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ANNOTATED CHECKLIST OF MAMMALS OF THE YUCATAN PENINSULA, MEXICO II. RODENTIA

J. KNOX JONES, JR., HUGH H. GENOWAYS, AND TIMOTHY E. LAWLOR

The Yucatán Peninsula, as encompassed in this series of papers, includes the Mexican states of Campeche and Yucatán, and the Federal Territory of Quintana Roo. This region is a low-lying plain that rises gently in elevation from north to south. It is surrounded on three sides by water and bounded on the south by British Honduras, Guatemala, and the Mexican state of Tabasco. The vegetation of the peninsula increases in height from north to south and from the coast inland. Generally, forest to the north is xerophilic, but that of the southern part of the peninsula is tall, quasi rainforest. More detailed discussions of the environment are given by Duellman (1965, 1966), Jones *et al.* (1973), Klaas (1968), and Paynter (1955).

Although the mammalian fauna of the Yucatán Peninsula is unique in many ways, there has been no comprehensive account of mammals of the region since Gaumer's (1917) "Monografía de los mamíferos de Yucatán." In an earlier paper of this series (Jones *et al.*, 1973), the chiropteran fauna of the peninsular region was treated. The present report deals exclusively with rodents, 20 native species of which (and two that have been introduced) presently are known from the Yucatán Peninsula. These 22 species represent 16 genera of seven families as follows: Sciuridae, two; Geomyidae, one; Heteromyidae, two; Cricetidae, 12; Muridae, two (introduced); Dasyproctidae, two; and Erethizontidae, one. One genus (*Otonyctomys*) is endemic to the peninsula, as are four species (*Sciurus yucatanicus*, *Heteromys*

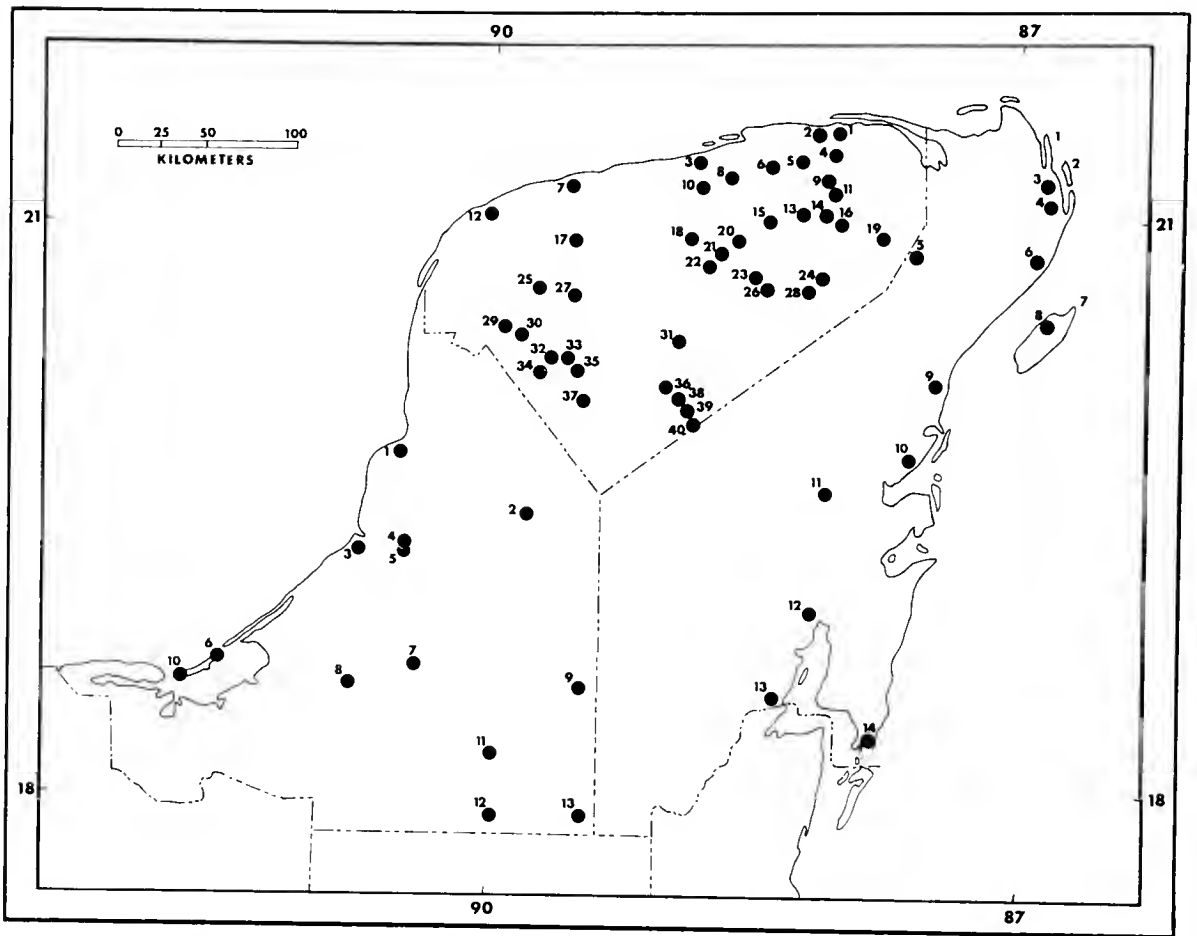


FIG. 1.—Map of Yucatán Peninsula showing location of place-names mentioned in text. CAMPECHE: 1, Campeche; 2, Dzibalchén; 3, Champotón; 4, San Juan; 5, San José Carpizo; 6, Puerto Real; 7, Apazote; 8, Escárcega; 9, Xpujil (128 km. E Escárcega); 10, Ciudad del Carmen; 11, Concepción (73 km. SE Escárcega); 12, Laguna Chumpich (103 km. SE Escárcega); 13, Laguna Alvarado (65 km. S, 128 km. E Escárcega); La Tuxpeña was not exactly located, but it is near Champotón as specimen labels bear the designation “La Tuxpeña, Champoton.” QUINTANA ROO: 1, Isla Mecó; 2, Isla Mujeres; 3, Puerto Juárez; 4, La Vega; 5, Pueblo Nuevo X-Can; 6, Puerto Morelos; 7, Isla Cozumel; 8, San Miguel; 9, Tuloom [= Tulum]; 10, Vigía; 11, Felipe Carrillo Puerto; 12, Limones (near 60 km. N, 16 km. E Chetumal); 13, Chetumal; 14, Xcalak; Dos Cocos and Santa Lucía were not exactly located. YUCATAN: 1, Río Lagartos; 2, San Felipe; 3, Silam [= Cilam]; 4, Loché; 5, Panabá; 6, Uxbay; 7, Progreso; 8, Buctzotz; 9, Kikil; 10, Temax; 11, Tizimín; 12, Sisal; 13, Espita; 14, Calotmul; 15, Cenotillo; 16, Pocoboch; 17, Mérida; 18, Izamal; 19, Nabalám; 20, Tunkas; 21, Uaxcach; 22, Tzalam; 23, Pisté; 24, Valladolid; 25, Chocholá; 26, Chichén-Itzá; 27, Chablé; 28, Tekom; 29, Santa Cruz; 30, Calcehtok; 31, Xbac; 32, Yokat; 33, Ticul; 34, Uxmal; 35, Oxkutzcab; 36, Peto; 37, San Anselmo; 38, Santa Rosa; 39, Laguna Chichancanab; 40, Esmeralda and Kilometro Cincuenta; Suquilá, Tohil [= Xtohil], and Yohnicté were not exactly located.

gaumeri, *Peromyscus yucatanicus*, and *Reithrodontomys spectabilis*) and a number of subspecies.

This report is based principally upon material housed in the Museum of Natural History at The University of Kansas. In the summer of 1962, two field parties from Kansas visited the region, one

consisting of W. E. Duellman and six students enrolled in a field course in vertebrate zoology, and the other including the senior author and four students working on a survey of terrestrial vertebrates and their ectoparasites under the aegis of a contract (DA-49-193-MD-2215) from the U.S. Army Research and Development Command. Also, Percy L. Clifton, field representative of the Museum of Natural History, collected mammals on the peninsula from mid-December 1962 until June 1963.

Specimens listed beyond carry no institutional designation if housed in the Museum of Natural History at The University of Kansas. Other collections from which specimens were examined are: American Museum of Natural History (AMNH); British Museum (Natural History) (BM); University of Michigan Museum of Zoology (UMMZ); The Museum, Texas Tech University (TTU); and National Museum of Natural History (USNM). All measurements are in millimeters and weights are given in grams. Most localities mentioned in text are plotted in Fig. 1. Ectoparasites obtained from our material from the Yucatán Peninsula have been reported by Emerson (1971), Genoways (1973), Lawlor (1965, 1969), Loomis (1969), and Price and Emerson (1971).

ANNOTATED LIST OF SPECIES

Family SCIURIDAE

***Sciurus yucatanensis yucatanensis* J. A. Allen, 1877**

Yucatán Gray Squirrel

Specimens examined (16).—CAMPECHE: 5 km. S Champotón, 1; 7 km. N, 51 km. E Escárcega, 2; 7½ km. W Escárcega, 65 m., 1. QUINTANA ROO: 4 km. NNE Felipe Carrillo Puerto, 30 m., 2; Pueblo Nuevo X-Can, 10 m., 8. YUCATAN: no specific locality, 2.

Additional records (Gaumer, 1917:98, 101, unless otherwise noted).—CAMPECHE: Apazote (Musser, 1968:108); S Campeche (Musser, 1968:108); La Tuxpeña (Musser, 1968:108). QUINTANA ROO: Dos Cocos; Isla Meco (Thomas, 1888:129); La Vega (Musser, 1968:108); Puerto Morelos (Musser, 1968:108); Tuloom [= Tulum]; Vigía. YUCATAN: Actun Coyok, 3½ km. SSE Oxkutzcab (Hatt *et al.*, 1953:63, cave deposit); Actun Has, 3½ km. WSW Yokat (Hatt *et al.*, 1953:63, cave deposit); Actun Spukil, 4½ km. SSW Calcehtok (Hatt *et al.*, 1953:63, cave deposit); Buctzotz; Calotmul; Chablé; Chichén-Itzá (Musser, 1968:108); Chocholá (Ingles, 1959:390); (Hatt and Villa-R., 1950:233); Espita; Ixamal; Mérida (Musser, 1968:108); Peto; Pocoboch; Río Lagartos (Elliot, 1907:131); San Anselmo; San Felipe (Elliot, 1907:131); Temax; Tizimín; Tunkas; Tzalam; Xbac; Yaxcach; "Yucatan" (Alston, 1879-82:125).

This squirrel is distributed throughout the forested areas on the Yucatán Peninsula and evidently is common in many areas. Two of three females taken on 28 and 29 July at Pueblo Nuevo X-Can were

gravid, one carrying three embryos (40 in crown-rump length) and the other two (30); the third had enlarged mammae, suggesting recent lactation, as did a female from 5 km. S Champotón that was obtained on 10 July. A young male, in juvenile pelage, was captured on 28 July. An adult male and adult female from the southern part of Campeche were in long, fresh pelage when collected on 28 December. The male had testes that measured 24 in length; the female evinced no sign of reproductive activity.

Sciurus yucatanensis occupies a relatively restricted distributional area, occurring on the Yucatán Peninsula and in adjacent areas of British Honduras, northern Guatemala, northern Chiapas, and eastern Tabasco (Musser, 1968:108). It is closely related to *Sciurus variegatoides*, a species with which Musser (*op. cit.*:92) opined it might intergrade. Geographic variation within populations currently assigned to *yucatanensis* is clinal from north (paler, smaller) to south. As understood at the outset of this study, three subspecies of *yucatanensis* were recognized: the nominate race on the northern part of the Yucatán Peninsula, *baliolus* Nelson from southern peninsular areas and adjacent Mexican states, and *phaeopus* Goodwin from northern Guatemala. Contrast in size and color between the relatively large and blackish-colored *phaeopus* of Guatemala and smaller, pale-colored squirrels from the northern parts of the peninsula is striking. However, specimens available to us from Campeche do not differ markedly from those to the north, and we see no utility in retaining use of the subspecific name *baliolus*. Determination of the taxonomic status of the nominal race *phaeopus* must await collection of additional material from northern Guatemala and adjacent areas to the east and west.

Cranial measurements of two males from Felipe Carrillo Puerto, one from Pueblo Nuevo X-Can, and one from 7 km. E Escárcega, followed by those of five females from Pueblo Nuevo X-Can and one from 7 km. N and 51 km. E Escárcega (all adults), are as follows: greatest length of skull, 53.1, 50.8, 50.8, 55.0, 52.1, 52.5, 51.4, 52.4, 51.5, 53.3; zygomatic breadth, 29.9, 29.7, 28.7, 31.0, 30.8, 30.6, 29.5, 30.7, 28.3, 29.0; interorbital breadth, 15.9, 16.4, 15.0, 17.1, 16.8, 15.9, 17.3, 16.8, 15.5, 17.0; length of maxillary toothrow, 9.8, 9.7, 9.6, 10.5, 10.1, 10.0, 9.7, 10.2, 9.5, 9.6; length of nasals, 15.2, 15.2, 15.4, 15.9, 15.0, 15.2, 14.8, 15.0, 14.4, 14.5.

***Sciurus deppei vivax* Nelson, 1901**
Deppe's Squirrel

Specimens examined (20).—CAMPECHE: 7 km. N, 51 km. E Escárcega, 5; 7½ km. W Escárcega, 65 m., 2; 65 km. S, 128 km. E Escárcega, 2. QUINTANA

ROO: 4 km. NNE Felipe Carrillo Puerto, 30 m., 1; 4 km. WSW Puerto Juárez, 5 m., 1; Pueblo Nuevo X-Can, 10 m., 9.

Additional records (Gaumer, 1917:102, unless otherwise noted).—CAMPECHE: Apazote (Nelson, 1901:131). YUCATAN: Esmeralda (Hatt and Villa-R., 1950:233); Izamal; "Kilómetro cincuenta" (Hatt and Villa-R., 1950:233); Peto; Ticul; Uxmal; Xbac.

This distinctive subspecies has rusty-reddish dorsal pelage, gray underparts that extend dorsad to form large grayish shoulder patches, and a small skull. The grayish shoulder patch is found in some populations of *S. d. deppei*, but never is as striking nor as extensive as in *S. d. vivax*. Deppe's squirrel frequently occurs in association with *S. yucatanensis*, individuals of both species having been taken together in forest habitats at four localities.

A female from 7 km. N and 51 km. E Escárcega (18 December) was pregnant, carrying two embryos (12 in crown-rump length).

Family GEOMYIDAE

Orthogeomys hispidus yucatanensis (Nelson and Goldman, 1929) Hispid Pocket Gopher

Specimens examined (14).—CAMPECHE: 5 km. S Champotón, 10 m., 1; Concepción, 73 km. SE Escárcega, 2; Dzibalchén, 5; 7 km. N, 51 km. E Escárcega, 1; 103 km. SE Escárcega, 3. QUINTANA ROO: 60 km. N, 16 km. E Chetumal, 1. YUCATAN: 6 km. N Tizimín, 1.

Additional records (Gaumer, 1917:128, unless otherwise noted).—CAMPECHE: Apazote (Nelson and Goldman, 1929:151); Campeche (Ingles, 1959:392). QUINTANA ROO: Isla Mecó; Tuloom [=Tulum]. YUCATAN: Actun Coyok, 3.5 km. SSE Oxkutzcab (Hatt *et al.*, 1953:63, cave deposit); Buctzotz; Calcehtok (Hatt and Villa-R., 1950:234); Calotmul; Chablé; Chichén-Itzá (Ingles, 1959:392); Izamal; Loltun, 5 km. SW Oxkutzcab (Hatt *et al.*, 1953:63, cave deposit); Mérida; Peto; San Anselmo; Silam; Suquilá; Temax; Tizimín; Tzalam; Uxmal; Xbac (G. M. Allen, 1906:107); Yaxcach (Nelson and Goldman, 1929:151); Yokat (Hatt, 1938:336); Yonicté; no specific locality (Alston, 1879-82:160).

Although the subspecies *O. h. yucatanensis* is widely distributed in both Mexican and Guatemalan parts of the Yucatán Peninsula, the species apparently is nowhere abundant and rather little is known about its habits. Allen and Chapman (1897:11) reported specimens taken in relatively deep soils in the bottom of dry cenotes near Chichén-Itzá. Specimens for which we have capture data are from the southern part of the peninsula. At a place 60 km. N and 16 km. E Chetumal, one specimen was taken in an area of dense quasi rainforest; no open fields or weedy areas were observed. Two individuals were trapped in the bed of a dry pond 73 km. SE Escárcega, in an area of dense quasi rainforest, and three specimens were obtained in a papaya orchard 103 km. SE Escárcega. Five specimens from Dzibalchén were purchased from natives; vegetation in the immediate area

was composed of low, thorny forest, but tall forest was reported to be nearby.

We have examined adult females taken on 2 January, 14 January, 16 January, and 3 June, and subadult females from 14 April, 29 April, 5 June (two), and 11 July; none of these individuals evinced gross reproductive activity. Testicular lengths of adult males are as follows (dates of capture in parentheses): 14 (2 January), 12 (13 January), 14 (3 June), 14 (4 June), 12 (26 December). Two individuals (taken on 29 April and 11 July) were molting from subadult to adult pelage.

Nelson and Goldman (1929:150) originally described *O. h. yucatanensis* as differing from other named subspecies of the species by its smaller size. Although a thorough understanding of the relationships within populations of *O. hispidus* awaits detailed analysis of geographic variation, our specimens do agree with the holotype in that they are small. External and cranial measurements of an adult male from 103 km. SE Escárcega and one from Dzibalchén, followed by those of two females from the first locality and one from the latter, are: total length, 331, 308, 304, 294, 309; length of tail, 83, 70, 84, 78, 76; length of hind foot, 49, 44, 45, 43, 44; length of ear, 9, 8.5, 9, 7, 8; greatest length of skull, 63.5, 61.7, 59.0, 56.9, 56.8; zygomatic breadth, 40.5, 42.8, 36.8, 33.9, 35.8; interorbital breadth, 10.6, 10.3, 10.3, 9.7, 10.8; mastoid breadth, 38.5, 38.0, 36.4, 34.9, 34.6; length of nasals, 23.2, 22.8, 19.6, 20.0, 19.7; length of maxillary toothrow, 12.8, 11.8, 12.6, 11.5, 12.4; palatal length, 43.8, 41.7, 39.3, 38.1, 39.1; rostral breadth, 14.7, 14.4, 12.1, 12.7, 14.0.

Family HETEROMYIDAE

***Heteromys desmarestianus desmarestianus* Gray, 1868**

Demarest's Spiny Pocket Mouse

Specimens examined (2).—QUINTANA ROO: 85 km. W Chetumal, 2.

The only two specimens of this species known from the Yucatán Peninsula were trapped by P. L. Clifton on the night of 3 March 1963 in a weedy cornfield near a shallow laguna. Both are subadults. The general area 85 km. W Chetumal is quasi rainforest.

Heteromys desmarestianus differs from *H. gaumeri* in being larger externally and cranially, lacking the broad, bright, ochraceous lateral stripe (although a narrow, pale lateral stripe usually is present), and in having soles of the hind feet naked posteriorly (this area is haired in *gaumeri*). Although allopatric, there is little doubt that these two taxa represent distinct species (see Genoways, 1973, for further discussion of their relationships). We have assigned our specimens to

the subspecies *desmarestianus* on geographic grounds, awaiting additional material from the peninsular region. Measurements of a subadult male and subadult female are, respectively, as follows: total length, 294, 281; length of tail, 160, 149; length of hind foot, 36, 35; length of ear, 19, 18; greatest length of skull, 35.5, 35.8; zygomatic breadth, —, 16.0; interorbital breadth, 9.3, 9.4; mastoid breadth, 15.4, 15.4; length of rostrum, 16.2, 16.3; length of maxillary toothrow, 5.4, 5.4; depth of braincase, 9.1, 9.1.

***Heteromys gaumeri* Allen and Chapman, 1897**

Gaumer's Spiny Pocket Mouse

Specimens examined (56).—CAMPECHE: 5 km. S Champotón, 10 m., 3; Dzibalchén, 1; 7 km. E Escárcega, 4; 7½ km. W Escárcega, 15; 103 km. SE Escárcega, 2. QUINTANA ROO: 4 km. NNE Felipe Carrillo Puerto, 30 m., 9; Pueblo Nuevo X-Can, 10 m., 1; 1½ km. S, 1 km. E Pueblo Nuevo X-Can, 1. YUCATAN: Chichén-Itzá, 10 m., 1; Esmeralda, 1; 1 km. SW Casa de la Esmeralda, 1; 66 km. NE Mérida, 1; Peto, 3; 3 km. N Pisté, 7; 2 km. N Pisté, 2; Pisté, 2; 1 km. SSW Santa Rosa, 1; 6 km. N Tizimín, 1.

Additional records (Hatt *et al.*, 1953:64, unless otherwise noted).—CAMPECHE: Apazote (Goldman, 1911:30); Campeche (Goldman, 1911:30). QUINTANA ROO: La Vega (Hatt, 1938:336); Puerto Morelos (Hatt, 1938:336). YUCATAN: Actun Chacaljas, 3 km. SSW Calcehtok (cave deposit); Actun Coyok, 3½ km. SSE Oxkutzcab (cave deposit); Actun Has, 3½ km. WSW Yokat (cave deposit); Actun Lara, 3 km. SW Yokat (cave deposit); Actun Oxkintok, 3 km. SW Santa Cruz (cave deposit); Actun Spukil, 4½ km. SSW Calcehtok (cave deposit); Calcehtok (Hatt and Villa-R., 1950:234); Loltun, 5 km. SW Oxkutzcab (cave deposit); Oxkutzcab (Pearse and Kellogg, 1938:304); Progreso (Goldman, 1911:30); Santa Rosa (Hatt and Villa-R., 1950:234); Tunkas (Goldman, 1911:30); Xbac (Gaumer, 1917:131); Yaxcach (Gaumer, 1917:131).

Gaumer's spiny pocket mouse occurs widely on the peninsula and has been found in a variety of ecological situations. For example, specimens have been taken along rotten logs in dense quasi rainforest at a place 103 km. SE Escárcega and along the edges of cultivated fields in an area of low thorny forest 66 km. NE Mérida. Of the 12 adult and subadult females for which reproductive data are available, only two were gravid. One taken on 28 July 1962 at Pueblo Nuevo X-Can contained five embryos that were 8 in crown-rump length, and the other, obtained 7 km. N and 51 km. E Escárcega on 26 December 1963, carried three embryos that measured 9. Testes of subadult and adult males had the following measurements (dates of capture in parentheses): 16 (15 July); 20 (21 July); 15 (25 July); 17 (16 August); 20 (26 April).

Laurie (1953:387) assigned specimens from X-Cala-Koop, Tekom, and Chichén-Itzá, Yucatán, to *Heteromys desmarestianus*. We have not had the opportunity to reexamine her material, but strongly sus-

pect it represents *H. gaumeri*. The characters by which *gaumeri* can be distinguished from *desmarestianus* are discussed in the account of the latter species, which is known to occur on the peninsula only in southern Quintana Roo. We suspect the two species are allopatric. We note no appreciable geographic variation among our samples of *gaumeri*, but many of our specimens are not fully adult.

External and cranial measurements of a male from 2 km. N Pisté, one from 7½ km. W Escárcega, two females from 3 km. N Pisté, and four from 7 km. N and 51 km. E Escárcega are, respectively, as follows: total length, 297, 286, 284, 271, 273, 273, 275, 273; length of tail, 162, 157, 153, 150, 145, 145, 145, 146; length of hind foot, 34, 34, 33, 31, 35, 35, 34, 34; length of ear, 19, 17, 19, 16, 18, 19, 19,—; greatest length of skull, 36.0, 34.8, 36.0, 34.1, 34.9, 35.4, 35.0, 34.9; zygomatic breadth, 16.9, 16.1, 16.0, 15.1, 16.6, 16.5, 15.8, 16.3; interorbital breadth, 9.0, 8.3, 8.7, 8.6, 8.9, 8.4, 8.8, 9.2; mastoid breadth, 16.4, 15.0, 15.1, 14.8, 15.4, 15.6, 15.1, 14.8; length of rostrum, 15.1, 15.5, 15.5, 14.6, 15.1, 15.4, 14.6, 15.1; length of maxillary toothrow, 5.2, 4.9, 5.3, 4.7, 4.7, 5.0, 4.7, 4.7; depth of braincase, 9.1, 8.5, 8.7, 8.7, 9.1, 8.9, 9.0,—.

Family CRICETIDAE

***Oryzomys fulvescens mayensis* Goldman, 1918**

Pygmy Rice Rat

Specimens examined (3).—CAMPECHE: 7 km. N, 51 km. E Escárcega, 2; 103 km. SE Escárcega, 1.

Additional records.—CAMPECHE: Apazote (Goldman, 1918:92). YUCATAN: Actun Has, 3½ km. WSW Yokat (Hatt *et al.*, 1953:64, cave deposit); Actun Spukil, 4½ km. SSW Calcehtok (Hatt *et al.*, 1953:64, cave deposit); Tunkas (Goldman, 1918:92); Xbac (Gaumer, 1917:123); Yaxcach (Gaumer, 1917:123).

Two specimens from 7 km. N and 51 km. E Escárcega were trapped in a cornfield overgrown with weeds and brush where *Sigmodon hispidus* also was taken. A female, obtained there on 27 December 1962 was pregnant with four embryos that measured 13.

Oryzomys melanotis

Black-eared Rice Rat

This species was taken in marginal or disturbed areas such as forest edge and along roads and trails. At 4 km. NNE Felipe Carrillo Puerto, *O. melanotis* was taken in the same trap-line with *O. palustris*.

A female from Yucatán, taken on 22 July 1962, was gravid with four embryos (crown-rump length, 13).

We refer our specimens to the two subspecies previously described from the region inasmuch as the small samples available do not lend themselves to detailed analysis of the two races. The pelage of the one adult from the northern part of the peninsula (Cenote Seco, Yucatán) is brighter than that of individuals of similar age from the south. No cranial differences were noted.

Lawlor (1965:435), in an account of species associated with *Peromyscus yucatanicus*, listed certain specimens of *O. melanotis* as *O. alfaroi*.

***Oryzomys melanotis megadon* Merriam, 1901**

Specimens examined (14).—CAMPECHE: 7½ km. W Escárcega, 65 m., 6. QUINTANA ROO: 4 km. NNE Felipe Carrillo Puerto, 30 m., 8.

Additional records (Goldman, 1918:55).—CAMPECHE: Apazote; Campeche.

***Oryzomys melanotis yucatanensis* Merriam, 1901**

Specimens examined (3).—YUCATAN: Cenote Seco, 2 km. E Chichén-Itzá, 2; Esmeralda, 1.

Additional records (Hatt *et al.*, 1953:64, unless otherwise noted).—QUINTANA ROO: Puerto Morelos (Goldman, 1918:55). YUCATAN: Actun Coyok, 3½ km. SSE Oxkutzcab (cave deposit); Actun Has, 3½ km. WSW Yokat (cave deposit); Chichén-Itzá (Hatt, 1938:336); Loltun, 5 km. SW Oxkutzcab (cave deposit).

Oryzomys palustris

Marsh Rice Rat

Two subspecies of this rice rat are recognized on the Yucatán Peninsula. Individuals from Cozumel Island (*O. p. cozumelae*) differ from those of the mainland race (*O. p. couesi*) principally in being larger externally and in minor cranial details (the skull of *cozumelae* averages slightly larger, is less arched over the orbits, has larger nasals, and the teeth are heavier). No appreciable geographic variation was noted among specimens from the mainland excepting that two individuals from Xcalak, in southeastern Quintana Roo, are smaller cranially and have decidedly shorter toothrows (4.1 in each) than do representatives from other areas. These two specimens are provisionally referred to *couesi*.

O. palustris is locally abundant on the peninsula and seemingly inhabits diverse vegetational situations. Individuals have been taken in dense deciduous forest and in quasi rainforest, thick brushy and grassy areas, and in weedy cornfields. *Sigmodon hispidus*, *Heteromys gaumeri*, and *Peromyscus yucatanicus* commonly were obtained in trap-lines with this rice rat. *Reithrodontomys spectabilis* was a com-

mon ecological associate on Cozumel Island. One female from Cozumel carried three embryos that measured 15 on 8 August.

***Oryzomys palustris couesi* (Alston, 1877)**

Specimens examined (33).—CAMPECHE: 7½ km. W Escárcega, 65 m., 1; 20 km. N, 128 km. E Escárcega, 3; 128 km. E Escárcega, 4; 65 km. S, 128 km. E Escárcega, 1; 103 km. SE Escárcega, 18. QUINTANA ROO: 83 km. W Chetumal, 1; 4 km. NNE Felipe Carrillo Puerto, 30 m., 1; Xcalak, 55 km. SE Chetumal, 2. YUCATAN: 13 km. WSW Sisal, 2.

Additional records (Gaumer, 1917:122, unless otherwise noted).—CAMPECHE: La Tuxpeña (Goldman, 1918:31). QUINTANA ROO: Santa Lucía (Goldman, 1918:31). YUCATAN: Actun Coyok, 3½ km. SSE Oxkutzcab (Hatt *et al.*, 1953:64, cave deposit); Actun Has, 3½ km. WSW Yokat (Hatt *et al.*, 1953:64, cave deposit); Actun Spukil, 4½ km. SSW Calcehtok (Hatt *et al.*, 1953:64, cave deposit); Calotmul; Esmeralda (Hatt and Villa-R., 1950:235); Izamal; Río Lagartos (Goldman, 1918:31); Temax; Xbac; Yaxcach.

***Oryzomys palustris cozumelae* Merriam, 1901**

Specimens examined (35).—QUINTANA ROO: 3½ km. N San Miguel, Cozumel Island, 33; 3 km. N San Miguel, Cozumel Island, 2.

Additional record (Merriam, 1901a:103).—QUINTANA ROO: "Cozumel Island."

***Tylomys nudicaudus* (Peters, 1866)**
Peters' Climbing Rat

The only record from the Yucatán Peninsula of this large climbing rat consists of fragmentary remains of several skulls from a cave deposit at Actun Spukil, 4½ km. SSW Calcehtok, Yucatán (Hatt *et al.*, 1953:65). It seems likely that *Tylomys* occurs presently at least in the southern parts of Campeche and Quintana Roo.

***Otodylomys phyllotis phyllotis* Merriam, 1901**
Big-eared Climbing Rat

Specimens examined (121).—CAMPECHE: 5 km. S Champotón, 10 m., 4; Dzibalchén, 2; 7 km. N, 51 km. E Escárcega, 1; 7½ km. W Escárcega, 8; 65 km. S, 128 km. E Escárcega, 2; 103 km. SE Escárcega, 3; San José Carpizo, 1 (UMMZ); La Tuxpeña, 1 (USNM). QUINTANA ROO: 68 km. N, 16 km. E Chetumal, 1; 60 km. N, 16 km. E Chetumal, 2; 85 km. W Chetumal, 2; 83 km. W Chetumal, 2; 4 km. NNE Felipe Carrillo Puerto, 16; La Vega, 1 (USNM); Pueblo Nuevo X-Can, 10 m., 7; 2 km. S Pueblo Nuevo X-Can, 1. YUCATAN: Calcehtok, 1 (USNM); Chichén-Itzá, 10 m., 16 (2 BM, 9 USNM); Cenote Seco, 2 km. E Chichén-Itzá, 4; Esmeralda, 14 (UMMZ); 1 km. SW Esmeralda, 3 (2 UMMZ); 66 km. NE Mérida, 7; Peto, 1; 3 km. N Pisté, 10; 2 km. N Pisté, 10 m., 1; Pisté, 10 m., 1; 6 km. N Tizimín, 2; Tohil [= Xtohil], Chac Mol Cave, 1 (USNM); Tunkas, 5 (USNM); Vallodolid, 1.

Additional records.—CAMPECHE: Apazote (Merriam, 1901b:563); 2 mi. S Campeche (Ingles, 1959:395). QUINTANA ROO: 10 mi. E Quintana Roo-Yucatán border on road between Vallodolid and Puerto Morelos (Ingles, 1959:395).

YUCATAN (Hatt *et al.*, 1953:66, unless otherwise noted): Actun Chacaljas, 3 km. SSW Calcehtok (cave deposit); Actun Coyok, 3½ km. SSE Oxkutzcab (cave deposit); Actun Has, 3½ km. WSW Yokat (cave deposit); Actun Jih, 3 km. SW Ticul (cave deposit); Actun Lara, 3 km. SW Yokat (cave deposit); Actun Oxkintok, 7 km. W Calcehtok (cave deposit); Actun Spukil, 4½ km. SSW Calcehtok (cave deposit); Loltun, 5 km. SW Oxkutzcab (cave deposit); Nabalám (Gaumer, 1917:126, as *Neotoma ferruginea*).

This climbing rat is widely distributed on the peninsula and not uncommon in many places. We took specimens most often in areas of rocky outcroppings, sinks, and in forested habitats of all types, where some were trapped on stumps and in trees. A female from 103 km. SE Escárcega, Campeche, was taken in dense forest from a tree hole about three feet above the ground.

Available evidence suggests that *O. phyllotis* may breed throughout the year. Gravid females or juveniles were captured on the Yucatán Peninsula in the months of January, February, March, April, July, August, and December. Sixteen pregnant females carried an average of 2.25 (1-3) embryos.

We follow Lawlor (1969) in regarding *Ototylomys* as a monotypic genus. According to Lawlor, the subspecies *O. p. phyllotis* ranges from the Yucatán Peninsula southeastward to Nicaragua.

Otonyctomys hatti Anthony, 1929 Yucatán Vesper Rat

Specimens examined (2).—CAMPECHE: Dzibalchén, 1. YUCATAN: Cenote Xtoloc, Chichén-Itzá, 1.

Additional records (Hatt *et al.*, 1953:67).—YUCATAN: Actun Chacaljas, 3 km. SSW Calcehtok (cave deposit); Actun Coyok, 3½ km. SSE Oxkutzcab (cave deposit); Actun Has, 3½ km. WSW Yokat (cave deposit); Actun Lara, 3 km. SW Yokat (cave deposit); Actun Spukil, 4½ km. SSW Calcehtok (cave deposit); Loltun, 5 km. SW Oxkutzcab (cave deposit).

Until relatively recently, this striking vesper rat was certainly known only from the type locality at Chichén-Itzá, Yucatán. A specimen in our collection from Campeche, and those reported from northern Guatemala by Rick (1965:335) and British Honduras by Peterson (1966:281), enlarged considerably the known geographic range of this species. A total of eight specimens now is housed in museum collections. Additional material was obtained from cave deposits as noted above.

The specimen from Dzibalchén, a subadult male, was trapped on a rafter under the roof of a house. The owner reported that he had seen other vesper rats there. At Chichén-Itzá, an adult female with "swollen uterus" was taken in a small tree in Cenote Xtoloc. In both instances, traps were baited with bananas.

External and cranial measurements of the specimens from Chichén-Itzá and Dzibalchén are, respectively: total length, 226, 200; length of tail, 120, 100; length of hind foot, 21, 21.5; length of ear from notch, 15, 14; greatest length of skull, 29.4, 27.2; condylobasal length, 28.5, 26.2; zygomatic breadth, 16.2, 14.5; interorbital breadth, 5.0, 5.2; breadth of braincase, 14.2, 13.1; mastoid breadth, 14.5, 13.0; length of rostrum, 9.8, 9.2; breadth of rostrum, 5.0, 5.1; length of maxillary toothrow, 4.4, 4.4; length of mandibular molar toothrow, 4.1, 4.2; length of incisive foramen, 5.1, 4.4; length of auditory bulla, 9.5, 8.1; width of bulla, 7.9, 6.7; weight, 32.3, 29.5.

Nyctomys sumichrasti, which superficially resembles *O. hatti*, does not occur on the Yucatán Peninsula insofar as it is known.

Reithrodontomys gracilis Slender Harvest Mouse

Judging from our collections, the slender harvest mouse is rather uncommon on the mainland of the Yucatán Peninsula, but is abundant on Isla del Carmen, the island separating Laguna de Terminos from the Gulf of Campeche, where no other cricetids are known to occur. On Isla del Carmen, *gracilis* was trapped in coconut groves in company with *Mus musculus*; one was shot from the trunk of a coco palm. On the mainland, this species was trapped in the following known situations: in a house located 27 km. NW Chetumal; in an orchard, especially at the base of banana trees, at Dzibalchén; among logs and roots in dense forest 7 km. N and 51 km. E Escárcega; in dense weeds and grasses bordering an aguada 128 km. E Escárcega; in a trap set atop a rock wall 4 km. NNE Felipe Carrillo Puerto; along a rock wall bordering a weedy sisal field 66 km. NE Mérida; in scrubby thorn forest on rocky substrate in the vicinity of Pisté; and on rafters (about three meters high) of a thatched hut at Pueblo Nuevo X-Can. Our specimens indicate that *gracilis* is more generally distributed on the peninsula than indicated by Hooper (1952:131, map 7), but our data tend to support his suggestion (p. 133) that the geographic range of the species "is probably highly discontinuous, particularly in the basal parts of the Yucatan Peninsula where the vegetation is predominantly quasi rainforest." Species of rodents trapped in association with *R. gracilis* on the mainland were *Heteromys gaumeri*, *Oryzomys palustris*, *Otodylomys phyllotis*, *Peromyscus leucopus*, *Peromyscus yucatanicus*, and *Sigmodon hispidus*.

Three females from Isla del Carmen taken on 7 and 8 July each carried three embryos (crown-rump lengths varying from 4 to 18) as did a female from Quintana Roo captured on 15 August (crown-rump

length, 10). A female from Pueblo Nuevo X-Can carried four embryos (15 in crown-rump length) on 28 July. Adult males had testes measuring 8 (5 April), 11 (4 June), and 9 (25 July). Only two of the 25 specimens taken on Isla del Carmen on 10 June 1963 were juveniles.

***Reithrodontomys gracilis gracilis* Allen and Chapman, 1897**

Specimens examined (16).—CAMPECHE: Dzibalchén, 5; 7 km. N, 51 km. E Escárcega, 1; 128 km. E Escárcega, 1; 7½ km. W Escárcega, 65 m., 1. QUINTANA ROO: 27 mi. NW Chetumal, 1; 4 km. NNE Felipe Carrillo Puerto, 30 m., 1; Pueblo Nuevo X-Can, 10 m., 2. YUCATAN: 66 km. NE Mérida, 1; 3 km. N Pisté, 1; Pisté, 10 m., 1; 6½ km. WSW Sisal, 1.

Additional records (Gaumer, 1917:125, under name *Reithrodontomys mexicanus*, unless otherwise noted).—CAMPECHE: Apazote, near Yohaltun (one locality, not two as listed by Hooper, 1952:133 and Howell, 1914:77); San Juan (Hooper, 1952:133). YUCATAN: Actun Coyok, 3½ km. SSE Oxkutzcab (Hatt *et al.*, 1953:67, cave deposit, all material listed as *Reithrodontomys* sp. from this and other cave deposits); Actun Has, 3½ km. WSW Yokat (Hatt *et al.*, 1953:67, cave deposit); Actun Lara, 3 km. SW Yokat (Hatt *et al.*, 1953:67, cave deposit); Actun Spukil, 4½ km. SSW Calcehtok (Hatt *et al.*, 1953:67); Calcehtok (Hooper, 1952:133); Calotmul; Chichén-Itzá (Hooper, 1952:133); Izamal; Mérida; Progreso (Hooper, 1952:133); Río Lagartos; Santa Rosa (Hooper, 1952:133); Silam; Yaxcach.

External measurements of seven adults are: 175.7 (169-185); 101.1 (94-111); 18.1 (17-19); 14.3 (13-15). Adults varied in weight from 9.8 to 12.0. Specimens from the southern part of the peninsula average slightly darker dorsally than do those from the north; one (KU 93704 from 7 km. N and 51 km. E Escárcega) has a noticeable buffy suffusion on the venter. The darkest individual examined, a young adult female (KU 92258) from 4 km. NNE Felipe Carrillo Puerto, also has a proportionately broader and deeper braincase than found in crania of other specimens.

***Reithrodontomys gracilis insularis* Jones, 1964**

Specimens examined (32).—CAMPECHE: 16 mi. NE Ciudad del Carmen, 25; 8 mi. ENE Ciudad del Carmen, 1; 3 mi. E Ciudad del Carmen, 2; 1 km. SW Puerto Real, 3 m., 4.

This subspecies, presently known only from Isla del Carmen, differs from *R. g. gracilis* of the peninsular mainland principally in having drabber upper parts (lacking the conspicuous tawny appearance of *gracilis*) and a broader mesopterygoid fossa (average breadth 1.53 in 29 *insularis*, 1.32 in 18 *gracilis*). Also, the skull of *insularis* averages slightly larger than that of *gracilis* in some dimensions, but specimens of both subspecies collected since the original description of *insularis* indicate these differences are less than originally supposed (Jones, 1964). Specimens of *gracilis* that most nearly approach *insularis* in color are those from the arid fringe of the northwestern part of the peninsula—66 km. NE Mérida and 6½ km. WSW Sisal in Yucatán, and Dzibalchén, Campeche.

Twenty adults have the following external measurements: total length, 173.7 (163-185); length of tail, 97.7 (87-107); length of hind foot, 18.3 (17.5-19.5); length of ear, 14.2 (13.0-15.5). A male and two nonpregnant females, June-taken, weighed 11.4, 10.6, and 10.5, respectively.

Reithrodontomys spectabilis Jones and Lawlor, 1965

Cozumel Harvest Mouse

Specimens examined (16).—QUINTANA ROO: 3½ km. N San Miguel, Isla Cozumel, 13; 2½ km. N San Miguel, Isla Cozumel, 3.

This large harvest mouse first was discovered on Cozumel Island in 1962 (Jones and Lawlor, 1965). Most of our 16 specimens were trapped in tangled, second-growth vines and brush adjacent to scrub forest along with *Oryzomys palustris cozumelae*. Others were taken in forest at the bases of trees or along a stone wall. One specimen was caught by hand at night as it climbed in the branches of a small tree. Several juveniles and subadults were trapped in the period 7 to 11 August, and a female obtained on 9 August had been lactating recently.

This species appears to be most closely related to the much smaller *R. gracilis* of the adjacent mainland. The magnitude of difference between the two suggests that *spectabilis* has been isolated on Isla Cozumel for a relatively long time.

Peromyscus leucopus

White-footed Mouse

On the mainland, we trapped the white-footed mouse in marginal habitats of thick grass or brush along roadsides, trails, fencerows, and cornfields, and in coconut groves, where the species frequently was taken along with *P. yucatanicus*. On Isla Cozumel, *P. leucopus* was trapped in places marginal between forest and second-growth brush. Presumably, Gaumer's (1917:116-117) records of both "*Peromyscus leucopus*" and "*Peromyscus texensis*" apply to this species, and they are so recorded below.

P. l. cozumelae differs from the peninsular subspecies (*P. l. castaneus*) in being larger, both externally and cranially, and in having heavier teeth. The two races closely resemble each other in color. Comparative measurements are given in Table 1.

No appreciable geographic variation was observed in specimens examined from the mainland and we therefore apply the name *P. l. castaneus* to all of them. All are characterized by being relatively small, having lightly constructed skulls, and dark brown pelage. Otherwise, they resemble *P. l. affinis* from Chiapas and Oaxaca, México. The uniformity of pelage color in mice from the Yucatán Peninsula may relate to their preference for dense brushy areas wherever they are found. No specimens were taken in the extremely arid part of northern Yucatán.

TABLE 1.—*External and cranial measurements of adults of two subspecies of Peromyscus leucopus from the Yucatán Peninsula.*

Catalogue number and sex	Total length	Length of tail	Length of hind foot	Greatest length of skull	Zygomatic breadth	Rostral length	Mastoid breadth	Interorbital breadth	Rostral breadth	Length of maxillary toothrow	Length of incisive foramina
<i>Peromyscus leucopus castaneus</i>											
5 km. S Champotón, Campeche											
KU 92395, ♂	177	80	20	26.5	13.1	10.0	11.0	3.9	4.6	3.8	5.1
KU 92396, ♀	182	81	21	25.8	13.4	9.8	10.6	3.8	4.9	3.9	5.1
KU 92397, ♂	170	77	19	25.8	13.3	9.8	10.9	3.6	4.8	3.9	4.7
7½ km. W Escárcega, Campeche											
KU 92402, ♀	172	74	21	25.9	12.6	9.9	10.7	3.6	4.5	4.1	5.2
<i>Peromyscus leucopus cozumelae</i>											
3½ km. N San Miguel, Quintana Roo											
KU 92417, ♂	187	84	21	26.8	13.8	10.1	11.5	3.9	5.0	4.0	4.8
KU 92421, ♀	150	60	21	26.5	13.4	9.7	11.6	3.8	4.9	3.9	5.3
KU 92422, ♂	186	85	22	27.5	13.8	10.4	11.8	4.0	5.1	4.3	5.2

A gravid female with four embryos (crown-rump length, 5) was taken 5 km. S Champotón on 9 July, and one of two adult females taken 7 mi. N Mérida on 21 March was pregnant (two embryos that measured 5 in crown-rump length). A female obtained on Cozumel Island on 11 August was lactating. Four adult males taken in the vicinity of Mérida on 21 March (two) and 11 April (two) had testes measuring 10, 14, 13, and 12, respectively.

Peromyscus leucopus castaneus Osgood, 1904

Specimens examined (35).—CAMPECHE: 5 km. S Champotón, 10 m., 3; Dzibalchén, 3; 7½ km. W Escárcega, 19. YUCATAN: 7 mi. N Mérida, 4 (TTU); N edge Mérida, 2 (TTU); 6 km. S Mérida, 1; 3 km. N Pisté, 1; 2 km. N Pisté, 1; 1 km. SSW Casa Principal, Santa Rosa, 1.

Additional records (Gaumer, 1917:116-117, unless otherwise indicated).—CAMPECHE: vicinity Yohaltun [= Apazote] (Osgood, 1909:133). YUCATAN: Actun Coyok, 3½ km. SSE Oxkutzcab (Hatt *et al.*, 1953:67, cave deposit); Actun Has, 3½ km. WSW Yokat (Hatt *et al.*, 1953:67, cave deposit); Actun Oxkintok, 3 km. SW Santa Cruz (Hatt *et al.*, 1953:67, cave deposit); Actun Spukil, 4½ km. SSW Calcehtok (Hatt *et al.*, 1953:67, cave deposit); Calotmul; Chichén-Itzá (Osgood, 1909:134); Izamal; Loltun, 5 km. SW Oxkutzcab (Hatt *et al.*, 1953:67, cave deposit); Nabalám; Panabá; San Anselmo; Temax; Tzalam; Uxbay; Valladolid; Xbac; Yaxcach.

***Peromyscus leucopus cozumelae* Merriam, 1901**

Specimens examined (6).—QUINTANA ROO: 3½ km. N San Miguel, Cozumel Island, 5; 2½ km. N San Miguel, Cozumel Island, 1.

Additional record (Merriam, 1901a).—QUINTANA ROO: "Cozumel Island."

Peromyscus yucatanicus* Allen and Chapman, 1897*Yucatán Deer Mouse**

Specimens examined (217).—CAMPECHE: Apazote, 18 (USNM); 7 km. N, 51 km. E Escárcega, 14; 7½ km. W Escárcega, 8. QUINTANA ROO: 60 km. N, 16 km. E Chetumal, 3; 27 km. NW Chetumal, 1; 4 km. NNE Felipe Carrillo Puerto, 30 m., 20; 2 km. N Felipe Carrillo Puerto, 30 m., 5; La Vega, 28 (USNM); 5 km. WSW Puerto Juárez, 5 m., 2; Puerto Morelos, 1 (USNM); Pueblo Nuevo X-Can, 10 m., 12; 1½ km. S, 1 km. E Pueblo Nuevo X-Can, 10 m., 1; 2 km. S Pueblo Nuevo X-Can, 5. YUCATAN: Calcehtok, 5 (UMMZ); 500 m. N Casa Principal, Calcehtok, 10 m., 1; 500 m. S Hda. Calcehtok, 1; Chichén-Itzá, 21 (17 AMNH, 2 USNM, 1 UMMZ); Esmeralda, 8 (UMMZ); Laguna Chichancanab, Esmeralda, 1; 66 km. NE Mérida, 9; Mérida Airport, 6 km. S Mérida, 4; 3 km. N Pisté, 10 m., 7; 2 km. N Pisté, 12 m., 13; Pisté, 3; Cenote Seco, 3 km. E Pisté, 3; Santa Rosa, 17 (UMMZ); 1 km. S Santa Rosa, 2; 6 km. N Tizimín, 4.

Additional records (Gaumer, 1917, unless otherwise indicated).—YUCATAN: Actun Coyok, 3½ km. SSE Oxkutzcab (Hatt *et al.*, 1953:67, cave deposit); Actun Has, 3½ km. WSW Yokat (Hatt *et al.*, 1953:67, cave deposit); Actun Lara, 3 km. SW Yokat (Hatt *et al.*, 1953:67, cave deposit); Actun Spukil, 4½ km. SSW Calcehtok (Hatt *et al.*, 1953:67, cave deposit); Buctzotz; Izamal; Loltun, 5 km. SW Oxkutzcab (Hatt *et al.*, 1953:67, cave deposit); Silam; Tekom (Laurie, 1953:392); Temax; Tizimín; Xbac; Yaxcach.

This species recently was reviewed systematically by Lawlor (1965). The Yucatán deer mouse is widely distributed and locally common in areas of thick brush or forest on the peninsular mainland; it also has been taken in cornfields and dense grass. Species collected in ecological association with *P. yucatanicus* include *Heteromys gaumeri*, *Oryzomys melanotis*, *Otodylomys phyllotis*, *Peromyscus leucopus*, *Sigmodon hispidus*, and *Mus musculus*.

Available evidence suggests that *P. yucatanicus* breeds the year around. Pregnant or lactating females have been taken in April, July, August, and December. Juvenile mice were recorded from the months of March, July, August, November, and December. External parasites of this deer mouse on the Yucatán Peninsula have been reported by Lawlor (1965) and Loomis (1969).

P. yucatanicus exhibits a discordant pattern of geographic variation of size and color—size varying from small in the west to large in the east and color varying from brownish in the south to ochraceous buff in the north. The variation generally is clinal, although there are some local reversals in this trend. For these reasons and others (see Lawlor,

1965:431-432), we regard *P. yucatanicus* as a monotypic species, albeit variable.

***Sigmodon hispidus microdon* Bailey, 1902**
Hispid Cotton Rat

Specimens examined (71).—CAMPECHE: 20 km. N, 128 km. E Escárcega, 4; 7 km. N, 51 km. E Escárcega, 6; 7½ km. W Escárcega, 16; 128 km. E Escárcega, 7; 103 km. SE Escárcega, 14; 65 km. S, 128 km. E Escárcega, 4. QUINTANA ROO: 27 km. NW Chetumal, 2; 83 km. W Chetumal, 3; 81 km. W Chetumal, 4; 2 km. N Felipe Carrillo Puerto, 1; 2 km. S Pueblo Nuevo X-Can, 1. YUCATAN: Chichén-Itzá, 10 m., 1; Peto, 3; 3 km. N Pisté, 1; Santa Rosa, 1; 6 km. N Tizimín, 3.

Additional records (Hatt *et al.*, 1953:68, unless otherwise indicated).—CAMPECHE: Apazote (Bailey, 1902:112). QUINTANA ROO: La Vega (Bailey, 1902:112); Puerto Morelos (Bailey, 1902:111). YUCATAN: Actun Chacaljas, 3 km. SSW Calcehtok (cave deposit); Actun Coyok, 3½ km. SSE Oxkutzcab (cave deposit); Actun Has, 3½ km. WSW Yokat (cave deposit); Actun Jih, 3 km. SW Ticul (cave deposit); Actun Lara, 2 km. SW Yokat (cave deposit); Actun Oxkintok, 3 km. SW Santa Cruz (cave deposit); Actun Spukil, 4½ km. SSW Calcehtok (cave deposit); Calotmul (Gaumer, 1917:121); Esmeralda (Hatt and Villa-R., 1950:237); Izamal (Gaumer, 1917:121); Loltun, 5 km. SW Oxkutzcab (cave deposit); Oxkutzcab (Pearse and Kellogg, 1938:303); San Anselmo (Gaumer, 1917:121); Temax (Gaumer, 1917:121); Tunkas (Bailey, 1902:112); Tzalam (Gaumer, 1917:121); Xbac (Gaumer, 1917:121); Yaxcach (Gaumer, 1917:121).

This cotton rat is among the most common small rodents on the Yucatán Peninsula. It occurs throughout the region, with the possible exception of some areas in the arid portion of the extreme northern part. Cotton rats have been obtained in a wide variety of habitats including grassy areas, near the edges of lagunas, deciduous scrub forest, experimental forest plantations, and in openings and along trails in dense quasi rainforest.

Reproductive data for subadult and adult females and males are summarized in Table 2. These data for females indicate that young are produced at least toward the end of the dry season (January, February, and March) and in the middle of the wet season (July). Our data are incomplete for other times of the year. We have specimens in adult pelage that were molting on the following dates: 7 January (two individuals), 23 July, 26 July, and 16 August. Because we have examined so few molting adults, it is difficult to determine if cotton rats undergo two annual molts (in wet and dry seasons) at this latitude, although we suspect that they do so. Individuals molting from juvenile to subadult pelage were taken on the following dates: 7 January, 14 July (three individuals), 15 July, 16 July, and 27 December (three). Specimens on which molt was evident from subadult to adult pelage were obtained on 7 January and 16 July.

TABLE 2.—*Reproductive data for subadults and adults of Sigmodon hispidus from the Yucatán Peninsula.*

Date	Locality	Reproductive data
7 January	103 km. SE Escárcega	2 ♀ (no embryos) 3 ♂ (testes 15, 18, 18)
8 January	"	2 ♀ (7, 10 embryos × 12, 30)
18 February	128 km. E Escárcega	1 ♀ (5 embryos × 30) 5 ♂ (testes 18, 18, 20, 20, 20)
21 February	20 km. N, 128 km. E Escárcega	3 ♂ (testes 15, 16, 19)
27 February	65 km. S, 128 km. E Escárcega	2 ♀ (3, 4 embryos × ?, 3) 1 ♂ (testes 20)
7 March	81 km. W Chetumal	3 ♂ (testes 18, 18, 19)
11 March	83 km. W Chetumal	1 ♀ (3 embryos × 8) 1 ♂ (testes 18)
5 April	27 km. NW Chetumal	1 ♂ (testes 19)
7 April	"	1 ♂ (testes 22)
17 April	Peto	2 ♂ (testes 15, 15)
26 April	6 km. N Tizimín	2 ♂ (testes 14, 14)
29 April	"	1 ♂ (testes 16)
12 July	7½ km. W Escárcega	1 ♀ (3 embryos × 27)
16 July	"	1 ♀ (no embryos)
23 July	Chichén-Itzá	1 ♂ (testes 22)
16 August	2 km. N Felipe Carrillo Puerto	1 ♂ (testes 16)
27 December	7 km. N, 51 km. E Escárcega	1 ♀ (no embryos)

We have assigned all of our specimens to *Sigmodon hispidus microdon*, described by Bailey (1902) on the basis of material from Puerto Morelos, Quintana Roo, although two other subspecies *furvus* (type locality at La Ceiba, Atlántida, Honduras) and *saturatus* (type locality at Teapa, Tabasco) have been reported from near the southern part of the peninsula. Our analysis of external and cranial measurements (Table 3) and color has convinced us that only one race of *S. hispidus* is represented in our material and for this we tentatively use the name based originally upon specimens from the peninsula. We have not studied the relationships among the three subspecies mentioned above, a thorough understanding of which must await an analysis of geographic variation of this species in southern México and Central America.

Family MURIDAE

Mus musculus Linnaeus, 1758

House Mouse

Specimens examined (9).—CAMPECHE: 5 km. S Champotón, 1; 16 mi. NE Ciudad del Carmen, Isla del Carmen, 2; 8 mi. E Ciudad del Carmen, Isla del

TABLE 3.—*External and cranial measurements of 20 adult Sigmodon hispidus from the Yucatán Peninsula.*

Catalogue number and sex	Total length	Length of tail	Length of hind foot	Length of ear	Greatest length of skull	Zygomatic breadth	Interorbital constriction	Breadth of braincase	Rostral length	Palatal length	Length of maxillary toothrow
Chichén-Itzá, Yucatán											
KU 92516 ♂	263	102	30	20	—	19.1	4.9	—	12.2	17.8	5.4
20 km. N, 128 km. E Escárcega, Campeche											
KU 93756 ♂	240	95	31	18	33.3	19.1	4.8	13.5	12.5	16.6	5.7
KU 93758 ♂	228	93	28	17	31.9	18.1	4.5	13.3	11.6	16.4	5.7
7 km. N, 51 km. E Escárcega, Campeche											
KU 93764 ♀	246	96	29	18.5	32.2	18.0	5.1	12.8	11.4	16.5	5.8
128 km. E Escárcega, Campeche											
KU 93767 ♂	241	91	31	18	31.8	18.3	5.0	13.4	11.5	16.0	5.3
KU 93768 ♂	233	102	30	18	32.0	17.2	4.8	13.0	11.4	16.1	5.5
KU 93769 ♂	250	100	32	19.5	33.8	18.3	4.8	12.9	12.1	17.7	5.8
KU 93770 ♂	240	99	29	17	32.6	18.0	4.6	13.1	11.8	16.4	5.9
103 km. SE Escárcega, Campeche											
KU 93776 ♂	237	89	30	19	32.5	18.3	5.0	13.3	11.8	16.0	5.5
KU 93778 ♂	235	96	32	19	33.2	18.2	5.0	13.1	12.2	17.1	5.9
KU 93777 ♀	220	84	29	18	30.9	17.3	4.9	12.8	11.0	15.4	5.7
KU 93782 ♀	267	107	30.5	19	35.6	19.8	5.2	13.4	13.6	18.3	5.7
65 km. S, 128 km. E Escárcega, Campeche											
KU 93788 ♂	261	105	32	20.5	35.1	19.4	4.8	14.3	12.8	17.7	6.0
KU 93786 ♀	255	103	29	20	33.2	17.9	4.9	13.0	12.0	17.3	5.8
KU 93787 ♀	250	102	29	18	33.5	18.5	5.4	12.7	12.2	17.1	5.7
27 km. NW Chetumal, Quintana Roo											
KU 93746 ♂	247	104	31	18	31.9	18.0	5.1	13.4	11.2	16.2	5.7
KU 93747 ♂	216	92	27.5	17.5	32.8	17.7	4.8	13.4	12.2	16.5	5.7
83 km. W Chetumal, Quintana Roo											
KU 93748 ♂	228	105	30.5	17.5	31.0	17.2	4.7	13.0	11.3	15.5	5.5
81 km. W Chetumal, Quintana Roo											
KU 93752 ♂	235	93	28.5	19	33.2	17.7	5.0	13.1	12.2	17.0	5.8
KU 93753 ♂	—	—	30.5	18.5	32.4	17.6	5.0	13.5	11.3	16.2	5.5

Carmen, 1. QUINTANA ROO: N end Isla Mujeres, 1. YUCATAN: Mérida, 1 (TTU); 6 km. S Mérida, 1; Pisté, 10 m., 2.

Additional records (Hatt *et al.*, 1953:68, unless otherwise noted).—YUCATAN: Actun Coyok, 3½ km. SSE Oxkutzcab (cave deposit); Actun Has, 3½ km.

WSW Yokat (cave deposit); Actun Lara, 3 km. SW Yokat (cave deposit); Actun Spukil, 4½ km. SSW Calcehtok (cave deposit); Calcehtok (Hatt and Villa-R., 1950:237); Chichén-Itzá (Ingles, 1959:400); Chocholá (Ingles, 1959:400); Loltun, 5 km. SW Oxkutzcab (cave deposit); Río Lagartos (Elliot, 1896:80); Tekom (Laurie, 1953:394).

Specimens of this introduced rodent were taken in coconut plantations, roadside ditches, and in and near human habitations. Neither of the two adult females (taken on 10 June and 23 July) was pregnant. An adult male taken on 3 April in Mérida had testes that measured 10 in length.

Rattus rattus (Linnaeus)

Black Rat

Specimens examined (4).—CAMPECHE: 7½ km. W Escárcega, 65 m., 2. QUINTANA ROO: N end Isla Mujeres, 1. YUCATAN: Pisté, 10 m., 1.

Additional records (Hatt *et al.*, 1953:68, unless otherwise noted).—YUCATAN: Actun Coyok, 3½ km. SSE Oxkutzcab (cave deposit); Actun Lara, 3 km. SW Yokat (cave deposit); Actun Spukil, 4½ km. SSW Calcehtok (cave deposit); Chichén-Itzá (Laurie, 1953:393); Izamal (Gaumer, 1917:111); Mérida (Gaumer, 1917:111); Progreso (Gaumer, 1917:111).

Our specimens of this introduced rat were taken in and near buildings or, in one instance, in an experimental forest plantation. A July-taken, adult female was lactating.

Several authors have reported the Norway rat, *Rattus norvegicus*, from the Yucatán Peninsula, but we know of no established populations of this species in the region at the present time.

Family DASYPROCTIDAE

Dasyprocta punctata yucatanica Goldman, 1913

Agouti

Specimens examined (3).—CAMPECHE: 103 km. SE Escárcega, 3.

Additional records (Gaumer, 1917:140-141, unless otherwise indicated).—CAMPECHE: Apazote (Goldman, 1913:13); La Tuxpeña (Goldman, 1913:13). QUINTANA ROO: La Vega (Goldman, 1913:13). YUCATAN: Actun Coyok, 3½ km. SSE Oxkutzcab (Hatt *et al.*, 1953:69, cave deposit); Actun Xkyc, 1½ km. SW Calcehtok (Hatt *et al.*, 1953:69, cave deposit); Buctzotz; Calotmul; Cenotillo; Chichén-Itzá (J. A. Allen and Chapman, 1897:11); Izamal; Río Lagartos (Elliot, 1896:80); Panabá; Temax; Tzalam; Uxbay; Uxmal; Xbac; Yohnicté; no specific locality (Alston, 1879-82:172).

Two of our three specimens were purchased from natives on 2 January 1963; the other was shot in a densely wooded place by P. L. Clifton on 9 January 1963 as it fed on seeds that had fallen from a tree. The area 103 km. SE Escárcega supports dense quasi rainforest, save for a large laguna and a few clearings for agricultural purposes.

No reproductive information is available for our specimens. The two obtained on 3 January were adults, but the specimen taken on 9 January was a subadult (third upper molars not erupted).

Apazote, Campeche, is the type locality of *D. p. yucatanica*. Our specimens clearly are assignable to this taxon. Cranial measurements of an adult female are: condylobasal length, 92.2; zygomatic breadth, 44.8; mastoid breadth, 32.6; length of maxillary toothrow, 18.8; length of mandibular p4-m3, 20.5; length of diastema, 24.9.

***Agouti paca nelsoni* Goldman, 1913**

Paca

Specimens examined (7).—CAMPECHE: Dzibalchén, 1; 7½ km. W Escárcega, 65 m., 1; 65 km. S, 128 km. E Escárcega, 1. QUINTANA ROO: 81 km. W Chetumal, 1. YUCATAN: 13 km. W Peto, 1; 8 km. N, 10 km. W Tizimín, 1; 8 km. N Tizimín, 1.

Additional records (Gaumer, 1917:143, unless otherwise indicated).—CAMPECHE: Apazote (Goldman, 1913:10). QUINTANA ROO: Tuloom [=Tulum]. YUCATAN: Actun Coyok, 3½ km. SSE Oxkutzcab (Hatt *et al.*, 1953:68, cave deposit); Actun Xkyc, 1½ km. SW Calcehtok (Hatt *et al.*, 1953:68, cave deposit); Buctzotz; Calotmul; Chichén-Itzá (Pearse and Kellogg, 1938:303); Chocholá; Mérida; Nabalám; Suquilá; Temax; Uxmal; Xbac.

The paca evidently occurs throughout most of the Yucatán Peninsula, although it may be absent from the arid portions of the extreme north. Our specimens were obtained in a variety of habitats. Those from 65 km. S and 128 km. E Escárcega and from 81 km. W Chetumal were obtained in areas of quasi rainforest, the specimen from the former locality having been shot from under the roots of a tree near a stream. Individuals from 7½ km. W Escárcega and 13 km. W Peto were taken in forested areas intermediate between quasi rainforest and dry deciduous forest. At Dzibalchén, a juvenile was taken in low, thorny scrub although taller forest occurred in the area, and P. L. Clifton found a skeleton 8 km. N Tizimín in a small natural cave that opened onto a cornfield. No reproductive information was recorded for our specimens, but individuals lacking complete adult dentition were taken on the following dates: 28 February (last molars not erupted); 18 April (last molars not erupted); 1 May (second molars not fully erupted, last molars not erupted); 2 June (last two molars not erupted).

Agouti paca nelsoni, with a type locality of Catemaco, Veracruz, is considered to be the subspecies occurring in southern México and northern Central America, and we refer our specimens to this race pending a thorough systematic review of the genus. External measurements of an adult male from 7½ km. W Escárcega are: total length,

622; length of tail, 24; length of hind foot, 110; length of ear, 47. Cranial measurements of this male and an adult female from 81 km. W Chetumal are, respectively, as follows: condylobasal length, 132.5, 125.7; zygomatic breadth, 102.7, 81.2; mastoid breadth, 57.1, 54.4; length of maxillary toothrow, 27.6, 24.8; length of mandibular p4-m3, 29.3, 27.0; length of diastema, 51.9, 44.4.

Family ERETHIZONTIDAE

Coendou mexicanus yucataniae Thomas, 1902

Mexican Porcupine

Specimens examined (6).—CAMPECHE: 46 km. S Champotón, 1. QUINTANA ROO: Pueblo Nuevo X-Can, 10 m., 1. YUCATAN: 6 km. N Tizimín, 4.

Additional records (Gaumer, 1917:135, 138, unless otherwise indicated).—YUCATAN: Actun Chacaljas, 3 km. SSW Calcehtok (Hatt, 1953:68, cave deposit); Izamal; “probably near Izamal”; Kikil; Loché; Nabalám (mistakenly placed in Quintana Roo by Hall and Kelson, 1959:784); Panabá; Tekom (Laurie, 1953:383); Tohil [= Xtohil] (Pearse and Kellogg, 1938:504).

The Mexican porcupine, termed “puerco espín” or “zorro espín” in the Yucatán region, evidently is widely distributed in forested areas on the peninsula. A male and three females from 6 km. N Tizimín were dug from retreats in a rocky cave by natives; two of the three females were lactating (28 April). Pearse and Kellogg (1938:304) earlier reported a pair of *C. mexicanus* denning in a cave (Chac Mol Cave at Tohil). A young adult female from Chuina, 46 km. S Champotón, which was shot from a tree on 4 February, carried a single embryo that measured 8. A specimen from Pueblo Nuevo X-Can, a young animal (deciduous premolars and third molars not yet erupted) taken on 31 July, also was shot from a tree.

The only recorded measurements of *C. m. yucataniae* seem to be those of the holotype (Thomas, 1902:249:250). External and cranial measurements of a male and three females, the last a young adult, from 6 km. W Tizimín and a young adult female from 46 km. S Champotón are, respectively: total length, 797, 800, 792, 760, 719; length of tail, 373, 362, 360, 361, 320; length of hind foot, 87, 83, 80, 79, 75; length of ear, 30, 26, 30, 30, 23; condylobasal length, 84.9, 86.1, 81.7, 80.3, 78.2; zygomatic breadth, 47.9, 50.7, 46.8, 45.9, 47.2; mastoid breadth, 34.1, 37.2, 34.6, 35.1, 34.2; breadth of mesopterygoid fossa, 12.2, 13.8, 13.5, 11.7, 12.1; length of maxillary toothrow, 18.8, 19.0, 18.1, 19.4, 18.4; length of mandibular p4-m3, 21.2, 21.4, 20.9, 21.3, 19.8; length of diastema, 24.2, 24.5, 24.4, 21.5, 22.4; length between infraorbital foramen and P4, 12.0, 13.6, 10.8, 10.5, 10.5.

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ANNOTATED CHECKLIST OF MAMMALS OF THE YUCATAN PENINSULA, MEXICO.

III. MARSUPIALIA, INSECTIVORA, PRIMATES, EDENTATA, LAGOMORPHA

J. KNOX JONES, JR., HUGH H. GENOWAYS, AND JAMES D. SMITH

This is the third (Jones *et al.*, 1973, 1974) in a series of papers detailing the distribution of mammalian species occurring on the Yucatán Peninsula of México. A fourth is contemplated, as well as a paper dealing with the zoogeography of these species. Prior to this series of papers, the most recent comprehensive treatment of the mammalian fauna of the region was Gaumer's (1917) "Monografía de los mamíferos de Yucatán." The present paper deals with 12 native species belonging to the following orders: Marsupialia, six; Insectivora, one; Primates, two; Edentata, two; Lagomorpha, one. None of these species is endemic to the peninsula, although it constitutes the major part of the geographic range of *Alouatta pigra*. Endemic subspecies include *Didelphis virginiana yucatanensis*, *Marmosa mexicana mayensis*, and *Sylvilagus floridanus yucatanicus*.

The Yucatán Peninsula as treated in this series of papers includes the Mexican states of Campeche and Yucatán and the Federal Territory of Quintana Roo. The physiography and vegetation of the region have been described in some detail in publications by Duellman (1965, 1966), Jones *et al.* (1973), Klaas (1968), and Paynter (1955).

This report is based principally upon material housed in the Museum of Natural History at The University of Kansas. Specimens were obtained in the summer of 1962 by members of a field course in vertebrate zoology and a survey team, lead by the senior author, working on terrestrial vertebrates and their ectoparasites under a

