

Peromyscus pectoralis. By David James Schmidly

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Peromyscus pectoralis Osgood, 1904
White-ankled or Encinal Mouse

Peromyscus attwateri pectoralis Osgood, 1904:59. Type locality Jalpan, Queretaro.
Peromyscus pectoralis V. Bailey, 1906:57.

CONTEXT AND CONTENT. Order Rodentia, Family Muridae, Subfamily Cricetinae, Subgenus *Peromyscus*. *P. pectoralis* currently, and probably correctly, is placed in the *boylei* species group in the subgenus *Peromyscus* (Schmidly, 1972). According to Osgood (1909:62) and Hooper (1968:51), *pectoralis* is more closely related to *boylei* and its subspecies than to any other species in the group. Architecture of the skull and of the male phallus in *pectoralis* resembles that of *P. (Peromyscus) crinitus* of the *crinitus* species group, which led Hooper (1968) to suggest a distant relationship between these two species. *P. pectoralis* and *P. crinitus* are divergent primarily in the dental pattern of the molars, that of *pectoralis* is more complex than that of *crinitus* (Hooper, 1957).

Three subspecies of *P. pectoralis* currently are recognized (Schmidly, 1972):

- P. p. pectoralis* Osgood, 1904:59, see above (*eremicoides* Osgood a synonym).
- P. p. collinus* Hooper, 1952:372. Type locality Sierra San Carlos, 12 mi NW San Carlos, San José, 2000 ft., Tamaulipas.
- P. p. laceianus* Bailey, 1906:57. Type locality Howard Lacey Ranch, Turtle Creek, near Kerrville, Kerr Co., Texas.

DIAGNOSIS. Throughout much of its geographic range, *pectoralis* occurs sympatrically with other species of the *boylei* species group (*P. boylei* and *P. attwateri*). There is such wide specific overlap in most characters of these species that much of the following diagnosis is necessarily general and qualitative in nature. The best single diagnostic feature that distinguishes *pectoralis* from *boylei* and *attwateri* is the baculum of males. Specimens of *pectoralis* have a long, attenuate, cartilaginous tip (see Clark, 1953 and Hooper, 1958 for an illustration), whereas in *boylei* and *attwateri* the cartilaginous tip is short and rounded. Positive identification of male specimens without a preserved baculum and of females often requires comparison with large series.

Peromyscus pectoralis from Texas differs from *P. attwateri* in having shorter hind feet (usually greater than 24 mm in *attwateri*, less than 23 mm in *pectoralis*); paler color; white instead of dusky ankles; more sharply bicolored tail; smaller bullae; truncate instead of rounded posterior border of nasals; shorter toothrow (usually greater than 4.1 mm in *attwateri*, less than 4.1 mm in *pectoralis*); smaller, more weakly-developed mesopterygoid process; eight large biarmed autosomes rather than six.

P. pectoralis differs from *P. boylei rowleyi* in the following features: molar teeth slightly smaller (row usually greater than 4 mm in *boylei* and less than 4 mm in *pectoralis*); white instead of dusky ankles; posterior border of nasals truncate rather than tapering in a V-shaped pattern; hair on end of tail shorter (usually more than 4 mm in *boylei* and less than 4 mm in *pectoralis*); eight large biarmed autosomes rather than two.

P. pectoralis from Mexico differs from *P. b. levipes* in having a relatively longer tail; smaller skull, with smaller teeth (molar row always greater than 4 mm in *boylei* and usually less than 4 mm in *pectoralis*); less swollen lacrimal region; zygomata somewhat compressed anteriorly, not elbowed squarely; eight large biarmed autosomes as opposed to four. The skull of *P. pectoralis* is illustrated in Figure 1.

At certain localities *pectoralis* occurs sympatrically with and superficially resembles *P. (Haplomylomys) eremicus*. The two species may be easily distinguished, however, by examining the molar teeth. Those of *eremicus* are simple and do not have accessory styles or lophes; those of *pectoralis* are complex and

possess accessory styles and lophes (for a drawing see Hooper, 1957).

GENERAL CHARACTERS. Mice of this species may be characterized as follows: size medium for the genus (total

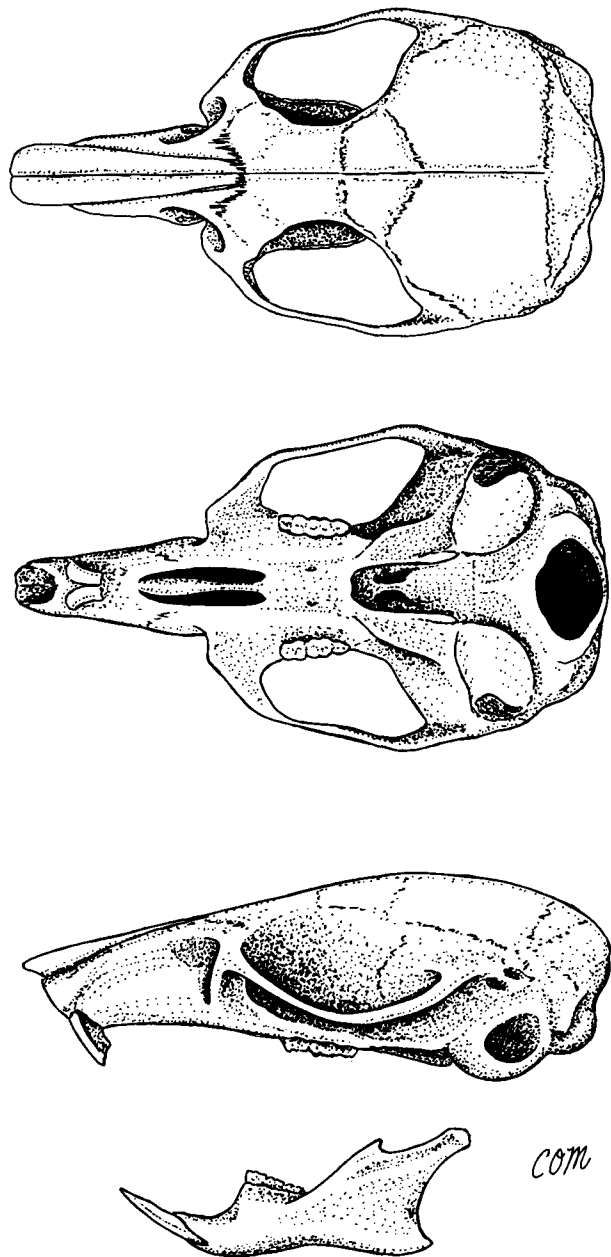


FIGURE 1. Dorsal, ventral, and lateral views of skull of *Peromyscus pectoralis*, TCWC 26417, made from 2 mi. SSE Conca, Queretaro. Drawn by Chester O. Martin. Scale at bottom represents 5 mm.

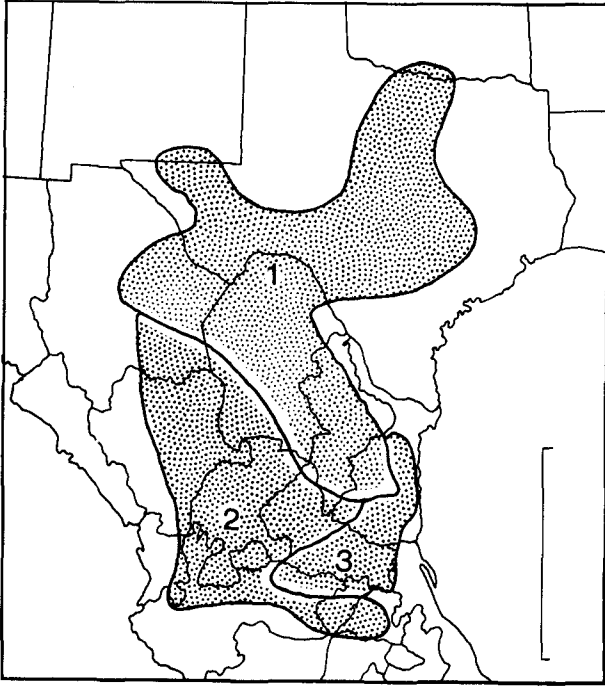


FIGURE 2. Range of *Peromyscus pectoralis* in northern Mexico and adjacent parts of the United States, and the general areas occupied by the subspecies: (1) *P. p. laceianus*, (2) *P. p. pectoralis*, (3) *P. p. collinus*. Scale at bottom right side represents 500 km.

length about 200 mm); tail equal to, or usually decidedly longer than, head and body; length of ear always shorter than hind foot; soles of hind feet naked or with slight hairiness on heel; ankles usually white; tail hairy, sharply bicolored, and coarsely annulated; greatest length of skull in adults 25 to 29 mm; toothrow short (usually less than 4.1 mm); molar teeth with small accessory tubercles of subgenus *Peromyscus*; auditory bullae small and not greatly inflated.

The extent of sexual dimorphism in *pectoralis* is slightly greater than reported for other species of *Peromyscus*. Secondary sexual differences in mensural characteristics are present in certain samples of *P. pectoralis* but the extent of these differences varies geographically (Schmidly, 1972).

Three distinct pelages, juvenal, subadult, and adult, exist in the life cycle of *P. pectoralis*. Two developmental molts, postjuvenal and postsubadult, occur and are responsible for the acquisition of the subadult and first adult pelages, respectively. The sequence of molt and change of pelage is similar to that of *P. truei* (Hoffmeister, 1951) and *P. boylii* (Brown, 1963).

DISTRIBUTION. *Peromyscus pectoralis* inhabits the Central Plateau and the Sierra Madre Oriental of Mexico and comparable areas of Texas, New Mexico, and Oklahoma (see figure 2). In Mexico, *pectoralis* is restricted on the west and south by the high mountains of the Sierra Madre Occidental and the Transverse Volcanic Belt. To the east, however, it inhabits the Sierra Madre Oriental, the Sierra San Carlos, and the Sierra de Tamaulipas, but it does not occur on the Gulf Coastal plains (Schmidly, 1972). *P. pectoralis* occurs in the Trans-Pecos, Edwards Plateau, and north-central regions of Texas. In Oklahoma, *pectoralis* occurs only in Love County in extreme southern Oklahoma (Kilpatrick and Caire, 1973).

Osgood (1909:163) reported three specimens of *pectoralis* from "Fort Huachuca," Arizona, a locality 300 miles or more from the nearest part of its main range (as in New Mexico and Chihuahua). Schmidly (1972), however, examined these specimens and regarded them as immature *P. boylii rowleyi*.

FOSSIL RECORD. *Peromyscus pectoralis* is known from late Pleistocene deposits at Cueva de Abra in the tropics of southern Tamaulipas (Dalquest and Roth, 1970); from Schulze Cave, Edwards County, Texas (Dalquest et al., 1969); and from Klein Cave, Kerr County, Texas (Roth, 1972). Notably, *pectoralis* is absent from Pleistocene deposits near Freisenhahn Cave, Bexar County, Texas (Martin, 1968); and

Longhorn Caverns, Burnet County, Texas (Seimken, 1961). *P. pectoralis* is now one of the more common small mammals at both of these localities.

FORM. Sprague (1941) described the hyoid skeleton and its associated musculature in *P. pectoralis*. Hooper (1957) described the structure of the molar teeth in *pectoralis*. Clark (1953) discussed the form and variation of the baculum, and Hooper (1958) discussed the gross anatomy of the penis.

ECOLOGY. *P. pectoralis* occurs in the Chihuahuan-Zacatecan, Sierra Madre Oriental, and Transverse-Volcanic biotic provinces in Mexico, as defined by Goldman and Moore (1945). In Coahuila and Chihuahua, *pectoralis* lives on the brush-covered foothills in chaparral and in the pinyon-oak association of mountainous areas (Baker, 1956). It is virtually absent from the more mesic pine-fir associations of the higher elevations and flat, low-lying desert situations (Baker, 1956). In eastern Durango, *pectoralis* is widespread in both grassland and desert habitat but occurs more commonly in the former vegetative type (Baker and Greer, 1962). Dalquest (1953) reported that *pectoralis* in San Luis Potosi occurs in the desert mountain ranges of the Mexican Plateau and in the tropical parts of the eastern slopes of the Sierra Madre. In northern Tamaulipas and Nuevo Leon, it is an inhabitant of brush-covered foothills in a vegetational belt of tall, thorny shrubs that is situated altitudinally below pine-oak forests and above the open and short vegetation of the coastal plains (Hooper, 1952).

In Texas and New Mexico, *pectoralis* is known from four of the seven biotic provinces recognized by Blair (1950). In southwestern Texas, it occurs in the Davis, Chisos, Chinati, Glass, and Sierra Vieja mountain ranges of the Chihuahuan Biotic Province and along the Balconian Escarpment in the Edwards Plateau and Central Mineral Region of the Balconian Biotic Province. *P. pectoralis* is known from the Guadalupe Mountains of the Navahonian Biotic Province in southern New Mexico and adjacent parts of Texas. In north-central Texas, disjunct populations of *pectoralis* occur in the Texas Biotic Province, primarily in areas of rocky and brushy habitat (Kilpatrick, 1971).

In the mountains of the Chihuahuan and Navahonian biotic provinces, *pectoralis* inhabits a vegetational belt altitudinally above the open plains and below pine-juniper associations. It is found predominantly in the oak-juniper, catclaw, and grama-bluestem plant associations (Blair, 1940; Borell and Bryant, 1942; Davis and Robertson, 1944; and Blair and Miller, 1949). Along the Edwards Plateau, *pectoralis* occurs in the massive outcrops of limestone characteristic of the stream canyons in cedar-oak associations (Clark, 1952). The habitat preference of *pectoralis* in north-central Texas seems to be related to rock outcrops and ravines with oak trees and without any species of *Juniperus* (Kilpatrick and Caire, 1973).

P. pectoralis is a saxicolous species, showing a decided preference for rocky situations whether it be in the arid desert mountains of the Central Plateau of Mexico or the more humid eastern slopes of the Sierra Madre Oriental (Schmidly, 1972). Baker (1956) and Dalquest (1953) indicated that in Coahuila and San Luis Potosi *pectoralis* prefers narrow stone walls and rocky arroyos where there is little vegetation. Baker and Greer (1962) reported that man-made rock fences are favorite home sites for this species in Durango.

In many parts of its geographic range, *P. pectoralis* occurs in close association with other species of *Peromyscus*. In the mountainous areas of southwestern Texas, *pectoralis* and *boylii* are known to occur sympatrically. Although some ecological overlap is evident, in most places the two species are ecologically and altitudinally separated. Populations of *pectoralis* occupy the arid and semiarid brush-covered foothills at the lower elevations of the mountains; whereas, *boylii* is more common in the pine-oak associations of higher altitudes.

P. pectoralis and *P. attwateri* are both known from north-central Texas. These species have been found in the same type of habitat (rocky and brushy) and in the same general area, within 2 miles of each other, but the populations seem to be completely allopatric (Kilpatrick, 1971).

Populations of *pectoralis* from the Mexican Tableland are found zonally above the areas of occurrence of *P. eremicus* and *P. leucopus*, but usually below that of *P. difficilis*, *P. melanotis*, and *P. truei* (Baker, 1956). According to Baker (1956) and Dalquest (1953), *pectoralis* occupies places where most other kinds of *Peromyscus* are absent. *P. pectoralis* commonly is associated with *eremicus* along the rocky slopes of the foothills of desert mountain ranges. Usually *pectoralis* is more common

at the higher elevations, whereas *eremicus* outnumbers *pectoralis* at the lower elevations where the habitat is more closely related to that of the desert plains (Baker, 1956).

Little is known of the food habits of *pectoralis*. In Texas, these mice feed on a variety of seeds, including juniper berries, acorns, and hackberries (Davis, 1966). In the Sierra Madre Oriental of Tamaulipas, they feed on "nopal" cactus fruit and the juice of this fruit produces a pinkish coloration on the mouth and forefeet (Alvarez, 1963).

The breeding habits of *P. pectoralis* are not well known. Notations concerning lactation and embryos on specimen labels of females suggest that *pectoralis* breeds the year around in at least part of its geographic range. Baker (1956) and Dalquest (1953) found this to be the case in Coahuila and San Luis Potosi, respectively. Davis (1966) found that the number of young per litter, based on five embryo counts, ranged from three to seven, averaging five. In Coahuila, Baker (1956) found the number of young per litter to range from two to five in 20 specimens, averaging 2.9. Nothing seems to be known regarding growth and development of the young, nor has the gestation period been determined, but it is probably about 23 days, as in closely related species (Davis, 1966). Alvarez (1963) suggested that *pectoralis* and *boylei* may differ in time of breeding. He found in Tamaulipas that males of *pectoralis* collected in August had the testes well developed whereas those organs were small in *boylei* collected at the same locality.

Currently, little is known of the external parasites of *P. pectoralis*. Auguston (1944) named a new genus and species of flea, *Pleochaetoides bullisi*, collected from a male *P. p. laceianus* from near Camp Bullis, Bexar Co., Texas. Loomis and Webb (1971) described a new intranasal chigger (*Microtrombicula welbourni*) found on two *P. p. laceianus* collected 10 mi. N, 8 mi. W Del Rio, Val Verde Co., Texas.

BEHAVIOR. Virtually nothing is known of the behavior of *P. pectoralis*. Petersen (1972) was successful in cross-fostering a litter of five *Reithrodontomys megalotis* with a female *P. pectoralis*.

GENETICS. *Peromyscus pectoralis* has a karyotype consisting of four pairs of medium to large biarmed, two pairs of small biarmed, and 17 pairs of large to small acrocentric autosomes (Hsu and Arrighi, 1968; Lee *et al.*, 1972). The number of autosomal arms (AN) is 58. The X chromosome is a submetacentric and the Y a small metacentric.

LITERATURE CITED

- Alvarez, T. 1963. Mammals of Tamaulipas, Mexico. Univ. Kansas Publ., Mus. Nat. Hist. 14:363-473.
- Auguston, G. F. 1944. A new mouse flea, *Pleochaetoides bullisi*, n. gen., n. sp., from Texas. Jour. Parasit. 30:366-368.
- Bailey, V. 1906. A new white-footed mouse from Texas. Proc. Biol. Soc. Washington 19:57-58.
- Baker, R. H. 1956. Mammals of Coahuila, Mexico. Univ. Kansas Publ., Mus. Nat. Hist. 9:125-335.
- Baker, R. H., and J. K. Greer. 1962. Mammals of the Mexican State of Durango. Publ. Mus., Michigan State Univ. 2:29-154.
- Blair, W. F. 1940. A contribution to the ecology and faunal relationships of the mammals of the Davis Mountain region, Southwestern Texas. Misc. Publ. Mus. Zool., Univ. Michigan 46:7-39.
- 1950. The biotic provinces of Texas. Texas Jour. Sci. 2(1):93-117.
- Blair, W. F., and C. Miller. 1949. The mammals of the Sierra Vieja Region, Southwestern Texas, with remarks on the biogeographic position of the region. Texas Jour. Sci. 1(1):67-92.
- Borell, A. E., and M. D. Bryant. 1942. Mammals of the Big Bend area of Texas. Univ. California Publ. Zool. 48:1-62.
- Brown, L. N. 1963. Maturation molts and seasonal molts in *Peromyscus boylei*. Amer. Midland Nat. 70:466-469.
- Clark, W. K. 1952. Isolating mechanisms, competition, and geographic variation of the *Peromyscus boylei* group in Oklahoma and Texas. Unpublished Ph.D. dissertation, Univ. Texas, 102 pp.
- 1953. The baculum in the taxonomy of *Peromyscus boylei* and *P. pectoralis*. Jour. Mammal. 34:189-192.
- Dalquest, W. W. 1953. Mammals of the Mexican State of San Luis Potosi. Louisiana State Univ. Studies, Biol. Ser. 1:233.
- Dalquest, W. W., E. Roth, and F. W. Judd. 1969. The mammal fauna of Schulze Cave, Edwards Co., Texas. Bull. Florida State Museum (Biol. Sci.) 13:205-276.
- Dalquest, W. W., and E. Roth. 1970. Late Pleistocene mammals from a cave in Tamaulipas, Mexico. Southwestern Nat. 15:217-230.
- Davis, W. B. 1966. The mammals of Texas. Bull. Texas Game and Fish Comm. 41:5-267.
- Davis, W. B., and J. L. Robertson. 1944. The mammals of Culberson County, Texas. Jour. Mammal. 25:254-273.
- Goldman, E. A., and R. T. Moore. 1945. The biotic provinces of Mexico. Jour. Mammal. 26:347-360.
- Hoffmeister, D. F. 1951. A taxonomic and evolutionary study of the pinon mouse *Peromyscus truei*. Illinois Biol. Monogr. 21:1-104.
- Hooper, E. T. 1952. Notes on mice of the species *Peromyscus boylei* and *P. pectoralis*. Jour. Mammal. 33:371-378.
- 1957. Dental patterns in mice of the genus *Peromyscus*. Misc. Publ. Mus. Zool., Univ. Michigan 99:1-59.
- 1958. The male phallus in mice of the genus *Peromyscus*. Misc. Publ. Mus. Zool., Univ. Michigan 105:1-24.
- 1968. Classification. Pp. 27-74, in Biology of *Peromyscus* (J. A. King, ed.), Amer. Soc. Mammal., Spec. Publ. 2:xiii + 1-593.
- Hsu, T. C., and F. E. Arrighi. 1968. Chromosomes of *Peromyscus* (Rodentia, Cricetidae) I. Evolutionary trends in 20 species. Cytogenetics 7:417-446.
- Kilpatrick, C. W. 1971. Distribution of the brush mouse, *Peromyscus boylei*, and the encinal mouse, *Peromyscus pectoralis*, in north-central Texas. Southwestern Nat. 16:209-220.
- Kilpatrick, C. W., and W. Caire. 1973. First record of the encinal mouse, *Peromyscus pectoralis*, for Oklahoma, and additional records for north-central Texas. Southwestern Nat. 18:351.
- Lee, M. R., D. J. Schmidly, and C. C. Huheey. 1972. Chromosomal variation in certain populations of *Peromyscus boylei* and its systematic implications. Jour. Mammal. 53(4):697-707.
- Loomis, R. B., and J. P. Webb. 1971. A new intranasal chigger of the subgenus *Crypticula*, genus *Microtrombicula* (Acarina: Trombiculidae) from Texas. Bull. So. California Acad. Sci. 70:102-103.
- Martin, R. A. 1968. Further study of the Friesenhahn Cave *Peromyscus*. Southwestern Nat. 13:253-266.
- Osgood, W. H. 1904. Thirty new mice of the genus *Peromyscus* from Mexico and Guatemala. Proc. Biol. Soc. Washington 17:55-77.
- 1909. Revision of the mice of the American genus *Peromyscus*. N. Amer. Fauna 28:1-285.
- Petersen, M. K. 1972. Female *Peromyscus pectoralis* fosters litter of *Reithrodontomys megalotis*. Southwestern Nat. 17:301-302.
- Roth, E. L. 1972. Late Pleistocene mammals from Klein Cave, Kerr County, Texas. Texas Jour. Sci. 24:75-84.
- Schmidly, D. J. 1972. Geographic variation in the white-ankled mouse, *Peromyscus pectoralis*. Southwestern Nat. 17:113-138.
- Seimken, H. A. 1961. Fossil vertebrates from Longhorn Cavern, Burnet Co., Texas. Texas Jour. Sci. 12:290-310.
- Sprague, J. M. 1941. A study of the hyoid apparatus of the Cricetinae. Jour. Mammal. 22:296-310.

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