JONES, J. K., JR., AND T. E. LAWLOR. 1965. Mammals from Isla Cozumel, Mexico, with description of a new species of harvest mouse. Univ. Kansas Publ., Mus. Nat. Hist., 16:409-419.

JONES, J. K., JR., J. D. SMITH, AND H. H. GENOWAYS. 1973. Annotated checklist of mammals of the Yucatan Peninsula, Mexico. I. Chiroptera. Occas. Papers Mus., Texas Tech Univ., 13:1-31.

KLAAS, E. E. 1968. Summer birds from the Yucatan Peninsula, Mexico. Univ. Kansas Publ., Mus. Nat. Hist., 17:579-611.

LAURIE, E. M. O. 1953. Rodents from British Honduras, Mexico, Trinidad, Haiti, and Jamaica collected by Mr. I. T. Sanderson. Ann. Mag. Nat. Hist., ser. 12, 6:382-394.

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

———. 1969. A systematic study of the rodent genus *Ototylomys*. J. Mamm., 50:28-42.

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

MERRIAM, C. H. 1901*a*. Six new mammals from Cozumel Island, Yucatan. Proc. Biol. Soc. Washington, 14:99-104.

———. 1901*b*. Seven new mammals from Mexico, including a new genus of rodents. Proc. Washington Acad. Sci., 3:559-563.

MUSSER, G. G. 1968. A systematic study of the Mexican and Guatemalan gray squirrel, *Sciurus aureogaster* F. Cuvier (Rodentia: Sciuridae). Misc. Publ. Mus. Zool., Univ. Michigan, 137:1-112.

NELSON, E. W. 1901. Descriptions of two new squirrels from Mexico. Proc. Biol. Soc. Washington, 14:131-132.

NELSON, E. W., AND E. A. GOLDMAN. 1929. Four new pocket gophers of the genus Heteromys from Mexico. Proc. Biol. Soc. Washington, 42:147-152.

OSGOOD, W. H. 1909. Revision of the mice of the American genus Peromyscus. N. Amer. Fauna, 28:1-285.

PAYNTER, R. A., JR. 1955. The ornithogeography of the Yucatán Peninsula. Bull. Peabody Mus. Nat. Hist., Yale Univ., 9:1-347.

PEARSE, A. S., AND R. KELLOGG. 1938. Mammalia from Yucatan caves. Publ. Carnegie Inst. Washington, 491:301-304.

PETERSON, R. L. 1966. Notes on the Yucatan vesper rat, Otonyctomys hatti, with a new record, the first from British Honduras. Canadian J. Zool., 44:281-284.

PRICE, R. D. AND K. C. EMERSON. 1971. A revision of the genus *Geomydoecus* (Mallophaga:Trichodectidae) of the New World pocket gophers (Rodentia: Geomyidae). J. Med. Ent., 8:228-257.

RICK, A. M. 1965. *Otonyctomys hatti* in Guatemala. J. Mamm., 46:335-336.

THOMAS, O. 1888. List of mammals obtained by Mr. G. F. Gaumer on Cozumel and Ruatan islands, Gulf of Honduras. Proc. Zool. Soc. London, p. 129.

———. 1902. New forms of *Saimiri*, *Oryzomys*, *Phyllotis*, *Coendou* and *Cyclopes*. Ann. Mag. Nat. Hist., ser. 7, 10:246-250.

OCCASIONAL PAPERS
THE MUSEUM
TEXAS TECH UNIVERSITY

NUMBER 23 26 APRIL 1974

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

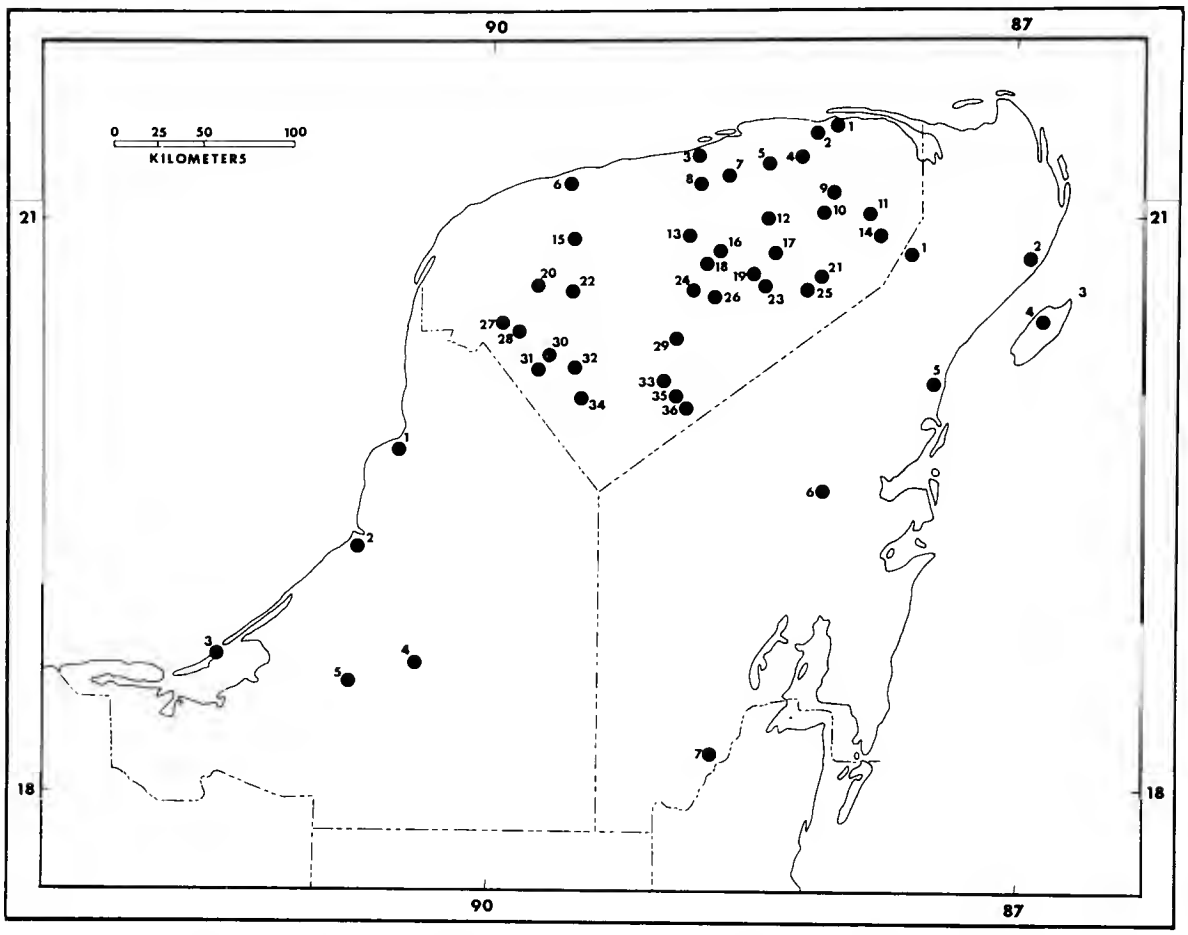

FIG. 1.—Map of the Yucatán Peninsula showing location of place-names mentioned in text. CAMPECHE: 1, Campeche; 2, Champotón; 3, Puerto Real; 4, Apazote; Escárcega; La Tuxpeña was not exactly located, but it is near Champotón as specimen labels bear the designation "La Tuxpena, Champoton." QUINTANA ROO: 1, Pueblo Nuevo X-Can; 2, Puerto Morelos; 3, Isla Cozumel; 4, San Miguel; 5, Tulum [=Tuloom]; 6, Felipe Carrillo Puerto; 7, Xcopen. YUCATAN: 1, Río Lagartos; 2, San Felipe; 3, Silam [=Cilam]; 4, Panabá; 5, Uxbay; 6, Progreso; 7, Buctzotz; 8, Temax; 9, Tizimín; 10, Calotmul; 11, Yot Cenote; 12, Cenotillo [=Senotillo]; 13, Izamal; 14, Nabalam; 15, Mérida; 16, Yaxcach; 17, Dzitas; 18, Tzalam; 19, Pisté; 20, Chocholá; 21, Valladolid; 22, Chablé; 23, Chichén-Itzá; 24, Sotuta; 25, Tekom; 26, Yaxcabá; 27, Santa Cruz; 28, Calcehtok; 29, Xbac; 30, Yokat; 31, Uxmal; 32, Oxkutzcab; 33, Peto; 34, San Anselmo; 35, Santa Rosa; 36, Laguna de Chichancanab; Suquilá, Yalahau (there is a Laguna de Yalahau in extreme northern Quintana Roo), and Yohnicte were not exactly located.

contract (DA-49-193-MD-2215) from the U.S. Army Research and Development Command, and by P. L. Clifton, field representative of the Museum of Natural History, who collected mammals on the peninsula from mid-December 1962 until June 1963.

Specimens listed beyond that carry no institutional designation are housed in the Museum of Natural History at The University of Kansas. Other institutions from which material was examined are the Museum of Comparative Zoology, Harvard University (MCZ), The Museum, Michigan State University (MSU), and the National Museum of

Natural History (USNM). All measurements are in millimeters. Most place-names mentioned in text are located on the accompanying map (Fig. 1).

ANNOTATED LIST OF SPECIES

Order Marsupialia

Family Didelphidae

Didelphis marsupialis caucae J. A. Allen, 1900
Southern Opossum

Specimen examined (1).—Campeche: 7½ km. W Escárcega, 1.
Additional records (Gardner, 1973:70).—Campeche: Apazote. Yucatan: Chichén-Itzá.

This species seemingly is less abundant on the peninsula than is its cogener, *D. virginiana*, as only four specimens are known from the region. Many older published records cannot be identified with either species, however, as the presence of two species of *Didelphis* in Central America and México was not recognized prior to Gardner's (1973) study of the genus.

Our specimen from 7½ km. W Escárcega was obtained on the grounds of an experiment station. Forest in this area was intermediate between quasi rainforest and dry deciduous forest; much was second growth but a few mature stands of trees remained.

Didelphis virginiana
Virginia Opossum

This opossum is common on the Yucatán Peninsula. A female (KU 91450) from 1 km. SW Puerto Real, captured on 7 July, carried 10 pouch young (five of each sex) that averaged 36 in crown-rump length; the young were completely naked except for short facial vibrissae and sparse hair on the crown. Another female (KU 91439), taken on 31 July at Pueblo Nuevo X-Can, carried six young (two males and four females) that averaged 52. These young opossums had well-developed facial vibrissae and moderately long, black hair on the crown, back, and sides. A female (KU 91428), obtained on Isla Cozumel on 8 August, carried six pouch young (average 65), one male and five females. Excepting for the white tip on the tail, these young animals were fully covered with hair—black and moderately dense dorsally, short and white ventrally—and the skin of the dorsum was darkly pigmented.

A recent systematic study of North American members of the genus *Didelphis* (Gardner, 1973) has revealed that two species occur in

northern Central America and eastern México. The area of sympatry includes the Yucatán Peninsula. For this reason, earlier reported material (see especially Alston, 1879-82; Gaumer, 1917; Hatt, 1938; Hatt and Villa-R., 1950; Hatt *et al.*, 1953; Hershkovitz, 1951; Ingles, 1959; Pearse and Kellogg, 1938) cannot be assigned with certainty to either species until such specimens as still may be in existence are reexamined.

Gardner (1973) recognized two subspecies of *virginiana* as occurring on the Yucatán Peninsula. *D. v. yucatanensis*, which is confined to the northern and eastern parts, is distinguished from the wide-ranging *californica*, known on the peninsula only from southern Campeche, by its smaller size and more prominent postorbital processes.

Didelphis virginiana californica Bennett, 1833

Specimens examined (12).—CAMPECHE: 65 km. S, 128 km. E Escárcega, 1; 1 km. SW Puerto Real, Isla del Carmen, 11.

Additional records (Gardner, 1973:74).—CAMPECHE: Apazote; La Tuxpeña.

Didelphis virginiana yucatanensis J. A. Allen, 1901

Specimens examined (21).—CAMPECHE: Champotón, 1; 5 km. S Champotón. QUINTANA ROO: 4 km. NNE Felipe Carrillo Puerto, 1; Pueblo Nuevo X-Can, 8; 3½ km. N San Miguel, Isla Cozumel, 10.

Additional records (Gardner, 1973:75).—CAMPECHE: Campeche. QUINTANA ROO: Cozumel Island; Xcopen. YUCATAN: Chichén-Itzá; ca. 1 km. E Chichén-Itzá; Izamal; Mérida; "Yucatán Peninsula."

Philander opossum pallidus (J. A. Allen, 1901)
Four-eyed Opossum

Specimens examined (2).—CAMPECHE: 65 km. S, 128 km. E Escárcega, 2.

Additional records (Hershkovitz, 1951:552).—YUCATAN: Chichén-Itzá; Tekom.

Only five specimens of the four-eyed opossum have been recorded from the Yucatán Peninsula, suggesting that the species is uncommon there. Our two specimens, a male and female, were obtained on 1 March 1963 in dense forest near a moderately large lagoon. The female (KU 93191) was nursing six young (average crown-rump length, 30).

Marmosa canescens canescens (J. A. Allen, 1893)
Grayish Mouse-opossum

Specimen examined (1).—YUCATAN: Pisté, 10 m., 1.

Additional records.—YUCATAN: Chichén-Itzá (Hershkovitz, 1951:551); Izamal (Osgood, 1913:176); Yaxcaba and "Yucatán" (Tate, 1933:141). In addition, Hatt *et al.* (1953:58) reported remains of this species from six cave deposits in southwestern Yucatán.

The grayish mouse-opposum apparently is uncommon on the peninsula. Insofar as we can ascertain, only eight specimens (excluding cave deposits) actually have been taken there. Our juvenile male was molting on the flanks and posterior part of the belly. It was captured by a native in a forested area at Pisté.

Marmosa mexicana mayensis Osgood, 1913
Mexican Mouse-opossum

Specimens examined.—None.

Additional records.—CAMPECHE: unspecified locality (Gaumer, 1917:7). YUCATAN: Chablé (Gaumer, 1917:7); Chichén-Itzá (Hatt, 1938:334); Izamal (Tate, 1933:135); San Anselmo (Gaumer, 1917:7). Also, Hatt *et al.* (1953:59) reported this mouse-opossum from two cave deposits (Actun Coyok, 3½ km. SSE Oxkutzcab, and Actun Lara, 3 km. SW Yokat) in southwestern Yucatán.

Aside from remains found in caves, evidently only two specimens of this subspecies have been preserved—the holotype from Izamal and a young female that was taken at Chichén-Itzá "in the shelter of a rock ledge near the upper border of the Xtolók cenote" (Hatt, 1938:334). The stomach of this individual contained remains of insects. Gaumer's (1917:7-8) account of "*Marmosa murina*," in which he recorded that species from two localities in Yucatán and from "Campeche," evidently relates to *M. mexicana.*

Caluromys derbianus fervidus (Thomas, 1913)
Woolly Opossum

Specimen examined (1).—CAMPECHE: 65 km. S, 128 km. E Escárcega, 1.

The woolly opossum has not been recorded previously from the Yucatán Peninsula. Our specimen, a female, was taken under circumstances described previously for *Philander opossum pallidus* and carried four young (average 20 in crown-rump length) in her pouch.

ORDER INSECTIVORA

Family SORICIDAE

Cryptotis nigrescens mayensis (Merriam, 1901)
Black Small-eared Shrew

Specimen examined (1).—YUCATAN: 6 km. S Mérida.

Additional records (Gaumer, 1917:249, unless otherwise noted).—CAMPECHE: La Tuxpeña (Choate, 1970:277). YUCATAN: Actun Coyok, 3½ km. SSE Oxkutzcab (Hatt *et al.*, 1953:59, cave deposit); Actun Has, 3½ km. WSW Yokat (Hatt *et al.*, 1953:59, cave deposit); Actun Lara, 3 km. SW Yokat (Hatt *et al.*, 1953:59, cave deposit); Actun Oxkintok, 3 km. SW Sta. Cruz (Hatt *et al.*, 1953:59, cave deposit); Actun Spukil, 4½ km. SSW Calcehtok (Choate, 1970:

277, cave deposit); Buctzotz; Calotmul; Chichén-Itzá (Choate, 1970:277); Izamal; 2 km. SE Laguna de Chichancanab (Choate, 1970:277); Nebalam; Senotillo [=Cenotillo]; Temax; Tzalam; Uxmal (Choate, 1970:277); Valladolid; Xbac (Choate, 1970:277); Yaxcach; no specific locality (Choate, 1970:277).

Alvarez and Martinez (1967:205) reported a specimen of this shrew from 2 km. SE Laguna de Chichancanab as having been trapped along a roadside opposite a cornfield in tropical "rainforest" in southeastern Yucatán. They also reported a mummified individual and numerous unassociated rami that were collected inside Mayan ruins at Uxmal. Our specimen is a male with unworn teeth that was trapped on 19 August 1962 in mixed grass and dense weeds near the Mérida air field. *Peromyscus yucatanicus*, *Mus musculus*, and a small snake, *Dryadophis melanolomus*, were taken in the same trap line.

The systematic relationships of Middle American representatives of the genus *Cryptotis* were reviewed by Choate (1970). He assigned specimens from the Yucatán Peninsula, formerly known as *Cryptotis mayensis*, to the species *Cryptotis nigrescens*, but retained *mayensis* as a subspecies, to which he assigned specimens from the Yucatán Peninsula, Guerrero, British Honduras, and Guatemala.

Order Primates

Family Cebidae

Alouatta pigra Lawrence, 1933
Black Howler Monkey

Specimens examined (7).—Campeche: Apazote, 2 (USNM); 7 km. N, 51 km. E Escárcega, 3; La Tuxpeña, 2 (USNM). Yucatan: Dzitas, 2 (MSU).

Additional records (Gaumer, 1917:308-309, unless otherwise indicated).—Campeche: vicinity of Champotón (Ingles, 1959:385). Quintana Roo: Felipe Carrillo Puerto (see below); Pueblo Nuevo X-Can (see below); Tuloom [=Tulum]. Yucatan: Peto; Sotuta; Yohnicte; Yot Cenote.

This howler monkey probably occurs throughout the heavily forested regions of the Yucatán Peninsula. The three specimens in the collection of the Museum of Natural History at Kansas (one male and two females) were taken in quasi rainforest in southern Campeche. Howler monkeys were heard by us as far north as Pueblo Nuevo X-Can, Quintana Roo, and natives reported their occurrence at Felipe Carrillo Puerto.

Our three specimens are young adult individuals collected on 20 December. The dentition of the two females was fully erupted but their sagittal and coronal sutures were open. In the male, all teeth except the upper canines were fully erupted, and sagittal, coronal, and basicranial sutures all were open.

The pelage on our only skin (female, KU 93803) is entirely black save for some scattered pale-colored hairs on the back and sides. Two specimens from Dzitas, Yucatán, are entirely black, thereby agreeing in color with Guatemalan populations of *A. pigra* as described by Lawrence (1933:333).

Smith (1970) studied the systematic status of howler monkeys from Middle America and concluded that two species, *Alouatta palliata* and *A. pigra*, occurred in the region. *A. palliata* ranges through most of Central America northeastward to Tabasco and Veracruz, whereas *A. pigra* occurs in northern Guatemala, British Honduras, eastern Tabasco and Chiapas, and on the Yucatán Peninsula. Smith found the two species occurring sympatrically 5 mi. SE Macuspana, Tabasco. He distinguished *pigra* from *palliata* on the basis of its larger size, blackish coloration, and differences in configuration of the cranium and upper molars.

Ateles geoffroyi vellerosus Gray, 1866
Black-handed Spider Monkey

Specimens examined (15).—CAMPECHE: 7½ km. W Escárcega, 2. QUINTANA ROO: Pueblo Nuevo X-Can, 10 m., 12. YUCATAN: "Cozumel Island," 1.

Additional records (Gaumer, 1917:313, unless otherwise indicated).—CAMPECHE: Apazote (Kellogg and Goldman, 1944:36); vicinity Champotón (Ingles, 1959:386). QUINTANA ROO: Puerto Morelos (Kellogg and Goldman, 1944:36); Tuloom [=Tulum]. YUCATAN: Tizimín; Uxbay; Yalahau.

This species is locally common in areas of quasi rainforest on the Yucatán Peninsula. One of our specimens, captured by Gaumer, is labeled as from Cozumel Island; for reasons elaborated by Jones and Lawlor (1965:417-418), we doubt the validity of this reported occurrence.

Kellogg and Goldman (1944:35) regarded spider monkeys from the Yucatán Peninsula as subspecifically distinct from adjacent Mexican populations of *A. g. vellerosus*. They proposed the name *yucatanensis* for the peninsular population and distinguished it from *vellerosus* as follows: "size about the same as *vellerosus* of Veracruz but decidedly paler, especially with regards to the coloration of the underparts which, in typical specimens, are whitish silver, and the frontal outline of the skull more prominent." Schultz (1960) examined and analyzed the variability in crania of 203 adult specimens (54 from unspecified Mexican localities) of *Ateles geoffroyi*. In his analysis of geographic variation, Schultz found only a few minor differences but noted that the subspecific separations of modern taxonomists, in this case Kellogg and Goldman (1944), seemed fully adequate.

TABLE 1.—*Cranial measurements of two subspecies of* Ateles geoffroyi. *Superscript numbers indicate fewer specimens averaged than listed in left-hand column.*

Specimens averaged or catalogue number, and sex	Condylobasal length	Zygomatic breadth	Cranial breadth	Mastoid breadth	Postorbital constriction	Interorbital constriction	Breadth across canines	Breadth across M1-M1	Breadth across M3-M3	Length of maxillary toothrow	Length of mandibular toothrow
					Ateles geoffroyi vellerosus						
					Yucatán Peninsula						
Mean (7 ♀)	82.7	63.5	58.4	55.6	46.9	8.7	22.4	29.2	28.4[6]	27.4	36.3
Minimum	81.6	61.9	56.8	53.9	44.6	7.9	21.3	27.9	27.7	26.5	35.8
Maximum	84.3	65.9	61.2	58.0	48.8	9.2	22.9	30.3	29.6	28.4	36.8
KU 92064, ♂	86.1	70.5	59.7	58.3	46.7	8.3	25.5	31.2	30.5	27.1	38.1
					Veracruz and Oaxaca						
Mean (10 ♀)	83.8	66.2[9]	57.7[9]	54.6	47.2	9.6[9]	24.8[9]	31.3[9]	29.1[9]	28.5	37.5[8]
Minimum	81.1	62.0	55.3	52.3	45.1	8.6	23.3	29.2	27.9	26.8	36.1
Maximum	87.2	69.7	60.7	56.7	48.2	11.1	27.5	33.5	31.4	29.5	39.1
Mean (10 ♂)	84.4	70.7	58.4[9]	56.1[9]	48.5	10.0	27.2	31.3	29.4	28.9	37.9
Minimum	77.9	68.4	57.0	54.9	45.3	8.7	24.8	30.7	28.0	27.3	36.1
Maximum	89.9	74.7	60.6	58.3	50.9	11.0	28.9	33.0	31.3	31.6	40.2
					Ateles geoffroyi frontalis						
					Nicaragua						
Mean (11 ♀)	84.5	65.2	58.0[10]	54.3[10]	47.7[10]	9.5[10]	23.9	29.1	27.7	28.2	36.4
Minimum	81.1	62.8	55.2	52.8	46.7	8.8	22.3	27.0	25.1	26.4	33.6
Maximum	88.9	69.5	60.3	56.3	50.2	10.2	24.8	30.6	30.2	29.7	38.2
Mean (3 ♂)	86.8	69.7	57.3	56.0	48.1	8.8	26.0[2]	29.5	27.2[2]	29.5[2]	36.9[2]
Minimum	82.0	67.7	55.2	55.7	46.9	8.3	26.0	29.0	26.7	28.4	35.3
Maximum	90.1	72.5	59.1	56.8	49.2	9.6	26.0	29.9	27.8	30.7	38.6

We have measured and compared adult spider monkeys from the Yucatán Peninsula with specimens from Veracruz, Oaxaca, and Nicaragua. Cranial differences observed by us (and by Schultz, 1960) appear primarily in dimensions of breadth (see Table 1). In color of pelage, specimens from the peninsula do not differ from those representing adjacent populations of *vellerosus*. In contrast, Nicaraguan specimens (*frontalis*) at hand differ markedly from Mexican *vellerosus* and from our Yucatán material, being almost entirely yellowish in color except for a blackish area on the head and neck. We consider *yucatanensis* as synonymous with *vellerosus* and assign our peninsular specimens to the latter.

Our sample from the Yucatán Peninsula, excluding the one Gaumer specimen of questionable provenance, is composed of two males and 12 females. One male is a young individual with deciduous canines and premolars; the permanent incisors and first molars are fully erupted. All of the females have permanent dentition although in one (KU 92076) the last upper molars are not fully erupted. This same individual also lacks the left lower third molar. One other female (KU 92066) also is missing a molar (left upper M3) and another (KU 92067) has a small, round, supernumerary molar in each ramus of the lower jaw. Eight of the 12 females (67 per cent) have bregmatic fontanelle bones similar in shape to those described by Schultz (1960:375).

Order Edentata

Family Myrmecophagidae

Tamandua tetradactyla mexicana (Saussure, 1860)
Tamandua

Specimens examined (6).—Campeche: 10 km. SSW Champotón, 1. Quintana Roo: "Isla Cozumel," 5.

Additional records (Gaumer, 1917:18).—Campeche: no specific locality. Quintana Roo: Tuloom [=Tulum]. Yucatan: Calotmul, Panabá, Senotillo [=Cenotillo], Suquilá, Temax, Tzalam, Valladolid, Xbac.

Five specimens, alleged to be from Isla Cozumel, were donated to The University of Kansas Museum of Natural History by G. F. Gaumer in the early part of this century. For reasons discussed by Jones and Lawlor (1965:417-418), we question the occurrence of this edentate on Isla Cozumel. The individual from near Champotón, a young female, was brought in by several native hunters who characterized the species as being rare in that area.

Family Dasypodidae

Dasypus novemcinctus mexicanus Peters, 1864
Nine-banded Armadillo

Specimens examined (10).—Campeche: vicinity Champotón, 1; 7 km. S Champotón, 1; 13 km. SSE Champotón, 1; 13 km. W Champotón, 2. Quintana Roo: Pueblo Nuevo X-Can, 10 m., 1. Yucatan: Pisté, 10 m., 2; unspecified locality ("Yucatán"), 2.

Additional records (Gaumer, 1917:22, unless otherwise indicated).—Campeche: no specific locality. Quintana Roo: Tuloom [=Tulum]. Yucatan: Actun Xkyc, 1½ km. SW Calcehtok (Hatt *et al.*, 1953:62); Calotmul, Chablé, Chichén-Itzá (Hershkovitz, 1951:568); Chocholá (Ingles, 1959:386); Izamal; Progreso (G. M. Allen, 1906: 107); Santa Rosa (Hatt and Villa-R., 1950:238); Senotillo [=Cenotillo], Temax, Tizimín, Uxmal, Yaxcach; "Yucatán" (Alston, 1879:82:189).

The nine-banded armadillo occurs throughout the peninsula. Most of our specimens were captured by hunters. The species is actively sought by natives for food in many areas.

Order Lagomorpha

Family Leporidae

Sylvilagus floridanus yucatanicus (Miller, 1899)
Eastern Cottontail

Specimens examined (9).—Campeche: Champotón, 4; 5 km. S, 4 km. E Champotón, 1. Yucatan: Chichén-Itzá, 2 (MCZ); Pisté, 10 m., 2.

Additional records (Gaumer, 1917:147, 150, unless otherwise indicated).—Campeche: Campeche (Nelson, 1909:191). Yucatan: Calotmul; Izamal; Mérida (Nelson, 1909:191); Progreso (Nelson, 1909:191); Río Lagartos; San Anselmo; San Felipe (Elliot, 1907:371); Silam; Temax; Tzalam; Uxmal; Xbac; Yalahau; Yaxcach.

Earlier authors (see, for example, J. A. Allen, 1875:365, and Alston, 1879-82:180) confused peninsular populations of this cottontail with the swamp rabbit (*S. aquaticus*), evidently because of the nearly complete fusion of the supraorbital processes to the braincase in some specimens. Individuals in our sample resemble typical *S. floridanus* in that there is only partial fusion of these elements. The species seemingly is rather common on the Yucatán Peninsula.

G. M. Allen (1906) reported a young female from Chichén-Itzá as *Sylvilagus brasiliensis*. Our examination of this specimen, however, reveals it to be *S. floridanus*. We know of no confirmed record of *S. brasiliensis* from the Yucatán Peninsula, but that species may occur in the quasi rainforests of the southern part. Gaumer (1917:147, 149, 150, and 151) recorded rabbits from the peninsula under four different specific names (*aquaticus*, *palustris*, *sylvaticus*, and *yucatanicus*). All localities listed for the four species by Gaumer are assigned herein to the species *floridanus*.

Two adult females taken on 10 July at Champotón evinced no gross reproductive activity. Two young individuals, approximately one-third grown, were obtained at Pisté on 27 July. Three of our specimens, one female and two males, taken in the vicinity of Champotón, on 9 and 10 July, show varying stages of terminal molt. The female was actively molting on the belly, flanks, rump, and forehead. The two males had less active molt on flanks and had completed molt on the venter; on the head, active molt was confined to several scattered patches and to the tip of the nose.

Literature Cited

Allen, G. M. 1906. Vertebrata from Yucatan. Mammalia. Bull. Mus. Comp. Zool., 50:101-159.

Allen, J. A. 1875. Synopsis of the American Leporidae. Proc. Boston Soc. Nat. Hist., 17:430-436.

Alston, E. R. 1879-82. Biología Centrali-Americana, Mammalia. xx + 220 pp. (introduction by P. L. Sclater).

Alvarez, T., and A. Martinez G. 1967. New records of *Cryptotis mayensis* from the Yucatan Peninsula, Mexico. Southwestern Nat., 12:204-205.

Choate, J. R. 1970. Systematics and zoogeography of Middle American shrews of the genus Cryptotis. Univ. Kansas Publ., Mus. Nat. Hist., 19:195-317.

Duellman, W. E. 1965. Amphibians and reptiles from the Yucatan Peninsula, México. Univ. Kansas Publ., Mus. Nat. Hist., 15:577-614.

———. 1966. The Central American herpetofauna: an ecological perspective. Copeia, pp. 700-719.

Gardner, A. L. 1973. The systematics of the genus Didelphis (Marsupialia: Didelphidae) in North and Middle America. Spec. Publ. Mus., Texas Tech Univ., 4:1-81.

Gaumer, G. F. 1917. Monografía de los mamíferos de Yucatán. Dept. de Talleres Gráficos de la Secretaría de Fomento, México, xii + 331 pp.

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.

Hatt, R. T., and B. Villa-R. 1950. Observaciones sobre algunos mamíferos de Yucatán y Quintana Roo. An. Inst. Biol., México, 21:215-240.

Hershkovitz, P. 1951. Mammals from British Honduras, Mexico, Jamaica and Haiti. Fieldiana: Zool., 31:547-569.

Ingles, L. G. 1959. Notas acerca de los mamíferos Mexicanos. An. Inst. Biol., México, 29:379-408.

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

Jones, J. K., Jr., and T. E. Lawlor. 1965. Mammals from Isla Cozumel, Mexico, with description of a new species of harvest mouse. Univ. Kansas Publ., Mus. Nat. Hist., 16:409-419.

Jones, J. K., Jr., J. D. Smith and H. H. Genoways. 1973. Annotated checklist of mammals of the Yucatán Peninsula, México. I. Chiroptera. Occas. Papers Mus., Texas Tech Univ., 13:1-31.

Kellogg, R., and E. A. Goldman. 1944. Review of the spider monkeys. Proc. U.S. Nat. Mus., 96(3186):1-45.

Klaas, E. E. 1968. Summer birds from the Yucatan Peninsula, Mexico. Univ. Kansas Publ., Mus. Nat. Hist., 17:579-611.

Lawrence, B. 1933. Howler monkeys of the *palliata* group. Bull. Mus. Comp. Zool., 75:315-354.

Nelson, E. W. 1909. The rabbits of North America. N. Amer. Fauna, 29:1-314.

OSGOOD, W. H. 1913. Two new mouse opossums from Yucatan. Proc. Biol. Soc. Washington, 26:175-176.

PAYNTER, R. A., JR. 1955. The ornithogeography of the Yucatán Peninsula. Bull. Peabody Mus. Nat. Hist., Yale Univ., 9:1-347.

PEARSE, A. S., AND R. KELLOGG. 1938. Mammalia from Yucatan caves. Publ. Carnegie Inst. Washington, 419:301-304.

SCHULTZ, A. H. 1960. Age changes and variability in the skulls and teeth of the Central American monkeys *Alouatta*, *Cebus*, and *Ateles*. Proc. Zool. Soc. London, 133:337-390.

SMITH, J. D. 1970. The systematic status of the black howler monkey, *Alouatta pigra* Lawrence. J. Mamm., 51:358-369.

TATE, G. H. H. 1933. A systematic revision of the marsupial genus *Marmosa*, with a discussion of the adaptive radiation of the murine opossums (*Marmosa*). Bull. Amer. Mus. Nat. Hist., 64:1-250.

OCCASIONAL PAPERS
THE MUSEUM
TEXAS TECH UNIVERSITY

NUMBER 24

24 MAY 1974

ELECTROPHORETIC ANALYSIS OF PEROMYSCUS COMANCHE BLAIR, WITH COMMENTS ON ITS SYSTEMATIC STATUS

GERALD L. JOHNSON AND ROBERT L. PACKARD

Recently, with refined electrophoretic techniques, it has become possible to estimate degrees of heterozygosity in populations (Lewontin and Hubby, 1966, Prakash *et al.*, 1969, on *Drosophila*; Selander and Yang, 1969, 1970, Selander *et al.*, 1969*b*, on *Mus*; Selander *et al.*, 1970, on *Limulus*) and thus compare them with respect to selected genetic characters. This assumes *a priori* that the loci controlling proteins examined are representative of the entire genome (Hubby and Lewontin, 1966; Selander *et al.*, 1969*a*). Following this approach, Selander *et al.* (1971) investigated protein polymorphism in the old-field mouse (*Peromyscus polionotus*). They analyzed geographic patterns of variation in allele frequencies, assessed levels of heterozygosity, and determined the genetic relationships of previously defined subspecies.

Populations of the Palo Duro mouse (*Peromyscus comanche*) in Texas have been regarded as affiliated with the *truei* group (Hall and Kelson, 1959). However, because these populations in Texas are geographically isolated and their taxonomy in question (Hooper, 1968; Lee *et al.*, 1972), we undertook an investigation of protein polymorphism in *P. comanche* and other geographically proximal members of the *Peromyscus truei* group (*P. difficilis nasutus*, *P. d. griseus*, and *P. truei truei*). The principal objective was to reveal the degree of genetic relationships between these species and subspecies. The results are compared to the current taxonomy.

Blair (1943) described *P. comanche* from northwestern Texas and suggested that its systematic affinities were with the *truei* group, even