 ft (at Sierra del Pino, 5 mi S, 3 mi W Acebuches). Field notes recorded by Dickerman and the few specimens available from widely separated localities suggest that *P. hooperi* occupies a restricted habitat.

**Specimens examined.**—Total number, 14, in Univ. Kansas Mus. Nat. Hist. except 4 from El Gorrión and the type specimen which are deposited in the Univ. of Illinois Mus. Nat. Hist. (UIMNH). COAHUILA: Sierra del Pino (5 mi S, 3 mi W Acebuches), 6,200 ft, 1; 3 mi N, 4 mi E San Francisco (25 mi N Ocampo), 4,850 ft, 1; 21 mi S, 2.5 mi W Ocampo, 3,500 ft, 6; 8 mi N, 25 mi W Cuatro Ciénegas, 4,000 ft, 1; 21 mi S, 11 mi E Australia, 4,400 ft, 1; “El Gorrión” (probably up slope, 1–2 km SW of a road sign reading “El Gorrión” on Mexico Highway No. 54, 19 mi NNE of Concepción del Oro, Zacatecas).

Species used in comparisons with *P. hooperi* were examined from the following localities (all specimens deposited in the UIMNH): *P. eremicus*—vicinity of Saltillo, Coahuila, 14; *P. merriami*—2 ½ mi N, 2 mi E Santa Ana, Sonora, 17.

#### COMMENTS

On the basis of cranial characters, accessory lophs and styles of the anterior molars, structure of the hyoid, and number and placement of the mammae, *P. hooperi* is

referable to the subgenus *Haplomylomys*. The unique anatomy of the phallus does not support this relationship and indicates a connection with some species of the subgenus *Peromyscus*. Thus, in certain features, *P. hooperi* seems to bridge the gap between the subgenera *Haplomylomys* and *Peromyscus*. The karyotype, which initially led us to think it was a species distinct from *P. eremicus* and *P. merriami* also indicates only a distant kinship with *eremicus* and *merriami* but perhaps a closer kinship with *P. californicus*. Indeed, the karyogram is indistinguishable from that of some members of the subgenera *Peromyscus* and *Osgoodomys*. We have no data for other important biological parameters and, at present, prefer to withhold a formal subgeneric assignment of *P. hooperi*.

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