

AN ANNOTATED LIST OF MAMMALS COLLECTED IN THE
VICINITY OF LA GUAIRA, VENEZUELA.

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During the summer of 1900 the authors spent six weeks collecting in the vicinity of La Guaira, Venezuela. The present paper embodies the results of the trip so far as mammals are concerned; the birds, reptiles, and batrachians are treated in the two succeeding articles in this volume.

La Guaira, the seaport town of the Venezuelan capital, Caracas, lies along the foot of a range of lofty mountains. This range breaks away from the eastern chain of the Andes in Colombia, bears northeast until it reaches the coast of the Caribbean Sea near Puerto Cabello, thence hugs the shore in an almost due east direction, and finally ends opposite the island of Trinidad. For the greater part of this latter course the slopes fall precipitately into the sea, the waves of the Caribbean breaking against the foot of the mountains themselves, but in places there is a littoral strip or terrace of no great width.

The mountains immediately behind La Guaira reach a height of 8,000 feet, but from this point fall away gradually as one proceeds to the eastward. There are in the vicinity of La Guaira few or no passes through these mountains. Seven miles to the west there is a rugged gap, high up on the side of which winds the English railroad to Caracas. To the eastward there are no near-by breaks in the chain.

Upon these peaks there is constant precipitation, and frequent streams of fine water furrow ravines in their course to the sea. The channels of these streams are well wooded, and would afford good ground for the collector were they not rendered so difficult by their cramped canyon-like character, their precipitous descent, and their boulder-strewn beds. The few trails that exist avoid these streams and zigzag up the crests of the more practicable slopes.

This northern coast of Venezuela is noted for its heat. The tropical sun beats upon it without mercy, and where water fails the aspect of the country is that of a desert. The littoral plain near La Guaira, where not watered by the *acequias*, or irrigation trenches, which bring the water from high up on the courses of the mountain streams, is parched and dusty, and given over to Agaves, Cacti of various kinds (*Opuntia*, *Cereus*, *Melocactus*), and to a sage-brush-like plant (*Lantana*) of characteristic odor. But wherever water can be obtained the plain assumes a most fertile and flourishing character. Such is the condition at Macuto, three miles east of La Guaira. Still farther to the east, some seven miles from La Guaira, a large stream comes down a fair-sized valley. Before debouching upon the plain, its water is all carried off to the right and left by the *acequias*, and used to operate sugar mills and afterwards to irrigate wide fields of cane.

In what might be called the delta of these two *acequias* lies the little straggling village of Caraballeda, and a short distance up in the mouth of the valley itself are some dozen scattered huts, the group bearing the name of San Julián.

Immediately back of the littoral plain there rises to about 500 feet a first row of red-clay foothills of the same character of vegetation as the plain. Behind these foothills, and springing almost from their tops, rise the mountains proper, and these latter are more or less well wooded, but are too steep and rough to afford collecting ground. On their southern aspect these mountains appear to be wooded only in the folds, while the ridges are covered with coarse grasses.

The western slopes of the San Julián Valley, although precipitous, have been cleared where it was possible for the peons to climb, and have been planted with coffee; but as the coffee plants require shade, fruit trees of several kinds have been set out, so that the hills may still be said to be wooded. About three miles up the valley the virgin forest is encountered.

Owing to several causes of uncertainty the trip could not be decided upon until the last minute, and less than a week was available for preparation. As a consequence there were some deficiencies in the outfit, notably in the number of Schuyler rat killers, the trap which was found to be by far the most useful.

Sailing from New York on June 21, the writers reached La Guaira on the morning of July 1.

Ten days spent in collecting in the vicinity resulted in but slight success, owing partly to a week's delay in getting guns through the custom-house, partly to the apparent scarcity of mammalian life, and partly to the prevailing drought and to poor luck at trapping. Fortunately a portion of the outfit was a cane gun, which escaped the notice of the customs officials, and with which a number of bats and small birds were secured.

On July 6 Captain Robinson made a reconnoissance along the railroad to Caracas in search of better collecting ground, but saw only one place that looked at all promising, a station called Cucurutí, about halfway up the road. He spent a half day here on July 7, but was unable to arrange for food or shelter.

On July 11 he made a second reconnoissance, this time to San Julián, and finding that the ground was favorable and that he could secure a vacant hut, he moved there on July 13 and remained until August 10. Mr. Lyon joined him on July 16, but was compelled by illness to return to La Guaira on July 22. He shortly after moved to Macuto, where he collected until August 10, in the meantime making one excursion for bats to a cave near Peña de Mora, on the La Guaira and Caracas Railroad, 9 miles below Caracas and at an elevation of 2,295 feet.

The return steamer to New York was taken on August 13.

In submitting these notes the writers wish to express their indebtedness to Mr. Gerrit S. Miller, jr., for much advice on technical points; to Dr. J. A. Allen, of New York City, Mr. Witmer Stone, of Philadelphia, and Mr. Outram Bangs, of Boston, for the examination of South American material in their possession; and to Mr. Oldfield Thomas, who compared several specimens with types in the British Museum.

Owing to his connection with the U. S. National Museum and facilities for comparisons and references, the descriptions of new species and the technical parts of this paper are entirely the work of the junior author, while the field notes have been almost exclusively compiled by Captain Robinson.

Where specimens are listed by numbers in the following pages it should be observed that those specimens preceded by the letters "W. R." are in Captain Robinson's collection,¹ while specimens unpreceded by letters belong to the Museum collection. Measurements of specimens are in millimeters unless otherwise stated.

1. DIDELPHIS KARKINOPHAGA Zimmermann.

FLESH-EATING OPOSSUM.

Local name: Rabo Pelado, i. e., skinned, or hairless tail.

1897. *Didelphis karkinophaga* ALLEN and CHAPMAN, Bull. Amer. Mus. Nat. Hist., IX, p. 23.

1900. *Didelphis karkinophaga* BANGS, Proc. New Eng. Zool. Club, I, p. 89.

Represented by five specimens, an adult female and four young. This was the first mammal trapped, and all were taken in rat killers baited with bananas. They are very tenacious of life, none being killed by the traps.

¹ During the course of printing this paper Captain Robinson has generously presented a large number of his specimens to the U. S. National Museum.

The adult and two of the young possess long black hairs scantily overlying the under-fur. One of the young has these black hairs replaced by white, and in another most of the black hairs are so replaced. The tail is eminently prehensile. Measurements of the adult female: Length, 700; tail, 350; hind foot, 50.

2. **CALUROMYS PHILANDER** (Linnaeus).

WOOLLY OPOSSUM.

Local name: Comadreja, a misnomer, as the word is Spanish for weasel.

1888. *Didelphys philander* THOMAS, Cat. Marsupialia and Monotremata, Brit. Mus., p. 337.

1894. *Didelphys (Philander) philander* THOMAS, Ann. Mag. Nat. Hist., 6th ser., XIII, p. 439.

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

One adult female and three young collected by Captain Robinson at San Julián. The tail is uniformly brown in color, as in *C. trinitatis* (Thomas) instead of having the terminal portion white, which is said to be typical of specimens from Guiana. Its skull measures a trifle less than that of the female given by Mr. Thomas in his Catalogue of the Marsupialia. In the following measurements the figures in parentheses are those given by Mr. Thomas. Skull: Basal length, 44 (48); greatest breadth, 28.5 (31); nasals, length, 20 (21.5); maximum breadth, 7 (6.8); minimum breadth, 3.5 (3.3); postorbital processes, tip to tip, 15.5 (16); intertemporal constriction, 9.8 (9.5); palate, length, 25 (28); breadth outside m^3 , 15 (16.5); inside m^3 , 10.5 (11.5); length molars 1-3, 7 (8).

Dimensions of female collected at San Julián, August 1: Length, 517; tail, 307; hind foot, 38.

One is struck at once by the difference in aspect between this and the common opossum; its rounded head, much more rounded than is usually represented in cuts; its large, mild, yellowish-brown eyes, so different from the beady black eyes of the other species; its woolly fur with no coarse hair, and its very long and slender prehensile tail. The young cling to their mothers' wool by their tails, mouths, hands, and feet, and the strength of their grasp is remarkable. The pouch of the female is lined with orange-brown hair and contains six rather prominent mammae.

3. **PERAMYS BREVICAUDATUS** (Erxleben).

SHORT-TAILED PIGMY OPOSSUM.

Local name: Ratón Casiragua.

1888. *Didelphys brevicaudata* THOMAS, Cat. Marsupialia and Monotremata, Brit. Mus., p. 356.

Only one specimen of this interesting little animal was secured, a young female trapped at San Julián on August 7. It was taken in a thicket of vines near a stream, in a cyclone trap baited with rolled oats. Its tail is not prehensile. The specimen was identified by Mr. Oldfield Thomas. It measures as follows: Length, 144; tail, 55; hind foot, 17.

4. CABASSOUS LUGUBRIS (Gray).

NAKED-TAILED ARMADILLO.

Local name: Cuchicamo.

1873. *Ziphila lugubris* GRAY, Hand-List of the Edentate, Thick-skinned, and Ruminant Mammals in the British Museum, p. 23.
 1899. *Tatoua (Ziphila) lugubris* MILLER, Proc. Biol. Soc. Wash., XIII, p. 6.
 1900. *Cabassous hispidus* BANGS, Proc. New Eng. Zool. Club, I, p. 89.

One specimen, a young male, was obtained by Captain Robinson at San Julián on July 11. Its measurements were: Length, 498; tail, 192; hind foot, 73.

It was kept alive until the following day. When put down near water it waded in and drank freely by rapidly protruding and retracting its slender tongue. This was 8 mm. wide at the widest point, and could be extended 60 mm. beyond the tip of the nose. There were fleshy filaments in the nostrils pointing to the front, and probably serving the purpose of the hairs in the nostrils of other animals. Its gait was very awkward; it stepped on the tips of the large claws of its forefeet and turned in its hind feet with the waddle of a muskrat. Its testes were abdominal. Its penis was recurved and turned to the left, so that in urinating a fine stream was ejected backward between its hind legs and to the left of its tail. This is probably a result of its burrowing habits. Its excrements were rounded and very hard, consisting apparently of earthy and gritty matter taken in along with its food. It made no attempt to roll up when molested, but if grasped around the middle would press forcibly against one's fingers with its heavy foreclaws.

5. TAYASSU TAJACU (Linnæus).

BRAZILIAN COLLARED PECCARY.

Local name: Bâquira.

1889. *Dicotyles tajassu* COPE, Amer. Naturalist, XXIII, pp. 146-147.
 1897. *Dicotyles tajacu* ALLEN and CHAPMAN, Bull. Amer. Mus. Nat. Hist., IX, p. 22.

Represented by one living specimen purchased in the market at La Guaira and now in the National Zoological Park, Washington, D. C. It may be *T. torvus* Bangs,¹ but this can not be determined without an examination of its skull. At San Julián Captain Robinson saw the hides of four that had been killed the previous year by the dogs of one of the natives. Some years ago small bands of six or eight came frequently to the clearings, but now they are not so abundant.

¹Proc. Biol. Soc. Wash., XII, 1898, p. 164.

6. PROECHIMYS GUAIRÆ Thomas.

LA GUAIRA SPINY RAT.

1901. *Proechimys guairæ* THOMAS, Proc. Biol. Soc. Wash., XIV, p. 27.

Mr. Oldfield Thomas kindly described this rat from specimens submitted to him. In his description he says that it is closely related to *Proechimys minceæ* Allen, from the Santa Marta region of Colombia. As he had no specimens from that locality with which to make the actual comparison, the following comparison made with topotypes of *P. minceæ* in the American Museum of Natural History will be of interest in proving the distinctness of the Venezuelan species.

Proechimys minceæ is much brighter in coloration throughout, the bright ochraceous color of the hairs is retained all over the upper parts, sides, legs, and cheeks. In *P. guairæ* the back alone is a rather dull ochraceous which bleaches out along the sides, legs, and cheeks so that viewed from the side *P. guairæ* is clay color instead of the ochraceous seen in *P. minceæ*. The tail of *P. guairæ* is slightly lighter above, has slightly longer hairs, a few of which are whitish in color, while the hairs on the dorsal surface of the tail in *P. minceæ* are invariably dark. The skulls are quite similar, but in *P. guairæ* the anterior palatine foramina are much wider than they are in *P. minceæ*, and the outer edges more concave and scooped out. The condyloid process of the mandible in *P. guairæ* is wider by from 1 to 2 millimeters than it is in *P. minceæ*, and the distance between the coronoid process and the condyle is greater than the corresponding distance in the Santa Marta animal.

Six were taken around the edges of a small clearing about two miles up the ravine east of La Guaira. All were caught in rat-killers baited with bananas and set under bowlders on the precipitous hill-sides. Three were taken in a similar locality at San Julián. An adult female taken at San Julián on July 17 had 6 mammae, 2 inguinal and 4 latero-pectoral. These last 4 are readily overlooked, as they are not at all on the under surface of the animal, but well up on the flanks among the coarse hair of the upper parts. The skin of these rats is of extreme tenderness, especially around the root of the tail and the back of the neck, tearing at the slightest touch.

Measurements.

No.	Locality.	Date.	Sex.	Length.	Tail.	Foot.
WR 1476	La Guaira	July 8	Male	455	203	52
¹ 102731	.....do .....	.....do .....	.....do	430	190	48
WR 1484	.....do	July 9	Female	387	180	47
102732	.....do	July 11	Male	209	No tail.	48
102733	.....do	July 12	Female	361	148	45
² 102734	.....do	July 13	Male	-----		
WR 1509	San Julián.....	July 17	Female	435	210	50
WR 1516	.....do .....	.....do	Male	450	195	51
WR 1633	.....do	Aug. 4	Young male	351	170	46

¹Type.²Presented to British Museum.

7. COELOGENYS PACA (Linnæus).

SPOTTED CAVY.

*Local name: Lapa.*1893. *Coelogenys paca* ALLEN and CHAPMAN, Bull. Amer. Mus. Nat. Hist., V, p. 228.1900. *Coelogenys paca* BANGS, Proc. New Eng. Zoöl. Club, I, p. 99.

Two specimens badly mutilated by dogs and machetes were secured from the natives at San Julián. They were adult males. These are thickset animals of the general proportions of a guinea pig and extremely heavy for their size. Their eyes are nearer the frontal plane than usually represented in figures. The tail is a mere stub with a callous tip. The skin is composed of several layers. The outer, which is brown on the upper parts and white beneath, is of extreme tenderness and tears even under the edge of a keen knife. The under layer is thick and fibrous and cuts like wet surgeon's cotton. It clings so tightly to the flesh that it must be dissected free. Any attempt to remove the hide by pulling results in splits in the tender outer skin, showing the white fibrous layer beneath.

On each side of the anus there is a large oval gland protruding farther to the rear than the tail and resembling a testis. These glands measure 30 by 20 mm. Horizontally across the middle runs a cleft, and if the gland be pressed at the top and bottom, it opens along this cleft and becomes everted like two thick, protruding lips, rolling back and revealing a somewhat nodular surface.

The sexual organs are peculiar. The testes are abdominal. The penis has on either side of the dorsum of the glans a corneous plate, hinged on the inner edge and with strong hooked thorns on the free edge. The fore part of the organ is thickly beset with recurved spines and terminates in two white, horny, conical tubes or awns, one-half inch long.

The flesh of the lapa is more highly esteemed by the natives than that of any other game, and the animals readily bring from \$2 to \$3 each in the markets.

They were formerly abundant in the forests at San Julián, and are still fairly common. At a small village 10 miles farther to the east there are two brothers who had killed over 60 lapas in the preceding twelve months.

As might be inferred from the character of the feet and hair and position of the eyes, the lapa takes freely to water when pursued and dives and swims beneath the surface with ease. They often squat with only their nostrils and eyes above the water.

Measurements.

No.	Locality.	Date.	Sex.	Length.	Tail.	Foot.
WR 1604	San Julián....	Aug. 1	Male	665	26	110
WR 1659	.....do.....	Aug. 8	.....do.....	633	22	116

8. HETEROMYS MELANOLEUCUS Gray.

WHITE AND BLACK POUCHED RAT.

Local name: Mochilero, i. e., one who carries a "mochila," or knapsack.

1868. *Heteromys melanoleucus* GRAY, Proc. Zool. Soc. London, p. 204.

1900. *Heteromys melanoleucus* BANGS, Proc. New Eng. Zool. Club, I, p. 98.

Three (one adult and two young) were taken at San Julián and another immature specimen at Macuto. Mr. Oldfield Thomas says of these that they are essentially topotypes. They were taken among vines and underbrush, not far from open spots covered with coarse grass. Their pouches are lined scantily with short, whitish hairs, and will contain almost a teaspoonful. It is worthy of note that a portion of the contents of the pouches of the Macuto specimen and of one of the San Julián specimens consisted of fragments of a shed skin of a snake.

Measurements of the adult female taken at San Julián August 7: Length, 282; tail, 156; hind foot, 33.

9. SIGMODON SANCTÆMARTÆ Bangs.

SANTA MARTA COTTON RAT.

1898. *Sigmodon sanctamartæ* BANGS, Proc. Biol. Soc. Wash., XII, pp. 189-190.

1900. *Sigmodon sanctamartæ* BANGS, Proc. New Eng. Zool. Club, I, p. 98.

Only one specimen, an adult male, trapped at San Julián on July 29. It was taken in a rat-killer baited with corn and set under some loose stones on the edge of a small cleared patch. Persistent trapping in the same locality for some days thereafter produced no result. Measurements: Length, 288; tail, 127; hind foot, 35.

10. ORYZOMYS MEDIUS, new species.

LA GUAIRA RICE MOUSE.

Type.—Young adult male, skin and skull, No. 105405, U. S. N. M. From San Julián, 8 miles east of La Guaira, Venezuela, August 8, 1900.

Characters.—Most nearly related to *Oryzomys mollipilosus* Allen and *O. magdalinae* Allen, both from the Santa Marta district of Colombia. In external size and in coloration of the skin it most nearly resembles *O. magdalinae*, but in size and shape of skull it agrees more closely with *O. mollipilosus*.

Pelage.—Soft and velvety, hairs on the back about 9 or 10 millimeters long; about half that length or a little less on the under parts.

Color.—Type: The upper parts an indefinite mixture of raw sienna and a deep blackish brown, the latter predominating on the median

dorsal area. The raw sienna is more extensive on the lateral dorsal regions and on the sides; as it approaches the belly it bleaches out to buff in color. Upper surfaces of the legs grayish. Dorsal surface of feet covered with a few short whitish hairs. Entire under parts, including region about mouth and under surfaces of legs, light gray. Fur everywhere slate color at base. Tail brownish throughout, darker above and at the tip, lighter beneath; clothed with a few fine short dark hairs about three to a scale, and in length equal to about a scale's length and a half. Ears brownish, clothed inside and out with a few short fine dark hairs, more numerous and darker externally.

An old adult nursing female has a greater predominance of the raw sienna. This color is brighter than in the type and approaches tawny ochraceous. The hairs of the under parts are much worn and almost slate gray.

Measurements.—Type: Total length, 262; tail, 138; hind foot, 31; ear from meatus (measured on the dry skin), 17. Average of four specimens, length, 260; tail, 134; hind foot, 31.

Skull.—Intermediate in size between that of *Oryzomys mollipilosus* and *O. magdalinae*, but similar in shape to that of former. The interorbital region is narrowed and the temporal beading well developed, as in *O. mollipilosus*, but the brain case is broader behind and the upper tooth row longer by half the last molar. Palate wider between the molars. Comparing the skull of *Oryzomys medius* with that of *O. magdalinae* it is seen to be narrower interorbitally, the beading more convergent, so that if prolonged forward the lines would meet at the posterior end of the nasals. In *O. magdalinae* they would meet at middle of nasals. The brain case of *O. medius* is more expanded, the rostrum shorter. The upper tooth rows are of the same length in each, but the teeth are wider in *O. medius* than in *O. magdalinae*.

Measurements of the type skull: Total length, 30.4; basal length, 25; zygomatic width, 14.2; mastoid width, 11; least interorbital width, 5; length of nasals, 12; palatal length, 6.4; length of palatal foramina, 4; length of upper tooth row, 4.6; greatest length of lower jaw, 17.6; depth of lower jaw at condyle, 7.2; length of lower tooth row, 5.

Oryzomys medius is based on four specimens, a fully adult female and three young adult males, measurements of which are given below. As already mentioned, it is intermediate between and at the same time entirely distinct from *O. mollipilosus* and *O. magdalinae*. The color of the old female is almost precisely the same as that of *O. magdalinae*, but *O. mollipilosus* is a lighter colored animal. In the structure of the skull, however, *O. medius* and *O. mollipilosus* are remarkably alike.

Three specimens were taken at San Julián under some vines and stones around a dead stump on the edge of a coffee plantation. They were captured in cyclone traps baited with rolled oats. A fourth specimen was taken at Macuto.

Measurements.

No.	Locality.	Date.	Sex.	Length.	Tail.	Foot.
WR 1648	San Julián..	Aug. 7	Male ...	246	128	30
WR 1654	.....do.....	Aug. 8	....do....	262	130	32
102735	Macuto.....	Aug. 5	Female..	271	140	31
1105405	San Julián..	Aug. 8	Male ...	262	138	31

¹Type.

11. MUS NORVEGICUS Erxleben.

COMMON BROWN RAT.

Common at Macuto and at La Guaira, where they were found around the sewer openings along the beach and in the houses of the town. Two specimens from La Guaira; one from Macuto.

12. MUS MUSCULUS Linnæus.

HOUSE MOUSE.

Abundant. They played around the hotel floor at La Guaira in broad daylight. Several were trapped at San Julián at a considerable distance from any hut. Two specimens from La Guaira; one from San Julián.

13. SCIURUS GRISEOGENA (Gray).

GRAY-CHEEKED SQUIRREL.

Local name: Ardita.

1867. *Macroceus griseogena* GRAY, Ann. Mag. Nat. Hist. 3d ser., XX, p. 429.

Mr. Thomas says of specimens submitted to him: "The squirrel is very typical of *S. griseogena* Gray, the specimen, No. 102721, being more exactly like the type than any others of the large numbers we have here [in the British Museum]."

As this species is imperfectly known, the following description will not be out of place:

Color.—Entire upper surface of head, body, hind legs, and base of tail, and sides of body a fine grizzle of dull orange-buff and black. Bases of hairs and underfur slate color; rest of hair black to and including the tip, except two, or sometimes only one, ring about $1\frac{1}{2}$ mm. wide of dull orange-buff. A few hairs are black throughout. In some specimens the black hairs are quite abundant and the orange-buff rings reduced to very narrow bands, so that the back appears darker than in the average specimen. Under parts of body and legs, orange-rufous; upper surface of forelegs, fore and hind feet, a dull hazel or cinnamon-rufous; base of tail above and below colored as the back; the tip black. The intermediate portion above varies in individuals from bright hazel to orange-rufous, and a few specimens have some black intermixed. Outer edge of under surface of tail about

10 mm. in width, the same color as upper surface; that is, hazel or orange-rufous. This is followed by a narrow band almost black in color. The central portion of the under surface of the tail is a mixture of blackish and dull orange-buff, the latter color predominating.

Skull.—Premolars $\frac{1}{2}$, braincase somewhat elongated; highest point of skull just posterior to line of postorbital processes. Audital bullæ rather small. The skulls show little individual variation, and three adults average as follows: Maximum length, 50.4; basal length, 43.3; maximum width, 29.8; interorbital constriction, 16.3; length of nasals, median line, 15.7; length of upper molar series, 9.

Sciurus griseogena very closely resembles *Sciurus astuans hoffmanni* Peters. The general appearance of the dorsal surface of the body and limbs is more olivaceous, due to the more buffy color of the subterminal bands of the hairs. The under parts are much brighter in color, being orange-rufous instead of tawny-ochraceous or dull ferruginous as in *hoffmanni*. The coloration of the tail in *griseogena* is much redder than that of *hoffmanni* and lacks the conspicuous admixture of black seen in the Central American squirrel, the terminal reddish bands being much wider and the subterminal black bands narrower than the corresponding ones found in *hoffmanni*. The skulls resemble one another very closely and present no differences except that the premolars in *griseogena* are larger than they are in *hoffmanni*. It apparently needs no comparison with the bright colored, white-bellied squirrels of the *variabilis* type that have been collected in the Santa Marta region of Colombia.

These squirrels were abundant at San Julián and were also found at La Guaira and at Macuto. In all 27 specimens were secured. At San Julián the majority were taken in the coffee plantations where they resorted to feed on the sweet pulp in the seed pods of the various species of Guamas, one of the fruit trees planted to shade the coffee. Others were shot as they fed on agnacates, on mangoes, and on bananas. The natives stated that they do much damage to green corn.

At San Julián in the latter part of July and first of August at least a dozen were seen daily. They were rutting at this season and the males were pursuing the females. On July 24 five males were shot in a few minutes, all after the same female. At these times they bark, but the sound is low and guttural. There was not heard any chirring sound nor the shrill sneezing, characteristic of our red squirrel. They resemble this species in the readiness with which they descend to the ground and take refuge in holes in the rocks instead of hiding among the branches.

Measurements.

No.	Sex.	Length.	Tail.	Foot.	Remarks.
WR 1492	Y o u n g male.	345	170	50	
WR 1499	Male	430	208	52	
WR 1501	Female	390	177	50	Mammae, 6.
WR 1517	Male	400	184	53	
WR 1528	Female	383	180	51	do.
WR 1529	Male	393	192	52	
WR 1546	Female	411	210	53	do.
WR 1547	.....do	388	187	50	do.
WR 1548	.....do	411	198	51	do.
WR 1555	Male	400	188	50	
WR 1556	Y o u n g male.	383	194	54	
WR 1557	Male	396	195	51	
WR 1558	.....do	406	192	54	
WR 1559	.....do	397	190	54	
WR 1564	Female	393	197	53	do.
WR 1565	Y o u n g male.	367	172	52	
WR 1596	Male	412	197	52	
WR 1630	.....do	386	182	50	
WR 1631	.....do	408	194	52	
102718	.....do	382	175	51	
102719	.....do	390	186	49	
102720	Female	396	199	51	
102721	Male . . . . .	.....	.....	.....	Presented to British Museum.
102722	Female	409	190	51	
102723	Young fe- male.	376	205	49	
102724	Female . . . . .	.....	.....	.....	do.
102725	.....do	395	195	49	

14. CANIS CANCRIVORUS Desmarest.

CRAB-EATING DOG.

Local name: Zorro Perro, i. e. Dog Fox, to distinguish it from other widely different animals to which the name Zorro, Fox, is applied.

1820. *Canis cancrivorus* DESMAREST, Mammalogie, p. 199.

1898. *Urocyon aquilus* BANGS, Proc. Biol. Soc. Wash., XII, pp. 93-94.

1900. *Urocyon aquilus* BANGS, Proc. New Eng. Zool. Club, I, p. 109.

In the hut of a native at San Julián there were two small fox cubs that had been caught some time in June in a cane field as the cane was being cut. They were dusky colored like the cubs of our gray fox. One died about July 20. and the other had become very tame when he was killed for catching a newly hatched chicken. On July 31 a half-grown cub was brought in by some boys whose dogs had caught and killed it. On August 3 the same boys brought in an adult male and on August 7 another half-grown cub.

The cubs are very like our gray fox of the same age, but the likeness disappears in the adult, which, although of about the same size, has a much less bushy tail, is more tawny about the flanks, and is not so grizzled.

The adult measured: Length, 940; tail, 290; hind foot, 145; height at shoulder, 400.

There is some variation in the sizes of the skull and teeth of the crab-eating dogs along the northern coast of South America, as is seen by the following table:

Measurements.

Locality.	Basal length.	Zygomatic breadth.	Mastoid breadth.	Breadth across post-orbital processes.	Breadth of palate at middle of last molar.	Length of palate.	Maximum length of single half of mandible.	Maximum length of Pm ⁴ .	Maximum length of M ¹ .	Maximum breadth of M ¹ at middle.
Santa Marta, Colombia ¹	123	64	12.8	36.8	19	61	94	14	9.8	11.6
do ²	74.6	48	42	22.8	63.6	104	12.2	9	10	
San Julián, Venezuela	123	76	45	43	20.2	65	107	13.2	10.4	12.2
Maturín, Venezuela	122	74	45.5	37.5	21.8	65	105	13.2	9.4	10.4
British Guiana	74	.....	.....	36	21	65	101	11.2	9.8	12.2

¹ Bangs's collection, No. 8002.

² Type of *Urocyon aquilus* Bangs, Bangs's collection, No. 8001.

Mr. Bangs's specimens from Santa Marta have a slightly grayer color and the hind feet are rather smaller. The material is too limited to form definite conclusions on the local forms of this dog.

15. PUTORIUS AFFINIS (Gray).

SOUTH AMERICAN WEASEL.

Local name: Hurón, the Spanish for ferret.

1874. *Mustela affinis* GRAY, Ann. and Mag. Nat. Hist. 4th ser., XIV, p. 375.

1896. *Putorius affinis* MERRIAM, N. A. Fauna, No. 11, p. 31.

A young male was shot at San Julián as it ran over some bowlders in a ravine. Its eyes shone with the same greenish light as do the eyes of our common weasel, and it emitted the same strong odor.

The specimen, identified by Mr. Oldfield Thomas, measures: Length, 431; tail, 168; hind foot, 51.

16. DESMODUS ROTUNDUS (Geoffroy).

VAMPIRE, OR BLOOD-SUCKING BAT.

1878. *Desmodus rufus* DOBSON, Cat. Chiropt. Brit. Mus., p. 547.

1900. *Desmodus rufus* J. A. ALLEN, Bull. Amer. Mus. Nat. Hist., XIII, p. 87.

1900. *Desmodus rotundus* THOMAS, Ann. Mus. Civ. Stor. Nat. Genoa, 2d ser., XX, p. 2.

In the cave at Peña de Mora one specimen of this interesting bat was found in a mummified condition. It gave the following measurements: Forearm, 53; longest finger, 88; thumb with claw, 17; tibia, 23; foot, 14.

At San Julián the donkeys were bitten almost nightly by bats, but although many attempts were made to secure specimens, and rewards were offered for them, none were obtained. The donkeys were usually

bitten on the withers or just along the base of the mane, and on several occasions the blood had flowed from the wound and trickled down the forelegs as far as the knee. In almost every shed or stable there was some contrivance to frighten away the bats. Usually pieces of tin or the wings of a black vulture stuck into a fruit of a pawpaw were suspended from the roof, so as to swing just above the backs of the animals.

17. *ARTIBEUS PLANIROSTRIS* (Spix).

LESSER ARTIBEUS.

1878. *Artibeus planirostris* DOBSON, Cat. Chiropt. Brit. Mus., p. 515.

1897. *Artibeus planirostris* ALLEN and CHAPMAN, Bull. Amer. Mus. Nat. Hist., IX, p. 15.

1900. *Uroderma planirostris* BANGS, Proc. New Eng. Zool. Club, I, p. 101.

While this bat is smaller than the one described under the same name by Dobson, it is the one usually called *A. planirostris*, and shows no tangible differences from Brazilian examples in the Philadelphia Academy of Natural Sciences.

Three specimens were obtained at Macuto. At first sight they resemble immature specimens of the large *A. palmarum*. They, along with a couple of the larger species, were obtained by swishing the air with poles in a garden at night, at the same time attracting them by making with the tongue a clicking noise in imitation of their cry. They are preserved in alcohol and give the following measurements:

Measurements.

No.	Sex.	Length.	Forearm.	Longest finger.	Tibia.	Foot.
102894	Male.....	75	60	117	22	14
102895	Female...	73	59	121	22	15
102896	.....do....	70	57.4	120	21	16

18. *ARTIBEUS PALMARUM* Allen and Chapman.

PALM ARTIBEUS.

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

1900. *Artibeus palmarum* J. A. ALLEN, Bull. Amer. Mus. Nat. Hist., XIII, p. 89.

Represented by 66 specimens—36 skins and 30 alcoholics.

At early dawn on July 3 a number of these large bats were seen to fly into a cocoa palm near La Guaira. When the day became sufficiently bright to see clearly they were discovered hanging from the midribs of the leaves, and six were secured. They were afterwards found abundantly in the trees in the streets and park at Macuto. They hung in clusters of from one to a dozen or more. Mr. Lyon secured 22 one morning, of which 10 were killed at one shot. Two were shot at San Julián. They evidently roost by sexes. They were often found

in the dark recesses between the trunk of the cocoa palms and the pendent clusters of nuts, but were found most frequently in dense shade trees.

Their average over 21 inches in extent, and as their wings are broad they make a striking appearance when flying. When in flight, the white tips of their wings are conspicuous, although these are hardly noticeable in the dead specimens. Their eyes are prominent and light brown. There are two mammae.

Nearly all of the females obtained were either nursing or pregnant. A female taken at La Guaira on August 11 contained a nearly mature fœtus 65 mm. in length and 248 in extent. Its body, including its ears and a portion of its wings, was covered with a very fine membrane which made it appear hairless, but when this membrane dried it could be brushed away, showing the short hair beneath.

Measurements.

No.	Sex.	Length.	Fore-arm.	Longest finger.	Tibia.	Foot.
102866	Female.....	83	69	150	25	16
102867	Male	89	65	140	25	18
102868	Female.....	88	68	147	26	19
102869	.....do	93	68	144	25	17
102870	.....do	86	71	150	27	18
102871	.....do	88	71	148	25	16
102872	.....do	87	65	138	24	16
102873	Male	83	68	142	24	17
102874	Female.....	87	67	147	25	16
102875	Male	92	68	146	25	18
102876	.....do	86	70	148	26	17
102877	Female.....	96	70	145	26	18
102879	.....do	81	68	139	25	17
102880	.....do	80	68	141	25	18
102881	.....do	91	70	147	25	16
102882	.....do	90	69	147	25	18
102883	.....do	87	71	148	26	17
102885	.....do	90	71	150	27	18
102886	.....do	83	70	147	26	18
102892	Male	83	69	145	25	17

19. VAMPYROPS HELLERI Peters.

HELLER'S STRIPED-BACKED BAT.

1878. *Vampyrops helleri* DOBSON, Cat. Chiropt. Brit. Mus., p. 524.

This species has usually been confused with *V. lineatus*, but the distinctness of the two can no longer be questioned. The present specimens agree perfectly with Dr. Peter's original description. They are much lighter in color than *V. lineatus*, and have the markings much more distinct. It is much smaller in every way, and both skins and skulls can be thus distinguished at a glance. The difference in size, however, is not so great as it is between *V. vittatus* and *V. lineatus*.

The following are the measurements of the two species, No. 8180, Bangs's collection, and No. 1543, Robinson's collection, the measurements in parentheses being those of *helleri*. Forearm, 43 (37); long-

est finger, 100 (87); tibia, 16 (13); foot, 13 (11); greatest length of skull, 27 (23); greatest width of skull, 16.2 (14).

Four females were secured at San Julián. They were found hanging together from the underside of some large plantain-like leaves in a dense and gloomy thicket at the foot of a cliff. When flushed they flew but a short distance, and on being started again they returned at once to their first roosting place. All contained fetuses almost ready for exclusion.

The interfemoral membrane extends about 6 mm. beyond the end of the spine. The mammae are two. The tragus, lobe, base and rims of the ears, and parts of the nose leaf are lemon yellow. This color fades rapidly in the dried skins.

Measurements.

No.	Sex.	Length.	Forearm.	Longest finger.	Tibia.	Foot.
WR 1541	Female...	63	38	82	13.6	10.6
WR 1542	.....do.....	61	35	85	13	10
WR 1543	.....do.....	63	37	87	13	11
WR 1544	.....do.....	61	35	87	14	10

20. *DERMANURA QUADRIVITTATUM* (Peters).

FOUR-STRIPED DERMANURE.

1878. *Artibeus quadrivittatus* DOBSON, Cat. Chiropt. Brit. Mus., p. 521.

1900. *Dermanura quadrivittata* BANGS, Proc. New Eng. Zool. Club I, p. 101.

Two nursing females and a young male of this species were caught under a loose scale of bark on a mango tree at San Julián on July 27. On July 31 two more were obtained in a clump of banana plants—one a nursing female, the other on the point of giving birth; and on August 3 three more were shot in a dense thicket of coffee plants—one a nursing female, one pregnant, and the third a male.

One specimen, a male, preserved in alcohol was obtained at Macuto by swishing the air with sticks.

In this species the rims of the ears, the tragus, and lobe are light yellowish, but not so highly colored as in the preceding species.

Measurements.

Number.	Sex.	Length.	Forearm.	Longest finger.	Tibia.	Foot.
WR 1585	Female.....	61	40	84	16	10
WR 1586	Young male.	54	37	71	13	10
WR 1587	Female.....	60	40	84	14.2	9.6
WR 1601	.....do.....	63	38.4	85	15	10
WR 1602	.....do.....	60	39	87	14	10
WR 1617	.....do.....	61	41	86	15	10
WR 1618	.....do.....	61	38	84	15	9.4
WR 1619	Male.....	59	-----	-----	15	10
102897	.....do.....	54	40	87	14	9.1

21. GLOSSOPHAGA LONGIROSTRIS Miller.

MILLER'S GLOSSOPHAGA.

1898. *Glossophaga longirostris* MILLER, Proc. Acad. Nat. Sci. Phil. 1898, p. 330.1900. *Glossophaga longirostris* J. A. ALLEN, Bull. Amer. Mus. Nat. Hist., XIII, p. 89.

Represented by 48 specimens—30 skins and 18 alcoholics.

Found abundantly at La Guaira, Macuto, San Julián, and at Peña de Mora, and in a great variety of situations—in hollow trees, in small caves and crevices in rocks, in holes under bowlders, under the drooping roots dangling from an overhanging bank, in unoccupied huts, in the attics of houses, etc. Nearly all of the females taken were either nursing or else far advanced in pregnancy. A female taken at La Guaira on July 4 measured 67 mm. in length and 292 in extent, and was carrying a young male whose length was 53 and extent 215. The tongue can be extended 34 mm. beyond the tip of the nose. The interfemoral membrane extends 8 mm. beyond the tip of the tail. The mammae are two.

Measurements.

Number.	Sex.	Length.	Tail.	Forearm.	Longest finger.	Tibia.	Foot.	Greatest length of skull.
WR 1458	Female ...	67	7	36.6	78	15	11.4	23
WR 1470	Male	70	11	37	81	16	12	23.6
WR 1471	.....do	70	9	37	77	16	11.4	22.6
WR 1472	.....do	69	8	37	78	15.4	10.4	23
WR 1473	.....do	74	7	35.2	79	15	11	23.4
WR 1474	.....do	70	9	36	77	16	10.4	23
WR 1533	Female ...	69	7	36	78	15	11	23
WR 1554	Male	71	8	36	76	15	11	23
WR 1563	Female ...	71	8	36	80	15	10	23.2
WR 1610	Male	70	11	36	77	14	11	23
WR 1611	.....do	68	8	37	78	15	11	23
WR 1614	.....do	68	8	-----	77	15	11	-----
WR 1658	Female ...	74	10	38	78	16	11.6	23.4

22. GLOSSOPHAGA SORICINA (Pallas).

SHREW-LIKE GLOSSOPHAGA.

1897. *Glossophaga soricina*, ALLEN and CHAPMAN, Bull. Amer. Mus. Nat. Hist., IX, p. 15.1898. *Glossophaga soricina*, J. A. ALLEN, Bull. Amer. Mus. Nat. Hist., XIII, p. 89.

Represented by 4 skins collected at San Julián, where they were found associating with the much commoner species, *G. longirostris*. The habits of the two species are evidently the same.

Measurements.

Number.	Sex.	Length.	Tail.	Forearm.	Longest finger.	Tibia.	Foot.	Greatest length of skull.	Remarks.
WR 1577	Female ...	63	7	33	70	13	9	20.6	
WR 1612	Male	62	8	33	70	13.4	9.2	20.6	
WR 1613	Female ...	63	8	33	65	14	10	21	
WR 1629	.....do	63	9	33	68	13	10	21	Pregnant.

23. HEMIDERMA BREVICAUDUM (Wied).

SHORT-TAILED HEMIDERMA.

1878. *Carollia brevicauda* Dobson, Cat. Chiropt. Brit. Mus., p. 493.

1897. *Hemiderma brevicaudum* ALLEN and CHAPMAN, Bull. Amer. Mus. Nat. Hist., IX, p. 15.

1900. *Hemiderma brevicauda* J. A. ALLEN, Bull. Amer. Mus. Nat. Hist., XIII, p. 90.

Two males were secured at San Julián. The first was caught in a net as it darted out from under an overhanging rock where it was in company with several others of the same species, and with a number of the common *Glossophaga*. The second was shot a few days later in a small cave where it hung among a cluster of the *Glossophagas*.

Measurements.

Number.	Sex.	Length.	Tail.	Forearm.	Longest finger.	Tibia.	Foot.
WR 1609	Male....	77	14	44	101	19	13
WR 1653	....do....	73	11	43	95	18	13

24. PHYLLOSTOMA HASTATUM (Pallas).

SPEAR-NOSED BAT.

1878. *Phyllostoma hastatum* Dobson, Cat. Chiropt. Brit. Mus., p. 484.

1897. *Phyllostoma hastatum* ALLEN and CHAPMAN, Bull. Amer. Mus. Nat. Hist., IX, p. 15.

1900. *Phyllostoma hastatum* J. A. ALLEN, Bull. Amer. Mus. Nat. Hist., XIII, p. 90.

Represented by 20 specimens. Most of these bats were purchased from a native boy who found them in a hollow tree at Macuto. A bunch of smoking palm leaves was applied to the opening in the tree and as the bats flew out they were struck down with sticks or caught in a butterfly net. One specimen was struck down with a cane one evening in the city of La Guaira, and on August 3 one was shot at San Julián as it hung from a branch in the edge of the forest. Some individuals of this species were seen roosting in an unused house at Macuto.

Like the *Molossi* this bat appears in two color phases, a dark one, between black and clove brown, which is characteristic of all the young, and a red phase, between tawny and chestnut. No. 1620, Robinson collection, presents a mottled appearance due to an admixture of the two phases.

This is the largest species of bat taken, some specimens exceeding 2 feet in expanse.

Measurements.

No.	Sex.	Length.	Tail.	Fore-arm.	Longest finger.	Tibia.	Foot.	Remarks.
WR 1464	Female...	130	20	81	151	29	20	Black phase; skin.
WR 1465	.....do.....	130	17	81	157	30	20	Red phase; skin.
WR 1466	.....do.....	133	19					do.
WR 1508	Male.....	133	20	79	143	29	20	Black phase; skin.
WR 1620	Female....	124	19	84	163	30	21	Red and black; skin.
102898	.....do.....	138	17	81	158	30	20	Red phase; skin.
102902	.....do.....	122	18	83	160	33	20	do.
102904	.....do.....	125	14	80	163	32	21	Black phase; skin.
102905	Male.....	135	21	85	159	32	20	do.
102906	.....do.....	120	15	88	157	34	20	Black phase; alcoholic.
102907	Female....	118	12	83	158	31	19	Red phase; alcoholic.
102908	Male.....	110	14	82	157	29	19	Black phase; alcoholic.
102911	.....do.....	115	13	81	153	30	21	do.
102912	.....do.....	116	12	85	161	32	19	do.

25. MICRONYCTERIS MEGALOTIS (Gray.)

COMMON LONG-EARED BAT.

1878. *Schizostoma megalotis* Dobson, Cat. Chiropt. Brit. Mus., p. 478.

1900. *Micronycteris megalotis* J. A. ALLEN, Bull. Amer. Mus. Nat. Hist., XIII, p. 90.

On July 3, in the ravine to the east of La Guaira, a native was met who, in answer to questions, stated that he knew where there were some bats in a cave near by. Upon being asked to point out the place, he went to a pile of vine-covered, waterworn boulders 20 feet away and, kneeling down, parted the leaves and revealed a small opening several feet wide and 18 inches high. By lying prone and waiting until the eyes grew accustomed to the faint light it was seen that the opening extended about 4 feet under the boulder and that a small cluster of bats of this species was clinging to the stone above. When disturbed they flew out, but some returned and others lit under overhanging stones near by. Two were shot and two caught in the butterfly net. One female was carrying a large-sized young.

At San Julián they were found in little communities of not over six individuals and in every case were in most insignificant little openings, usually beneath waterworn boulders.

A pair were taken in a similar position at El Valle, island of Margarita, Venezuela, by Captain Robinson on July 12, 1895. The female was well advanced in pregnancy.

All of the females taken at San Julián during the last week of July and first week of August were nursing well-grown young.

Measurements.

No.	Sex.	Length.	Tail.	Fore-arm.	Longest finger.	Tibia.	Foot.	Remarks.
WR 1452	Male.....	62	11	32	62	13	9	Skin.
WR 1463	.....do.....	57	12	34	65	15	9.6	do.
WR 1599	.....do.....	58	12	33	61	14	8	do.
WR 1626	Female....	61	14	34	67	14	10	Nursing one young; skin.
WR 1627	.....do.....	59	13	.....	65	15	9	do.
WR 1628	.....do.....	58	13	.....	65	15	9	do.
WR 1634	.....do.....	58	13	33.6	67	15	10	do.
WR 1635	.....do.....	61	12	34	61	15	9	do.
WR 1657	Male.....	62	12	32	62	14	8.4	
102913	.....do.....	56	11	32	61	15	9	
102915	Female....	54	13	34.6	65	16	9.6	Nursing one young; alcoholic.
102916	Male.....	50	12	33	61	15	10	Alcoholic.

26. LOPHOSTOMA VENEZUELÆ, new species.

VENEZUELAN LOPHOSTOMA.

Type.—Adult female preserved in alcohol, No. 102919, U.S.N.M. From Macuto, Venezuela.

Characters.—Like *Lophostoma brazilense* in size, but resembling *L. amblyotis* in the possession of the low band across the forehead between the ears and the narrow interorbital constriction of the skull. It apparently bears the same relation to *L. amblyotis* that *L. brazilense* bears to *L. bidens*.

Color.—Type; isabella color throughout, but much lighter on the under parts than above. The two males are dark drab, but much lighter on the under parts. One of them, No. 102918, has a few irregular patches of wood brown about the shoulder and top of the head. The hairs in all the specimens are nearly white at the bases. The fur is about 8 mm. long on the back. Above it extends over the humerus and halfway up the forearm and about halfway down the femur. Below it has the same extension, but is scantier.

Membranes.—Entirely naked except for a few short, dark hairs in the angle of the elbow above, and a few long, light scanty ones about the elbow joint beneath. Uropatagium large, coming from entire leg and the long calcar. Membranes blackish brown.

Ears.—Large and wide, united by a low band across forehead. When laid forward they extend 5 mm. beyond tip of muzzle. The outer half is marked with about 15 striations. Tragus long, pointed at the apex, two-toothed about the middle, when laid forward reaching to the middle of the eye. Antitragus a small rounded lobe.

Chin with 10 rounded warts arranged in a semicircle, inside of which are 4 secondary warts. Nose leaf cordate-lanceolate, a row of 2 or 3 small warts arranged vertically in the median line between the nostrils. The tail does not project from the interfemoral membrane.

Cranial measurements of the type.—Greatest length, 21.2; basal length, 17.4; basilar length, 16; median palatal length, 9; breadth of palate at first premolar, 2.4; at second molar, 3.6; zygomatic breadth, 10.4; mastoid breadth, 9.8; greatest breadth of brain case, 8.4; least interorbital breadth, 3.2; breadth of rostrum at premolars, 4.4; depth of cranium from saggital ridge to basi-sphenoid, 8.4; greatest length of mandible, 14; depth of mandible from coronoid process, 6; length of upper tooth row from front of canine, 7.4; greatest width between upper tooth rows from external surfaces of teeth, 6.8; length of lower tooth row from front of canine, 8.4.

Measurements.

	102919, female type.	102918, male adult.	102920, male young adult.
Length:			
Total	65	61	58
Tail	11	10	10
Ear from meatus	25	22	22
Tragus	10	8	8.2
Width, ear	17	17	17
Height of nose leaf from lower edge of upper lip	9	8	10
Greatest width nose leaf	6.2	5	6
Length of—			
Forearm	38	40	39
Thumb	14	12.4	13
Third finger (longest).....	71	74	75
Metacarpal	31	30.6	32
First phalanx	13.6	14	14.4
Second phalanx	15	15.6	16.6
Fourth finger—			
Metacarpal	30	32	33
First phalanx	13.6	14	15
Second phalanx	11	12	13
Fifth finger—			
Metacarpal	32	34	34.4
First phalanx	13	15	15
Second phalanx	12	11.4	12
Tibia	20	20	21
Foot	10	11	11.4
Calcaneum	13	13.6	15

The three specimens were brought in by a boy at Macuto, who said that they were found in a small cave under a pile of rocks.

27. THYROPTERA DISCIFERA (Lichenstein and Peters).

DISC BAT.

1896. *Thyroptera discifera* MILLER, Proc. Biol. Soc. Wash., X, p. 109.

This rare and interesting bat is represented by 10 adults and 7 young. The specimens measure slightly larger than two alcoholics from Nicaragua. With more material from Central America the Venezuelan specimens may be found to represent a larger race. The adults give the following measurements:

Measurements.

No.	Sex.	Length.	Tail.	Fore-arm.	Longest finger.	Tibia.	Foot.	Remarks.
WR 1510	Female...	65	32	35	66	15.4	5	Skin.
WR 1511	do	76	28	35	66	16	5.2	do.
WR 1513	Male.....	76	28	32.6	64	15	5	do.
WR 1515	Female...	80	28	33.2	64	15.2	5	do.
WR 1533	Male.....	74	30	32.4	64	15	5	do.
WR 1535	Female...	71	27	33	62	14	5	do.
102926	do	80	32	35	64	16	5.2	do.
102927	do	70	33	34	64	15	5	do.
102922	Male.....	67	26	34.4	63	15.4	5	Alcoholic.
102923	Female...	72	27	35	67	16	5.4	do.

On July 17, at San Julián, ten of these little bats were brought in by a native, who had caught them with one grasp of his hand, as they clung closely grouped on the under surface of a dead banana leaf. His attention had been attracted to them by their droppings on the ground

beneath. To carry them, he had simply wrapped them up in a piece of the leaf to which they clung, and by the time they were brought in all but one were smothered. This one was placed under an inverted tumbler, to the vertical surface of which it adhered with ease, the vacuum spots under its disks glistening like globules of quicksilver. On July 21 seven more were brought in by a native, who had captured them in the same manner as the first. He stated that two or three had escaped. Of this second lot several were alive and unhurt. Both lots contained males, females, and young. The young, although still nursing and clinging to their mothers, were able to fly with ease.

The sucking disks having largely usurped the clinging functions of the thumb and toes, these latter have dwindled to insignificant proportions, the hind feet being especially weak and partly attached to the interfemoral membrane. The disk at the base of the thumb is much larger than the one at the ankle, being about 3.5 mm. in diameter as compared to 2 mm. in the latter. The surface of these disks appears to be constantly moist, so as insure perfect contact with smooth surfaces, and the bats cling to the under surface of leaves or to the sides of a glass without any effort to use their claws.

Young nursing bats cling to their mother's neck or breast with claws and teeth and are carried about as she flies, even when they almost equal her in size and when their weight makes her flight labored and slow. With this species the sucking disks are of no help in clinging to fur, and the claws are so small and weak as to be almost useless; nevertheless, the young manage to hold on with no risk of falling. The mammae of the female are strap-like, broad and flat, 3 mm. wide by 2 mm. long. Seizing one in his teeth, the young holds on like a bulldog, dangling by the strength of his jaws alone. One of the young that was brought in hung in this way for twenty minutes, and in all that time made no effort to grasp its mother with its claws.

28. MOLOSSUS RUFUS Geoffroy.

RUFUS MOLOSSUS.

1878. *Molossus rufus* DOBSON, Cat. Chiropt. Brit. Mus., p. 112.

1897. *Molossus rufus* ALLEN and CHAPMAN, Bull. Amer. Mus. Nat. Hist., IX, p. 14.

This species is represented by a series of 71 specimens—44 skins and 27 alcoholics—consisting of adults of both sexes, as well as very immature to nearly full-grown young. The very young are almost naked and the surface of their body is smooth and of a bluish-black color. The first coat of hair is invariably black. Among the adults there is considerable variation in color. In the majority it is some form of reddish brown; but six of the adult skins are entirely melanistic. About half of the specimens have a prevailing seal-brown coloration. Four

have a general color of burnt umber or chestnut, and three are dark tawny, mottled with deep brown.

All were obtained from the natives. On the 6th of July there were brought in 26 alive in a sack, and on the following day 39 more. Later, still others were brought in. The adult females were all nursing, although the majority of the young were able to fly. These bats are very rat-like in their actions, running about on a horizontal surface with ease and rapidity. Some that were liberated made no attempt to rise from the floor, but scurried first to an open window and did not spread their wings until they had launched themselves into the air. They were all captured in unused houses, where they stow themselves in the cracks, between the roof and the walls. When poked out they dropped to the floor and crawled about, and did not fly away like other bats, though perfectly able to do so.

They possess a peculiar gland in the throat, lying in front of the larynx. It is rudimentary in the female, but in the male it is about the size and shape of a white bean. It lies transversely under the skin and exudes a whitish, creamy fluid, which has a faint, but characteristic disagreeable odor. This persists in the dried skins, so that the sexes can be separated by the sense of smell.

Bats of this genus could be seen flying rapidly about early in the morning just before sunrise and in the evening just after sundown. Their flight is very rapid, and their pointed tails readily distinguish them from other bats.

Measurements.

No.	Sex.	Length.	Tail.	Forearm.	Longest finger.	Tibia.	Foot.
102737	Female...	118	40	46	86	15	13
102738	Male.....	127	40	48	91	16	12
102741	.....do.....	129	47	46.4	93	19	14.1
102742	Y o u n g						
	male.....	123	42	45	83	16	13
102745	Female...	114	43	45	87	17	12
102746	.....do.....	118	34	46	91	17	12
102747	.....do.....	115	34	45.4	87	16	11.4
102748	.....do.....	120	35	45	86	18	12
102749	Male.....	128	36	46	95	18	13
102750	.....do.....	131	36	48	91	17.4	12
102751	Female...	108	39	45	88	18	12
102752	Male.....	118	42	47	88	17.4	13
102753	.....do.....	120	33	46	91	17	13
102754	Female...	117	35	46	87	17.4	13
102765	.....do.....	124	38	46	89	16	12
102766	.....do.....	122	42	47	89	17	12
102767	Male.....	123	43	46	92	18	12
102768	.....do.....	130	43	46	90	18	12
WR 1475	.....do.....	121	44	.....	.....	.....	.....
WR 1477	Female...	121	41	.....	.....	.....	.....
WR 1478	.....do.....	125	45	.....	.....	.....	.....
WR 1479	Male.....	128	45	.....	.....	.....	.....
WR 1480	Female...	127	44	46	89	17	12
WR 1482	.....do.....	130	45	.....	.....	.....	.....
WR 1483	.....do.....	124	44	.....	.....	.....	.....
WR 1488	Male.....	126	44	.....	.....	.....	.....
WR 1489	Female...	119	40	.....	.....	.....	.....
WR 1490	.....do.....	121	39	.....	.....	.....	.....

29. MOLOSSUS OBSCURUS Geoffroy.

LITTLE MOLOSSUS.

1878. *Molossus obscurus* DOBSON, Cat. Chiropt. Brit. Mus., p. 410.

1897. *Molossus obscurus* ALLEN and CHAPMAN, Bull. Amer. Mus. Nat. Hist., IX, p. 14.

First obtained by Captain Robinson, at San Julián, in the form of a skull taken from the stomach of a bat falcon (*Falco albogularis*, Daudin). Later five others were secured at Macuto. Its habits and flight are identical with those of the larger *M. rufus*.

Measurements.

No.	Sex.	Length.	Tail.	Forearm.	Longest finger.	Tibia.	Foot.	Remarks.
102798	Female	95	32	38	75	12	8	Alcoholic.
102799	.....do	90	30	36	69	12	8	do.
102800	Male	96	31	40	72	13	9	Skin.
102801	Female	87	31	39	73	12	8	do.
102802	Young female ..	76	23	28	45	12	8	do.

30. PEROPTERYX KAPPLERI Peters.

LARGE SAC-WINGED BAT.

1878. *Saccopteryx kappleri* DOBSON, Cat. Chiropt. Brit. Mus., p. 374.

This bat, which has usually been regarded as a mere local variety or an age variation of *P. canina*, is represented by a splendid series of 16 specimens, all taken by Captain Robinson, at San Julián.

The tail is free for 3 mm. on the upper surface of the membrane, which extends for 24 mm. beyond the tip.

The first of these bats was prodded out from a deep crevice that extended horizontally under a large boulder, and was caught in a butterfly net. It was alone. Several weeks later a number were discovered in a small cave formed by a huge rock that rested against a larger vertical one, leaving a tunnel-like opening beneath. This and the following species resemble each other closely in habits and general form, but differ in size and color. Their pointed muzzle and overhanging upper lip, pompadour bang, and protruding eyes, rather large for a bat and much more protuberant than in other genera, give them somewhat the countenance of a King Charles spaniel. The two nipples of the nursing females are long and fusiform. The wing sacs are much larger in the males than in the females, but do not approach in size those of *Saccopteryx leptura*.

Some were found hanging from a horizontal surface, but the majority clung to a more or less vertical wall. They can be told at a glance, as they brace themselves by their widely-spread forearms which, being excessively long, give them a rather "sprangly" appearance. They are easily caught, some even permitting themselves to be picked off by hand, while the *Glossophagus*, which inhabit similar caves, begin to flutter about at the first intrusion and seek to dart by and escape.

Measurements.

No.	Sex.	Length.	Tail.	Forearm.	Longest finger.	Tibia.	Foot.	Length of skull.	Width of skull.	Remarks.
WR 1498	Male	71	15	47	80	18.6	8.6	17	10.5	Skin.
WR 1570	Female	75	14	51	86	21.6	11	18	11	do.
WR 1571	Male	74	14	48	75	20	10	17	10.5	Alcoholic.
WR 1572	Young male.	72	13	47	75	19	10	17.5	11	Skin.
WR 1573	Male	73	14	47	79	19	10	17.5	11	do.
WR 1574	Young male.	72	14	48	82	19	9.2	17	11	do.
WR 1575	do	77	16	.....	84	22	11	17.5	11	do.
WR 1588	Female	80	16	49	85	19.6	10	17	11	do.
WR 1589	Male	79	17	48.5	84	19.4	10	18	11	do.
WR 1590	do	83	18	49	85	19.2	10	17.5	11	do.
WR 1591	Young female	78	15	50	81	20.2	11	17.5	11	do.
WR 1592	Female	80	16	52	86	20	10	18	11	do.
WR 1600	Male	77	15	48	82	19	9.4	17.5	11	do.
WR 1643	Female	80	15	48	86	19.2	9.4	17	11	do.
WR 1644	do	77	15	49	86	19.6	10	17	11	do.
WR 1645	Male	77	14	48	78	20	9.4	.....	.....	Alcoholic.

31. PEROPTERYX CANINA (Wied).

LITTLE SAC-WINGED BAT.

1878. *Saccopteryx canina* DOBSON, Cat. Chiropt. Brit. Mus., p. 373.

1900. *Peropteryx canina* J. A. ALLEN, Bull. Amer. Mus. Nat. Hist., XIII, p. 93.

A short distance below the summit of the first foot hill which walls in the west bank of the ravine east of La Guaira, there runs a small shelf, and in the vertical rock which forms its back there are a few irregular cavities, not large enough to be designated as caves. They are so shallow that the light enters freely, and they do little more than afford a shade from the glare outside. Here was found, on July 9, a small colony of the present species, and twelve were taken. On the following day the spot was revisited, but only four were seen, of which two were captured. These two were females, one containing a fœtus ready for exclusion, the other carrying a large young one clinging about her neck. When disturbed in one cavity they flitted to the adjoining one, returning to the original point when again disturbed, and so on. They take the same sprawling position as the preceding species. In addition to being smaller, they are more reddish than *P. Kappleri*. The interfemoral membrane extends 19 mm. beyond the tip of the tail.

Measurements.

No.	Sex.	Length.	Tail.	Forearm.	Longest finger.	Tibia.	Foot.	Length of skull.	Width of skull.	Remarks.
WR 1485	Male	63	13	41	68	19	8.2	14	8	Skin.
WR 1486	Female	65	14	43	72	18.2	8.2	14	8.5	do.
WR 1487	do	64	13	43	75	17.6	8.6	15	8.5	do.
WR 1491	do	65	14	42	72	18	8.4	14	8.5	do.
102929	do	67	16	44	74	19	9	.....	.....	do.
102930	do	64	15	42	71	18	8	.....	.....	do.
102932	do	60	15	42	73	19	7.4	.....	.....	do.
102934	do	60	15	45	72	19	8	.....	.....	Alcoholic.
102935	do	58	15	43	68	18.4	7.6	.....	.....	do.
102936	Male	50	14	41	69	.....	8	.....	.....	do.
102939	do	56	12	42	70	18.2	8.4	.....	.....	do.

32. SACCOPTERYX LEPTURA (Schreber).

STRIPED SAC-WINGED BAT.

1878. *Saccopteryx leptura* DOBSON, Cat. Chiropt. Brit. Mus., p. 371.

1897. *Saccopteryx leptura* ALLEN and CHAPMAN, Bull. Amer. Mus. Nat. Hist., IX, p. 14.

1900. *Saccopteryx leptura* J. A. ALLEN, Bull. Amer. Mus. Nat. Hist., XIII, p. 94.

Of this species, only three specimens were obtained—a male and two females—all from San Julián. The male was cut down with a pole as it flew about the hut at dusk; a female was secured in the same manner a few days later, and the third was shot in a small cave, where it was in company with *Peropteryx kappleri* and *Glossophaga longirostris*. This species differs greatly in general appearance from the other two species of sac-winged bats; It lacks the pompadour bang, its ears are very differently shaped and proportioned, the wing sacs are differently located, are operated by a larger muscle, are larger, and are very different on the interior. Both sexes have the sacs, but those of the male are much the larger. When opened, the interior is seen to be coarsely rugose and whitish in color. The odor emitted is not very decided.

The two whitish lines on the back are not parallel but wavy, making a double lyre-shaped pattern as they extend out upon the interfemoral membrane.

Both females contained fetuses ready for exclusion.

Measurements.

No.	Sex.	Length.	Tail.	Fore-arm.	Longest finger.	Tibia.	Foot.
WR 1537	Male.....	58	18	39	69	16	6.6
WR 1567	Female...	64	16	42	72	17	7
WR 1642	.....do.....	65	15	40	70	17	7

33. LASIURUS BLOSSEVILLEI (Férussac).

SOUTH AMERICAN RED BAT.

One specimen preserved in alcohol, a nearly adult male. It was brought in by a small boy at Macuto. The specimen, although presenting some differences from topotypes of *L. blossevilliei* from Paraguay, seems not to be separable from it, as the differences are slight and may be due to age. The Venezuelan bat is in every way a slightly smaller animal. The ear is smaller than that of Paraguayan specimens, with smaller tragus, which is straighter and less convex anteriorly. The skull is smaller, with a rather relatively shorter facial portion. The palate is narrower, and also the notch between the incisors in front. Compared with the Mexican red bat, it differs in being somewhat smaller, which may be due to its immaturity, and in having a slightly narrower ear, a noticeably smaller skull, relatively smaller

audital bulke, narrower palate, smaller teeth, and much narrower intermaxillary notch.

Its dimensions are: Length, 82; tail, 44; forearm, 38; longest finger, 75; tibia, 18; and foot, 7.

NOTE.

In addition to the foregoing, Captain Robinson saw evidences or gathered information at San Julián of the occurrence of some twenty-odd other mammals, among them:

1. *Chironectes* sp. (local name "perro de agua," i. e., water dog). The natives described a spotted, or striped, web-footed opossum which they had killed in the stream at San Julián. It was said to be scarce.

2. *Sloth* sp. (local name "pereza"). Described as being tolerably common in the forests and feeding on the leaves of the aruma. In the market at Caracas the hides of two species were seen; one with coarse grayish hair, the other with a peculiar mark in the back consisting of a round spot of orange, rimmed with black and divided longitudinally by a black line.

3. "*Oso hormiguero*," i. e., ant bear. Occasionally met with at San Julián. There was seen in the market at Caracas a small flax-haired hide, said to be the skin of this animal.

4. *Tatus noremeincta* (local names "cupa" and "cachicamo"). Described as being more common than the *Cabassous*. There was seen in a hut at San Julián the dried carapace of one of these animals, which was used as a tobacco box.

5. *Odocoileus* sp. (local name "venado"). Several sets of branching antlers were seen at San Julián. They were said to come from a deer considerably larger than the following.

6. *Mazama* sp. Two were killed at San Julián in July, but both were cut up before they could be secured as specimens. They were quite small, about the size of a goat, but with longer and slenderer legs. Their horns, or "cachos" are mere spikes a couple of inches in length.

7. Tapirs (local name "danta") are occasionally killed at San Julián. A native at that place had a couple of hoofs or nails of a tapir which had been killed near by. The scrapings of these mixed with wine made what he declared to be an infallible remedy against weak heart.

8. *Coendou prehensile*, *Porcupine*. One of these was offered for sale at La Guaira, and the intention was to purchase it for the National Zoölogical Park, but before the sale was effected it gnawed out of its cage and made good its escape.

9. *Dasyprocta* sp. (local name "acurri"). Described as a yellowish brown guinea pig, considerably larger than the domesticated species, but smaller than the lapa, and found in the woods back of San Julián.

10. *Lepus* sp. (local name "conejo"). The natives say that rabbits

are found, but are scarce. On the island of Margarita *Lepus margaritæ* is so plentiful that the animals are split and dried like codfish and brought by the boat load to La Guaira for sale.

11. *Felis*, Jaguar. Local name, "tigre." Several have been killed within the last five years within 10 miles of La Guaira. Many hides were seen in the market at Caracas. The natives say that this is the only Venezuelan beast of prey that will attack man. Like its cousin, the leopard, it has a great fondness for dog's flesh. There was hardly a native at San Julián who at some time in the past had not lost one or more dogs by jaguars.

12. *Felis*, Puma. Local name "leon." Not rare. Many hides were seen in the market at Caracas. The puma does not attack dogs, but is destructive to goats, calves, and pigs. It is described as very cowardly.

13. *Felis* sp. Numerous hides of tiger cats were seen. According to the natives three species of small cats were found at San Julián; the "tigrillo," or "tigre cunaguaro," probably the ocelot; the "zorro oncita," a spotted cat smaller than the preceding, and a third, still smaller, tawny or brownish color, without spots.

14. *Procyon* sp. ? Local name, "zorro lava tu mano," i. e., "fox wash thy hand." Said to be common around San Julián, and described as having a ringed tail, frequenting the vicinity of streams and climbing well.

15. *Conceputus* sp. ? Local name, "mapurito." Common at San Julián, where their unmistakable odor was frequently noticed at night, and where were often seen their excavations, where they had dug out lizard eggs or insects.

16. *Galiotis* sp. ? Local name, "zorro guapán." A hide seen at San Julián indicated an animal of about the size and proportions of an otter. It was chocolate brown, with tawny neck and head.

17. "Mona euchi euchi," a nocturnal monkey of medium size.

18. "Mona tui tui," a very small monkey, usually found in pairs. It attempts to hide like a squirrel, instead of making off as do the other monkeys.

19. "Macaco," a large monkey.

20. "Mona frontina," a white-crowned monkey, which barks like a dog.

21. *Myctes* sp. Local name, "arajuata." At San Julián the roaring of these monkeys was heard on several occasions, but the animals frequented an inaccessible mountain crest, and no specimens could be obtained. Their cry is indescribably wild. It starts with a series of short barks in deep tone, increasing progressively in rapidity, and sounding at a distance like the puffs of a heavy locomotive as it pulls out. Finally it winds up with a prolonged sullen roar of great volume.