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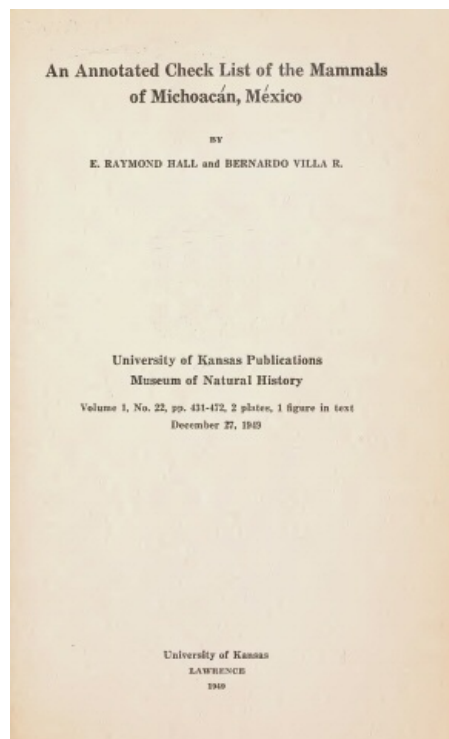
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## **An Annotated Check List of the Mammals of Michoacán, México**

**BY**

**E. RAYMOND HALL and BERNARDO VILLA R.**

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## **An Annotated Check List of the Mammals of Michoacán, México**

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By

**E. RAYMOND HALL and BERNARDO VILLA R.**

### **INTRODUCTION**

When General Lázaro Cardenas was President of the Republic of México, encouragement was given by his administration to linguistic groups of native American peoples to record in printed form, eventually in their native languages, accounts of their cultural accomplishments and accounts of the natural resources of the regions concerned. For the Tarascan "Empire" centering in the state of Michoacán, a committee of Mexicans and citizens of the United States of America was formed to forward these aims. Under the leadership of ethnologists on the committee, especially Professor Daniel Rubin F. de la Borbolla and Professor Ralph L. Beals, invitations to coöperate in the studies were extended to biologists. One of us (Hall) was invited to investigate the fauna of native wild mammals. In 1943, assisted by a fellowship which Hall at that time held from the John Simon Guggenheim Memorial Foundation, and with support from Miss Annie M. Alexander, through the University of California Museum of Vertebrate Zoölogy, most of March—March 3 to March 29, 1943—was spent in the state of Michoacán.

Bernardo Villa R. of the Instituto de Biología de la Universidad de México was a member of the party from March 23 to 27. Previously, March 4 to 22, Roberto Alcántar from the Universidad de Michoacán, in Morelia, participated in the field work. Mr. J. R. Alcorn was active in the collecting from the beginning until he entrained for the United States on March 24. The remainder of the field party was made up of E. Raymond Hall, his wife Mary F. Hall, and their three sons, William Joel, Hubert H., and Benjamin D. Hall.

From March 4 to 15 we collected at, and in the vicinity of, Pátzcuaro. We were housed in two cottages kindly made available by Sr. Efrain Buenrostro, in Campo Turista Janitzio, 200 meters northwest of the railroad station in Colonia Revolución. The shore of Lake Pátzcuaro, the cultivated fields surrounded by stone fences, and the oak and pine forests roundabout provided varied habitats.

From March 16 to 23 we collected in the territory 1 to 6 miles south of Tacámbaro, making our headquarters in the Europa Hotel, in the town. The steep main street of Tacámbaro with native pines at the upper end descends to plantings of bananas and sugar cane at the lower end. Our collecting all was done below (south of) the town in the semitropical country and none at all was done above (north of) the town.

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From March 24 to 27 (three night's trapping) we collected in the vicinity of Zamora, making our headquarters in rooms diagonally across the street intersection from the Hotel Fenix.

The resulting specimens, approximately 650 in number, were deposited in the Museum of Vertebrate Zoölogy at the University of California at Berkeley.

A noteworthy coincidence is that on the very day, February 26, on which we crossed the

international border into México at Laredo, the beginning of the new volcano, Parícutín, was announced in the daily press. Our collecting of mammals in Michoacán was nearly all done in sight of the towering white plume of this rapidly heightening volcanic cone and frequently our traps were thickly dusted with its wind-borne ash. Our eagerness at that time to have stations established for observing the effects on vertebrates of the deposition of ash, was gratified in that Dr. Robert T. Hatt independently had the same idea and such observations at appropriate places and times were begun by him and staff members of the Museum of Zoölogy of the University of Michigan. One of us, Villa, was privileged to share in these observations in the spring of 1947.

This continuing interest in the mammals of Michoacán has made it seem, to us, the more desirable to place on record our findings as to kinds and occurrence of species. In doing this we have examined the collections made previously on Cerro Tancítaro and vicinity by the field party led by Mr. Harry Hoogstraal from the University of Illinois and the Chicago Natural History Museum. The specimens of mammals collected by this field party are in the Chicago Natural History Museum and we are obliged to Mr. Karl P. Schmidt, Mr. Colin C. Sanborn and the late Dr. Wilfred H. Osgood for the privilege of studying this material.

Drs. William H. Burt and Emmet T. Hooper, of the Museum of Zoölogy of the University of Michigan, lent to us for examination five specimens of bats, of as many species, which they had taken in Michoacán. Drs. Remington Kellogg and Henry W. Setzer have provided us with data on specimens of deer and peccary from Michoacán which are in the United States National Museum. Specimens in the Institute of Biology of the University of México have been used. Financial provision by the Kansas University Endowment Association has enabled us to obtain specimens needed for comparison from other parts of México.

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In addition to the materials mentioned above we have used published references to mammals of Michoacán and have prepared the following lists of kinds of mammals positively known to us to occur in the Mexican state of Michoacán. It is noteworthy that specimens recorded in the literature from Acámbaro, Michoacán, no longer are to be ascribed to Michoacán, since a relocation of the boundary between the states of Michoacán and Guanajuato, places Acámbaro in the latter state.

Our aims were: (1) To record kinds of mammals positively known from the state, under the correct scientific name, and vernacular names in English, Spanish, and Tarascan. The first Tarascan name is given in the spelling used by Tarascans followed by the phonetic equivalent in English in parentheses. (2) To indicate the geographic range of each kind in the state, and, (3) To record miscellaneous information which it is thought probably will be useful in one way or another to other students whose work certainly will lengthen the list of kinds of mammals known from Michoacán and otherwise add to our knowledge of them.

Several kinds of bats, of which we lack records, certainly occur in Michoacán. Four or five kinds of cats (genus *Felis*), species of the genera *Potos*, *Lutra*, *Tayra*, *Grison*, and several other kinds of mammals of which we now lack positive record, also probably occur there; the list of kinds, we expect, will number more than one hundred species and subspecies when more intensive collecting has been done in the state. In all, we have positive record of 85 kinds of native, wild mammals of which specimens have been examined or recorded from Michoacán. Distances and elevations here are recorded either in the metric system or in the English system, according to the system used on the labels of the specimens concerned. Unless otherwise indicated, catalogue numbers of more than 100,000 are of specimens in the University of California Museum of Vertebrate Zoölogy and numbers of less than 100,000 are of the Chicago Natural History Museum.

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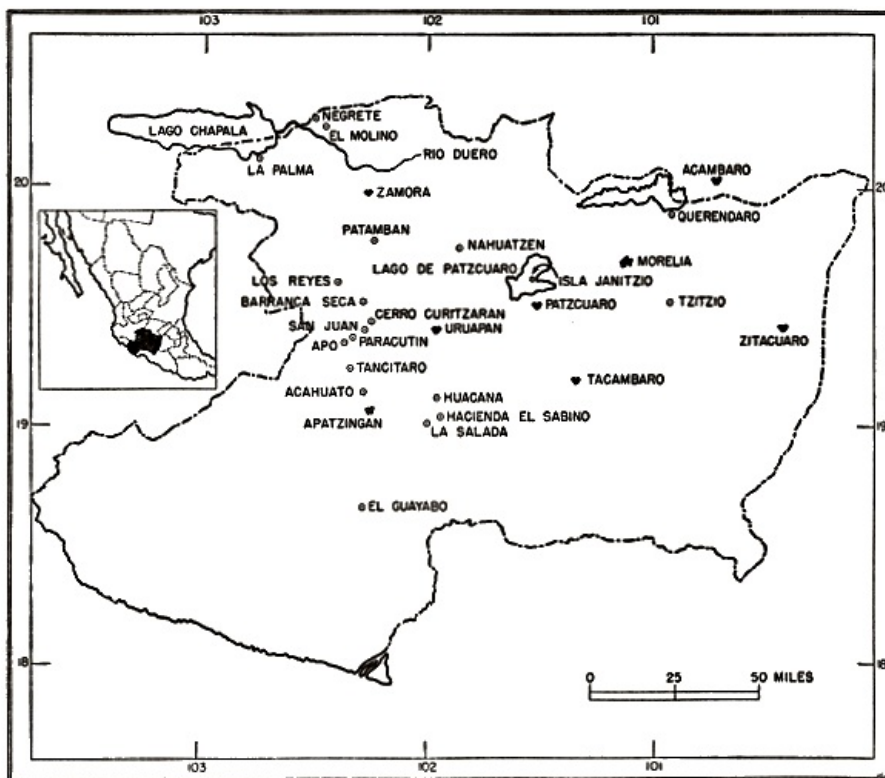


FIG. 1. Map of the state of Michoacán showing place names mentioned in the text.

## ACCOUNTS OF SPECIES AND SUBSPECIES

### *Didelphis mesamericana mesamericana* Oken

Opossum; Spanish, Tlacuache; Tarascan, Ujkúri (Ukuri)

*Did[elphys]. mes-americana* Oken, Lehrbuch d. Naturgesch., pt. 3, 2:1152, 1816, type from northern México.

*Didelphis mes-americana*, Allen, Bull. Amer. Mus. Nat. Hist., 16:256, August 18, 1902.

*Range*.—Statewide.

*Specimens examined*, 7: nos. 100063-100067, 100074, 51396, distributed by localities as follows: Pátzcuaro (3 mi. N, 6,700 ft., 1; 2 mi. W, 6,700 ft., 2; 5 mi. S, 7,800 ft., 1), 4; Tancítaro, 1; 1-¾ mi. S Tacámbaro, 5,700 ft., 1; 1 mi. E and 6 mi. S Tacámbaro, 1.

*Remarks*.—The coarse overhair is white all the way to the base in three specimens but is black in its distal two thirds (white in basal third) in four specimens. The overhair, six centimeters anterior to the base of the tail, is 83 (80-85) mm. long in the three gray specimens (those with white overhair) and 68 (64-72) mm. long in the black specimens. The ears and all four feet are black. The tail is black in its proximal half and white in its distal half except in one specimen in which the distal half is almost as dark as the proximal half. Of the two largest specimens, one is a female from 1¾ mi. S Tacámbaro and the other, a male is from 6 mi. S of the same place. Measurements are: Total length, ♂ 810, ♀ 786; length of tail, ♂ 360, ♀ 348; length of hind foot, —, 58; condylobasal length, 110.0; 99.6; zygomatic breadth, 68.5; 59.6; length of nasals, 59.7, 45.0. The tail amounts to 48, 48 and 47 per cent of the total length in specimens from Pátzcuaro; 50 per cent in one from Tancítaro; 45 and 44 per cent in two from Tacámbaro. The subspecies *mesamericana* probably intergrades with *Didelphis virginiana virginiana* by way of *D. m. texensis* and *D. v. pigra*, as Davis (1944:375) and other writers suggest, in which case the proper name of the subspecies *mesamericana* would be *Didelphis virginiana mesamericana*. Until intergradation is actually demonstrated, it seems best to use the name *D. m. mesamericana*.

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Most of our specimens were caught in steel traps, at meat baits, set for small carnivores.

### *Marmosa canescens canescens* (Allen)

Murine Opossum; Spanish, Ratón Tlacuache

*Didelphis (Micoureus) canescens* Allen, Bull. Amer. Mus. Nat. Hist., 5:235, September 22, 1893, type from Santo Domingo de Guzman, Isthmus of Tehuantepec, México.

*Marmosa canescens* Allen, Bull. Amer. Mus. Nat. Hist., 9:58, March 15, 1897.

*Range*.—Below *Quercus* belt, probably throughout western half of state.

*Specimen examined*, 1: no. 100062, 1 mi. E and 6 mi. S Tacámbaro, 4,000 ft.

*Remarks*.—The one unsexed subadult measures 5.5 mm. from M1 to M3 inclusive, which measurement is near the minimum that Tate (1933: table 1, Sec. 5) records for this subspecies but larger than the maximum that he (*loc. cit.*) records for the subspecies *sinaloae* which occurs to the northward of Michoacán. Tate (*op. cit.*:141) lists two other specimens from Los Reyes. Our specimen was caught in a mouse trap set in dry grass between a sugar cane field and a patch of banana trees.

### **Sorex saussurei saussurei** Merriam

Saussure Shrew; Spanish, Musaraña

*Sorex saussurei* Merriam, Proc. Biol. Soc. Washington, 7:173, September 29, 1892, type from north slope Sierra Nevada de Colima, approximately 8,000 feet, Jalisco.

*Range*.—In and above *Quercus* belt, probably throughout northeastern half of state.

*Specimens examined*, 14: nos. 8688, 52131-52141, 100076, 100077, distributed by localities as follows: Pátzcuaro, 1; 4 mi. S Pátzcuaro, 7,800 ft., 2; Mount Tancítaro (7,800 ft., 8; 9,500 ft., 1; 9,600 ft., 1; 10,000 ft., 1), 11.

*Remarks*.—Two males from Mount Tancítaro, with much worn teeth, catalogue nos. 52132 and 52138, measure, respectively, as follows: Total length, 122, 114; length of tail, 46, 43; length of hind foot, 15, 14; condylobasal length, 18.4, 18.3; palatal length, 8.0, 7.3; cranial breadth, 9.4, 9.2; least interorbital breadth, 3.7, 3.8; maxillary breadth, 5.5, 5.5; maxillary tooth-row, 6.8, 6.7. The long palate in no. 52132 and the broad brain case in both specimens appear to be only individual variations or possibly variations correlated with the advanced age of the two animals since in other features they do not differ from specimens which are smaller in these two dimensions. Jackson (1928:156) records specimens of this shrew from Mount Patambán and Nahuatzin. [440]

### **Cryptotis pergracilis pergracilis** (Elliot)

Short-tailed Shrew; Spanish, Musaraña Colicorta

*Blarina pergracilis* Elliot, Field Columb. Mus., publ. 71, zoöl. ser., 3:149, February, 1903, type from Ocotlan, Jalisco, México.

*Cryptotis pergracilis pergracilis*, Miller, Proc. Biol. Soc. Washington, 24:223, October 31, 1911.

*Range*.—Probably statewide.

*Specimen examined*, 1: no. 1721 B. Villa R. from Colonia Ibarra, Pátzcuaro.

*Remarks*.—Our one specimen, originally a mount, proves to have a crushed brain case. The specimen was saved on March 10, 1944, by P. Luna, who in March, 1943, told one of us (Hall) that many of these shrews fell into the cement fish-rearing tanks at the biological station situated at Colonia Ibarra, a suburb of Pátzcuaro, on the shore of Lake Pátzcuaro. We are indebted to Dr. H. H. T. Jackson for examining our specimen and assigning a name to it.

### **Balantiopteryx plicata** Peters

Sac-winged Bat; Spanish, Murciélago Sacoptero; Tarascan word for bat is Huasis (Wasis)

*Balantiopteryx plicata* Peters, Monatsber. k. preuss. Akad. Wiss. Berlin, p. 476, 1867, type from Punta Arenas, Costa Rica.

*Range*.—Statewide.

*Specimens examined*, 2: nos. 52224, 52225, from Apatzingan, 1,040 ft.

*Remarks*.—This bat is a cave dweller, not infrequently found roosting with other species.

### **Glossophaga soricina leachii** (Gray)

Long-tongued Bat; Spanish, Murciélago Siricotéro

*Monophyllus leachii* Gray, Voyage of the Sulphur, Zoöl., 1:18, 1844, type from Realejo, Nicaragua.

*Glossophaga soricina leachii*, Miller, Proc. U. S. Nat. Mus., 46:419, December 31, 1913.

*Range*.—Statewide. [441]

*Specimens examined*, 4: nos. 11377, Univ. Kan., and alcoholic specimens nos. 950-952 B. Villa R. field numbers, I. B. (specimens in Instituto de Biología, Univ. de México), distributed by localities as follows:

*Remarks.*—Specimens from El Guayabo were taken in a natural cave which they shared with *Desmodus rotundus murinus* and *Artibeus planirostris planirostris*.

The length of the thumb averages 7.4 mm. (7.0 to 7.7). As compared with *G. s. alticola* from northeast Tlaxcala according to the description given by Davis (1944:377), our specimens agree with *alticola* in length of thumb. In all other characters they correspond to *leachii*.

### **Choeronycteris mexicana** Tschudi

ongued Bat; Spanish, Murciélago Carilargo

*Choeronycteris mexicana* Tschudi, Fauna Peruana, p. 72, 1844, type from México.

*Range.*—Statewide.

*Specimens examined*, 4: nos. 100078-100081, from 2 mi. W Pátzcuaro, 7,700 ft.

*Remarks.*—A colony of 20 or more bats of this species was found in a natural cave. Four were caught by hand as they flew about after we disturbed them. We returned on the following day, but found that all the bats had left.

### **Leptonycteris nivalis nivalis** (Saussure)

Leaf-nosed Bat; Spanish, Murciélago Lengüilarga

*M*[=*Ischnoglossa*]. *nivalis* Saussure, Revue et Magasin de Zoölogie, 12(ser. 2):492, November, 1860, type from near snow line on Mount Orizaba.

*Leptonycteris nivalis*, Miller, Proc. Biol. Soc. Washington, 13:126, April 6, 1900.

*Range.*—Probably middle and higher altitudes through state.

*Specimen examined*, 1: no. 91911, Univ. Michigan Mus. Zoöl., from 1050 m., 12 miles (on Huetamo Road) south of Tzitzio.

*Remarks.*—The subspecific name *L. n. nivalis* is tentatively applied to this specimen in the absence of an opportunity to compare it directly with the holotype or topotypes of *Leptonycteris nivalis yerbabuena* Martínez and Villa (1940:291). Unfortunately, the materials on which this name, *L. n. yerbabuena*, was based all were destroyed in 1945 or 1946 while Villa was absent from the Institute of Biology of the University of México.

### **Artibeus planirostris planirostris** (Spix)

Big Leaf-nosed Bat; Spanish, Murciélago Zapotero

*Phyllostoma planirostre* Spix, Simiarum et vespertilionum Brasiliensium, p. 66, 1823, type from suburbs of Bahia, Brazil.

*Artibeus planirostris*, Dobson, Catal. Chiroptera, British Mus., p. 515 (part), 1878.

*Range.*—Probably southwestern part of state.

*Specimen examined*, 1: no. 945b B. Villa R., field no., I.B., El Guayabo, 34 kms. S Uruapan.

*Measurements.*—Head and body, 89.0 mm.; total length of skull to front of upper canines, 28.0; mastoid breadth, 15.5; zygomatic breadth, 17.8; maxillary width across first upper molars, 13.2; breadth across cingula of upper canines, 7.9; greatest length of one ramus of lower jaw including anteriormost incisor tooth, 19.4; length of upper tooth-row, anterior border of canine to posterior border of M2, 10.4; length of lancet (nose-leaf), 9.0; width of lancet, 6.5; width of horseshoe, 9.0; forearm, 57.3; 3rd metacarpal, 52.6; 1st (basal) phalanx, 16.0; 2nd (middle) phalanx, 26.7; 3rd (distal) phalanx, 18.5; 4th metacarpal, 50.7; 1st (basal) phalanx, 14; 2nd phalanx, 18.8; 5th metacarpal, 54; 1st (basal) phalanx, 11.2; 2nd phalanx, 13.2; lower leg, 22.9; foot with claws, 15.2; calcar, 6.5.

*Remarks.*—Our single specimen, a female, was caught on July 28, 1945, by my (B. Villa's) father, Andres Villa, in a natural cave, roosting with the individuals of *Glossophaga s. leachii*. The northernmost locality in México from which *A. p. planirostris* previously has been recorded is El Papayo, in the state of Guerrero (Andersen, 1908:238), approximately 225 kilometers to the southward. *A. p. planirostris* and *Artibeus jamaicensis* closely resemble each other but *A. planirostris* may be recognized by the presence of a minute M3 which is absent in *A. jamaicensis*. Specimen no. 945b has M3 present on both sides of the upper jaw. From *Artibeus hirsutus*, known from La Salada, Michoacán, approximately 40 miles north and slightly to the east of El Guayabo, our specimen differs in the apparently hairless tibia and interfemoral membrane. The measurements, of no. 945b, recorded above, if compared with those given by Andersen (1908:246) are seen mostly to fall within the range recorded for *A. hirsutus*. Where measurements are outside this range, they fall within the range of those of the larger *A. p. planirostris*. We recognize that the Mexican species of *Artibeus* are not well understood, at least

by us.

**Artibeus hirsutus** K. Andersen

Leaf-nosed Bat; Spanish, Murciélago Zapotero

*Artibeus hirsutus* K. Andersen, Ann. and Mag. Nat. Hist., 18(ser. 7):420, December, 1906, type from La Salada, Michoacán.

*Range*.—Known from western part of state.

*Remarks*.—From Michoacán, Andersen (1908:247) examined three specimens, all from the type locality. [443]

**Desmodus rotundus murinus** Wagner

Vampire Bat; Spanish, Vampiro

*D[esmodus]. murinus* Wagner, Schreber's Säugethiere, Suppl., 1:377, 1840, type from México.

*Desmodus rotundus murinus*, Osgood, Field Mus. Nat. Hist., publ. 155, zool. ser., 10:63, January 10, 1912.

*Range*.—Statewide, except rare or absent at higher altitudes.

*Specimens examined*, 6: nos. 944-949 B. Villa R. field numbers, I.B., El Guayabo, 34 kms. S Uruapan.

*Remarks*.—This species is colonial; usually it is found in large numbers in favorite roosting sites, mainly in natural caves. Four of our specimens, caught in July, are females and two are young males. One, female, no. 944, has one embryo of 40 mm. in length.

**Myotis yumanensis lutosus** Miller and Allen

Yuma Myotis; Spanish, Murciélago de Yuma

*Myotis yumanensis lutosus* Miller and Allen, U. S. Nat. Mus., Bull., 144:72, May 25, 1928, type from Pátzcuaro, Michoacán.

*Myotis yumanensis*, Miller, N. Amer. Fauna, 13:67, October 16, 1897.

*Range*.—Known only from Pátzcuaro and El Molino.

*Remarks*.—Originally recorded by Miller (1897:67) from Pátzcuaro, the animals from central México were named as a new subspecies by Miller and Allen (1928:72) who record one specimen from El Molino.

**Myotis velifer velifer** (Allen)

Cave Bat; Spanish, Murciélago Vespertino

*Vespertilio velifer* J. A. Allen, Bull. Amer. Mus. Nat. Hist., 3:177, December 10, 1890, type from Santa Cruz del Valle, Guadalajara, Jalisco.

*Myotis velifer velifer*, Allen and Miller, U. S. Nat. Mus. Bull., 144:89, May 25, 1928.

*Range*.—Statewide.

*Specimens examined*, 17: nos. 100083-100099, from 3 mi. NW Pátzcuaro, 6,700 ft.

*Remarks*.—Our specimens were taken on March 12, 1943, from a crevice in the wall of an abandoned chapel where 35 or more individuals of both sexes were living. Miller (1897:59) records the species from Pátzcuaro and Miller and Allen (1928:91) record it from there and also from Lake Chapala, La Palma, Acámbaro (now in Guanajuato) and Negrete.

**Myotis thysanodes thysanodes** Miller

Fringed-tailed Myotis; Spanish, Murciélago Colirugosa

*Myotis thysanodes* Miller, N. Amer. Fauna, 13:80, October 16, 1897, type from Old Fort Tejon, Kern County, California.

*Range*.—Known only from Pátzcuaro.

*Remarks*.—In the original description five specimens are recorded from Pátzcuaro and Miller and Allen (1928:127) mention the same locality of occurrence. [444]

**Myotis californicus mexicanus** (Saussure)

California Myotis; Spanish, Murciélago de California

*V[espertilio]. mexicanus* Saussure, Rev. et Mag. de Zoöl., 12 (ser. 2):282, 1860, type from somewhere in the warmer part of the state of México.

*Myotis californicus mexicanus*, Miller, N. Amer. Fauna, 13:73, October 16, 1897.

*Range*.—Known in Michoacán only from Pátzcuaro.

*Remarks*.—Specimens from Pátzcuaro are recorded by Miller and Allen (1928:160).

**Eptesicus fuscus miradorensis** (H. Allen)

Big Brown Bat; Spanish, Murciélago Fusco

*S[cotophilus]. miradorensis* H. Allen, Proc. Acad. Nat. Sci. Philadelphia, p. 287, 1866, type from Mirador, Veracruz.

*Eptesicus fuscus miradorensis*, Miller, N. Amer. Land Mamm., 1911, p. 62, December 31, 1912.

*Range*.—Probably statewide.

*Specimen examined*, 1: no. 91909, Univ. Michigan, Mus. Zoöl., from Rancho Escondido, one mile north of Apo, 6,000 feet elevation, June 29, 1947, female adult, taken by W. H. Burt.

**Lasiurus borealis mexicanus** (Saussure)

Red Bat; Spanish, Murciélago Rojizo

*A[talapha]. mexicana* Saussure, Rev. et Mag. de Zoöl., 13(2):97, March, 1861, type probably from Veracruz, Puebla or Oaxaca.

*Lasiurus borealis mexicanus*, Miller, N. Amer. Fauna, 13:111, October 16, 1897.

*Range*.—Probably larger part of state.

*Specimen examined*, 1: no. 89446, Univ. Michigan, Mus. Zoöl., from Nuevo San Juan (Los Conejos), 5 mi. SW Uruapan, May 23, 1945, by W. H. Burt.

*Remarks*.—This specimen, a male with much worn teeth, answers well to the description of *L. b. mexicanus* except that the minute premolar between the canine and fourth premolar is missing on each side of the upper jaw. This, however, seems the less remarkable after examination of 18 skulls of *L. b. borealis* from the United States in two of which these minute premolars are likewise absent; one of the two specimens from the United States has unworn teeth and the other much worn teeth.

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**Lasiurus cinereus cinereus** (Beauvois)

Hoary Bat; Spanish, Murciélago Pardo

*Vespertilio cinereus* (misspelled *linereus*) Beauvois, Catal. Raisonné Mus. Peale, Philadelphia, p. 18, 1796, type locality, Philadelphia, Pennsylvania.

*Lasiurus cinereus*, H. Allen, Monogr. N. Amer. Bats, Smithsonian Misc. Colls., 7(1): 12, June, 1864.

*Range*.—Higher elevations throughout state.

*Specimen examined*, 1: no. 89456, Univ. Michigan Mus. Zoöl., from Barranca Seca, May 6, 1945, adult male with much worn teeth, obtained by W. H. Burt.

**Corynorhinus rafinesquii mexicanus** G. M. Allen

Long-eared Bat; Spanish, Murciélago Narigudo

*Corynorhinus megalotis mexicanus* Allen, G. M., Bull. Mus. Comp. Zoöl., 60:347, April, 1916, type from "near Pacheco," Chihuahua.

*Corynorhinus rafinesquii mexicanus*, Miller, U. S. Nat. Mus., Bull., 128:83, April 29, 1924.

*Corynorhinus macrotis pallescens*, Miller, N. Amer. Fauna, 13:52, October 16, 1897.

*Range*.—Known from only Pátzcuaro.



*Remarks.*—Miller (1897:53) recorded one specimen from Pátzcuaro and Allen (1916:349) merely alludes to Miller's record.

**Tadarida mexicana** (Saussure)

Mexican Free-tailed Bat; Spanish, Murciélago Coludo

*Molossus mexicanus* Saussure, Rev. et Mag. de Zoöl., 12:283, July, 1860, type from Cofre de Perote, 13,000 feet, Veracruz.

*Tadarida mexicana*, Miller, Bull. U. S. Nat. Mus., 128:86, April 29, 1924.

*Range.*—Statewide.

*Specimens examined*, 12: nos. 100100-100111, distributed by localities as follows: 1 mi. N Zamora, 5,450 ft., 1; 3 mi. N Pátzcuaro, 6,800 ft., 3; 3 mi. NW Pátzcuaro, 6,700 ft., 3; Isla Janitzio, Lago de Pátzcuaro, 6,600 ft., 5.

*Remarks.*—This species is widespread in México, ranging from sea level to high elevations as at the type locality. In Michoacán most of our specimens were shot as they flew about at early dusk. The five from Isla Janitzio were shot as they clung to the roof of a cave along with scores of other individuals of the same species.

**Eumops underwoodi underwoodi** Goodwin

Mastiff Bat; Spanish, Murciélago Mastin

*Eumops underwoodi* Goodwin, Amer. Mus. Novitates, 1075:2, June 27, 1940, type from El Pedrero, 6 km. N Chinaela, approximately 3,000 ft. elevation, Dept. La Paz, Honduras.

*Range.*—Known only from Tancítaro Mtn.

*Specimen examined*, 1: no. 89461, Univ. Michigan Mus. Zoöl., from Rancho Escondido, 2 mi. N Apo, Tancítaro Mtn., ♀ ad. with much worn teeth, taken June 11, 1945, by W. H. Burt.

*Remarks.*—Selected measurements of this specimen are: Total length, 158; ear from notch, 32; mastoid breadth, 16.1; width across crowns of M3, 12.6; maxillary tooth-row (from anterior face of canine above cingulum to posterior face of M3), 11.8. The total length is less than in *E. underwoodi* or than in *Eumops sonoriensis* Benson (1947:133); the other measurements given above exceed those of *E. sonoriensis* and equal or approach those of *E. underwoodi*. The ears seem not to be connected across the forehead; the color is near (*l*) Bister above and slightly lighter on the underparts. [446]

The specimen is clearly intermediate in size, as it also is geographically, between *Eumops underwoodi underwoodi* Goodwin and *Eumops underwoodi sonoriensis* Benson and gives basis for arranging these two named kinds as subspecies of a single species as Benson (1947:134) suggested might prove to be necessary. We are not certain whether this specimen should be referred to the subspecies *underwoodi* or *sonoriensis* and probably this uncertainty will remain until the range of individual variation in *underwoodi* is known.

**Procyon lotor hernandezii** Wagler

Raccoon; Spanish, Mapache; Tarascan, Apátze (Apatz)

*Pr[ocyon] hernandezii* Wagler, Isis, 24:514, 1831, type from Valley of México, according to Nelson and Goldman (Proc. Biol. Soc. Washington, 44:17, February 21, 1931).

*Procyon lotor hernandezii*, Allen, Bull. Amer. Mus. Nat. Hist., 3:176, December 10, 1890.

*Range.*—Statewide.

*Specimens examined*, 2: no. 100113 from 10 mi. ESE Zamora, 5,500 ft., 1; no. 52220 from 15 kms. W Apatzingan, 1,040 ft., 1.

*Remarks.*—In allusion to its habit of washing its food, in captivity at least, before eating it, the Spanish speaking people often refer to this species as *ositos labadores*. The specimen from 10 mi. ESE Zamora is a skull without lower jaws or indication of sex. Because the racoons damage corn in the roasting ear stage the animals are disliked by the farmers, a score of whom sometimes band together in an organized hunt to kill the animals. Dogs are especially trained to hunt them. In Michoacán no use is made of the pelts.

**Nasua narica molaris** Merriam

Coati; Spanish, Pizote; Tarascan, Amátze (Amatz)

*Nasua narica molaris* Merriam, Proc. Biol. Soc. Washington, 15:68, March 22, 1902, type from Manzanillo, Colima; Goldman, Proc. Biol. Soc. Washington, 55:79, June 25, 1942.

*Range*.—Probably all but higher parts of state.

*Remarks*.—We have no positive record of this animal which Goldman (1942:79) writes "is widely distributed from Jalisco south through Colima, Michoacán, ... to southwestern Oaxaca." In the parts of Michoacán visited by us the Spanish name tejón instead of pizote was used for this animal although in parts of México where the badger (*Taxidea*) occurs, tejón is, we understand, the name used for the badger. [447]

**Bassariscus astutus consitus** Nelson and Goldman

Ring-tailed Cat; Spanish, Cacomixtle

*Bassariscus astutus consitus* Nelson and Goldman, Jour. Washington Acad. Sci., 22:487, October 19, 1932, type from La Salada, 40 mi. S Uruapan, Michoacán.

*Range*.—Probably greater part, or all, of state.

*Specimen examined*, 1: no. 100112 from 3 mi. NW Pátzcuaro, 6,700 ft.

*Remarks*.—La Salada and three miles northwest of Pátzcuaro are the two localities represented by actual specimens. A live animal, at night, was seen one mile east and four miles south of Tacámbaro at 4,500 feet elevation. The young female from three miles northwest of Pátzcuaro was trapped at a break in a stone fence.

Ring-tailed cats live in the stone walls, crevices and rocky ledges, around corn fields and pasture lands.

**Mustela frenata leucoparia** (Merriam)

Weasel; Spanish, Comadreja; Tarascan, Apásr or Apatzee (Apatz)

*Putorius frenatus leucoparia* Merriam, N. Amer. Fauna, 11:29, June 30, 1896, type from Pátzcuaro, Michoacán.

*Mustela frenata leucoparia*, Miller, Bull. U. S. Nat. Mus., 79:100, December 31, 1912.

*Range*.—Probably statewide.

*Specimens examined*, 6: in Biological Surveys Collection of U. S. Nat. Mus., nos. 120304, 125972, 34914/47179, 36855/49239, and 34915/47180; 2014 B. Villa R., I.B., distributed as follows: Zamora, 1; Los Reyes, 1; Pátzcuaro, 4.

*Remarks*.—This subspecies of weasel is notable for having, among American weasels of any kind, the maximum amount of white on the head. When collecting at Pátzcuaro we saw no live specimens but were shown several from there that had been recently mounted by P. Luna. He regarded the animal as not especially rare.

**Spilogale angustifrons angustifrons** Howell

Spotted Skunk; Spanish, Zorrillo Manchado

*Spilogale angustifrons* Howell, Proc. Biol. Soc. Washington, 15:242, December 16, 1902, type from Tlalpam, D. F.

*Range*.—Probably all of state except low coastal area.

*Specimen examined*, 1: no. 100126, 3 mi. NW Pátzcuaro, 6,700 ft.

*Remarks*.—The short tail of our specimen, an adult male, is noteworthy as perhaps also is the breadth between the orbits. External measurements are 338, 101, 39. It weighed 308 grams. Selected cranial measurements are: Basilar length, 44.1; zygomatic breadth, 32.4; postpalatal length, 26.6; least interorbital breadth, 13.8; height of cranium, 16.0. The specimen was trapped in a hole in a stone fence. Howell (1906:23), under the name *Spilogale gracilis*, recorded another male from Pátzcuaro. [448]

**Mephitis macroura macroura** Lichtenstein

Hooded Skunk; Spanish, Zorrillo or Mofeta Rayada; Tarascan, Cuitziqui (Kweetzeke)

*Mephitis macroura* Lichtenstein, Darstellung Neuer oder wenig bekannter Säugethiere pl. 46, 1832, type from mountains northwest of México City.

*Range*.—Statewide.

*Specimens examined*, 12: nos. 100114-100125, distributed with reference to Pátzcuaro, as follows: 3 mi. NW, 6,700 ft., 1; 2 mi. W, 7,600 and 7,000 ft., 2; 3½ mi. S, 7,900 ft., 1; 4 mi. S, 7,800 ft., 2; 5 mi. S, 7,800 ft., 5; 9 mi. SE, 8,000 ft., 1.

*Remarks.*—Skunk tracks were abundant in all localities around Pátzcuaro. Most of our specimens were caught in steel traps, some along the edges of cornfields, others along the highway and along the pole fences. Tarascan friends at Colonia Revolución were eager to have the bodies of the skunks which we caught. They regarded the skunks as a delicacy and told us that this food was reputed to be good for a person's blood and complexion.

***Conepatus mesoleucus nelsoni* Goldman**

Hog-nosed Skunk; Spanish, Zorillo Real

*Conepatus mesoleucus nelsoni* Goldman, Jour. Mamm., 3:41, February 8, 1922, type from Armería (near Manzanillo), Colima, 200 ft. altitude.

*Range.*—Probably greater part, or all, of state.

*Specimen examined*, 1: no. 52217, Tancítaro, 6,000 ft.

*Remarks.*—The name *C. m. nelsoni* is tentatively used for the single skin, which is without skull or indication of sex.

***Urocyon cinereoargenteus colimensis* Goldman**

Gray Fox; Spanish, Zorra Gris; Tarascan, Cúmihuázt (Cumewatz)

*Urocyon cinereoargenteus colimensis* Goldman, Jour. Washington Acad. Sci., 28:495, November 15, 1938, type from 3 mi. W city of Colima, 1,700 ft. elevation.

*Range.*—Statewide.

*Specimens examined*, 2: no. 100127, from 1 mi. E and 6 mi. S Tacámbaro, 4,000 ft., and no. 51393 from Apatzingan.

*Remarks.*—The female from southeast of Tacámbaro, caught on March 20, 1943, had two embryos, 28 mm. in length. This female was trapped near a small stream. Goldman (1938:497) reported 7 specimens of *U. c. colimensis* from the following localities in the state: La Huacana, 1; La Salada, 2; Los Reyes, 1; Mount Tancítaro, 1; Pátzcuaro, 2.

## PLATE 4



FIG. 1. Panoramic view of Lake Pátzcuaro.

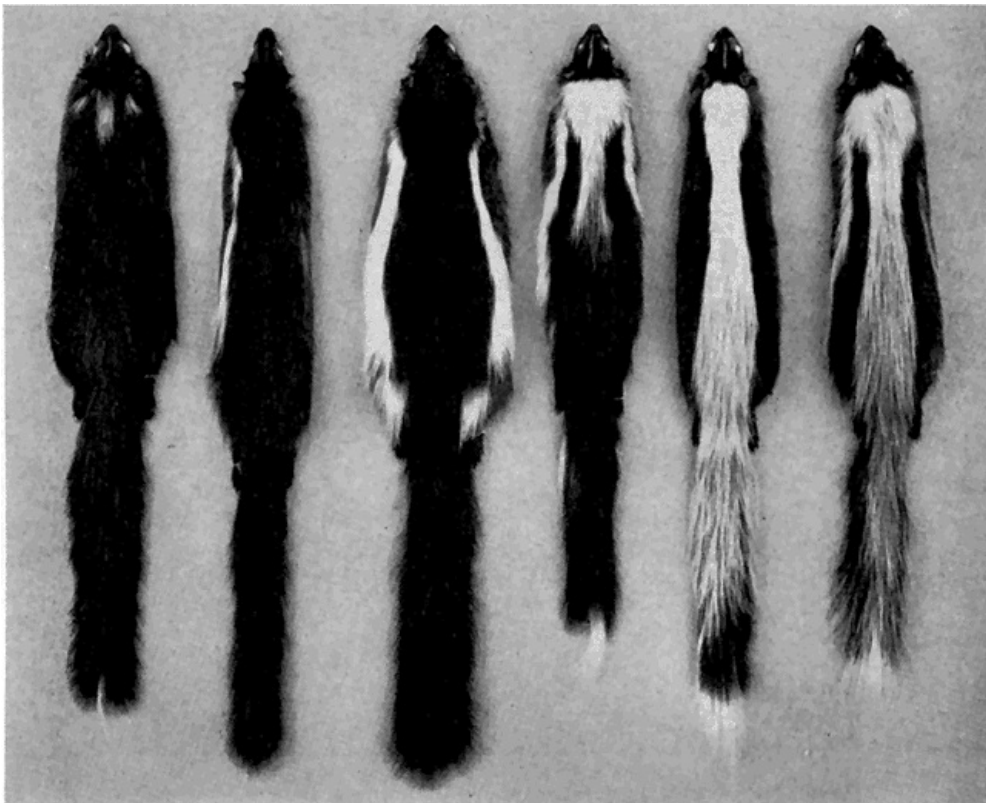


FIG. 2. Stuffed skins, in dorsal view, of 6 males of *Mephitis macroura macroura*, all trapped within a radius of 5 miles of Pátzcuaro, to show the amount of individual variation in color-pattern.  $\times \frac{1}{10}$ .

Photo by W. C. Matthews.

## PLATE 5



FIG. 1. Ungrazed pasture with oaks on slope of El Estribo, 7,700 feet elevation, two miles west of the town of Pátzcuaro, Michoacán. Several species of rodents, *Liomys*, *Sigmodon*, and *Peromyscus* were taken abundantly in the grass in the immediate foreground. Photo March 16, 1943, by Mary F. Hall.

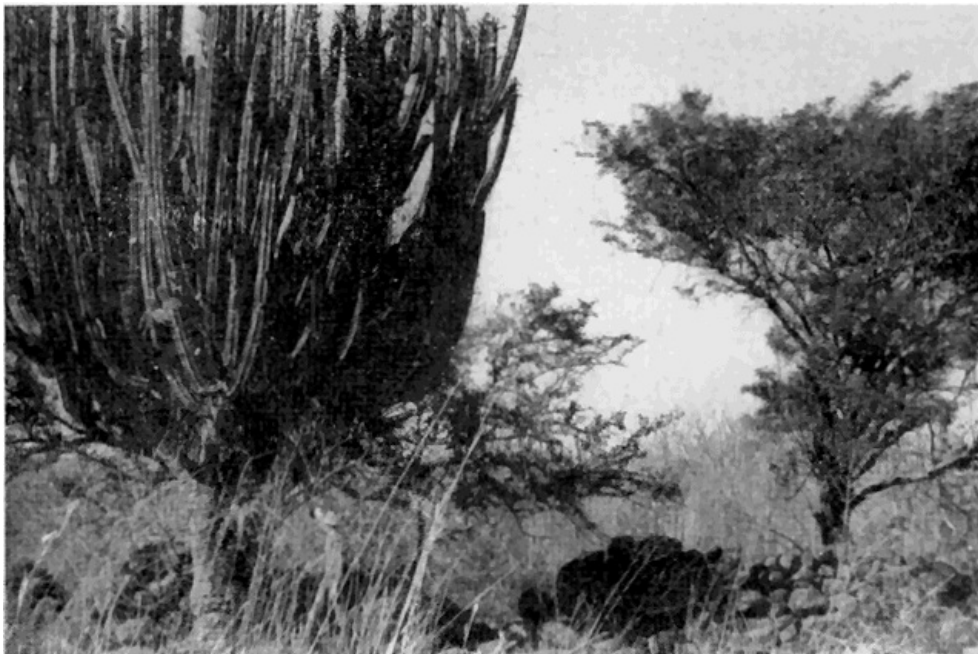


FIG. 2. Xerophitic vegetation, eleven miles west of Zamora, Michoacán. 5,750 feet elevation, where rodents were trapped. Photo March 26, 1943, by Mary F. Hall.

**Canis latrans cagottis** (Hamilton Smith)

Coyote; Spanish, Coyote; Tarascan, Jihuátz (Hewatz)

*Lyciscus cagottis* Hamilton Smith, Jardine's Naturalist's Library, Mamm., 9:164, 1839, type from Río Frío between city of México and Puebla.

*Canis latrans cagottis*, Nelson, Proc. Biol. Soc. Washington, 45:224, November 26, 1932.

*Range*.—Probably most of state.

*Remarks*.—On March 27 or 28, 1943, in Morelia, at a gasoline filling station, one of us (Hall) saw a freshly killed coyote tied on the bumper of the automobile of a Medical Doctor. In response to inquiry about the animal the Doctor said that he killed it some 15 miles northeast of town.

**Lynx rufus escuinapae** Allen

Bobcat; Spanish, Gato del Monte; Tarascan, Misícápú (misticpau)

*Lynx rufus escuinapae* Allen, Bull. Amer. Mus. Nat. Hist., 19:614, November 14, 1903, type from Escuinapa, Sinaloa.

*Range*.—Probably all of state above the Tropical Life-zone.

*Specimen examined*, 1: no. 47818 (U. S. Nat. Mus., Biol. Surv. Coll.), Pátzcuaro.

*Remarks*.—The skull of the male from Pátzcuaro agrees well with those of topotypes of *L. r. escuinapae* even to the elongate tympanic bullae. Because of their elongation the bullae resemble, in some degree, those of the ocelot. Natives told us that the gato del monte was resident around Pátzcuaro. Four miles south of Pátzcuaro in a cornfield at the edge of an area grown up to oak trees and brush, tracks were seen that our Indian companion identified as those of the gato del monte.

**Citellus variegatus variegatus** (Erxleben)

Rock Squirrel; Spanish, Ardilla de Pedregal; Tarascan, Kuaráki (Kuaraki)

[*Sciurus*] *variegatus* Erxleben, Syst. Regni, Anim., 1:421, 1777; type locality fixed as Valley of México near the city of México, by Nelson, Science, N. S., 8:898, December 23, 1898.

[*Citellus*] *variegatus*, Elliot, Field Columb. Mus. Pub., zoöl. ser. 4:148, 1904.

*Range*.—Probably in all semi-arid, rocky habitats of the state.

*Specimens examined*, 11: nos. 100128-100135; 51385-51387, distributed by localities as follows: 1 mi. N Zamora, 5,450 ft., 1; 3 mi. NW Pátzcuaro, 6,700 ft., 5; 4 mi. S Pátzcuaro, 7,800 ft., 1; 1-½ mi. S Tacámbaro, 5,700 ft., 1; Mount Tancítaro, 1; Pedregal, Tancítaro, 1; Tancítaro, 1.

*Remarks.*—Rock squirrels were seen along rock fences, around Pátzcuaro, where they are fairly common. On July 17 and 18, 1947, at San Juan Parangaricutiro, one of us (Villa) saw these squirrels running over the newly formed lava bed which was still emitting vapors and which in places (between boulders) was emitting heat detectable by the collectors. This is only additional evidence of the animal's strong predilection for rocks, boulders and cliffs, which has earned for it, in parts of the western United States, the vernacular name "rock squirrel" and in México "*Ardilla de Pedregal*."

Howell (1938:138) reported specimens from the following localities: Acámbaro, 1; Los Reyes, 1; Mount Tancitaro, 2; Pátzcuaro, 12; Queréndaro, 1; Zamora, 2.

### **Citellus adocetus adocetus** Merriam

Lesser Tropical Ground Squirrel; Spanish, Cuiniqui; Tarascan, Kuaráki (Kuaraki)

*Citellus adocetus* Merriam, Proc. Biol. Soc. Washington, 16:79, May 29, 1903, type from La Salada, 40 miles south of Uruapan, Michoacán.

*Range.*—Southern part of state in arid tropical land.

*Specimens examined*, 4: nos. 52000, 52001, 51388, 51389, distributed by localities as follows: "Near Tancitaro," 2; Acahuato, 1; Apatzingan, 1,040 ft., 1.

*Remarks.*—Ground squirrels of this species are fairly abundant in the arid tropical parts of the state. Their burrows are usually found on stony areas along small ravines or under mesquite (*Prosopis juliflora*) thickets. The name cuiniqui in use by the Spanish speaking population is merely a corruption of the Tarascan name. Cuiniqui, therefore, is a particular kind of *ardilla terrícola* (ground squirrel).

### **Sciurus poliopus nemoralis** Nelson

Michoacán Squirrel; Spanish, *Ardilla arborícola*; Tarascan, Uakuí (Wakqe)

*Sciurus albipes nemoralis* Nelson, Proc. Biol. Soc. Washington, 12:151, June 3, 1898, type from Pátzcuaro, Michoacán.

*Sciurus poliopus nemoralis* Nelson, Proc. Washington Acad. Sci., 1:50, May 9, 1899.

*Range.*—Pine and oak forests of most of state.

*Specimens examined*, 3: nos. 2102 and 2103 Louisiana State University from 20 mi. E Morelia, 7,300 ft., and no. 1369 B. Villa R. from 1½ km. N San Juan 2,250 meters.

*Remarks.*—Tree squirrels of this kind have been reported by Nelson (1899:51) from Pátzcuaro and Nahuatzin. [451]

The young specimen, no. 2102, ♂, has the tail slender, resembling somewhat that of the *S. p. senex* from the southward. The underparts of the female are Warm Buff, more clearly so on the underside of the legs.

### **Sciurus poliopus senex** Nelson

Michoacán Squirrel; Spanish, *Ardilla Arborícola*; Tarascan, Uakuí (Wakqe)

*Sciurus poliopus senex* Nelson, Proc. Biol. Soc. Washington, 17:148, October 6, 1904, type from La Salada, 40 mi. S Uruapan.

*Range.*—Lowlands in southern part of state.

*Specimens examined*, 3: nos. 52004, 52014, 52015, distributed by localities as follows: Tancitaro, 6,000 ft., 1; Apatzingan, 1,040 ft., 2.

*Remarks.*—Specimen number 52014, ♂, represents the melanistic phase of this subspecies.

The upper parts of the hind legs in this specimen are slightly grizzled. The upper side of the tail is vermiculated with whitish and the underside of the tail is black.

### **Thomomys umbrinus pullus** Hall and Villa

Southern Pocket Gopher; Spanish, Tuza Serrana; Tarascan, Cúmu (Cõmõ)

*Thomomys umbrinus pullus* Hall and Villa, Univ. Kansas Publ., Mus. Nat. Hist., 1:251, July 26, 1948, type from 5 miles south Pátzcuaro, 7,800 ft., Michoacán.

*Range.*—Known only from pine-covered rolling land three to five miles south of Pátzcuaro.

*Specimens examined*, 17: nos. 100136-100152, distributed by localities as follows: 3 mi. S Pátzcuaro, 7,800 ft., 1; 4 mi. S Pátzcuaro, 7,800 ft., 10; 5 mi. S Pátzcuaro, 7,800 ft., 6.

*Remarks.*—Most of these pocket gophers were caught in areas supporting a good growth of pine trees in the same places where the much larger pocket gopher, *Cratogeomys gymnurus*, lived. Concerning the individual designated as the type specimen, H. H. Hall (field notes) writes that when he was making an excavation to reveal the gopher's burrow (5 inches below the surface), he dug deeper than was necessary and broke into the burrow of a *Cratogeomys* directly below. Another of us (E. R. Hall) had the same experience where the burrow of a *Thomomys* was approximately six inches below ground and that of a *Cratogeomys* approximately 16 inches below the surface of the ground. At the time this arrangement led us to wonder if *Thomomys* was in some sense a "parasite" on the larger *Cratogeomys* by levying on food stores, if *Cratogeomys* has any, but we found no evidence that such was the case and from our subsequent trapping concluded that the two-story arrangement was accidental and not the rule. The habit of burrowing at different levels probably was one factor which permitted the two kinds of pocket gophers to live in the same area. The average weight of these gophers was 86 grams in males and 74 grams in females, or only an eighth as much as in *Cratogeomys*.

[452]

### ***Cratogeomys gymnurus imparilis* (Goldman)**

Plains Pocket Gopher; Spanish, Tuza Llanera; Tarascan, Cúmu (Cõmõ)

*Platygeomys gymnurus imparilis*, Goldman, Jour. Mamm., 20:89, February 14, 1939, type from Pátzcuaro, 7,000 ft., Michoacán.

*Platygeomys tylorhinus* Merriam, N. Amer. Fauna, 8:167, pl. 13, fig. 1, January 31, 1895.

*Range.*—Pátzcuaro and Tacámbaro, as now known.

*Specimens examined*, 14: nos. 100153-100166, distributed by localities as follows: 2 mi. W Pátzcuaro, 7,700 ft., 2; 3 mi. S Pátzcuaro, 7,800 ft., 1; 4 mi. S Pátzcuaro, 7,800 ft., 1; 5 mi. S. Pátzcuaro, 7,800 ft., 6; 9 mi. SE Pátzcuaro, 8,000 ft., 1; 1¾ mi. S Tacámbaro, 5,700 ft., 1; 1½ mi. S Tacámbaro, 5,700 ft., 2.

*Remarks.*—Burrows were common in cultivated fields and along the roads and trails on the southern and southeastern side of Lake Pátzcuaro. In the vicinity of Tacámbaro we noted burrows only in the area between one and a half and two miles south of town where two specimens were taken. As mentioned in the immediately preceding account, the small *Thomomys umbrinus pullus* and the large *Cratogeomys* were found in the same area. The color of our specimens varies from Cinnamon-Brown through Prouts Brown and in some specimens is Fuscous Black.

Hooper (1946:397) has shown that the genus *Platygeomys* is not generically distinct from the earlier named *Cratogeomys*. From independent study of specimens not examined by Hooper we have satisfied ourselves that he is correct in synonymizing *Platygeomys* under *Cratogeomys*. Average and extreme weights of 4 of each sex from 2 to 5 miles south of Pátzcuaro are: ♂, 683 (562-819); ♀, 558 (438-707) grams.

### ***Cratogeomys angustirostris* (Merriam)**

Plains Pocket Gopher; Spanish, Tuza Llanera; Tarascan, Cúmu (Cõmõ)

*Platygeomys tylorhinus angustirostris* Merriam, Proc. Biol. Soc. Washington, 16:81, May 29, 1903, type from Patambán, 10,000 ft., Michoacán.

*Platygeomys angustirostris*, Goldman, Jour. Mamm., 20:90, February 14, 1939.

*Range.*—Known only from the type locality.

### ***Cratogeomys varius* (Goldman)**

Plains Pocket Gopher; Spanish, Tuza Llanera; Tarascan, Cúmu (Cõmõ)

*Platygeomys varius* Goldman, Jour. Mamm., 20:90, February 14, 1939, type from Uruapan, about 6,000 ft., Michoacán.

*Range.*—Known only from the type locality.

*Remarks.*—Specimens from localities intermediate between Uruapan, the type locality of *C. varius*, and the known localities of occurrence of *Cratogeomys gymnurus imparilis* are much needed to ascertain if *C. varius* is specifically different from *C. g. imparilis*, or merely subspecifically different.

### ***Zygogeomys trichopus tarascensis* Goldman**

Michoacán Pocket Gopher; Spanish, Tuza de Michoacán; Tarascan, Cúmu (Cõmõ)

*Zygogeomys trichopus tarascensis* Goldman, Proc. Biol. Soc. Washington, 51:211, December 23, 1938, type from six miles southeast of Pátzcuaro, 8,000 ft., Michoacán.

[453]

*Zygoeomys trichopus* Merriam, N. Amer. Fauna, 8:196, January 31, 1895.

*Range*.—"Known only from the upper slopes of the mountains in the vicinity of the type locality" (Goldman, 1938:211).

*Remarks*.—As we drove an automobile from Pátzcuaro to Tacámbaro we noted mounds made by pocket gophers along the road in the highest part of the pass and supposed that these mounds were made by *Zygoeomys* although we took no specimens of any kind of pocket gopher in the pass.

### ***Zygoeomys trichopus trichopus* Merriam**

Michoacán Pocket Gopher; Spanish, Tuza de Michoacán; Tarascan, Cúmu (Cömö)

*Zygoeomys trichopus* Merriam, N. Amer. Fauna, 8:196, pl. 6, 14-18, January 31, 1895, type from Nahuatzin, Michoacán.

*Range*.—Altitudinally from 6,000 feet to 11,800 feet on Mountains Tancítaro, Patambán, and at Nahuatzin.

*Specimens examined*, 9: nos. 51970-51978, all from Mount Tancítaro, distributed by altitude as follows: 6,000 ft., 5; 7,800 ft., 3; 10,500 ft., 1.

*Remarks*.—The upper parts of specimens available to us are rich Seal-Brown and glossy. The chin, and in most specimens, the upper side of the hind feet are white; the irregular white patch of the throat is present only in two young females, numbers 51974 and 51978. [454]

### ***Liomys pictus plantinarenis* Merriam**

Western Spiny Pocket Mouse; Spanish, Ratón Espinoso Occidental; Tarascan word for mouse is Jeyáqui (Hayake)

*Liomys plantinarenis* Merriam, Proc. Biol. Soc. Washington, 15:46, March 5, 1902, type from Plantinar, Jalisco.

*Liomys pictus plantinarenis*, Goldman, N. Amer. Fauna, 34:37, September 7, 1911.

*Range*.—Northwestern part of state in semitropical areas.

*Remarks*.—Goldman (1911:38) records specimens from Los Reyes, noting that in some cranial features they suggest intergradation between *L. p. plantinarenis* and *L. p. parviceps*.

### ***Liomys pictus parviceps* Goldman**

Western Spiny Pocket Mouse; Spanish, Ratón Espinoso Occidental

*Liomys parviceps* Goldman, Proc. Biol. Soc. Washington, 17:82, March 21, 1904, type from La Salada, "40 miles south of Uruapan, Michoacán."

*Liomys pictus parviceps* Goldman, N. Amer. Fauna, 34:38-39, September 7, 1911.

*Range*.—Southern part of state in semitropical and tropical areas.

*Specimens examined*, 28: nos. 100185-100199, 52072-52084, distributed by localities as follows: Apatzingan, 1,040 ft., 13; 1 mi. E and 2½ mi. S Tacámbaro, 4,700 ft., 4; 4 mi. S and 1 mi. E Tacámbaro, 4,500 ft., 5; 1 mi. E and 6 mi. S Tacámbaro, 4,000 ft., 6.

*Remarks*.—Most measurements show a sexual dimorphism in this subspecies. Adult males are 15 per cent larger in external measurements except that the foot is approximately the same. Cranial measurements average approximately 5 per cent larger in males except that the breadth of the rostrum and length of the maxillary tooth-row are slightly less. South and east of Tacámbaro our specimens all were taken in dry semitropical country, where bananas and sugar cane were the principal crops grown. This subspecies has been recorded also from La Huacana, Michoacán, as well as from La Salada, the type locality, by Goldman (1911:39).

### ***Liomys irroratus jaliscensis* (Allen)**

Northern Spiny Pocket Mouse; Spanish, Ratón Norteño

*Heteromys jaliscensis* Allen, Bull. Amer. Mus. Nat. Hist., 22:251, July 25, 1906, type from Las Canoas, approximately 20 mi. W Zapotlán, 7,000 ft., Jalisco.

*Liomys irroratus jaliscensis*, Goldman, N. Amer. Fauna, 34:60, September 7, 1911.

*Range*.—Northwestern part of state.

*Specimens examined*, 3: nos. 120273-120275 (U. S. Nat. Mus.) from Zamora.

*Remarks*.—As explained in detail by Hall and Villa (1948:254) these specimens from Zamora



and *L. i. acutus* and with almost equal propriety could be referred to either subspecies.

***Liomys irroratus acutus* Hall and Villa**

Northern Spiny Pocket Mouse; Spanish, Ratón Norteño

*Liomys irroratus acutus* Hall and Villa, Univ. Kansas Publ., Mus. Nat. Hist., 1:253, figs. 4-6, July 26, 1948, type from 2 mi. W Pátzcuaro, 7,700 ft., Michoacán.

*Liomys irroratus alleni*, Goldman, N. Amer. Fauna, 34:57, September 7, 1911, part.

*Range*.—Pátzcuaro and vicinity.

*Specimens examined*, 16: nos. 100170-100184 and 50356 (U. S. N. M.), distributed, with reference to Pátzcuaro, as follows: 3 mi. NW, 6,700 ft., 1; 2 mi. W, 7,700 ft., 5; 2 mi. W, 6,700 ft., 2; Pátzcuaro itself, 1; 5 mi. S, 7,800 ft., 7.

*Remarks*.—None of the eight females contained embryos. Two adult males weigh, in grams, 71.5 and 65.1; the average and extreme weights for five adult females are 50.8 (44.8-61.8).

***Liomys irroratus alleni* (Coues)**

Northern Spiny Pocket Mouse; Spanish, Ratón Norteño

*Heteromys alleni* Coues, Bull. Mus. Comp. Zoöl., 8:187, March, 1881, type from Río Verde, San Luis Potosí, México.

*Liomys irroratus alleni* Goldman, N. Amer. Fauna, 34:56, September 7, 1911.

*Range*.—Northeastern part of state.

*Specimens examined*, 5: nos. 50325-50329 (U. S. Nat. Mus.) from Queréndaro.

*Remarks*.—The specimens from Queréndaro are not typical of the subspecies *L. i. alleni* in that the shape of the interparietal bone and width of the basisphenoid bone are almost exactly intermediate between the conditions obtaining in typical *L. i. alleni* and topotypes of *L. i. acutus*.

***Reithrodontomys megalotis saturatus* Allen and Chapman**

Western Harvest Mouse; Spanish, Ratón Orejudo

*Reithrodontomys saturatus* Allen and Chapman, Bull. Amer. Mus. Nat. Hist., 9:201, June 16, 1897, type from Las Vigas, Veracruz.

*Reithrodontomys megalotis saturatus*, Howell, N. Amer. Fauna, 36:36, June 5, 1914.

*Range*.—Northeastern part of state.

*Specimens examined*, 12: nos. 100202-100212, 100273, from 1 mi. N Zamora, 5,450 ft.

*Remarks*.—Howell (1914:37) referred nine specimens from Nahuatzin to this race and two from the same place to the subspecies *R. m. zacatecae*. Our specimens from Zamora agree with topotypes of *R. m. saturatus* and with specimens of that subspecies from the Valley of México in dark color and large size.

If our specimens of *Reithrodontomys megalotis* are correctly identified, subspecifically, *R. m. zacatecae* ranges southward around the western end of the geographic range of *R. m. saturatus*.

Where *R. megalotis* and *R. fulvescens* occur together, we find the skull of the latter to be distinguishable by: a median spine on the posterior border of the hard palate (truncate in *R. megalotis*); an S-shaped instead of a C-shaped pattern on the worn occlusal face of the last lower molar; and two re-entrant angles, on the lateral side on the worn occlusal surface of the third upper molar, reaching halfway across the tooth whereas in *R. megalotis* the anterior re-entrant angle is wanting or extends less than a third of the way across the crown surface of the tooth.

***Reithrodontomys megalotis zacatecae* Merriam**

Western Harvest Mouse; Spanish, Ratón Orejudo

*Reithrodontomys megalotis zacatecae* Merriam, Proc. Washington Acad. Sci., 3:557, November 29, 1901, type from Valparaiso Mountains, Zacatecas.

*Range*.—From northwestern part of state south through its central part.

*Specimens examined*, 53: nos. 100217-100269; distributed by localities, with reference to Pátzcuaro, as follows: 3 mi. N, 6,700 ft., 3; 3 mi. N, 6,800 ft., 1; 3½ mi. S, 7,900 ft., 3; 4 mi. S, 7,800 ft., 31; 5 mi. S, 7,800 ft.,

*Remarks.*—Howell (1914:40) has referred four specimens from Patambán to this subspecies, and our large series from the vicinity of Pátzcuaro is also referred to *R. m. zacatecae* because of small size and reddish (less blackish) color. We lack typical specimens of *R. m. zacatecae* from the type locality for comparison and our knowledge of *zacatecae* is derived from Howell's (1914:39) description of it.

Average measurements of 5 adult males of *R. m. zacatecae* from the Pátzcuaro area showing much wear on the teeth compared with those of five specimens from the Zamora area, of corresponding sex and age of *R. m. saturatus* reveal the smaller size of *R. m. zacatecae*. Total length, 157, 166; length of tail, 84, 84; length of hind foot, 19.6, 20.1; length of ear from notch in flesh, 14.8, 14.0; basilar length, 16.2, 16.6; length of nasals, 8.3, 8.5; zygomatic breadth, 11.1, 11.5; mastoid breadth, 9.9, 10.2; breadth of rostrum, 3.8, 4.0; interorbital construction, 3.2, 3.1; alveolar length of maxillary tooth-row, 3.5, 3.5; length of rostrum, 7.7, 8.0.

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**Reithrodontomys fulvescens tenuis** Allen

Fulvous Harvest Mouse; Spanish, Ratón Moreno

*Reithrodontomys tenuis* Allen, Bull. Amer. Mus. Nat. Hist., 12:15, March 4, 1899, type from Rosario, Sinaloa.

*Reithrodontomys fulvescens tenuis*, Howell, N. Amer. Fauna, 36:45, June 5, 1914.

*Range.*—Western part of state.

*Specimens examined*, 27: nos. 100213-100216, 100274-100277, 100293-100311, distributed by localities as follows: 11 mi. W Zamora, 5,750 ft., 2; 6½ mi. W Zamora, 5,950 ft., 2; 6 mi. W Zamora, 5,950 ft., 4; 1½ mi. SSE Tacámbaro, 5,700 ft., 2; 1¾ mi. S Tacámbaro, 5,700 ft., 1; 1 mi. E and 2½ mi. S Tacámbaro, 7; 4 mi. S and 1 mi. E Tacámbaro, 4,700 ft., 5; 1 mi. E and 5 mi. S Tacámbaro, 4,000 ft., 1; 1 mi. E and 6 mi. S Tacámbaro, 4,000 ft., 3.

*Remarks.*—Of the 19 specimens from the vicinity of Tacámbaro, only two have the underparts reddish as does *R. f. inexpectatus*. The upper parts are less reddish than in *R. f. inexpectatus* but more reddish and less blackish than in *R. f. toltecus* from the valley of México or than in *R. f. toltecus* from Zamora. The external measurements and cranial measurements are less than in *R. f. toltecus* or *R. f. inexpectatus* and are as small as, or even smaller than, those of *R. f. tenuis* to the northward or than those of *R. f. nelsoni* to the westward. Relying only on printed descriptions of *R. f. tenuis* and *R. f. nelsoni*, we are inclined to refer our specimens to *R. f. tenuis* although the reddish color, we suppose, is evidence of intergradation with *R. f. nelsoni* and *R. f. inexpectatus*.

The four skins from Zamora are gray, as opposed to reddish, both above and below and in this respect they agree with the description of *R. f. tenuis*. They are lighter-colored (grayer) than either *R. f. toltecus* or *R. f. inexpectatus*. The four specimens from Zamora are larger than animals from the vicinity of Tacámbaro and average slightly smaller than topotypes of *R. f. inexpectatus*.

By identifying our specimens as *R. f. inexpectatus* and *R. f. tenuis*, we are left without any specimens that we, ourselves, have examined, which are referable to the subspecies *R. f. toltecus*. The specimens from Los Reyes which Howell (1914:47) referred to *R. f. toltecus* have not been seen by us, and we guess, on the criteria used by us, that the animals would be referable to *R. f. tenuis*. Because Dr. Emmet T. Hooper has a revisionary study of the Mexican *Reithrodontomys* underway, we have not attempted to bring together all of the pertinent material from different collections as would be required for an ideally thorough analysis of the geographic variation in *Reithrodontomys megalotis* and *Reithrodontomys fulvescens*.

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As illustrative of statements made concerning the average size of *Reithrodontomys fulvescens*, the following measurements, all of specimens with much wear on each of the molar teeth, are recorded.

LOCALITY	Number averaged or catalogue No.	Sex	Total length	Length of tail	Length of hind foot	Basilar length	Length of nasals	Zygomatic breadth	Mastoid breadth	Alveolar length of maxillary tooth-row
Vall. Mex.	3	♂♂	200	114	22.0	17.6	9.3	12.0	10.7	3.7
Pátzcuaro	5	♂♂	170	101	20.6	16.7	8.7	11.6	10.6	3.7
Zamora	100215	♂	153	82	19.0	15.9	7.8	10.9	10.3	3.5
Zamora	100275	♂	184	101	21.0	16.5	8.0	11.1	10.4	3.6
Tacámbaro	5	♂♂	159	91	19.4	15.5	8.0	10.5	9.6	3.3
Vall. Mex.	3	♀♀	184	103	21.0	16.6	8.7	11.4	10.6	3.6
Pátzcuaro	5	♀♀	182	104	21.6	16.8	8.6	11.6	10.5	3.6
Zamora	5	♀♀	159	91	19.0	16.0	8.4	11.4	10.0	3.5
Tacámbaro	5	♀♀	149	87	18.6	14.9	7.7	10.4	9.5	3.4

### **Reithrodontomys fulvescens inexpectatus** Elliot

Fulvous Harvest Mouse; Spanish, Ratón Moreno

*Rhithrodontomys inexpectatus* Elliot, Field Columb. Mus. zool. ser., 3:145, February, 1903, type from Pátzcuaro, Michoacán.

*Reithrodontomys fulvescens toltecus*, Howell, N. Amer. Fauna, 36:51, June 5, 1914, part.

*Range*.—Central Michoacán; limits of range unknown.

*Specimens examined*, 15: nos. 100278-100292, distributed by localities as follows: 3 mi. N Pátzcuaro, 6,800 ft., 6; 3 mi. NW Pátzcuaro, 6,700 ft., 3; 2 mi. W Pátzcuaro, 7,600 ft., 2; 2 mi. W Pátzcuaro, 7,700 ft., 4.

*Remarks*.—Howell (1914:51) made *R. inexpectatus* Elliot a synonym of *R. f. toltecus* and perhaps we should follow him in this. The facts are that in our large series from the vicinity of Pátzcuaro, the upper parts are more reddish than in *R. f. toltecus* from the valley of México, and more reddish than in *R. f. tenuis* if we correctly interpret Howell's (*op. cit.*:45) description of *R. f. tenuis*. In the color of the underparts the series is, to us, indistinguishable from topotypical *toltecus* and therefore has more reddish underparts than *R. f. tenuis*, as we know *R. f. tenuis*, from Howell's (*loc. cit.*) description. In size, the series from Pátzcuaro is intermediate between *R. f. tenuis* and *R. f. toltecus* but nearer the latter. [459]

### **Reithrodontomys chrysopsis chrysopsis** Merriam

Volcano Harvest Mouse; Spanish, Ratón Dorado

*Reithrodontomys chrysopsis* Merriam, Proc. Biol. Soc. Washington, 13:152, June 13, 1900, type from Mount Popocatepetl, México.

*Reithrodontomys chrysopsis chrysopsis*, Howell, N. Amer. Fauna, 36:66, June 5, 1914.

*Range*.—Patambán, 1,200 feet elevation as now known.

*Remarks*.—Howell (1914:68) lists nine specimens from Patambán. We have not examined these specimens. He listed at the same time seven of the specimens from Tancítaro, but we have found specimens from Tancítaro to be of another subspecies, *R. c. seclusus*. Accordingly, we are in doubt as to whether the mice from Patambán are subspecies *chrysopsis*, *seclusus*, or an unnamed subspecies and our use here of the name *Reithrodontomys chrysopsis chrysopsis* for them is, of course, provisional.

### **Reithrodontomys chrysopsis seclusus** Hall and Villa

Volcano Harvest Mouse; Spanish, Ratón Dorado

*Reithrodontomys chrysopsis seclusus* Hall and Villa, Proc. Biol. Soc. Washington, 62:163, August 23, 1949, type from Mount Tancítaro, 7,800 ft., Michoacán.

*Reithrodontomys chrysopsis chrysopsis*, Howell, N. Amer. Fauna, 36:66, June 5, 1914, part.

*Range*.—Known only from Mount Tancítaro, from 6,000 feet elevation up to at least 11,000 feet.

*Specimens examined*, 22: nos. 51407-51411, 52110-52126, all from Mount Tancítaro, distributed by altitude as follows: 6,000 ft., 5; 7,800 ft., 10; 10,500 ft., 1; 11,000 ft., 1; no altitude recorded, 5.

*Remarks*.—The 22 specimens in the Chicago Natural History Museum are remarkably uniform in color in spite of differences in age; 17 are so young as to have the first upper molar only slightly worn and 5 are adults. In preparing the original description of *R. c. seclusus*, known only from specimens in the summer pelage, comparison of color was made with only the winter pelage of *R. c. chrysopsis* and it was pointed out that the differences noted in color between the two subspecies might be seasonal rather than subspecific. A summer specimen of *R. c. chrysopsis* (K. U. 17980, taken on June 15, 12 km. ESE Amecameca, 11,500 ft.), is available as the present account is being written. In direct comparison with the original material of *R. c. seclusus*, all in summer pelage, and in comparison with a specimen of *R. c. chrysopsis* in winter pelage (January 18), from 30 km. E Amecameca, the summer pelage of no. 17980 is more blackish than the winter pelage and therein more closely resembles that of *R. c. seclusus*. The same is true of the more sparsely haired tail. The ears, however, are blackish as in winter-taken *R. c. chrysopsis*. This feature and also the large size and different cranial proportions of specimen no. 17980 are in accordance with the differences between *R. c. chrysopsis* and *R. c. seclusus* as recorded in the original description of the latter. [460]

### **Baiomys taylori analogus** (Osgood)

Northern Pygmy Mouse; Spanish, Ratón Pigmeo Norteño

*Peromyscus taylori analogus* Osgood, N. Amer. Fauna, 28:256, April 17, 1909, type from

Zamora, Michoacán.

*Baiomys taylori analogus*, Miller, N. Amer. Land. Mamm., 1911, p. 137, December 31, 1912.

*Range*.—Northwestern part of state.

*Specimens examined*, 35: nos. 100331-100365, distributed by localities as follows: 8 mi. N Zamora, 5,500 ft., 2; 11 mi. W Zamora, 5,750 ft., 1; 6½ mi. W Zamora, 5,950 ft., 2; 4 mi. W Zamora, 5,450 ft., 1; 3 mi. NW Pátzcuaro, 6,700 ft., 21; 3 mi. N Pátzcuaro, 6,800 ft., 5; 2 mi. W Pátzcuaro, 6,700 ft., 3.

*Remarks*.—Osgood (1909:257) has recorded this subspecies also from Acámbaro and Los Reyes. We found that these animals got caught in our traps almost as often in the daytime as at night and concluded that they were less nocturnal, or at any rate more diurnal, than any of the other cricetine mice at the places in Michoacán where we trapped.

### **Baiomys musculus musculus** (Merriam)

Tropical Pygmy Mouse; Spanish, Ratón Pígemeo Tropical

*Sitomys musculus* Merriam, Proc. Biol. Soc. Washington, 7:170, September 29, 1892, type from Colima, Colima.

*Peromyscus musculus*, Allen and Chapman, Bull. Amer. Mus. Nat. Hist., 9:203, June 16, 1897.

*Baiomys musculus*, Mearns, U. S. Nat. Mus. Bull., 56:381, April 13, 1907.

*Range*.—Dry, tropical, southwestern parts of state.

*Specimens examined*, 41: nos. 100366-100406; distributed by localities as follows: 1¼ mi. S Tacámbaro, 5,700 ft., 1; 1 mi. E and 2½ mi. S Tacámbaro, 4,700 ft., 11; 4 mi. S and 1 mi. E Tacámbaro, 10; 1 mi. E and 5 mi. S Tacámbaro, 4,000 ft., 1; 6 mi. S Tacámbaro, 4,000 ft., 4; 1 mi. E and 6 mi. S Tacámbaro, 4,000 ft., 14.

*Remarks*.—Osgood (1909:258) has recorded this subspecies also from La Huacana and La Salada. Three adult males with much worn teeth weigh, in grams, 8.3, 9.3, and 10.8. Weights of three adult, nonpregnant, females are 8.1, 9.4, and 9.7. None of our 13 females was pregnant. [461]

### **Peromyscus maniculatus labecula** Elliot

Deermouse; Spanish, Ratón Cuatralvo

*Peromyscus labecula* Elliot, Field Columb. Mus., zool. ser., 3:143, February (March?), 1903, type from Ocotlan, Jalisco.

*Peromyscus*. *s[onoriensis]*. *labecula*, Osgood, Proc. Biol. Soc. Washington, 17:57, March 21, 1904.

*Range*.—Northwestern part of state.

*Specimens examined*, 59: nos. 51402-51406, 52175, 52176, 100407-100447, 100484; and 1366-1368, 1370-1372, 1374-1377, of Bernardo Villa R., distributed by localities as follows: Tancítaro, 7; 11 mi. W Zamora, 5,750 ft., 3; 2 mi. W Pátzcuaro, 7,700 ft., 4; 3½ mi. S Pátzcuaro, 7,800 ft., 2; 4 mi. S Pátzcuaro, 7,800 ft., 3; 5 mi. S Pátzcuaro, 7,800 ft., 24; 9 mi. SE Pátzcuaro, 8,000 ft., 6; 1½ km. N San Juan, 2,250 M., 3; 1 km. NNE San Juan, 2,250 M., 7.

*Remarks*.—The zygomatic arches are less widely flaring in specimens from Tancítaro than in those from Pátzcuaro.

### **Peromyscus perfulvus** Osgood

Marsh Mouse; Spanish, Ratón Breñero

*Peromyscus perfulvus* Osgood, Jour. Mamm., 26:299, November 14, 1945, type from 10 kilometers west of Apatzingan, 1,040 ft., Michoacán.

*Range*.—Known only from the semitropical Life-zone in western Michoacán.

*Specimens examined*, 5: nos. 100593, 100595, 100597, 100598, and 100600, all from 1 mi. E and 6 mi. S Tacámbaro, 4,000 ft.

*Remarks*.—J. R. Alcorn took these specimens between fields of sugar cane in tall (5 ft. high) grass growing in a belt 10 feet or so wide along side a stream, which a person could step across. The one adult, no. 100597, was recognized at the time of capture as different from any other species known to us, by reason of the long, unicolored, sparsely-haired tail and nearly clear Cinnamon Rufous color above, white underparts, white feet, and dark brown ears. The four other specimens in darker immature pelage are plumbeous and cinnamon whereas immature individuals of comparable age of *Peromyscus banderanus* caught in the same place are plumbeous above and lack the cinnamon color. The immature animals of the two species differ in

color more than do the adults. Osgood (1945:300) has recorded eleven specimens from the type locality. Our one adult weighs 52.4 grams.

### ***Peromyscus boylii evides* Osgood**

Brush Mouse; Spanish, Ratón de Chaparral

*Peromyscus spicilegus evides* Osgood, Proc. Biol. Soc. Washington, 17:64, March 21, 1904, type from Juquila, Oaxaca.

*Peromyscus boylei evides* Osgood, N. Amer. Fauna, 28:152, April 17, 1909.

*Range*.—Northern part of state.

*Specimens examined*, 22: nos. 100450-100471, distributed by localities as follows: 1½ mi. SSE Tacámbaro, 5,700 ft., 16; 1¼ mi S Tacámbaro, 5,700 ft., 1; 1 mi. E and 2½ mi. S Tacámbaro, 4,700 ft., 5. [462]

*Remarks*.—Osgood (1909:153) recorded 31 specimens from Los Reyes. Weights recorded by the collectors of our specimens for 13 males from the vicinity of Tacámbaro, are 24.8 (17.2-37.1) and for 9 females 25.0 (20.0-31.5) grams. These weights include those of subadults as well as those of adults.

### ***Peromyscus boylii levipes* Merriam**

Brush Mouse; Spanish, Ratón de Chaparral

*Peromyscus levipes* Merriam, Proc. Biol. Soc. Washington, 12:123, April 30, 1898, type from Mount Malinche, Tlaxcala.

*Peromyscus boylei levipes*, Osgood, N. Amer. Fauna, 28:153, April 17, 1909.

*Range*.—Probably central-eastern part of state.

*Remarks*.—Osgood (1909:155) records one specimen of this subspecies from Pátzcuaro.

### ***Peromyscus hylocetes* Merriam**

Woods Mouse; Spanish, Ratón Ocotero

*Peromyscus hylocetes* Merriam, Proc. Biol. Soc. Washington, 12:124, April 30, 1898, type from Pátzcuaro, 7,000 feet, Michoacán; Osgood, N. Amer. Fauna, 28:159, pl. 3, fig. 8, April 17, 1909.

*Range*.—Mountainous parts of state.

*Specimens examined*, 24: nos. 100472, 100542, both from 9 mi. SE Pátzcuaro at 8,000 feet altitude; 1358-1365 of Bernardo Villa R., from Cerro Curitzarán, 3.5 km. NNW San Juan, 2,200 M.; 52178, 52185, 52187-52192, 52197, 52198, 52203, 52213-52215, from Tancítaro at elevations of 6,000 to 10,000 ft.

*Remarks*.—All of the specimens were taken in pine forest. The old male from nine miles southeast of Pátzcuaro weighs 43.7 grams and the younger male from there 35 grams. The adults from Tancítaro have longer diastemae and some have the braincase more prolonged posteriorly, than in specimens from the vicinities of San Juan and Pátzcuaro but individual variation is considerable and we are unable to differentiate some of the adults from Tancítaro from those from elsewhere.

### ***Peromyscus truei gratus* Merriam**

Piñon Mouse; Spanish, Ratón Piñonero

*Peromyscus gratus* Merriam, Proc. Biol. Soc. Washington, 12:123, April 30, 1898, type from "Tlalpam," D. F.

*Peromyscus sagax* Elliot, Field Columb. Mus., Chicago, zool. ser., 3:142, February, 1903, type from La Palma, Michoacán.

*Peromyscus pavidus* Elliot, Field Columb. Mus., Chicago, zool. ser., 3:142, February, 1903, type from Pátzcuaro, Michoacán.

*Peromyscus zelotes* Osgood, Proc. Biol. Soc. Washington, 17:67, March 21, 1904, type from Queréndaro, Michoacán.

*Peromyscus truei gratus*, Osgood, N. Amer. Fauna, 28:173, April 17, 1909. [463]

*Range*.—Northern part of state.

*Specimens examined*, 42: nos. 100448, 100473-100483, 100485-100509, 8700, 8702, 8703, 8896, 8897, distributed by localities as follows: 8 mi. N Zamora, 5,500 ft., 2; 11 mi. W Zamora, 5,750 ft., 11; 6½ mi. W

Zamora, 5,950 ft., 4; 6 mi. W Zamora, 5,950 ft., 4; Rio Duaro, 9 mi. E Zamora, 5,500 ft., 1; 3 mi. N Pátzcuaro, 6,800 ft., 1; 3 mi. NW Pátzcuaro, 6,700 ft., 10; 1½ mi. NW Pátzcuaro, 6,700 ft., 1; 2 mi. W Pátzcuaro, 6,700 ft., 3; Pátzcuaro (Chicago Nat. Hist. Mus.), 5.

*Remarks.*—The ear measured from the notch is shortest, 19 (18-21), at Zamora, intermediate, 21 (19-23), at Pátzcuaro, and longest, 21.8 (20-23), at the type locality of *gratus* in the Valley of México.

### ***Peromyscus melanophrys zamorae* Osgood**

Blackish Mouse; Spanish, Ratón Oscuro

*Peromyscus melanophrys zamorae* Osgood, Proc. Biol. Soc. Washington, 17:65, March 21, 1904, type from Zamora, Michoacán; N. Amer. Fauna, 28:187, April 17, 1909.

*Range.*—Northern part of state.

*Remarks.*—Insofar as we know, this mouse has been taken in Michoacán only at the type locality.

### ***Peromyscus banderanus banderanus* Allen**

Tarascan Mouse; Spanish, Ratón Tarasco

*Peromyscus banderanus* Allen, Bull. Amer. Mus. Nat. Hist., 9:51, March 15, 1897, type from Valle de Banderas, Nayarit; Osgood, Jour. Mamm., 26:300, November 14, 1945.

*Peromyscus banderanus vicinior* Osgood, N. Amer. Fauna, 28:209, 210, April 17, 1909, part.

*Range.*—Northern and eastern parts of state.

*Remarks.*—Specimens from Los Reyes referred to the subspecies *P. b. vicinior* by Osgood (1909:209-210) were later characterized by Osgood (1945:300) as agreeing with specimens from Zitácuaro, and Osgood (*loc. cit.*) thought that those from both Los Reyes and Zitácuaro were not *P. b. vicinior* but possibly *P. b. banderanus*. He had this material set aside for further study when he showed it to one of us (Hall) in 1945. It was his intention to revise the entire species (*P. banderanus*) but so far we know never did this before his death.

### ***Peromyscus banderanus vicinior* Osgood**

Tarascan Mouse; Spanish, Ratón Tarasco

*Peromyscus banderanus vicinior* Osgood, Proc. Biol. Soc. Washington, 17:68, March 21, 1904, type from La Salada, Michoacán.

*Range.*—Hot valleys of western part of state.

*Specimens examined*, 53: nos. 100543-100592, 100594, 100596, 100599, distributed by localities, from Tacámbaro, as follows: 2½ mi. S and 1 mi. E, 4,700 ft., 21; 4 mi. S and 1 mi. E, 4,500 ft., 10; 6 mi. S, 4,000 ft., 6; 6 mi. S and 1 mi. E, 4,000 ft., 16. [464]

*Remarks.*—There is much variation in size in our animals. The three largest males weigh, in grams, 67.5, 50.3, 48.9 and corresponding figures for the two heaviest, nonpregnant, females are 53.5 and 48.3 grams. Of the 14 adult females, only one was recorded as having embryos; it had two embryos each 24 millimeters in crown to rump length. Where we trapped among big boulders and among the roots of trees of the genus *Ficus*, *Peromyscus banderanus vicinior* was the only species of the genus taken. *Peromyscus boylii evides* occurred in the less tropical vegetation, altitudinally and zonally above *P. b. vicinior*.

### ***Peromyscus melanotis* Allen and Chapman**

Black-eared Deermouse; Spanish, Ratón Montañero

*Peromyscus melanotis* Allen and Chapman, Bull. Amer. Mus. Nat. Hist., 9:203, June 16, 1897, type from Las Vigas, 8,000 ft., Veracruz.

*Range.*—Higher mountains throughout state.

*Specimens examined*, 33: nos. 51397-51401, 52142-52166, 52172-52174, from Tancítaro.

*Remarks.*—The elevation recorded on the label of one specimen is 9,000 feet and on the labels of other specimens is no lower than 10,500 feet and on some is as high as 12,000 feet. The elevation of capture is not recorded for two specimens. Osgood (1909:112) previously recorded the species from 12,000 feet elevation on Mount Tancítaro.

### ***Oryzomys couesi regillus* Goldman**

Tropical Rice Rat; Spanish, Rata Arroceras Tropical; Tarascan word for rat is Jeyáquiuhiri (Hayakewire), or Sarisi

*Oryzomys couesi regillus* Goldman, Proc. Biol. Soc. Washington, 28:129, June 29, 1915, type from Los Reyes, Michoacán; Goldman, N. Amer. Fauna, 43:37, September 23, 1918.

*Range*.—Plateau region of Northeast Michoacán.

*Specimens examined*, 22: nos. 100601-100622, distributed by localities as follows: 1 mi. N Zamora, 5,450 ft., 2; 4 mi. W Zamora, 5,450 ft., 1; 4 mi. S Pátzcuaro, 7,800 ft., 1; 1 mi. E and 6 mi. S Tacámbaro, 4,000 ft., 18.

*Remarks*.—The tooth-row is longest in the specimens from Zamora, shortest in those from Tacámbaro and intermediate in length in the one specimen from Pátzcuaro. The shorter tooth-row at the lower elevation (Tacámbaro), we interpret as intergradation with *Oryzomys couesi mexicanus*. In color the specimens from Tacámbaro are, to us, indistinguishable from those from Zamora and Pátzcuaro but the color is notably darker than that of specimens from the vicinity of Apatzingan which are here referred to the subspecies *Oryzomys couesi mexicanus*. The largest male, fully adult from Zamora weighs 82.9 grams and the largest one from the vicinity of Tacámbaro weighs 73.6 grams. [465]

### ***Oryzomys couesi mexicanus* Allen**

Tropical Rice Rat; Spanish, Rata Arroceras Tropical

*Oryzomys mexicanus* Allen, Bull. Amer. Mus. Nat. Hist., 9:52, March 15, 1897, type from Hacienda San Marcos, 3,500 ft., Tonila, Jalisco.

*Oryzomys couesi mexicanus*, Goldman, N. Amer. Fauna, 43:33, September 23, 1918.

*Range*.—Semitropical and tropical western part of the state.

*Specimens examined*, 14: nos. 52018-52023, 52063-52070, from 1,040 ft., 10 kms., W Apatzingan.

*Remarks*.—These specimens are notably paler and have shorter tooth-rows than those referred to *O. c. regillus*.

### ***Oryzomys fulvescens lenis* Goldman**

Fulvous Rice Rat; Spanish, Rata Arroceras Pigmea

*Oryzomys fulvescens lenis* Goldman, Proc. Biol. Soc. Washington, 28:130, June 29, 1915, type from Los Reyes, Michoacán; N. Amer. Fauna, 43:91, September 23, 1918.

*Range*.—Semitropical parts of state.

*Remarks*.—The type and one topotype so far as we know are the only specimens of this species to have been obtained from the state. The size is hardly larger than that of a large *Reithrodontomys*.

### ***Sigmodon melanotis* Bailey**

Fulvous Cotton Rat; Spanish, Rata Algodonera Leonada

*Sigmodon melanotis* Bailey, Proc. Biol. Soc. Washington, 15:114, June 2, 1902, type from Pátzcuaro, 7,000 ft., Michoacán.

*Range*.—Central Michoacán, as now known.

*Specimens examined*, 8: nos. 100623-100626, 52089-52092, distributed by localities as follows: 2 mi. W Pátzcuaro (7,400 and 7,700 ft.), 2; 3½ mi. S Pátzcuaro, 7,800 ft., 2; Tancítaro, 6,000 ft., 4.

*Remarks*.—This species was taken along with the species *S. hispidus* two miles west of Pátzcuaro, and can be easily distinguished from the latter by the dark reddish as opposed to grayish color of the upperparts and by the shorter hind foot (less instead of more than 32.5 mm.).

### ***Sigmodon hispidus mascotensis* Allen**

Hispid Cotton Rat; Spanish, Rata Algodonera Setosa

*Sigmodon mascotensis* Allen, Bull. Amer. Mus. Nat. Hist., 9:54, March 15, 1897, type from San Sebastián, near Mascota, Jalisco.

*Sigmodon hispidus mascotensis*, Bailey, Proc. Biol. Soc. Washington, 15:108, June 2, 1902.

*Range*.—Larger part of state.

*Specimens examined*, 4: nos. 100629, 3 mi. N Pátzcuaro, 6,700 ft.; 100630, 2 mi. W Pátzcuaro, 7,700 ft.; 100632, 1¾ mi. S Tacámbaro, 5,700 ft.; 100631, 6 mi. S and 1 mi. E Tacámbaro, 4,000 ft.

*Remarks*.—Bailey (1902:109) records a "very large" specimen from Queréndaro. Our specimens have shorter molariform tooth-rows than do those from nearer the type locality, for example, those from Tuxpan, Las Canoas, and Artenkiki, all three places in Jalisco.

### ***Sigmodon hispidus atratus* Hall**

Hispid Cotton Rat; Spanish, Rata Algodonera Setosa

*Sigmodon hispidus atratus* Hall, Proc. Biol. Soc. Washington, 62:149, August 23, 1949, type from 6½ mi. W Zamora, 5,950 ft., Michoacán.

*Range*.—Known only from Zamora and the type locality.

*Specimens examined*, 2: nos. 100628 (the holotype), 6½ mi. W Zamora, 5,950 ft.; 120268 (U. S. Nat. Mus., Biol. Surveys Coll.), Zamora.

*Remarks*.—When the present account first was prepared our specimen from six and a half miles west of Zamora was tentatively referred to *S. h. mascotensis*. Subsequently a second specimen, from Zamora, was found. It agreed with the specimen from six and a half miles west of Zamora. Inasmuch as the second specimen agrees with the first and since each of the two differs from any previously described kind, a name and description were published in time to be inserted in the present account. From *S. h. mascotensis*, *S. h. atratus* differs in shorter hind foot, darker upper parts, more densely haired tail, shorter skull, more convex dorsal longitudinal outline of skull, posteriorly constricted anterior palatine foramina instead of parallel-sided foramina, and shorter and less decurved anterior process of maxillary arm of zygoma.

### ***Neotomodon alstoni alstoni* Merriam**

Volcano Mouse; Spanish, Ratón de Los Volcanes

*Neotomodon alstoni* Merriam, Proc. Biol. Soc. Washington, 12:128, April 30, 1898, type from Nahuatzin, 8,500 ft., Michoacán.

*Range*.—Higher mountains of state.

*Specimens examined*, 22: nos. 52179-52184, 52186, 52193-52196, 52199, 52200, 52204-52212, all from Mount Tancítaro, distributed by localities as follows: 7,800 ft., 5; 7,850 ft., 3; 10,000 ft., 4; 10,200 ft., 5; 10,500 ft., 1; 10,800 ft., 1; 11,000 ft., 2; 11,400 ft., 1.

*Remarks*.—The taking of specimens on Mount Tancítaro extends the known geographic range of *Neotomodon* approximately 75 kilometers to the southwestward; the westernmost locality previously known was Nahuatzin, the type locality.

### ***Nelsonia goldmani* Merriam**

Dwarf Wood Rat; Spanish, Rata Montera Minúscula

*Nelsonia goldmani* Merriam, Proc. Biol. Soc. Washington, 16:80, May 29, 1903, type from Mount Tancítaro, Michoacán.

*Range*.—Known only from the type locality.

*Remarks*.—In the original description three specimens are recorded from the type locality.

### ***Neotoma latifrons* Merriam**

White-throated Wood Rat; Spanish, Rata Montera Frentuda

*Neotoma latifrons* Merriam, Proc. Biol. Soc. Washington, 9:121, July 2, 1894, type from Queréndaro, Michoacán.

*Range*.—Known only from the type locality.

### ***Neotoma ferruginea tenuicauda* Merriam**

Ferruginous Wood Rat; Spanish, Rata Ferruginosa

*Neotoma tenuicauda* Merriam, Proc. Biol. Soc. Washington, 7:169, September 29, 1892, type from north slope of Sierra Nevada de Colima, 12,000 ft., Colima.

*Neotoma ferruginea tenuicauda*, Howell, N. Amer. Fauna, 31:73, October 19, 1910.

*Range*.—Probably all but southern tropical part of state.

*Specimens examined*, 4: nos. 100633 from 9 mi. SE Pátzcuaro, 8,000 ft., and 52177, 51390, 51391, from



Tancítaro, the elevation being given as 7,850 ft. on no. 52177.

*Remarks.*—Our one specimen from 9 miles southeast of Pátzcuaro was caught in a small steel trap set at a meat bait.

**Microtus mexicanus salvus** Hall

Mexican Meadow Mouse; Spanish, Meteorito

*Microtus mexicanus salvus* Hall, Univ. Kansas Publ., Mus. Nat. Hist., 1:426, December 24, 1948, type from Mount Tancítaro, 11,400 ft., Michoacán.

*Range.*—Known only from Mount Tancítaro at elevations of 7,800 to 11,400 feet.

*Specimens examined*, 14: nos. 51412, 51413, 52093, 52095-52099, 52101, 52103-52107, all from Mount Tancítaro, distributed by elevations as follows: 11,400 ft., 8; 11,000 ft., 2; 7,800 ft., 1; no elevation recorded, 3.

**Microtus mexicanus fundatus** Hall

Mexican Meadow Mouse; Spanish, Meteorito

*Microtus mexicanus fundatus* Hall, Univ. Kansas Publ., Mus. Nat. Hist., 1:425, December 24, 1948, type from 3½ mi. S. Pátzcuaro, 7,900 ft., Michoacán.

*Range.*—Central part of state.

*Specimens examined*, 59: nos. 100636-100694, distributed, with reference to the town of Pátzcuaro, as follows: 3½ mi. S, 7,900 ft., 9; 4 mi. S, 7,800 ft., 16; 5 mi. S, 7,800 ft., 26; 9 mi. SE, 8,000 ft., 8.

*Remarks.*—Of the 23 females, only one was pregnant. It had two embryos. Average and extreme weights of ten adults of each sex, are: males, 37.8 (31.5-48.2); females, 38.0 (31.0-48.6) grams. Our specimens were trapped in well-defined runways beneath a rail fence where there was a growth of grass sufficient to make a cover for the runways. Bailey (1900:54-55) has recorded under the name *Microtus mexicanus phaeus* specimens from Nahuatzin which may be referable to the subspecies *M. m. fundatus*. [468]

**Mus musculus** subsp.?

House Mouse; Spanish, Ratón Casero

*Mus musculus* Linnaeus, Systema Naturae, ed. 10, 1:62, 1758, type from Upsala, Sweden.

*Range.*—Probably throughout state.

*Specimens examined*, 4: nos. 100696-100699, of which one is from Tacámbaro, 5,700 ft., and 3 are from 4 mi. S and 1 mi. E Tacámbaro, 4,500 ft.

*Remarks.*—In each of our specimens the belly is dark, approximately as dark as the back. The specimens caught by us were living in the wild; that is to say, they were not caught in and around buildings. Elliot (1903:141) records the species from Pátzcuaro.

**Rattus rattus alexandrinus** (Geoffroy)

Black Rat; Spanish, Rata Negra

*Mus alexandrinus* Geoffroy, Catal. Mammif. du Mus. Nat. d'Hist., Paris, p. 192, 1803, type from Alexandria, Egypt.

*R[attus]. rattus alexandrinus*, Hinton, Jour. Bombay Nat. Hist. Soc., 26:63, December 20, 1918.

*Range.*—Probably throughout tropical and subtropical parts of state; recorded also from Pátzcuaro.

*Specimens examined*, 3: nos. 52027, 52033 from Tancítaro and 8909 from Pátzcuaro.

*Remarks.*—These specimens answer well to the description of *R. r. alexandrinus* except that no. 8909, taken in May, 1901, by F. E. Lutz, has yellowish underparts suggestive of *Rattus rattus frugivorous*. In the town of Tacámbaro we saw a freshly killed rat of this species which was all black.

**Sylvilagus floridanus subcinctus** (Miller)

Florida Cottontail; Spanish, Conejo de Florida

*Lepus floridanus subcinctus* Miller, Proc. Acad. Nat. Sci. Philadelphia, p. 386, October 5, 1899, type from Hacienda El Molino, Negrete, Michoacán.

*Sylvilagus floridanus subcinctus*, Lyon, Smiths. Misc. Coll., 45:336, June 15, 1904; Nelson, N. Amer. Fauna, 29:180, August 31, 1909.

*Range*.—Northeastern part of state.

*Remarks*.—Nelson (1909:181) records specimens from Acámbaro, Queréndaro and the type locality.

### ***Sylvilagus floridanus restrictus* Nelson**

Florida Cottontail; Spanish, Conejo de Florida

*Sylvilagus floridanus restrictus* Nelson, Proc. Biol. Soc. Washington, 20:82, July 22, 1907, type from Zapotlán, Jalisco; Nelson, N. Amer. Fauna, 29:181, August 31, 1909.

*Range*.—Forested areas of non-tropical part of state except northeastern part.

*Remarks*.—Nelson (1909:183) records specimens from Los Reyes, Pátzcuaro and Mount Tancítaro. This species and the Mexican cottontail are favorite small game for the rural peoples.

### ***Sylvilagus cunicularis cunicularis* (Waterhouse)**

Mexican Cottontail; Spanish, Conejo Méxicano

*Lepus cunicularis* Waterhouse, Nat. Hist. Mammalia, 2:132, 1848, type from Zacualpan (probably in state of México).

*Sylvilagus cunicularis*, Nelson, N. Amer. Fauna, 29:239, August 31, 1909.

*Range*.—Probably all of state except tropical coastal areas where another subspecies of the same species probably will be found to occur.

*Specimens examined*, 2: nos. 51965, 51966, from Tancítaro, one specimen labeled as taken at 6,000 feet altitude.

*Remarks*.—Nelson (1909:241) has recorded this rabbit also from Pátzcuaro.

### ***Lepus callotis* Wagler**

White-sided Jack Rabbit; Spanish, Liebre

*Lepus callotis* Wagler, Naturliches System der Amphibien, p. 23, 1830, type from southern end of Mexican Tableland; Nelson, N. Amer. Fauna, 29:122, August 31, 1909.

*Range*.—Approximately northeastern half of state.

*Remarks*.—Nelson (1909:124) records specimens from Los Reyes and Queréndaro; we did not see any animals of this species in our own field work.

### ***Tayassu angulatus humeralis* Merriam**

Collared Peccary; Spanish, Jabalí del Collar; Tarascan, cúchjerámba (cucheramba) or Juárezanapu (whatalanapu)

*Tayassu angulatus humeralis* Merriam, Proc. Biol. Soc. Washington, 14:122, July 19, 1901, type from Armería, Colima.

*Range*.—Approximately southwestern half of state.

*Remarks*.—Under date of October 11, 1948, Henry W. Setzer (*in litt.*) states that four specimens of this species, in the Biological Surveys Collection in the United States National Museum, were taken at La Salada, by Nelson and Goldman, and bear catalogue numbers 126156, 126157, 126158 and 126159. No. 126158 is a female taken on March 19, 1903. The other three specimens are males taken on March 17, 1903. We did not see any animals of this species in our own field work, and the only materials from Michoacán actually examined by one of us (Hall) are the skulls of nos. 126156 and 126158, referred to above, from the Biological Surveys Collection.

### ***Odocoileus virginianus sinaloae* Allen**

White-tailed Deer; Spanish, Venado Cola Blanca; Tarascan, Asúni (Ashumi)

*Odocoileus sinaloae* Allen, Bull. Amer. Mus. Nat. Hist., 19:613, November 14, 1903, type from. Esquinapa, Sinaloa.

*Range*.—Probably statewide.

*Remarks*.—Through the courtesy of Dr. A. Remington Kellogg we learn that in a manuscript on

the deer of the *Odocoileus virginianus* group, he and the late Major E. A. Goldman had recorded specimens, in the Biological Surveys Collection of the United States National Museum, as follows: Nahuatzin, 8,500 ft., nos. 35924/48232, and 35925/48233; Los Reyes, 5,000 ft., no. 165673; Pátzcuaro, 7,000 ft., no. 35535/47819; and Uruapan, 4,500 ft., no. 13060. We have not anywhere seen the name combination *Odocoileus virginianus sinaloae* but from the original description we judge that *Odocoileus sinaloae* is to be arranged as a geographic race of the wide-ranging species *Odocoileus virginianus* as that species is now understood.

### ***Dasypus novemcinctus mexicanus* Peters**

Nine-banded Armadillo; Spanish, Armadillo; Tarascan, Isíngu (Esingö)

*Dasypus novemcinctus mexicanus* Peters, Monatsber. k. preuss. Akad. Wissensch. Berlin, p. 180, 1864 (name restricted by Bailey, N. Amer. Fauna, 25:52, October 24, 1905, to the subspecies occurring at Colima).

*Range*.—Probably statewide.

*Specimens examined*, 2; nos. 51392 from Tancítaro and 51964 from Apatzingan, 1,040 ft.

*Remarks*.—The female from Tancítaro is immature as indicated by the wide-open sutures between the bones of the skull which in over-all length is only 72.8 mm. The male from Tancítaro is older and the over-all length of the skull is 98.33 mm. Geographic considerations alone are responsible for our use of the subspecific name *mexicanus*; we do not know the morphological features which distinguish *mexicanus* from other named subspecies.

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## Transcriber's Notes

On [page 458](#), the *Reithrodontomys fulvescens inexpectatus* Elliot also lists *Rhithrodontomys inexpectatus* Elliot. Apparently the two genera names (Reithrodontomys and Rhithrodontomys) are both 'correct' spellings for Harvest Mice.

## Typographical Corrections

Page	Correction
<a href="#">444</a>	Fanua → Fauna
<a href="#">447</a>	costal → coastal
<a href="#">451</a>	Cúnu → Cúmu

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