

DISTRIBUTIONAL RECORDS OF MAMMALS FROM THE  
SOUTHWESTERN YUCATÁN PENINSULA OF MEXICOROBERT C. DOWLER<sup>1</sup>

Research Associate, Section of Mammals

MARK D. ENGSTROM<sup>2</sup>

## ABSTRACT

Records of mammals are reported for the Mexican states of Campeche and Tabasco on the Yucatán Peninsula. New distributional records include: *Uroderma bilobatum*, and *Micronycteris megalotis* from Campeche; and *Myotis elegans*, *Sylvilagus floridanus*, *Heteromys gaumeri*, and *Oryzomys fulvescens* from Tabasco. Additional information also is provided on the occurrence of *Cryptotis nigrescens* in Campeche and *Rhynchonycteris naso* in eastern Tabasco. Based on specimens reported in this study, the southwesternmost limit of the Yucatán Biotic Province, as it applies to mammals, is defined as that area of Tabasco north of the Sierra del Norte de Chiapas and east of the Río Usumacinta.

## INTRODUCTION

The Mexican portion of the Yucatán Peninsula (see Fig. 1) is an area of mammalian endemism with a fauna that differs markedly from the rest of Mexico; however, few extensive field studies on mammals of this region have been conducted and distributional limits of this endemic fauna are not well understood. The most comprehensive studies of the peninsular mammalian fauna were a distributional monograph by Gaumer (1917) and a series of annotated checklists by Jones et al. (1973, 1974a, 1974b) and Genoways and Jones (1975). Other papers also have added to our knowledge of mammalian distributions on the Yucatán Peninsula, including those by Hatt (1938, 1953), Hatt and Villa-R. (1950), Jones and Lawlor (1965), Birney et al. (1974), Sanchez-H. et al. (1986), and McCarthy (1987). Our field work was designed to determine the distributional limits of mammals on the Peninsula and to examine the transition between the nuclear Middle American mammal fauna and that of the Yucatán Peninsula. Although the Mexican state of Tabasco often is not included in distributional studies of the Peninsula, our initial fieldwork indicated that the portion of Tabasco east of the Río Usumacinta and north of the Sierra del Norte de Chiapas contained a characteristic peninsular mammalian fauna. Consequently, this eastern section of Tabasco is considered herein to represent the southwesternmost extension of the Yucatán Biotic Province (for definition and discussion of this biotic province, see Goldman and Moore, 1945; Barrera, 1962).

Fieldwork for this study was conducted during July and August of 1980 and 1984. Specimens representing six new records for the Mexican states of Campeche and Tabasco are reported. Information also is included for two species previously reported from Campeche and Tabasco.

<sup>1</sup> Department of Biological Sciences, Fordham University, Bronx, New York 10458.

<sup>2</sup> Department of Biology, Angelo State University, San Angelo, Texas 76909.

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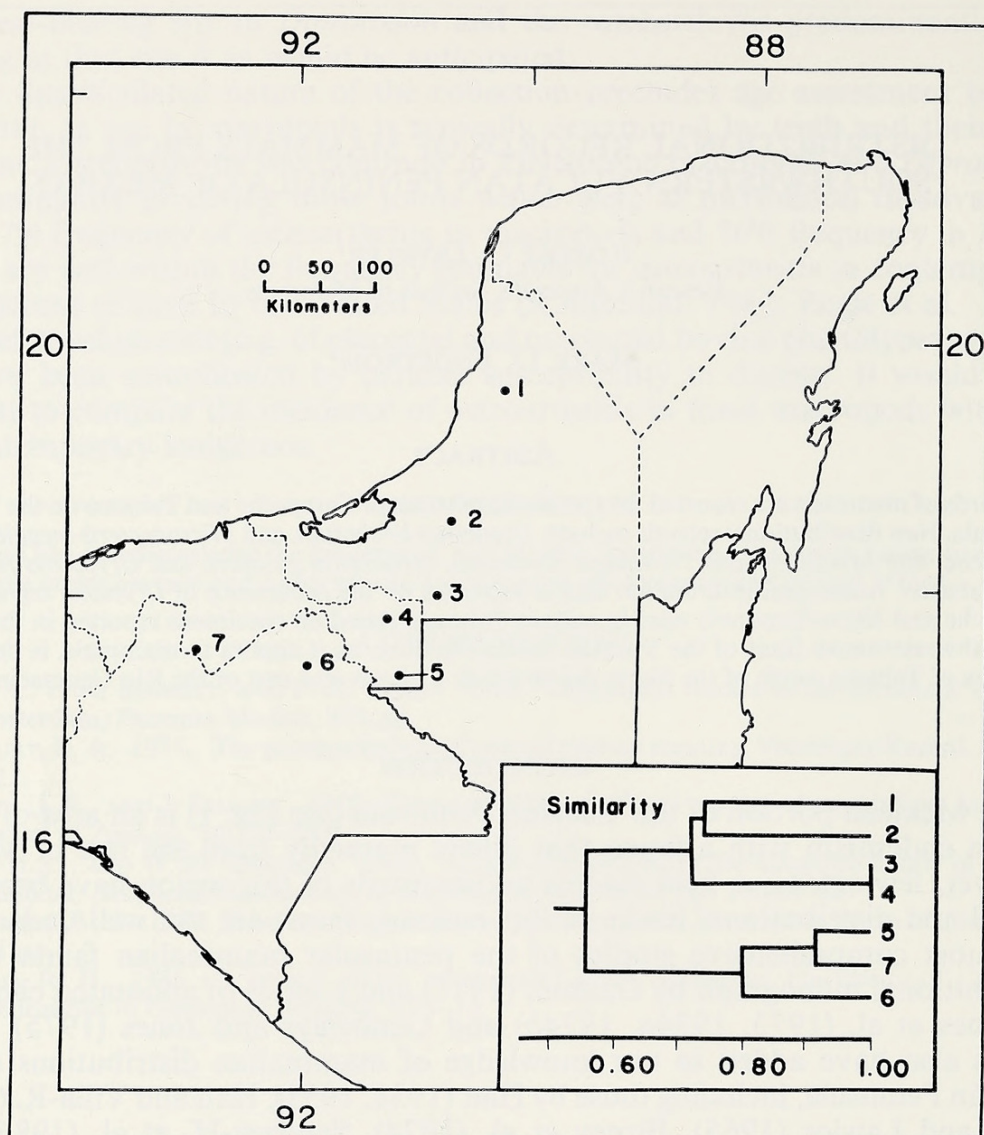


Fig. 1.—Map of the Yucatán Peninsula showing localities discussed in text. CAMPECHE: 1 = Edzna; 2 = 7.5 km W Escárcega; 3 = 11 km S Candelaria. TABASCO: 4 = 3.8 km SW Ruinas Acalán; 5 = 21–28 km SE Tenosique; 7 = Teapa. CHIAPAS: 6 = Palenque. Insert shows cluster analysis of localities based on the presence or absence of species of rodents (see Table 1 and discussion in text).

## METHODS AND MATERIALS

Rodents were trapped using Sherman live traps and bats were obtained using mist nets. Specimens were preserved in fluid or prepared as standard museum study specimens and were deposited in the Angelo State Natural History Collections (ASNHC), Angelo State University, San Angelo, Texas; The Carnegie Museum of Natural History, Pittsburgh, Pennsylvania; or the Texas Cooperative Wildlife Collection, Texas A&M University, College Station, Texas. A representative series of specimens also was submitted to the Subsecretaría de Ecología, Dirección General de Flora y Fauna Silvestres, for deposit in Mexico. In the following accounts, external and cranial measurements, crown–rump lengths of embryos, and dimensions of testes are given in mm. Localities mentioned are shown in Fig. 1.

## SPECIES ACCOUNTS

### *Cryptotis nigrescens mayensis*

*Specimens examined*.—(1♀) Campeche: 7.5 km W Escárcega. A nonpregnant female was collected at an experimental forestry station (El Tormento) west of



Escárcega, on 24 July. The shrew was caught with a Sherman trap set in mature, transitional deciduous-evergreen forest. Other species caught in the same trapline included *Heteromys gaumeri*, *Otodylomys phyllotis*, *Peromyscus yucatanicus*, and *Oryzomys melanotis*.

Only one other *C. nigrescens* previously was reported from Campeche, an individual collected in 1911 from La Tuxpeña, near Champotón (Choate, 1970). Additional peninsular records of this species have been reported from the state of Yucatán (Gaumer, 1917; Hatt, 1953; Choate, 1970; Jones et al., 1974b).

### *Rhynchonycteris naso*

*Specimens examined*.—(5: 3♀♀, 2♂♂) Tabasco: 3.8 km SW Ruinas Acalán (35 km N, 10 km E Tenosique). This species was first reported from southwestern Tabasco by Villa-R. (1966) at Río Puyacatengo, 15 km E Teapa, and our specimens represent the first from eastern Tabasco. The only other peninsular records of this species are from southeastern Quintana Roo, near the border with Belize (Jones et al., 1973).

Our specimens were netted over a tributary of the Río San Pedro on 15 July. This locality is near a small ruin site, approximately 25 km W of the village of San Pedro, and 35 km N, 10 km E Tenosique. The vegetation surrounding this area was secondary growth deciduous forest with no large trees, although a few trees of medium height lined the edge of the river. Our nets were set beneath the canopy of these trees over a relatively calm pool in a branch of the main river, near a group of small waterfalls. Each female carried a single embryo with crown-rump lengths of 12 and 25, respectively. One male had testes measuring 2 by 1. Other bats collected at this locality included *Pteronotus parnelli*, *Artibeus lituratus*, *Sturnira lilium*, *Carollia brevicauda*, *C. perspicillata*, *Desmodus rotundus*, and *Myotis elegans*.

### *Micronycteris megalotis mexicana*

*Specimens examined*.—(1♂) Campeche: 7.5 km W Escárcega. This species previously has been reported from each state in the Mexican portion of the Peninsula except Campeche, although Jones et al. (1973) noted that it apparently was uncommon. We collected a single specimen on 30 July in a mist net set across a small, unpaved road in transitional deciduous-evergreen forest.

### *Uroderma bilobatum molaris*

*Specimens examined*.—(7: 4♀♀, 3♂♂) Campeche: 11 km S Candelaria. This species previously was reported from southern Quintana Roo by Sanchez-H. et al. (1986) and McCarthy (1987) and our records are the first for the state of Campeche. We collected seven *U. bilobatum* in mist nets set across foot paths and over a small pool, in secondary growth transitional deciduous-evergreen forest in southwestern Campeche on 20–21 July. All females collected were pregnant and each carried a single fetus. Crown-rump lengths of fetuses from three females were 20, 21, and 25, respectively. Testicular measurements of two males were 5 by 3 and 4 by 2.

Although *U. bilobatum* has only recently been recorded from the Yucatán Peninsula of Mexico, our specimens along with those reported by Sanchez-H. et al. (1986) and McCarthy (1987), indicate that it probably is widely distributed in southern parts of the Peninsula.



*Myotis elegans*

*Specimens examined.*—(1♀) Tabasco: 3.8 km SW Ruinas Acalán (35 km N, 10 km E Tenosique). One nonpregnant female was collected in a mist net set over a tributary of the Río San Pedro on 15 July. This specimen represents the first record of the species for Tabasco and is only the second collected from the Peninsula. Jones et al. (1973) reported one *M. elegans* collected from 65 km S, 128 km E Escárcega, Campeche. Selected measurements for our specimen are: total length, 76; length of tail, 35; length of hind foot, 7; length of ear, 11; length of tragus, 6; length of forearm, 34; greatest length of skull, 12.8; zygomatic breadth, 8.2; breadth of braincase, 6.5.

*Sylvilagus floridanus yucatanicus*

*Specimens examined.*—(3: 2♀♀, 1♂) Tabasco: 3.8 km SW Ruinas Acalán (35 km N, 10 km E Tenosique). Cottontail rabbits were common at this locality, based on numerous sightings during our field work. Our specimens were shot by a local hunter on 14 July. One of the two females collected had three embryos that measured 80 and the male had testes measuring 32 by 17.

*S. floridanus* has not previously been recorded from Tabasco (Ramírez-Pulido et al., 1986) and the range map for the species depicted in Hall (1981) indicated a distinct hiatus in Tabasco between the distributions of *S. f. yucatanicus* in Yucatán and Campeche, and the two nearest subspecies, *S. f. russatus* in southern Veracruz and *S. f. chiapensis* in the central highlands of Chiapas and Guatemala. Nelson (1909) distinguished these three subspecies mainly on the basis of coloration and size. *S. f. yucatanicus* and *S. f. chiapensis* were distinguished from *S. f. russatus* by their larger external and cranial size (particularly total length and length of ear). *S. f. yucatanicus* was distinguished from *S. f. chiapensis* by paler coloration, proportionately larger auditory bullae (diameter averaging greater than 11 in *S. f. yucatanicus* and less than 10 in *S. f. chiapensis*) and pronounced fusion of the postorbital processes with the cranium, in the former. Our specimens were relatively pale (particularly in the diagnostic rear of the hind legs), were large externally and cranially, had relatively large auditory bullae (mean diameter = 11.3), and the postorbital processes were fused with the cranium in each specimen. Accordingly, although our specimens are approximately equidistant among the currently recognized geographic ranges of the three subspecies, they are clearly assignable to *S. f. yucatanicus*. Selected measurements of the three specimens from Tabasco, two adult females followed by one adult male, respectively, are as follows: total length, 450, 457, 440; length of tail, 40, 47, 37; length of hind foot, 92, 96, 96; length of ear, 64, 66, 66; greatest length of skull, 79.4, 81.3, 78.4; zygomatic breadth, 37.4, 36.4, 35.6; mastoid breadth, 36.4, 36.8, 36.6; length of maxillary toothrow, 14.9, 14.2, 14.8; diameter of bulla, 11.0, 11.8, 11.0.

*Oryzomys fulvescens mayensis*

*Specimens examined.*—(1♀) Tabasco: 3.8 km SW Ruinas Acalán (35 km N, 10 km E Tenosique). A subadult female was collected on 17 July in secondary deciduous forest bordering overgrown but grazed pasture. The specimen was pregnant with four embryos measuring 12. Other species of rodents taken at this locality included *Heteromys gaumeri*, *Sigmodon hispidus*, *Oryzomys melanotis*, *O. couesi*, *Ototylomys phyllotis*, and *Rattus rattus*. Jones et al. (1973) recorded specimens of this species from Campeche and Yucatán, but this specimen is the first reported for the state of Tabasco.



*O. f. mayensis* was described from Campeche and Yucatán by Goldman (1918) as distinct from adjacent populations of *O. f. fulvescens*, based on paler coloration and narrower skull (particularly zygomatic breadth) of the former. Comparison of the specimen from Tabasco with adult specimens of *O. f. mayensis* from near Candelaria in southern Campeche (1♂) and *O. f. fulvescens* from near Palenque in northeastern Chiapas (1♀, 2♂♂) in the ASNHC revealed little variation in color among the specimens. Of those examined, the individual from Tabasco is slightly paler middorsally, due to a lack of suffusion of the dorsum with reddish hairs. The skull of the specimen from Tabasco also is among the smallest of the series, although size variation among these specimens might owe to differences in age. Based primarily on relatively narrow zygoma, we tentatively assign the specimen from Tabasco to the peninsular subspecies. Selected external and cranial measurements of the three specimens from 6.6 to 9.5 km S Palenque, Chiapas (one adult female, followed by two adult males), the adult male from 11 km S Candelaria, Campeche, and the subadult female from Tabasco are, respectively: total length, 186, 186, 192, 172, 166; length of tail, 106, 111, 109, 99, 93; length of hind foot, 21, 22, 22, 21, 21; greatest length of skull, 26.8, 27.1, 26.9, 25.6, 26.0; length of rostrum, 7.2, 7.7, 7.6, 6.9, 6.6; zygomatic breadth, 11.4, 11.4, 11.7, 11.2, 11.0; breadth of braincase, 9.8, 9.7, 10.3, 10.1, 10.3.

### *Heteromys gaumeri*

*Specimens examined.*—(11: 7♀♀, 4♂♂) Tabasco: 3.8 km SW Ruinas Acalán (35 km N, 10 km E Tenosique). This species is endemic to the Yucatán Peninsula. Our specimens from Tabasco represent the first records for the state and the southwesternmost locality at which the species has been collected (see Engstrom et al., 1987). *H. gaumeri* were trapped in secondary deciduous forest and brushy areas near a tributary of the Río San Pedro. Of seven females collected on 15 and 16 July, none were pregnant. Testes measurements for two males collected on those dates were 17 by 10 and 6 by 3. Other rodents taken at this locality were listed under the account for *Oryzomys fulvescens*.

### DISCUSSION

Previous authors who delineated the Yucatán Biotic Province based all or in part on mammalian distributions (Goldman and Moore, 1945; Barrera, 1962), usually included extreme eastern Tabasco within the province (although this area was not included in the checklists of Yucatán mammals by Jones et al., 1973, 1974a, 1974b, and Genoways and Jones, 1975). However, there are few distributional records of mammals (particularly rodents) from this portion of Tabasco and inclusion of this area in the Yucatán Biotic Province based on mammalian distributions was conjectural.

Initially, this study was designed to examine the transition between the southwestern peninsular mammalian fauna and that in nuclear Middle America. Localities reported herein (with reference to place names Escárcega and Candelaria, Campeche; and Acalán, Tabasco) and additional localities represented in our collections (near Edzna, Campeche; Tenosique and Teapa, Tabasco; and Palenque, Chiapas) approximate a transect from northern Campeche southwest to Tabasco and northern Chiapas (Fig. 1). We calculated similarities for all pairwise comparisons among these seven localities based on the presence or absence of species of rodents (Table 1), using the similarity coefficient of Baroni-Urbani and Buser (1976). Cluster analysis using the unweighted pair group method based on arith-



Table 1.—Presence or absence of species of rodents used to calculate similarity coefficients among seven localities from the Yucatán Peninsula of Mexico. Locality numbers are defined in Fig. 1.

	Localities						
	1	2	3	4	5	6	7
<i>Heteromys gaumeri</i>	1	1	1	1	0	0	0
<i>H. desmarestianus</i>	0	0	0	0	1	1	1
<i>Oryzomys couesi</i>	0	1	1	1	0	1	1
<i>O. melanotis</i>	1	1	1	1	1	1	1
<i>O. fulvescens</i>	0	0	1	1	0	1	0
<i>Tylomys nudicaudus</i>	0	0	0	0	0	1	0
<i>Ototylomys phyllotis</i>	1	1	1	1	1	1	1
<i>Reithrodontomys gracilis</i>	0	1	0	0	0	0	0
<i>Peromyscus leucopus</i>	0	1	0	0	0	0	0
<i>P. yucatanicus</i>	1	1	0	0	0	0	0
<i>P. mexicanus</i>	0	0	0	0	1	1	1
<i>Sigmodon hispidus</i>	1	1	1	1	1	1	1

metic averages (UPGMA; Sneath and Sokal, 1973) was performed on the resulting matrix to depict faunistically similar subsets of localities (also see Lee, 1980). This analysis was restricted to data from rodents because members of this order comprise the majority of non-insular, endemic species characteristic of the peninsular fauna and because these taxa were best represented in our (and previous) collections.

In the UPGMA analysis (Fig. 1), the principal distinction among localities was between samples collected in the foothills of the Sierra del Norte de Chiapas (near Palenque, Teapa, and Tenosique) and those to the north and east (near Acalán, Candelaria, Escárcega, and Edzna). Localities in the Sierra del Norte de Chiapas were characterized by the presence of non-peninsular rodent species (e.g. *Peromyscus mexicanus* and *Heteromys desmarestianus*), widespread Middle American taxa, and the absence of Yucatán endemics (e.g. *Peromyscus yucatanicus* and *Heteromys gaumeri*). Localities to the north and east of this mountain range were characterized by the presence of at least some taxa endemic to the peninsula (e.g. *H. gaumeri*), widespread Middle American species, and absence of non-peninsular species.

Differentiation of the species composition of rodent communities between these groups of localities parallels a decrease in rainfall and change in plant communities at the northern margin of the Sierra del Norte de Chiapas. For example, annual precipitation at San Pedro, 10 km west of our collecting site near Acalán, is approximately 1500 mm, whereas that near our collecting localities southeast of Tenosique is approximately 2200 mm (Garcia, 1973). Primary vegetation near Acalán is medium-height, sub-perennial sub-deciduous forest whereas that southwest of Tenosique is tall, perennial rain forest. Although the distance between these localities is only 50 km (see Fig. 1), Acalán has a typical peninsular rodent fauna (the principal exception being the absence of *P. yucatanicus*, which has not been collected at any locality southwest of Escárcega) and clusters with localities to the north, whereas our sites southeast of Tenosique had a more typical nuclear Middle American fauna and cluster with other localities in the Sierra del Norte de Chiapas, to the west.

Based on the distributions of rodent communities from this study we define the southwesternmost limit of the Yucatán Biotic Province, as it applies to mam-



malian distributions, as that area of Tabasco north of the Sierra del Norte de Chiapas and, based on previous studies (see Hall, 1981), west of the Río Usumacinta. This boundary closely parallels that proposed by Barrera (1962), based on the distributions of terrestrial and aquatic vertebrates.

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