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Peromyscus yucatanicus

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Peromyscus yucatanicus Allen and Chapman, 1897

Yucatán Deer Mouse

Peromyscus yucatanicus Allen and Chapman, 1897:8. Type locality Chichén-Itzá, Yucatán.

CONTEXT AND CONTENT. Order Rodentia, Family Cricetidae (considered by some to be a subfamily of Muridae), Subfamily Cricetinae. The genus *Peromyscus*, which occurs throughout temperate and tropical North America, barely reaching South America, contains about 60 Recent species arranged in seven subgenera (Hall, 1981), although Carleton (1980) recognized only two subgenera, elevating the other five to generic rank. *P. yucatanicus* is a member of the nominal subgenus and therein of the *Peromyscus mexicanus* group.

Lawlor (1965), followed by Huckaby (1980), regarded this species as monotypic. Hall (1981), however, recognized two subspecies, as follows:

P. y. badius Osgood, 1904:70. Type locality Apazote, Campeche.
P. y. yucatanicus Allen and Chapman, 1897:8, see above.

DIAGNOSIS. From *Peromyscus mexicanus*, with which it is closely related but from which it is allopatric, *P. yucatanicus* differs in being smaller, both externally and cranially, and in several other features as described by Huckaby (1980) and Lawlor (1965). From *P. leucopus*, with which it is sympatric, *P. yucatanicus* differs in being larger in most dimensions, having a moderately developed supraorbital ridge (but with slight or no beading), no pectoral mammae, a glans penis with divided dorsal lappets, and a sparsely-haired frequently-blotched tail.

GENERAL CHARACTERS. The Yucatán deer mouse is a medium-sized *Peromyscus*, but small for members of the *P. mexicanus* group. In the skull (Fig. 1), the nasals are not expanded and the supraorbital shelf is moderately developed (Huckaby, 1980). Additionally, according to Lawlor (1965) the braincase is narrow and elongate, the auditory bullae and teeth are small, the cusps of the upper molars have well-developed labial styles and accessory ridges, and those of the lower molars corresponding stylids and ridges (see Fig. 2).

Lawlor (1965) documented geographic variation in pelage color from north to south on the Yucatán Peninsula, the basis for recognition of two subspecies in the past and by Hall (1981). In mice from the south, the upperparts are brownish, whereas northern specimens have coats of brighter ochraceous-buff; individuals from both areas have an admixture of dusky hairs. Huckaby (1980) observed that young from near Chichén-Itzá, Yucatán, "start life with a paler coat of gray than those from Campeche and develop brighter buff over the dorsum as they mature. In contrast, animals from Campeche over a year old show slight traces of buff, and at all ages appear much darker and grayer than specimens from further north." The underparts are yellowish-white, the forefeet are white to above the wrists, and the hindfeet white to the base of the tarsus. A narrow, dark, orbital ring is present and the ears are large, brownish, and naked. The tail is dusky above, yellowish below, and frequently blotched with darker pigments (Allen and Chapman, 1897; Lawlor, 1965).

The phallus and baculum were described by Hooper (1958). The phallus of *P. yucatanicus* is similar to that of *P. mexicanus*. The glans is an elongate rod half the length of the hindfoot. It bears large spines, has divided dorsal lappets, and a long, smooth, protractile tip. The baculum (Fig. 2) is cylindrical and about three-fifths the length of the hindfoot. The base is slightly expanded laterally and dorsoventrally flattened. The tip bears a small cartilagenous cone. The entire glans penis was illustrated by Huckaby (1980).

Average and extreme external and cranial measurements (mm, after Lawlor, 1965) of 29 specimens from the vicinity of Chichén-Itzá, Yucatán, followed by those of 14 specimens from Apazote, Campeche, are: total length, 201.7 (185 to 219), 190.9 (181 to 203); length of tail, 99.8 (85 to 117), 94.5 (84 to 105); length of hindfoot, 21.8 (20 to 24), 23.6 (23 to 24); greatest length of skull, 29.3 (28.1 to 30.3), 27.5 (26.3 to 28.8); zygomatic breadth, 13.9 (12.9 to 14.7), 13.0 (12.3 to 14.0); length of rostrum, 11.4 (10.5 to 12.3), 10.6 (10.0 to 11.4); breadth of braincase, 12.4 (11.6 to 13.0), 12.3 (11.6 to 12.7); length of incisive foramen, 6.0 (5.3 to 6.6), 5.5 (5.1 to 5.8). Length of ear in a series from Yucatán examined by us ranged from 18 to 22 mm. Huckaby (1980) recorded length of the maxillary toothrow for 25 specimens from Campeche as averaging 3.7 (3.4 to 3.9) mm.

DISTRIBUTION. The Yucatán deer mouse is distributed throughout the semi-deciduous to semi-evergreen forested area of the Yucatán Peninsula in Yucatán and at least northern and central Campeche and Quintana Roo (Fig. 3). The southern limits of its range are not exactly known (Huckaby, 1980).

FOSSIL RECORD. No certain fossil remains of *P. yucatanicus* have been found. Lawlor (1965) suggested that *P. yucatanicus* diverged from its closest relative, *P. mexicanus*, during the Pleistocene with speciation occurring before Wisconsin glaciation. Hatt (1938) and Hatt et al. (1953) reported finding remains of *P. yucatanicus* in Yucatán caves in which some deposits were dated as late Pleistocene in age.

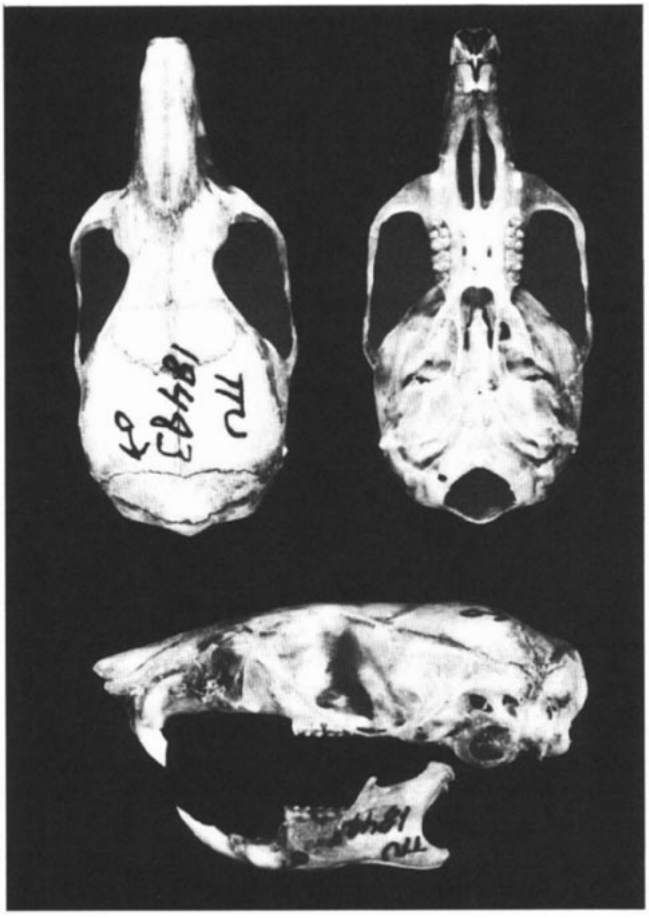

FIGURE 1. Dorsal, ventral, and lateral views of skull and lateral view of lower jaw of *Peromyscus yucatanicus* (♂, TTU 18483) from near Calcehtoc, Yucatán. Total length of skull is 29.1 mm.

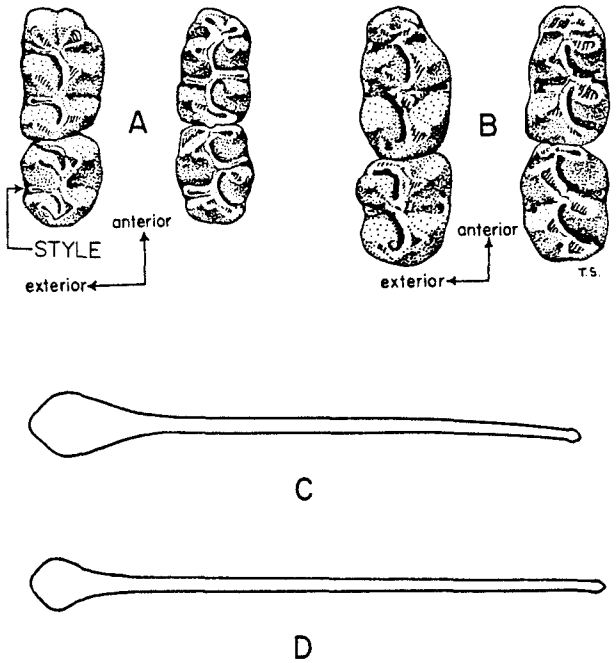

FIGURE 2. First and second upper and lower molars (A) and baculum (C) of *Peromyscus yucatanicus* as compared with those (B, D) of *P. mexicanus* (after Lawlor, 1965).

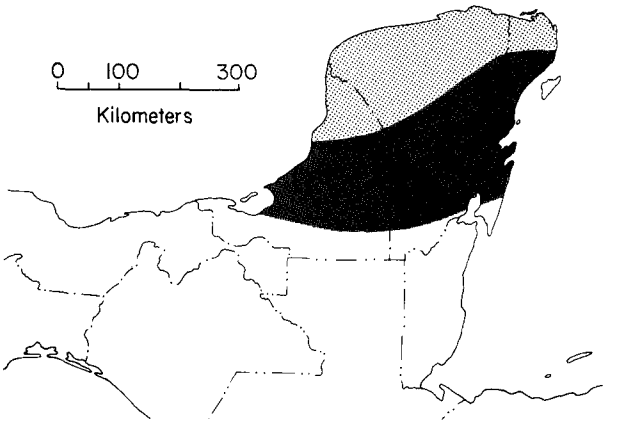

FIGURE 3. Distribution of *Peromyscus yucatanicus*. Subspecies, as defined by Hall (1981), are *P. y. yucatanicus* (north) and *P. y. badius* (south).

FORM AND FUNCTION. As in other species of the genus, there are three distinct, age-related pelages. The first of these is the grayish juvenile pelage, which is replaced by a subadult coat, difficult to distinguish from adult pelage, that is "dusky dorsally, the dark terminal band on individual hairs being long and the subterminal band short. The underparts are pale grayish with little or no admixture of yellow" (Lawlor, 1965). In contrast, adult pelage is brighter ochraceous on the sides and dorsum, the subterminal bands are longer, and the venter is yellowish white. The sequence of postjuvenile and subadult molts is similar to that described for other species of the genus.

Adults molt twice each year, once in spring and again in autumn. According to Lawlor (1965), seasonal pelages are somewhat difficult to distinguish and the molt patterns are irregular and atypical of other species of *Peromyscus*.

ONTOGENY AND REPRODUCTION. *Peromyscus yucatanicus* appears to breed throughout the year. Pregnant or lactating females have been taken in April, July, August, October, and December (Hatt, 1938; Lawlor, 1965). Juveniles have been recorded from the months of March, July, August, November, and December (Lawlor, 1965). Lackey (1976) noted that litters were born continually throughout an 18-month laboratory study. The shortest gestation periods in five lactating females were recorded by Lackey as 31 (3 instances), 32, and 33 days. Lackey also noted evidence for lactation-induced delayed implantation and that postpartum estrous is a regular part of the reproductive cycle. In five instances in which newborn litters were killed by the parents, the periods of gestation of the next litter ranged from 27 to 28 days (Lackey, 1976).

Lawlor (1965) reported the number of fetuses from females collected in April (1), July (2), August (1), and December (1), was three in each case. Birney et al. (1974) reported females collected between 23 April and 10 May as follows: three with three placental scars each; two with three fetuses each; one with four fetuses; and two each with eight placental scars of two separate ages. Eight subadult and adult males taken during the same period had testes ranging from 9 to 16 mm in length and 6 to 8 in width.

In laboratory populations, Lackey (1976) found mean litter size ("embryo count") to be 3.5, but stated that the mean in the wild is 2.8. He also observed that in the laboratory there was an increase in litter size, which leveled off at four, with age and that there was an inverse relationship between litter size and mean weight of the offspring at birth.

No sexual differences in rate of growth were found by Lackey (1976). The incisors erupted at a mean of 8.05 days, the ear opened at a mean of 14.25 days, the eyes at 17.48 days, the vaginal orifice perforated at a mean of 51.5 days, the testes first appeared scrotal on the average at 45.0 days, and reached their maximal scrotal size in 74.4 days. Lackey noted that postnatal development appears to be slower than in other species of *Peromyscus*, with the exception of large taxa such as *P. megalops* and *P. thomasi*. The life expectancy of *P. yucatanicus* is not known.

ECOLOGY. *Peromyscus yucatanicus* is, as noted, restricted in distribution to the Yucatán Peninsula. Baker (1968) and Lawlor (1965) reported this species as occurring in the humid subzone of the Lower Tropical Life-Zone of the Peninsula and Goldman (1951) recorded it from the arid subzone as well. Jones et al. (1974) stated that this mouse is "widely distributed and locally common in areas of thick brush or forest on the peninsula mainland; it has also been taken in cornfields and dense grass."

Lawlor (1965) reported species of rodents found in association with *P. yucatanicus* as including *Heteromys gaumeri, Ototylomys phyllotis, Oryzomys alfaroi, O. melanotis, Sigmodon hispidus, Peromyscus leucopus,* and *Mus musculus*. He noted that "where *P. yucatanicus* and *P. leucopus* occur in the same areas, *yucatanicus* commonly is present in dense forested situations, whereas *leucopus* is found along roads, in coconut fields, and around borders of milpas." Birney et al. (1974) trapped the Yucatán Deer Mouse "in a variety of habitats including quasi rainforest, a banana plantation, grazed thornforest, and weedy cornfields."

Chiggers obtained from *P. yucatanicus* have been identified by Loomis (1969) as: *Odontacarus cayolargoensis, O. chiapanensis, Cordiseta mexicana, Eutrombicula alfreddugesi, Fonsecia (Parasecia) gurneyi, Hoffmannia suriana, Pseudoschoengastia brennani,* and *Speleocola secunda*. Lawlor (1965) also reported a louse *Hoplopleura hesperomydis,* and the ticks *Ixodes* sp. and *Amblyamma cajennense* from this species.

BEHAVIOR. Dewsbury (1979) noted the following copulatory behavior seen in the laboratory. The mean time from introduction of a female to copulation was 285.5 s. The male mounted the female from behind, vaginal penetration was accompanied by a vigorous inward pelvic thrust. Copulation lasts about one second. Locking was not seen, and after initial penetration there was no intravaginal thrusting. Single or multiple ejaculations were possible during a single insertion. The mean number of copulations per couple was six with a mean intercopulatory interval of 392.3 seconds.

Lackey (1976) observed that young animals from 3 to 6 weeks old were aggressive, biting when handled. Adults were less aggressive and in comparison to *Peromyscus leucopus* were quite tractable.

REMARKS. We know of no reports on the genetics of *P. yucatanicus*. As noted previously, Lawlor (1965) did not recognize subspecies in this species. "Recognition of two subspecies, one in the south and one in the north . . . would produce weak subspecies for several reasons: 1) the area of intergradation would be larger than the area occupied by any one subspecies; 2) there is clinal discordance of size and color; 3) there is local reversal of clinal variation; and 4) no other significant variation is apparent."

Huckaby (1980) followed Lawlor, although he noted that it is easy to "separate the specimens from southern Campeche from

those of more northern localities on the basis of color . . . ." Hall (1981) reexamined some of the material studied by Lawlor and, on that basis, recognized both previously described subspecies, "the pale, northern *P. y. yucatanicus* and the dark, southern *P. y. badius.*"

LITERATURE CITED

Allen, J. A., and F. M. Chapman. 1897. On mammals from Yucatan, with description of new species. Bull. Amer. Mus. Nat. Hist., 9:1–12.

Baker, R. H. 1968. Habitats and distribution. Pp. 98–126, *in* Biology of *Peromyscus* (Rodentia) (J. A. King, ed.). Spec. Publ. Amer. Soc. Mamm., 2:1–593.

Birney, E. C., J. B. Bowles, R. M. Timm, and S. L. Williams. 1974. Mammalian distributional records in Yucatan and Quintana Roo, with comments on reproduction, structure, and status of peninsular populations. Occas. Papers Bell Mus. Nat. Hist., Univ. Minnesota, 13:1–25.

Carleton, M. D. 1980. Phylogenetic relationships in neotomine-peromyscine rodents (Muroidea) and a reappraisal of the dichotomy within New World Cricetinae. Misc. Publ. Mus. Zool., Univ. Michigan, 157:1–146.

Dewsbury, D. A. 1979. Copulatory behavior of four Mexican species of *Peromyscus*. J. Mamm., 60:844–846.

Goldman, E. A. 1951. Biological investigations in Mexico. Smiths. Misc. Coll., 115:1–476.

Hall, E. R. 1981. The mammals of North America. Second ed. John Wiley and Sons, New York, 2:601–1181 + *90.*

Hatt, R. T. 1938. Notes concerning mammals collected in Yucatan. J. Mamm., 19:333–337.

Hatt, R. T., H. I. Fisher, D. A. Langebartel, and G. W. Brainerd. 1953. Faunal and archeological researches in Yucatan caves. Bull. Cranbrook Inst. Sci., 33:1–119.

Hooper, E. T. 1958. The male phallus in mice of the genus *Peromyscus*. Misc. Publ. Mus. Zool., Univ. Michigan, 105:1–24.

Huckaby, D. G. 1980. Species limits in the *Peromyscus mexicanus* group (Mammalia: Rodentia: Muroidea). Contrib. Sci. Nat. Hist. Mus., Los Angeles Co., 326:1–24.

Jones, J. K. Jr., H. H. Genoways, and T. E. Lawlor. 1974. Annotated checklist of mammals of the Yucatan Peninsula, Mexico II. Rodentia. Occas. Papers Mus., Texas Tech Univ. 22: 1–24.

Lackey, J. A. 1976. Reproduction, growth, and development in the Yucatan deer mouse, *Peromyscus yucatanicus*. J. Mamm., 57:638–655.

Lawlor, T. E. 1965. The Yucatan deer mouse, *Peromyscus yucatanicus*. Univ. Kansas Publ., Mus. Nat. Hist., 16:421–438.

Loomis, R. B. 1969. Chiggers (Acarina, Trombiculidae) from vertebrates of the Yucatan Peninsula, Mexico. Misc. Publ. Mus. Nat. Hist., Univ. Kansas, 50:1–22.

Osgood, W. H. 1904. Thirty new mice of the genus *Peromyscus* from Mexico and Guatemala. Proc. Biol. Soc. Washington, 17: 55–77.

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