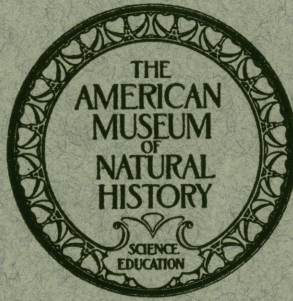


# MAMMALS OF HONDURAS

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BY GEORGE G. GOODWIN

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## Article II.—MAMMALS OF HONDURAS

By GEORGE G. GOODWIN

### CONTENTS

	PAGE
INTRODUCTION.....	108
GAZETTEER OF LOCALITIES.....	108
ORDER MARSUPIALIA.....	111
Family Didelphiidae.....	111
ORDER INSECTIVORA.....	116
Family Soricidae.....	116
ORDER CHIROPTERA.....	117
Family Emballonuridae.....	117
Subfamily Emballonurinae.....	117
Subfamily Diclicurinae.....	120
Family Noctilionidae.....	121
Family Phyllostomidae.....	122
Subfamily Chilonycterinae.....	122
Subfamily Phyllostominae.....	123
Subfamily Glossophaginae.....	128
Subfamily Carollinae.....	131
Subfamily Sturnirinae.....	132
Subfamily Stenoderminae.....	133
Family Desmodontidae.....	138
Family Natalidae.....	139
Family Thyropteridae.....	139
Family Vespertilionidae.....	140
Family Molossidae.....	143
ORDER PRIMATES.....	146
Suborder Anthropoidea.....	146
Family Cebidae.....	146
Family Atelidae.....	146
Family Alouattidae.....	147
ORDER EDENTATA.....	148
Suborder Xenarthra.....	148
Family Dasypodidae.....	148
Subfamily Cabassouinae.....	148
Subfamily Dasypodinae.....	148
Family Myrmecophagidae.....	149
ORDER LAGOMORPHA.....	150
Family Leporidae.....	150
ORDER RODENTIA.....	151
Family Sciuridae.....	151
Subfamily Sciurinae.....	151
Subfamily Pteromyinae.....	154
Family Heteromyidae.....	155
Family Geomyidae.....	156
Family Cricetidae.....	158
Family Muridae.....	171
Family Erethizontidae.....	172
Family Dasyproctidae.....	173
Family Echimyidae.....	175
ORDER CARNIVORA.....	176
Family Procyonidae.....	176
Family Bassariscidae.....	178
Family Mustelidae.....	178
Family Canidae.....	182
Family Felidae.....	184
ORDER PINNIPEDIA.....	186
Family Phocidae.....	186
ORDER SIRENIA.....	187
Family Trichechidae.....	187

ORDER PERISSODACTYLA.....	187
Family Tapiridae.....	187
ORDER ARTIODACTYLA.....	188
Family Tagassuidae.....	188
Family Cervidae.....	189
INDEX.....	190

## INTRODUCTION

The mammalian fauna of Honduras more or less escaped the attention of early collectors, and there have been only a few scattered accounts of the mammals of this country published in recent years.

The following report has been planned to give as complete data as possible in order to make it a handy reference book for students other than taxonomists and those already familiar with the special field to be covered. It is based mainly on material gathered by the veteran collector, Cecil F. Underwood, over a period of years dating from 1932 to 1938. This collection contains 2213 specimens, representing 123 species and subspecies of which 14 were new to science and records of several new genera for the North American continent. In addition specimens in other museums have been examined, and a summary of probable ranges derived from the literature but not represented by specimens in museum collections has been included.

The principal localities visited by Mr. Underwood were in the mountain ranges of western and central Honduras. Here collections were made near the Guatemala border, and at intervals south to Nicaragua and in the north near San Pedro Sula, and Catacamas.

Mr. Underwood was greatly indebted to the President of Honduras, General Tiburcio Carias. Both the President and his wife, Dona Elena, treated him with exceptional good will officially and personally.

Major E. A. Goldman has been of great assistance in preparing this report. I am indebted for the loan of material to the U. S. National Museum, U. S. Fish and Wildlife Service, Field Museum of Natural History, Museum of Comparative Zoölogy, and the University of Michigan. The generous contribution of Mr. Childs Frick to the departmental funds has made possible the acquisition of these very desirable collections.

Colors in the descriptions refer to Ridgway's "Color Standards and Nomenclature," 1912. All measurements are in millimeters.

## GAZETTEER OF HONDURAS COLLECTING STATIONS

Alto Cantoral	(6000 ft.), Dept. Tegucigalpa, northeast of Archaga, highest point of Cantoral.
Archaga	(2500 ft.), Dept. Tegucigalpa, 20 km. north of city of Tegucigalpa and about 2 km. north of Choluteca River.
Belen Guacho	(4000 ft.), Dept. Ocotepeque, about 12 miles north of Ocotepeque. Collection made from 4900 to 5500 ft.
Boqueron	(1000 ft.), Dept. Olancho, a small cattle farm on the outskirts of Catacamas. Collection made mostly in adjoining woods at elevation from 2000 to 2500 ft.
Cantoral	(5000-6000 ft.), Dept. Tegucigalpa, 12 or 15 miles northeast of Archaga.
Catacamas	(1000 ft.), Dept. Olancho, see Boqueron.
Catacombas	(3000-4000 ft.), Dept. Cortés, a farm about 15 miles northwest of Cofradia.
Cementerio	(5300 ft.), Dept. Gracias, slopes of Cerro Pucca, northwest of Cofradia.



- Cerro Cantoral See Cantoral.  
 Cerro Coyote Same as Cerro Guinote.  
 Cerro de los Cuches (3260 ft.), Dept. Tegucigalpa, 4 km. southeast of Sabana Grande. Scrubby hills near Mineral de San Marcos.  
 Cerro Grande (6500 ft.), Dept. La Paz, 15 miles northeast of Chincala. Luxuriant vegetation and dense woods.  
 Cerro Guinote (about 2000 ft.), Dept. Tegucigalpa, 3 miles north of Las Flores Archaga. Rocky Cerro, low mountain, barren land. About 3 miles from Archaga.  
 Cerro Pucca See Pucca.  
 Cerro Santa Maria (4500 ft.), Dept. Tegucigalpa, hills about 15 miles north of Laguna de Archaga.  
 Cerro Vasquez See Cantoral. Taken on lower slopes of Cantoral. Not Vasquez. Marked Vasquez by mistake.  
 Cofradia (500 ft.), Dept. Cortés, small town southwest of San Pedro Sula.  
 Comayaguela Dept. Tegucigalpa, city adjoining Tegucigalpa divided by the Rio Grande. (Grande River, same river as Cholutica, seen clearly on map, which passes through several departments and in each department often given a different name.) Collections were made on scrubby land 400 or 500 ft. higher than the city.  
 Copan (3000-3500 ft.), Dept. Copan. A town west of Santa Rosa, near the border of Guatemala.  
 Cueva de las Golondrinas Sabana Grande, Dept. Tegucigalpa (this means swallow cave). The resort of large number of swifts but almost inaccessible.  
 El Caliche Cedros (2500-3000 ft.), Dept. Tegucigalpa, west of Orica, like most of Cedros, broken woodland surrounding small cultivations.  
 El Caliche Orica See El Caliche Cedros.  
 El Capante Dept. Gracias, near Las Flores, Gracias.  
 El Chorro (4500 ft.), Dept. Ocotepeque on the east side of the city of that name, Ocotepeque. A small stretch of virgin forest.  
 El Colerio (5500-6000 ft.), Dept. Tegucigalpa, northeast of Archaga, highest part of Alto Cantoral. Thick forest.  
 El Derrumbo (4000-5000 ft.), Dept. Tegucigalpa. North of Archaga, collections were made at the source of Ilima River.  
 El Guayabal (4000 ft.), Dept. La Paz, 10 miles north of Marcala. Scrub and second growth timber.  
 El Horno (4000 ft.), Dept. La Paz, 5 miles north of Marcala. Conditions as at El Guayabal.  
 El Jaral (2160 ft.), Dept. Cortés. A hamlet on the north side of Lake Yojoa and southwest of the district of Santa Cruz Yojoa.  
 El Manteado (3000 ft.), Dept. La Paz, 4 or 5 miles northeast of San José. Woods and scrub land.  
 El Pedernal (2500-3000 ft.), Dept. La Paz, 5 or 6 km. northeast of San José. Mountainous, fertile land, thick woods and dense forest.  
 El Pedernillo See El Pedrero.

- El Pedrero (3000 ft.), Dept. La Paz, 6 km. north of Chincala. Mountainous fertile land.
- El Picacho (5000 ft.), Dept. Tegucigalpa, a mountain peak northeast of Tegucigalpa.
- El Zapote (2500 ft.), Dept. Tegucigalpa, a small farm 7 km. south of Sabana Grande. Broken scrub land.
- Guaymaca (2500 ft.), Dept. Tegucigalpa, a town on the road between Cedros and Juticalpa.
- Hatillo (4810 ft.), Dept. Tegucigalpa, a small village northeast of Tegucigalpa.
- Ilama (1300 ft.), Dept. Santa Barbara, in the district of Santa Barbara.
- La Cienega (2250 ft.), Dept. Tegucigalpa, a small town 7 km. south of Sabana Grande. Broken scrubby land.
- La Cruz Grande (3000 ft.), Dept. La Paz. A patch of scrub on a hill on the outskirts of San José.
- La Cueva Archaga (2500 ft.), Dept. Tegucigalpa, part of Archaga.
- La Flor Archaga (4500-5000 ft.), a small village on the Talanga road east of Archaga.
- La Florida Dept. Intibuca.
- Laguna Archaga (400 ft.), a small hamlet northeast of Archaga at the foot of Cerro Cantoral. Collections were made at an elevation of 4000 to 5000 ft.
- Lake Yojoa (2500 ft.), about 200 km. north of Tegucigalpa, 20 km. long and 14 km. wide.
- La Lima (5000 ft.), Dept. Tegucigalpa. See Cantoral also.
- La Mica (2600 ft.), Dept. Santa Barbara, 4 miles southeast of San José de Orient, Ilama, coffee plantation. Fertile land.
- Lapaera (3300 ft.), Dept. Gracias, north of city of Gracias.
- La Piedra de Jesús (3200 ft.), Dept. Tegucigalpa, 5 km. south of Sabana Grande mostly uncultivated but small patches of plantation, white sandy ridge, sparsely covered with pine.
- La Pita Sabana Grande.
- Las Flores (1850 ft.), Dept. of Gracias, northwest of town of Gracias.
- Las Flores Archaga See La Flor Archaga.
- Las Peinitas Dept. Cortés, a farm about 4 miles west of San Pedro Sula. Collections were made at an elevation varying from 500 to 2000 ft.
- Las Pilas (4000 ft.), Dept. La Paz, 6 miles north of Marcala. Second growth wood and scrub.
- Las Ventanas (2500 ft.), Dept. Cortés. Mountainous land, southwest of El Jaral and 5 km. from Lake Yojoa.
- Los Encuentros (3000 ft.), Dept. La Paz, 6 miles northeast of San José. Second growth wood.
- Los Oreganos See Los Organos.
- Los Organos (1573 ft.), Dept. Tegucigalpa. Site on Organos River, 16 miles south, southwest of Sabana Grande.
- Minas de Oro (3000 ft.), Dept. Comayagua, southwest of Sulaco and San José de Potrero.
- Montana Vasquez (6000 ft.), Dept. Tegucigalpa, hamlet 15 miles west of Monte Redondo.
- Monte Linderos (5700 ft.), Dept. Gracias, slopes of Cerro Pucca.
- Monte Redondo (3500-4000 ft.), Dept. Tegucigalpa, district of Archaga,



- about 50 km. northwest of Tegucigalpa. Second growth vegetation. Scrubby and mostly sterile land.
- Monte Verde (4500 ft.), Dept. Ocotepeque, about 30 miles northeast of city of Ocotepeque. Dense forest.
- Muin (2500 ft.), Dept. La Paz, woodlands on Intibuca border.
- Muya (4000 ft.), Dept. La Paz, 4 or 5 miles north of Chincala. A hill covered with second growth timber.
- Olancho Dept. Olancho. Collections were made at altitudes of 1000 to 2000 ft. Pastures surrounded by patches of virgin forest.
- Plan del Rancho (3800 ft.), Dept. Ocotepeque, 10 miles northeast of city of Ocotepeque. Small patch of virgin forest.
- Pucca or Cerro Pucca (8000 or 9000 ft. high), Dept. Gracias. A mountain north of the city of Gracias. Collections made from 6000 to 7000 ft.
- Quemado Rancho (5000-6000 ft.), Dept. Tegucigalpa northeast of Tegucigalpa.
- Rancho Quemado Same as Quemado Rancho.
- Redondo Same as Monte Redondo.
- Rio Aguan Dept. Colon. A large river on the north coast.
- Rio Grande River Flows between Comayaguela and Tegucigalpa. Called Rio Grande or Rio Grande de Cholutica.
- Roman River Old name for the Rio Aguan.
- Sabana Grande (1100 ft.), Dept. Tegucigalpa, south of Tegucigalpa town.
- San José de Santa Barbara (2386 ft.), Dept. Santa Barbara, a hamlet east of Ilama.
- San Pedro Sula (5000 ft.), Dept. Cortés, a town in the valley of the Sula, 60 km. from the gulf of Honduras.
- Santa Barbara Capital of the department of Santa Barbara, northeast of Santa Rosa. Collecting made on outskirts of town about 1000 ft. or so.
- Santa Rosa Dept. Colon, at the mouth of Rio Aguan.
- San Maracos (3000-3500 ft.), Dept. Tegucigalpa, district of Guaymaca.
- Savanna Grande Often spelled Sabana Grande.
- Tegucigalpa (3000 ft.), capital of Honduras. Collections were made mostly at an elevation of 300-500 ft. above the city.
- Zambrano (4500 ft.), Dept. Tegucigalpa on main road about half-way between Tegucigalpa and Comayagua. Second growth timber, mostly pine. Farms and plantations.

## CLASS MAMMALIA

### SUBCLASS EUTHERIA

#### ORDER MARSUPIALIA

##### *Didelphiidae*

The opossums are the only existing family of marsupials in Central America. They have five toes on fore and hind feet; the young are born in a very incomplete stage of development. The female is usually provided with an external abdominal pouch, but which in some species is rudimentary or absent. A true allan-

toic placenta is never found in American forms. The teeth are numerous and general construction primitive.

##### *Didelphis marsupialis* Linnaeus

Black-eared Opossum

*Didelphis marsupialis* LINNAEUS, 1758, Syst. Nat., 10th Ed., I, p. 54.

TYPE LOCALITY.—Guiana.

RANGE.—From coast of Texas south through Mexico, Central America, northern part of South America; Amazon region, east of the Andes, and south in eastern Brazil at least to Rio de Janeiro; west of Andes south to Peru.

GENERAL CHARACTERS.—A large opossum with long, loose pelage occurring in either gray or black phase; relatively long scaly tail; large black ears.

DESCRIPTION.—Pelage on upperparts, including crown of head and sides of body, with an outer coat of long, loose white bristly over-hair; black in dark phase; underfur soft and long, white for about two-thirds its length, apical portion black; cheeks white; spot over eye and area surrounding base of ears whitish; top of head and nose dusky brown with a blackish stripe running from ear across eye to nose, indistinct in some specimens; fore and hind limbs and feet black, upperside of limbs more or less grizzled with long white over-hair; underside mainly soft white underfur with tips more or less tinged with dusky; ears entirely black; tail black at base for half or two-thirds its length, apical portion white. Skull elongate; molariform teeth small; canines long and slender; sagittal and occipital crests highly developed. Skull increases in its principal dimensions throughout the life of the animal.

MEASUREMENTS.—Adult male from Tegucigalpa, adult females from La Flor Archaga and El Horno, La Paz, respectively: head and body, 500, 450, 435; tail vertebrae, 400, 325, 350; hind foot, 65, 68, 65. Skull: greatest length, 119.5, 113.5, 106.5; length of nasals, 56, 50.7, 44; zygomatic breadth, 61.5, 57.3, 54.7; postorbital constriction, 11.5, 11.5, 11.5; palatal length, 70, 66.5, 61.5; upper tooth-row, 38.3, 36.4, 34.1; upper molar series, 20.5, 19.5, 19.1.

The present series are here referred to *marsupialis*. There seems to be one species of the large black-eared opossum found in Central America and a study of the large Honduras series and specimens in the A. M. N. H. collection does not reveal any definite geographical or racial characters.

SPECIMENS.—Tegucigalpa: La Flor Archaga, 3; Zapote, Sabana Grande, 1; El Caliche Cedros, 2; Tegucigalpa, 3. La Paz: El Mantado, 1; El Horno, 2. Gracias: Las Flores, 30. Santa Barbara: Ilima, 3. Cortés: El Jaral, 1; Las Ventanas, 1.

***Chironectes panamensis argyrodytes***  
Dickey

Salvador Water Opossum or Yapok

*Chironectes argyrodytes* DICKEY, 1928, Proc. Biol. Soc. Wash., XLI, pp. 15-16.

TYPE LOCALITY.—Hacienda Zapotitan, Dept. La Libertad, El Salvador; altitude 1500 feet.

RANGE.—Mountains of Salvador east to central Honduras; limits of range unknown.

GENERAL CHARACTERS.—A medium-sized opossum with black and gray marbled dorsal markings; ears rounded; feet webbed; very similar externally to *Chironectes panamensis* Goldman but darker, with the dark masses in the pattern of dorsal pelage larger and with the intervening broken bands of gray proportionately reduced, the band across the hips being especially reduced and inconspicuous; the gray of sides and narrow dorsal bands darker.

DESCRIPTION.—Color of upperparts dark mummy brown; sides of body finely grizzled, this color extending in three transverse light-colored bands across back, narrowly broken at middorsal line by the dark color of upperparts; a similar but less distinct band on front of shoulders; face and top of head mummy brown, a narrow grizzled area over eye; upperside of fore and hind limbs light mummy brown, extending down over the thinly haired feet and phalanges, terminal phalanges on front feet whitish; upperside of hairy base of tail like back, paler below; scaly part of tail from base for three-fourths its length black all around, rest of tail white to tip; underparts, including underside of fore and hind limbs, throat and underside of neck to base of tail, silvery white to base of hairs. Type description of skull, similar to *panamensis* but with longer and much wider nasals, and broader, heavier rostrum



throughout. Maxillary tooththrow longer, the premolars in particular being less crowded, and the molar series (especially  $m^2$  and  $m^3$ ) slightly heavier. Upper edge of middle portion of zygoma less incurved and the postorbital constriction greater. Shape of frontals specialized; produced posteriorly along the sagittal line in a narrow tongue running back between the parietals. The comparatively long braincase, pointed posterior end of the nasals, and other cranial details which skulls of *argyrodyles* share with those of *panamensis* serve to distinguish the former, as well as the latter, from their South American neighbors.

MEASUREMENTS.—One adult male from Minas de Oro and one from Las Flores Gracias, and type in parentheses: total length, 690, 744 (675); tail vertebrae, 386, 410 (358); hind foot, 60, 72 (70); ear, 22, 31 (22). Skull: greatest length, 76.3, 81; condylobasal length, 74.9, 77.5 (73.5); zygomatic breadth, 44.5, 43.5 ? (45.2); length of nasals, 34.7, 37.5 (34.3); breadth of nasals, 14, 12.8 ? (13.2); interorbital breadth, 16.8, 16.9 (15.4); postorbital constriction, 8.2, 8.5 (8); palatal length, 46, 47 (47); maxillary tooththrow, 33, 34.2 (33); upper premolar series, 12.7, 13.5 (13).

The Underwood specimens show considerable individual variation. The dimensions of some of the Honduras skulls are considerably greater than those of the type, and band across the hips and white facial markings, while distinct in some specimens, are inconspicuous in others. Compared with a Richardson specimen from Matagalpa the Honduras specimens are larger and the general color less blackish. The most outstanding characters in the Honduras series are the heavy rostrum and broad interorbital area.

SPECIMENS.—Gracias: Las Flores, 3. Comayagua: Minas de Oro, 1. Tegucigalpa: Tegucigalpa, 4.

#### **Philander opossum fuscogriseus (Allen)**

Allen's Short-haired Opossum

*Metachirus fuscogriseus* ALLEN, 1900, Bull. Amer. Mus. Nat. Hist., XIII, p. 194.

TYPE LOCALITY.—Greytown, Nicaragua.

RANGE.—From Panama north to Honduras.

GENERAL CHARACTERS.—A medium-sized opossum, with relatively short dark pelage; tail about equal length to head and body, haired at base for about 60 mm., the rest of tail naked.

DESCRIPTION.—Color of upperparts finely mixed buff and black, darkest on middorsal region; top of head and face blackish, without mixture of buffy hairs; two conspicuous whitish areas on top of head over eyes; outside of ears creamy white near base in some specimens; outside of forearms and hind limbs like sides, this color extending more or less on upper-sides of feet to toes; tail dusky for basal two-thirds its length, remaining third white to tip; underparts buffy or yellowish white, base of hairs more or less plumbeous; males with a patch of yellowish green on each side of the flanks. Skull, long and narrow; zygomatic broad; sagittal well developed in adult specimens; interorbital constriction narrow; bullae small.

MEASUREMENTS.—Type, female juvenal: total length, 534; tail, 283; hind foot, with claws, 39. Skull: greatest length, 66; basal length, 62; nasal length, 32; upper tooththrow, from canine to last molar, 25.5; zygomatic breadth, 32.

#### **Metachirus nudicaudatus dentaneus**

Goldman

Brown Opossum

*Metachirus nudicaudatus dentaneus* GOLDMAN, 1912, Smiths. Misc. Coll., LVI, No. 36, p. 2.

TYPE LOCALITY.—Gatun, Canal Zone, Panama.

RANGE.—Known from Canal Zone north to Chontales, Nicaragua.

GENERAL CHARACTERS.—A medium-sized brown opossum with short pelage, similar to *Philander o. fuscogriseus* but smaller and color brown instead of dark grayish.

DESCRIPTION.—General color of upperparts near wood-brown, darkened along back by black; orbital rings and sides of muzzle blackish; cheeks, supraorbital spots and area about ears ochraceous buffy; underparts yellowish white, tail dusky

above, lighter below becoming whitish all around near tip. Skull much like *Philander o. fuscogriseus* but smaller, with sagittal crest and postorbital processes undeveloped; only two posterior palatine foramina, four in *P. o. fuscogriseus*.

MEASUREMENTS.—Type, adult male: total length, 597; tail vertebrae, 332; hind foot, 48. Skull: greatest length, 63; condylobasal length, 61.7; zygomatic breadth, 31.7; nasals,  $30 \times 9.5$ ; interorbital breadth, 9.3; upper molariform toothrow, 22.2.

***Caluromys derbianus fervidus* (Thomas)**

Guatemala White-eared Woolly Opossum

*Philander laniger fervidus* THOMAS, 1913, Ann. Mag. Nat. Hist., (8) XII, p. 359.

TYPE LOCALITY.—Guatemala; exact locality not known.

RANGE.—Probably the lowlands of east-central Guatemala and northern Honduras.

GENERAL CHARACTERS.—A bright reddish-colored opossum with thick woolly pelage and long tail furled from base for one-third of its length.

DESCRIPTION.—Color of specimen from Ilima, Santa Barbara: upperparts golden tawny, sides of body, hips, outer side of fore and hind limbs, bright ochraceous tawny; head drab; ring around eye dusky; face marked by a dark median stripe; ears creamy white; tail ochraceous tawny at base, becoming mummy brown toward end of fur; scaly part of tail black for 30 mm. on underside beyond extension of fur and irregularly blotched with black for 90 mm., remaining two-thirds light yellowish to tip; median line between shoulders, sometimes referred to as the "withers mark," faint and practically imperceptible; markings behind shoulder buffy white, restricted to lower sides of body; hip marking indistinct; underparts more or less pale drab; the color of sides extends over mid-ventral region to median line; lower fore arm and fore feet white; hind feet mummy brown. An old individual with worn teeth from Catacamas has the rich color of the Ilima specimen, but resembles typical *derbianus* in having the withers mark more grayish and the light areas behind shoulders and on hips more extensive. Skull, short

and broad with massive zygomatic arches; long slender canines and small teeth. The Catacamas specimen has a larger skull with larger teeth than the one from Ilima, but the differences are probably within the range of individual variation.

MEASUREMENTS.—One adult male from Ilima and one from Catacamas: head and body, 263, 255; tail, 375, 428; hind foot (s.u.), 35, 40; ear, 35, 40. Skull: greatest length, 57, 61; zygomatic breadth, 32.1, 35.7; interorbital constriction, 10.2, 11.5; length of nasals, 24.3, 27; length from canine to back of last molar, 20.4, 21.7;  $m^1$  to  $m^4$ , 9.5, 9.9;  $m^1$  to  $m^3$ , 8, 8.2.

The general color of the type given in Thomas' description of *P. l. fervidus* is rich cinnamon-rufous, the lighter markings yellowish, and withers mark strongly contrasted buffy yellow; naked part of tail dark to end. The Ilima and Chamelecon specimens seem to agree fairly closely in general tone with the coloration of the type but they approach *P. centralis* from Costa Rica in the buffy withers mark and the creamy white tail. Color markings in the Central American woolly opossums, while relatively constant locally, apparently do vary somewhat geographically and probably with age.

SPECIMENS.—Santa Barbara: Ilima, 1; Chamelecon (U. S. N. M. 1). Olanchito: Catacamas, 1.

***Marmosa alstoni alstoni* (Allen)**

Alston Marmosa

*Caluromys alstoni* ALLEN, 1900, Bull. Amer. Mus. Nat. Hist., XIII, p. 189.

TYPE LOCALITY.—Tres Rios, subtropics, east of the divide, Costa Rica.

RANGE.—Subtropics of Costa Rica, Nicaragua, Honduras, and subtropics of Colombia.

GENERAL CHARACTERS.—A small dusky-colored opossum with rather long thick pelage, long tail, moderately large naked ears and typical opossum feet, resembling *Caluromys* in general appearance but much smaller in size, darker and inornate coloration, and the woolly hair on tail restricted to a short distance at base.

Description.—General color of upperparts dark gray washed with brownish,



face pale cinnamon-buff with a black stripe across eye, underparts pinkish buff or cinnamon-buff, the base of hairs dusky; feet grayish white; naked part of tail white except at base where it is more or less dusky all around.

Skull broad and strong; zygomata flaring and muzzle short; nasals not abruptly expanding backward. Supra-orbital processes strongly developed, palate broad, bullae small and rounded.

MEASUREMENTS.—Adult male from Cor-tago, Costa Rica: total length, 430; tail vertebrae, 250; hind foot, 30; ear, 25. Skull: greatest length, 44; zygomatic breadth, 26.1; interorbital breadth, 9; length of nasals, 18.5; upper tooththrow,  $c-m^4$ , 17.6;  $m^1-m^4$ , 9.1.

Alston's opossum is at once recognizable by the length and general bushy appearance of the hairs at base of the tail. It is the largest species of this genus found in Honduras. A rather smaller race with short close pelage, *M. a. nicaraguae* Thomas, inhabits the torrid coastal parts of Nicaragua, Costa Rica, and possibly Honduras.

SPECIMENS.—Olancho: Segovia R. (U. S. N. M. 1); eastern Honduras (U. S. N. M. 1).

### ***Marmosa ruatanica ruatanica* Goldman**

Ruatan Island Opossum

*Marmosa ruatanica* GOLDMAN, 1911, Proc. Biol. Soc. Wash., XXIV, p. 237.

TYPE LOCALITY.—Ruatan Island, off north coast of Honduras.

RANGE.—Known only from Ruatan Island.

GENERAL CHARACTERS.—A relatively large murine opossum with extensive black orbital markings, thick pelage and rather large ears.

DESCRIPTION.—Type (in worn pelage): general color above between cinnamon and Isabella color, becoming smoky brown on top of head, and lighter again on broad line down middle of face; blackish orbital markings extending to nose; underparts cream color, tinged with yellow; ears dark brownish; feet soiled white; tail dusky on basal half, becoming lighter terminally.

MEASUREMENTS.—Type (dry skin):

total length, 338; tail, 188; hind foot, 24.5. Skull: occipitonasal length, 40.5; zygomatic breadth, 22.7; nasals,  $17.7 \times 4.9$ ; interorbital breadth, 5.8; three anterior molariform teeth, 6.

### ***Marmosa mexicana mexicana* (Merriam)**

Mexican Murine Opossum

*Marmosa murina mexicana* MERRIAM, 1897, Proc. Biol. Soc. Wash., XI, p. 44.

TYPE LOCALITY.—Juquila, Oaxaca, Mexico.

RANGE.—From Oaxaca on the Pacific coast and Vera Cruz on the Caribbean side southward through central Guatemala, central Honduras and south to north central and western Nicaragua.

GENERAL CHARACTERS.—A small bright reddish brown opossum, with intensely black stripes across the eyes, moderately long, finely haired tail, and light creamy buff underparts.

DESCRIPTION.—Color of upperparts varies from rich ochraceous tawny to light ochraceous tawny; sides of body and outside of fore and hind limbs ochraceous buff; stripes across eyes broad and intensely black, extending from base of vibrissae to anterior margin of ears; ears mummy brown; underparts, fore and hind feet warm buff, the ochraceous buff color of sides extends in some specimens broadly over midventral region; tail mummy brown or cinnamon-brown. Skull: small; supra-orbital ridges slightly projecting and temporal ridges obliquely convergent; palate very thin, almost invariably with irregular fenestrae on the posterior portion; teeth small, canines long and slender.

MEASUREMENTS.—One adult male from Santa Barbara and one subadult female from Catacombas: head and body, 130, 110; tail vertebrae, 170, 180; hind foot, 21, 20; ear, 20, 20. Skull: greatest length, 37.4; zygomatic breadth, 20; anterior interorbital constriction, 6.2; length of nasals, 17.3; length of upper tooththrow from canine to last molar, 14.2, 13; from  $m^1$  to  $m^3$ , 5.6, 5.5; from  $m^1$  to  $m^4$ , 6.8, 6.7.

Honduras specimens vary noticeably in color. One from northwestern Honduras

is brightly colored, with line of demarcation between dorsal and ventral colors sharply pronounced. Five specimens from central and north central Honduras are relatively dull in color. Cranial characters in the series while more or less variable individu-

ally agree in all essential characters with *mexicana*.

SPECIMENS.—Santa Barbara: San José, 1. Cortés: Catacombas, 1. La Paz: Muya, 3. Tegucigalpa: Cerro Vasquez, (U. S. N. M. 1).

## ORDER INSECTIVORA

### Soricidae

#### Shrews

Shrews are small, mouse-like mammals with very small eyes, sharp-pointed muzzle, and small ears which are more or less concealed by short dense blackish fur. Central American species have short tails, short limbs and five toes on fore and hind feet. They are primarily insectivorous; the teeth are noticeably stained a deep reddish brown and are thirty in number.

#### *Cryptotis micrura* (Tomes)

##### Tropical Shrew

*Sorex micrurus* TOMES, 1861, Proc. Zool. Soc. London, p. 279.

TYPE LOCALITY.—Coban, Guatemala; altitude about 4400 feet.

RANGE.—Tropical regions of western Honduras, western Guatemala, and southern Mexico in the states of (Chiapas?), Oaxaca, and Vera Cruz.

GENERAL CHARACTERS.—A small, dark-colored shrew, with short tail and small feet.

DESCRIPTION.—Color near olive brown; underparts drab. Skull small; braincase on plane of rostrum with only a shallow sulcus between; fourth unicuspid tooth minute; molariform teeth slightly concave behind.

MEASUREMENTS.—One specimen from Belen Guacho and one from Cantoral: head and body, 63, 59; tail, —, 17; hind foot, 10.9. Skull: upper toothrow, 7, 7.5.

The Honduras specimens of *C. micrura* are represented by one old individual with worn teeth and a young specimen. They are both poorly prepared skins and the skulls are rather fragmentary. They appear to be rather smaller than typical *C. micrura* and approach *C. olivacea* in size.

SPECIMENS.—Tegucigalpa: Cantoral, 1. Ocotepeque: Belen Guacho, 1.

#### *Cryptotis olivacea* (Allen)

##### Nicaraguan Short-tailed Shrew

*Blarina olivaceus* ALLEN, 1908, Bull. Amer. Mus. Nat. Hist., XXIV, p. 669.

TYPE LOCALITY.—San Rafael del Norte, Nicaragua; altitude 5000 feet.

RANGE.—Highlands of north central Nicaragua and probably south central Honduras.

GENERAL CHARACTERS.—Very similar to *C. micrura* but size smaller.

DESCRIPTION.—General color similar to *micrura* but tone more grayish brown.

MEASUREMENTS.—Type, female: total length, 80; tail, 17; hind foot, 10; least interorbital breadth, 3.7; maxillary toothrow, 7.5.

*Cryptotis olivacea* is probably a geographical race of *C. micrura* or it may be a synonym.

#### *Cryptotis goodwini* Jackson

##### Goodwin Shrew

*Cryptotis goodwini* JACKSON, 1933, Proc. Biol. Soc. Wash., XLVI, p. 81.

TYPE LOCALITY.—Calel, altitude 10,200 feet, Guatemala.

RANGE.—Calel and Tecpan, Guatemala, and probably western Honduras.

GENERAL CHARACTERS.—A relatively large shrew with large feet and color dark both above and below.

DESCRIPTION.—Color of upperparts somewhat darker than clove brown; underparts olive brown mixed with grayish. Cranium deep, broadly expanded; rostrum broad; molariform teeth broad and heavy, deeply pigmented.



MEASUREMENTS.—Type: total length, 117; tail vertebrae, 28; hind foot, 15.5. Skull: condylobasal length, 21.3; interorbital breadth, 5.7; maxillary toothrow, 8.0.

*C. goodwini* is distinguished from *micrura* and *olivacea* by its larger size and darker color and from *nigrescens* by its larger size and much larger fore and hind feet.

### **Cryptotis nigrescens** (Allen)

Dusky Short-tailed Shrew

*Blarina (Soriciscus) nigrescens*, ALLEN, 1895, Bull. Amer. Mus. Nat. Hist., VII, p. 339.

TYPE LOCALITY.—San Isidro (San José), Costa Rica.

RANGE.—Costa Rica, and probably north to Honduras.

GENERAL CHARACTERS.—A medium-sized, dark-colored shrew, with a relatively long tail and rather long pelage.

DESCRIPTION.—Color, dark olive brown; underparts only slightly paler than back. Skull, similar in general to *C. micrura* but larger; molariform teeth very large and slightly excavated posteriorly; unicuspid teeth with inner cusps fairly well developed.

MEASUREMENTS.—One specimen from Las Flores Gracias and one from San José de Santa Barbara: head and body, 66, 60; tail, 25, 26; hind foot, 11, 12. Skull: greatest length, 19.2, 20; greatest width of braincase, 9.2; upper toothrow, 8.7, 9.2; width across  $m^2$ - $m^2$ , 5.6, 6.

The two Honduras specimens are here provisionally referred to *C. nigrescens*. Very little comparative material is available. They agree, however, fairly closely in general characters with Allen's type.

SPECIMENS.—Gracias: Las Flores, 1. Santa Barbara: San José, 1.

## ORDER CHIROPTERA

### Emballonuridae

Sac-winged Bats

#### Emballonurinae

The Central American members of the subfamily Emballonurinae are recognized by their small size, normal teeth, free premaxillaries, well-developed postorbital processes and the reduced condition of the index finger. Externally they may be distinguished by the combination of slender leg with reflexed proximal phalanx of third finger. In all the known genera the tail perforates the interfemoral membrane and appears on its upper surface back from the edge. Most of the genera have glandular sacs in the antebrachial membranes and no noseleaf.

### **Rhynchiscus naso** (Maximilian)

Brazilian Long-nosed Bat

*Vespertilio naso* MAXIMILIAN, 1820, Reise nach Brasilien, I, p. 251, footnote.

TYPE LOCALITY.—Banks of Mucuri, near Morro d'Arara, Minas Geraes, Brazil.

RANGE.—From southern Mexico south through Central America to northern Peru and central Brazil.

GENERAL CHARACTERS.—Size small; no wing-sacs; forearm dotted with tufts of fur; interfemoral haired to exsertion of tail; muzzle elongated. Dentition:  $i \frac{1-1}{3-3}$ ,  $c \frac{1-1}{1-1}$ ,  $pm \frac{2-2}{2-2}$ ,  $m \frac{3-3}{3-3} = 32$ .

DESCRIPTION.—General color in fresh pelage: tips of hair gray, giving a light grizzled appearance; on lower back two curved lines in rough form of an hourglass which in worn pelage do not show; base of hairs on underparts dark brown and tips light gray. Skull small; no angle between rostrum and forehead; premaxillaries broad posteriorly and ending on upper surface of rostrum; no division between deep basisphenoid pits; first upper premolar large, triangular, with small cingulum cusps anteriorly and posteriorly.

MEASUREMENTS.—Two specimens from Santa Barbara: forearm, 37, 38. Skull: greatest length, 11.3, 11.5; condylobasal length, 10.4, 10.3; interorbital breadth, 2.6, 2.8; least width of rostrum, 3.2, 3.3; zygomatic breadth, 6.8, 6.5; length of upper toothrow, 4.7, 4.5.

*Rhynchiscus naso priscus* was separated

by Dr. G. M. Allen mainly on the shape of the anterior upper premolar, but a careful examination of some 80 skulls shows great variation in this tooth irrespective of locality. In a series from any one locality, teeth may be found varying from an almost simple tooth with barely indicated cusps to a broad triangular tooth with prominent cusps (Sanborn).

SPECIMENS.—Cortés: Las Ventanas, 4.

### ***Saccopteryx bilineata* (Temminck)**

Greater White-lined Bat

*Urocryptus bilineatus* TEMMINCK, 1838-1839, Van der Hoeven's Tijdschr. Nat. Gesch. en Physiol., V, p. 33.

TYPE LOCALITY.—Dutch Guiana.

RANGE.—From southern Mexico (Colima, Guerrero, and Vera Cruz) south to central Bolivia and Matto Grosso and Rio de Janeiro, Brazil.

GENERAL CHARACTERS.—Size relatively large; wings from tarsus; wing-sac close to forearm near elbow, well developed in males and less so in females; inter-femoral membrane thinly haired to exsertion of tail; ears moderately long, narrow, and pointed. Dental formula as in *Rhynchiscus*.

DESCRIPTION.—Color, in fresh pelage, of upperparts: black with two longitudinal wavy lines of whitish or buffy color from upper back to rump; hairs with the exception of white-tipped ones forming the dorsal lines, uniform black to base; hairs of underparts dark at base with light tips, giving a grayish appearance.

MEASUREMENTS.—Two adults from Sabana Grande: forearm, 40, 43.5. Skull: condylobasal length, 13.3, 14; interorbital breadth, 4.1, 4.4; zygomatic breadth, 9.5, 9.7; upper tooththrow, 6.3, 6.5.

*Saccopteryx bilineata* has a very wide range, with but slight geographical variation. Specimens from Mexico, Guatemala, and Honduras have, on an average, shorter forearm and smaller skull than those from Trinidad and the Amazon drainage. In the intermediate area the size is variable. When the extremes are compared, as Thomas did when he described *centralis*, the difference is very marked, but no

definite geographic line can be drawn between large and small specimens. As there is no other character besides size, it seems best to consider all specimens as belonging to but one species, *bilineata* (Sanborn).

SPECIMENS.—Tegucigalpa: Los Oreganos, Sabana Grande, 12. Olancho: Catacomas, 1.

### ***Centronycteris maximiliani centralis* Thomas**

Thomas Sac-winged Bat

*Centronycteris centralis* THOMAS, 1912, Ann. Mag. Nat. Hist., (8) X, p. 638.

*Centronycteris maximiliani centralis* SANBORN, 1936, Field Mus. Nat. Hist., Zool. Ser., XX, p. 94, Guatemala.

TYPE LOCALITY.—Bogava, Chiriqui, Panama.

RANGE.—Guatemala south to Ecuador and western Brazil.

GENERAL CHARACTERS.—Wings from metatarsus. No wing-sac so far as known. Fur very long and soft. Back without lines. Dental formula as in *Saccopteryx*.

DESCRIPTION.—Color close to raw umber above, lighter below. Hairs on inter-femoral membrane reddish. The fur in front of the eyes has a reddish tinge. Skull, without angle between rostrum and forehead. Lower edge of orbit expanded so little that edge of tooththrow can be seen from above. First upper premolar (pm<sup>2</sup>) with distinct anterior and posterior cusps. Basisphenoid divided by a plate. Like *maximiliani* but with much shorter basisphenoid pits which do not extend forward between the pterygoids.

MEASUREMENTS.—One male from Guatemala and one female from Costa Rica followed by measurements of the type, male, in parentheses: forearm, 45.5, 43 (45); third finger metacarpal, 49.6, 46.7 (46.5). Skull: greatest length, 15.5, 15.5 (15); condylobasal length, 14.2, 14.3; interorbital width, 3.2, 3.4; rostral width, 6.7, 6.4; zygomatic width, 9.3, 9.6 (10); mastoid width, 7.7, 7.8; width of braincase, 7.1, 7.2; upper tooththrow, 6.1, 6.4 (6.1); width across canines, 3.7, 3.7; width across m<sup>2</sup>-m<sup>2</sup>, 7.1, 7.3 (6.6).

***Pteropteryx macrotis macrotis* (Wagner)**

Neotropical Sac-winged Bat

*Emballonura macrotis* WAGNER, 1843, Wiegmann's Arch. f. Naturg., (9) I, p. 367.

TYPE LOCALITY.—Matto Grosso, Brazil.

RANGE.—From Guatemala south to Matto Grosso, Brazil, west to Peru and east to São Paulo, Brazil.

GENERAL CHARACTERS.—A small, slender, dusky bat with wing-sac near upper edge of antebrachial membrane and opening outward; no dorsal stripes; fur relatively long and loose; ears moderately long and narrow. Dental formula as in *Centronycteris*.

DESCRIPTION.—Color of upperparts ranges from blackish or dark buffy brown to various shades of reddish brown; underparts only slightly paler than back. Skull without a sharp angle between the expanded rostrum and braincase.

MEASUREMENTS.—Three adult females from Sabana Grande: forearm, 38.2. Skull: greatest length, 14, 14.4, 14.5; condylobasal length, 13.1, 13.2, 13.4; interorbital constriction, 3.1, 3.1, 3.1; zygomatic width, 8.1, 8.4, 8.5; upper tooththrow, 6, 6.2, 6.2.

SPECIMENS.—Tegucigalpa: Oreganos, Sabana Grande, 3; La Flor Archaga, 1.

***Pteropteryx kappleri* Peters**

Dusky Sac-winged Bat

*Pteropteryx kappleri* PETERS, 1867, Monatsber. k. preuss. Akad. Wiss. Berlin, p. 473.

TYPE LOCALITY.—Dutch Guiana.

RANGE.—From Guatemala south through Nicaragua and Panama to Ecuador and east through Venezuela to Dutch Guiana.

GENERAL CHARACTERS.—Similar to *Pteropteryx macrotis* but larger; forearm, 45 to 53.6; greatest length of skull, 16 to 17.8.

DESCRIPTION.—Color of two color phases: one close to mummy brown, the other a little darker than Prout's brown; underparts slightly paler than back.

MEASUREMENTS.—Three adult females from Las Pilas, La Paz: forearm, 48.5, 48.9, 50. Skull: greatest length, 16.2, 16.4, 16.5; condylobasal length, 15.4, 15.6, 15.7; interorbital constriction, 3.2,

3.2, 3.3; zygomatic width, 9.4, 9.8, 10.2; upper tooththrow, 7, 7.5, 7.5.

SPECIMENS.—La Paz: Las Pilas, 9; La Cruz Grande, 2.

***Cormura brevirostris* (Wagner)**

Wagner Sac-winged Bat

*Emballonura brevirostris* WAGNER, 1843, Wiegmann's Arch. f. Naturg., (9) I, p. 367.—WAGNER, 1847, Abhandl. Münch. Akad., V, p. 187.

TYPE LOCALITY.—Marabitanos, Rio Negro, Amazonas, Brazil.

RANGE.—Nicaragua south through Ecuador and Colombia to Peru, and east through Venezuela and northern Brazil.

GENERAL CHARACTERS.—Size small; fur long and loose; feet short; wings from metatarsus; wing-sac in center of antebrachial membrane opening outward and extending from anterior border almost to elbow. Base of interfemoral almost naked. Dental formula as in *Pteropteryx*.

DESCRIPTION.—There are two color phases, one a deep blackish brown and the other a reddish brown. In both, the underparts are paler. Two male specimens from Costa Rica, collected together, respectively represent both color phases. Skull with short, broad rostrum; rims of orbits and zygoma broad. No angle between rostrum and forehead. First upper premolar with distinct anterior and posterior cusps.

MEASUREMENTS.—Forearm, 43.3–49.8. Skull: greatest length, 15–16.7; condylobasal length, 13.6–15.7; palatal length, 6.2–7.3; intertemporal width, 2.8–3.5; width of rostrum, 5.8–6.6; zygomatic width, 9.4–10.1; mastoid width, 8.5–9.1; width of braincase, 7.2–8.3; upper tooththrow, 6.1–6.8; width across canines, 3.6–4.3; width across  $m^1-m^1$ , 6.6–7.9. Wing measurements of a female in alcohol, from Nicaragua: forearm, 47.8; tibia, 16; second digit metacarpal, 39.9; third digit, metacarpal, 43.2; first phalanx, 13.2, second phalanx, 22.3; fourth digit metacarpal, 35.8; first phalanx, 10.3, second phalanx, 8; fifth digit metacarpal, 33.6; first phalanx, 11.5, second phalanx, 6.8.***Balantiopteryx plicata* Peters**

Peters Sac-winged Bat

*Balantiopteryx plicata* PETERS, 1867, Monatsber. k. preuss. Akad. Wiss. Berlin, p. 476.

TYPE LOCALITY.—Punta Arenas, Costa Rica.

RANGE.—From Sonora and southern Lower California to Costa Rica.

GENERAL CHARACTERS.—A small bat with long loose pelage; wing-sac near center of antebrachial membrane, opening inward. Size relatively large for this group. Interpterygoid fossa narrow. Dental formula as in *Cormura*.

DESCRIPTION.—Color above, dark gray; below, dark gray on throat and chest becoming lighter on the lower abdomen. Rostrum greatly inflated. Basisphenoidal pit not divided by plate.

MEASUREMENT.—Forearm, males, 39–44.7, females, 38.3–36.2; tibia, 16.9–20.2. Skull: greatest length (from front of canine), 13–14.8; condylobasal length (from in front of canine), 11.4–12.7; intertemporal width, 2.8–3.7; width of rostrum, 6.3–7; zygomatic width, 8.3–9.3; mastoid width, 7.4–8.2; width of braincase, 6.4–7.1; upper tooththrow, 5–5.6; width across canines, 3.1–3.7; across molars, 5.8–6.7.

External measurements of two males: forearm, 42.7–44.7; second digit metacarpal, 35.4–35.7; third digit metacarpal, 37.8–37.8; first phalanx, 10.6–11.5, second phalanx, 11.9–15.5; fourth digit metacarpal, 31.3–31.3; first phalanx, 9.3–8.9, second phalanx, 7.1–6.6; fifth digit metacarpal, 29.3–29.7; first phalanx, 9.5–9.5, second phalanx, 5.7–5.7; tibia, 18.4–18.

This form appears to be common on the west coast of Mexico and much less common from Guatemala south to Costa Rica, as there is only one record each for these two countries. Aside from its inhabiting caves little is known of its habits (Sanborn).

### **Balantiopteryx io** Thomas

Thomas Sac-winged Bat

*Balantiopteryx io* THOMAS, 1904, Ann. Mag. Nat. Hist., (7) XIII, p. 252.

TYPE LOCALITY.—Rio Dolores, near Coban, Alta Verapaz, Guatemala.

RANGE.—Alta Verapaz and Izabal, Guatemala.

GENERAL CHARACTERS.—Similar in general to *plicata* but size smaller. Interpterygoid fossa broadly U-shaped.

DESCRIPTION.—Color dark brown above, lighter below.

MEASUREMENTS.—Forearm, 35.6–38.8; tibia, 14–15.9. Skull: greatest length (from front of canine), 12.4–12.9; condylobasal length (from in front of canine), 10.9–11.2; intertemporal width, 3.1–3.5; width of rostrum, 5.7–6.2; zygomatic width, 8.2–8.3; mastoid width, 7.5–7.8; width of braincase, 6.4–6.8; upper tooththrow, 4.5–4.8; width across canines, 3–3.3; width across molars, 5.5–5.9.

External measurements of a male: forearm, 38.1; tibia, 15.5; second digit metacarpal, 32.5; third digit metacarpal, 35.5; first phalanx, 11.3, second phalanx, 14.2; fourth digit metacarpal, 28.8; first phalanx, 8.6, second phalanx, 5.5; fifth digit metacarpal, 26.6; first phalanx, 9.5, second phalanx, 4.6.

Some specimens of *Balantiopteryx io* are as large as small specimens of *B. plicata* in certain measurements, but *B. io* is always shorter in skull length and in the length of the upper tooththrow and tibia. The interpterygoid fossa is broadly U-shaped in *io* and quite narrow in *plicata*. From known specimens *io* is found only in eastern Guatemala while *plicata* inhabits the Pacific coast or, with the exception of one specimen from Guatemala, close to it (Sanborn).

### **Diclicurinae**

#### **White Bats without Noseleaf**

Bats of this subfamily are white, with short rounded ears, no wing-sac, nares simple, eyes large, tail shorter and perforating interfemoral membrane.

### **Diclidurus virgo** Thomas

Costa Rica White Bat

*Diclidurus virgo* THOMAS, 1903, Ann. Mag. Nat. Hist., (7) XI, p. 377.

TYPE LOCALITY.—Escazu, Costa Rica.

RANGE.—From Panama north to Guatemala.

GENERAL CHARACTERS.—A relatively large white bat similar to *D. albus* but with differently shaped incisors and premolars, ears shorter than head.

DESCRIPTION.—Color above pure white to roots of hairs, or grayish white, the hairs



then being slaty at base; below white, base of hairs slaty on basal half. Skull with braincase flattened anteriorly, rostrum broad and flattened with elevated lateral margins; upper incisors weak, the main cusp without secondary cusps, first small premolar well separated from the large premolar.

MEASUREMENTS.—A Costa Rica specimen: forearm, 65 mm.; hind foot in dried skin, 10.5. Skull: condylobasal length, 17; postorbital width, 5.5; zygomatic width, 12.3; width of braincase, 9.2; upper tooth-row,  $c-m^3$ , 8.2.

SPECIMENS.—Gracias: 3 miles north of Gracias on Rio Grande, (Field Mus. 1).

## Noctilionidae

### Bull Dog Bats

Bats of this family are rather large, with narrow, sharp-pointed ears; short tail and short close pelage; foot with greatly developed bony calcar supported by an enlarged calcaneum; muzzle without leaf-like outgrowths; lips full, forming distinct cheek pouches.

#### *Noctilio leporinus mexicanus* Goldman

##### Mexican Bull Dog Bat

*Noctilio leporinus mexicanus* GOLDMAN, 1915, Proc. Biol. Soc. Wash., XXVIII, p. 136.

TYPE LOCALITY.—Papayo, Guerrero, Mexico.

RANGE.—Southern Mexico, south to Panama.

GENERAL CHARACTERS.—Size rather large; ears narrow and sharply pointed; tail short and protrudes from upperside of interfemoral membrane; pelage very short and on lower part of back confined to median portion; no noseleaf; legs very long; feet large and armed with strong claws; calcar, heavy and bony. Dentition:  $i \frac{2-2}{1-1}$ ,  $c \frac{1-1}{1-1}$ ,  $pm \frac{1-1}{2-2}$ ,  $m \frac{3-3}{3-3}$  = 28.

DESCRIPTION.—Color of upperparts rich dark ochraceous tawny, with a narrow stripe of paler fur along median line of back; underparts between zinc-orange and tawny. Skull: strong and massive with large canine teeth; upper incisors very unequal, the inner twice as high as long; the outer very small; lower incisors crowded between canines.

MEASUREMENTS.—Type: forearm, 83.2; hind foot, 33.5. Skull: greatest length, 28.5; condyloincisive length, 25.2; zygomatic breadth, 19.8; interorbital breadth, 7.4; maxillary toothrow, 10.7.

#### *Dirias minor* (Osgood)

##### Little Bull Dog Bat

*Noctilio minor* Osgood, 1910, Field Mus. Nat. Hist., Zool. Ser., Publ. 149, X, p. 30.

TYPE LOCALITY.—Encontrador, Zulua, Venezuela.

RANGE.—Venezuela, Panama, and north to Lake Nicaragua, and probably southwestern Honduras.

GENERAL CHARACTERS.—A rather small reddish bat with sharp-pointed ears, short tail, short close pelage, and no noseleaf. Very similar to *Noctilio* but considerably smaller in size.

DESCRIPTION.—Color of Nicaragua specimens: upperparts cinnamon brown with a narrow yellowish-white middorsal line on lower back; underparts bright ochraceous tawny. Skull closely resembling that of *Noctilio* but much smaller and teeth more slender than latter.

MEASUREMENTS.—Two females from El Toro Rapids, Lake Nicaragua, and type (female) in parentheses: head and body, 79, 78 (67); tail—, — (12); foot from back of calcar, 16, 16.8 (15.6); forearm, 58.3, 56.5 (58.4); third digit metacarpal, 52.3, 52.3 (51.5): first phalanx, 13.3, 13, second phalanx, 36.8, 37.3; fourth digit metacarpal 48.3, 52.3 (52.5): first phalanx, 9.8, 9.8, second phalanx, 22, 21.5; fifth digit metacarpal, 53.5, 51 (50.4): first phalanx, 11.8, 10.5. Skull: greatest length, 19.8, 19.2; condylobasal length, 17.8, 17.6; length of palate, 9.4, 9.2; zygomatic width, 15.1, 14.2 (14.6); width across upper canines, 6.7, 6.3; width across  $m^3-m^3$ , 9.2, 9; interorbital width, 5.7, 5.5; width of braincase, 11, 10.9 (11.2); mastoid width, 14, 13.2 (12.6); length of upper toothrow, 7.4, 7.4 (7.5).

## Phyllostomidae

## Leaf-nose Bats

Members of this family are usually distinguished by the presence of a noseleaf or naked cutaneous folds which rise prominently over the nostrils, but in the subfamily *Chilonycterinae* these are absent. The ears, moderately developed in most genera, are variable in form but usually rather narrow and pointed. The family *Phyllostomidae* includes the largest of American bats and the greatest number of genera. There is such a marked diversity in the structure and size of the members that it is necessary to divide them into subfamilies.

*Chilonycterinae*

In this group the noseleaf is absent, the tail projects through the upper surface of the interfemoral membrane, lower lip with plate-like outgrowths.

*Chilonycteris torrei continentis* Sanborn

Sanborn's Little Mustache Bat

*Chilonycteris torrei continentis* SANBORN, 1938, Occ. Papers Mus. Mich., No. 373, p. 1.

TYPE LOCALITY.—Laguna de Zota Petèn, Guatemala.

RANGE.—Unknown.

GENERAL CHARACTERS.—Like *C. personata* in general but smaller and allied to *Chilonycteris torrei torrei* from Cuba. Wings and interfemoral membrane are attached to underside of joint between tibia and foot; the calcaneum is not bound to the tibia and extends straight out with a free tip beyond for 2 mm. In *personata* the calcaneum and wing are bound to the tibia for almost a third of its length and the calcaneum does not project beyond the free edge of interfemoral membrane. Dentition:  $i \frac{2-2}{2-2}$ ,  $c \frac{1-1}{1-1}$ ,  $pm \frac{2-2}{3-3}$ ,  $m \frac{3-3}{3-3} = 34$ .

DESCRIPTION.—General color of upperparts brownish gray; lighter below. Skull about the same size as typical *torrei* but upper edge of rostrum almost a straight line and then gently slopes toward the forehead.

MEASUREMENTS.—Forearm, 43; calcar, 17.6. Skull: greatest length, 14.8; zygo-

matic width, 7.8; width of braincase, 7.2; upper tooththrow, 5.7; width across  $m^3-m^3$ , 5.1.

*Chilonycteris personata* Wagner

Little Mustache Bat

*Chilonycteris personata* WAGNER, 1843, Wiegmann's Arch. f. Naturg., (9) I, p. 367.

TYPE LOCALITY.—Matto Grosso, Brazil.

RANGE.—From Matto Grosso, Brazil, to Guatemala (Dobson).

GENERAL CHARACTERS.—A small slender bat with long pointed ears; noseleaf absent; tail well developed and projecting through upper surface of interfemoral membrane; elongated tufts of hair projecting from sides of muzzle. Very similar in general to *C. rubiginosa* but size much smaller.

DESCRIPTION.—Color of upperparts in dark phase mummy brown, and the light phase is bright ochraceous tawny; underparts paler than back. Skull, similar in general to *C. rubiginosa* but much smaller.

MEASUREMENTS.—Total length, 69; tail, 19; forearm, 44.5. Skull: greatest length, 15.9; zygomatic breadth, 8.7; interorbital constriction, 3.5; width of braincase, 7.5; width across  $m^3-m^3$ , 5.5; upper tooththrow, canine to last molar, 6.3.

*Chilonycteris rubiginosa rubiginosa* Wagner

Wagner Mustache Bat

*Chilonycteris rubiginosa* WAGNER, 1843, Wiegmann's Arch. f. Naturg., (9) I, p. 367.

TYPE LOCALITY.—Caicara, Brazil.

RANGE.—Upper Amazon region of Brazil, north to Guatemala.

GENERAL CHARACTERS.—A relatively large slender bat with long pointed ears; tragus small; tail well developed; noseleaf absent; elongated tufts of hair projecting from sides of muzzle.

DESCRIPTION.—Color in general: upperparts dark brown to warm sepia; underparts paler than back. Skull: braincase subglobose, elevated; rostrum depressed; nasal opening circular; sagittal crest finely developed.

MEASUREMENTS.—Adult male and fe-

male: head and body, 63, 67; tail, 20, 20; hind foot, 12, 15; ear, 20, 20. Skull: greatest length, 21, 21.3; condylobasal length, 20, 20.4; zygomatic width, 12.5, 12.5; interorbital constriction, 4.5, 4.4; width braincase, 10.5, 10.5; width across  $m^3$ - $m^3$ , 8.4, 8.2; length of upper toothrow, 9.1, 9.2.

*C. rubignosa* is one of the largest races in this genus. The Honduras series average a little smaller than typical specimens from Brazil. They are definitely larger and need no comparison with *C. r. mexicana*. The forearm, unfortunately, is incomplete in all the specimens of the present series.

SPECIMENS.—Gracias: Las Flores, 35.

***Pteronotus suapurensis centralis***  
Goodwin

Greater Naked-backed Bat

*Pteronotus suapurensis centralis* GOODWIN, 1942, Jour. Mamm., XXIII, No. 1, p. 88.

TYPE LOCALITY.—Matagalpa, Nicaragua; 3000 feet elevation.

RANGE.—Central Nicaragua and probably north to central Honduras.

GENERAL CHARACTERS.—About the size of and similar in general characters to *Chilonycteris rubiginosa* but back bare, the wings attached along middle line of back. Dental formula as in *Chilonycteris*.

DESCRIPTION.—Color of fur on head and shoulders about Prout's brown, tips of hairs mummy brown; underparts paler than back, the hairs lightly tipped with pale buff in inguinal region. Skull and dental characters as in *Chilonycteris*.

MEASUREMENTS.—Forearm, 53.5; hind foot, in dried skin, 12; third digit metacarpal, 48.9; fourth digit metacarpal, 43; fifth digit metacarpal, 40. Skull: greatest length, 17.9; condylobasal length, 16.5; zygomatic breadth, 10.5; interorbital constriction, 4.2; length of maxillary toothrow,  $c$ - $m^3$ , 7.5.

This genus is readily recognized among Central American bats by its apparently bare back. The Nicaraguan form is very much larger than the Mexican race of *davyi* and even larger than the typical Venezuelan species *suapurensis*.

***Mormoops megalophylla megalophylla***  
Peters

Peters Leaf-chinned Bat

*Mormops megalophylla* PETERS, 1864, Monatsber. k. preuss. Akad. Wiss. Berlin, p. 381.

TYPE LOCALITY.—Southern Mexico.

RANGE.—From southern Mexico and Yucatan south to Colombia, Ecuador, Venezuela, and Trinidad.

GENERAL CHARACTERS.—Size medium, form slender, ear as broad as high, tip rounded, dermal outgrowths on chin highly developed. Dental formula as in *Chilonycteris*.

DESCRIPTION.—Color dark reddish brown above and below; chinleaf deeply divided, crown of head greatly elevated above face line. Skull shortened, rostrum and braincase broader than long, the basicranial axis almost at right angles with facial.

MEASUREMENTS.—Head and body, 63.5; tail, 29; hind foot, 12; forearm, 55. Skull: greatest length, 15.5; zygomatic breadth, 9.2; interorbital breadth, 5.2; upper toothrow, canine to last molar, 8.1.

SPECIMENS.—Recorded from Dueñas, Guatemala.

**Phyllostominae**

Muzzle with well-developed noseleaf; lower lip without plate-like outgrowths; large ears; interfemoral membrane large. This subfamily contains all the leaf-nosed American bats with normal teeth.

***Micronycteris megalotis mexicana*** Miller

Mexican Big-eared Bat

*Micronycteris megalotis mexicana* MILLER, 1898, Proc. Acad. Nat. Sci. Phila., p. 329.

TYPE LOCALITY.—Plantinar, Jalisco, Mexico.

RANGE.—From Bogota through Central America to Mexico.

GENERAL CHARACTERS.—A small slender bat with large ears connected by a concealed band across the forehead; rather long loose pelage; prominent narrow noseleaf; tail to about middle of interfemoral membrane. Dentition:  $i \frac{2-2}{2-2}$ ,  $c \frac{1-1}{1-1}$ ,  $pm \frac{2-2}{3-3}$ ,  $m \frac{3-3}{3-3}$  = 34.

DESCRIPTION.—Color, in fresh pelage: Prout's brown, base of hairs white;

underparts variable but usually darker; one specimen in worn pelage from La Paz is uniform rusty brownish to base of hairs. Skull: slender; rostrum narrow and tapering; braincase large; anterior upper and lower premolars relatively large.

MEASUREMENTS.—Two specimens from La Flor Archaga: forearm, 36.5, 36.6. Skull: greatest length, 19.4, 19; condylo-basal length, 17, 17.3; interorbital constriction, 4.2, 4.1; zygomatic breadth, 9.5, 9.6; mastoid width, 9, 9; braincase, 8, 7.8; width across  $m^3$ - $m^3$ , 6, 6.5; upper tooth-row, 7.6, 7.3.

Underwood's specimens are all *M. megalotis* (including Rehn's type *Otopterus pygmaeus*) but it is not clear which subspecies—there may be only one. None of the present series closely approaches the type of *M. microtis*.

SPECIMENS.—La Paz: Muya, 1. Tegucigalpa: La Flor Archaga, 10; Sabana Grande, 1.

### ***Micronycteris microtis* Miller**

Nicaraguan Big-eared Bat

*Micronycteris microtis* MILLER, 1898, Proc. Acad. Nat. Sci. Phila., p. 328.

TYPE LOCALITY.—Greytown, Nicaragua.

RANGE.—Unknown.

GENERAL CHARACTERS.—Similar in general characters to *M. megalotis* but differing in lighter color and smaller ears; length of ear from meatus about half as long as forearm; ears densely furred on base half; externally the fur running up along anterior border to within 5 mm. of tip.

DESCRIPTION.—Color uniform wood-brown, slightly richer on dorsal surface; hairs on body dorsally and ventrally nearly white through basal third. Skull, similar to *megalotis*.

MEASUREMENTS.—Forearm, 31; hind foot, 8; ear from meatus, 16.

### ***Micronycteris schmidtorum* Sanborn**

Guatemala Big-eared Bat

*Micronycteris schmidtorum* SANBORN, 1935, Field Mus. Nat. Hist., Zool. Ser., XX, No. 11, p. 81.

TYPE LOCALITY.—Bobos, Izabal, Guatemala.

RANGE.—Only known from type locality.

GENERAL CHARACTERS.—A small big-eared bat similar in general to *M. megalotis* but nearer to *M. minuta* from Brazil, differing from the latter in longer calcar, band between ears higher, interfemoral less notched, hair longer and skull larger throughout.

DESCRIPTION.—Color of upperparts between Prout's and mummy brown, the hairs with white bases; underparts paler. Skull larger than *minuta*; teeth larger, especially the lower premolars; zygomata heavier and more expanded.

MEASUREMENTS.—Type: total length, 64; tail, 17; hind foot, 10; ear, 16; forearm, in dried skin, 35.3. Skull: greatest length, 20.5; condylobasal length, 18; mastoid width, 8.9; zygomatic width, 9.1; upper toothrow, 7.9; lower toothrow, 8.8.

This bat resembles *minuta* in color pattern but in longer calcar approaches *megalotis*. In the enlarged premolars *schmidtorum* differs from both the other species.

### ***Macrotus mexicanus mexicanus* Saussure**

Saussure Large Big-eared Bat

*Macrotus mexicanus* SAUSSURE, 1860, Rev. et Mag. de Zool., (2) XII, p. 486.

TYPE LOCALITY.—Yautepec, near Cuautla, Morelos, Mexico.

RANGE.—From Colima, Michoacan and Morelos, Mexico, to Vera Paz, Guatemala, and probably northern Honduras.

GENERAL CHARACTERS.—Head long; muzzle conical; noseleaf simple, erect, lanceolate; lower lip with a triangular pad bearing a longitudinal groove; ears large, united; tail long, projecting beyond the posterior margin of uropatagium. Dental formula as in *Micronycteris*.

DESCRIPTION.—Two color phases occur. Dark brown phase: above, bister lightly washed with silver; basal three-fifths of hair whitish; below wood brown. Rufous brown phase: above, cinnamon; below, paler. Skull: like that of *Micronycteris* except that the braincase rises less abruptly in front, forming only a slight angle with rostrum.

MEASUREMENTS.—Total length, 93;



forearm, 49; hind foot, 12.7. Skull: greatest length, 24.8; zygomatic breadth, 12; interorbital width, 4.1.

**Lonchorhina aurita** Tomes

Tomes Long-eared Bat

*Lonchorhina aurita* TOMES, 1863, Proc. Zool. Soc. London, p. 83.

TYPE LOCALITY.—West Indies.

RANGE.—Venezuela, Trinidad, Bahama Island, Panama north to Guatemala.

GENERAL CHARACTERS.—Noseleaf very long and acutely pointed; ears large; posterior limbs elongated; tail reaching posterior border of large interfemoral membrane. Dentition:  $i \frac{2-2}{2-2}$ ,  $c \frac{1-1}{1-1}$ ,  $pm \frac{2-2}{2-2}$ ,  $m \frac{3-3}{3-3} = 34$ .

DESCRIPTION.—General color from Prout's brown to light reddish brown. Skull: crown of head slightly elevated above face line, a distinct concavity at base of rostrum between orbits; teeth essentially as in *Micronycteris*.

MEASUREMENTS.—Head and body, 61; tail 56; forearm, 50.8.

**Tonatia amblyotis** (Wagner)

Round-eared Bat

*Phyllostoma amblyotis* (Natterer MS.) WAGNER, 1843, Wiegmann's Arch. f. Naturg., (9) I, p. 365.

TYPE LOCALITY.—Matto Grosso, Brazil.

RANGE.—From Matto Grosso, Brazil, north on west coast (Bolivia, Peru, Ecuador, Colombia) to Panama and in Central America north to British Honduras.

GENERAL CHARACTERS.—A rather large, slender bat with moderately long loose pelage, very large ears, noseleaf tapering to a point, tail extending to about middle of interfemoral membrane, fur extending about halfway along forearm. Dentition:  $i \frac{2-2}{1-1}$ ,  $c \frac{1-1}{1-1}$ ,  $pm \frac{2-2}{3-3}$ ,  $m \frac{3-3}{3-3} = 32$ .

DESCRIPTION.—General color dull brownish; base of hairs white; underparts rather paler than back. Skull robust, palate relatively narrow, teeth strong, inner of upper incisors obliquely set, their bases apart and crowns broadly in contact, outer incisors small and crowded forward, lower incisors higher than wide, cheek teeth essentially as in *Micronycteris*

except that the anterior premolar is broader than long and the middle lower premolar is small, functionless and crowded between the anterior and posterior premolars.

MEASUREMENTS.—Forearm, 51.9–54. Skull: greatest length, 26.8–29.2; condylo-basal length, 21.6–24.1; interorbital width, 3.8–4.5; zygomatic breadth, 12.3–13.6; upper toothrow, 10.1–11.3.

**Mimon bennettii** Gray

Bennett Bat

*Mimon bennettii* GRAY, 1838, Mag. Zool. and Bot., II, p. 488.

TYPE LOCALITY.—South America.

RANGE.—South America (range north to southern Mexico).

GENERAL CHARACTERS.—Size medium; ears large, separate; tragus long and attenuated; noseleaf lanceolate, attenuated in upper third; tail about as long as femur, terminating near middle of broad interfemoral membrane; chin with a broad naked space divided by a longitudinal groove. Dentition:  $i \frac{2-2}{1-1}$ ,  $c \frac{1-1}{1-1}$ ,  $pm \frac{2-2}{2-2}$ ,  $m \frac{3-3}{3-3} = 30$ .

DESCRIPTION.—General color of upperparts, near sayal brown; pelage becoming paler basally; outer side of forearm clothed proximally with short fur; underparts wood brown. Skull slender, but with rather broadly arched rostrum; zygomata without expansion either in front or behind; teeth more robust than those of *Micronycteris* though not essentially very different in structure.

MEASUREMENTS.—Male and female from Yucatan: forearm, 55.5–56.8; ear, 34.6–35.7; tail, 21.5–22.8; hind foot, 14.5–14.6.

**Phyllostomus hastatus panamensis** Allen

Panama Spear-nosed Bat

*Phyllostomus hastatus panamensis* ALLEN, 1904, Bull. Amer. Mus. Nat. Hist., XX, p. 233.

TYPE LOCALITY.—Boqueron, Chiriqui, Panama.

RANGE.—Panama and north in Central America to Honduras.

GENERAL CHARACTERS.—A large robust bat with a well-developed noseleaf, rather narrow-pointed ears; short tail and large interfemoral membrane; no facial stripes.

Skull short and massive with strong canine teeth; middle upper incisors broad, simple and projecting forward; outer incisors very short and broad; lower incisors forming a continuous, nearly straight row between cingula of canines; the outer teeth slightly smaller than inner ones, the cutting edge faintly trifid. Dentition:  $i \frac{2-2}{1-1}$ ,  $c \frac{1-1}{1-1}$ ,  $pm \frac{2-2}{2-2}$ ,  $m \frac{3-3}{3-3} = 32$ .

DESCRIPTION.—Color of upperparts dark seal-brown, somewhat lighter and slightly varied with gray on neck, head, and shoulders; underparts lighter brown than back with extreme tips of hairs grayish; ears, noseleaf, and membranes, blackish brown.

MEASUREMENTS.—Specimen from Matagalpa, Nicaragua (in dried skin): head and body, 122; hind foot, 25.3; forearm, 91. Skull: greatest length, 40.5; condylobasal length, 35.5; zygomatic width, 22.5; width of braincase, 15.3; least interorbital width, 7.4; width across  $m^3$ - $m^3$ , 14.2; upper tooththrow,  $c$ - $m^3$ , 14.5.

SPECIMENS.—Recorded by Goldman from Patuca.

### *Phyllostomus discolor verrucosus* Elliot

Elliot Spear-nosed Bat

*Phyllostoma verrucosum* ELLIOT, 1905, Proc. Biol. Soc. Wash., XVIII, p. 236.

TYPE LOCALITY.—Niltpec, Oaxaca, Mexico.

RANGE.—Southern Mexico, south to Honduras; limits of range unknown.

GENERAL CHARACTERS.—Size small; V-shaped groove on lower lip, margined with warts; ears rather small, pointed; tragus falcate, constricted at base, posterior border emarginate; noseleaf well developed; tail short, projecting from base of a rather short interfemoral membrane; a gland on underside of neck in males, inconspicuous in females; no facial stripes. Dentition:  $i \frac{2-2}{2-2}$ ,  $c \frac{1-1}{1-1}$ ,  $pm \frac{2-2}{2-2}$ ,  $m \frac{3-3}{3-3} = 32$ .

DESCRIPTION.—Color of upperparts varying from mummy brown to Prout's brown, becoming almost pale ochraceous tawny on head and shoulders, base of hairs warm buff; underparts cinnamon buff to base of hair, this color extending well up on sides of neck and shoulders in

some specimens. Skull: relatively long and slender, with broad, low rostrum, rounded braincase and a weak sagittal crest; zygomata well developed but not especially spreading; basisphenoid pits about as broad as long; middle upper incisors large, projecting forward, outer very short; lower incisors subequal forming a continuous row between canines, cutting edges simple.

MEASUREMENTS.—Two adult males from Las Flores, Gracias: head and body, 78, 90; tail, 16, 18; hind foot, 17, 18; ear, 21, 24; forearm, in dried skin, 62.7. Skull: greatest length, 30.7, 31.4; condylobasal length, 28, 28.1; zygomatic width, 15.7, 15.8; width braincase, 12.2, 12.2; width across  $m^3$ - $m^3$ , 10.5, 10.1; upper tooththrow, 10.2, 10.1; length of mandible to front of incisors, 19.7, 19.7.

Externally *P. d. verrucosus* is not very unlike *Artibeus jamaicensis* but it has a wider interfemoral membrane, a short tail, and lacks the white facial lines of the latter. I have not compared the Honduras specimens with the type series, but they apparently agree in essential characters, though differing a little in cranial measurements with Elliot's description.

SPECIMENS.—Gracias: Las Flores, 14.

### *Phylloderma septentrionalis* Goodwin

Great Northern Spear-nosed Bat

*Phylloderma septentrionalis* GOODWIN, 1940, Amer. Mus. Novit., No. 1075, p. 1.

TYPE LOCALITY.—Las Pilas, La Paz, Honduras.

RANGE.—Known only from Honduras.

GENERAL CHARACTERS.—A large bat with short, close fur limited to head, body, and humerus; chin with V-shaped naked space margined by warts; noseleaf slender; ears large, obtusely pointed, with slight undulations on posterior half; tragus long and narrow, upper third attenuated to an acutely pointed tip, posterior border emarginate with two or more small pointed processes and a squarish lobe at base; tail perforating interfemoral membrane on upperside; wing membrane from middle of ankle; glandular opening on lower throat; externally similar in general to *P. stenops*

Peters from Cayenne, Brazilian subregion, but larger and differing in distinctive cranial characters. Dentition:  $i \frac{2-2}{2-2}$ ,  $c \frac{1-1}{1-1}$ ,  $pm \frac{2-2}{3-3}$ ,  $m \frac{3-3}{3-3} = 34$ .

DESCRIPTION.—Color of upperparts Prout's brown, base of hairs light buff; underparts soiled light buff, the hairs being dusky and washed with light buff; light color of underparts extends on shoulders and sides of neck; ears and membranes blackish brown; wing membrane from middle third phalanx of third finger to tip of wing, light buff. Skull: braincase relatively high and rounded; sagittal crest moderately well developed; rostrum tapering from in front of orbits; nasals rising rather abruptly from behind nares; zygomatic arches rounded; teeth small, inner upper incisors bifid, the lobes subequal; inner lower incisors twice as wide as outer, cutting edges entire; anterior face of upper canines without longitudinal grooves; crowns of mandibular premolars narrow and a minute  $pm_3$  wedged transversely between two functional teeth; mandibular molars narrow.

MEASUREMENTS.—Two specimens from Las Pilas: head and body, 110, 112; tail vertebrae, 20, 20; hind foot, 20, 23; ear, 30, 31; tragus, 9.1, 10.2; forearm, in dried skin, 82.5, 81.1. Skull: greatest length, 35.5, 33.1; condylobasal length, 30.2, 30; interorbital constriction, 9.2, 9.6; zygomatic width, 17.6, 18; upper tooththrow, 11, 11.

*Phylloderma* is apparently a new addition to the North American list. I have not been able to compare *P. septentrionalis* with specimens of *P. stenops*; descriptions of the latter species are rather limited. *P. septentrionalis* may be distinguished from *stenops*, however, by its larger size and the subequal lobes in the upper incisors. In *stenops* the inner upper incisors are bifid but the outer cusps are definitely longer and more slender than the inner. In *septentrionalis* the cutting edges of the lower incisors are entire, while in *stenops* they are bifid.

SPECIMENS.—La Paz: Las Pilas, 3. Tegucigalpa: Las Flores, Archaga, 2.

### *Trachops coffini* Goldman

Coffin Fringe-lipped Bat

*Trachops coffini* GOLDMAN, 1925, Proc. Biol. Soc. Wash., XXXVIII, pp. 23-24.

TYPE LOCALITY.—Guayo Penten, Guatemala.

RANGE.—Guatemala and Honduras, limits of range unknown.

GENERAL CHARACTERS.—A rather large bat, ears large with hair along anterior border; tragus long, tapering; noseleaf large, acutely pointed; lips and chin margined with wart-like protuberances; tail shorter than femur appearing on upperside of a broad interfemoral membrane. Dentition:  $i \frac{2-2}{2-2}$ ,  $c \frac{1-1}{1-1}$ ,  $pm \frac{2-2}{2-2}$ ,  $m \frac{3-3}{3-3} = 34$ .

DESCRIPTION.—Upperparts, near cinnamon brown, varying to a darker shade in some examples, the hairs whitish at base; underparts dull brownish tinged with gray owing to light-colored tip of hairs. Skull with braincase elevated behind rostrum; sagittal crest moderately developed; anterior face of upper canine grooved; inner upper incisor large, outer very small; face of upper incisors with a broad open groove leading to a distinct notch in cutting edge;  $pm_3$  minute and crowded from tooththrow on innerside; similar to *T. cirrhosus* but considerably smaller; molariform tooththrows short but individual teeth relatively broad.

MEASUREMENTS.—Two adult females from Las Flores, Gracias, and type in parentheses: head and body, 74, 84; hind foot, 16, 18; ear, 13, 13; forearm in dried skin, 59.2, 59.4 (58.2). Skull: greatest length, 27.4, 27.3 (28.2); zygomatic width, 13.5, 13.9 (13.5); interorbital constriction, 4.8, 5.3 (5.2); width across  $m^3$ - $m^3$ , 9.5, 9.6; width of braincase, 11.2, 11.2; maxillary tooththrow, 9.6, 10.2 (10.3).

*T. coffini* is much like *T. cirrhosus* but considerably smaller. The forearm is less than 60 mm. (in *cirrhosus* about 62), and dentition differs in detail, especially in the relatively broader upper and lower premolars.

Specimens.—Gracias: Las Flores, 35.

**Chrotopterus auritis** (Peters)

Peters False Vampire Bat

*Vampyrus auritus* PETERS, 1856, Abhandl. k. preuss. Akad. Wiss. Berlin, p. 415.

TYPE LOCALITY.—Mexico.

RANGE.—Tropical America, north to southern Mexico.

GENERAL CHARACTERS.—Size very large; ears large and separate; tail barely perceptible in base of very wide interfemoral membrane; lips and chin nearly smooth; fur unusually long and soft; forearm furred for about half its length, noseleaf large. Dentition:  $i \frac{2-2}{1-1}$ ,  $c \frac{1-1}{1-1}$ ,  $pm \frac{2-2}{3-3}$ ,  $m \frac{3-3}{3-3} = 32$ .

DESCRIPTION.—Color of upperparts bister, the roots whitish, lightly washed with light buff; underparts soiled whitish. Skull large with well-developed canine teeth; first upper premolar very small; second lower premolar minute and crowded completely from toothrow.

MEASUREMENTS.—Total length, 106.6; forearm, 85. Skull: greatest length, 25; zygomatic width, 13; interorbital constriction, 4.5; palatal length to alveoli of incisors, 10.

**Vampyrus spectrum nelsoni** Goldman

Nelson False Vampire Bat

*Vampyrus spectrum nelsoni* GOLDMAN, 1917, Proc. Biol. Soc. Wash., XXX, p. 115.

TYPE LOCALITY.—Coatzacoalcas, Vera Cruz, Mexico.

RANGE.—Amazonian region northward through Central America to southern Mexico.

GENERAL CHARACTERS.—Size very large, forearm over 100 mm.; ears long, relatively narrow and tip rounded; externally much like *Phyllostomus* but with chin smooth and tail absent; noseleaf normal. Dentition:  $i \frac{2-2}{2-2}$ ,  $c \frac{1-1}{1-1}$ ,  $pm \frac{2-2}{3-3}$ ,  $m \frac{3-3}{3-3} = 34$ .

DESCRIPTION.—General color, rusty brownish. Skull: larger than in any other genus of Phyllostomidae.

MEASUREMENTS.—Type: forearm, 106.9; hind foot with claws, 31. Skull: greatest length, 51; zygomatic width, 23.6; maxillary toothrow, canine to back of last molar, 20.2.

**Glossophaginae**

Members of this group are small bats with elongated muzzle; small noseleaf; short rounded ears; short tail; tongue long and highly extensible, its surface armed with conspicuous bristle-like papillae; cheek teeth elongate.

**Glossophaga soricina leachii** (Gray)

Leach's Long-tongued Bat

*Monophyllus leachii* GRAY, 1844, Voyage of the "Sulphur," Zool., I, p. 18.

TYPE LOCALITY.—Realejo, Nicaragua.

RANGE.—From Panama north to Central Mexico.

GENERAL CHARACTERS.—A small brown bat, with elongate muzzle, small noseleaf, short rounded ears, notched lower lip and short tail protruding slightly from the upperside of interfemoral membrane; length of forearm about 35 mm. Dentition:  $i \frac{2-2}{2-2}$ ,  $c \frac{1-1}{1-1}$ ,  $pm \frac{2-2}{3-3}$ ,  $m \frac{3-3}{3-3} = 34$ .

DESCRIPTION.—Color: uniform dark brown varying in shade from snuff brown to mummy brown; base of hairs soiled whitish. Skull: slender; rostrum long and low; teeth small and delicate; similar to typical *Glossophaga soricina* but longer, its condylobasal length ranging from 19.7 to 21 mm.

MEASUREMENTS.—Two specimens from Sabana Grande: Head and body, 54, 55; tail, 7, 8; hind foot (s.u.), 9, 8; ear, 12, 13; forearm, 35.5, 36. Skull: greatest length, 21, 21.2; condylobasal length, 19.7, 20.3; width braincase, 8.8, 8.2; interorbital constriction, 4.6, 4.5; molariform toothrow, 7.4, 7.6.

Leach's long-tongued bat has a wide distribution. While individual and local differences are not uncommon, there is very little geographical variation throughout its range.

SPECIMENS.—Cortés: Cofradia, 1. Santa Barbara: Santa Barbara, 6. Gracias: Las Flores, 1. Tegucigalpa: La Flor Archaga, 16; Comayagua, 2; San Marcos, Sabana Grande, 21; Tegucigalpa, 11.

**Anoura geoffroyi lasiopyga** Peters

Peters Long-nosed Bat

*Glossonycteris lasiopyga* PETERS, 1868, Monatsber k. preuss. Akad. Wiss. Berlin, p. 365.



TYPE LOCALITY.—Southern Mexico.

RANGE.—Southern Mexico, Guatemala, Salvador, and probably Honduras.

GENERAL CHARACTERS.—A medium-sized bat with a long muzzle and small pointed noseleaf; external characters similar in general to *G. s. leachii* but interfemoral membrane very narrow; no tail, calcar very short. Dental formula as in *Glossophaga*.

DESCRIPTION.—General color: dark mummy brown; base of hairs white or soiled white; underparts, dark grayish brown; the hairs dark to base. Skull: long and slender with a long slender rostrum; zygomatic arch incomplete; teeth small; upper incisors minute; anterior upper premolars (pm<sup>2</sup>) separated from canine by a space about equal to length of its base.

MEASUREMENTS.—Total length, 78; hind foot, 18; forearm, 41. Skull: greatest length from 24.5 to 26.1.

### *Choeronycteris mexicana* Tschudi

Mexican Long-nosed Bat

*Choeronycteris mexicana* TSCHUDI, 1844, Fauna Peruana, p. 72.

TYPE LOCALITY.—Mexico.

RANGE.—Jalisco, Mexico to Guatemala, and probably Honduras.

GENERAL CHARACTERS.—A medium-sized bat with an exceptionally long muzzle, noseleaf small and triangular; ears short and rounded; tongue very long; tail short, about one-third the length of interfemoral membrane. Dentition:  $i \frac{2-2}{0-0}$ ,  $c \frac{1-1}{1-1}$ ,  $pm \frac{2-3}{3-3}$ ,  $m \frac{3-3}{3-3} = 30$ .

DESCRIPTION.—General color of upperparts dark brown; fur, pale grayish brown at base; underparts lighter brown than back. Skull with rostrum very greatly elongated; zygomata incomplete; upper incisors minute; premolars long and narrow, widely separated; upper molars distinctly spaced.

MEASUREMENTS.—Total length, 72; tail, 17; hind foot, 11; ear, 12.5; forearm, 43.5. Skull: greatest length, 29; zygomatic breadth, 10.2; upper toothrow, canine to last molar, 11.

### *Choeroniscus godmani* (Thomas)

Godman Long-nosed Bat

*Choeronycteris godmani* THOMAS, 1903, Ann. Mag. Nat. Hist., (7) XI, p. 288.

TYPE LOCALITY.—Guatemala.

RANGE.—Known from Guatemala, Honduras, and Costa Rica.

GENERAL CHARACTERS.—A small dark-colored bat; ears small, obtusely pointed; tragus moderately long and pointed, with a lobe near base of posterior border; noseleaf triangular; tail extending less than halfway to edge of interfemoral membrane; fur short and thick. Dental formula as in *Choeronycteris*.

DESCRIPTION.—Color of upperparts uniform mummy brown, the hairs brownish light drab heavily overlaid with mummy brown; underparts slightly paler and duller than back. Skull: small and delicate; muzzle long and slender; mandible very long and slender; teeth very small, delicate, with wide gaps between them, the widest space behind upper canines; upper incisors minute, subequal, widely separated in middle line.

MEASUREMENTS.—Adult male from La Flor Archaga and type in parentheses: head and body, 55 (47); tail, 6.5 (7); hind foot, 8; ear, 5 (9.5); forearm, in dried skin, 32.6 (33.5). Skull: greatest length, 19.5 (19.6); condylobasal length, 19 (17); width of braincase, 8 (8); width across m<sup>3</sup>-m<sup>3</sup>, 4 (4); width of muzzle at anterior premolars, 3.2; upper toothrow, 7 (7.1).

*Choeroniscus godmani* seems to be rare in collections. It needs no comparison with *Choeronycteris mexicana*, being much smaller and differing in cranial proportions. The length of the skull alone, 19.6 mm. as compared with 26 in *mexicana*, is sufficient difference to distinguish the two genera.

SPECIMENS.—Tegucigalpa: La Flor Archaga, 2; Cantoral, 1.

### *Hylonycteris underwoodi* Thomas

Costa Rica Long-nosed Bat

*Hylonycteris underwoodi* THOMAS, 1903, Ann. Mag. Nat. Hist. (7), XI, p. 286.

TYPE LOCALITY.—Rancho Redondo, Costa Rica.

RANGE.—From Costa Rica north to Vera Cruz, Mexico.

GENERAL CHARACTERS.—A small uniformly dark-colored bat with a long muzzle, noseleaf small, ears small and rounded at tip, tail short and appearing on upperside of interfemoral membrane; closely resembling *Choeroniscus* except that the pterygoids are normal, not inflated and are not produced backward to come in contact with the audital bullae. Dental formula as in *Choeroniscus*.

DESCRIPTION.—General color of upperparts dark brown, crown of head almost black; underparts only slightly paler than back; hairs of back tricolor, dark brown basally and terminally with a light brown mesial ring.

Skull about as in *Choeroniscus* but upper toothrows less parallel and diverging backward and no wide space behind upper canines.

MEASUREMENTS.—The type: forearm, 34.5. Skull: greatest length, 23; basal length 20.3; interorbital width, 4.2; breadth of braincase, 8.6; upper toothrow (canine to last molar), 8.5.

REMARKS.—The genus *Hylonycteris* was described in 1903 by Oldfield Thomas from specimens taken at Rancho Redondo and Tabasco, Costa Rica. Since then no further specimens were recorded until Glover Allen reported six specimens of *Hylonycteris underwoodi* (1942, Jour. Mamm., XXIII, No. 1, p. 97) from a mine tunnel at Metlac, Vera Cruz, Mexico, widely extending the known range of this bat.

### *Leptonycteris nivalis* (Saussure)

Snow Bat

M [= *Ischnoglossa*] *nivalis* SAUSSURE, 1860, Rev. et Mag. de Zool., (2) XII, p. 492.

TYPE LOCALITY.—Near the snow-line on Mount Orizaba, Mexico.

RANGE.—Mexico and Central America.

GENERAL CHARACTERS.—A medium-sized bat with long narrow snout; small noseleaf; ears broad and short; chin divided by a deep groove; tail absent; interfemoral membrane very narrow; calcar small; feet large and armed with strong

claws; fur short and dense. Dentition:  $i \frac{2-2}{2-2}, c \frac{1-1}{1-1}, pm \frac{2-2}{3-3}, m \frac{2-2}{2-2} = 30$ .

DESCRIPTION.—General color dark brownish, hairs whitish from base for about half their length; neck and shoulder lighter than back; underparts lightly washed with buffy white. Skull of the normal glossophagine type: zygomata slender but complete; upper incisors rather large, forming a continuous line between canines, or separated in pairs by a narrow median space; lower incisors low, almost equally spaced or in pairs, divided by a wider median gap.

MEASUREMENTS.—Adult male from Colima: head and body, 75; foot, 14.6; forearm, 55; ear from meatus, 16. Skull: greatest length, 27; zygomatic breadth, 11; interorbital breadth, 5; upper toothrow (exclusive of incisors), 8.6.

The genus *Leptonycteris* is well characterized by its unique dental formula, though externally it rather closely resembles *Anoura* and *Lonchoglossa*.

SPECIMENS.—Recorded from Dueñas, Guatemala.

### *Lichonycteris obscura* Thomas

Nicaraguan Dusky Bat

*Lichonycteris obscura* THOMAS, 1895, Ann. Mag. Nat. Hist., (6) XVI, p. 56.

TYPE LOCALITY.—Managua, Nicaragua.

RANGE.—Dutch Guiana, Costa Rica, Nicaragua, and probably southern Honduras.

GENERAL CHARACTERS.—A small dark-colored bat with rather short, full, soft pelage, small ears and hairy forearm, similar in external characters to *Glossophaga* but darker in color. Dentition:  $i \frac{2-2}{0-0}, c \frac{1-1}{1-1}, pm \frac{2-2}{3-3}, m \frac{2-2}{2-2} = 26$ .

DESCRIPTION.—Color of upperparts uniform dark mummy brown, finely brushed with buffy, base of hairs mummy brown followed by a band of drab; underparts slightly darker than back and hairs dark brown to base; forearm well furred for about half its length; ears short, evenly rounded, outer margin concave; interfemoral membrane well developed; tail barely extending to middle of membrane, tip free. Skull light, evenly elevated from rostrum; braincase large but narrow;

palate well extended backward; upper incisors small, evenly and widely separated; lower incisors absent. Canines slender; premolars slender and widely separated above; molars narrow, without W-shaped pattern.

MEASUREMENTS.—Female from San José and female from Montes de Oca Fuentes, Costa Rica: head and body, 51, 55; tail, 7, 10; ear, 10, 10; hind foot, 8, 8; forearm, 32.5, 33.5. Skull: greatest length, 18.5, 19.3; condylobasal length, 17.2, 18.1; basal length, 15.4, 16.2; interorbital breadth, 3.9, 4.4; width of braincase, 8, 8.3; upper tooththrow, 6, 6.2; lower tooththrow, 5.8, 6.5.

### Carollinae

Size medium; noseleaf small; rather short, somewhat pointed ears; tail reaching to about middle of naked, moderately developed, interfemoral membrane; forearm furred along outside near base.

#### *Carollia perspicillata azteca* (Saussure)

Aztec Short-tailed Bat

*Carollia azteca* SAUSSURE, 1860, Rev. et Mag. de Zool., (2) XII, p. 480.

TYPE LOCALITY.—Southern Mexico.

RANGE.—Hot, humid regions of southern Mexico and Central America from Panama as far north as Orizaba.

GENERAL CHARACTERS.—A medium-sized bat, with moderately large noseleaf; pointed ears; tail reaching to about middle interfemoral membrane; feet rather large; forearm from about 42 to 44 mm. in length. Dentition:  $i \frac{2-2}{2-2}$ ,  $c \frac{1-1}{1-1}$ ,  $pm \frac{2-2}{2-2}$ ,  $m \frac{3-3}{3-3} = 32$ .

DESCRIPTION.—Color varying from mummy brown to rusty, the hairs blackish at base followed by a wide band of soiled whitish broadly tipped with mummy brown and finely washed with light buff; underparts slightly paler than back. Skull: long and heavy with rather high, broad braincase; teeth strong; outer upper incisors very small; middle lower incisors small, crowns notched; greatest length of skull averages about 23 mm.

MEASUREMENTS.—Two adult males from Las Flores, Gracias: head and body, 68,

69; hind foot, 13, 13; ear, 17, 17; forearm, 44.5. Skull: greatest length, 24, 24.2; condylobasal length, 22.1, 22.1; width of braincase, 10, 10.5; interorbital constriction, 5.4, 6; upper tooththrow, 8.2, 8.2.

*C. p. azteca* is the largest known form of the genus. Most of the Honduras series are various shades of mummy brown, with the exception of one individual which is cinnamon buff. The series show considerable variation in cranial and dental characters. While the majority of the specimens have the long, heavy skull and large teeth of typical *C. p. azteca*, the skulls of some individuals are relatively small and show dental characters closely resembling the larger specimens of *C. subrufa*.

SPECIMENS.—Gracias: Las Flores, 76.

#### *Carollia subrufa* (Hahn)

Hahn Short-tailed Bat

*Hemiderma subrufum* HAHN, 1905, Proc. Biol. Soc. Wash., XVIII, p. 247.

TYPE LOCALITY.—Santa Efigenia, near the west coast of Oaxaca.

RANGE.—Southern Mexico to Honduras; limits of range unknown.

GENERAL CHARACTERS.—Similar in general to *C. p. azteca*, but smaller, intermediate in size between *azteca* and *castanea*.

DESCRIPTION.—Color of Honduras species is reddish brown, varying from tawny to mummy brown. Skull, small with high rounded braincase and short broad rostrum; palate wide posteriorly; teeth relatively small; longitudinal axis of the second upper premolar not in line with first premolar and canine, but with anterior edge turned in, making a distinct angle in the line of the tooththrow.

MEASUREMENTS.—One adult male from San Marcos and one from Muya: head and body, 60, 62; hind foot, 14, 12; ear, 18, 14; forearm, 40, 39.5. Skull: greatest length, 22.5, 22.5; condylobasal length, 20.5, 19.4; width braincase, 9.2, 9.5; interorbital constriction, 5.6, 5.6; upper tooththrow, 8.1, 7.3.

The present series comes from an elevation of over 3000 feet. The Sabana

Grande series show a wide range of individual variation. They average larger than typical *subrufa* and a number are equal in size to small specimens of *azteca*. The majority, however, have the angle in the line of the upper tooththrow well accentuated and the teeth are relatively small. Some specimens in the series here referred to *subrufa* may be within the individual range of *azteca*.

SPECIMENS.—Tegucigalpa: San Marcos, Sabana Grande, 69. La Paz: Muya, 3.

### *Carollia castanea* H. Allen

Least Short-tailed Bat

*Carollia castanea* H. ALLEN, 1890, Proc. Amer. Philos. Soc., XXVIII, p. 19.

TYPE LOCALITY.—Costa Rica.

RANGE.—From Panama north to Honduras; limits of range unknown.

GENERAL CHARACTERS.—Externally similar to *subrufa* but smaller.

DESCRIPTION.—Honduras specimens are various shades of Prout's brown, the white band on the hairs is broader and the fine white tips are more dominant than in other species of the genus. Skull: very small and relatively broad; teeth essentially as in *C. subrufa* in structure but smaller, and the arrangement is different, the first upper molar projects considerably beyond the outer edge of the last premolar, making a definite break in the tooth line.

MEASUREMENTS.—Adult male and female from La Piedra de Jesús: head and body, 56, 60; hind foot (s.u.), 11; ear, 19, 19; forearm, 37. Skull: greatest length, 20.4, 20.9; condylobasal length, 18.8, 18.8; interorbital constriction, 5.2, 5.1; width braincase, 9.1, 9.3; upper tooththrow, 6.5, 6.7.

The Honduras series extends the known range of this rare bat. Previous published reports have recorded it only from Costa Rica and Panama. A specimen in the American Museum from British Guiana is apparently referable to this species. The present series show very little individual variation and have all the essential characters ascribed to *C. castanea*.

SPECIMENS.—Tegucigalpa: La Piedra de Jesús, Sabana Grande, 10.

### Sturnirinae

Noseleaf and ears normal; no external tail; interfemoral membrane narrow and densely furred; toes haired to base of claws; teeth highly specialized.

#### *Sturnira lilium parvidens* Goldman

Northern Yellow-shouldered Bat

*Sturnira lilium parvidens* GOLDMAN, 1917, Proc. Biol. Soc. Wash., XXX, p. 116.

TYPE LOCALITY.—Papayo (about 25 miles northwest of Acapulco), Guerrero, Mexico.

RANGE.—From Guerrero and Campeche, Mexico, south to Panama.

GENERAL CHARACTERS.—A medium-sized bat, with rather soft, thick fur; noseleaf and ears normal; tail absent; interfemoral membrane reduced to a narrow fringe; legs and toes furred to base of claws; a conspicuous tuft of yellowish or reddish hairs near the front of shoulders. Dentition:  $i \frac{2-2}{2-2}$ ,  $c \frac{1-1}{1-1}$ ,  $pm \frac{2-2}{2-2}$ ,  $m \frac{3-3}{3-3} = 32$ .

DESCRIPTION.—Color of females: upperparts pinkish buff overlaid with mummy brown; base of hairs dusky; underparts like back but without cinnamon buff; epaulettes ochraceous tawny to cinnamon buff; males rather darker than females, some individuals pale russet; epaulettes from rich ochraceous tawny to deep mars brown. Skull: short and rounded; sagittal crest indistinct; inner incisors with crown higher than long; outer incisors barely extending beyond cingulum of canines; lower incisors small, cutting edges of all four teeth uniformly trilobate; upper molariform tooththrow evenly horse-shoe shaped in males, nearly a straight line in females.

MEASUREMENTS.—Adult male and female from La Cruz Grande and type in parentheses (female): head and body, 61, 66; hind foot, 12, 12; ear, 15, 16; forearm, 40, 41.1 (41.9). Skull: greatest length, 22, 21.5 (23.4); zygomatic width, 13.3, 13.8; interorbital width, 5.9, 5.7 (6); maxillary tooththrow, 6.3, 6.6 (6.6); width across  $m^2-m^2$ , 8.1, 7.7; width across upper canines, 6.1, 6 (5.9).

*Sturnira lilium parvidens* is similar in general to *S. l. lilium* of Paraguay but

smaller. The forearm is shorter, skull narrower, and molariform teeth smaller. The Honduras series, which includes both males and females, is smaller than the Mexican specimens. The only difference seems to be in size, which can probably be included in the range of variation of this subspecies.

SPECIMENS.—Tegucigalpa: La Flor Archaga, 7. La Paz: El Pedernal, 10; La Cruz Grande, 16; Los Encuentros, 1.

### *Sturnira hondurensis* Goodwin

Honduras Yellow-shouldered Bat

*Sturnira hondurensis* GOODWIN, 1940, Amer. Mus. Novit., No. 1075, pp. 1-2.

TYPE LOCALITY.—La Cruz Grande, La Paz, Honduras.

RANGE.—Known only from type locality.

GENERAL CHARACTERS.—Similar to *S. ludovici* from Ecuador but slightly smaller and cutting edges of lower incisors deeply bilobed instead of simple; larger than *S. lilium* and differing in distinctive cranial characters; ears and noseleaf normal for this genus; tragus long and falcate; interfemoral membrane reduced to a narrow fringe, densely furred to margin.

DESCRIPTION.—Color of upperparts between mummy brown and bistre brown; hairs pale mummy brown at base followed by a broad band of soiled light buff and tipped with mummy brown; shoulder patches pinkish buff to roots of hairs, mummy brown tips barely perceptible, stained ochraceous tawny in the males; underparts between pinkish buff and soiled light buff; area around mammae, hair broadly dusky at base and tipped with mummy brown. Skull: relatively long and narrow; braincase moderately high with fairly well-developed sagittal crest;  $pm^3$ ,  $pm^4$ , and  $m^1$  in straight slightly diverging lines;  $m^2$  placed at an angle, directed inward and in line with  $m^3$ , contrasting with the symmetrically curved tooththrows of *S. lilium*; lower incisors small, closely crowded as in *ludovici* and *lilium* but cutting edges of all four incisors uniformly deeply bilobate, the lobes subequal, in *lilium* the crowns are trilobate and in *ludovici* the cutting edges are entire.

MEASUREMENTS.—Two specimens from

La Cruz Grande: head and body, 73, 68; hind foot, 14, 12; ear, 17, 17. Skull: greatest length, 22.8, 24.1; condylobasal length, 20.5, 21.3; zygomatic width, 13.2, 13.4; upper tooththrow, 6.5, 7.2.

*S. hondurensis* needs no comparison with *parvidens*. It resembles *lilium* in general coloration but is readily distinguished from the latter by its larger size and distinctive cranial characters. The Honduras species approached *ludovici* in size and general cranial characters, especially in the placement of the upper molars but it lacks the reddish coloration of the latter, and the lower incisors are bilobate instead of simple.

SPECIMENS.—La Paz: La Cruz Grande, 4.

### Stenoderminae

Noseleaf usually present though sometimes rudimentary or absent; interfemoral membrane narrow; usually no external tail; ears normal; teeth specialized.

### *Vampyrops helleri* Peters

Heller White-striped Bat

*Vampyrops helleri* PETERS, 1866, Monatsber. k. preuss. Akad. Wiss. Berlin, p. 392.

TYPE LOCALITY.—Mexico.

RANGE.—Mexico, south to Panama.

GENERAL CHARACTERS.—A small bat with prominent noseleaf, normal ears, no external tail, white facial stripes, and a white line down middle of back, forearm hairy. Dentition:  $i \frac{2-2}{2-2}$ ,  $c \frac{1-1}{1-1}$ ,  $pm \frac{2-2}{2-2}$ ,  $m \frac{3-3}{3-3} = 32$ .

DESCRIPTION.—General color about snuff-brown, underparts paler, two broad white stripes extend backward from nose to above ear, two more from corner of mouth to below ear, and one narrow stripe from back of head down middle of back. Skull, much like a small *Artibeus* but upper incisors very unequal, the inner more than twice as high as outer, the cutting edges entire; very similar to *Vampyrodes* but with upper molars 3-3.

MEASUREMENTS.—Head and body, 66; forearm, 38. Skull: occipitonasal length, 20; zygomatic width, 12.2; interorbital constriction, 5.5; maxillary tooththrow,  $c-m^3$ , 8.



**Vampyroides major** G. M. Allen

San Pablo Bat

*Vampyroides major* G. M. ALLEN, 1908, Bull. Mus. Comp. Zool., LII, p. 38.

TYPE LOCALITY.—San Pablo, Panama.

RANGE.—Panama, north to Guatemala.

GENERAL CHARACTERS.—A rather large bat with white facial stripes; noseleaf well developed, pointed; dorsally the fur extends out on the wing membranes as far as a line joining elbow, knee and along upper surface of forearm; no external tail, interfemoral membrane narrow. Dentition:  $i \frac{2-2}{2-2}$ ,  $c \frac{1-1}{1-1}$ ,  $pm \frac{2-2}{2-2}$ ,  $m \frac{2-2}{3-3} = 30$ .

DESCRIPTION.—General color above and below mummy brown, base of hairs soiled whitish and broadly tipped with mummy brown, lighter on shoulders, two broad white stripes extend from nares backward over eyes to above ears, and a white line extends from top of head down middle of back. Another white mark extends from corner of mouth to ear. Skull: resembling that of *Artibeus* and very similar to *Vampyrops* but with only 2-2 upper molars; upper incisors very unequal, the inner more than twice the size of outer; canines and premolars essentially as in *Artibeus*.

MEASUREMENTS.—Type: head and body, 76; forearm, 55.5. Skull: greatest length, 29; interorbital constriction, 7; zygomatic breadth, 18.5; maxillary tooth-row,  $c-m^2$ , 10.5.

**Chiroderma salvini** Dobson

Salvin Bat

*Chiroderma salvini* DOBSON, 1878, Cat. Chirop. Brit. Mus., p. 532.

TYPE LOCALITY.—Costa Rica.

RANGE.—From Panama north to Honduras; limits of range unknown.

GENERAL CHARACTERS.—A moderately large bat with well-developed noseleaf tapering to a sharp point; ears rather short and rounded; tragus small, triangular; interfemoral membrane relatively short; forearm covered with hair. Dentition:  $i \frac{2-2}{2-2}$ ,  $c \frac{1-1}{1-1}$ ,  $pm \frac{2-2}{2-2}$ ,  $m \frac{2-2}{2-2} = 28$ .

DESCRIPTION.—Color of upperparts mummy brown, the hairs brownish black at base followed by a broad band of pinkish buff and tipped with mummy brown; underparts slightly paler and lightly

washed with buffy white; a pair of white stripes extending forward from outer edges of noseleaf to inner border of ears; another pair of white stripes from angle of mouth to base of ear; a distinct white dorsal stripe from neck to interfemoral membrane. Skull: rather short and broad, with nasal bones absent, the place occupied by an emargination extending back from nares to between orbits; zygomatic wide; molariform teeth heavy; upper inner incisor rather long and slender; upper incisor very small; lower incisors small, their cutting edges indistinctly bifid in unworn dentition.

MEASUREMENTS.—Two adult males from La Flor Archaga: head and body, 67, 74; hind foot, 11, 13; ear, 13, 15; forearm, in dried skin, 49, 49.4. Skull: greatest length, 26.4, 26.6; condylobasal length, 23.6, 24.4; postorbital constriction, 6, 6; interorbital width, 6.6, 6.6; zygomatic width, 15.7, 16.6; width of braincase, 11.4, 11.4; width across  $m^2-m^2$ , 11.6, 11.9; upper toothrow, 9.5, 9.7.

There are no skulls in the present large series sufficiently immature to show whether or not the nasals are completely absent during early stages of development. The white facial stripes are very wide and distinct in the Honduras series and the mid-dorsal stripe is well defined in most of the specimens, though Dobson gives as a character for *salvini* "no white line along the spine."

SPECIMENS.—Tegucigalpa: La Flor Archaga, 32; San Marcos, 1.

**Ectophylla alba** H. Allen

Honduras White Bat

*Ectophylla alba* H. ALLEN, 1892, Proc. U. S. Nat. Mus., XV, p. 442.

TYPE LOCALITY.—Segovia River, eastern Honduras.

RANGE.—Honduras and Nicaragua.

GENERAL CHARACTERS.—A small whitish bat, noseleaf erect, tail absent, tragus moderately convex on inner margin, outer margin with two coarse serrations, ears moderately large and rounded. Externally *E. alba* has the appearance of a small whitish *Vampyrus*. Dentition:  $i \frac{2-2}{2-2}$ ,  $c \frac{1-1}{1-1}$ ,  $pm \frac{2-2}{2-2}$ ,  $c \frac{2-2}{2-2} = 28$ .

DESCRIPTION.—General color dull whitish above and below; sides of body from shoulder to rump dark fawn.

MEASUREMENTS.—Type: head and body, 36; hind foot, 8; forearm, 25.

**Artibeus planirostris planirostris** (Spix)

Flat-nosed Fruit Bat

*Phyllostoma planirostris* SPIX, 1823, Simiar et Vespert., Brazil, p. 66.

TYPE LOCALITY.—Suburbs of Bahia, Brazil.

RANGE.—From central Brazil to southern Mexico.

GENERAL CHARACTERS.—Very similar to *A. jamaicensis*. The two species are difficult to distinguish apart by external characters, but *A. p. planirostris* differs normally in the possession of a small third upper molar. Dentition:  $i \frac{2-2}{2-2}$ ,  $c \frac{1-1}{1-1}$ ,  $pm \frac{2-2}{2-2}$ ,  $m \frac{3-3}{3-3}$  = 32.

DESCRIPTION.—Similar to *A. jamaicensis* but color darker.

MEASUREMENTS.—Forearm, 65.2; hind foot, 17.2. Skull: greatest length, 30; zygomatic width, 18.5; upper tooththrow,  $c-m^2$ , 10.6.

**Artibeus jamaicensis jamaicensis** Leach

Jamaican Fruit Bat

*Artibeus jamaicensis* LEACH, 1821, Trans. Linn. Soc., XIII, p. 75.

TYPE LOCALITY.—Jamaica.

RANGE.—Central America and southern Mexico as far north as Morelos and east of Jamaica in the West Indies to St. Kitts.

GENERAL CHARACTERS.—A large robust bat with extensive wings, narrow interfemoral membrane; no external tail; moderately long pointed ears; rather small tragus; well-developed noseleaf. Dentition:  $i \frac{2-2}{2-2}$ ,  $c \frac{1-1}{1-1}$ ,  $pm \frac{2-2}{2-2}$ ,  $m \frac{2-2}{3-3}$  = 30.

DESCRIPTION.—Color: various shades of blackish brown, the hairs almost smoke-gray from base for most of their length followed by a dark brownish band and tipped with grayish white or light buffy; underparts slightly paler than back; facial stripes indistinct. Skull: massive; zygomatic spreading; braincase slightly elevated; molariform teeth heavy;  $m^3$  absent; upper incisors small; inner with a distinct bilobed cutting edge; lower incisors small, crowded between canines.

MEASUREMENTS.—Two adult males: head and body, 75, 75; hind foot, 15, 10; ear, 16, 15; forearm, in dried skin, 57.7, 60. Skull: greatest length, 27.3, 28.3; condylobasal length, 24.4, 24.8; width of braincase, 12.5, 12.7; zygomatic width, 16.8, 17.5; width across upper  $m^1-m^1$ , 12.5, 13; upper tooththrow, 9.6, 10.3.

*Artibeus jamaicensis jamaicensis* is indigenous to Central America and may be confused with two other forms: *A. j. palmarum* and *A. p. planirostris*. Anderson states that *palmarum* is a late intruder from the south into this region, and is larger than *jamaicensis*, with more angular interorbital ridges and relatively shorter and wider palate. *A. p. planirostris* has a third upper molar which is absent in *jamaicensis*. *A. j. richardsoni* Allen is probably a synonym of *jamaicensis*.

SPECIMENS.—Intibuca: El Manteado, 2; Tegucigalpa: La Flor Archaga, 2; Tegucigalpa, 1.

**Artibeus jamaicensis palmarum** Allen and Chapman

Trinidad Fruit Bat

*Artibeus palmarum* ALLEN and CHAPMAN, 1897, Bull. Amer. Mus. Nat. Hist., IX, p. 16.

TYPE LOCALITY.—Trinidad.

RANGE.—Venezuela, including Trinidad and St. Vincent Islands, through Central America to Vera Cruz and Jalisco, Mexico.

GENERAL CHARACTERS.—Similar to typical *jamaicensis* but larger.

DESCRIPTION.—Similar in color to *jamaicensis* but facial stripes more pronounced. The Honduras series is about sayal brown, lighter on the neck and shoulders and dark on the rump. Skull as in *jamaicensis* but larger.

MEASUREMENTS.—Two adult females from La Flor Archaga: head and body, 85, 88; hind foot, 15, 18; ear, 15, 15; forearm, in dried skin, 67.8, 70. Skull: greatest length, 29.3, 29.3; condylobasal length, 25.8, 26.2; zygomatic width, 19, 18.5; width of braincase, 13.1, 13; width across  $m^1-m^1$ , 12.7, 12.4; upper tooththrow, 10.8, 10.4.

While the Honduras specimens of *Artibeus jamaicensis* seem to fall into two

recognizable subspecies, a review of this group may prove that there is but one.

SPECIMENS.—Tegucigalpa: La Flor Archaga, 9.

### **Artibeus watsoni** Thomas

Panama Little Fruit Bat

*Artibeus watsoni* THOMAS, 1901, Ann. Mag. Nat. Hist., (7) VII, p. 542.

TYPE LOCALITY.—Bogava, Chiriqui, Panama.

RANGE.—Central America; Panama, north to Guatemala.

GENERAL CHARACTERS.—Similar to *A. toltecus* but differs in the presence of a third lower molar—only two in *toltecus*. Dentition:  $i \frac{2-2}{2-2}$ ,  $c \frac{1-1}{1-1}$ ,  $pm \frac{2-2}{2-2}$ ,  $m \frac{2-2}{3-3} = 30$ .

DESCRIPTION.—Similar to *A. toltecus* but smaller and lighter in color.

MEASUREMENTS.—Forearm about 40; hind foot, 10. Skull: greatest length, 20; zygomatic width, 11.5; upper tooththrow,  $c-m^2$ , 7.

### **Artibeus toltecus** (Saussure)

Mexican Little Fruit Bat

*Stenoderma tolteca* SAUSSURE, 1860, Rev. et Mag. de Zool. (2), XII, p. 427.

TYPE LOCALITY.—Mexico. Exact place unknown.

RANGE.—Central America; southern and central Mexico as far north as Durango.

GENERAL CHARACTERS.—A small dark-colored bat with well-developed noseleaf; ears separate; no external tail; inter-femoral narrow; tragus emarginate along posterior border. Dentition:  $i \frac{2-2}{2-2}$ ,  $c \frac{1-1}{1-1}$ ,  $pm \frac{2-2}{2-2}$ ,  $m \frac{2-2}{2-2} = 28$ .

DESCRIPTION.—Color: blackish brown, the hairs white at extreme base followed by a broad band of pale drab and tipped with blackish brown; a pair of white facial stripes extending from base of noseleaf to between ears; indistinct white edging on ears. Skull: moderately wide; braincase slightly elevated; palate wide; molariform teeth large, tooththrow evenly horse-shoe shaped; zygomata wide spreading. Incisors: upper small; inner with distinctly bilobed cutting edge; lower smaller than upper, crowded between canines. Third upper molar absent.

MEASUREMENTS.—Two adult males from La Flor Archaga: head and body, 53, 56; hind foot, 8, 8; ear, 12, 16; forearm, in dried skin, 39.3, 40.3. Skull: greatest length, 20.3, 20.4; condylobasal length, 18, 18.4; zygomatic width, 11.8, 12.2; width of braincase, 9.5, 9.5; width across  $m^1-m^1$ , 8.8, 9; upper tooththrow, 6.5, 6.5.

In a majority of the Honduras specimens there is no trace of a white edging to the ears, and while the white facial stripes are present on all the specimens, they are only well defined in a few individuals.

SPECIMENS.—Tegucigalpa: La Flor Archaga, 22.

### **Artibeus phaeotis** (Miller)

Yucatan Little Fruit Bat

*Dermanura phaeotis* MILLER, 1902, Proc. Acad. Nat. Sci. Phila., p. 405.

TYPE LOCALITY.—Chichenitze, Yucatan, Mexico.

RANGE.—Yucatan and southern Mexico.

GENERAL CHARACTERS.—Similar to *A. toltecus* but shorter tooththrow; forearm about 38 mm.

DESCRIPTION.—Color about as in *A. toltecus* but no whitish edging to ears. Skull like that of *toltecus* but smaller.

MEASUREMENTS.—Forearm, 41.8. Skull: greatest length, 19.3; zygomatic width, 11.6; upper tooththrow  $c-m^2$ , 6.

The difference between *phaeotis* and *toltecus* is not clearly marked. Size apparently is the main factor. *A. phaeotis* is the smaller with a shorter tooththrow; length of forearm about 38 as against 39 to 43 mm. in *toltecus*.

### **Artibeus nanus** Anderson

Anderson Little Fruit Bat

*Artibeus nanus* ANDERSON, 1906, Ann. Mag. Nat. Hist., (7) XVIII, p. 423.

TYPE LOCALITY.—Tierra Colorado, Sierra Madre del Sur, Guerrero, Mexico.

RANGE.—Guatemala and north to Sinaloa, Mexico.

GENERAL CHARACTERS.—Similar to *A. toltecus* but smaller and differing in cranial characters.

DESCRIPTION.—General color dark brown washed with drab. Underparts broccoli-brown. Facial stripes strongly

marked; conspicuous light margins to ears. Skull: dentition about as in *toltecus* but braincase broader and more sharply elevated above rostrum.

MEASUREMENTS.—Forearm, 37.2; hind foot, 9.7. Skull: greatest length, 18.5; zygomatic width, 11.7; upper tooththrow,  $c-m^2$ , 6.

*A. nanus* may be readily distinguished from other small species of *Artibeus* by its short bony palate and high braincase.

### ***Enchisthenes harti* (Thomas)**

Hart Bat

*Artibeus harti* THOMAS, 1892, Ann. Mag. Nat. Hist., (6) X, p. 409.

TYPE LOCALITY.—Trinidad.

RANGE.—Recorded from Trinidad, Venezuela, Honduras, and southern Ecuador.

GENERAL CHARACTERS.—A small bat, similar to *Artibeus* but upper incisors not bifid and third molar, both above and below, well developed; noseleaf short and broad; interfemoral membrane very short; approximately two-thirds of forearm, above and below, upperside of tibia, foot, and interfemoral membrane furred; ears short and pointed. Dentition:  $i \frac{2-2}{2-2}$ ,  $c \frac{1-1}{1-1}$ ,  $pm \frac{2-2}{2-2}$ ,  $m \frac{3-3}{3-3} = 32$ .

DESCRIPTION.—Color of upperparts dark mummy brown, becoming almost black on head and shoulders; underparts like back but slightly paler, with darkest area on chest; a pair of distinct buffy brown facial stripes extending from base of noseleaf to between ears and an indistinct line from corner of mouth to base of ear. Skull, short and broad; profile from front of sagittal crest to nasals concave; palate short; cutting edges of upper median incisors simple, obtusely pointed in the center; outer upper incisors narrower and shorter, cutting edges simple; third molars, both above and below, well developed.

MEASUREMENTS.—Honduras specimen, in dried skin, collector's in parentheses: head and body, 60 (54); hind foot, 11.4 (9); ear, from notch, 11 (10); forearm, 37.6; third metacarpal, 35.9; fourth metacarpal, 35.8; fifth metacarpal, 35.9. Skull: greatest length, 20.8; mastoid width, 10.2; width braincase, 9.4; zygomatic breadth, 11.6; width across  $m^1-m^1$ , 8.5; width across canines, 5.5; upper tooththrow  $c-m^3$ , 7.2.

The Honduras specimen agrees fairly well with the measurements of the type and with the specimen from Venezuela; the forearm is a little short but it may be incomplete. The present specimen is the first record of this bat for the North American continent and apparently the third known complete specimen of this genus. The second, now in the Carnegie Museum, was collected at Petare, Merida, Venezuela. The two specimens recorded by J. A. Allen from Caparo, Trinidad, now prove to be a different genus and are not *Enchisthenes*. Over 20 skulls were found in owl pellets collected by Dr. H. E. Anthony in South Ecuador.

SPECIMENS.—Tegucigalpa: La Flor Archaga, 1.

### ***Pygoderma bilabiatum* (Wagner)**

Ipanema Noseleaf Bat

*Phyllostoma bilabiatum* WAGNER, 1843, Wiegmann's Arch. f. Naturg., (9) I, p. 366.

TYPE LOCALITY.—Ipanema, São Paulo, Brazil.

RANGE.—Brazil, north to southern Mexico.

GENERAL CHARACTERS.—Size medium; muzzle short; ears and noseleaf similar to *Artibeus*; no external tail; calcar and interfemoral membrane moderately developed, wing membrane between humerus and forearm and legs to ankles covered with fur. Dentition:  $i \frac{2-2}{2-2}$ ,  $c \frac{1-1}{1-1}$ ,  $pm \frac{2-2}{2-2}$ ,  $m \frac{2-2}{2-2} = 28$ .

DESCRIPTION.—Color above dark brown, the hairs with a band of pale buff, underparts grayish brown, a small patch of white on shoulder. Skull, with a shortened and deepened cuboidal rostrum; the inner line of upper tooththrows form almost a circle except where broken posteriorly.

MEASUREMENTS.—Head and body, 61; forearm, 28; hind foot, 11.4; ear, 17.7.

### ***Centurio senex* Gray**

Wrinkled-face Bat

*Centurio senex* GRAY, 1842, Ann. Mag. Nat. Hist., X, p. 259.

TYPE LOCALITY.—Unknown.

RANGE.—From south central Mexico to Costa Rica.

GENERAL CHARACTERS.—Muzzle short and broad; no noseleaf, entire face and throat a complicated mass of naked dermal outgrowths, no external tail, interfemoral membrane moderately wide. Dentition:  $i \frac{2-2}{2-2}$ ,  $c \frac{1-1}{1-1}$ ,  $pm \frac{2-2}{2-2}$ ,  $m \frac{2-2}{2-2} = 28$ .

DESCRIPTION.—General color yellowish brown, tip of hairs grayish; a white spot

on shoulder. Skull with high rounded narrow braincase and practically no rostrum; palate very wide and short, its length only half its width, sagittal crest distinct, extending over entire braincase.

MEASUREMENTS.—Head and body, 50.5–76; forearm, 40–43; hind foot, 10–11. Skull: greatest length, 17.4–18.4; interorbital width, 4.8–5.4; zygomatic width, 14.6–15.3.

## Desmodontidae

### Vampire Bats

This family includes the true vampire bats which subsist on the blood of animals, probably to the exclusion of other food.

Teeth highly specialized for cutting, all trace of crushing surface being absent, cheek teeth greatly reduced; ears short; nose bordered by cutaneous folds; no external tail; interfemoral reduced to a narrow fringe.

#### *Desmodus rotundus murinus* (Wagner)

Mexican Vampire Bat

*Desmodus murinus* WAGNER, 1840, Schreber's Säugethiere, Suppl. 1, p. 377.

TYPE LOCALITY.—Mexico.

RANGE.—Mexico and Central America; limits of range unknown.

GENERAL CHARACTERS.—A highly specialized medium-sized bat with small rounded ears; tragus moderately long, pointed, haired; thumb elongated; interfemoral membrane reduced to a narrow fringe; tail and noseleaf absent. Dentition:  $i \frac{1-1}{2-2}$ ,  $c \frac{1-1}{1-1}$ ,  $pm \frac{1-1}{2-2}$ ,  $m \frac{1-1}{1-1} = 20$ .

DESCRIPTION.—Color of upperparts mummy brown, lightly washed with buffy white; base of hairs whitish; underparts soiled whitish. Skull: braincase large, very wide posteriorly; rostrum reduced to a mere support for a pair of large incisors and canines.

MEASUREMENTS.—Two adult females from San Marcos, Sabana Grande: head and body, 86, 87; hind foot, 15, 16; ear, 19, 19. Skull: greatest length, 24, 24.7; condylobasal length, 21.8, 22.3; interorbital constriction, 5.7, 5.9; zygomatic width,

12.3, 11.9; width of braincase, 12.1, 12; width across canines, 5.8, 6.2.

*Desmodus rotundus murinus* is a wide ranging race and averages smaller than typical *D. rotundus* from Paraguay. Individual Mexican specimens, however, are practically indistinguishable from the southern race.

SPECIMENS.—Gracias: Las Flores, 3; Cerro Pucca, 3; El Capante 7. La Paz: La Cruz Grande, 12. Tegucigalpa: La Flor Archaga, 12; La Cueva Archaga, 7; San Marcos, Sabana Grande, 8.

#### *Diphylla ecaudata centralis* Thomas

Hairy-legged Vampire Bat

*Diphylla centralis* THOMAS, 1903, Ann. Mag. Nat. Hist., (7) XI, p. 378.

TYPE LOCALITY.—Boquete, Chiriqui, Panama.

RANGE.—Central America and north to southern Mexico.

GENERAL CHARACTERS.—Externally similar to *Desmodus* but with shorter and more broadly rounded ears; thumb short and without distinct pad under metacarpal; well developed though small calcar; hind limbs haired to base of claws. Dentition:  $i \frac{2-2}{2-2}$ ,  $c \frac{1-1}{1-1}$ ,  $pm \frac{1-1}{2-2}$ ,  $m \frac{2-2}{2-2} = 26$ .

DESCRIPTION.—General color, seal-brown, base of hair white; underparts, shoulders, and neck rather lighter than back. Similar to *D. ecaudata* but with less white on digits and tips of wings. Skull differs from that of *Desmodus* in the much higher, broader interorbital region, nearly parallel sides, interorbital space

and the fan-shaped seven-lobed outer lower incisors.

MEASUREMENTS.—Two adult males from San Marcos, Sabana Grande: head and body, 80, 84; hind foot, 15, 15; ear, 16, 18; forearm, in dried skin, 53, 55.4. Skull: greatest length, 22.5, 23.1; condylo-basal length, 20, 20; zygomatic width, 12.5, 12.9; width of braincase, 11, 11.8; width across canines, 5.2, 5.2.

*D. centralis* is represented as differing from *D. ecaudata* mainly in the relative

size of the lower cheek teeth. In this respect the Honduras specimens closely approach the latter and the differences, if any, are not more than subspecific. Underwood's specimens have rather long dark fur and probably average larger than South American specimens. Thomas' species *centralis* may not be valid and the present species should be referred to *ecaudata*.

SPECIMENS.—Tegucigalpa: San Marcos, Sabana Grande, 2. Gracias: Las Flores, 1.

## Natalidae

### Funnel-eared Bat

Members of this family are small, delicately formed bats. Central American representatives of this group may be recognized by their low, somewhat funnel-shaped ears; long, slender limbs; large interfemoral membrane; and the absence of a noseleaf. The skull is long and narrow, with high, subglobose braincase; postorbital processes are absent.

#### *Natalus mexicanus* Miller

Mexican Straw-colored Bat

*Natalus mexicanus* MILLER, 1902, Proc. Acad. Nat. Sci. Phila., p. 399.

TYPE LOCALITY.—Santa Anita, Lower California, Mexico.

RANGE.—Mexico south to Panama.

GENERAL CHARACTERS.—A small delicately formed bat with low somewhat

funnel-shaped ears; long slender limbs; large interfemoral membrane; no noseleaf—long thin thread-like tail; thin papery flying membrane. Dentition:  $i \frac{2-2}{3-3}$ ,  $c \frac{1-1}{1-1}$ ;  $pm \frac{3-3}{3-3}$ ,  $m \frac{3-3}{3-3} = 38$ .

DESCRIPTION.—Color uniform rich golden yellow or cinnamon buff, flying membrane dark wood brown; underparts paler than back. Skull long and narrow, with high subglobose braincase; palate excised anteriorly but the premaxillae meet in the median line in front of two well-developed foramina. Upper incisors low, subequal; lower incisors small trifid.

MEASUREMENTS.—Total length, 100; tail vertebrae, 52; hind foot, 9; ear, 10.5. Skull: greatest length, 16; zygomatic breadth, 8; interorbital constriction, 3; maxillary toothrow, 7.

## Thyropteridae

### Disk-winged Bats

Members of this family are small, delicately formed bats with hollow suctorial disks at base of thumbs and on soles of feet; no noseleaf and tail extending slightly beyond a broad interfemoral membrane.

#### *Thyroptera discifera* (Lichtenstein and Peters)

Honduras Disk-winged Bat

*Hyonycteris discifera* LICHTENSTEIN AND PETERS, 1854, Monatsber. k. preuss. Akad. Wiss. Berlin, p. 336.

TYPE LOCALITY.—Puerto Caballos, District of Cortés, Honduras.

RANGE.—Honduras south to South America.

GENERAL CHARACTERS.—Size small; tail long; no noseleaf; sole of foot and base of thumb with adhesive disks; similar to *T. t. albigula* but differing in color and dental characters. Dentition:  $i \frac{2-2}{3-3}$ ,  $c \frac{1-1}{1-1}$ ;  $pm \frac{3-3}{3-3}$ ,  $m \frac{3-3}{3-3} = 38$ .

DESCRIPTION.—Color of upperparts reddish brown; underparts pale yellowish

brown or yellowish white. Skull: similar to *T. l. albigula*, both upper incisors bifid.

MEASUREMENTS.—Total length, 68.5; forearm, 38. Skull: occipitonasal length, 13; zygomatic width, 6; interorbital constriction, 2; upper tooththrow, including incisors, 6.5.

**Thyroptera tricolor albigula** G. M. Allen

Allen's Disk-winged Bat

*Thyroptera tricolor albigula* G. M. ALLEN, 1923, Proc. New England Zool. Club, IX, p. 1.

TYPE LOCALITY.—Gutierrez, in the mountains about 25 miles inland from Chiriquito, western Panama.

RANGE.—From Panama north to Honduras; limits of range unknown.

GENERAL CHARACTERS.—A small, slender bat with sole of foot and thumb provided with conspicuous adhesive disks; ears short, funnel-shaped, pointed; tragus short and broad; tip of tail free from interfemoral membrane.

DESCRIPTION.—Color of upperparts very dark cinnamon brown, base of hairs only

slightly paler than tips; entire underparts white, except a narrow strip at the sides and a small spot on each side of lower jaw which are cinnamon brown. Skull, abruptly elevated behind rostrum, smooth and rounded; rostrum narrow; palate slightly concave; inner upper incisor larger than outer; outer upper incisor distinctly bifid; lower incisors trifid.

MEASUREMENTS.—One specimen from San Marcos and type in parentheses: head and body, 40 (39); tail, — (29); hind foot, in dried skin, 6 (6.5); forearm, 34.5 (36.6). Skull (in bad condition): greatest length, — (14.6); palatal length, — (7.2); zygomatic width, — (7.5); width of braincase, — (7.3); upper tooththrow, including incisors, 6.6 (6.7).

The characters distinguishing *T. t. albigula* from other races of Central American *Thyroptera* are: underparts entirely white and outer upper incisors distinctly bifid (not so in *albiventer*, and both upper incisors bifid in *discifera*).

SPECIMENS.—Tegucigalpa: San Marcos de Guaymaca, 1.

## Vespertilionidae

### Common Bats

Members of this family are medium-sized bats; muzzle without leaf-like outgrowths; tail well developed, extending to edge of wide interfemoral membrane; ears usually separate; tragus well developed, simple; premaxillaries without palatal branches; the palate widely emarginate anteriorly.

**Myotis nigricans nigricans** (Wied)

Little Black Bat

*Vespertilio nigricans* WIED, 1826, Beiträge z. Naturg., Brazil, II, p. 266.

TYPE LOCALITY.—Fazenda de Aga, near the Rio Iritiba, Province of Espirito Santo, eastern Brazil.

RANGE.—Central and South America from Guatemala to southern Brazil and from coast to coast.

GENERAL CHARACTERS.—A small dark-colored bat with small well-separated ears; no noseleaf; tail long, reaching edge of wide interfemoral membrane; nostrils

simple. Dentition:  $i \frac{2-2}{3-3}$ ,  $c \frac{1-1}{1-1}$ ,  $pm \frac{3-3}{3-3}$ ,  $m \frac{3-3}{3-3} = 38$ .

DESCRIPTION.—General color above blackish slate; underparts not so dark as the back and often washed buffy or yellowish. Skull: slender, braincase rounded; premaxillaries without palatal branches, the palate widely emarginate anteriorly.

MEASUREMENTS.—Head and body, 45; tail, 37; hind foot, 6.6; forearm, 36. Skull: greatest length, 14; zygomatic breadth, 8.0; interorbital constriction, 3.4; maxillary tooththrow, 5.2.

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

Mirador Brown Bat

*Scotophilus miradorensis* H. ALLEN, 1866, Proc. Acad. Nat. Sci. Phila., p. 287.

TYPE LOCALITY.—Mirador, Vera Cruz, Mexico.

RANGE.—From Panama north to southern Mexico.



GENERAL CHARACTERS.—A large brown bat with rather small ears narrower than long; tragus straight, constricted at base, tapering to a rounded tip. Dentition:  $i \frac{2-2}{3-3}, c \frac{1-1}{1-1}, pm \frac{1-1}{2-2}, m \frac{3-3}{3-3} = 32$ .

DESCRIPTION.—Color, about sayal brown; underparts slightly paler than back, the hairs dark brownish from base and tipped with brown. Skull: large and heavily built; rostrum broad and flattened; sagittal crest conspicuous; larger than typical *fuscus*, and teeth heavier.

MEASUREMENTS.—Two adult females from El Manteado: head and body, 66, 73; tail, 54, 54; hind foot, 10, 10; ear, 16, 18; forearm, in dried skin, 54, 54. Skull: greatest length, 20.4, 21; condylo-basal length, 19, 19.5; zygomatic width, 13.8, 14.2; interorbital constriction, 4.4, 4; upper toothrow, 7.6, 7.7; width across  $m^3-m^3$ , 8.3, 9.

*E. f. miradorensis* is larger than typical *fuscus* and much larger than *E. propinquus*. The measurements of the Honduras series are even greater than the average for the Mirador bat.

SPECIMENS.—La Paz: El Manteado, 8; La Cruz Grande, 2; El Pedrero, 1.

### *Eptesicus propinquus* (Peters)

Peters Black Bat

*Vesperus propinquus* PETERS, 1872, Monatsber. k. preuss. Akad. Wiss. Berlin, p. 262.

TYPE LOCALITY.—Santa Isabel, Guatemala.

RANGE.—Vera Cruz, Yucatan to Panama.

GENERAL CHARACTERS.—A small slender bat with dark color of upperparts sharply distinguished from lighter underside of body; ears small, obtusely pointed; tragus constricted at base, sides parallel for two-thirds its length and attenuated to a sharp pointed tip.

DESCRIPTION.—Color of upperparts dark mummy brown; tips of hairs lightly washed with pale cinnamon, hairs broadly blackish brown from base; underparts heavily washed with light buff. Skull: rostrum flat, the nares and palatal emargination not especially enlarged; teeth normal, both upper incisors well developed,

the inner larger than outer; lower incisors subequal, trifid.

MEASUREMENTS.—Adult male from Comayagua: head and body, 58; tail, 30; hind foot, 9; forearm, in dried skin, 40. Skull: greatest length, 15; condylo-basal length, 14.4; zygomatic width, 10.3; interorbital constriction, 3.8; upper toothrow, 5.6; width across  $m^2-m^2$ , 6.4.

This rare bat described by Peters in 1872 has since been recorded from only a few additional localities: Achotal, Vera Cruz; Santa Isabel, Guatemala; Greytown, Nicaragua; San Pablo, Panama. Dr. Allen's *Adelonycteris gaumeri* from Isamal, Yucatan, has since proved to be a synonym for *propinquus*.

SPECIMENS.—Tegucigalpa: Comayagua, 1.

### *Lasiurus borealis mexicana* (Saussure)

Mexican Red Bat

*Atalapha mexicana* SAUSSURE, 1861, Rev. et Mag. de Zool., (2) XIII, p. 97.

TYPE LOCALITY.—Mexico, probably in Vera Cruz, Puebla, or Oaxaca.

RANGE.—From Panama north to southern Mexico.

GENERAL CHARACTERS.—A small, reddish bat with fur covering the hind limbs and upper interfemoral membrane; ears short and rounded; tragus pointed triangular in general outline; underside of wings sparsely haired along forearm. Dentition:  $i \frac{1-1}{3-3}, c \frac{1-1}{1-1}, pm \frac{2-2}{2-2}, m \frac{3-3}{3-3} = 32$ .

DESCRIPTION.—Color of upperparts bright russet, the hairs blackish at base followed by a bright band of light buff and broadly tipped with russet; the hair on upperside of interfemoral membrane russet to base; underparts lighter than back, the hairs subterminally dusky and washed with light buff. Skull, short and broad; braincase high and rounded; rostrum short and blunt; upper incisor in contact with canine; a minute upper premolar on inner side of toothrow at base of canine; nares and palatal emargination wide; lower incisors trifid.

MEASUREMENTS.—Specimen from La Flor Archaga: head and body, 55; tail, 46; hind foot, 6; forearm, in dried skin, 39. Skull: condylo-basal length, 11.6;

zygomatic width, 8.7; width of braincase, 7.1; depth of braincase, 5.7; width across  $m^2-m^3$ , 5.4; upper toothrow, 4.

*Lasiurus borealis mexicana* is a well-marked race. The area behind the forearm on underside of the wings which is densely furred in other subspecies is merely sprinkled with a few hairs, and on the interfemoral membrane the hair becomes sparse beyond the middle and the edge is entirely bare.

SPECIMENS.—Tegucigalpa: La Flor Archaga, 1.

### ***Dasypterus ega panamensis* Thomas**

Panama Short-eared Bat

*Dasypterus ega panamensis* THOMAS, 1901, Ann. Mag. Nat. Hist., (7) VIII, p. 246.

TYPE LOCALITY.—Bogava, Chiriqui, Panama.

RANGE.—Panama to Honduras and Yucatan, limits unknown.

GENERAL CHARACTERS.—A medium-sized light brown bat with short, rounded ears; tragus large, tip rounded; fur of back extends on basal half of dorsal surface of interfemoral membrane and lightly along forearm on underside of wing membranes and basal half of outside of ear. Dentition:  $i \frac{1-1}{3-3}$ ,  $c \frac{1-1}{1-1}$ ,  $pm \frac{1-1}{2-2}$ ,  $m \frac{2-3}{3-3} = 30$ .

DESCRIPTION.—Color between raw umber and clay color, the hairs blackish at base and lightly tipped with dusky; area around eyes and upper lip blackish; rump and hair on interfemoral membrane clay color to base of hairs; underparts slightly paler than back. Skull, similar in general to *Lasiurus borealis* but larger and without the small upper premolar.

MEASUREMENTS.—Forearm, in dried skin, 44.2; of type, 46.5.

The present specimen is a skin without

skull and field measurements, apparently not quite fully adult.

SPECIMENS.—Tegucigalpa: Tegucigalpa, 1.

### ***Rhogeessa tumida* H. Allen**

Little Yellow Bat

*Rhogeessa tumida* H. ALLEN, 1866, Proc. Acad. Nat. Sci. Phila., p. 286.

TYPE LOCALITY.—Mirador, Vera Cruz, Mexico.

RANGE.—Central America and southern Mexico.

GENERAL CHARACTERS.—A small, slender bat with small feet; naked interfemoral membrane; rather narrow obtusely pointed ears; tragus long and slender, acutely pointed; noseleaf absent. Dentition:  $i \frac{1-1}{3-3}$ ,  $c \frac{1-1}{1-1}$ ,  $pm \frac{1-1}{2-2}$ ,  $m \frac{2-3}{3-3} = 30$ .

DESCRIPTION.—Color of upperparts light cinnamon-buff throughout; hairs on upperparts tipped with Prout's brown; underparts slightly paler than back; ears and membrane brownish black. Skull small and slender, similar to that of *Nycticeius* but outer lobe of all three lower incisors obsolete and inner lobe practically absent in the outer tooth.

MEASUREMENTS.—Two adult females from El Pedrero: head and body, 41, 41; tail, 25, 25; hind foot, 5, 6; ear, 13, 14; forearm, 31, 31. Skull: greatest length, 12.3, 12.4; zygomatic width, 8.1, 8.1; upper toothrow, 4.6, 4.8.

*Rhogeessa tumida* may be distinguished from the Mexican species, *R. gracilis*, by its smaller ears and larger upper molariform teeth.

SPECIMENS.—La Paz: El Pedrero, 7; El Pederal, 1; Los Encuentros, 1. Tegucigalpa: Comayagua (M. C. Z. 1); La Flor Archaga, (M. C. Z. 1).

## Molossidae

### Free-tailed Bats

The family Molossidae includes large, medium, and small bats with short thick leathery ears; a short thick muzzle, not provided with a noseleaf; tail long, and projecting well beyond the posterior border of interfemoral membrane; wings very narrow; feet short and broad. Skull without postorbital processes, premaxillaries with nasal branches present or absent.

#### *Tadarida yucatanica* (Miller)

Yucatan Free-tailed Bat

*Nyctinomops yucatanicus* MILLER, 1902, Proc. Acad. Nat. Sci. Phila., p. 393.

TYPE LOCALITY.—Chichenitza, Yucatan, Mexico.

RANGE.—Yucatan, eastern Guatemala, and probably northern Honduras, limits of range unknown.

GENERAL CHARACTERS.—Size medium; ears short, thick, close together at base of inner margins, broader than high and projecting forward over eyes; no noseleaf; legs short; tail long, projecting beyond posterior border of short interfemoral membrane; wings narrow. Dentition:  $i \frac{1-1}{2-2}$ ,  $c \frac{1-1}{1-1}$ ,  $pm \frac{2-2}{2-2}$ ,  $m \frac{3-3}{3-3} = 30$ .

DESCRIPTION.—Color of upperparts uniform Vandyke brown; the hairs whitish at base; underparts like back but tinged with wood brown. Skull, strong with strong heavy teeth; premaxillaries separated in front by a very narrow space; upper incisors simple, about half as high as canines; lower incisors equal, bifid; first upper premolar minute, but in the tooththrow.

MEASUREMENTS.—Total length, 98; tail, 42; hind foot, 9; forearm, 42. Skull: greatest length, 17.2; interorbital constriction, 3.4; zygomatic breadth, 10; maxillary tooththrow, exclusive of incisors, 6.4.

#### *Promops centralis* Thomas

Domed Palate Mastiff Bat

*Promops centralis* THOMAS, 1915, Ann. Mag. Nat. Hist., (8) XVI, p. 62.

TYPE LOCALITY.—Northern Yucatan, Mexico.

RANGE.—Recorded from Jalisco, northern Yucatan, Mexico; Guatemala and Honduras.

GENERAL CHARACTERS.—A medium-sized robust bat; ears short and rounded, rising from a point on forehead; antitragus well developed, constricted at base; tragus minute, flattened; a dense brush of stiff hairs below nostrils; wings, feet, tail, and membranes normal for this group; males with glandular opening in lower throat. Dentition:  $i \frac{1-1}{2-2}$ ,  $c \frac{1-1}{1-1}$ ,  $pm \frac{2-2}{2-2}$ ,  $m \frac{3-3}{3-3} = 30$ .

DESCRIPTION.—Color of upperparts rich Prout's brown, tips of hairs darkened, base of hairs white or buffy white; underparts lighter than back. Skull: short and rounded; braincase expanded; sagittal crest extending forward almost to lacrimar region; rostrum short and deep; palate highly domed; dentition similar to that of *Eumops*, anterior upper premolar rudimentary, second lower incisor present.

MEASUREMENTS.—Two adult specimens from Honduras and specimen from Jalisco in parentheses: head and body, 80, 82; tail, 50, 53; hind foot, 10, 11; ear, 15, 16; forearm, 52; 52.5 (54.4). Skull: greatest length, 19.7, 20.1 (20.8); condylobasal length, 18.4, 18.8 (19.5); interorbital constriction, 4, 4.5 (4); zygomatic width 12, 12.5 (12.7); upper tooththrow, 7.8, 8 (8.2).

The Honduras specimens average slightly smaller than the type and the specimens from Guatemala. One individual from Jalisco, in the Museum collection, is also larger than the Honduras series, in both cranial and external measurements.

SPECIMENS.—La Paz: El Pedrero, 3.

#### *Eumops underwoodi* Goodwin

Underwood Mastiff Bat

*Eumops underwoodi* GOODWIN, 1940, Amer. Mus. Novit., No. 1075, pp. 2-3.

TYPE LOCALITY.—El Pedrero, La Paz, Honduras.

RANGE.—Known only from type locality.

GENERAL CHARACTERS.—A large *Eumops* nearly equaling *perotis* in size; ears moderately large, rounded, and

joined at base across forehead; tragus small, flat, rounded; antitragus large; tail extending well beyond interfemoral membrane; feet heavy and wings normal for the genus. Dentition:  $i \frac{1-1}{2-2}$ ,  $c \frac{1-1}{1-1}$ ,  $pm \frac{2-2}{2-2}$ ,  $m \frac{3-3}{3-3} = 30$ .

**DESCRIPTION.**—Color of upperparts between cinnamon brown and mummy brown; hairs gray brown at base; underparts lighter than back. Skull: upper incisors long and slender; lower incisors subequal, bifid, and crowded in a nearly semi-circular row; canines large and strong; first upper premolar small and forced outward from toothrow. Skull strongly built with sagittal crest well indicated; lambdoidal crest well developed; dorsal profile from nares to occiput in a straight line; interorbital region distinctly hour-glass-shaped; rostrum broad; basisphenoid pit short, nearly as broad as long, about half the size of the pits in *perotis*; zygomatic arches strong; palate ending on a level with its last molars; mandible heavy.

**MEASUREMENTS.**—Average of four specimens from El Pedrero: head and body, 109 (106–113); tail, 51.5 (50–53); hind foot, 15 (15–15); ear, 28.5 (28–29); forearm, in dried skin, 71.3 (69.5–73). Skull: greatest length, 29.3 (28.1–30.5); condylobasal length, 27.7 (26.8–28.5); interorbital constriction, 5.9 (5.7–6); zygomatic width, 18.6 (18.4–18.8); upper tooththrow, 11.8 (11.5–12.3).

*Eumops underwoodi* is a well-marked species and is not related to *E. californicus* or *E. perotis* but is like a large *abrasus*. The skull is relatively short and broad. The interorbital region is hour-glass-shaped, while in *californicus* and *perotis* it is nearly tubular and the basisphenoid pits are very short, about half the size of those in *californicus* and *perotis*, and the rostral and interorbital widths are greater. The series show some individual variation in color, which ranges from cinnamon brown to mummy brown.

**SPECIMENS.**—La Paz: El Pedrero, 5.

### ***Eumops glaucinus* (Wagner)**

Chestnut Mastiff Bat

*Dysopes glaucinus* WAGNER, 1843, Weigmann's Arch. f. Naturg., (9) I, p. 368.

**TYPE LOCALITY.**—Cuyaba, Matto Grosso, Brazil.

**RANGE.**—Recorded from Colombia and Ecuador in South America, Cuba and Jamaica in the West Indies, Costa Rica, Honduras, and Guatemala in Central America, Yucatan, and Morelos in Mexico.

**GENERAL CHARACTERS.**—A medium-sized free-tailed bat; ears large, rounded and joined across forehead; antitragus large; tragus small, flat, broad, upper edge square; short stiff hairs on margin of upper lip between nostrils; wings, feet, and membranes normal for the genus; a glandular opening on lower throat; tail extending well beyond interfemoral membrane.

**DESCRIPTION.**—Color of upperparts dark cinnamon brown, base of hairs white; underparts duller and slightly paler than back. Skull: relatively slender without sagittal crest; lambdoidal crest well developed; supraoccipital extends beyond the lambdoidal crest; first upper premolar small and crowded out of toothrow; upper incisors large and slender; lower incisors small, subequal, bifid, crowded in front of canines; basisphenoid pits well defined, nearly as broad as long.

**MEASUREMENTS.**—Two adult males from La Cruz Grande: head and body, 91, 91; tail, 40, 49; hind foot, 12, 13; ear, 25, 26; forearm, in dried skin, 61, 61.8. Skull: greatest length, 23.1, 23.6; condylobasal length, 22.3, 22.6; zygomatic width, 14.4, 14; interorbital constriction, 5, 4.9; upper tooththrow, 9.5, 9.5; width across canines, 5.9, 6; width across  $m^2$ , 9.5, 9.5.

*Eumops glaucinus* appears to have a wide range with relatively little geographical variation. The Honduras series, however, has noticeably smaller teeth than specimens from Colombia, but they agree in general with the essential characters of this species.

**SPECIMENS.**—La Paz: La Cruz Grande, 2.

### ***Molossus nigricans* Miller**

Black Mastiff Bat

*Molossus nigricans* MILLER, 1902, Proc. Acad. Nat. Sci. Phila., p. 395.

**TYPE LOCALITY.**—Acaponeta, Nayarit, Mexico.

**RANGE.**—From Tepic, Vera Cruz, and

Yucatan, south to Honduras; limits of range unknown.

**GENERAL CHARACTERS.**—Largest of this genus found in Central America; ears short and rounded; antitragus well developed, constricted at base; tragus small; muzzle with brush of stiff hairs below nostrils; glandular opening on throat; tail, feet, wings, and membranes normal for the genus. Dentition:  $i \frac{1-1}{1-1}$ ,  $c \frac{1-1}{1-1}$ ,  $pm \frac{1-1}{2-2}$ ,  $m \frac{3-3}{3-3} = 26$ .

**DESCRIPTION.**—Color of upperparts, red phase: uniform bright rich russet, extreme base of hairs whitish; underparts slightly paler than back; dark phase: glossy blackish brown; ears and membranes blackish brown. Skull: large and massive; dentition normal for the genus; sagittal and lambdoidal crest very well developed, but not quite the extremes seen in *Molossus rufus*.

**MEASUREMENTS.**—Two adult males and two adult females from Honduras: head and body, 87, 90, 71, 75; tail, 46, 46, 46, 46; hind foot, 13, 15, 14, 14; ear, 15, 16, 15, 16; forearm, 55, 55.3, 49.5, 50. Skull: greatest length, 24, 24.2, 21, 22; condylobasal length, 21.3, 21.5, 19, 20; interorbital constriction, 5.2, 5.3, 4.5, 4.5; zygomatic width, 14.8, 15.3, 13, 14.3; maxillary tooththrow, 8.6, 8.7, 8.1, 8.4.

The variation in color, as shown by both phases, is slight. Extremes are dominant, though a few individuals are intermediate. Specimens in the dark phase in the present series average about two to one in the red.

**SPECIMENS.**—La Paz: Los Encuentros, 2; La Cruz Grande, 19; El Manteado, 5; El Pedrero, 13. Ocotepeque: El Chorro, 14. Cortés: Las Peinitas, 14. Tegucigalpa: Tegucigalpa, 1.

### *Molossus sinaloae* Allen

Sinaloa Mastiff Bat

*Molossus sinaloae* ALLEN, 1906, Bull. Amer. Mus. Nat. Hist., XXII, p. 236.

**TYPE LOCALITY.**—Escuinapa, Sinaloa, Mexico.

**RANGE.**—From Sinaloa south through Central America to western Panama.

**GENERAL CHARACTERS.**—Similar to *Molossus bondae* but larger and somewhat lighter in color.

**DESCRIPTION.**—Color of upperparts dark

brownish drab, base of hairs whitish; underparts lighter than back. Skull: similar to that of *M. bondae* but larger.

**MEASUREMENTS.**—Type: head and body, 69.5; tail, 38; hind foot, in dried skin, 12.5; forearm, 45.5. Skull: greatest length, 19.5; condylobasal length, 17.6; interorbital constriction, 4; zygomatic width, 12.2; maxillary tooththrow, 7.2.

### *Molossus bondae* Allen

Bonda Mastiff Bat

*Molossus bondae* ALLEN, 1904, Bull. Amer. Mus. Nat. Hist., XX, p. 228.

**TYPE LOCALITY.**—Bonda, Santa Marta, Colombia.

**RANGE.**—From northern Colombia to Honduras; limits of range unknown.

**GENERAL CHARACTERS.**—A small free-tailed bat; ears short and rounded, rising from a point on forehead; antitragus well developed, constricted at base; tragus small, obtusely pointed; muzzle with a patch of stiff, short hairs below nostrils; tail extending well beyond interfemoral membrane; glandular opening on throat.

**DESCRIPTION.**—Color of upperparts, red phase: between rich cinnamon brown and russet, base of hairs white or buffy white; underparts slightly paler than back; dark phase: mummy brown, with base of hairs whitish. Skull: strongly built, short and rounded; upper second premolar and second lower incisor absent as in this genus; sagittal crest developed into a knife-like crest; basisphenoid pits distinct.

**MEASUREMENTS.**—Two adult males from La Paz: head and body, 65, 67; tail, 35, 48; hind foot, 11, 10; ear, 13, 11; forearm, in dried skin, 38, 39.5. Skull: greatest length, 18.3, 18.4; condylobasal length, 15.8, 16.1; zygomatic width, 11.5, 11.9; interorbital constriction, 4, 4; upper tooththrow, 6.3, 6.6.

The skulls of the Honduras specimens (males) are larger than the type (female), with rostrum, palate, and tooththrow actually shorter. This appears to be a sexual character, as an adult male from northern Colombia corresponds very closely with the Honduras specimens in this respect.

**SPECIMENS.**—La Paz: El Manteado, 1; Los Encuentros, 1.

ORDER PRIMATES  
SUBORDER ANTHROPOIDEA

**Cebidae**

Capuchin Monkeys

The Central American Capuchins are medium-sized monkeys readily recognizable by the extensive white covering on the face, chest, and shoulders. The tail is long but not naked near the tip.

***Cebus capucinus limitaneus* Hollister**

Honduras White-throated Capuchin

*Cebus capucinus limitaneus* HOLLISTER, 1914, Proc. Biol. Soc. Wash., XXVII, p. 105.

TYPE LOCALITY.—Segovia River, eastern Honduras.

RANGE.—Eastern and northern Honduras.

GENERAL CHARACTERS.—The capuchins are recognizable by the extensive white area covering the entire face, sides of neck, throat, chest, and shoulders, in marked contrast to the glossy black color of the main parts of the body. *C. c. limitaneus* is similar to *C. c. imitator* Thomas of western Panama and Costa Rica, but slightly smaller.

DESCRIPTION.—Color of forehead, face,

sides of head and neck, throat to breast, shoulder, and upperside of arms to below elbow, creamy white; forearms, crown, neck above, tail and entire upperparts of body and legs, black; underparts scantily covered with buff and dusky hairs; inner sides of legs and small area on knees, grizzled. Skull: similar to that of *imitator* but smaller with comparatively larger orbits and relatively larger teeth.

MEASUREMENTS.—Adult male and female from Catacamas: head and body, 400, 355; tail, 484, 492; hind foot (s.u.), 130, 121; ear, 40, 32. Skull: greatest length, 96.4, 90.3; condylobasal length, 75, 65; width of braincase, 52, 52.8; palatal length, 33.5, 29.5; zygomatic width, 67.4, 58; least postorbital width, 41.2, 41.2; width of rostrum, 28.8, 26.6; upper molariform toothrow, 22.6, 22.3.

The Honduras series include specimens of all ages and are apparently typical *limitaneus*. The largest individuals are only slightly bigger than the type.

SPECIMENS.—Olancho: Catacamas, 15.

**Atelidae**

Spider Monkeys

The spider monkeys are rather large in size but slender, long-limbed species with very long, prehensile tails, naked on the underside near the tip. In general appearance they are not very unlike the howling monkeys but are recognizable by the absence of thumbs on the hands.

***Ateles pan* Schlegel**

Schlegel Spider Monkey

*Ateles pan* SCHLEGEL, 1876, Mus. Hist. Nat. Pays-Bas., VII, p. 180.

TYPE LOCALITY.—Coban, Guatemala.

RANGE.—From southern Vera Cruz south through Chiapas, Guatemala to central Honduras; limits of range unknown.

GENERAL CHARACTERS.—A rather large and slender long-limbed monkey, with a very long prehensile tail, naked on underside near tip; general appearance not very unlike the howling monkeys of Central America, but recognizable by the absence of a thumb; light color on inner side of arms and legs very restricted, no white on cheeks.

DESCRIPTION.—Color of face black; head, shoulders, arms, hands, legs, feet, and tail black or brownish black; flanks, hips, brownish; the hairs broadly tipped with golden buff, brightest posteriorly and grading to dull blackish brown on shoulders and middorsal line, a reddish line on border of flanks in some specimens; underparts in

Honduras specimens silvery white, becoming warm buff in inguinal region and tawny on innerside of thighs; chin and throat silvery mixed with brownish hairs; inner side of arms to elbows whitish; legs to ankles warm buff; tail unicolor blackish brown. Skull: elongated and evenly rounded; zygomatic arches short and slender; braincase high, long, and full, expanding slightly posteriorly; molariform teeth rather small; canines larger in males than in females.

MEASUREMENTS.—Adult female from Guaymaca and the type in parentheses: head and body, 470 (420); tail, 700 (700); hind foot, 165 (150); ear, 20. Skull: greatest length, 111 (102.2); length of nasals, 16 (15.4); zygomatic breadth, 68

(63.5); interorbital breadth, 50 (57.1); occipitonasal length, 99.2 (99.3); length of upper molar series, 23 (24.5); length of lower molar series, 25.7 (27.1).

Underwood's specimens of spider monkeys are from west, central, and eastern highlands of Honduras. They show practically no individual variation and agree closely with the type description of *A. pan* except in the absence of a reddish lateral line and the underparts being more of a silvery white than yellowish white.

SPECIMENS.—Ocotepeque: El Chorro, 1 subadult male and 1 adult female. Tegucigalpa: Cantoral, 1 adult female; Guaymaca, 1 adult female and 1 juv. male. Olancho: Catacamas, 1 adult female.

## Alouattidae

### Howling Monkeys

Members of this family are large, robust monkeys with rather long prehensile tails. They are similar in general appearance to the spider monkeys but have shorter limbs and five fingers on the hands. They are remarkable for the extraordinary inflation of the laryngeal apparatus which is associated with their unusual vocal powers.

#### *Alouatta palliata palliata* (Gray)

##### Mantled Howler

*Myctes palliatus* GRAY, 1848, Proc. Zool. Soc. London, p. 138.

TYPE LOCALITY.—Lake Nicaragua.

RANGE.—Central America from extreme western Panama north through Costa Rica, Nicaragua, and Honduras; in the south it merges gradually with *A. p. aequatorialis*. Specimens from north Honduras near the Guatemala border are typical *A. p. palliata*.

GENERAL CHARACTERS.—A large robust monkey with rather long prehensile tail; face black, naked and a pronounced beard in males; general color black, with long golden flank-hairs.

DESCRIPTION.—Head, shoulders, limbs, feet, and tail blackish brown; flanks golden cinnamonrufous, base of hairs

slightly paler and tips dark walnut; the light-colored flank hairs extend from groin to armpit, most pronounced posteriorly and grade gradually to blackish brown finely mixed with buff on middorsal line; underparts sparsely covered with dark chestnut hairs. Skull: short and broad; zygomatic arches short and rather squarely spreading, ending posteriorly in a prominent ridge over auditory meatus; braincase short and broad, slightly depressed between orbits, nasals narrow and slightly spreading anteriorly; palate U-shaped; molars proportionately large as compared with premolars; canines and mandible greatly enlarged in males; auditory bullae rounded and not greatly inflated.

MEASUREMENTS.—An adult female from Copan and an adult male from Catacamas: head and body, 585, 500; tail vertebrae, 455, 570; hind foot, 175, in dried skin (s.u.), 135, 140; ear, 25, 35. Skull: greatest length, 102, 109.4; condylobasalar length, 83, 90.4; palatal length, 37.3, 38.4; zygomatic breadth, 70, 77.4; interorbital breadth, 38.6, 40; length from upper canine to last molar, 37.2, 42.

The color of the *palliata* group of howler monkeys is extremely varied. An indi-



vidual specimen from Copan is rather light-colored with some light hairs on neck and in front of shoulders. Specimens from Chamelicon, Segovia River, and San

Pedro are regarded by Lawrence as typical *A. p. palliata*.

SPECIMENS.—Copan: Copan, 1. Olancho: Catacamas, 3.

## ORDER EDENTATA

### Edentates

## SUBORDER XENARTHRA

### Dasypodidae

#### Armadillos

The armadillos have a bony carapace or protective armor covering the exposed parts of the body. They are by no means toothless as the application of the order to which they belong indicates.

#### Cabassouinae

##### Five-toed Armadillos

#### *Cabassous centralis* (Miller)

Honduras Five-toed Armadillo

*Tatoua (Ziphila) centralis* MILLER, 1899, Proc. Biol. Soc. Wash., XIII, p. 4.

TYPE LOCALITY.—Chamelicon, Honduras.

RANGE.—Central America.

GENERAL CHARACTERS.—Size medium; five toes on fore feet; claws very large; head broad; ears widely separated; snout short and broad; tail shorter than body and covered with skin; ten or twelve movable transverse bands across middle of back; teeth  $\frac{5}{5}$ .

DESCRIPTION.—Color above brownish black, edges of carapace and underparts yellowish, the dark color of upperparts extending down uppersides of fore and hind feet to claws and along tail almost to tip, tip yellowish.

MEASUREMENTS.—Adult female (in dried skin) from Suerre, Costa Rica: total length, 406; tail vertebrae, 106; hind foot, 62.5. Skull: type, female: greatest length, 80; zygomatic breadth, 41; interorbital constriction, 24; length of nasals, 27; upper tooththrow, 62.

#### Dasypodinae

##### Four-toed, Nine-banded Armadillo

#### *Dasypus novemcinctus mexicanus* Peters

Mexican Four-toed Armadillo

*Dasypus novemcinctus* var. *mexicanus* PETERS, 1864, Monatsber. k. preuss. Akad. Wiss. Berlin, p. 180.

TYPE LOCALITY.—Fixed by Bailey as Colima.

RANGE.—From southern Mexico south to Honduras; limits of range unknown.

GENERAL CHARACTERS.—A medium-sized armadillo, with bony carapace or protective armor covering the exposed parts of the body; eight or nine movable transverse bands across middle of shell on back; ears close together; snout long and slender; tail about equal length to head and body or shorter; definitely ringed basally and armored throughout; four toes on front feet; teeth,  $\frac{5}{5}$ .

DESCRIPTION.—Color of shell-like structure brownish, mottled with yellow, with a scattering of yellowish hairs between the plates. Skull: narrow, with a long slender nearly parallel-sided rostrum; jugal broadest anteriorly, the outer surface deeply furrowed; frontal outline not depressed; palatal bones short, not reaching the level of the posterior teeth.

MEASUREMENTS.—Adult male from Cantoral, in dried skin: total length, 740; tail, 340; hind foot, 65. Skull: greatest length, 99.5; palatal length, 64; zygomatic breadth, 45.4; upper tooththrow, 24.7; lower tooththrow, 26.2; last molar to end of palate, 20; least interorbital breadth, 24.6.

There is little or no difference between the armadillos from Honduras and those from Sinaloa, Mexico.

SPECIMENS.—Tegucigalpa: Cantoral, 2; La Cueva Archaga, 6.

## Myrmecophagidae

### Anteaters

The anteaters are the only really toothless American members of the order Edentata. They have an elongate conical head, small mouth and long narrow tongue.

#### *Cyclopes didactylus dorsalis* (Gray)

Central American Silky Anteater

*Cyclothurus dorsalis* GRAY, 1865, Proc. Zool. Soc. London, p. 385.

TYPE LOCALITY.—Costa Rica.

RANGE.—Southern Mexico through Central America to South America.

GENERAL CHARACTERS.—Size very small; tail tapering and strongly prehensile; pelage soft and silky; only two toes on forefeet. Habits strictly arboreal.

DESCRIPTION.—General color golden yellow or ochraceous tawny; tail, limbs, and feet, golden yellow; a dark patch on middle of chest.

MEASUREMENTS.—Adult female from Costa Rica: total length, 398; tail vertebrae, 198; hind foot, 36. Skull: occipitonasal length, 50; breadth of braincase, 24; length of nasals, 13.

SPECIMENS.—Recorded from Ceiba, Honduras.

#### *Tamandua tetradactyla mexicana* (Saussure)

Mexican Three-toed Anteater

"*Myrmecophaga tamandua* (?) Desm. (var. *mexicana* SAUSS.)" SAUSSURE, 1860, Rev. et Mag. de Zool., (2) XII, p. 9.

TYPE LOCALITY.—Tabasco, Mexico.

RANGE.—Vera Cruz, Tabasco, eastern Guatemala, and central Honduras.

GENERAL CHARACTERS.—A large black and white, three-toed anteater with close coarse pelage and tail prehensile, about equal length to head and body.

DESCRIPTION.—Color from behind shoulders to hips black all around the body, this color extending in two narrow horseshoe stripes over shoulders and part of the way

along underside of limbs; a narrow white stripe down middle of back; underside of neck soiled white; a few black hairs around eye; rest of hair on head, limbs, body, and tail, yellowish white. Skull: narrow and tapering, zygomata narrow and weak.

MEASUREMENTS.—Two females from Catacamas: total length, 1138, 1143; tail vertebrae, 548, 558; hind foot (s.u.), 93, 95. Skull: occipitonasal length, 131.2, 135.2; width of braincase, 41.1, 41.6; length of nasals, 51.4, 52.9; interorbital breadth, 24, 24.9.

Three specimens from Honduras are uniform in coloration and indistinguishable from one of Colburn's Vera Cruz specimens referred by Allen to *tenuirostris*.

SPECIMENS.—Olancho: Catacamas, 2. Tegucigalpa: La Cueva Archaga, 1.

#### *Myrmecophaga tridactyla centralis* Lyon

Central American Great Anteater  
or Ant-Bear

*Myrmecophaga centralis* LYON, 1906, Proc. U. S. Nat. Mus., XXXI, p. 570.

TYPE LOCALITY.—Pacuare, Costa Rica.

RANGE.—Said to be from Guatemala, south to Brazil.

GENERAL CHARACTERS.—Size large; tail long and very bushy; head very long, cylindrical; three toes on fore feet; limbs short; hair long and coarse.

DESCRIPTION.—General color of upperparts grizzled, a black stripe or collar from throat over shoulders and ending on lower back; a broad black band above hands; underparts and most of hind limbs and tail blackish.

MEASUREMENTS.—Dried skin from Costa Rica: total length, 1860; tail vertebrae, 650; hind foot, 135. Skull from Venezuela: greatest length, 365; zygomatic breadth, 65; interorbital breadth, 43.

The great anteater has apparently not

been recorded from Honduras. Although rare where it is known to occur in Central

America, its range may possibly include suitable localities in Honduras.

## ORDER LAGOMORPHA

### Leporidae

#### Hares and Rabbits

External characters of members in the family Leporidae include a short tail, large eyes, large ears, relatively long hind feet, and soft fur. The upper lip is deeply cleft in the middle. They resemble typical rodents in having large chisel-like incisors in both upper and lower jaws, and a wide diastema. They differ from the rodents in having an additional pair of small upper incisors, placed directly behind the large ones. The bony palate is reduced to a narrow bridge.

#### *Sylvilagus floridanus hondurensis*

Goldman

Honduras Cottontail

*Sylvilagus floridanus hondurensis* GOLDMAN, 1932, Proc. Biol. Soc. Wash., XLV, pp. 122-123.

**TYPE LOCALITY.**—Monte Redondo, about 30 miles northwest of Tegucigalpa, Honduras. Altitude about 5100 feet.

**RANGE.**—West and central Honduras, south to northern part of Nicaragua.

**GENERAL CHARACTERS.**—A dark-colored medium-sized cottontail with relatively short ears, short pelage; sides of head and flanks grayish, contrasting with the dark dorsum; top of head and upper surface of tail to near tip blackish.

**DESCRIPTION.**—Color of topotype in December pelage: top of head and back light tawny, heavily overlaid with black; nape clear cinnamon rufous; sides of body buffy grayish, becoming clearer gray on sides of head, base of ears, and on sides of rump; light tawny of back extending downward across flanks in narrow areas in front of thighs (a marking shared with many other rabbits); throat, inner surfaces of limbs, pectoral region, median abdominal and inguinal areas white or buffy white; sides of abdomen and under surface of neck cinnamon buff; ears gray, mixed with black externally, becoming nearly pure black along antero-external margins near

tips; outer surfaces of forearms and thighs tawny; tail above buff mixed with black becoming nearly pure black, toward tip; below, pure white. In January pelage, a topotype is noticeably duller and grayer than December specimens. Summer pelage, June specimen from Comayagua: top of head and back ochraceous buff; underparts white; the hairs white to base. Skull: relatively narrow and slender; similar in general to that of *S. f. aztecus* but jugal slightly less extended vertically and audital bullae larger than usual in that form. Similar to that of *S. f. chiapensis* and *S. f. yucatanicus* but narrower and less massive. Audital bullae average larger than *chiapensis*, smaller than *yucatanicus*.

**MEASUREMENTS.**—Average of six topotypes: head and body, 366.2 (325-392); tail, 41.1 (34-50); hind foot, 88 (85-95); ear, dried skin, 55.9 (50-59.5). Skull: occipitonasal length, 76.3 (74.5-78.8); condylobasal length, 67 (65-69); zygomatic breadth (anteriorly), 34.9 (33.5-37.5); interorbital breadth, 18.7 (18-19); length of nasals, 34 (32-35.5); maxillary toothrow, 14.2 (14-14.5).

*S. f. hondurensis* is a dark-colored form. In the topotype series of those examined, the length of the ear appears to be variable and there is a noticeable difference in the size of the bullae. A Santa Barbara specimen is lighter in color than the average with longer ears (63 mm.) and very small bullae (diameter 7.9 as compared with 8.5 to 10 mm. in typical *hondurensis*). Further material may justify the segregation of a new form which probably occupies the low arid lands of northern Honduras.

**SPECIMENS.**—La Paz: El Horno, 4. Santa Barbara: Santa Barbara, 1. Ocotepeque: Ocotepeque, 1. Tegucigalpa: Monte Redondo, 5 (U. S. N. M. 1; Field Mus. 3; Univ. Mich. 8); Cedros, 1; Sabana Grande, 1; La Flor Archaga, 8;

Comayaguela, 1 (M. C. Z. 2); Tegucigalpa, 7; Hatillo, 1.

***Sylvilagus gabbi gabbi* (Allen)**

Costa Rica Forest Hare

*Lepus brasiliensis* var. *gabbi* ALLEN, 1877, Monogr. N. Amer. Rodentia, p. 349.

**TYPE LOCALITY.**—Talamanca, Costa Rica.

**RANGE.**—Eastern Honduras, Nicaragua, Costa Rica, and Panama.

**GENERAL CHARACTERS.**—Size small, ear short and rounded, tail small; upper part of body mainly dark buffy brown, heavily overlaid with black.

**DESCRIPTION.**—Upperparts varying from rich deep ochraceous buff to nearly ochraceous rufous, heavily overlaid with black, side of body paler, top of tail and back of legs nearly uniform reddish brown; underparts white. Skull: proportionally narrow, rostrum heavy, broader at base than

interorbital width; upper outline of skull arched but depressed in frontal region; bullae small.

**MEASUREMENTS.**—Adult female from San José de Santa Barbara, altitude 3000 feet; head and body, 365; tail, 10; hind foot, 75; ear, 45 (in dried skin, 37). Skull: occipitonasal length, 72; condylobasal length, 65; zygomatic breadth, 34; interorbital breadth, 14.5; length of nasals, 27.5; width of nasals at base, 13.5; alveoli of upper molar series, 14.

Underwood's specimens of *gabbi* are more heavily overlaid with black than the average and the skulls are relatively narrower between the orbits and in the braincase. They are, however, not very different from Allen's type series of *tumacus* which Nelson considered typical *gabbi*.

**SPECIMENS.**—Santa Barbara: San José, 1; La Mica, 1.

## ORDER RODENTIA

### Rodents

### Sciuridae

### Squirrels

This family is represented in Honduras by species of the familiar tree squirrels and the flying squirrel. They are highly specialized animals especially adapted for arboreal habits.

### Sciurinae

#### ***Sciurus variegatoides variegatoides***

#### **Ogilby**

Salvador Squirrel

*Sciurus variegatoides* OGILBY, 1839, Proc. Zool. Soc. London, p. 117.

**TYPE LOCALITY.**—El Salvador, assumed to be in the vicinity of San Carlos (Nelson).

**RANGE.**—From the Pacific coast of southeastern El Salvador through the Departments of La Unión, San Maguel, and Usulután and north into western Honduras.

**GENERAL CHARACTERS.**—Pelage coarse, rather stiff and shiny. General color of upperparts dull yellowish, washed with black; underparts, yellowish orange.

**DESCRIPTION.**—Upperparts including

head, sides, and outside of limbs ochraceous buff mixed with black. Hairs of back and sides black at base followed by a median buffy band and tipped with black; ears with a narrow black border; postauricular patches back of ears ochraceous buff; cheeks and chin paler than back; underparts including inside of legs and toes between ochraceous orange and ochraceous buff with occasional traces of white on throat and axilla; tail above, black washed with white; below, with a median line of ochraceous buff.

**MEASUREMENTS.**—Adult male and female from Las Flores Gracias: total length, 518, 502; tail, 263, 252; hind foot, 60, 60. Skull: greatest length, 60, 61.7; condylobasal length, 54.4, 55.8; zygomatic breadth, 34.3, 34.2; length of nasals, 19.9, 21; maxillary toothrow, 12, 12.

Two specimens from Las Flores, Gracias, have the entire underparts rich ochraceous buff. Three others from the same locality have some white on throat, median line

down abdomen, inside of fore limbs and inguinal region and rest of underparts being rich ochraceous buff; two specimens from Ocotepeque are very young and underparts are light ochraceous buff.

SPECIMENS.—Gracias: Las Flores, 5. Ocotepeque: Plan del Rancho, 2.

***Sciurus variegatoides underwoodi*  
(Goldman)**

Underwood Squirrel

*Sciurus boothiae underwoodi* GOLDMAN, 1932, Jour. Wash. Acad. Sci., XXII, No. 10, p. 275.

TYPE LOCALITY.—Monte Redondo, about 30 miles northwest of Tegucigalpa, Honduras; altitude 5100 feet.

RANGE.—Mountains of central and southern Honduras and northwestern Nicaragua.

GENERAL CHARACTERS.—Approaching *Sciurus variegatoides boothiae* of northern Honduras but upperparts much paler, the general color grayer, less blackish and lacking the rufescent suffusion present in *boothiae*. Contrasting strongly with *S. v. adolphei* from Nicaragua in white underparts, sharply defined laterally, instead of gray, passing gradually into color of sides. Somewhat similar to *S. variegatoides variegatoides* of Salvador above, but underparts white instead of tawny. General coloration suggesting that of *S. goldmani* of Chiapas, Mexico, but markedly distinctive in detail, as follows: postauricular spots buffy instead of white; feet dark ochraceous buffy or black instead of gray; dark ochraceous buff lateral line normally present (absent in *goldmani*); tail more extensively white.

DESCRIPTION.—Upperparts in general light buff moderately overlaid with black; outer sides of limbs and feet ochraceous buff mixed with black; underparts, including innersides of forearms and thighs, nearly pure white; in the type a broad ochraceous buff lateral line sharply separating abdominal area from general tone of upperparts, entirely absent in some specimens; ears usually narrowly edged with black and with tufts scanty and indistinctly tawny; postauricular spots extending up over median posterior basal part of ears, ochraceous buff in the type but varying to light

ochraceous buff in topotypes; feet dark ochraceous buff edged along innerside with ochraceous buff in topotypes; feet dark ochraceous buff edged along innerside with ochraceous buff in the type—in one specimen the feet are black; tail above sparsely overlaid with silvery white, the long white tips of hairs practically concealing a subterminal black zone, below annulated, the hairs ochraceous buff at base, interrupted by a narrow black band, followed by another ochraceous buff band and a subterminal black zone, the white tips forming a distinct margin. Skull: about like those of *S. v. boothiae* and *S. v. variegatoides* but broader between orbits.

MEASUREMENTS.—Type: head and body, 241; tail vertebrae, 272; hind foot, 60. Average of four adult topotypes: 240 (225–250); 285 (275–300); 62 (60–65); 31.7 (30–33). Skull type: greatest length, 59.6; condylobasal length, 55.7; zygomatic breadth, 34.2; interorbital breadth, 21.3; length of nasals, 19.4; maxillary toothrow, 11.7.

*Sciurus variegatoides underwoodi* is a well-marked form but it approaches *variegatoides* and *boothiae* in the more essential characters that assignment to subspecific status by Goldman seems fully warranted. The series show relatively little individual variation in color. There is, however, a tendency to intergradation with *variegatoides* on the west and with *boothiae* on the north.

SPECIMENS.—Tegucigalpa: Monte Redondo, 2 (Univ. Mich. 5; Field Mus. 1; U. S. N. M. 2; U. S. Fish and Game 1); Hatillo (M. C. Z. 7); Comayaguela (M. C. Z. 1); La Flor Archaga, 13 (M. C. Z. 3); Cantoral, 2; Sabana Grande, 6; Tegucigalpa, 2; El Caliche Cedros, 6.

***Sciurus variegatoides boothiae* Gray**

Honduras Squirrel

*Sciurus boothiae* GRAY, 1843, List Spec. Mamm. Brit. Mus., p. 139.

TYPE LOCALITY.—“Honduras” assumed to be in the vicinity of San Pedro Sula (Nelson).

RANGE.—Mountains on the northeastern border of central part of Honduras, from

San Pedro Sula, Honduras, southeast to north central Nicaragua.

**GENERAL CHARACTERS.**—Upperparts contrasting strongly with *variegatoides* in being a duller, more yellowish brown, and more heavily washed with black. Postauricular patches tawny; underparts white with occasional trace of tawny lateral line.

**DESCRIPTION.**—Upperparts, including back, head, sides, and outside of legs, grizzled (ochraceous tawny and black). Hairs of back and sides sooty black at base followed by median tawny band and tipped with black. Back of ears tawny edged with black. Cheeks and chin like back but paler. Feet black or like back. Underparts and inside of legs white. Tail above, black washed with white; below, with median line like back, bordered with black and edged with white.

**MEASUREMENTS.**—Subadult male and adult female from El Jaral: total length, 482, 513; tail, 250, 267; hind foot, 60, 54. Skull: greatest length, 56.6, 60; condylo-basal length, 51.1, 55.5; zygomata, 32, 34.8; interorbital breadth, 19.5, 19.2; length of nasals, 18.8, 20; maxillary tooth-row, 12.3, 12.

Two specimens from El Jaral on the north shore of Lake Yoja, about 55 miles south of the type locality, are here provisionally referred to *S. v. boothiae*. They are both dark-colored squirrels with blackish limbs and feet.

**SPECIMENS.**—Cortés: El Jaral, 2.

### ***Sciurus variegatoides belti* (Nelson)**

Nicaragua Squirrel

*Sciurus boothiae belti* NELSON, 1899, Proc. Wash. Acad. Sci., I, p. 78.

**TYPE LOCALITY.**—Escondido River, fifty miles from Bluefields, Nicaragua.

**RANGE.**—Eastern slopes of mountains of Honduras and Nicaragua to the Atlantic coast, including approximately the entire eastern halves of these countries.

**GENERAL CHARACTERS.**—Upperparts yellowish brown washed with black; postauricular patches tawny; underparts normally uniform rusty rufous.

**DESCRIPTION.**—Similar in color pattern to *boothiae*. Lateral line absent. Underparts and inside of legs ochraceous tawny.

**MEASUREMENTS.**—About as in *S. v. boothiae*.

**SPECIMENS.**—Recorded from Yoro: Yaruca, 3. Atlantida: Lancetilla, 1; La Ceiba, 2; Camelina, 1. Colón: Truxillo, 1.

### ***Sciurus deppei deppei* Peters**

Deppe Squirrel

*Sciurus deppei* PETERS, 1863, Monatsber. k. preuss. Akad. Wiss. Berlin, p. 654.

**TYPE LOCALITY.**—Papantla, Vera Cruz, Mexico.

**RANGE.**—Humid tropical and Austral zones from Tegucigalpa, Honduras west, including south, central, and northwestern Honduras north along mountains on both coasts of Guatemala and Chiapas to the Isthmus of Tehuantepec, and thence along the east coast of Mexico to Papantla, Vera Cruz. Replaced in the north central Nicaragua by a rather poorly marked form of *S. d. matagalpae* Allen.

**GENERAL CHARACTERS.**—A small rusty colored squirrel with soft, rather full pelage, thinly haired ears, and tail about equal to length of head and body.

**DESCRIPTION.**—Color of Honduras specimens: upperparts, including top of head, nose, and base of tail, uniform; individuals vary from Sanford brown to ochraceous buff finely washed with black; ear like head with a small patch of white or buff at base; outside of fore and hind limbs and feet like back, in some specimens outside of fore limbs and feet deep mouse-gray; underparts white, grayish white or ochraceous buff, almost ochraceous orange in pectoral regions of some specimens; color of flanks extending over inguinal region and inside of thighs in some specimens; tail above, black washed with white, below the broad median area varying from Sanford brown to ochraceous buff bordered with black and edged with white; seasonal changes of pelage are not marked, the only noticeable difference being the frequent absence in summer of the ear patches and white tip of the tail. Skull: in general like that of *S. hoffmanni* but proportionately more slender and otherwise distinguished by the presence of a small upper premolar and longer audital bullae.

**MEASUREMENTS.**—Taken by collector,

average of six largest Honduras specimens: head and body, 194.6 (182–200); tail vertebrae, 173.6 (165–185); hind foot, 47.1 (44–55); ear, 20.8 (20–22). Skull: greatest length, 52.3 (51.2–54.2); zygomatic breadth, 30.4 (29.3–31.7); interorbital breadth, 16.4 (15–18); alveolar length of upper toothrow, 9.1 (8.7–9.8).

The Honduras series present considerable individual variation and as a group show characters of typical *S. deppei*, *S. d. vivax*, and *S. d. matagalpae*. A series from Las Peinitas, four miles west of San Pedro Sula, average whiter on the underparts than those from central and western Honduras. Some individuals have pure white underparts without a trace of buffy, while others are even more buffy on the underparts than the type series of *matagalpae*. Specimens from southwestern and central Honduras average more buffy than white on underparts though some individuals have pure white underparts. The amount of clear gray on fore limbs is extremely variable throughout the series. There appear to be two distinct color phases in this squirrel: one with a strong buffy suffusion on the underparts, and the other with pure white underparts and a relative paler shade on upperparts; in between these two extremes may be found every shade of intergradation as is well illustrated by the large series from Las Peinitas. Everything considered it seems best to apply the name *S. d. deppei* to all the Honduras specimens.

**SPECIMENS.**—Ocotepeque: Belen Guacho, 1. Cortés: Las Peinitas, 15; Corfradia, 1; Catacombas, 2. Copan: Copan, 2. Gracias: Cementerio, 2; Lapaera, 1; Cerro Pucca, 3. Santa Barbara: Santa Barbara, 2. Intibuca: La Florida, 1. Tegucigalpa: Cantoral, 2; Cerro Cantoral, 1 (M. C. Z. 6); Comayagua (M. C. Z. 1); Rancho Quemado (M. C. Z. 3); Cerro Santa Maria, 2; Monte Redondo, 4 (Field Mus. 2).

### Pteromyinae

#### Flying Squirrels

#### *Glaucomys volans underwoodi* Goodwin

Underwood Flying Squirrel

*Glaucomys volans underwoodi* GOODWIN, 1936, Amer. Mus. Novit., No. 898, pp. 1–2.

**TYPE LOCALITY.**—Zambrano, Tegucigalpa, Honduras, a village on the main road to Lake Yojoa and the north coast about halfway between Tegucigalpa and Comayagua, altitude 4500 feet.

**RANGE.**—Known only from type locality.

**GENERAL CHARACTERS.**—Similar to *Glaucomys v. goldmani*, from Chiapas, Mexico, but color grayer and less rusty brownish; white on nose more restricted; postauricular spots more extensive and paler. Skull larger.

**DESCRIPTION.**—Color of type: upperparts of head, nose, and body light sayal brown; sides of face smoke gray mixed with fuscous; fuscous black ring around eye; area between eye and ear fuscous black shading into gray on cheeks and sides of head below ear; sides of neck joining postauricular spot which extends over posterior half of ear, pale pinkish buff; outer side of anterior half of ear sparsely covered with very fine fuscous hair; sides of nose creamy white; upper surface of flying membrane black finely washed with sayal brown; hind feet fuscous, toes wood brown; fore feet and toes buffy white; tail above, snuff brown; below, slightly lighter than pinkish buff; underparts of body, throat, chin, and underside of fore limbs creamy white lightly washed with pinkish buff; under surface of membranes and innards of thighs between pinkish buff and pale pinkish buff. Skull: characters much the same as in *Glaucomys v. goldmani* but larger with longer palate and broader rostrum; the greatest breadth of the rostrum is largely in the nasals; incisors slightly broader than *G. v. goldmani*, but molariform teeth are about the same.

**MEASUREMENTS.**—Head and body, 136; tail vertebrae, 105; hind foot, 29; ear, 16. Skull: greatest length, 35.7; least interorbital breadth, 7; least postorbital breadth, 9; length of nasals, 10.4; greatest breadth of nasals, 4.7, at base, 3.3; width of rostrum, 6.5; palatal length, 18.1; maxillary toothrow, 6.75.

All of the forms of *Glaucomys volans* are closely allied, although widely separated geographically. *G. v. underwoodi* is not very different from forms that occur in the



United States. Compared with *G. v. goldmani* it is somewhat similar in size and color, but the upperparts are grayer and less rusty brownish. The under surface of the membranes and innersides of the thighs in *G. v. underwoodi* are between pinkish buff and pale pinkish buff. In *G. v. goldmani*

these parts are near ochraceous buff. The underside of the tail in *G. v. underwoodi* is a slightly lighter pinkish buff than in *goldmani*. The skull in *G. v. underwoodi* is larger and longer with longer palate and broader rostrum than in *G. v. goldmani*.

SPECIMENS.—Tegucigalpa: Zambrano, 1.

## Heteromyidae

### Spiny Pocket Mice

The pocket mice are small rodents with external cheek pouches and spiny or bristly pelage; one premolar and three molars on a side. Two genera, *Heteromys* and *Liomys*, inhabit Honduras.

#### *Heteromys desmarestianus fuscatus*

Allen

Nicaragua Spiny Pocket Mouse

*Heteromys fuscatus* ALLEN, 1908, Bull. Amer. Mus. Nat. Hist., XXIV, p. 652.

TYPE LOCALITY.—Tuma, Nicaragua.

RANGE.—Central Nicaragua and central Honduras.

GENERAL CHARACTERS.—A medium-sized dark-colored spiny rat with a long tail, similar to typical *desmarestianus* but smaller, tail about equal to or longer than head and body.

DESCRIPTION.—General color of upperparts, between dark mouse-gray and slaty black from nose to base of tail mixed with fine ochraceous buffy hairs; outer surface of fore limbs buffy gray; outer surface of hind limbs like back; underparts including innersides of fore and hind limbs and fore and hind feet, white; tail black above, white below, becoming blackish all around near tip. Skull closely resembling that of *desmarestianus* but smaller and more slender.

MEASUREMENTS.—Adult male from Cerro Pucca Gracias and an adult female from Muya, La Paz: total length, 311, 274; tail vertebrae, 183, 146; hind foot, 35, 34. Skull: greatest length, 37.8, 37.4; length of nasals, 15.1, 15.4; zygomatic breadth, 16, 17.9; interorbital breadth, 9.5, 9.2; alveoli upper toothrow, 5.0, 5.6.

The large series of *Heteromys* from Honduras while showing some local variation

average much the same in general color, size, and cranial characters and all are here referred to *fuscatus*. The series from Pucca Gracias, 6600 feet elevation, are relatively dark-colored, long-tailed specimens with skull slightly longer and rostrum more slender than the average. Those from Muya, La Paz, while they have a well-developed buffy lateral line, are near typical *fuscatus* in general characters.

SPECIMENS.—Gracias: Pucca, 17; Cerro Pucca, 27; Monte Linderos, 1. Santa Barbara: La Mica, 1. Tegucigalpa: Cantoral, 4 (M. C. Z. 4); Alto Cantoral, 1; Cerro Cantoral, 2; El Colerio, Cantoral, 4. La Paz: Muya, 5.

#### *Liomys heterothrix* Merriam

Honduras Spiny Pocket Mouse

*Liomys heterothrix* MERRIAM, 1902, Proc. Biol. Soc. Wash., XV, p. 50.

TYPE LOCALITY.—San Pedro Sula, Honduras.

RANGE.—Southeastern Guatemala, central and northern Honduras from sea level to 2500 feet.

GENERAL CHARACTERS.—A small spiny pocket mouse, tail about equal length to head and body, thinly haired; forearms entirely white; ears indistinctly edged with whitish; hind foot with six tubercles, sole hairy posteriorly.

DESCRIPTION.—Color of fresh pelage: upperparts between drab and hair-brown, the long slender hairs tipped with ochraceous buff; underparts including fore limbs and fore and hind feet creamy white; tail dusky above, whitish below. Skull: relatively large with rostrum broad, superior outline slightly ovate; interparietal irregularly oval without posterior emargina-

tion, nasal slightly wedge-shaped, tapering posteriorly, ascending branches of premaxillae broad reaching posteriorly beyond nasals; interpterygoid fossa U-shaped; last molars narrower than premolars, posterior loop in crown of upper premolar with anterior border concave and slightly notched, loops of molar crowns without additional enamel islands.

MEASUREMENTS.—Adult male and female from El Caliche Orica: total length, 236, 205; tail vertebrae, 127, 100; hind foot (s.u.), 25, 24; ear, 15, 15. Skull: greatest length, 33.4, 33.4; zygomatic breadth, 15.9, 15; interorbital breadth, 6.9, 6.6; length of nasals, 13.4, 13; mastoid width, 14.7, 14.7; alveolar length of upper molar series, 4.9, 4.8.

*Liomys heterothrix*, compared with *salvini*, is smaller, skull shorter with a broader rostrum and nasals more wedge-shaped.

SPECIMENS.—Tegucigalpa: El Caliche Orica, 12; La Cueva Archaga, 5. Olancho: Catcacamas, 1.

### *Liomys salvini salvini* (Thomas)

Salvin Spiny Pocket Mouse

*Heteromys salvini* THOMAS, 1893, Ann. Mag. Nat. Hist., (6) XI, p. 331.

TYPE LOCALITY.—Dueñas, Guatemala.

RANGE.—Southern Guatemala and in the mountains south to south central Honduras.

GENERAL CHARACTERS.—A fairly large spiny pocket mouse. General color rather dark; sole of hind foot hairy posteriorly. Tail equal to or longer than head and body.

DESCRIPTION.—Upperparts: spiny pelage mummy brown mixed with long slender sayal-brown tipped hairs, base of hair and spines soiled whitish; underparts, including fore limbs and feet, inner-sides of hind limbs and feet, white to roots of hair; tail mummy brown above, white below. Skull moderately large and slender with long narrow rostrum. Superior outline in nearly a straight line; nasals long and slender, sides nearly parallel.

MEASUREMENTS.—Full adult male and female from Sabana Grande and one adult male from Monte Redondo: total length, 242, 238, 244; tail, 123, 122, 133; hind foot (dry), 27.8, 28.5, 28.2. Skull: greatest length, 34, 35.4, 34; interorbital breadth, 7.6, 7, 7.5; length of nasals, 13.5, 14, 13.2; mastoid width, 14.3, 15.1, 15.1; alveolar length of upper toothrow, 5.2, 5.5, 5.1.

Monte Redondo and Sabana Grande are here referred to *L. salvini* although they may represent a separate geographical race, averaging somewhat lighter in color and with longer tails than the typical form. Compared with *salvini* from San Lucas, Guatemalan selected specimens, however, are identical in color, size, and cranial characters but only a few individuals show a slight slaty gray edging on outside of forearm.

SPECIMENS.—Tegucigalpa: La Piedra de Jesús, 66; Cerro de los Cuchos, 8; El Zapote, 2; La Flor Archaga, 2 (M. C. Z. 1); Monte Redondo, 9 (Field Mus. 8; Univ. Mich. 4; M. C. Z. 2; U. S. N. M. 3); Hatillo (M. C. Z. 2).

## Geomyidae

### Pocket Gophers

Members of this family are robust, burrowing animals with very small ears and eyes; external cheek pouches; short smooth naked tail; short limbs. The genera in this family inhabiting Honduras have large grooved incisors.

### *Orthogeomys grandis pluto* Lawrence

Honduras Pocket Gopher

*Orthogeomys grandis pluto* LAWRENCE, 1933, Proc. New England Zool. Club, XIII, p. 65.

TYPE LOCALITY.—Cerro Cantoral, north of Tegucigalpa, Honduras.

RANGE.—Known only from type locality.

GENERAL CHARACTERS.—Size large; pelage coarse and dark; upper incisors with sulcus slightly on innerside of median line; tail naked; similar to *O. g. grandis* but smaller and general coloration paler.

DESCRIPTION.—Color, nearly uniform, between Prout's brown and bister; under-

side of fore legs, chest, and throat only slightly paler than back. Skull: large; zygomata moderately expanded; frontals broad, slightly concave along median line between orbits; postorbital processes small; nasals relatively long and narrow, tapered on posterior half, and not inflated; occipital plane flat without vertical median ridge; audital and mastoid bullae normal; the enamel surface of the upper incisors flat, the sulcus rather wide and slightly to the innerside of the median line; heel of last molar short, wide, sloping slightly outward.

**MEASUREMENTS.**—One adult male (marked female) and one adult female: head and body, 255, 252; tail vertebrae, 95, 108; hind foot (in dried skin), 47.5, 44; ear, 6, 6. Skull: greatest length, 68, 65.3; condylobasal length, 66.5, 62; condylobasilar length, 61, 57; zygomatic breadth, 40.4, 37.1; interorbital constriction, 14.5, 13.1; width of rostrum in front of zygoma, 15.3, 14; length of nasals, 27.5, 26.3; diastema, 25.2, 22.5; alveolar length of upper molar series, 14.5, 14.2.

*O. g. pluto* closely resembles *O. g. grandis* but differs in smaller size, shorter hind foot, and relatively shorter and less angular skull. The six specimens examined include one adult male, two adult females, and three immature.

**SPECIMENS.**—Tegucigalpa: Cerro Cantoral, 6 (M. C. Z. 2).

### ***Heterogeomys hispidus chiapensis***

Nelson and Goldman

Chiapas Pocket Gopher

*Heterogeomys hispidus chiapensis* NELSON AND GOLDMAN, 1929, Proc. Biol. Soc. Wash., XLII, p. 151.

**TYPE LOCALITY.**—Tenejapa, about 16 miles northeast of San Cristobal, Chiapas, Mexico (altitude 7800 feet).

**RANGE.**—Highlands of Chiapas, Guatemala, and probably northern Honduras.

**GENERAL CHARACTERS.**—Size smaller

and pelage softer than *Orthogeomys*. The groove on upper incisors narrow and far on the innerside.

**DESCRIPTION.**—General color near seal-brown; underparts thinly haired, cinnamon brownish; feet and toes, scantily clothed with brownish hairs; tail nearly naked. Skull short and broad with widely spreading, angular zygomatic arches.

**MEASUREMENTS.**—Type: total length, 323; tail vertebrae, 86; hind foot, 48. Skull: condylobasal length, 58.5; length of nasals, 22.1; zygomatic breadth, 39.3; alveolar length of upper molar series, 12.8.

### ***Macrogeomys matagalpaë* Allen**

Nicaragua Pocket Gopher

*Macrogeomys matagalpaë* ALLEN, 1910, Bull. Amer. Mus. Nat. Hist., XXVIII, p. 97.

**TYPE LOCALITY.**—Peña Blanca, Matagalpa, Nicaragua.

**RANGE.**—Highlands of north central Nicaragua and probably south central Honduras.

**GENERAL CHARACTERS.**—Much like *Heterogeomys* but fur softer and cranial characters strikingly different, especially the remarkably short and broad palatopterygoids and the strongly developed postorbital processes. The groove on the upper incisors is even farther on innerside than in *Heterogeomys*.

**DESCRIPTION.**—General color considerably darker than seal-brown, underparts drab, top of head with a large area of clear white.

**MEASUREMENTS.**—Type, male adult: total length, 320; tail vertebrae, 80; hind foot, 40. Skull (type imperfect), female adult: total length, 56; zygomatic breadth, 35.5; least interorbital breadth, 9; length of nasals, 21.

The large white area on the crown of head in the Matagalpa species appears to be a normal and characteristic feature of the coloration. Five specimens of this species are all similarly marked.

## Cricetidae

## Rats and Mice

The Cricetidae comprise the largest family of American mammals. Members of this family are from small to medium size. They have no premolars and never more than three molars on a side.

**Reithrodontomys fulvescens chiapensis**  
Howell

Chiapas Harvest Mouse

*Reithrodontomys fulvescens chiapensis* HOWELL, 1914, North American Fauna, No. 36, p. 53.

TYPE LOCALITY.—Canjob, Chiapas, Mexico.

GENERAL CHARACTERS.—A medium-sized light-colored harvest mouse with rather small ears, long tail, white underparts, and feet white to the ankles. A distinct longitudinal groove on face of upper incisors, characteristic of all members of this genus.

DESCRIPTION.—Upperparts, pinkish cinnamon-buff, heavily lined with black hairs, lateral buffy line moderately well defined; ears fuscous; underparts, including fore and hind feet, grayish white; tail fuscous above, soiled whitish below.

MEASUREMENTS.—Two adult males from Sabana Grande: head and body, 72, 67; tail vertebrae, 108, 93; hind foot, 19, 18; ear, 13, 13. Skull: greatest length, 22.4, 22.3; breadth of braincase, 10.6, 10.6; length of nasals, 8.5, 8.1; width of outer wall of anteorbital foramina, 1.8, 1.8; alveoli, upper molar series, 3, 3.1.

Five specimens from Sabana Grande are referable to *chiapensis*, being only slightly paler in color than the type, and the skulls are typical.

SPECIMENS.—Tegucigalpa: La Piedra de Jesús, 3; El Zapote, 2.

**Reithrodontomys australis underwoodi**  
(Goodwin)

Underwood Harvest Mouse

*Reithrodontomys dorsalis underwoodi* GOODWIN, 1937, Amer. Mus. Novit., No. 921, p. 2.

TYPE LOCALITY.—Monte Verde, Ocotepeque, Honduras, altitude 4500 feet.

RANGE.—Western Honduras.

GENERAL CHARACTERS.—A small dark-

colored harvest mouse with relatively short tail, small ears and buffy underparts; similar to *R. dorsalis* but differs in having nearly unicolor tail, richer color and slightly smaller skull.

DESCRIPTION.—Color of upperparts ochraceous tawny mixed with black, with a well-defined, broad, dark median dorsal stripe; sides of body and head ochraceous tawny with an ochraceous tawny lateral line next to belly; underparts washed with light buff and an ochraceous buff pectoral spot; ears fuscous black; hind feet soiled whitish; fore feet white with a dusky stripe reaching halfway to toes; tail fuscous, nearly unicolor, only slightly paler below. Skull: small and rounded, palatine foramen extending posteriorly to just beyond the plane of first molars, similar to *R. dorsalis* but slightly smaller.

MEASUREMENTS.—Average of type and three topotypes: head and body, 69 (65–75); tail vertebrae, 89 (75–98); hind foot, 17 (16–19); ear, 14 (13–17). Skull: greatest length, 22 (21–23); breadth of braincase, 10.4 (10–10.6); length of nasals, 8.8 (8.3–9.5); interorbital constriction, 3.2 (3–3.4); width of outer wall of anteorbital foramen, 1.7 (1.5–1.9); alveolar length of upper molar series, 3.1 (3–3.3).

This race was originally based on four specimens which agree closely in color and size. In the type the tail is practically unicolor, while in the other three specimens it is slightly paler below, but the line of demarcation is indistinct. The skull of one topotype, however, is much smaller than any of the other three.

*R. a. underwoodi* is intermediate between *dorsalis* and *australis* and the differences from either are not more than subspecific.

Ocotepeque specimens approach *R. a. modestus* and are perhaps the same, though available *modestus* material is very imperfect. Specimens from La Paz are close to *dorsalis* in color but the skulls are smaller.

With the Central American material now available it seems evident that *dorsalis* and *australis* should be united under one species.

SPECIMENS.—Ocotepeque: Monte Verde, 4. Gracias: Cementerio, 1. La Paz: Muya, 20.

***Reithrodontomys mexicanus ocotepequensis* Goodwin**

Ocotepeque Harvest Mouse

*Reithrodontomys mexicanus ocotepequensis* GOODWIN, 1937, Amer. Mus. Novit., No. 921, pp. 1-2.

TYPE LOCALITY.—Monte Verde, Ocotepeque, Honduras, 30 miles northeast of the city of Ocotepeque; altitude 4500 feet.

GENERAL CHARACTERS.—Similar to *Reithrodontomys mexicanus lucifrons* but color of pelage slightly darker, tail shorter, and skull distinctly smaller.

DESCRIPTION.—Upperparts, from crown to rump, dark sayal brown varied with fuscous; forehead to sides of face dark cinnamon buff; eye-ring black; sides of body near clay-color, very little paler than back; ears fuscous; feet dull white, hind feet with median stripe of hair-brown reaching to base of toes; underparts soiled whitish, broadly plumbeous basally; tail fuscous, unicolor. Skull: small and slender with rostrum rather narrow for the *mexicanus* group; nasals slender, ending posteriorly on a line with ends of premaxillae; braincase small and rounded; palatal foramen short, ending in front of plane of first molars; similar to *R. m. lucifrons*, but distinctly smaller, with smaller teeth, less inflated braincase, and relatively narrower rostrum.

MEASUREMENTS.—Average of nine specimens from Monte Verde: head and body, 74 (68-80); tail vertebrae, 102 (93-109); hind foot, 18.6 (17-20); ear, 14 (12-18). Skull: greatest length, 22.5 (21.9-23.8); breadth of braincase, 10.7 (10.4-10.9); length of nasals, 8 (7.6-8.4); interorbital constriction, 3.6 (3.5-3.8); width outer wall of anteorbital foramen, 1.4 (1.3-1.5); alveolar length of upper molar series, 3.08 (2.8-3.25).

The twelve specimens on which this race was based agree closely in color and cranial characters. The type, an adult male with worn molars, represents near the maximum rather than the medium size of *R. m. ocotepequensis*. The skulls in the topo-

types, while more or less adult, are slightly smaller with somewhat more globular braincase than in the type. *R. m. ocotepequensis* is unlike *R. m. mexicanus* which is much larger, and needs comparison only with *R. m. lucifrons*. From the latter it differs in darker color, shorter tail, smaller and more slender skull.

SPECIMENS.—Ocotepeque: Monte Verde, 12.

***Reithrodontomys mexicanus lucifrons* Howell**

Mountain Harvest Mouse

*Reithrodontomys mexicanus lucifrons* HOWELL, 1932, Proc. Biol. Soc. Wash., XLV, p. 125.

TYPE LOCALITY.—Cerro Cantoral, Tegucigalpa, Honduras, a mountain northwest of Archaga, elevation about 6000 feet.

RANGE.—Mountain regions of south and central Honduras.

GENERAL CHARACTERS.—Similar in size and cranial characters to *mexicanus* but hind foot smaller, coloration distinctly paler, especially on forehead and sides of face. Compared with *goldmani*, the coloration of body is similar but face paler and skull shorter with more globular braincase.

DESCRIPTION.—Color of forehead and sides of face cinnamon buff; ring around eye black; dorsal area, from crown to rump, sayal brown varied with fuscous; sides pale sayal brown; ears fuscous; feet dull white with a median stripe of hair-brown extending to base of toes; underparts pale pinkish cinnamon or white; tail fuscous, usually unicolor, indistinctly whitish below in some specimens. Skull: short and broad with short, broad rostrum; short nasals ending posteriorly about on a line with ends of premaxillary; braincase globular, palatal foramen short ending at or slightly in front of plane of first molars; audital bullae small. Compared with *Reithrodontomys mexicanus cherrii* the skull is smaller and toothrow shorter.

MEASUREMENTS.—Taken by collector, average of twelve adult specimens: head and body, 74.6 (64-85); tail, 110.2 (100-121); hind foot, 16.7 (14-19); ear, 12.7 (9-16). Skull: average of nine adult specimens: greatest length, 23.2 (22.9-23.8); breadth of braincase, 11.2 (11-11.6);

length of nasals, 8 (7.8-8.8); interorbital constriction, 3.6 (3.4-3.9); width of outer wall of anteorbital foramen, 1.58 (1.5-1.7); alveolar length of upper molar series, 3.2 (2.9-3.4).

The series of specimens examined agree rather closely in both skull and skin characters with typical *lucifrons*, though some are darker in color.

**SPECIMENS.**—Gracias: Pucca, 3; Monte Linderos, 4. Tegucigalpa: Cerro Cantoral, 3 (M. C. Z. 1; U. S. N. M. 1); Cantoral, 25; Laguna, Cerro Cantoral, 1; La Flor Archaga, 5 (M. C. Z. 1); Montana Vasquez (Field Mus. 3; M. C. Z. 1); Hatillo, 1; El Derrumbo, 1; Comayagua 1; Monte Redondo, 9. La Paz: Muya, 11.

**Reithrodontomys mexicanus minusculus**  
Howell

Honduras Little Harvest Mouse

*Reithrodontomys mexicanus minusculus* HOWELL, 1932, Proc. Biol. Soc. Wash., XLV, pp. 125-126.

**TYPE LOCALITY.**—Comayagua (just south of Tegucigalpa), Honduras.

**RANGE.**—Known only from Comayagua and Sabana Grande.

**GENERAL CHARACTERS.**—Similar in color and cranial characters to *R. mexicanus lucifrons* but decidedly smaller; upperparts slightly paler, except on the head, which is similar to the back.

**DESCRIPTION.**—Color of head and upperparts, sayal brown varied with fuscous; sides pale sayal brown; ears fuscous; eye-ring black; feet dull white with a median stripe of hair-brown; tail fuscous, unicolor; underparts white, faintly washed with pale pinkish cinnamon.

**MEASUREMENTS.**—Two specimens from Sabana Grande and type in parentheses: head and body, 68, 70 (69); tail vertebrae, 103, 105 (102); hind foot, 18, 16 (dry, 18.5); ear, 17, 15 (from notch, dry, 11). Skull: greatest length, 22.5, — (21.4); breadth of braincase, 11.3, — (11.1); length of nasals, 8.5, 7.4 (7.5); width of outer wall of anteorbital foramen, 1.5, 1.5 (1.5).

*R. m. minusculus* is clearly referable to the *mexicanus* group, and doubtless will prove to be a subspecies, nearest related

to *lucifrons*. Although resembling the latter closely in color, its distinctly smaller size and pinkish cinnamon underparts indicate that it represents a separate race.

**SPECIMENS.**—Tegucigalpa: Sabana Grande, 3; Comayagua (U. S. N. M. 1).

**Baiomys musculus grisescens** Goldman  
Honduras Baiomys

*Baiomys musculus grisescens* GOLDMAN, 1932, Proc. Biol. Soc. Wash., XLV, pp. 121-122.

**TYPE LOCALITY.**—Comayagua, just south of Tegucigalpa, Honduras; altitude 3100 feet.

**RANGE.**—From western and central Honduras south to Matagalpa in north-central Nicaragua; limits of range unknown.

**GENERAL CHARACTERS.**—A very small mouse with tail less than half the total length; ears small; closely allied to *B. m. nigrescens* of Chiapas, but upperparts paler, owing to a grayish suffusion, and underparts more pinkish buff (pure white pectoral areas present in some specimens).

**DESCRIPTION.**—Color of upperparts finely mixed vinaceous buff and dusky, with a grayish plumbeous suffusion, producing a grayish brown general tone, the dusky element due to fine black tips of hairs restricted mainly to top of head and back; cheeks, shoulders, and flanks lighter, more pinkish buffy; underparts overlaid with pinkish buff, the plumbeous basal color showing through; outer surfaces of forearms and thighs grayish plumbeous; feet dull whitish; ears dusky; tail nearly unicolor, dark brownish above, slightly paler below. In several topotypes the pectoral region is marked by white area, varying from a narrow median line to broad patches extending more than halfway across underparts. Skull: very similar to that of *B. m. nigrescens*, but braincase and interorbital region broader; zygomata more strongly bowed outward, near middle, the sides therefore less nearly parallel; not very unlike that of *B. m. musculus* of Colima, but differing mainly in more widely spreading zygomata.

**MEASUREMENTS.**—Average of seven topotypes: head and body, 60 (52-72); tail vertebrae, 44 (41-50); hind foot, 14

(14-15); ear, 11 (11-12). Skull: greatest length, 19.5 (18.5-20.2); condylobasal length, 17.7 (16.9-18.5); zygomatic breadth, 10.3 (10-11); interorbital breadth, 3.9 (3.7-4.1); length of nasals, 7.2 (6.7-7.5); alveolar length of upper molar series, 3 (2.8-3.2).

*Baiomys m. grisescens* is a relatively light gray-colored race. A large series from Sabana Grande are paler than the type series, with whiter underparts. An individual from Comayaguela, the type locality of *grisescens*, however, is as dark as Guatemalan specimens of *nigrescens* and the only specimen from Gracias is darker than the average. It seems that these are instances of melanism or darker phases rather than racial characters.

In the Museum collection are two Nicaraguan *Baiomys*, one from Matagalpa and the other from San Rafael del Norte, probably representing the most southern extent of the known range of this genus.

**SPECIMENS.**—Gracias: Cementerio, 1. Tegucigalpa: El Caliche, Cedros, 1; Monte Redondo, 1; La Flor Archaga, 2 (Univ. Mich. 1); Hatillo, 1 (M. C. Z. 3); Comayaguela, 7 (U. S. N. M. 6; M. C. Z. 1; Univ. Mich. 3); Piedra de Jesús, Sabana Grande, 83; El Zapote, Sabana Grande, 5.

### *Peromyscus boylii sacarensis* Dickey

San José del Sacare White-footed Mouse

*Peromyscus boylii sacarensis* DICKEY, 1928, Proc. Biol. Soc. Wash., XLI, p. 3.

**TYPE LOCALITY.**—San José del Sacare, Dept. of Chalatenango, El Salvador.

**RANGE.**—Type locality, Sonoran zone, El Salvador and southern Honduras.

**GENERAL CHARACTERS.**—Smallest of the Central American forms of this species; tail about equal length to head and body.

**DESCRIPTION.**—Color of upperparts ochraceous buff, mixed with black, darkest along middorsal line; tail dusky above, whitish below; underparts including fore and hind feet, soiled whitish. Skull: small, rostrum short, braincase smooth, rounded; bullae small; toothrow short and weak.

**MEASUREMENTS.**—Adult male and female from La Flor Archaga and type in parentheses, all with worn teeth: total

length, 190, 178 (200); tail vertebrae, 90, 80 (103); hind foot, 20, 20 (23); ear, 15, 15 (16). Skull: greatest length, 27.1, 27.3 (27.1); zygomatic breadth, 13.3, 13.7 (13.4); interorbital breadth, 4.2, 4.1 (4.2); length of nasals, 10.9, 10.4 (10.5); palatal foramina, 5.5, 5.3 (5.4); maxillary tooth-row, 4, 3.9 (4.1).

Two small *Peromyscus* from La Flor Archaga are here provisionally referred to *sacarensis*. They agree fairly well with the type description and measurements. The dusky color on the hind feet, however, extends to the base of toes in one specimen and only to just below ankle in the other.

**SPECIMENS.**—Tegucigalpa: La Flor Archaga, 2.

### *Peromyscus guatemalensis tropicalis* Goodwin

Tropical White-footed Mouse

*Peromyscus guatemalensis tropicalis* GOODWIN, 1932, Amer. Mus. Novit., No. 560, pp. 3-4.

**TYPE LOCALITY.**—Chimoxan, Guatemala.

**RANGE.**—Southeastern Guatemala, central and southern Honduras.

**GENERAL CHARACTERS.**—A rather large dark-colored mouse with long soft full pelage, large ears and tail about equal to length of head and body; very similar externally and possibly allied to *nudipes*.

**DESCRIPTION.**—Color of upperparts pinkish cinnamon, heavily mixed with black, the latter concentrated on middle of back; a broad dark stripe from base of whiskers across eye almost to base of ear; underparts buffy white modified by plumbeous basal color; pectoral region often overlaid with pinkish cinnamon, fore and hind feet white; tail dusky above, irregularly blotched with yellowish white below; skull large; braincase large and full.

**MEASUREMENTS.**—Old male from Muya La Paz, adult male from Cerro Pucca Gracias and an adult male from Alto Cantoral: total length, 282, 244, 270; tail vertebrae, 140, 130, 143; hind foot, 29 (s.u.), 25, 25; ear, 22, 20, 19. Skull: greatest length, 34.1, 33.3, 33.7; zygomatic breadth, 16.8, 15.9, 16.4; interorbital breadth, 5.3, 5.2, 4.6; breadth of braincase, 14.2, 14.3, 13.7; length of nasals, 13.9,



11.2, 13.1; alveoli of upper molar series, 4.9, 4.5, 4.6.

*Peromyscus g. tropicalis* is characterized by its relatively large size, long, somewhat woolly pelage, dark dusky color, large ears, indistinctly bicolor tail, broad dark area round eye, large skull and full braincase. The color in the Honduras series seems to be variable, those from Muya La Paz are generally lighter and more uniform in color than typical *tropicalis*. Specimens from Cantoral, however, are very close in color to the type series of *tropicalis* as also are a large series from Gracias.

**SPECIMENS.**—Santa Barbara: Santa Barbara, 3. Gracias: Cerro Pucca, 60; Monte Linderos, 12; Cementerio, 5; Pucca, 11; Las Flores, 2; Lapacera, 1. Ocotepeque: Monte Verde, 5. La Paz: Muya, 37. Tegucigalpa: El Caliche Orica, 9; Cerro Santa Maria, 4; Laguna, Cantoral, 9; Cantoral, 18; Alto Cantoral, 2; La Flor Archaga, 3 (M. C. Z. 2; Univ. Mich. 1); Cerro Cantoral, 26 (U. S. N. M. 21; M. C. Z. 1; Univ. Mich. 2); La Cueva Archaga, 5; Hatillo (M. C. Z. 2); Rancho Quemado, 3 (M. C. Z. 2; Univ. Mich. 1); Sabana Grande, 2.

### *Peromyscus mexicanus saxatilis*

Merriam

Rock Mouse

*Peromyscus mexicanus saxatilis* MERRIAM, 1898, Proc. Biol. Soc. Wash., XII, p. 121.

**TYPE LOCALITY.**—Jacaltenango, Huehuetenango, Guatemala, altitude 5400 feet.

**RANGE.**—Highlands of southeastern Chiapas, southwestern Guatemala, central Honduras and south to Nicaragua.

**GENERAL CHARACTERS.**—A moderately large tawny mouse with relatively small ears, rather short full pelage and tail longer than head and body.

**DESCRIPTION.**—Color of upperparts rich cinnamon buff mixed with black, darkest on middorsal area, side of body and face clearer cinnamon buff than back; orbital ring narrow, blackish brown; underparts white, occasionally with buffy pectoral markings, feet white with a wedge of dark color extending below ankles, fore feet white; tail dusky above, whitish below.

**MEASUREMENTS.**—Old female from

Muya, La Paz, and an adult female from Monte Linderos, Gracias: total length, 248, 244; tail vertebrae, 129, 128; hind foot, 25, 25; ear, 18, 20. Skull, type in parentheses: greatest length, 32.2, 30.5 (31.8); zygomatic breadth, 15.5, 15 (14.9); interorbital breadth, 4.75, 4.5 (5); breadth of braincase, 13.2, 13; length of nasals, 13.1, 11.8 (12.2); maxillary toothrow, 4.7, 4.7 (4.4).

*Peromyscus m. saxatilis* seems to be characterized by its bright-colored, relatively short pelage and short ears. The Honduras series show some geographical variation. La Paz specimens are the largest with longest tails, those from Gracias are relatively smaller with shorter tails and closer pelage. Cantoral specimens are richest in color with darkest dorsal area.

**SPECIMENS.**—Gracias: Cerro Pucca, 12; Monte Linderos, 6; Pucca, 1. La Paz: Muya, 3. Tegucigalpa: El Derumbo, 2; Sabana Grande, 1; Cantoral, 5; El Colerio, 8.

### *Peromyscus stirtoni* Dickey

Stirton's White-footed Mouse

*Peromyscus stirtoni* DICKEY, 1928, Proc. Biol. Soc. Wash., XLI, p. 5.

**TYPE LOCALITY.**—Rio Goascoran, 13° 30' N., Dept. of La Union, El Salvador, altitude 100 feet.

**RANGE.**—Tropical zone of southeastern Salvador and extreme southwestern Honduras.

**GENERAL CHARACTERS.**—A medium-sized buff-colored mouse with tail conspicuously haired, heavy and about equal length to head and body.

**DESCRIPTION.**—Upperparts, ochraceous buff with a widely distributed admixture of dusky hairs; tail bicolor, dusky above and white below; underparts, including feet, white. Skull of medium size and smoothly rounded; nasals broad; supraorbital border flat with an incipient ridge, near extreme edge; audital bullae small.

**MEASUREMENTS.**—Adult male from Sabana Grande and the type in parentheses: total length, 194 (190); tail vertebrae, 94 (100); hind foot, 22 (24); ear, 20 (15). Skull: greatest length, 29.2 (29.6); zygomatic breadth, 14.8 (14.7);

length of nasals, 11.8 (11.7); maxillary toothrow, 4 (4).

*Peromyscus stirtoni* may be at once recognized by its light uniform color, heavy and well-haired tail. It seems to be an isolated species with no close geographically related forms.

SPECIMENS.—Tegueigalpa: La Piedra de Jesus, Sabana Grande, 19.

### *Peromyscus hondurensis* Goodwin

Honduras White-footed Mouse

*Peromyscus hondurensis* GOODWIN, 1941, Amer. Mus. Novit., No. 1121, p. 1.

TYPE LOCALITY.—Muya, 50 miles north of Chincala, altitude 3000 feet, La Paz, Honduras.

RANGE.—Western Honduras.

GENERAL CHARACTERS.—A small tawny white-footed mouse with moderately large ears and tail about equal to the length of head and body; allied to *P. lophurus* Os-good from western Guatemala but larger, pelage shorter, color paler, and skull more rounded than the latter.

DESCRIPTION.—General color of upperparts cinnamon brown, darkened along middorsal line with an admixture of black hairs; sides of body bright ochraceous tawny mixed with black, becoming clear tawny along lateral line and on cheeks; a narrow dusky ring around eye; hind limbs blackish mummy brown above ankles, this color extending below ankle on upper-side of foot; fore and hind feet white. Tail covered with fine short hairs, dusky above, whitish below; the line of demarcation fairly well defined; underparts including underside of fore limbs white with base of hair dark neutral gray. Skull similar to that of *P. lophurus* but broader between the orbits, higher and more rounded.

MEASUREMENTS.—Type and topotype: total length, 213, 215; tail vertebrae, 102, 107; hind foot, 24, 24 (in dried skin, 25, 25); ear, 16, 17 (in dried skin, 16.3, 14.5). Skull: greatest length, 29.4, 29.2; basilar length, 22.2, 22.2; length of nasals, 11.5, 11.8; zygomatic breadth, 14.7, 14.9; interorbital breadth, 4.7, 4.6; palatine foramina, 5.2, 5.4; maxillary toothrow, 4.8, 4.8.

*Peromyscus hondurensis* is apparently related to *P. lophurus* but is somewhat paler in color with shorter pelage and nearly naked instead of well-haired tail. Specimens from Cerro Pucca Gracias (6600 feet) average longer tails than the type series and show a slight variance in cranial characters.

SPECIMENS.—La Paz: Muya, 3. Gracias: Cerro Pucca, 6.

### *Oryzomys couesi couesi* (Alston)

Coues Rice Rat

*Hesperomys couesi* ALSTON, 1876, Proc. Zool. Soc. London, p. 756.

TYPE LOCALITY.—Coban, Guatemala.

RANGE.—From northern Vera Cruz southeastward through eastern Puebla, eastern Oaxaca, northern and extreme southern Chiapas, Tabasco, Campeche, Yucatan, Quintana Roo, Guatemala, Honduras, and Nicaragua to northwestern Costa Rica; altitudinal range from sea level to about 5000 feet, mainly in the humid lower Tropical zone.

GENERAL CHARACTERS.—A medium-sized buff-colored rat with a rather long bicolored tail and large, whitish feet.

DESCRIPTION.—Color of upperparts varying from ochraceous buff to ochraceous tawny, deepening in a few examples to light cinnamon brown; lightest on cheeks, shoulders and along sides of face; top of head and back much darkened by black hairs; underparts varying from light buff to light ochraceous buff, in some specimens dull white; outsides of ears blackish, innersides clothed with short ochraceous buff hairs; feet yellowish white; tail brownish above, dull yellowish below, becoming brownish toward tip, in some specimens nearly unicolor dark brownish. Skull: in general form closely resembling that of *O. palustris*; anteorbital foramen extending posteriorly to about a line between the first molars; ascending branches of premaxillary extending to the posterior border of nasals; braincase narrow, with supraorbital ridges well defined and molar teeth relatively small.

MEASUREMENTS.—Average of six specimens from south central Honduras: head and body, 125 (121–131); tail, 146 (128–

160); hind foot, 29 (28-31); ear, 15 (11-16). Skull, two extreme types of adults from Comayaguela and Cantoral, and one from Lake Yojoa, respectively: greatest length, 32.2, 31.9, 31.9; zygomatic breadth, 18, 16.3, 16; breadth of braincase, 13.6, 12.5, 12.7; interorbital constriction, 5, 5.1, 4.5; nasals, 12.1, —, 12; anterior palatine foramen, 6.4, 6.6, 5.5; palatal shelf, 6.4, —, 6; alveolar length of upper molar series, 4.4, 4.5, 4.7.

Specimens from south and central Honduras are paler and clearer ochraceous tawny, with relatively longer and more sharply bicolored tails than typical *O. couesi* from Guatemala, and the skulls are also relatively lighter, and more slender. A small series from Lake Yojoa district are darker than the average. One individual from El Caliche Cedros is clear ochraceous tawny without the admixture of any black hairs. The whole series, however, show a wide range of individual variation and are apparently referable to *couesi*.

**SPECIMENS.**—Cortés: El Jaral, 2. Santa Barbara: La Mica, 5. Gracias: Las Flores, 3. Olancho: Catacamas, 1. Tegucigalpa: El Caliche Cedros, 30; El Caliche Orica, 14; Cerro Cantoral, 1 (M. C. Z. 1); Cantoral, 4; Hatillo (M. C. Z. 1); La Flor Archaga (M. C. Z. 2; Univ. Mich. 4); Comayeguela, 12 (M. C. Z. 1); Monte Redondo, 1; La Cueva Archaga, 2; El Zapote, 4; La Pita, 5; La Piedra de Jesús, 4; La Cienega, 2.

### ***Oryzomys alfaroi alfaroi* (Allen)**

Alfara Rice Rat

*Hesperomys (Oryzomys) alfaroi* ALLEN, 1891, Bull. Amer. Mus. Nat. Hist., III, p. 214.

**TYPE LOCALITY.**—San Carlos, Costa Rica.

**RANGE.**—Heavily forested mountain regions from northern Honduras south through central Nicaragua; Costa Rica, and western Panama; altitudinal range from about 1000 to 4000 feet; mainly in the humid lower Tropical zone.

**GENERAL CHARACTERS.**—A rather small dark-colored rice rat, with short pelage, small teeth, and short wide anterior palatine foramina.

**DESCRIPTION.**—Color of upperparts

varying from cinnamon buff to ochraceous tawny mixed with black; lighter and clearer ochraceous shades on cheeks, shoulders, and sides of body. Underparts white or buffy, thinly overlaying the dark plumbeous basal color; ears thinly clothed with short blackish hairs; feet dull whitish, elongated silvery tufts of hairs on hind toes extending beyond points of claws; tail sparsely covered with short, stiff hairs, brownish or blackish above, yellowish below, basically becoming dusky all around toward tip. Skull: size medium for the *alfaroi* group, rather narrow and elongated with narrowly spreading zygomata and short wide anterior palatine foramina; in general form very similar to that of *O. a. dariensis*, but braincase and frontal region usually broader; apparently differing from that of *O. a. angusticeps* and of *O. a. chapmani* in shorter anterior palatine foramina; compared with that of *O. a. rhabdops* the skull is narrower, with smaller and less inflated braincase.

**MEASUREMENTS.**—Average of five skins and four skulls from Catacombas: head and body, 88 (80-95); tail, 112 (98-125); hind foot, 25 (24-28); ear, 15 (15-16). Skull: greatest length, 26.7 (25.6-27.3); zygomatic breadth, 13.4 (12.3-14); breadth braincase, 11.1 (10.7-11.5); interorbital breadth, 4.9 (4.7-5); nasals, 10.8 (10-11.3); anterior palatine foramina, 4.2 (3.5-4.5); palatal shelf, 5.5 (5.3-5.8); alveolar length of upper molar series, 3.7 (3.6-3.9).

A female, the only adult out of five from Catacamas, is a very large individual with unusually large ears (16.7 mm., dried skin), large skull (greatest length, 29; zygomatic breadth, 14.9) and differs in some cranial characters from typical *alfaroi*, especially in the longer and narrower palatine slits. Catacombas specimens are close to typical *alfaroi*.

**SPECIMENS.**—Cortés: Catacombas, 5. Olancho: Catacamas, 5.

### ***Oryzomys alfaroi saturator* (Merriam)**

Dusky Rice Rat

*Oryzomys chapmani saturator* MERRIAM, 1901, Proc. Wash. Acad. Sci., III, p. 291.

TYPE LOCALITY.—Tumbala, Chiapas, Mexico; altitude 5000 feet.

RANGE.—Forested mountain slopes from northern Chiapas southward through central Guatemala and southeast probably to Tegucigalpa, Honduras.

GENERAL CHARACTERS.—Size rather small, very similar in general to *O. alfaroi* but color darker.

DESCRIPTION.—Color of upperparts cinnamon brownish heavily mixed with black, top of head and median dorsal area darker than sides of body; underparts varying from white to ochraceous buff; ears blackish; feet yellowish white; tail usually dusky all around, but in some examples irregularly yellowish on undersides; young, in first pelage, with upperparts nearly black, the cinnamon brownish hairs inconspicuous and restricted mainly to the sides; underparts dark plumbeous, very thinly overlaid with buffy white. Skull: small and structure light, similar to *alfaroi*, but shorter and narrower, with slightly smaller molar teeth.

MEASUREMENTS.—Adult female from Cantoral, an adult female from Muya and an adult male from Cerro Pucca, Gracias; total length, 210, 215, 208; tail vertebrae, 110, 115, 123; hind foot (s.u.), 22, 23, 24. Skull: greatest length, 26.4, 26.4, 26.7; zygomatic breadth, 13, 13.7, 13.6; interorbital breadth, 4.8, 4.6, 4.5; nasals, 11, 10.5, 10.5; upper molar series, 3.4, 3.6, 3.3.

Cantoral and Muya specimens are apparently referable to *saturnator* as are the Gracias series though the latter have somewhat smaller molars.

SPECIMENS.—Gracias: Monte Linderos, 5; Cerro Pucca, 30. Ocotepeque: Monte Verde, 2. Santa Barbara: La Mica, 1. La Paz: Muya, 9. Tegucigalpa: Cantoral, 2; El Colerio, Alto Cantoral, 4.

### *Oryzomys fulvescens fulvescens*

(Saussure)

Vera Cruz Pigmy Rice Rat

*Hesperomys fulvescens* SAUSSURE, 1860, Rev. et Mag. de Zool., (2) XII, p. 102.

TYPE LOCALITY.—(Fixed by Merriam), Orizaba, Vera Cruz, Mexico.

RANGE.—Southern Tamaulipas, Vera

Cruz, eastern Oaxaca, Chiapas, and east through central Guatemala to south central Honduras; altitudinal range from near sea level to about 5500 feet; mainly arid and humid lower Tropical zones.

GENERAL CHARACTERS.—Size small, molar tooth series short; similar to *O. f. lenis* but upperparts darker ochraceous buff; general tone less yellowish; skull narrow and less massive; size about as in *O. f. costaricensis* but upperparts usually less tawny; molar series shorter.

DESCRIPTION.—Color of upperparts near ochraceous buff, most intense and in some examples slightly suffused with tawny on rump, palest and purest on cheeks, shoulders, and sides of body, top of head and back moderately darkened by blackish hairs; underparts varying from nearly pure white throughout to warm buff, with white appearing only on lips, chin, and innersides of hind limbs; ears blackish; feet whitish; tail brownish buff, yellowish below, except toward tip which is dusky all around. Skull: about like that of *O. f. costaricensis* but molar teeth smaller and shorter; compared with *O. f. lenis* the skull is narrower, with less widely spreading zygomata.

MEASUREMENTS.—Average of six specimens from south central Honduras: head and body, 68 (60–73); tail vertebrae, 107 (102–115); hind foot, 21.5 (21–23); ear, 11 (10–13). Skull: greatest length, 21.3 (19.7–22.6); zygomatic breadth, 11.2 (10.1–11.9); breadth of braincase, 10.2 (9.8–10.5); interorbital constriction, 3.5 (3.3–3.8); nasals, 7.6 (6.3–8.5); anterior palatine foramina, 3.2 (2.9–3.6); palatal shelf, 3.6 (3.3–4); width outer wall anteorbital foramen, 1.8 (1.5–2.1); alveolar length of upper molar series, 2.9 (2.7–3).

Honduras specimens appear to be intermediate between *O. f. costaricensis* and typical *O. fulvescens* but apparently nearer the latter. Those from Sabana Grande are paler than the average with whiter underparts.

SPECIMENS.—La Paz: Muya, 1. Tegucigalpa: Comayaguela, 4 (U. S. N. M. 2); Monte Redondo, 4; Cantoral, 2; Cerro Cantoral (M. C. Z. 2); Hatillo, 1; La Piedra de Jesús, Sabana Grande, 3.

**Tylomys nudicaudus** (Peters)

Guatemala Greater Climbing Rat

*Hesperomys (Tylomys) nudicaudus* PETERS, 1866, Monatsber. k. preuss. Wiss. Berlin, p. 404, Pl. 1, figs. 1-4.

TYPE LOCALITY.—Guatemala.

RANGE.—Central Guatemala and probably northern Honduras.

GENERAL CHARACTERS.—A large tree climbing rat with a very long naked tail, moderately large ears and relatively short feet.

DESCRIPTION.—General color of upperparts dark grayish brown, darkest on head and along median dorsal line; face grayish brown with a broad dusky ring around eye; underparts light buffy fulvous, with some white under forearms and inguinal region, fore and hind feet dark brown, tail blackish from base for about half its length, terminal half white.

MEASUREMENTS.—Adult female from La Primavera, Guatemala: total length, 500; tail vertebrae, 240; hind foot, 45. Skull: greatest length, 51.2; zygomatic breadth, 26.5; length of nasals, 18.5; alveolar length of upper molar series, 9.

fingers; underparts, including lips, chin, throat, underside of fore limbs and inner-side of hind limbs white to base of hairs; tail blackish all around. Skull: elongated with low, rather flat, braincase; supra-orbital shelves well developed; similar to *O. p. fumeus* but averaging smaller.

MEASUREMENTS.—Adult male from Ilama, Santa Barbara (1300 feet elevation), and type in parentheses: length of head and body, 155 (170); tail vertebrae, 155 (161); hind foot in dried skin, 26.8 (28 s.u.); ear, 20 (16). Skull: greatest length, — (40.7); zygomatic breadth, 20 (20.5); length of nasals, 15.2 (15); inter-orbital constriction, 6.3 (6.7); diastema, 10.5 (11); length of bullae, 7; alveoli of upper molar series, 6.7 (6.8).

A specimen from Ilama, Santa Barbara, agrees closely with Thomas' description of *O. guatemalae*. One from Catacamas has the dark color extending down upperside of feet almost to claws.

SPECIMENS.—Santa Barbara: Ilama, 1; Santa Barbara, 1. Cortés: Las Ventanas, 1. Olancho: Catacamas, 1; El Bogueron, 1.

**Otodylomys phyllotis guatemalae** Thomas

Guatemala Lesser Climbing Rat

*Otodylomys guatemalae* THOMAS, 1909, Abstr. Proc. Zool. Soc. London, p. 32.

TYPE LOCALITY.—Tucurú, a hamlet in the valley of the Rio Polochic, about 50 miles southeast of Coban, Guatemala; altitude 2000 feet.

RANGE.—Southeastern Guatemala, northern Honduras.

GENERAL CHARACTERS.—A medium-sized dark-colored rat with large ears, sparsely covered with fine dusky hairs; tail naked except for relatively few short scattered hairs, about equal to length of head and body.

DESCRIPTION.—Color of upperparts dark mouse-gray, most hairs dark slate with brownish tips but mixed with long black hairs, darkest on top of head and middorsal region; sides of body, cheeks, outside of fore and hind limbs mouse-gray; fore and hind feet white with a wedge of dark color extending down uppersides below wrists and ankles, more or less to the base of toes and

**Otodylomys phyllotis fumeus** Allen

Matagalpa Climbing Rat

*Otodylomys fumeus* ALLEN, 1908, Bull. Amer. Mus. Nat. Hist., XXIV, p. 658.

TYPE LOCALITY.—Matagalpa, Nicaragua.

RANGE.—Mountains of northern Nicaragua and central and southern Honduras.

GENERAL CHARACTERS.—A medium-sized rather pale-colored climbing rat with white underparts; tail about equal length of head and body; similar to *O. p. guatemalae* but paler and more tawny, with less admixture of black hairs.

DESCRIPTION.—Pelage moderately long, soft, and full; color of Honduras specimen in July pelage: upperparts mainly clear wood-brown; worn hair on head and shoulders, drab, sparsely mixed with black hairs; sides of body, cheeks, and outside of fore and hind limbs drab-gray; ears sparsely covered with fine dusky hairs; underparts, including lips, chin, throat, underside of fore limbs and innerside of thighs pure white to roots of hair; upper-

side of fore and hind feet, pure white to ankles; tail, dusky above, irregularly blotched with white below, a few scattered hairs growing from between annulations.

MEASUREMENTS.—Adult male from Sabana Grande and type in parentheses: length of head and body, 166 (190); tail vertebrae, — (140); hind foot (s.u.), 26 (30). Skull: greatest length, 42.3 (42); zygomatic breadth, 20 (21); length of nasals, 15 (14); alveoli of upper molar series, 6.9 (6.8).

A specimen of *Ototylomys* from Sabana Grande is indistinguishable in color and size from the type of *O. p. fumeus* but the skull is narrower, a character which is occasionally variable in other series of *Ototylomys*. Specimens from the highlands north of Tegucigalpa are paler in color with whiter feet than the typical *fumeus*. They are nearer to Allen's species than *guatemalae* which is a smaller darker race with darker feet that inhabits the lowlands nearer the east coast.

SPECIMENS.—Tegucigalpa: La Piedra de Jesús, Sabana Grande, 4; El Derrumbo, 1; La Flor Archaga, 1 (M. C. Z. 2).

### **Rheomys thomasi** Dickey

Thomas Water Mouse

*Rheomys thomasi* DICKEY, 1928, Proc. Biol. Soc. Wash., XLI, p. 11.

TYPE LOCALITY.—Mt. Cacaguatique, Dept. of San Miguel, El Salvador; altitude 3500 feet.

RANGE.—Highlands of Salvador and probably western Honduras.

GENERAL CHARACTERS.—A small, dark-colored, aquatic mouse with short, glossy fur. The feet have short webs between some of the toes and are fringed with bristles. Ears very short.

DESCRIPTION.—General color above mummy brown, darkened by the black tips of the longer hairs. Rump nearly black, the tips of the longer hairs here white. Underparts grayish white, the bases of hairs slaty; head slaty blackish; fore feet white; hind feet pale brown, the fringing bristles white; tail well haired, dark brown above, paler below.

MEASUREMENTS.—Type (female adult): total length, 233; tail vertebrae, 125;

hind foot, 33. Skull: greatest length, 29.4; basilar length of Hensel, 23.3; zygomatic breadth, 14.7; interorbital constriction, 5.0; maxillary toothrow, 4.5.

A subspecies, *R. thomasi stirtoni*, was described by Dickey from Los Esesmites (8000 ft.), Dept. Chalatenango, Salvador. It is rather larger than typical *thomasi* and color almost identical. In size this race is intermediate between *thomasi* and *underwoodi* from Costa Rica and may represent the form that inhabits Honduras. Measurement of *R. t. stirtoni*: total length, 253; tail, 120; hind foot, 32. Skull: greatest length, 29.4; zygomatic breadth, 15.3; maxillary toothrow, 4.7.

### **Nyctomys sumichrasti decolorus** (True)

Honduras Vesper Rat

*Sitomys (Rhipidomys) decolorus* TRUE, 1894, Proc. U. S. Nat. Mus., XVI, p. 689.

TYPE LOCALITY.—Rio de las Piedras, Honduras.

RANGE.—Highlands of central and western Honduras. Limit of range unknown.

GENERAL CHARACTERS.—A rich tawny colored tree rat with short feet and hairy tail, about the size of *N. s. salvini* from Dueñas, Guatemala, but color brighter.

DESCRIPTION.—Upperparts rich tawny darkened on back by dark brownish hairs; sides of body clear golden tawny; a narrow dusky ring around eye; tail Prout's brown or mummy brown; upperside of hind feet to base of toes pale mummy brown; underparts, including fore feet and hind toes, white.

MEASUREMENTS.—Adult male and female from Las Flores, Gracias, and an adult male from El Derrumbo: total length, 249, 267, 255; tail vertebrae, 134, 138, 110; hind foot (in dried skin), 22.5, 22.7, 23.5. Skull: greatest length, 31.6, 30.8, 31.7; zygomatic breadth, 18.5, 18, 18.3; interorbital breadth, 5.7, 5.8, 6; greatest width between temporal ridges, 13.7, 14.2, 13.0; length of nasals, 9.8, 10.4, 9.9; length of anterior palatine foramina, 5.3, 5.4, 5.3; maxillary toothrow, 4.5, 4.5, 4.8.

The Honduras series are all bright rich tawny colored specimens with only a slight shading of dark hairs on middle of back.

Specimens from El Derrumbo and Cantoral are lighter colored than Gracias series, some individuals having hind feet creamy white instead of the usual broad dusky band to base of toes.

**SPECIMENS.**—Gracias: Las Flores, 40. Olancho: Catacamas, 1. Cortés: Catacombas, 2. Tegucigalpa: El Derrumbo, 2, Cantoral, 7; La Flor Archaga, 4 (M. C. Z. 1).

### ***Sigmodon hispidus griseus* Allen**

Gray Cotton Rat

*Sigmodon hispidus griseus* ALLEN, 1908, Bull. Amer. Mus. Nat. Hist., XXIV, p. 657.

**TYPE LOCALITY.**—Chontales, Nicaragua.

**RANGE.**—Pacific coast lowlands of Nicaragua and adjacent portions of Honduras.

**GENERAL CHARACTERS.**—A rather large gray-colored cotton rat with relatively coarse pelage.

**DESCRIPTION.**—General color above, mixed pinkish buff and black; sides lighter and less varied with black than back; feet buffy white, tail blackish brown above, paler below; underparts white or buffy white.

**MEASUREMENTS.**—Adult male and female from Sabana Grande: total length, 300, 291; tail vertebrae, 130, 126; hind foot (s.u.) 30, 21. Skull: greatest length, 38, —, length of nasals, 13, 12; basal length, 33.5, —; zygomatic breadth, 21.4, 20; mastoid width, 14.2, —; length of upper molar series, 6, 6.3.

A series of cotton rats from Sabana Grande are all coarsely grizzled light gray specimens and very close in color to the type series of *griseus* from Chontales.

**SPECIMENS.**—Tegucigalpa: La Pita, Sabana Grande, 1; El Zapote, 4; La Piedra de Jesús, 3; Sabana Grande, 2.

### ***Sigmodon hispidus zanjonensis* Goodwin**

Zanjon Cotton Rat

*Sigmodon zanjonensis* GOODWIN, 1932, Amer. Mus. Novit., No. 528, p. 1.

**TYPE LOCALITY.**—Zanjon, Guatemala; 9000 feet elevation.

**RANGE.**—Highlands of western Guatemala and probably western and south central Honduras.

**GENERAL CHARACTERS.**—A large gray-

ish brown cotton rat, with rather long pelage and relatively long tail; similar to *S. h. saturatus*, but uniformly grayer with grayer and lighter colored feet.

**DESCRIPTION.**—Color of upperparts, including outsides of fore and hind limbs, dull yellowish brown darkened by long black guard-hairs, some of which on rump and sides are tipped with light buff; cheeks, legs, and shoulders less darkened by long black hairs; eyes with indistinct narrow ring of buffy yellow; ears sparsely covered with fine buffy tipped hairs; tail bicolored, brownish above, hairs white below, underparts including fore and hind feet and innersides of fore and hind limbs, white, the plumbeous bases of the hair showing through. Skull: short, compact, with heavy rostrum, about as in *S. h. saturatus* but relatively narrower, with molars perceptibly broader and more massive.

**MEASUREMENTS.**—Adult male and female from La Cueva Archaga: head and body, 197, 144; tail vertebrae, 119, 110; hind foot (s.u.), 30, 28; ear, 17, 15. Skull: greatest length, 36.3, 38.1; zygomatic breadth, 20.5, 20.6; length of nasals, 13.4, 14.5; mastoid breadth, 14.2, 14.2; length of upper molar series, 6.5, 6.2.

The Honduras series of cotton rats present a wide range of individual variation, not only from widely separated districts but in specimens from the same locality. Five specimens from Catacombas in the highlands of northwestern Honduras include one that is as gray as typical *griseus*; others go to the opposite extreme and approach *fulvus* in rich brown coloration. A small series from El Mica just north of Lake Yojoa are darker than the average and apparently intermediate between *saturatus* and *zanjonensis*, but appear to be nearer the latter. Those from southern Honduras, near Tegucigalpa, appear to average somewhat larger and approach *S. h. borucae* of Costa Rica. The majority of Honduras specimens from the highlands, however, are nearer to *zanjonensis* than *borucae*.

**SPECIMENS.**—Cortés: Catacombas, 5. Santa Barbara: La Mica, 5. Tegucigalpa: La Flor Archaga (M. C. Z. 1); La Cueva

Archaga, 24; El Caliche Cedros, 5; El Caliche Orica, 9; Monte Redondo, 7 (Field Mus. 2; Univ. Mich. 4); Comayagua, 14 (M. C. Z. 1).

***Sigmodon hispidus saturatus* Bailey**

Teapa Cotton Rat

*Sigmodon hispidus saturatus* BAILEY, 1902, Proc. Biol. Soc. Wash., XV, p. 111.

TYPE LOCALITY.—Teapa, Tabasco, Mexico.

RANGE.—Tabasco, western Chiapas, northern and central Guatemala, and probably south to Lake Yojoa, Honduras.

GENERAL CHARACTERS.—A medium-sized, dark, rich-colored cotton rat, with a relatively short dusky tail and yellowish brown hands and feet.

DESCRIPTION.—Color of upperparts dark reddish brown; underparts usually dull cinnamon brown, rarely whitish; feet yellowish brown; tail blackish, only slightly paler below. Skull: short and compact, with heavy rostrum; similar to *S. h. zanjonensis*, but rostrum relatively broader and molars narrower and less massive.

MEASUREMENTS.—Subadult male from El Jaral and a subadult female from Las Ventanas: head and body, 145, 145; tail vertebrae, 90, 130; hind foot, 27, 30; ear, 17, 18. Skull: greatest length, 31.8; basal length, 27.7; length of nasals, 11.7, 12.7; zygomatic breadth, 17.5, 18.4; mastoid breadth, 12.8; alveolar length of upper molar series, 5.8, 5.9.

Four specimens from the northern end of Lake Yojoa are dark-colored individuals with dull cinnamon underparts and very similar to Guatemalan specimens of *saturatus*.

SPECIMENS.—Cortés: El Jaral, 2; Las Ventanas, 2.

***Sigmodon hispidus furvus* Bangs**

Ceiba Cotton Rat

*Sigmodon hispidus furvus* BANGS, 1903, Bull. Mus. Comp. Zool., XXXIX, p. 158.

TYPE LOCALITY.—Ceiba, Honduras, sea level.

RANGE.—Known only from type locality and southeast Guatemala.

GENERAL CHARACTERS.—Nearest to *Sig-*

*modon hispidus saturatus* Bailey of Teapa, Tabasco, Mexico, but darker in color; less rusty above; tail blacker, and underparts redder; skull similar, but audital bullae wider and flatter and basioccipital longer and narrower.

DESCRIPTION.—Color of upperparts dark rich brown, between mummy brown and burnt umber, rather redder on rump; head, back, and rump darkened and varied by a copious sprinkling of brownish black-tipped hairs; underparts, strong buffy ochraceous; feet and hands dark brown, the hairs colored about like those of the back; ears blackish, nearly naked externally, sparsely haired inside, the color of these hairs about like those of the back; tail black, nearly unicolor, being only just perceptibly paler below. The type is in long, fresh, unworn pelage, and there are a few pure white hairs scattered at irregular intervals along the back and sides.

MEASUREMENTS.—Adult male, the type: total length, 265; tail vertebrae, 105 (tip of tail is gone, probably 5 to 10 mm.); hind foot, with claw, 32; ear, from notch, 18. Skull: basal length, 31.4; occipitonasal length, 35.8; zygomatic width, 20.4; mastoid width, 15.2; interorbital width, 5; length of nasals, 12.6; length of palate to palatal notch, 16.2; length of upper molar series, 6; length of single half of mandible, 20.

***Scotinomys teguina teguina* (Alston)**

Coban Brown Mouse

*Hesperomys teguina* ALSTON, 1876, Proc. Zool. Soc. London, p. 755.

TYPE LOCALITY.—Coban, Alta Verapaz, Guatemala.

RANGE.—Central Guatemala and Honduras; limits of range unknown.

GENERAL CHARACTERS.—A very small dark brownish mouse, with soft pelage, and tail shorter than head and body.

DESCRIPTION.—General color, about Prout's brown; upperparts ochraceous tawny, heavily mixed with black, darker on middorsal area where the admixture of black hairs is heaviest; underparts varying from pinkish buff to cinnamon buff; fore and hind feet, tail and ears, dusky. Skull: small, molars relatively



narrow and elongated in the antero-posterior direction; the lateral compression is especially noticeable in the posterior portion of the first upper molar; the inner-side of this tooth shows the postero-internal re-entrant angle extending as a deep groove to the alveolar border, and in advanced age three root divisions are visible; the lower incisor lacks a tubercular swelling over the root.

**MEASUREMENTS.**—Two skulls and three skins from Monte Verde, Ocotepeque: head and body, 71, 70, 62; tail vertebrae, 47, 48, 51; hind foot, 16, 16, 17; ear, 13, 13, 12. Skull: greatest length, 22.5, 22.7; zygomatic breadth, 10, 11.3; interorbital constriction, 4.3, 4.8; length of nasals, 7.9, 8.6; breadth of braincase, 10.2, 10.3; length of anterior palatine foramina, 3.3, 4; palatal shelf, 4.4, 4.2; alveolar length of upper molar series, 4, 4.

Through the courtesy of the Field Museum I was able to compare the Honduras series with typical *S. teguina* from Coban, Guatemala, and find them almost identical in color and cranial characters.

**SPECIMENS.**—Gracias: Cerro Pucca, 30. Ocotepeque: Monte Verde, 3. La Paz: Muya, 50.

### **Scotinomys teguina rufoniger** Sanborn

San Pedro Brown Mouse

*Scotinomys teguina rufoniger* SANBORN, 1935, Field Mus. Nat. Hist., Zool. Ser., XX, No. 11, p. 84.

**TYPE LOCALITY.**—Mountains west of San Pedro, northwestern Honduras; altitude 4500 feet.

**RANGE.**—Known only from San Pedro, but probably occurs throughout the Sierra de Merendon on the Honduras Guatemala border.

**GENERAL CHARACTERS.**—A small reddish-brown mouse about the size of *S. t. teguina*, but much darker and richer in color throughout, with a flatter skull.

**DESCRIPTION.**—General color near warm sepia; upperparts between tawny and russet, heavily mixed with black; underparts about ochraceous tawny; fore and hind feet, tail and ears, dusky. Skull as in *teguina*, but when viewed from side dorsal outline much flatter and less arched.

**MEASUREMENTS.**—Type (topotype in parentheses): total length, 132 (133); tail vertebrae, 56 (58); hind foot, 17 (19). Skull: greatest length, 23.1 (22.7); condylobasal length, 21 (20.3); palatal length, 11.2 (10.6); length of nasals, 7.7 (7.5); interorbital width, 4.3 (4.4); zygomatic width, 11.5; mastoid width, 10.3 (10.4); width of braincase, 10.2 (10.7); upper molar series, 3.9 (4); lower molar series, 4 (4).

The dark color of *S. t. rufoniger* readily separates it from all other known forms. The San Pedro region is much more humid than Coban, and is entirely a region of hardwood, while the limestone formation at Coban permits the growth of pine on the higher ridges.

**SPECIMENS.**—The type and three topotypes, two without skulls, are in the Field Museum.

### **Neotoma ferruginea solitaria** Goldman

Nenton Wood Rat

*Neotoma ferruginea solitaria* GOLDMAN, 1905, Proc. Biol. Soc. Wash., XVIII, p. 31.

**TYPE LOCALITY.**—Nenton, Guatemala.

**RANGE.**—Known from Nenton and Sacapulus, Guatemala, and probably Pucca Gracias, Honduras.

**GENERAL CHARACTERS.**—Similar in general characters to *N. chrysomelas* but smaller, with relatively narrower skull and smaller teeth; similar to *N. ferruginea* but less richly colored; skull relatively narrower and teeth smaller.

**DESCRIPTION.**—Color of upperparts tawny ochraceous, brightest along sides; underparts, dull white owing to the broad plumbeous basal color of fur; hind feet to toes irregularly clouded with dusty, toes white; tail faintly bicolored. Skull small, relatively long and narrow; rostrum slender; nasals long and attenuated posteriorly.

**MEASUREMENTS.**—Adult male from Pucca Gracias, and type in parentheses: total length, 343 (338); tail vertebrae, 168 (156); hind foot in dried skin, 30 (35). Skull: basilar length, — (35.5); zygomatic breadth, 21.3 (22.4); interorbital breadth, 5.6 (5.5); length of nasals, 17.7 (18.2); length of palatine foramina, 9.2

(9.2); length of palatal bridge, 8.9 (8.3); alveolar length of upper molar series, 8.5 (8.4).

Only one specimen of wood rat was taken at Cerro Pucca, Gracias, 6600 feet elevation. It is apparently an old individual with the posterior loop on last upper molar worn down to an island and similar in size and color of *solitaria*. It is smaller than *chrysomelas* with noticeably smaller teeth and whiter feet.

SPECIMENS.—Gracias: Cerro Pucca, 1.

### ***Neotoma chrysomelas* Allen**

Nicaragua Wood Rat

*Neotoma chrysomelas* ALLEN, 1908, Bull. Amer. Mus. Nat. Hist., XXIV, pp. 653-654.

TYPE LOCALITY.—Matagalpa, Nicaragua.

RANGE.—From north central Nicaragua north to south central Honduras.

GENERAL CHARACTERS.—A large tawny colored rat, with tail sparsely haired and longer than head and body. Similar to *N. ferruginea* from Dueñas, Guatemala, but apparently larger, more sharply bicolored tail, pelage paler and without the tawny suffusion in the pectoral region present in most specimens of the *ferruginea* group.

DESCRIPTION.—Color of upperparts varying from bright ochraceous tawny to rich cinnamon buff, purest on cheeks and sides of body, darkened on top of head and back by overlying black-tipped hairs; outsiders of legs buffy grayish brown; underparts white, the fur plumbeous

basally, except small areas, mainly on throat, pectoral and inguinal regions where it is pure white to roots; fore feet white, hind feet white clouded with dusky to toes, in some individuals pure white; toes white; tail above brownish or blackish, below white, dusky basally. Skull: much like that of *N. ferruginea* but slightly larger. Compared with *chamula*, one of the larger forms of the *ferruginea* group, the skull of *chrysomelas* has zygomatics more spreading, narrowing anteriorly; the sides less nearly parallel than in *chamula*; the only two complete skulls in the Honduras specimens are narrower with less spreading zygomatics than in the type series of *chrysomelas*; the ascending branches of the premaxillae extend farther posteriorly in typical specimens than in the present series; in general, the central Honduras specimens agree sufficiently in general characters to be referred to this form.

MEASUREMENTS.—Adult male and female from Montana Vasquez: head and body, 177, 168; tail vertebrae, 178, 174; hind foot (dry skin), 33, 32.2; ear, 24, 25. Skull: basilar length, 37.3, 34.7; greatest length, 46.3, 44.7; condylobasal length, 42.7, 40.6; zygomatic breadth, 22.75; interorbital breadth, 5.9; length of nasals, 17.6, 18; length of anterior palatine foramina, 8.8; palatal bridge, 8.8, 8.8; alveolar length of upper molar series, 8.8, 8.9.

SPECIMENS.—Tegucigalpa: Rancho Quemado (M. C. Z. 2); Hatillo (M. C. Z. 1); Montana Vasquez (U. S. N. M. 3).

## **Muridae**

### **Old World Rats and Mice**

The Muridae comprise the largest family of Old World mammals. Its members are typically rat- or mouse-like. They have no premolars, and three true molars on each side with transverse series of tubercles arranged in three longitudinal rows.

### ***Mus musculus* Linnaeus**

House Mouse

*Mus musculus* LINNAEUS, 1758, Syst. Nat., 10th Ed., I, p. 62.

TYPE LOCALITY.—Upsala, Sweden.

RANGE.—Introduced and widely established in North and South America.

GENERAL CHARACTERS.—A small dark grayish-brown mouse; tail slightly longer than head and body.

DESCRIPTION.—General color dark and brownish, usually without evident yellowish tinge; underparts dusky grayish; tail and feet about color of back. Skull: small

and slender with three longitudinal rows of tubercles on molars.

MEASUREMENTS.—Specimen from Sabana Grande: head and body, 72; tail vertebrae, 76; hind foot, 18; ear, 19.

The house mice from Honduras seem to be separable into three subspecific forms. The distinction between these forms of *Mus*, however, is based primarily on color characters. The specimens from Cedros are typical *musculus* and almost identical with specimens from England. Cantoral specimens are referred to *azoricus* and are characterized by a strong suffusion of buff throughout the series. Archaga specimens are closest to *jalapae* and are distinguished by their relatively dark color and the development of a broad dark dorsal line.

SPECIMENS.—*Mus musculus musculus* Linnaeus—Tegucigalpa: La Piedra de Jesús, Sabana Grande, 3; El Caliche Orica, 1; El Caliche Cedros, 8. *Mus musculus azoricus* Schinz—Tegucigalpa: Cantoral, 3. *Mus musculus jalapae* Allen and Chapman—Tegucigalpa: La Cueva Archaga, 14.

### **Rattus rattus rattus** (Linnaeus)

#### Black Rat

*Mus rattus* LINNAEUS, 1758, Syst. Nat., 10th Ed., I, p. 61.

TYPE LOCALITY.—Upsala, Sweden.

RANGE.—Introduced and widely established in North and South America.

GENERAL CHARACTERS.—A medium-sized dark-colored rat with tail naked, longer than head and body.

DESCRIPTION.—General color black or blue black, underparts mouse-gray. Skull: angular with beaded orbital ridges extending across parietals; upper molars with three longitudinal rows of tubercles.

MEASUREMENTS.—Subadult female from Cantoral: total length, 345; tail vertebrae, 185; hind foot (s.u.), 34; ear, 17.

The black house rat is easily recognized by its dark color and long coarsely annulated tail.

SPECIMENS.—Gracias: Las Flores, 1. Tegucigalpa: Cantoral, 1, La Cueva Archaga, 3; La Piedra de Jesús, 1.

## **Erethizontidae**

### American Porcupines

The porcupines constitute a family of large rodents recognizable externally by the well-developed, long, sharp spines loosely attached to the skin.

### **Coendou mexicanum mexicanum** (Kerr)

#### Mexican Long-tailed Porcupine

*Hystrix mexicana* KERR, 1792, Animal Kingdom, I, p. 214.

TYPE LOCALITY.—Mountains of Mexico, exact locality not known.

RANGE.—Probably high mountain ranges of Mexico, Guatemala, and northern Nicaragua; replaced in Yucatan and Costa Rica by somewhat smaller and slightly different forms.

GENERAL CHARACTERS.—A medium-sized black porcupine with a long prehensile tail; the upper instead of the underside of the terminal portion modified; long,

thick, black woolly hair almost or entirely covering the spines.

DESCRIPTION.—Color of entire upperparts black, sometimes with a slight rusty tinge, the hair soiled whitish at base; spines of back, basal three-fifths pale yellowish white, tips brownish black; underparts grizzled, the spines white, bristly and black-tipped; fore and hind feet black; tail, upper basal four-fifths with short spines, rest of tail covered with black bristly hairs except upper terminal third which is naked. Skull: frontal region greatly inflated, the highest point at about naso-frontal suture; nasals with sides nearly parallel; supraorbital ridges converging evenly posteriorly, meeting at about occipito-parietal suture and forming a sagittal crest in some specimens; palatal foramina extending posteriorly beyond the premaxillo-maxillary suture; anterior part

of premaxillae projecting well in front of nasals; interparietal region smooth, convex, broadening posteriorly with well-marked postorbital inflation; braincase rather small and narrow; anterior palate hollowed behind palatal foramina; bullae well inflated, long and narrow; molars relatively large; premolars rather larger than molars.

MEASUREMENTS.—Two adult males and two adult females from Laguna Archaga and Guaymaca: head and body, 480, 520, 450, 410; tail vertebrae, 280, 250, 210, 210; hind foot, 65, 65, 55, 60. Skull: greatest length, 96.3, 97.8, 92.2, 93.5; basilar length, 81.2, 80.8, 79.3, 79.5; palatilar length, 45, 41.8, 40.7, 41.5; length of nasals, 30, 32, 34.2, 32.5; breadth of nasals, 20.2, 20, 19, 21.7; zygomatic

breadth, 54, 57, 52.4, 55.8; interorbital breadth, 34.5, 32.5, 31.2, 35.7; length of upper molar series, 21, 21.6, 20.3, 19.2.

The exact locality for the type of *C. mexicanum* has not been fixed and an adequate description of typical specimens is not available. Underwood specimens from Honduras seem to agree rather closely with what I gather to be the general characters of *C. mexicanum*. The series show very little individual variation, which is unusual in this group of porcupines. Four specimens collected by Richardson at Matagalpa and Ocotal, Nicaragua, average a little smaller but are close in general characters with the Underwood material.

SPECIMENS.—Tegucigalpa: Laguna Archaga, 2; La Lima, Cantoral, 1; Guaymaca, 2.

## Dasyproctidae

### Agoutis and Pacas

The members of this family are terrestrial, with hoof-like claws, short ears, rudimentary tail, and slender limbs. They are large-sized rodents, mainly South American in distribution, but two genera range northward through middle America to southern Mexico.

#### *Dasyprocta punctata punctata* Gray

Gray's Agouti

*Dasyprocta punctata* GRAY, 1842, Ann. Mag. Nat. Hist., X, p. 264.

TYPE LOCALITY.—Probably western Nicaragua.

RANGE.—Western Costa Rica, north to Salvador and western Honduras.

GENERAL CHARACTERS.—A medium-sized rabbit-like animal with rudimentary tail, three toes on hind foot and coarse yellowish tawny pelage.

DESCRIPTION.—Color of Honduras specimens: upperparts yellow-ochre coarsely mixed with black becoming yellowish tawny on shoulders; underparts a more greenish yellow than back; hair yellowish to base in area along median line of abdomen; feet black or black mixed with tawny. Skull normal for the *punctata*

group but showing some individual variation.

MEASUREMENTS.—Adult male and female from Intibuca: head and body, 545, 515; tail vertebrae, 25, 20; hind foot, 115, 112; ear, 36, 36. Skull: greatest length, 113.5, 110; condylobasal length, 95.3, 91.7; zygomatic breadth, 49.4, 49.9; length of nasals, 46.3, 40.6; least interorbital breadth, 30.5, 30.5; palatal length, 50.9, 49.6; alveolar length of upper molar series, 19.6, 18.3.

Intibuca specimens agree closely with those from Salvador in the Dickey collection which Goldman considers near typical *punctata*. One individual from the Roman River in the Museum collection is also referable to this race. *Dasyprocta punctata* was originally assigned to South America by Gray but according to Alston the specimens forming the basis of Gray's short description were collected by Commanders Belcher and Kellett and probably on the west coast of Costa Rica or Nicaragua.

SPECIMENS.—Intibuca: La Florida, 2. La Paz: El Guayabal, 3; El Horno, 3. Tegucigalpa: El Zapote Grande, 1. Santa

Barbara: Santa Barbara, 1. Colon: Roman River, 1.

***Dasyprocta punctata richmondi* Goldman**

Richmond Agouti

*Dasyprocta punctata richmondi* GOLDMAN, 1917, Proc. Biol. Soc. Wash., XXX, pp. 114-115.

TYPE LOCALITY.—Escondido River, 50 miles above Bluefields, Nicaragua.

RANGE.—From Talamanca, Costa Rica, north through central and eastern Nicaragua to south central and eastern Honduras.

GENERAL CHARACTERS.—Similar in general to *punctata* but color more tawny and darker.

DESCRIPTION.—Color of upperparts varying from rich tawny to near burnt sienna, coarsely mixed with black, the tawny or rufescent element predominating especially over back and rump; underparts in general overlaid with varying shades from warm buff to ochraceous buff, except along median line of abdomen, where the buffy color extends to roots of hairs; feet black. Skull: similar in size to that of *D. p. isthmica* but rostrum narrower; sphenopalatine vacuities usually larger; auditral bullae more inflated anteriorly. Closely resembling that of *D. p. yucatanica* but auditral bullae usually smaller and less fully inflated.

MEASUREMENTS.—Adult female from Monte Redondo and the type in parentheses: head and body, 545 (455); tail, 15 (35); hind foot (s.u.), 110 (123); ear, 40. Skull: greatest length, 109 (110.7); condylobasal length, 93.5 (101.4); zygomatic breadth, 49.5 (49.4); length of nasals, 43.5 (44.4); interorbital breadth, 30 (28.4); palatal length, 47.4 (57.4); alveolar length of upper molar series, 19.5 (17.9).

One specimen from El Caliche Cedros is almost clear tawny on the rump with little admixture of black and much brighter color than the one from Monte Redondo. Both specimens, however, are tawny in color and very different to the greenish yellow shades of typical *punctata*.

SPECIMENS.—Tegucigalpa: Monte Redondo, 1; El Caliche Cedros, 1.

***Dasyprocta ruatanica* Thomas**

Ruatan Island Agouti

*Dasyprocta ruatanica* THOMAS, 1901, Ann. Mag. Nat. Hist., (7) VIII, p. 272.

TYPE LOCALITY.—Ruatan Island, Bay Islands, Honduras.

RANGE.—Bay Islands, Honduras.

GENERAL CHARACTERS.—Similar in general to the mainland form *D. punctata*, but much smaller.

DESCRIPTION.—Fur as in *D. punctata*, everywhere annulated to the roots with black and ochraceous or yellow, the annulations conspicuous on the surface, underparts like back, but more olivaceous; a white spot on chin and a yellow patch on lower part of abdomen. Skull in general shape closely agreeing with that of the type of *D. punctata*, but smaller in all dimensions.

MEASUREMENTS.—Type (adult female): head and body, 435; hind foot, 101. Skull: greatest length, 96.5; zygomatic breadth, 46; interorbital breadth, 27.5; length of upper tooththrow, 17.4.

***Cuniculus paca nelsoni* (Goldman)**

Nelson Paca

*Agouti paca nelsoni* GOLDMAN, 1913, Smiths. Misc. Coll., LX, No. 22, p. 9.

TYPE LOCALITY.—Catemaco, southern Vera Cruz, Mexico.

RANGE.—Coastal plains and mountain slopes from the vicinity of Jalapa, Vera Cruz, eastward and southward through Tabasco, Chiapas, and the Peninsula of Yucatan to eastern Guatemala, western and central Honduras.

GENERAL CHARACTERS.—Similar to *C. p. virgatus* but general color more rusty or reddish brown, dark stripe below lower lateral white stripe obsolescent (distinct in *virgatus*); pelage longer and denser; molariform tooththrow narrow; differing from typical *C. p. paca* in the obliteration of the lower lateral stripe.

DESCRIPTION.—Ground color of upperparts varying from dark cinnamon brown to warm sepia, interrupted along sides by white arranged in narrow stripes or lines of spots; two lateral white lines begin as rows of spots along sides of neck and become stripes near shoulders, curve down-

ward along lower part of sides, rise again toward hips and break into spots over sides of rump; above the upper lateral white stripe and separated from it by a broad dark stripe, a line of spots reaches from neck to rump and above this a shorter parallel row extends along posterior part of back; lower lateral white stripe bounded below by a narrow and rather indistinct dark line; a third white stripe, continuous and distinct in *C. p. paca*, is indicated posteriorly near the thigh where it merges with the white of the underparts; underparts, usually including innersides of limbs, dull white; cheeks grayish brown; outer sides of fore limbs pale fawn color; hind limbs similar to back. Skull: closely resembling that of *C. p. virgatus* but rostrum longer; frontals more inflated along maxillary borders; molariform teeth narrower.

MEASUREMENTS.—Adult male from Guaymaca and type in parentheses: head and body, 650 (765); tail, 15 (29); hind

foot, 95 (127); ear, 25. Skull: greatest length, 149.3 (154.8); condylobasal length, 138 (147.5); zygomatic breadth, 114 (111.7); interorbital constriction, 40 (43.3); nasals, 48 (55.7); maxillary tooth-row, — (30).

The Underwood specimens include an adult male with palate and roof of mouth damaged and two subadult specimens. All three are extensively white on underside of fore and hind limbs.

The specimens from Rio Coco, Vijagua, and Matagalpa, Nicaragua, show the encroachment of the white underparts along the sides and the consequent more or less obliteration of the dark stripes, and are probably referable to *nelsoni*.

In the Mexican *paca* the encroachment of the white color of the underparts along the sides has reduced the dark stripe below the lower of the two lateral white stripes to a very narrow line.

SPECIMENS.—Tegucigalpa: Guaymaca, 2. Gracias: Las Flores, 1.

### Echimyidae

This family includes various forms of Central and South American spiny rodents and large tree rats found on certain islands in the West Indies and off the coast of Central America. It is mainly South American in distribution and of the several genera recognized only one ranges within the limits of Honduras. One premolar and three molars present on each side of upper and lower jaws.

#### *Capromys thoracatus* True

White-banded Hutia

*Capromys brachyurus thoracatus* TRUE, 1889, Proc. U. S. Nat. Mus., II, p. 469.

TYPE LOCALITY.—Little Swan Island, Gulf of Honduras.

RANGE.—Known only from the type locality.

GENERAL CHARACTERS.—A medium-sized, robust animal with short limbs and short scantily haired tail; ears rather small; thumb of fore foot rudimentary but carrying a blunt claw.

DESCRIPTION.—Hairs dull plumbeous brown at base, with a subterminal ring of dull Naples yellow, tips blackish brown; throat pale gray; a band of nearly pure white hairs across breast between fore legs; limbs and feet like back but darker.

MEASUREMENTS.—Total length, 389; length of tail, 45; hind foot, 65. Skull: greatest length, 68.5; length of nasals, 23; zygomatic breadth, 35.5; interorbital constriction, 17.7; upper molar series, 15.5.

## ORDER CARNIVORA

## Carnivores

## Procyonidae

## Raccoons, Coatis, and Kinkajous

Members of this family are all medium-sized carnivores with plantigrade feet, naked soles, and curved non-retractile claws. The tail is moderately long, somewhat bushy, and usually ringed.

**Procyon lotor crassidens** Hollister

Costa Rica Raccoon

*Procyon lotor crassidens* HOLLISTER, 1914, Proc. Biol. Soc. Wash., XXVII, p. 142.

TYPE LOCALITY.—Talamanca, Costa Rica.

RANGE.—Costa Rica, Nicaragua, and north to south central Honduras.

GENERAL CHARACTERS.—A medium-sized robust animal with short rounded ears and rather short and somewhat bushy ringed tail; *P. l. crassidens* is about the same size as *P. l. shufeldti* from Campeche, but color darker; upperparts less heavily overlaid with black, and the subterminal light zone of longer hairs less extended.

DESCRIPTION.—Color of upperparts, from crown to base of tail, light buffy with thinly distributed overlying black-tipped hairs, resulting in a coarsely grizzled blend; sides of body lighter than back; nape near rusty rufous; top of head clearer gray than rest of body, mixed with black; black mask across face extending downward along median line of muzzle, lips and chin white; underparts overlaid with very light buffy hairs, the light brownish underfur showing through; throat patch blackish brown; ears grayish; black postauricular spots small; limbs similar in color to upperparts, the over-hairs becoming dull white on feet; tail buff with seven narrow black rings, alternating with light ochraceous buffy rings and a black tip. Skull: similar in size to that of *P. l. hernandezii* but more massive; interorbital and postorbital regions are broader and flatter; dentition and other cranial details about as in *shufeldti*.

MEASUREMENTS.—Type: head and body, 600; tail vertebrae, 325; hind foot, 118.

Skull: condylobasal length, 123; zygomatic breadth, 75.5; greatest length of nasals, 34.5; interorbital breadth, 25.7; upper toothrow, c-m<sup>2</sup>, 48; pm<sup>3</sup>-m<sup>2</sup>, 31; pm<sup>4</sup>-m<sup>2</sup>, 25.1.

The only two specimens collected by Underwood in Honduras are too immature for definite identification. They seem to agree closely with *crassidens* in dark color and general characters.

SPECIMENS.—Tegucigalpa: La Flor Archaga, 2.

**Nasua narica richmondi** Goldman

Nicaraguan Coati Mundi

*Nasua narica richmondi* GOLDMAN, 1932, Jour. Wash. Acad. Sci., XXII, No. 11, p. 312.

TYPE LOCALITY.—Escondido River, 50 miles above Bluefields, Nicaragua.

RANGE.—Humid and tropical forested region of eastern Nicaragua and Honduras.

GENERAL CHARACTERS.—A medium-sized dark-colored animal with a long mobile snout that extends well forward beyond lower lip; legs short, ears short, tail long and muzzle white.

DESCRIPTION.—Upperparts dark brownish black washed with light buff, changing gradually to tawny between shoulders; outsides of forearms overlaid with buffy white, the long white tips of hairs contrasting with the general dark tone of the body; underparts in general dark brownish black, mixed with buffy white on chest and throat; muzzle white, with two narrow whitish lines extending backward along face, diverging gradually to enclose eye; ears edged with buffy white; feet black; tail brownish black with only a trace of light-colored annulations discernible.

MEASUREMENTS.—Adult male from Santa Barbara and an adult female from Muin, La Paz: head and body, 740, 525; tail vertebrae, 510, 470; hind foot, 120, 85. Skull: occipitonasal length, 120, 115.5; condylobasal length, 122.5, 115.7; zygomatic breadth, 77.3, 64; interorbital

breadth, 30, 26.5; crown length of last upper three molar teeth, 21.5, 20.3; width of posterior premolar, 7.2, 7.3.

*N. n. richmondi* is a large dark-colored subspecies with small teeth. Females lighter colored than males and with more definite light markings on head and shoulders. Honduras specimens are indistinguishable in color from the type of *Nasua n. bullata* from western Costa Rica but the skulls are shorter and relatively broader. Cranial characters average close to *N. n. molaris* from Colima, especially in the size of the bullae and molariform teeth. The Honduras and Nicaraguan specimens seem to represent a separable geographical race. Goldman described *Nasua n. richmondi* from Bluefields, Nicaragua, and while the type has a relatively slender rostrum, narrow interorbital and large bullae (characters subject to a wide range in all forms of *Nasua narica* group) this name is probably applicable to Honduras and Nicaraguan specimens.

**SPECIMENS.**—Santa Barbara: Santa Barbara, 1. Tegucigalpa: Laguna Archaga, 1; Guaymaca, 1; Monte Redondo (M. C. Z. 1). La Paz: Muin, 2.

**Potos flavus campechensis** Nelson and Goldman

Campeche Kinkajou

*Potos flavus campechensis* NELSON AND GOLDMAN, 1931, Jour. Wash. Acad. Sci., XXI, No. 19, pp. 482–483.

**TYPE LOCALITY.**—La Tuxpeña, Champoton, Campeche, Mexico.

**RANGE.**—Campeche, Yucatan Peninsula, Tabasco, Guatemala, and northern Honduras.

**GENERAL CHARACTERS.**—A uniform light-colored arboreal animal with thick, short pelage; short ears, long prehensile tail, rounded head, and robust form; similar in general characters to closely allied geographical races but paler in color and smaller in size.

**DESCRIPTION.**—Color of upperparts in general about clay-color but shade rather variable; underparts of Honduras specimens light ochraceous buff; tail above, about like back, becoming more brownish toward tip. Skull: similar in general form to *Potos f. chiriquensis* but braincase narrower; bullae usually larger; differing from *aztecus* in smaller size.

**MEASUREMENTS.**—Adult male (?) and female from Santa Barbara: total length, 900, 910; tail vertebrae, 455, 480; hind foot, 92, 92. Skull: greatest length, 88.1, 91.8; condylobasal length, 81.8, 85.8; interorbital breadth, 18.9, 21.3; postorbital constriction, 16.6, 20.6; zygomatic breadth, 61.7, 60.7; breadth across mastoid processes, 45.5, 46.2; breadth braincase, 39.5, 39.6; alveoli, front of canines to back of last molar, 25.2, 26.4.

The Santa Barbara and Cedros specimens are apparently referable to *campechensis* though they may not be typical. One fully adult male has a short, finely constructed skull with rather large bullae, well-developed sagittal crest, and wide zygomatic arches, contrasting with the relatively normal long heavy skulls in the rest of the series.

**SPECIMENS.**—Santa Barbara: La Mica, 1; Santa Barbara, 3. Tegucigalpa: El Caliche Cedros, 1.



## Bassariscidae

### Cacomistles

The cacomistles are slender, short-legged animals, with short rounded heads, long tails and large ears, feet densely haired to pads. Mexican species commonly live in caves and cliffs, but Central American forms seem to be more arboreal in their habits.

#### *Jentinka sumichrasti variabilis* (Peters)

Guatemala Cacomistle

*Bassaris variabilis* PETERS, 1874, Monatsber. k. preuss. Akad. Wiss. Berlin, p. 704.

TYPE LOCALITY.—Coban, Guatemala.

RANGE.—Guatemala and Honduras.

GENERAL CHARACTERS.—The cacomistle is a long slender animal with short limbs; rather large ears; short rounded head;

long tail, well haired to the tip, and ringed in contrasting colors throughout its length.

DESCRIPTION.—General color of upperparts buffy grayish, extensively overlaid with black, darkest on head and along median line of back. Tail with eight or nine gray rings alternating with black rings, tending to become clear black toward tip. Fore and hind feet and toes blackish. Underparts and inner sides of limbs light ochraceous buff; ears blackish.

MEASUREMENTS.—Adult male and female from Guatemala: total length, 925, 870; tail vertebrae, 500, 500; hind foot, 75, 75. Skull: female, greatest length, 87; zygomatic breadth, 50; interorbital breadth, 15.5; upper tooththrow, c to m<sup>2</sup>, 33.

## Mustelidae

### Weasels, Tayras, Grisons, Skunks, and Otters

Members of this family have long, slender bodies, short limbs, usually well-developed anal scent glands, and teeth modified for cutting flesh; carnassial teeth well developed; upper molars one on each side.

#### *Mustela frenata nicaraguae* (Allen)

Nicaragua Weasel

*Mustela tropicalis nicaraguae* ALLEN, 1916, Bull. Amer. Mus. Nat. Hist., XXXV, p. 100.

TYPE LOCALITY.—Matagalpa, Nicaragua.

RANGE.—Nicaragua and Honduras.

GENERAL CHARACTERS.—A medium-sized dark-colored weasel with white facial markings. Similar to *tropicalis* but coloration darker. Pelage relatively short and coarse.

DESCRIPTION.—Color of upperparts ochraceous tawny overlaid with black, darker on shoulders and becoming black on head, white facial markings well developed; limbs, feet, and tail like back, with tip of tail black; underparts pale ochraceous tawny becoming light ochraceous buff on throat. Skull large with elongated

braincase and a low sagittal crest in adult males.

MEASUREMENTS.—Adult male from La Paz and a female from Tegucigalpa: total length, 490, 351; tail vertebrae, 200, 133; hind foot, 48, 36. Skull: basilar length, 48, 39.5; upper tooththrow, canine to last molar, 15.5, 12; interorbital breadth, 10.9, 8.8; mastoid breadth, 20.8, 19.5; zygomatic breadth, 28.9, 22.5; length of bullae, 14.6, 13.2.

The Honduras specimens show characters of *M. f. nicaraguae*, *M. f. perda*, *M. f. goldmani*, and *M. f. costaricensis*. Relationship to the latter is slight and shown only by selected specimens. *M. f. perda* and *M. f. nicaraguae* are, according to Hall, closely related and comprise a lowland type in contrast to *goldmani*, a highland form. The Honduras specimens are intermediate between the upland and lowland weasels, but, everything considered, the name *M. f. nicaraguae* Allen should be applied to them.

SPECIMENS.—Tegucigalpa: La Flor Archaga (M. C. Z. 1); Cerro Grande, 1;

Alto Cantoral, 2; Comayaguela (M. C. Z. 1); Tegucigalpa, 2.

SPECIMENS.—Tegucigalpa: Comayaguela, 1.

### *Lutra latidens* Allen

Nicaragua Otter

*Lutra latidens* ALLEN, 1908, Bull. Amer. Mus. Nat. Hist., XXIV, p. 660.

TYPE LOCALITY.—Lavala, Matagalpa, Nicaragua.

RANGE.—Central Nicaragua and north to south central Honduras; limits of range unknown.

GENERAL CHARACTERS.—A long, slender animal, with flattened head, short limbs, and long muscular tail; tufts of hair under the toes and the granular tubercles present on the hind feet of the *canadensis* group are absent in Central American species; the Nicaraguan otter is distinguished from its near geographical allies by larger size and especially by its more massive dentition.

DESCRIPTION.—Color of upperparts uniform warm sepia or mars brown; underparts brownish washed with buffy white, purest on throat, pectoral and inguinal regions; lips and innersides of fore and hind legs light buff; upperside of fore and hind feet paler and more buffy than rest of upperparts, becoming almost buffy white on toes of hind feet. Skull: large, massive, and broad, with frontal region not especially flattened; bullae short and flat, differing from *L. annectens* from Rio de Tepic, Mexico, in its much larger size and relatively more massive teeth; compared with Costa Rica and Panama species it is very much larger, with relatively smaller and less inflated bullae and less flattened frontal region.

MEASUREMENTS.—An adult male from Comayaguela and external measurements of the type in parentheses: total length, 1015 (1280); tail vertebrae, 465 (490); hind foot, 125; ear, 21. Skull: zygomatic breadth, 79.5; interorbital breadth, 25.5; postorbital breadth, 16; maxillary toothrow, 38.5; alveolar breadth of upper carnassial, 13; alveolar breadth of upper carnassial, 11.

The Comayaguela specimen was shot on the Rio Grande, the river that divides the cities of Comayaguela and Tegucigalpa.

### *Tayra barbara inserta* Allen

Nicaragua Tayra

*Tayra barbara inserta* ALLEN, 1908, Bull. Amer. Mus. Nat. Hist., XXIV, p. 662.

TYPE LOCALITY.—Uluce, Matagalpa, Nicaragua.

RANGE.—Most of Nicaragua and south central Honduras; limits of range unknown.

GENERAL CHARACTERS.—A large weasel-like animal, black in general color but with head and neck very dark brown; very similar to *T. b. biologiae* from Panama; in the type series of *inserta* the black extends forward on the ventral surface of throat, without a trace of a white or yellowish spot on fore neck; other Nicaraguan specimens from east and south of Matagalpa have a well-pronounced white area on fore neck.

DESCRIPTION.—Color of body, limbs, and tail, black; head and neck dull dark brownish. Skull: in general, large and massive with a well-developed sagittal crest in old males; molariform teeth relatively small for an animal of this type; canines short and heavy.

MEASUREMENTS.—Adult female from Cantoral and an adult male from Catacamas: head and body, 628, 650; tail vertebrae, 440, 425; hind foot (s.u.), 95, 115; ear, 25, 42. Skull: greatest length, 112, 119.5; condylobasal length, 108.5, 115.5; zygomatic breadth, 66.3, 80.5; interorbital constriction, 25.2, 31.4; postorbital constriction, 23, 25.2; upper toothrow from canine to last molar, inclusive, 33.9, 33.9.

An old female from Cantoral is not quite so dark as in the type of *T. b. inserta* and it has a small yellowish spot on the underside of neck, a few buffy hairs around claws and pads on outer side of fore feet. An old male from Catacamas is almost uniform black with only a slight suggestion of brown on head and neck.

SPECIMENS.—Olancho: Catacamas, 1. Tegucigalpa: Cantoral, 1.

**Grison canaster** (Nelson)

Yucatan Grison

*Galictis canaster* NELSON, 1901, Proc. Biol. Soc. Wash., XIV, p. 129.

TYPE LOCALITY.—Near Tunkas, Yucatan, Mexico.

RANGE.—Southern Mexico, south to Panama.

GENERAL CHARACTERS.—The grison is a robust weasel-like animal with short limbs, broad head, short rounded ears, short tail, soles of hind feet naked.

DESCRIPTION.—General color of upperparts grizzled; face, limbs, and underparts black, a white band across forehead extending over eyes and across cheeks and ears nearly to shoulders.

MEASUREMENTS.—Specimen from Orizaba, Mexico: total length, 720; tail, 170; hind foot, in dried skin, 50. Skull: zygomatic breadth, 50; across postorbital processes, 26; alveolar length of upper carnassials, 9.

**Spilogale angustifrons elata** Howell

Highland Spotted Skunk

*Spilogale angustifrons elata* HOWELL, 1906, North American Fauna, No. 26, p. 27.

TYPE LOCALITY.—San Bartolomé, Chiapas, Mexico.

RANGE.—Highlands of Chiapas, probably Guatemala, Honduras, Nicaragua, and Costa Rica; limits of range unknown.

GENERAL CHARACTERS.—A small slender weasel-like skunk, with rather long soft fur and extensive white markings. *S. a. elata* is a small race of spotted skunks, similar in color to *S. ambigua*, but lateral stripes averaging broader and usually without white bands on thighs.

DESCRIPTION.—General color black, a triangular white spot on forehead between eyes; four parallel white stripes on the upperparts extending to about middle of back, the inner two commencing between the ears, the outer two extending forward under and in front of ear; another white stripe on each side commencing just behind the fore leg and running parallel with and beyond the dorsal stripes, where it curves up on the back and almost meets the corresponding stripe at the middorsal line; between the ends of these two lateral

stripes on the back are two narrow white patches in line with the median dorsal stripes; two white transverse bands in front of the hips, a small white patch on each side of the rump, a narrow white patch on each side of the tail at base; end of tail black. Skull, relatively long and slender, about the size of *S. a. tropicalis* but rostrum broader and only slightly depressed below level of upper surface; postorbital processes well developed; upper molar larger than in *tropicalis* and more evenly rounded on innerside; lower carnassial broader and interpterygoid fossa broader.

MEASUREMENTS.—Adult male from La Flor Archaga, an adult male from Cantoral and type in parentheses: head and body, 254, 230 (262); tail vertebrae, 105, 130 (126); hind foot, 36, 34 (37); ear, 21, 15. Skull: basilar length, 45, 43.7 (45.5); occipitonasal length, 51.5, 49.2 (49.5); zygomatic breadth, 32.4, 32.3 (33.7); interorbital constriction, 14.3, 13.9 (14.8); mastoid breadth, 28, 27 (28.5); upper toothrow, exclusive of incisors, 16, 17.3.

Underwood's specimens from southern Honduras are all males and show considerable individual variation, both in color markings and cranial characters. The median dorsal stripes are grayish, owing to intermixture of black with the white hairs. In the Archaga specimens the lateral lines terminate at the shoulder; in the Cantoral specimen these lines extend well forward on the outside of the forearm. Both localities are closely associated geographically and topographically, and the specimens agree in general with the type description of *elata*.

SPECIMENS.—Tegucigalpa: La Flor Archaga, 1; Cantoral, 1; Laguna Archaga, 1.

**Mephitis macroura macroura**

Lichtenstein

Hooded Skunk

*Mephitis macroura* LICHTENSTEIN, 1832, Darstellung neuer oder wenig bekannter Säugethiere, Pl. 46.

TYPE LOCALITY.—Mountains northwest of the City of Mexico.

RANGE.—Highlands of central and southern Mexico, south to Honduras.

GENERAL CHARACTERS.—A medium-sized skunk with extremely variable coloration. Two patterns occur: one in which the upperparts are chiefly white, the underparts black; the other in which the upperparts are mostly black with narrow lateral stripes and underside of tail white. Between these two extremes are many intermediate phases; frontal stripe narrow or absent.

DESCRIPTION.—In the white-backed phase a broad band of white begins between the ears and covers the whole back and upper surface of tail, the white hairs mixed with black, giving a more or less grayish effect. Skull: short and broad; interpterygoid fossa U-shaped, ending on a line with last molars; sagittal crest and mastoid processes well developed; molars small.

MEASUREMENTS.—Adult male and female from Catacamas: total length, 668, 567; tail vertebrae, 330, 289; hind foot (s.u.), 60, 53. Skull: condylobasal length, 64, 58.2; basal length, 57.5, 52.6; zygomatic breadth, 44.3, 37.9; palatal length, 24.9, 22.6; upper molar on outside edge, 5.5, 6.2.

The hooded skunk from the highlands of Honduras is apparently referable to typical *macroura*. It is larger than *vittata* which is a small species from the coast region of Oaxaca and Chiapas.

SPECIMENS.—Olancho: Catacamas, 5. Tegucigalpa: El Caliche Orica, 1; Tegucigalpa, 1; La Flor Archaga, 1.

### ***Conepatus nicaraguae* Allen**

Nicaragua Hog-nosed Skunk

*Conepatus nicaraguae* ALLEN, 1910, Bull. Amer. Mus. Nat. Hist., XXVIII, p. 106.

TYPE LOCALITY.—San Rafael del Norte, Nicaragua.

RANGE.—Highlands of central Nicaragua and north to central Honduras.

GENERAL CHARACTERS.—A large skunk

with a very long snout and a naked pad on upperside for rooting. Soles of hind feet naked to heel.

DESCRIPTION.—Color: black with a single broad, white, medium dorsal band beginning on top of head and reaching to tail; tail, white except at base below. Skull: relatively high, nasals and maxillae ending posteriorly on essentially the same plane.

MEASUREMENTS.—Adult male and female from Catacamas, male from Cedros and male from Sabana Grande, all with worn teeth: total length, 699, 651, 546, 530; tail vertebrae, 230, 220, 186, 230; hind foot (s.u.), 75, 75, 60, 60. Skull: condylobasal length, 77, 77.5, 67.5, 69.5; zygomatic breadth, 54.7, 50.2, 47, 47; palatal length, 33.5, 32.5, 30, 29.5; worn upper molar on outer edge, 8.8, 8.3, 8.5, 8.9, before wear average probably about 9.

External characters of the Honduras specimens with exception of size show no individual variation. Cranial characters, however, are more variable. Specimens from Catacamas are the largest and nearest to typical *nicaraguae* from San Rafael del Norte. Archaga and Gracias specimens are relatively smaller with smaller molars but general characters similar to the type series. An adult male from Cedros and one from Sabana Grande with worn molars might well represent a distinct race if it were not for the geographical position of the localities. These specimens are relatively small in size; skulls, short and broad with a definitely arched palate; teeth and external characters, except for smaller size, about the same as in the rest of the series. Mastoid processes are pronounced in the type series and Gracias specimens but undeveloped in the Tegucigalpa and Olancho series.

SPECIMENS.—Olancho: Catacamas, 6. Gracias: Cerro Pucca, 1; Cementerio, 1; Las Flores, 2. Tegucigalpa: El Caliche Cedros, 1; El Zapote, Sabana Grande, 1; La Flor Archaga, 3.

## Canidae

## Wolves and Foxes

In all the genera of this family, the canine teeth are long and powerful, the carnassial teeth well developed, with sharp shearing edges; the claws not retractile, feet digitigrade, muzzle elongated, tail long and bushy.

***Urocyon cinereoargenteus guatemalae***  
(Miller)

Guatemala Gray Fox

*Urocyon guatemalae* MILLER, 1899, Proc. Acad. Nat. Sci. Phila., p. 278.

TYPE LOCALITY.—Nenton, Guatemala.

RANGE.—Highlands of western Guatemala, central and southern Honduras; limits of range unknown.

GENERAL CHARACTERS.—Typically fox-like in general appearance but with a concealed mane of stiff hairs and pupil of eyes elliptical; *U. c. guatemalae* is similar to *U. littoralis* from the Santa Barbara islands but color darker and richer, carnassial teeth heavier and audital bullae slightly more inflated than in other members of the *cinereoargenteus* group.

DESCRIPTION.—Type specimen in unworn winter coat. Quality of fur and arrangement of color bands as in *U. parvidens* and other members of the genus; dorsal surface clear gray formed by nearly equal mixture of black tips and white subterminal rings of the coarse hairs; underfur pale cream buff appearing at surface only when hair is disarranged; top of head tinged with tawny; on sides the black tips are less conspicuous than on back, the buff of underfur appears distinctly at the surface; belly ochraceous buff except along median line and between hind legs where it is dull white; base of ear and area behind ear tawny ochraceous, this area extending back to front leg but much suffused with gray except on and close to ear; distal half of ear thickly sprinkled with dusky hairs; inner surface of ear whitish; muzzle, upper lip, and chin dark brown; cheek between eye and lip and region beneath the ochraceous area under ear, dull white, continuous with white of throat; dorsum of manus and pes a coarse dark grizzle of black,

white, and tawny; innerside of hind leg white; outer and posterior side dull ochraceous; palms and soles dull ochraceous; the gray of sides of belly extends down the front of fore leg to join the gray of the foot; outer surface of fore leg dull ochraceous; tail gray, heavily shaded with black; a broad, black dorsal stripe and conspicuous black tip; underside of tail dull ochraceous. Specimens in worn pelage are less gray than type and the tawny areas are brighter and more extensive. Skull closely resembles that of *U. littoralis* but averages slightly larger. It is much smaller, however, than that of the ordinary gray fox of Mexico north of the Isthmus of Tehuantepec. Zygomatic slightly less flaring than in *U. littoralis*. Audital bullae slightly larger and closer together than in *U. littoralis*, their longitudinal diameter greater relatively to their transverse diameter. The whole surface of the bullae is more evenly rounded than in other members of the *cinereoargenteus* group; in this respect showing an approach to *U. fraterculus* and *U. parvidens*. Compared with that of *U. parvidens* the skull of *Urocyon guatemalae* is considerably larger, while the audital bullae are actually as well as relatively smaller.

MEASUREMENTS.—Adult female from La Flor Archaga and the type, an adult male, in parentheses: head and body, 535 (503); tail vertebrae, 290 (327); hind foot, 110 (128); ear, 55. Skull: greatest length, 112.3 (111); basal length, 110 (101); basilar length, 101.8 (98); palatal length (median), 53.5 (51.4); nasals, 34.5 (33.1); zygomatic breadth, 60.5 (60); interorbital breadth, 21.4 (21.4); upper tooththrow, exclusive of incisors, 46.7 (46).

Underwood's Honduras specimens of gray fox all appear to agree closely with typical *guatemalae*. Mexico north of the Isthmus of Tehuantepec is inhabited by gray foxes of large size and pale color, which resemble *U. c. scottii* Mearns. These animals are replaced south of the Isthmus by *U. s. fraterculus* and *U. c. parvidens* in the arid tropical region of Yucatan and by

*U. c. guatemalae* in the humid tropical region of Guatemala and Honduras.

SPECIMENS.—Gracias: Las Flores, 1. Ocotepeque: Belen Guacho, 1. Intibuca: La Florida, 1. Tegucigalpa: La Flor Archaga, 1 (M. C. Z. 1); Hatillo (M. C. Z. 1); Cantoral, 1; El Picacho, 4; Tegucigalpa, 3; La Paz: La Cruz Grande, 1.

### ***Canis hondurensis* Goldman**

Honduras Coyote

*Canis hondurensis* GOLDMAN, 1936, Jour. Wash. Acad. Sci., XXVI, No. 1, p. 33.

TYPE LOCALITY.—Cerro Guiñote, northeast of Archaga, on the Talaña road north of Tegucigalpa, Honduras.

RANGE.—Known only from the open country in the vicinity of the type locality.

GENERAL CHARACTERS.—A rather small, rufescent species with coarse, thin pelage and a short, broad skull. Similar in color to *C. latrans dickeyi* of the Pacific coast region of Salvador, but smaller; and skull characters, especially the shorter toothrows and more widely spreading zygomata, distinctive. Resembling *C. l. goldmani* of eastern Chiapas, Mexico, but back apparently more heavily overlaid with black and differing in various cranial features.

DESCRIPTION.—Color of type: top of head and back coarsely grizzled buffy grayish mixed with black, the black tending to predominate on the back; muzzle, outer surfaces of ears, flanks, fore and hind limbs rusty rufous; a short, narrow line of black hairs along middle of anterior surface of forearm; underparts sparsely clothed, the hairs light buffy across abdomen, becoming whitish on throat and inguinal region; a few inconspicuously dark-tipped hairs across underside of neck; tail above overlaid with black like back, below light buffy, giving way to black all around at tip. Skull, similar in general to that of

*C. l. dickeyi* but smaller, especially shorter, with more widely spreading zygomata; nasals much shorter and broader between maxillae; palate relatively broader; audital bullae smaller; dentition similar but maxillary and mandibular tooththrows shorter and the premolars more closely crowded.

MEASUREMENTS.—Type and an adult male; total length, 1240, 1300; tail vertebrae, 350, 350; hind foot, 190, 225. Skull: greatest length, 190.3, 204; condylobasal length, 178.2, 190; zygomatic breadth, 100.7, 110; breadth of rostrum (at constriction between first and second upper premolars), 30, 30.9; interorbital breadth, 35.1, 36.3; postorbital constriction, 39.1, 39.4; breadth across mastoid processes of squamosal, 60.7, 62; greatest length of nasals, 76, 74; width of nasals (across middle between maxillae), 12.6, 11; maxillary tooththrow (alveoli), 77.2, 82.5; crown length (outer side) of upper carnassial, 20, 20; crown width of upper carnassial, 9.9, 10.

In Central America coyotes are restricted mainly to open savanna or semi-forested areas, subject to a long dry season, along the Pacific coast as far south as Costa Rica. They do not regularly occur in the unbroken forests that cover so much of the general region, and form more or less effective barriers limiting their distribution.

Mr. Underwood describes the region of the type locality as open, sterile, and rocky, and concerning the occurrence and habits of coyotes says: "... they seem to prefer to make their dens amongst the rocks often within a league or so from cattle farms or haciendas where calves and chickens can be gotten."

SPECIMENS.—Tegucigalpa: Cerro Guiñote (U. S. Fish and Game, 3); La Cueva Archaga, 1.

## Felidae

## Cats

The Felidae is the most specialized family of the order Carnivora. In all the species the feet are digitigrade, the claws retractile, the head broad and rounded; canine teeth exceptionally long and sharp, upper carnassial very large, with a trilobate blade, only one small true molar on each side above and below.

**Felis onca centralis** Mearns

Central American Jaguar

*Felis centralis* MEARNS, 1901, Proc. Biol. Soc. Wash., XIV, p. 139.

TYPE LOCALITY.—Talamanca, Costa Rica.

RANGE.—Panama north to Honduras.

GENERAL CHARACTERS.—The jaguar is a large tawny spotted cat with tail about equal to length of body. *F. o. centralis* is a relatively small race but the largest of the Central American cats.

DESCRIPTION.—Color of upperparts clay-color with a median chain of black spots, bordered on each side by five longitudinal rows of black rosettes; the lateral rosettes increase in size toward belly, and contain from one to five small black spots. Crown and neck tawny with black spots or rosettes, tail clay-color and heavily spotted and banded with black; underparts buffy white.

MEASUREMENTS.—Total length, 1800; tail vertebrae, 575; hind foot, 220. Skull: occipitonasal length, 240; zygomatic breadth, 153; length of carnassial, 26.

**Felis pardalis pardalis** Linnaeus

Mexican Ocelot

*Felis pardalis* LINNAEUS, 1758, Syst. Nat., 10th Ed., I, p. 42.

TYPE LOCALITY.—"Mexico," more definitely assigned to Vera Cruz by Allen.

RANGE.—Southeastern Mexico, Guatemala, and Honduras. Limits of range not determined.

GENERAL CHARACTERS.—A rather large spotted cat with relatively short tail. Larger than the long-tail tiger cat but with a much shorter tail.

DESCRIPTION.—Color of adult male from

Honduras: upperparts, ground color light ochraceous buff, darkest on head and mid-dorsal area. Five parallel black stripes on neck; outer two double lines enclosing narrow buffy areas. A more or less broken black middorsal line. Rest of back and sides evenly distributed with irregular rosettes. Limbs and feet paler than back, with rather small black spots. Underparts white with large black spots. Skull: massive with heavy zygomatic arches and abruptly truncated rostrum, resulting in a sharp angle in the nasal bones; bullae swollen and rounded.

MEASUREMENTS.—Male adult from Honduras: head and body, 915; tail, 40; hind foot (s.u.), 180; ear, 67. Skull: greatest length, 143.5; condylobasal length, 143.9; zygomatic breadth, 97.6; postorbital constriction 33.3; interorbital width, 28.2; mastoid width, 63.3; upper toothrow, to front of canine, 44.3.

One Honduras specimen is an adult male; although the sagittal crest is not well developed, it equals in size specimens of *F. p. mearnsi* from Nicaragua, figured by Allen, and is apparently larger than a fully adult male from Guatemala referred by me as typical *pardalis*. The present specimen, however, is much paler in color than the Nicaraguan specimens of *mearnsi* and the bullae are more rounded and swollen. The specific characters of the ocelot seem to be very unstable and until a larger series of Central American specimens can be brought together the status of the Honduras form cannot be definitely determined.

SPECIMENS.—Tegucigalpa: Archaga, 1; La Cueva Archaga, 1.

**Felis glaucula yucatanica** Goldman

Yucatan Long-tailed Tiger Cat

*Felis glaucula yucatanica* GOLDMAN, 1931, Jour. Mamm., XII, No. 3, pp. 304–305.

TYPE LOCALITY.—Merida, Yucatan.

RANGE.—The Peninsula of Yucatan, northern Chiapas, and south to central Honduras.

GENERAL CHARACTERS.—A medium-sized spotted cat, closely resembling the

ocelot, but differing in more slender form and longer tail; hairs on nape of neck reversed; the direction of the pelage of the nape, however, is apt to be unreliable as a distinctive character; *F. g. yucatanica* is distinguished from its geographical neighbors by the very pale buffy grayish ground color of the pelage.

DESCRIPTION.—Color of type: upperparts very pale buffy gray from top of head over nape and along median dorsal area to base of tail, becoming still paler and clearer gray on sides; upper surface irregularly spotted or streaked with black as usual in the group, the black spots on the flanks tending to encircle lighter areas; top of head with six narrow, longitudinal black lines; black facial markings as usual in the group; nape with a narrow median black line bifurcating posteriorly, and two broader parallel lines; median line of back with two more or less interrupted black lines, paralleled by a row of elongated black spots on each side; underparts white, spotted with black across abdomen, on innersides of limbs and on underside of neck; an interrupted black bar across throat; outsides of forearms and hind legs very pale buffy gray, spotted with black; feet pale gray, dotted with small black spots; outsides of ears deep black, edged with white, and with the usual white submarginal median spots; tail (incomplete) above with smaller black spots and dull white interspace. Skull characters drawn from a subadult female from Tecpactan, Chiapas, as follows: similar to that of *F. g. oaxacensis*, but nasals narrower posteriorly; dentition heavier, the upper carnassials decidedly broader. Dentition approaching that of *F. g. nicaraguae* but interpterygoid fossa narrower, and nasals narrower posteriorly.

MEASUREMENTS.—Adult female from Guaymaca and subadult female from Tecpactan, Chiapas, in parentheses: head and body, 510 (452); tail vertebrae, 400 (383); hind foot, 100, in dried skin, 110 (120); ear, 30. Skull: greatest length, 89.5 (90); condylobasal length, 84.5 (84); zygomatic breadth, 60 (54.8); interorbital breadth, 16.4 (14.8); length of nasals, median line, 16.5 (15); greatest breadth

of nasals anteriorly, 11.1 (10.6); greatest breadth of braincase, 43.3 (44); upper toothrow exclusive of incisor, 26.8 (27.7); upper carnassials, crown, 10.9 (11.8).

The pallid coloration association with the general aridity of the climate distinguishes a number of mammals of the Yucatan Peninsula region, and the long-tailed tiger cat appears to be no exception to the rule. In cranial characters the Honduras specimen is smaller and suggests relationship to *F. g. nicaraguae* but it lacks the rich tones of the latter and agrees well with the type description of *yucatanica*, except slightly darker.

SPECIMENS.—Tegucigalpa: Guaymaca, 1. Santa Barbara: Santa Barbara, 1 juv.

### *Felis concolor mayensis* Goldman

Guatemala Puma

*Felis concolor mayensis* GOLDMAN, 1929, Jour. Mamm., X, No. 4, p. 350.

TYPE LOCALITY.—La Libertad, Dept. of Peten, Guatemala.

RANGE.—Vera Cruz, Guatemala, and probably Honduras.

GENERAL CHARACTERS.—A large tawny cat without spots. Rounded ears and moderately long tail. Closely related to *F. c. costaricensis* but smaller and differing in cranial details, especially in the form of the nasals and shorter postorbital processes.

DESCRIPTION.—Color from top of head, median dorsal area, to base of tail, between tawny and ochraceous tawny, richest on rump, the general color grading on sides of body and outsides of limbs to light ochraceous buff; underparts white, with a few irregular buffy markings; tail like body but overlaid with black along distal half, tip black.

MEASUREMENTS.—Type (adult male): total length, 1710; tail vertebrae, 660; hind foot, 240. Skull: greatest length, 183; zygomatic breadth, 127.7; interorbital breadth, 37.7; alveolar length of upper canine and premolar series, 55.4; alveolar length of upper carnassial, 20.6.

*F. c. mayensis* is the smallest of the North American members of the group and is intermediate between the rich-colored and delicate-structured tropical forms and the plainer-colored more northern races.



**Felis (yagouaroundi) fossata** Mearns

Yucatan Yagouaroundi

*Felis fossata* MEARNS, 1901, Proc. Biol. Soc. Wash., XIV, p. 150.

TYPE LOCALITY.—Merida, Yucatan, Mexico.

RANGE.—Yucatan Peninsula region; limits of range unknown.

GENERAL CHARACTERS.—A small slender long-tailed cat, with short limbs, elongate body, and variable but unspotted coloration. It is a dichromatic species presenting gray and red color phases of varying tones. In the red phase it is nearly uniformly rusty red, darker on head and limbs and paler below. In the gray phase the pelage is dark brown or black finely mixed with buffy gray, producing a grizzled effect; underparts slightly paler.

DESCRIPTION.—Color of two specimens collected by Underwood is dusky gray throughout, the hairs blackish, light buff at base and two narrow buffy bands, paler on top of head, chin, ears, and throat, darker on middorsal region. A third specimen is light buffy gray contrasting with the other two. Skull: elongate; cranium compressed laterally; rostrum elevated; dorsal contour convex posteriorly, flattened supraorbitally, with marked declination forward from middle of nasals; interorbital region with a deep fossa continuing forward to extremity of nasals; jugal broad; audital bullae large

and broad, constricted laterally; sagittal and occipital crests moderately well developed.

MEASUREMENTS.—Female and male adult from La Flor Archaga: head and body, 660, 680; tail vertebrae, 400, 530; hind foot (s.u.), 120, 140; ear, 25, 40. Skull: occipitonasal length, 89.3, 107; zygomatic breadth, 62.3, 71; condylobasal length, 91.4, 102.4; breadth of braincase above auditory meatus, 44, 45; palatal length, 41, 42; breadth of jugal, 10.1, 13.2; length of upper carnassial, 11.2, 12.1; length from upper canine to back of carnassial, 29, 32.1; bullae,  $20.5 \times 12$ ,  $22.4 \times 11.4$ .

The type of *F. fossata* is a skull without skin, probably that of a male, with moderately large teeth and large bullae. The Archaga specimens seem to combine the characters of *F. j. tolteca* and *F. fossata*. Compared with the type of *F. panamensis*, which is a subadult female, they have relatively smaller carnassial teeth with a distinct protocone and larger bullae. General dimensions and color of both forms, however, are very similar. Underwood's specimens are here provisionally referred to *F. fossata* largely on geographical grounds. Very little is known of these cats. They are an extremely variable group and few specimens are available for study.

SPECIMENS.—Tegucigalpa: La Flor Archaga, 2. La Paz: Muin, 1.

## ORDER PINNIPEDIA

## Seals

## Phocidae

## Hair Seals

Seals of the family Phocidae have no external ear, coarse pelage, hind limbs directed backward and incapable of rotation forward; fore limbs smaller than hind, fully haired and provided with claws. They are large-sized animals, highly modified for a life in the water.

**Monachus tropicalis** (Gray)

West Indian Seal

*Phoca tropicalis* GRAY, 1850, Cat. Seals Brit. Mus., p. 28.

TYPE LOCALITY.—Jamaica.

RANGE.—Formerly from the islands of the coast of Yucatan to the Bay of Honduras and eastward to Jamaica, Cuba, Florida Keys and the Bahamas (Elliot).

GENERAL CHARACTERS.—A large brown seal with a short stiff pelage, long whiskers, well-developed nails on fore feet; muzzle elongated, depressed; soles and palms naked; tail short. Dentition:  $i \frac{2-2}{2-2}$ ,  $c \frac{1-1}{1-1}$ ,  $pm \frac{4-4}{4-4}$ ,  $m \frac{1-1}{1-1} = 32$ .

DESCRIPTION.—Color above blackish

brown tinged with gray; sides of body lighter than back and grading to yellowish white on underparts.

MEASUREMENTS.—Total length to end of hind limbs, 2390; length of manus, 300;

of pes, 320. Skull from Yucatan (adult male): greatest length, 283; zygomatic breadth, 175; interorbital breadth, 30.5; alveolar length of upper toothrow, canine to last molar, 84.2.

## ORDER SIRENIA

### Seacows

### Trichechidae

#### Manatees

The manatees are a group of herbivorous mammals inhabiting the delta regions along the Atlantic side of Middle America, northern South America, and the West Indies. They are highly specialized aquatic mammals of large size; head rounded; muzzle truncate, eyes small, mouth comparatively small, fore limbs developed as swimming paddles, no trace of hind limbs; tail broad and greatly expanded transversely.

#### *Trichechus manatus* Linnaeus

West Indies Manatee

[*Trichechus*] *manatus* LINNAEUS, 1758, Syst. Nat., 10th Ed., I, p. 34.

TYPE LOCALITY.—West Indies.

RANGE.—West Indies and Atlantic coast of southern Mexico and Central America, and northern South America.

GENERAL CHARACTERS.—A large robust mammal with thick pendulous lips and blunt truncate muzzle; upper lip cleft medially; fore limbs modified into broad flippers; no trace of hind limbs; tail broad, flat; eyes minute; nostril valve-like; external ear very small. Skin practically naked but muzzle set with stiff bristles.

DESCRIPTION.—General color uniform dull grayish; bones dense. Skull massive, mandible with horny plate attached anteriorly in place of teeth. Molar teeth in both jaws square, with elevated tuberculate ridges.

MEASUREMENTS.—Adult specimens average about seven feet and weigh about 430 lbs. Individuals have been recorded as measuring as much as twelve feet.

## ORDER PERISSODACTYLA

### Odd-toed Ungulates

### Tapiridae

#### Tapirs

The tapirs are the only indigenous odd-toed ungulates existing in America. They are stockily built animals with short, stout legs and a long, prehensile upper lip, short ears, rather long neck and a short tail. The front feet have four toes, but the outer one does not give support to the body.

#### *Tapirella dowii* (Gill)

Dow's Tapir

*Elasmognathus dowii* GILL, 1870, Amer. Jour. Sci. Arts, L, p. 142.

TYPE LOCALITY.—Guatemala.

RANGE.—Southern Mexico and Central America.

GENERAL CHARACTERS.—A dark-colored tapir, young, not spotted or streaked, skull with frontals extended anteriorly and separating the nasals.

DESCRIPTION.—Color of face and nose rufous; cheeks pale brown, remainder of body and limbs blackish brown.

MEASUREMENTS.—Total length, 2020; tail vertebrae, 70; hind foot, 575; ear, 140.

## ORDER ARTIODACTYLA

## Even-toed Ungulates

## Tagassuidae

## Peccaries

The family Tagassuidae includes two species of peccaries, or pig-like animals. Both have short tails, coarse bristly hairs, four toes on fore feet and three on hind feet, and large tusks or canine teeth.

**Tagassu tajacu nigrescens** (Goldman)

Honduras Collared Peccary

*Pecari angulatus nigrescens* GOLDMAN, 1926, Proc. Biol. Soc. Wash., XXXIX, p. 49.

TYPE LOCALITY.—Chamelicon, Honduras.

RANGE.—Central and northwestern Honduras to northern Guatemala and eastern Quintana Roo.

GENERAL CHARACTERS.—A medium-sized dark form without distinct dorsal stripe. Similar to *T. yucatanensis* but larger and general color uniformly much darker; cranial characters differing in detail. In general color somewhat resembling *nelsoni* but lighter, under tone more grayish. Skull smaller, shorter, and relatively broader, with molariform toothrows decidedly shorter. Similar in general to *T. crusnigrum*, but lighter element in pelage buffy or grayish instead of tawny, and dentition lighter.

DESCRIPTION.—Color of type: upper and underparts in general very light ochraceous or pinkish buffy, varying to grayish on lower part of back, coarsely mixed or heavily overlaid with black; chin and median line of underparts blackish; muzzle above, and feet, black. Shoulder stripes light buffy but rather narrow and indistinct.

MEASUREMENTS.—Type: total length, 890; hind foot, 180. Skull: greatest length, 238.5; condylobasal length, 199; zygomatic breadth, 99.8; interorbital

breadth, 56.1; breadth across postorbital processes, 72.7; maxillary toothrow, 58.2.

This dark race is apparently most closely allied to *yucatanensis* but is distinguished by its darker color due to the more uniform distribution of hairs with long black tips. Underwood's specimens from Cantoral and Gracias are dark-colored, and agree closely with *nigrescens* in this respect. The skulls, however, are too immature to show any definite characters.

SPECIMENS.—Tegucigalpa: Cantoral, 1. Gracias: Las Flores, 2.

**Tagassu pecari ringens** (Merriam)

Campeche White-lipped Peccary

*Tayassu albirostris ringens* MERRIAM, 1901, Proc. Biol. Soc. Wash., XIV, p. 121.

TYPE LOCALITY.—Apazote, near Yoahaetun, Campeche, Mexico.

RANGE.—Campeche, Guatemala, and probably Honduras.

GENERAL CHARACTERS.—The white-lipped peccaries are larger and blacker than the collared peccaries and are further distinguished externally by a conspicuous white area extending from the mouth along the side of face.

DESCRIPTION.—General color nearly black, muzzle, chin, and lips, pale yellowish white, the whitish color extending back broadly on each side of underjaw to below ears; underparts black mixed with fulvous, limbs and feet black mixed with white near hoofs.

MEASUREMENTS.—Type (adult female): total length, in dry skin, 1180; hind foot, in the flesh, 229. Skull: basal length, 242; zygomatic breadth, 112; length of upper molariform series, 78.

## Cervidae

## Deer

The family Cervidae includes all the true deer, males having deciduous, solid antlers (females also in some cases) which grow from permanent bases on the frontals; no upper incisors; canines sometimes present; second and fifth toes, small lateral hoofs or dew-claws usually present.

***Odocoileus truei* Merriam**

Honduras White-tailed Deer

*Odocoileus truei* MERRIAM, 1898, Proc. Biol. Soc. Wash., XII, p. 103.

TYPE LOCALITY.—Segovia River, eastern Honduras.

RANGE.—Honduras and Nicaragua, limits of range unknown.

GENERAL CHARACTERS.—A medium-sized white-tailed deer, with simple spiked antlers, slightly lyrate, and directed backward in line of face.

DESCRIPTION.—Summer pelage: bright chestnut, a dusty band from nose to forehead; orbital ring white, chest and flanks pale chestnut; throat, abdomen, inguinal region, and inside of fore legs, white; tail above tawny, beneath white; winter pelage, darker and grayer.

MEASUREMENTS.—Young male from eastern Honduras: height at shoulder, 732; tail to end of hair, 239; hind foot, 312; length of antlers, 88. Skull (adult male): greatest length, 222; length of nasals, 70; length of upper toothrow, 69.

***Mazama satorii cerasina* (Hollister)**

Middle American Forest Deer or Brocket

*Mazama tema cerasina* HOLLISTER, 1914, Proc. Biol. Soc. Wash., XXVII, p. 209.

TYPE LOCALITY.—Talamanca, Costa Rica.

RANGE.—Costa Rica, Nicaragua, Honduras, and Guatemala.

GENERAL CHARACTERS.—The forest deer is a small reddish species, with antlers reduced to simple spikes; the body is heavy for so small an animal but the limbs

are very slender; *M. s. cerasina* is a rich-colored form, differing from the Mexican and Canal Zone species in its considerably darker and more reddish coloration.

DESCRIPTION.—Color of type specimen: above, from nose to withers, including most of outsides of ears, dark blackish brown; sides of muzzle, region around eyes, and hairs of crown-tuft mixed with reddish. Entire upperparts and sides of body, fore limbs to knees and outsides of hind limbs to points of hock bright reddish chestnut (almost Hay's russet of Ridgway), darkest on back and lighter and brighter on sides, hips, and limbs. Chin and throat, warm buff; the chin crossed by a band of brownish; lower neck brownish; underparts of body like sides but lighter colored, without line of demarcation; inguinal region dark buffy, scantily haired. Lower fore and hind limbs dark brown, the feet reddish. Tail above like rump, below whitish. Two skins of older animals from the type locality are virtually like the type, and three skins of adults from Guatemala are only slightly paler, clearly resembling *cerasina* more than they do Mexican specimens of *satorii*.

MEASUREMENTS.—Old female from Gracias and type in parentheses: head and body, 972 (910); hind foot, 290 (235). Skull: greatest length, 179 (176); condylo-basal length, 173 (167.5); zygomatic breadth, 84.8 (80.5); length of nasals, 53.1 (46.5); upper molar premolar series, 52.5 (58—milk premolars in place).

Underwood's Honduras specimens include an old female, one young female, and a spotted fawn. There are apparently no characters separating the Middle American brocket from the Mexican race other than color. The Honduras specimens are equally as dark and rich in color as those from Costa Rica.

SPECIMENS.—Gracias: Pucca, 1. La Paz: Muya, 1. Tegucigalpa: La Flor Archaga, 1.

## INDEX

- abrasus, *Eumops*, 144  
*Adelonycteris gaumeri*, 141  
*adolphi*, *Sciurus*, 152  
*aequatorialis*, *Alouatta*, 147  
*Agouti nelsoni*, 174  
   *paca*, 174  
*alba*, *Ectophylla*, 134  
*albigula*, *Thyroptera*, 140  
*albirostris*, *Tayassu*, 188  
*albiventer*, *Thyroptera*, 140  
*albus*, *Diclidurus*, 120  
*alfaroi*, *Hesperomys*, 164  
   *Oryzomys*, 164  
*Alouatta aequatorialis*, 147  
   *palliata*, 147  
*alstoni*, *Caluromys*, 114  
   *Marmosa*, 114  
*ambigua*, *Spilogale*, 180  
*amblyotis*, *Phyllostoma*, 125  
   *Tonatia*, 125  
*angulatus*, *Pecari*, 188  
*angusticeps*, *Oryzomys*, 164  
*angustifrons*, *Spilogale*, 180  
*annectens*, *Lutra*, 179  
*Anoura geoffroyi*, 128  
   *lasiopyga*, 128  
*argyrodites*, *Chironectes*, 112  
*Artibeus harti*, 137  
   *jamaicensis*, 135  
   *nanus*, 136  
   *palmarum*, 135  
   *phaeotis*, 136  
   *planirostris*, 135  
   *richardsoni*, 135  
   *toltecus*, 136  
   *watsoni*, 136  
*Atalapha mexicana*, 141  
*Ateles pan.*, 146  
*aurita*, *Lonchorhina*, 125  
*auritus*, *Chrotopterus*, 128  
   *Vampyrus*, 128  
*australis*, *Reithrodontomys*, 158  
*azoricus*, *Mus*, 172  
*azteca*, *Carollia*, 131  
*aztecus*, *Potos*, 177  
   *Sylvilagus*, 150  
  
*Baiomys grisescens*, 160  
   *musculus*, 160  
   *nigrescens*, 160  
*Balantiopteryx io*, 120  
   *plicata*, 119  
*barbara*, *Tayra*, 179  
*Bassaris variabilis*, 178  
*belti*, *Sciurus*, 153  
*bennettii*, *Mimon*, 125  
*bilabiatum*, *Phyllostoma*, 137  
   *Pygoderma*, 137  
*bilineata*, *Saccopteryx*, 118  
*bilineatus*, *Urocryptus*, 118  
*biologiae*, *Tayra*, 179  
*Blarina nigrescens*, 117  
   *olivaceus*, 116  
*bondae*, *Molossus*, 145  
  
*boothiae*, *Sciurus*, 152  
*borealis*, *Lasiurus*, 141  
*borucae*, *Sigmodon*, 168  
*boylii*, *Peromyscus*, 161  
*brachyurus*, *Capromys*, 175  
*brasiliensis*, *Lepus*, 151  
*brevirostris*, *Cormura*, 119  
   *Emballonura*, 119  
*bullata*, *Nasua*, 177  
  
*Cabassous centralis*, 148  
*californicus*, *Eumops*, 144  
*Caluromys alstoni*, 114  
   *derbianus*, 114  
   *fervidus*, 114  
*campechensis*, *Potos*, 177  
*canadensis*, *Lutra*, 179  
*canaster*, *Galictis*, 180  
   *Grisson*, 180  
*Canis diekeyi*, 183  
   *goldmani*, 183  
   *hondurensis*, 183  
   *latrans*, 183  
*Capromys brachyurus*, 175  
   *thoracatus*, 175  
*capucinus*, *Cebus*, 146  
*Carollia azteca*, 131  
   *castanea*, 132  
   *perspicillata*, 131  
   *subrufa*, 131  
*castanea*, *Carollia*, 132  
*Cebus capucinus*, 146  
   *imitator*, 146  
   *limitaneus*, 146  
*centralis*, *Cabassous*, 148  
*Centronycteris*, 118  
*Diphylla*, 138  
*Felis*, 184  
*Myrmecophaga*, 149  
*Philander*, 114  
*Promops*, 143  
*Pteronotus*, 123  
*Saccopteryx*, 118  
*Tatoua*, 147  
*Ziphipha*, 147  
*Centronycteris centralis*, 118  
   *maximiliani*, 118  
*Centurio senex*, 137  
*cerasina*, *Mazama*, 189  
*chamula*, *Neotoma*, 171  
*chapmani*, *Oryzomys*, 164  
*cherrii*, *Reithrodontomys*, 159  
*chiapensis*, *Heterogeomys*, 157  
   *Reithrodontomys*, 158  
   *Sylvilagus*, 150  
*Chilonycteris continentis*, 122  
   *personata*, 122  
   *rubiginosa*, 122  
   *torrei*, 122  
*chiriquensis*, *Potos*, 177  
*Chiroderma salvini*, 134  
*Chironectes argyrodites*, 112  
   *panamensis*, 112  
*Choeroneiscus godmani*, 129

- Choeronycteris godmani*, 129  
*mexicana*, 129  
*Chrotopterus auritis*, 128  
*chrysomelas*, *Neotoma*, 171  
*cinereoargenteus*, *Urocyon*, 182  
*cirrhosus*, *Trachops*, 127  
*Coendou mexicanum*, 172  
*coffini*, *Trachops*, 127  
*concolor*, *Felis*, 185  
*Conepatus nicaraguae*, 181  
*continentis*, *Chilonycteris*, 122  
*Cormura brevirostris*, 119  
*costaricensis*, *Felis*, 185  
*Mustela*, 178  
*Oryzomys*, 165  
*couesi*, *Hesperomys*, 163  
*Oryzomys*, 163  
*crassidens*, *Procyon*, 176  
*crusnigrum*, *Tagassu*, 188  
*Cryptotis goodwini*, 116  
*micrura*, 116  
*nigrescens*, 117  
*olivacea*, 116  
*Cuniculus nelsoni*, 174  
*paca*, 174  
*virgatus*, 174  
*Cyclopes didactylus*, 149  
*dorsalis*, 149  
*Cyclothurus dorsalis*, 149  
  
*dariensis*, *Oryzomys*, 164  
*Dasyprocta isthmica*, 174  
*punctata*, 173  
*richmondi*, 174  
*ruatanica*, 174  
*yucatanica*, 174  
*Dasypterus ega*, 142  
*panamensis*, 142  
*Dasyptus mexicanus*, 148  
*novemcinctus*, 148  
*davyi*, *Pteronotus*, 123  
*decolorus*, *Nyctomys*, 167  
*Rhipidomys*, 167  
*Sitomys*, 167  
*dentaneus*, *Metachirus*, 113  
*deppiei*, *Sciurus*, 153  
*derbianus*, *Caluromys*, 114  
*Dermanura phaeotis*, 136  
*desmarestianus*, *Heteromys*, 155  
*Desmodus murinus*, 138  
*rotundus*, 138  
*dickeyi*, *Canis*, 183  
*Diclidurus albus*, 120  
*virgo*, 120  
*didactylus*, *Cyclopes*, 149  
*Didelphis marsupialis*, 111  
*Diphylla centralis*, 138  
*ecaadata*, 138  
*Dirias minor*, 121  
*discifera*, *Hyonycteris*, 139  
*Thyroptera*, 139  
*discolor*, *Phyllostomus*, 126  
*dorsalis*, *Cyclopes*, 149  
*Cyclothurus*, 149  
*Reithrodontomys*, 158  
*dowii*, *Elasmognathus*, 187  
  
*Tapirella*, 187  
*Dysopes glaucinus*, 144  
  
*ecaadata*, *Diphylla*, 138  
*Ectophylla alba*, 134  
*ega*, *Dasypterus*, 142  
*Elasmognathus dowii*, 187  
*elata*, *Spilogale*, 180  
*Emballonura brevirostris*, 119  
*macrotis*, 119  
*Enchisthenes harti*, 137  
*Eptesicus fuscus*, 140  
*miradorensis*, 140  
*propinquus*, 141  
*Eumops abrasus*, 144  
*californicus*, 144  
*glaucus*, 144  
*perotis*, 143  
*underwoodi*, 143  
  
*Felis centralis*, 184  
*concolor*, 185  
*costaricensis*, 185  
*fossata*, 186  
*glaucula*, 184  
*mayensis*, 185  
*mearnsi*, 184  
*nicaraguae*, 185  
*oaxacensis*, 185  
*onca*, 184  
*panamensis*, 186  
*pardalis*, 184  
*tolteca*, 186  
*yagouarundi*, 186  
*yucatanica*, 184  
*ferruginea*, *Neotoma*, 170  
*fervidus*, *Caluromys*, 114  
*Philander*, 114  
*flavus*, *Potos*, 177  
*floridanus*, *Sylvilagus*, 150  
*fossata*, *Felis*, 186  
*fraterculus*, *Urocyon*, 182  
*frenata*, *Mustela*, 178  
*fulvescens*, *Hesperomys*, 165  
*Oryzomys*, 165  
*Reithrodontomys*, 158  
*fumeus*, *Ototylomys*, 166  
*furvus*, *Sigmodon*, 168  
*fuscatus*, *Heteromys*, 155  
*fuscogriseus*, *Metachirus*, 113  
*Philander*, 113  
*fuscus*, *Eptesicus*, 140  
  
*gabbi*, *Lepus*, 151  
*Sylvilagus*, 151  
*Galiotis canaster*, 180  
*gaumeri*, *Adelonycteris*, 141  
*geoffroyi*, *Anoura*, 128  
*glaucus*, *Dysopes*, 144  
*Eumops*, 144  
*Glaucornis goldmani*, 154  
*underwoodi*, 154  
*volans*, 154  
*glaucula*, *Felis*, 184  
*Glossophaga leachii*, 128  
*soricina*, 128  
*godmani*, *Choeroniscus*, 129

- Choeronycteris, 129  
 goldmani, Canis, 183  
 Glaucomys, 154  
 Mustela, 178  
 Sciurus, 152  
 Reithrodontomys, 159  
 goodwini, Cryptotis, 116  
 gracilis, Rhogeessa, 142  
 grandis, Orthogeomys, 156  
 griseus, Baiomys, 160  
 griseus, Sigmodon, 168  
 Grison canaster, 180  
 guatemalae, Otoryzomys, 166  
 Urocyon, 182  
 guatemalensis, Peromyscus, 161  
  
 harti, Artibeus, 137  
 Enchisthenes, 137  
 hastatus, Phyllostomus, 178  
 helleri, Vampyrops, 133  
 Hemiderma subrufum, 131  
 hernandezii, Procyon, 176  
 Hesperomys alfaroi, 164  
 couesi, 163  
 fulvescens, 165  
 nudicaudus, 166  
 teguina, 169  
 Heterogeomys chiapensis, 157  
 hispidus, 157  
 Heteromys desmarestianus, 155  
 fuscatus, 155  
 salvini, 156  
 heterothrix, Liomys, 155  
 hispidus, Heterogeomys, 157  
 Sigmodon, 168  
 hoffmanni, Sciurus, 153  
 hondurensis, Canis, 183  
 Peromyscus, 163  
 Sturnira, 133  
 Sylvilagus, 150  
 Hylonycteris underwoodi, 129  
 Hyonycteris discifera, 139  
 Hystrix mexicana, 172  
  
 imitator, Cebus, 146  
 inserta, Tayra, 179  
 io, Balantiopteryx, 120  
 Ischnoglossa nivalis, 130  
 isthmica, Dasypsecta, 174  
  
 jalapae, Mus, 172  
 jamaicensis, Artibeus, 135  
 Jentinka sumichrasti, 178  
 variabilis, 178  
  
 kappleri, Peropteryx, 119  
  
 laniger, Philander, 114  
 lasiopga, Anoura, 128  
 Glossonycteris, 128  
 Lasiurus borealis, 141  
 mexicana, 141  
 latidens, Lutra, 179  
 latrans, Canis, 183  
 leachii, Glossophaga, 128  
 Monophyllus, 128  
 lenis, Oryzomys, 165  
  
 leporinus, Noctilio, 121  
 Leptonycteris nivalis, 130  
 Lepus brasiliensis, 151  
 gabbi, 151  
 Lichonycteris obscura, 130  
 lilium, Sturnira, 132  
 limitaneus, Cebus, 146  
 Liomys heterothrix, 155  
 salvini, 156  
 littoralis, Urocyon, 182  
 Lonchorhina aurita, 125  
 lophurus, Peromyscus, 163  
 lotor, Procyon, 176  
 lucifrons, Reithrodontomys, 159  
 ludovici, Sturnira, 133  
 Lutra annectens, 179  
 canadensis, 179  
 latidens, 179  
  
 Macrogeomys matagalpae, 157  
 macrotis, Emballonura, 119  
 Peropteryx, 119  
 Macrotylus mexicanus, 124  
 macroura, Mephitis, 180  
 major, Vampyrodes, 134  
 manatus, Trichechus, 186  
 Marmosa alstoni, 114  
 mexicana, 115  
 murina, 115  
 nicaraguae, 115  
 ruatanica, 115  
 marsupialis, Didelphis, 111  
 matagalpae, Macrogeomys, 157  
 Sciurus, 153  
 maxmiliani, Centronycteris, 118  
 mayensis, Felis, 185  
 Mazama cerasina, 189  
 satorii, 189  
 tema, 189  
 mearnsi, Felis, 184  
 megalophylla, Mormoops, 123  
 Mormops, 123  
 megalotis, Micronycteris, 123  
 Mephitis macroura, 180  
 vittata, 181  
 Metachirus dentaneus, 113  
 fuscogriseus, 113  
 nudicaudatus, 113  
 mexicana, Atalapha, 141  
 Choeronycteris, 129  
 Hystrix, 172  
 Lasiurus, 141  
 Marmosa, 115  
 Micronycteris, 123  
 Myrmecophaga, 149  
 Tamandua, 149  
 mexicanum, Coendou, 172  
 mexicanus, Dasypus, 148  
 Macrotus, 124  
 Natalus, 139  
 Noctilio, 121  
 Peromyscus, 162  
 Reithrodontomys, 159  
 Micronycteris megalotis, 123  
 mexicana, 123  
 microtis, 124

- minuta, 124
- schmidtorum, 124
- microtis, Micronycteris, 124
- micrura, Cryptotis, 116
- micrurus, Sorex, 116
- Mimon bennettii, 125
- minor, Dirias, 121
  - Noctilio, 121
- minusculus, Reithrodontomys, 160
- minuta, Micronycteris, 124
- miradorensis, Eptesicus, 140
  - Scotophilus, 140
- modestus, Reithrodontomys, 158
- molaris, Nasua, 177
- Molossus bondae, 145
  - nigricans, 144
  - rufus, 145
  - sinaloae, 145
- Monachus tropicalis, 186
- Monophyllus leachii, 128
- Mormoops megalophylla, 123
- Mormops megalophylla, 123
- murina, Marmosa, 115
- murinus, Desmodus, 138
- Mus azoricus, 172
  - jalapae, 172
  - musculus, 171
  - rattus, 172
- musculus, Baiomys, 160
- Mus, 171
- Mustela costaricensis, 178
  - frenata, 178
  - goldmani, 178
  - nicaraguae, 178
  - perda, 178
  - tropicalis, 178
- Mycetes palliatus, 147
- Myotis nigricans, 140
- Myrmecophaga centralis, 149
  - mexicana, 149
  - tamandua, 149
  - tridactyla, 149
- nanus, Artibeus, 136
- narica, Nasua, 176
- naso, Rhynchiscus, 117
  - Vespertilio, 117
- Nasua bullata, 177
  - molaris, 177
  - narica, 176
  - richmondi, 176
- Natalus mexicanus, 139
- nelsoni, Agouti, 174
  - Cuniculus, 174
  - Tagassu, 188
  - Vampyrus, 128
  - Vampyrus, 128
- Neotoma chamula, 171
  - chrysomelas, 171
  - ferruginea, 170
  - solitaria, 170
- nicaraguae, Conepatus, 181
  - Felis, 185
  - Marmosa, 115
  - Mustela, 178
- nigrescens, Baiomys, 160
- Blarina, 117
- Cryptotis, 117
- Pecari, 188
- Soriciscus, 117
- Tagassu, 188
- nigricans, Molossus, 144
- Myotis, 140
  - Vespertilio, 140
- nivalis, Ischnoglossa, 130
  - Leptonycteris, 130
- Noctilio leporinus, 121
- mexicanus, 121
- minor, 121
- novemcinctus, Dasypus, 148
- nudicaudatus, Metachirus, 113
- nudicaudus, Hesperomys, 166
  - Tylomys, 166
- nudipes, Peromyscus, 162
- Nyctinomops yucatanicus, 143
- Nyctomys decolorus, 167
  - salvini, 167
  - sumichrasti, 167
- oaxacensis, Felis, 185
- obscura, Lichonycteris, 130
- ocotepequensis, Reithrodontomys, 159
- Odocoileus truei, 189
- olivacea, Cryptotis, 116
- olivaceus, Blarina, 116
- onca, Felis, 184
- opossum, Philander, 113
- Orthogeomys grandis, 156
  - pluto, 156
- Oryzomys alfaroi, 164
  - angusticeps, 164
  - chapmani, 164
  - costaricensis, 165
  - couesi, 163
  - dariensis, 164
  - fulvescens, 165
  - lenis, 165
  - palustris, 163
  - rhabdops, 164
  - saturnator, 164
- Otopterus pygmaeus, 124
- Ototylomys fumeus, 166
  - guatemalae, 166
  - phyllotis, 166
- paca, Agouti, 174
  - Cuniculus, 174
- palliata, Alouatta, 147
- palliatus, Mycetes, 147
- palmarum, Artibeus, 135
- palustris, Oryzomys, 163
- pan, Ateles, 146
- panamensis, Chironectes, 112
  - Dasypterus, 142
  - Felis, 186
  - Phyllostomus, 125
- pardalis, Felis, 184
- parvidens, Sturnira, 132
  - Urocyon, 182
- Pecari angulatus, 188
- nigrescens, 188
- pecari, Tagassu, 188



- perda, *Mustela*, 178  
*Peromyscus boylii*, 161  
     *guatemalensis*, 161  
     *hondurensis*, 163  
     *lophurus*, 163  
     *mexicanus*, 162  
     *nudipes*, 162  
     *sacarensis*, 161  
     *saxatilis*, 162  
     *stirtoni*, 162  
     *tropicalis*, 161  
*Peropteryx kappleri*, 119  
     *macrootis*, 119  
*perotis*, *Eumops*, 143  
*personata*, *Chilonycteris*, 122  
*perspicillata*, *Carollia*, 131  
*phaeotis*, *Artibeus*, 136  
     *Dermanura*, 136  
*Philander centralis*, 114  
     *fervidus*, 114  
     *fuscogriseus*, 113  
     *laniger*, 114  
     *opossum*, 113  
*Phoca tropicalis*, 186  
*Phylloderma septentrionalis*, 126  
     *stenops*, 126  
*Phyllostoma amblyotis*, 125  
     *bilabiatum*, 137  
     *planirostris*, 135  
     *verrucosum*, 126  
*Phyllostomus discolor*, 126  
     *hastatus*, 125  
     *panamensis*, 125  
     *verrucosus*, 126  
*phyllotis*, *Ototylomys*, 166  
*planirostris*, *Artibeus*, 135  
     *Phyllostoma*, 135  
*plicata*, *Balantiopteryx*, 119  
*pluto*, *Orthogeomys*, 156  
*Potos aztecus*, 177  
     *campechensis*, 177  
     *chiriquensis*, 177  
     *flavus*, 177  
*priscus*, *Rhynchiscus*, 117  
*Procyon crassidens*, 176  
     *hernandezii*, 176  
     *lotor*, 176  
     *shufeldti*, 176  
*Promops centralis*, 143  
*propinquus*, *Eptesicus*, 141  
     *Vesperus*, 141  
*Pteronotus centralis*, 123  
     *davyi*, 123  
     *suapurensis*, 123  
*punctata*, *Dasyprocta*, 174  
*pygmaeus*, *Otopterus*, 124  
*Pygoderma bilabiatum*, 137  
     *goldmani*, 159  
     *lucifrons*, 159  
     *mexicanus*, 159  
     *minusculus*, 160  
     *modestus*, 158  
     *ocotepequensis*, 159  
     *underwoodi*, 158  
*rhabdops*, *Oryzomys*, 164  
*Rheomys stirtoni*, 167  
     *thomasi*, 167  
     *underwoodi*, 167  
*Rhipidomys decolorus*, 167  
*Rhogeessa gracilis*, 142  
     *tumida*, 142  
*Rhynchiscus naso*, 117  
     *priscus*, 117  
*richardsoni*, *Artibeus*, 135  
*richmondi*, *Dasyprocta*, 174  
     *Nasua*, 176  
*ringens*, *Tagassu*, 188  
     *Tayassu*, 188  
*rotundus*, *Desmodus*, 138  
*ruatanica*, *Dasyprocta*, 174  
     *Marmosa*, 115  
*rubiginosa*, *Chilonycteris*, 122  
*rufoniger*, *Scotinomys*, 170  
*rufus*, *Molossus*, 145  
     *sacarensis*, *Peromyscus*, 161  
*Saccolpteryx bilineata*, 118  
     *centralis*, 118  
*salvini*, *Chiroderma*, 134  
     *Heteromys*, 156  
     *Liomys*, 156  
     *Nyctomys*, 167  
*satorii*, *Mazama*, 189  
*saturnator*, *Oryzomys*, 164  
*saturatus*, *Sigmodon*, 168  
*saxatilis*, *Peromyscus*, 162  
*schmidtorum*, *Micronycteris*, 124  
*Sciurus adolphi*, 152  
     *belti*, 153  
     *boothiae*, 152  
     *deppei*, 153  
     *goldmani*, 152  
     *hoffmanni*, 153  
     *matagalpae*, 153  
     *underwoodi*, 152  
     *variegatoides*, 151  
     *vivax*, 154  
*Scotinomys rufoniger*, 170  
     *teguina*, 169  
*Scotophilus miradorensis*, 140  
*scottii*, *Urocyon*, 182  
*senex*, *Centurio*, 137  
*septentrionalis*, *Phylloderma*, 126  
*shufeldti*, *Procyon*, 176  
*Sigmodon borucae*, 168  
     *furvus*, 169  
     *griseus*, 168  
     *hispidus*, 169  
     *saturatus*, 169  
     *zanjonensis*, 168  
*sinaloae*, *Molossus*, 144  
*Sitomys decolorus*, 167  
*solitaria*, *Neotoma*, 170

- Sorex micrurus*, 116  
*soricina*, *Glossophaga*, 128  
*Soriciscus nigrescens*, 117  
*spectrum*, *Vampyrus*, 128  
*Vampyrus*, 128  
*Spilogale ambigua*, 180  
*angustifrons*, 180  
*elata*, 180  
*tropicalis*, 180  
*Stenoderma tolteca*, 136  
*stenops*, *Phylloderma*, 126  
*stirtoni*, *Peromyscus*, 162  
*Rheomys*, 167  
*Sturnira hondurensis*, 133  
*lilium*, 132  
*ludovici*, 133  
*parvidens*, 132  
*suapurensis*, *Pteronotus*, 123  
*subrufa*, *Carollia*, 131  
*subrufum*, *Hemiderma*, 131  
*sumichrasti*, *Jentinka*, 178  
*Nyctomys*, 167  
*Sylvilagus aztecus*, 150  
*chiapensis*, 150  
*floridanus*, 150  
*gabbi*, 151  
*hondurensis*, 150  
*tumacus*, 151  
*yucatanicus*, 150  
  
*Tadarida yucatanica*, 143  
*Tagassu crusnigrum*, 188  
*nelsoni*, 188  
*nigrescens*, 188  
*pecari*, 188  
*ringens*, 188  
*tajacu*, 188  
*yucatanensis*, 188  
*tajacu*, *Tagassu*, 188  
*Tamandua mexicana*, 149  
*tenuirostris*, 149  
*tetradactyla*, 149  
*tamandua*, *Myrmecophaga*, 149  
*Tapirella dowii*, 187  
*Tatoua centralis*, 148  
*Tayassu albirostris*, 188  
*ringens*, 188  
*Tayra barbara*, 179  
*biologiae*, 179  
*inserta*, 179  
*teguina*, *Hesperomys*, 169  
*Scotinomys*, 169  
*tema*, *Mazama*, 189  
*tenuirostris*, *Tamandua*, 149  
*tetradactyla*, *Tamandua*, 149  
*thomasi*, *Rheomys*, 167  
*thoracatus*, *Capromys*, 175  
*Thyroptera albigula*, 139  
*albiventer*, 140  
*discifera*, 139  
*tricolor*, 140  
*toleca*, *Felis*, 186  
*Stenoderma*, 136  
*toltecus*, *Artibeus*, 136  
  
*Tonatia amblyotis*, 125  
*torrei*, *Chilonycteris*, 122  
*Trachops cirrhosus*, 127  
*coffini*, 127  
*Trichechus manatus*, 187  
*tricolor*, *Thyroptera*, 140  
*tridactyla*, *Myrmecophaga*, 149  
*tropicalis*, *Monachus*, 186  
*Mustela*, 178  
*Peromyscus*, 161  
*Phoca*, 186  
*Spilogale*, 180  
*truei*, *Odocoileus*, 189  
*tumacus*, *Sylvilagus*, 151  
*tumida*, *Rhogeessa*, 142  
*Tylomys nudicaudus*, 166  
  
*underwoodi*, *Eumops*, 143  
*Glaucomys*, 154  
*Hylonycteris*, 129  
*Reithrodontomys*, 158  
*Rheomys*, 167  
*Sciurus*, 152  
*Urocyon cinereoargenteus*, 182  
*fraterculus*, 182  
*guatemalae*, 182  
*littoralis*, 182  
*parvidens*, 182  
*scottii*, 182  
*Urocyon bilineatus*, 118  
  
*Vampyrodes major*, 134  
*Vampyrops helleri*, 133  
*Vampyrus nelsoni*, 128  
*spectrum*, 128  
*Vampyrus auritus*, 128  
*nelsoni*, 128  
*spectrum*, 128  
*variabilis*, *Bassaris*, 178  
*Jentinka*, 178  
*variegatoides*, *Sciurus*, 151  
*verrucosus*, *Phyllostoma*, 126  
*verrucosus*, *Phyllostomus*, 126  
*Vespertilio naso*, 117  
*nigricans*, 140  
*Vesperus propinquus*, 141  
*virgatus*, *Cuniculus*, 174  
*virgo*, *Didelurus*, 120  
*vittata*, *Mephitis*, 181  
*vivax*, *Sciurus*, 154  
*volans*, *Glaucomys*, 154  
  
*watsoni*, *Artibeus*, 136  
  
*yagouaroundi*, *Felis*, 186  
*yucatanensis*, *Tagassu*, 188  
*yucatanica*, *Dasyprocta*, 174  
*Felis*, 184  
*Tadarida*, 143  
*yucatanicus*, *Nyctinomops*, 143  
*Sylvilagus*, 150  
  
*zanjonensis*, *Sigmodon*, 168  
*Ziphipha centralis*, 148











