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A LIST OF MAMMALS

OBTAINED BY

THADDEUS SURBER,

IN

NORTH AND SOUTH CAROLINA,
GEORGIA AND FLORIDA,

BY

D. G. ELLIOT, F.R.S.E.

Curator of Department.



CHICAGO, U. S. A.

June, 1901.

LIST OF MAMMALS

OBTAINED BY

THADDEUS SURBER,

IN

NORTH AND SOUTH CAROLINA, GEORGIA
AND FLORIDA.

Mr. Surber made two trips to the south Atlantic States and Florida, in the winters of 1899-1900, and 1900-1901, and the present collection of skins, amounting to about four hundred and fifty, is the result of his labor. He stopped at different places on his route to Florida where the types of newly described forms had been procured, such as Riceboro, St. Marys, etc. He was refused permission to trap on Cumberland Island and consequently was unable to obtain specimens of the *Geomys* found there and described by Mr. Bangs. In Florida he visited various type localities and a considerable number of topotypes were procured. The mammals of Florida have suffered many divisions, or as it may be termed, *disintegration* of species, and it was my desire to obtain as many specimens as possible, especially of those belonging to sub-species, in order to get an idea whether or not these forms could produce any convincing reasons for their existence. Of some of these, such as the opossum, and the mole from Anastasia Island, a definite conclusion was reached, but of the raccoon and certain mice and gophers (*Geomys*), my series were not sufficient to enable me to arrive at a satisfactory decision. After finding, as was the case in one instance, that seventy specimens of the species and race were not enough to establish a claim to subspecific rank, one might naturally ask, how many examples must one have before he is authorized to form an opinion as to subspecific values? Few persons comparatively can have at their disposal seventy specimens of a single form, and if these are not sufficient to establish a species or subspecies, it would seem likely that the fault lay more with the describer of the form than with him who failed to find the characters that were supposed to exist.

Florida has been a fruitful field for the creation of subspecies, and few opportunities for describing them have been missed, but a number are evidently in a very unsatisfactory state, and require an

altogether too large array of witnesses to keep them from falling back into the obscurity from which they have been mistakenly brought.

It is to be hoped, however, that the pendulum has reached the farthest point in its swing towards an extreme radicalism in the recognition of forms, and as it returns to a reasonable equipoise, that a more conservative, and as it appears to many, a more sensible treatment of the often insignificant differences in the appearance of animals may be attained.

ORDER MARSUPIALIA.

FAM. DIDELPHYIDÆ.

DIDELPHYS.

Didelphys virginiana.

Didelphys virginiana. Linn. Syst. Nat., i. 1758, p. 54.

Didelphys pigra. Bangs, Proc. Bost. Soc. Nat. Hist., 1898, p. 172.

Six specimens from New Berlin, Anastasia Island, Enterprise, and Gainesville, Florida.

These examples ought to belong to the race named *pigra* by Mr. Bangs, but I fail utterly to discover any character to distinguish them from typical *D. virginiana*. Mr. Bangs states (l. c.) that *pigra* is "smaller" than the Virginia opossum, with a "longer and more slender tail and smaller feet." All these are comparative distinctions and may be observed among individuals in any series of opossums from various localities, occasionally even from the same locality. In size these six specimens range in their total length from 712 to 890 mm., and the tails from 300 to 370. It will thus be seen that within these figures are practically embraced the measurements of the Virginia opossum, which ranges, in my experience, from 570 to 871 in total length and the tail from 260 to 394, therefore the average Florida animal does not seem to be smaller than the typical form, but the tail may be slightly longer. If this is a character, however, it demands an absolute certainty of locality and a considerable number of examples to prove as to which form a specimen may belong, two desiderata not always possible to command. Of twelve specimens of *D. virginiana*, in the New York Museum of Natural History, the measurements of which were kindly sent to me by Dr. Allen, the following figures repre-

sent the averages: Total length, 772.33 mm.; tail vertebræ, 316.5; hind foot, 66.6; among these were two tails only 255 and 270 mm. in length. Mr. Bangs' twelve specimens of *pigra* (l. c.) average, total length 809.1; tail vertebræ, 343.6; hind foot, 62. The animals, it will be observed, average considerably larger than those of *virginiana* from Dr. Allen, and their tails possess no greater length than their larger size requires to be in harmony. The foot average is 66.6 for the typical form, and 62 for those of Mr. Bangs' examples from Florida and Georgia, but Mr. Surber's six specimens give an average foot measurement of 71. Mr. Bangs' first six specimens give an average foot measurement of 68.1, and the first six of Dr. Allen's 65.5. It does not seem therefore, from these figures that the average measurements of the Florida opossum is smaller than the northern form. But it would not be safe to depend upon a length of tail for specific distinction, when that varies from 287 to 402. Size as a character can never be depended upon.

The following tables show the measurements of Dr. Allen's and Mr. Bangs' specimens.

DIDELPHYS VIRGINIANA.

Mus. No.	LOCALITY.	Sex.	Total Length	Head and Body.	Tail.	Hind Foot.
56,567	Montauk Point. N. Y.	♀	730	475	255	65
47,132	Golden City, Mo.	♀	774	469	305	69
34,867						
48,523	Hartshorne, I. T.	♀	750	435	315	65
36,179						
16,594	Hatteras, N. C.	♂	871	518	353	65
16,595	Hatteras, N. C.	♂	640	370	270	65
45,058	Riceboro, Ga.	♀	747	437	310	66
33,060						
46,805	Danville, Tenn.	♂	785	465	320	52
47,768	Clarkville, Tenn.	♀	750	440	310	60
47,129	Big Sandy, Tenn.	♀	740	430	310	66
34,864						
8,653	San Antonio, Tex.	♂	864	472	394	75
10,340						
8,651	San Antonio, Tex.	♂	787	482	305	70
10,338						
97,149	Virginia Point, Tex.	♂	830	480	350	80

MR. BANGS' FLORIDA AND GEORGIA SPECIMENS.

D. v. pigra.

LOCALITY.	No.	Sex and Age.	Total Length.	Tail Vert.	Hind Foot.
Florida, Oak Lodge.....	3,500	Type ♀ yg. ad.	762	330	66
Florida, Eau Gallie.....	7,223	♀ yg. ad.	734	304	63
Florida, Citronelle.....	2,492	♀ old ad.	805	349	69
Florida, Deer Creek.....	2,493	♂ yg. ad.	757	325	.
Florida, New Berlin....	6,530	♀ ad.	875	390	69
Florida, New Berlin....	6,528	♀ ad.	922	402	72
Florida, New Berlin....	6,529	♀ ad.	793	340	70
Georgia, St. Mary's.....	5,042	♀ ad.	836	318	74
Georgia, St. Mary's.....	5,041	♀ ad.	745	313	62
Georgia, Sterling.....	6,417	♀ old ad.	865	345	68
Georgia, Barrington.....	6,422	♂ ad.	830	375	68
Georgia, Montgomery...	6,299	♀ old ad.	785	340	67

Unless, therefore, *locality* is to be regarded as a *character*, I fail to find any that are recognizable in any example of so-called *pigra* that would warrant a separation from the typical form.

Two of Mr. Surber's examples, one from Enterprise and one from Gainesville, are black, and if their localities were unknown they might easily be taken for *D. marsupialis* ex Mexico. In regard to this peculiarity, Mr. Surber writes, "from all I can learn there seem to be two patterns of coloration among opossums in this State (Florida), the one frequenting the open pine woods and prairies being of a light grayish hue, like normal specimens found farther north, while those found in the swamps and low hummocks are very dark in color, like the one I got at Gainesville. Apparently they are subject to a wide range of color variation, and *also size*."

ORDER RODENTIA.

FAM. SCIURIDÆ.

SCIURUS.

Sciurus niger.

Sciurus niger. Linn. Syst. Nat., 1, 1758, p. 64.

Three specimens: 1, Riceboro, Georgia; 2, New Berlin, Florida.

While in some portions of Florida the fox squirrel is said to be not uncommon, as in the district about Citronelle on the

west coast, it is difficult to secure specimens, a dog being necessary to assist the hunter. Near St. Mary's, Ga., Mr. Surber writes that they seem to be practically extinct, but in the pine lands south and west of Riceboro, they are tolerably common. He adds, "there are more fox squirrels within twenty miles about Jacksonville, Florida, than in any place visited by the writer in the State. In the vicinity of Enterprise they are nearly extinct." One of the specimens from New Berlin has the under parts dark buff, while the rest of the body, head, legs and entire tail above and beneath is jet black, relieved only by the white nose and edge of ears. This melanistic pelage in such a complete condition is very rare. The Riceboro example shows an inclination towards melanism, as the edges of thighs and arms are jet black, and the under parts blackish. The other New Berlin specimen has a normal coloration.

Sciurus carolinensis.

Sciurus carolinensis. Gmel. Syst. Nat., 1, 1788, p. 148.

Thirteen examples: 1, Apex, North Carolina; 2, Calhoun Falls, South Carolina; 4, St. Mary's, Georgia; 1, Riceboro, Georgia; 1, New Berlin, 1, St. Charles Creek, 1, Oak Lodge, 1, Enterprise, and 1, Crystal River, Florida.

In this small series of the gray squirrel from various localities, a surprising variation in measurements is found among the adults. The largest from Apex, North Carolina, has a total length of 490 mm., and tail vertebræ, 215. The total length of the St. Mary's specimens ranges from 420-450; tail vertebræ, 175-220; while that of the Florida examples is 425-440; tail vertebræ, 200-215; the last averaging in total length 431.7, or 7 mm. less than Bangs' *S. c. extimus*, which is called the smallest of the *S. carolinensis* series. The description of *S. c. extimus* is suited to some of these Florida skins, but they also agree perfectly with those from the north in color of pelage, and undoubtedly should be regarded as *S. carolinensis*, although apparently possessing all the characters that are given as distinguishing *S. c. extimus*. I regret that at present I have no examples from Dade County, the typical locality of *S. c. extimus*, to compare with these more northern specimens, and so get a better conception of the value of the sub-species as a separate form. Judging from the description alone one would have little hesitation in

calling the animals from Enterprise and Oak Lodge *extimus*, but unfortunately they refuse to be separated from the true *S. carolinensis*. In the museum collection there are examples from E. Penn opposite Micco, and also from Tarpon Springs, Enterprise and Micco, and all except the first are the same in size and appearance as those procured by Mr. Surber, which might indicate that the Florida form in some places is inclined to be smaller than the northern. I say in some places, for unfortunately for even this supposition, I find the specimen from E. Penn opposite Micco, collected by Mr. F. M. Chapman, gives the measurements taken in the flesh, total length, 490; tail vertebræ, 260; thus equaling the total length of Mr. Surber's largest example from North Carolina. It would seem from these facts very doubtful if there was more than one form of gray squirrel in Florida, for none could possibly imagine that two races so closely allied as these must be, would be found in the same State.

Regarding some of these examples, Mr. Surber writes: "The specimen taken at Riceboro, Ga., is small, and I was told that all taken in that vicinity are like it." (This measures, total length, 450; tail vertebræ, 215). "In the hardwood hummocks, both at New Berlin and Enterprise, squirrels of probably the *small Florida form* are fairly common, but they are unknown in the pine woods, being altogether confined to the heavy swamps and hummocks in both Florida and Georgia. I was told they had become very rare about Micco during the past two or three years."

SCIUROPTERUS.

Sciuropterus volans.

Mus volans. Linn. Syst. Nat., I, 1776, p. 85.

Eight examples: 7, Calhoun Falls, South Carolina; 1, St. Mary's, Georgia.

Three of the Calhoun Falls specimens have the under side of the tail inclined to a pinkish color, very similar to one of the Enterprise skins supposed to be *S. v. querceti* and if the locality was unknown they would probably be referred to that species by most systematists. It is rather far north, however, to look for a gradation into the Florida subspecies, and so we can only regard them as deeply colored individuals of *S. volans*.

Sciuropterus volans querceti.

Sciuropterus volans querceti. Bangs, Proc. Biol. Soc. Wash., 1896, p. 166.

Two specimens from Enterprise, Florida.

I refer these examples to the present subspecies, on account of the pinkish red under surface of the tail. They are not alike in this coloration, one being of a very much deeper hue than the other and, indeed, more pinkish than an example before me from Tarpon Springs. Mr. Bangs says that this subspecies passes into true *volans* in southern Georgia, a series of specimens from St. Marys, Ga., being intermediate between the two. Judging from the Calhoun Falls specimens above mentioned, we will be obliged to carry the line of separation quite a space northward. A large series of flying squirrels from the Atlantic States into southern Florida will alone enable us to form a correct judgment as to whether this form is worthy of a separate rank, and if so, where the dividing line of species and subspecies really exists, for it would appear to be neither in Florida nor Georgia.

FAM. MURIDÆ.

MUS.

Mus alexandrinus.

Mus alexandrinus. Is. Geoff. Descr. Egypt, 11, 1812, p. 733, Atlas, pl. v, fig. 1.

Two specimens: 1, Espanita, Anastasia Island; 1, Enterprise, Florida.

PEROMYSCUS.

Peromyscus gossypinus.

Peromyscus gossypinus. (Le Conte), Proc. Acad. Nat. Scien., Phil., 1853, p. 411.

Seventeen examples: 7 Riceboro (type locality), Georgia; 3, New Berlin; 1, St. Charles Creek; 6, Gainesville, Florida.

This species did not appear to be very abundant at any of the places visited by Mr. Surber, as the small number of specimens taken proves.

Peromyscus g. palmarius.

Peromyscus g. palmarius. Bangs, Proc. Biol. Soc. Wash., 1896, p. 124.

Thirty-six specimens: 2, near Oak Lodge (type locality); 4, Micco; 3, E. Penn opposite Micco; 13, Enterprise; 10, Crystal River; 4, Tarpon Springs, Florida.

This close ally of *P. gossypinus* was not uncommon in certain localities, though no large series were taken. Mr. Surber, in his notes, says: "The cotton mice secured at Enterprise were taken in palmetto hummocks exclusively, two of the specimens having been taken from an old *Neotoma* nest in a hollow log lying about six feet above the ground. All the others were taken near rotten logs, or at the base of a hollow tree. I got four specimens of this mouse at Micco, taking them all among the scrub on the sand ridge just west of the Indian River. Of the five specimens taken on the East Peninsula, near Oak Lodge, four of them came from the beach among the sea oats, while the other was taken on the river side among the mangrove bushes." At Crystal River, on the west side, he found "cotton mice fairly plentiful in one of the large swamps, but swamps were scarce about Citronelle, the country being high pine ridges, and not a single specimen was secured. Cotton mice live in the swamps and canebrakes, and it is a rare thing if one is found where the country is high and dry."

This form so closely resembles *P. gossypinus* that it is not always easy to distinguish them from each other, and of the two series before me there are a number of individuals in each so nearly alike that, should they lose their labels, it would be impossible to rename them as they were, unless by a mere chance. The characters that distinguish this form, as given by Bangs (l. c.), are "colors paler and more yellowish, no decided darker dorsal band; a black orbital ring; hind foot shorter." All of these characters I find in the specimens of *P. gossypinus*, and characters such as are given for the species and subspecies are also found in examples from Gainesville. The average length of the hind foot of the two forms is about the same, but in the majority of the subspecies they measure 22 and 23 mm. In many, indeed I may say in most, of the specimens there is a decided darker dorsal band, and the general colors are no paler than in *P. gossypinus*, but the orbital ring is generally darker, though some of the specific forms have the ring equally dark. Altogether, while I am of the impression that this form will eventually become a synonym of *P. gossypinus*, I do not consider that my material is sufficient to enable me to reach a final decision. It may pass as a subspecies with the Scotch verdict "not proven."

Peromyscus anastasiæ.

Peromyscus anastasiæ. Bangs, Proc. Bost. Soc. Nat. Hist., 1898, p. 195:

Ten examples from Espanita, Anastasia Island, Florida.

This mouse is very questionably separated from *P. gossypinus*, and there are specimens before me of this form, and of *P. g. palmaris* from Enterprise and of *P. gossypinus* from Riceboro, Georgia, that are precisely alike in coloration, and cannot be separated. As a rule, the Espanita examples may be slightly paler than those of *P. gossypinus*, but dark ones are met with among them that will equal the deeper hues of the other forms. Larger series, and from numerous localities, would be necessary to decide the validity of a subspecific rank.

Peromyscus nuttalli.

Peromyscus nuttalli. (Harl.), Am. Month. Journ., 1832, p. 446.

Thirty specimens: 9, Apex; 6, Roanoke Rapids, North Carolina; 12, Calhoun Falls; 3, Catawba, South Carolina.

With one exception, all the Calhoun Falls examples were taken, Mr. Surber says, "in a marshy place at the head of a small ravine, and all the others in a low, wet, hardwood forest, where they were probably numerous among the many half-rotten logs with which the earth was strewn. This tract of timber was original forest, with such trees as ash, swamp oak and hickory prevailing, with here and there a small walnut tree. Many specimens had the cheek pouches crammed with rolled oats, with which the traps were baited, also grass seeds."

Peromyscus floridanus.

Peromyscus floridanus. (Chapman), Bull. Amer. Mus. Nat. Hist., 1889, p. 117.

Twenty-nine examples: 10, Espanita, Anastasia Island; 9, Micco; 5, Enterprise; 3, Citronelle; 1, Crystal River; 1, Tarpon Springs, Florida.

On Anastasia Island, Mr. Surber says, "this mouse will be found a common species, inhabiting that part which is covered with a growth of scrub oaks and saw palmettos, its favorite haunts wherever found in the State. Six specimens were taken in this sort of surroundings, and another was secured on the sand hills where *P. phasma* is so common. When I say it will

yet be found a common species, I feel perfectly safe, for by far the greater part of the island is just suited to its habitat, being an endless growth of scrub, and high and dry." At Enterprise he found this species "in the flat woods scrub. In some places in those woods the scrub oaks and saw palmettos grow rather sparingly, leaving the bare white sand showing in large patches, and here is where I secured all my specimens. In the flat woods, one-quarter of a mile west of Micco, I secured quite a little series of this beautiful mouse in identically the same character of surroundings as at Enterprise, and we must conclude it is as plentiful in the flat woods, when not too thickly overgrown with scrub, as on the sand hills. At Micco I took one in the fresh water marsh. On Anastasia Island all the specimens of this mouse were taken on top of the sand ridge next the beach." No examples were procured at Gainesville, and the country about Crystal River was not suitable for the animal, but at Citronelle and Tarpon Springs it was favorable. At the latter place many burrows were found under clumps of dead beanstalks and grass, "about 2 to 2½ inches in diameter, and 6 inches deep, descending perpendicularly in the sandy soil. No effort was made to conceal the entrance. I could not find them in any other place, though sand hills and ridges suitable for their abode were common enough."

Peromyscus niveiventris.

Peromyscus niveiventris. (Chapman), Bull. Amer. Mus. Nat. Hist., 1889, p. 117.

Four specimens: 2, Oak Lodge; 2, E. Penn opposite Oak Lodge, Florida.

Of this species Mr. Surber says, "I took over 30 specimens of the beach mouse on the East Peninsula just south of Oak Lodge, but the ants ruined all but four. They did not appear to be very numerous as I had about sixty traps out and should have caught over a hundred in the same length of time if they had been abundant. I found them nowhere but among the sea oats on the beach."

Peromyscus niveiventris phasma.

Peromyscus phasma. Bangs, Proc. Bos. Soc. Nat. Hist., 1898, p. 199.

Twenty-five examples from Espanita, Anastasia Island, Florida.

This beautiful little mouse is a very close ally of *P. niveiventris*, resembling it so closely that it can only properly be considered as a subspecies. The white of the under parts extends farther up on the sides, and the back is possibly a little more drab, and that is about all the difference between the two forms. Mr. Surber's notes give the following account of this animal: "This mouse, which is prettier than its near relative *P. niveiventris*, does not seem to live anywhere but among the scattered tufts of sea oats on the upper beach, and there I was able to trace them to their burrows at the base of a bunch of sea oats or bush, by their little footprints. I saw a great many of their burrows, which were about three-quarters of an inch in diameter, and running back at an angle of about 30 degrees into the sand. The burrows were generally pretty well concealed by the overhanging blades of grass."

Peromyscus subgriseus.

Peromyscus subgriseus. (Chapman), Bull. Amer. Mus. Nat. Hist., 1893, p. 340.

· Eleven specimens from Gainesville, Florida.

Of this species Mr. Surber writes: "About two miles south of the city (Gainesville), along the rock road, there is a small, rather rocky hill, cleared of all trees, and grown up in broom grass and rag weed. There appeared to be quite a colony of these interesting little mice in that hill, and though most of the grass and weeds had been burnt away leaving their burrows exposed, they were still holding the ground, and all the specimens secured were taken at that place, though I trapped for them in every direction about the city. Apparently they live in colonies and on the higher rocky and sandy ridges. A number of specimens were destroyed by ants, but a small series were saved in good order."

SIGMODON.

Sigmodon hispidus.

Sigmodon hispidus. Say and Ord, Jour. Acad. Nat. Scien., Phil., 1825, p. 352.

Forty-five examples: 31, Calhoun Falls, South Carolina; 5, Riceboro; 2, St. Mary's, Georgia; 7, Gainesville, Florida.

There is considerable variation in color among these specimens, those from Riceboro being very dark, in fact blackish,

while those from Calhoun Falls are inclined to a rufous brown mixed with black, the former color, however, predominating, and the examples from *Gainesville cannot be separated from those obtained at Calhoun Falls. The trouble with specimens of this rat is that their color varies so much, and this is particularly noticeable according to the way in which the light strikes them (with or against the hair), so that one is easily misled as to what the real hue is. When the light shows *with* the hair the color is always darkest, and a specimen that is quite dark one way is sometimes comparatively pale the other. It is a curious distribution, if we must recognize a species and subspecies, that South Carolina examples should most nearly resemble and be seemingly inseparable from those near Gainesville, while those lower down the west coast of Florida and yet not far removed from the city just named, should be apparently nearer to Micco and Enterprise examples. If there is a race of *S. hispidus* in Florida, it has in its midst a colony of the specific form, and if color is to be the criterion I cannot connect that colony with the northern animals by my specimens from New Berlin and Anastasia Island, which appear to agree better with Micco and Enterprise examples.

Sigmodon hispidus littoralis.

Sigmodon littoralis. Chapman, Bull. Amer. Mus. Nat. Hist., 1889, p. 118.

Twenty-seven specimens: 2, New Berlin; 9, Espanita, Anastasia Island; 3, E. Penn opposite Micco (type locality); 4, Micco; 4, Enterprise; 3, Citronelle; 2, Tarpon Springs, Florida.

These examples I refer to Mr. Chapman's subspecies. He says it is similar to *S. hispidus*, but darker. The skins before me cannot be said to carry out this supposed distinction. The darkest are those from Micco, and the lightest those from E. Penn opposite Micco. The dark ones from Micco are equalled in color and depth of hue by the specimens from Riceboro, Georgia, and I see no way of separating them, while the Citronelle and Tarpon Springs examples match fairly well with those from E. Penn and these agree with some from Anastasia Island. There would seem to be therefore a considerable variation in the depth of color of this rat, and as examples do not always resemble each other from particular localities, when they should do so to enable the race to be satisfactorily established, and specimens from even the same locality vary among themselves, and although

*"Clearly referable to the northern form." Chapman, Bull. Amer. Mus. Nat. Hist., 1889, p. 118.

this series is not very large (71 specimens, counting those of all the states represented), yet it should give one a fair idea as to what discernible differences exist, and where gradation from species to race begins, while in fact it does nothing of the kind. From these specimens I should be inclined, taking them as one lot, to regard those from Florida as the lighter of the two, instead of the darker, although as I have said those from Micco are very dark, but E. Penn specimens and certain ones from Espanita, Anastasia Island, and also from Citronelle, are lined with clay colored or very pale yellow hairs amid the black.

Judging therefore from this series, it would seem that a large collection of this rat from both the south Atlantic States and Florida, and from numerous localities, will be required before the proper status of the subspecies can be satisfactorily determined. Besides the specimens already enumerated, there are in the Museum others from E. Penn, Enterprise, Gainesville, Flamingo and Jupiter, all collected by Mr. Chapman, and considered by him to be *S. h. littoralis*. These vary in coloration, but not so much as the specimens in my series do, probably because they are few, only eight. However, two from E. Penn opposite Micco, present a very dark, almost black appearance, unlike any in my series from the same locality, and also one lined with clay colored hairs like my examples. The specimen from Flamingo is of the lighter style, while again the one from Jupiter is dark. Enterprise possesses both styles, but the Gainesville specimen cannot be separated from those from South Carolina. The animal evidently has a very variable coloration, and, from the evidence before me, it would seem to offer a very unreliable character for separating individuals in certain parts of Florida from those found in the more northern states.

ORYZOMYS.

Oryzomys palustris.

Oryzomys palustris. (Harlan), Amer. Journ. Scien., 1837, p. 385.

Eighteen specimens: 2, Calhoun Falls, South Carolina; 5, Riceboro; 3, St. Marys, Georgia; 8, New Berlin, Florida.

This species was evidently not very common. Mr. Surber says: "I first met with *Oryzomys* at Calhoun Falls, South Carolina, securing two specimens at the head of a little creek in a canebrake. At New Berlin I saw a few of their nests, built in the marsh grass well above high-water mark, and here a few were taken."

Oryzomys palustris natator.

Oryzomys p. natator. Chapman, Bull. Amer. Mus. Nat. Hist., 1893, p. 44.

Nineteen specimens: 3, Espanita, Anastasia Island; 3, Micco; 10, Enterprise; 3, Gainesville, Florida.

Mr. Chapman, in his description of this form, says that it is darker than North Carolina specimens, and judging from a single example before me, from Raleigh, North Carolina, I should say this was correct, but it will not answer for a character in general, for the examples of *O. palustris* in the small series before me are very much darker than those representing the subspecies, and so much darker than the North Carolina specimen as to be strikingly different. Writing of their nests, Mr. Surber says that "some of them are as large as those of *Microtus (Neofiber) alleni*, but can be told from the latter at a glance. Almost invariably I found their nests in bunches of cat-o-nine tails, built up about a foot above the water, but in some cases higher, never being found on the water level. They are composed principally of the blades of the cat-o-nine tails interwoven with some wire grass, with one entrance on the side, rather underneath."

RHITHRODONTOMYS.

Rhithrodontomys lecontei.

Rhithrodontomys lecontei. (Aud. and Bachm.,) Jour. Acad. Nat. Scien. Phil., 1842, p. 307.

Seven examples from Gainesville, Florida.

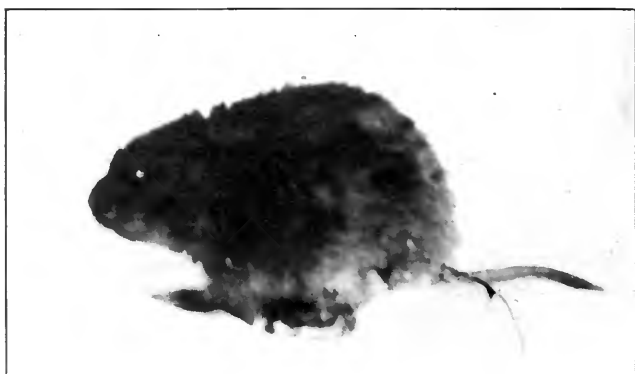
"A number of the harvest mouse," says Mr. Surber, "were taken and ruined by ants and hot weather. I found it associated with *Peromyscus subgriseus* on the high land south of the city, but others were taken on lower land among the broom grass. This mouse apparently lives on the seeds of the broom grass, for it is invariably found in such growth."

Rhithrodontomys lecontei dickinsoni.

Rhithrodontomys l. dickinsoni. Rhoads, Am. Nat., xxix, 1895, p. 590.

A single specimen referred to this form was procured at Enterprise, Florida.

Mr. Bangs regards this as a very doubtful subspecies, and probably he is correct in so doing, but judging from a single specimen (an unadvisable thing to do), it seems about as worthy



MICROTUS (NEOFIBER) ALLENI.
PHOTOGRAPHED FROM LIFE.

of recognition as most forms that enjoy a similar rank. How it would stand the test of a large series I am not prepared to say, but at present give it the benefit of the doubt. It does not agree with the specimens of *Rhithrodontomys* from Gainesville, and I believe the example is the first taken in eastern Florida.

NEOTOMA.

Neotoma floridana.

Neotoma floridana. (Ord), Bull. Soc. Philom., Phil., 1818, p. 181.

Eleven specimens: 6, Riceboro, Georgia; 2, Enterprise; 3, Gainesville, Florida.

The above were the only places where Mr. Surber found this rat. He says: "A month's search about New Berlin failed, and I am confident it is not found very near there. Bangs records several specimens from New Berlin, taken by Mr. Brown, but they must have been taken several miles distant in the swamps. The native name for this rat about Enterprise is 'cow rat'; at several different points at this place I saw work of this rat, but it was all old. In a low, wet hummock, by the side of Lake Munroe, two specimens, an adult ♀ and a young ♀, were secured."

MICROTUS.

Microtus (Neofiber) alleni.

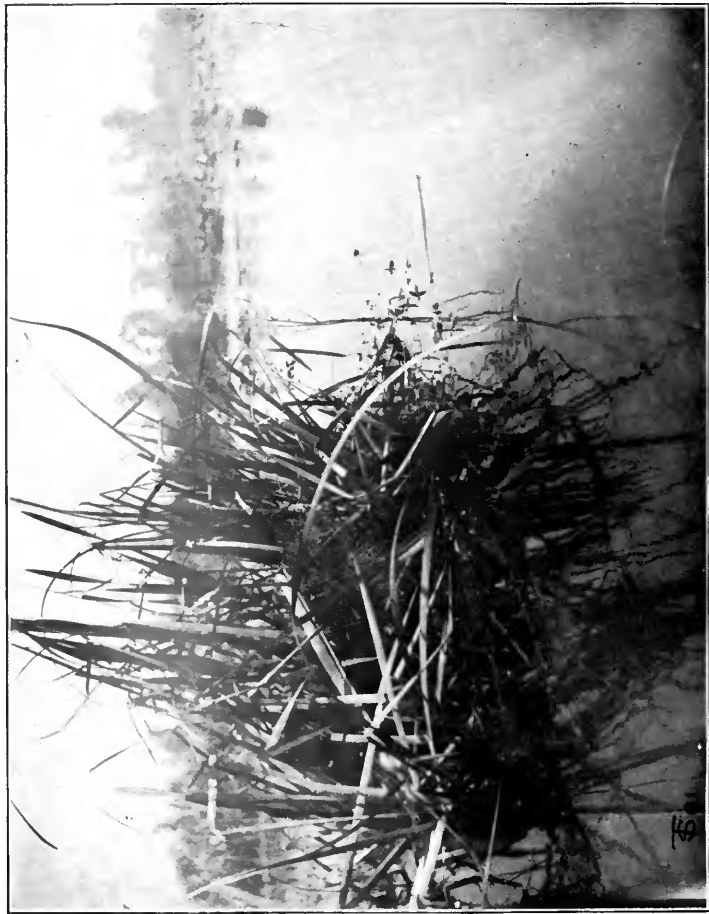
Neofiber alleni. True, Science, iv, 1884, p. 347.

Twenty-three specimens: 8, Enterprise; 15, Gainesville, Florida.

This was one of the species found in Florida which Mr. Surber was particularly instructed to seek. In places such as Oak Lodge, where Mr. Bangs had formerly found them numerous, not a specimen was secured nor an individual seen, and even in the localities in which Mr. Surber found them they were few in number. Is this species marching toward extinction? The following are Mr. Surber's accounts of this animal, as observed at Enterprise and Gainesville:

"I found two colonies of *Neofiber* in a small lake called Gleason's pond, about two miles north of Enterprise, one colony of about fifteen nests being in the southern end of the lake, while the other was a mile distant in the northern end, also of about the same number of nests. Either the Florida muskrat builds two

or three nests for use at one time or continually shifts about, building a nest in which to live while it constructs another, for fully two-thirds of the nests were always uninhabited. Their nests are firmly and neatly woven of grass and fine weed stalks, anchored to the surrounding tufts of grass and floating in the water. But two exceptions to this were noted and then the nests were built against the base of a bush and a stump respectively, with only about a foot of water beneath. These two nests had but a single entrance, which was at one side and of course under the water. All the other nests I saw were placed in water ranging from 18 inches to 3 feet in depth, and invariably had two entrances, one on each side, well under the water. The nests are a perfect dome shape as they float on the water, and average 14 inches in diameter by 12 inches high. That is the nest which appears above the surface of the water, but it is generally resting on a mass of half-rotten grass ranging from 18 inches to 24 inches in diameter, and a few inches thick. The platform on which the rat both sits and sleeps is only about 4 inches wide, the entrances being on either side of it, and often this platform is quite wet, in fact it is so near the water it could not well be otherwise: I once saw some short pieces of marsh grass on the little platform and being perfectly green must have been serving as a meal for the rat. Luck seemed against my securing a really good photo of their nests, but the one I did secure finally will give a good idea of what they appear like. None of the nests were placed over 20 feet from shore and were invariably built among the high marsh grass, which so closely resembles the broom sedge grass of the dry old fields. I never saw the animals swimming about in the water, in fact I saw but one alive and free, and that one was sitting on top of its nest one day during a hard rain, disappearing into the water like a flash when it saw me. I believe one rat is all that frequents a nest. On opening a nest on February 22d I was delighted to find it contained two young ones—♂ and ♀—their eyes yet unopened and I should judge about a week old. They had a thick coat of very dark hair and were very pretty, but odd looking little fellows, their noses being very blunt, and resembling nothing so much as the pictures of young hippopotami I have seen. These two young ones were in the nest referred to above as being built against a stump. This nest was far more substantially built than any of the others, and the interior was very dry and nice. These little fellows must have been born about the 15th of February, from which we must



NEST OF *MICROTUS (NEOFIBER) ALLENI*.
NEAR VIEW.

conclude they are early breeders. The two colonies frequenting this small lake were all I could find, though I searched far and wide for others, and there are suitable ponds everywhere about Enterprise. It is no use trying to get any information about this species from the natives in the region it frequents, for not one out of a hundred know of their existence, and the animals are quite a curiosity to the vast majority of even the oldest inhabitants; men who hunt for curios all the season through knowing nothing whatever about them. The series of ten specimens secured were all taken at Enterprise, as I was unable to find them elsewhere in the State.

While at Micco in February I trapped the savannah for this species as far north nearly as Grant, and south quite to the Sebastian River without any success. While trapping near Oak Lodge in April I fully expected to secure them, but was again disappointed, though there must be a few at least remaining in the extensive savannah just west of Mr. Latham's house. Taken as a whole I believe it a rare animal now, likely soon to become rarer, for it is very easily trapped when once its nest is found.

Shortly after my arrival at Gainesville I secured one water rat from a nest in the western end of Biven's Arm, and it was a week before I found another nest. Taking a boat at last, and getting a negro to help me, we cut our way through the dense mass of floating vegetation and entered into the center of the mass of floating islands in Biven's Arm, where I found quite a colony of the rats, but securing only 12 specimens out of some 30 nests, among the lot being one young one not over a day old. These nests were built of the same material and in exactly the same manner as those found last year near Enterprise, being composed mainly of a sort of wire grass. With much trouble I at last secured a photo of a nest which may be regarded as typical, and it was built among the dead weeds and grass near the edge of one of the floating islands, where the water was about 20 inches deep. The water within 6 feet of the nest was fully 10 feet deep, as the island sloped off rather abruptly there. Underneath the nest the water was perfectly clear, and the whole bottom was covered with a sort of short wire grass, with here and there a small water lily. That part of the nest visible above the water was 9 inches high and solidly arched over, but the whole mass under the surface was rather loose and spread over a surface of nearly 2 feet, the whole being firmly anchored to the dead weed stalks. A few of the nests, however, were

built on the tops of the islands and in that case they had both shallow runways, like trenches, leading from the nests to the open water, and also holes leading straight down to the bottom of the island, from the usual entrances found in the floating nests. I set a number of traps in these runways but caught only one rat there, so they can be used but very little. A day or so before I left Gainesville, I went after rabbits around the western end of Payne's prairie and while going through a cane-brake found a dead *Neofiber* lying in the water with a wound on its head, but though I searched everywhere in the vicinity for a nest or runway could find none. This was some distance from the open water. It is my opinion *Neofiber* is abundant on Payne's prairie, for it extends for miles, but is impenetrable on account of the matted growth of weeds and grass, interspersed with big open stretches of water, the abode of myriads of snakes. However, I think the use of a canvas canoe would solve the difficulty, and the collector who goes there with one will no doubt reap a harvest. One of the rats being but slightly injured was taken to the city where I attempted to photograph it alive, but with poor results, as it fought like a fury, biting at everything in reach."

Microtus pinetorum.

Microtus pinetorum. LeConte, Ann. N. Y. Lyc., Nat. Hist., iii, 1829, p. 132, pl. 2.

Three examples: 2 Apex, North Carolina; 1 Catawba, South Carolina.

Of this species Mr. Surber states that "two pine voles were secured in the pine woods at Apex, North Carolina, where they were undoubtedly common, and another was taken in a cotton field at Catawba, South Carolina. I am positive they are quite common at Calhoun Falls, but all my efforts to get any failed, and no others were secured on the entire trip."

FAM. GEOMYIDÆ.

GEOMYS.

Geomys tuza.

Geomys tuza. (Ord.) Guthr. Geogr., 2nd Amer. ed., ii, 1815, p. 292.

One example taken at Rocky Ford, Georgia, "among the sand hills, between the railroad track and the Ogeechee River. Although I searched the country for miles, no others were found."



HILLS OF THE "SALAMANDER."
GEOMYS TUZA FLORIDANA.

Geomys tuza floridanus.

Geomys t. floridanus. (Aud. and Bach.,) N. Am. Quad., iii, 1854, p. 242.

Thirteen specimens: 6, New Berlin; 1, St. Charles Creek; 5, Gainesville; 1, Citronelle, Florida.

"Several specimens," writes Mr. Surber, "of this species were taken at New Berlin, and one was taken in the flat woods a few miles east, at St. Charles Creek, where they were common. At the latter place I secured a photograph of the hills of this mammal, which gives an excellent idea of the appearance of the pine woods where they are found, as the hills lead for miles through the timber, where there is no undergrowth to hinder them. Their hills are a common sight from the train between Jacksonville and St. Augustine. They are not found near Enterprise, but I was told they are plentiful near De Laud, twelve miles away."

Geomys tuza austrinus.?

Geomys t. austrinus. Bangs, Proc. Bost. Soc. Nat. Hist., 1898, p. 179.

Ten examples from Tarpon Springs, Florida.

Judging from these specimens, this is a very doubtful subspecies, and the characters given by Mr. Bangs to distinguish it from *G. t. floridanus*, such as, "much paler and more tawny above; much more white on under parts," do not hold good when compared with specimens from Gainesville and New Berlin. Mr. Bangs says the Gainesville specimens are good "intermediates;" perhaps these from Tarpon Springs are also, although they are perilously close to the type locality. If these from Tarpon Springs are "intermediates," then *G. t. austrinus* is not represented in my series, but it would be interesting to know where its geographical limits begin. In comparison with New Berlin specimens, which I suppose will be acknowledged as *G. t. floridanus*, some of the eastern examples have more white beneath than any from Tarpon Springs, and these latter are in nowise paler above, thus rendering the characters for separating them of little value. I am inclined to refer all these specimens to *G. t. floridanus*, but wait for a larger series to ascertain if any characters really do exist that would be worthy of recognition. The specimens before me do not possess any.

Geomys colonus.

Geomys colonus. Bangs, Proc. Bost. Soc. Nat. Hist., 1898, p. 178, fig.

Three examples from St. Marys, Georgia.

This is a very dark colored form of *Geomys*, like melanistic individuals occasionally seen in different species of the group. The three specimens are alike, and are nearly black on the upper parts and sides, a slight tinge of brown being occasionally visible. The cranial characters, as mentioned by Mr. Bangs, are to be seen in the slightly wider palate and the wider and rounder palatal notch, when compared with *G. tuza* or even with *G. t. floridanus*. Mr. Surber states that "the three specimens of this 'Salamander' were secured on the Arpow (not Arnott) plantation, four miles from St. Marys. Apparently they were abundant, but I could find but few fresh hills, though old signs of their presence could be seen in abundance through the high pine woods. They do not seem to differ in their habits from either *G. tuza* or *G. t. floridanus*."

FAM. LEPORIDÆ.

LEPUS.

Lepus floridanus.

Lepus floridanus. Allen, Bull. Amer. Mus. Nat. Hist., 1899, p. 13.

Four examples: 1, Micco; 3, Enterprise, Florida.

Mr. Surber writes that this species was "fairly common about Enterprise, particularly in the flat woods and sand ridges."

Lepus floridanus mallurus.

Lepus f. mallurus. Thomas, Ann. Mag. Nat. Hist., 1898, p. 320.

Three specimens: 1, Apex, North Carolina; 1, Gainesville; 1, Enterprise, Florida.

"Cotton-tails," writes Mr. Surber, "were fairly common at all the places visited except Riceboro, Georgia, and in the immediate vicinity of New Berlin, Florida. On Anastasia Island they were very rare, the common rabbit of the Island being *L. palustris*. On the East Peninsula I failed to take any rabbits at all, but this peninsula, as well as the main land of Florida, is densely covered with scrub palmetto, and one very seldom gets a shot at a rabbit; in fact, one seldom gets even a glimpse of one, unless hunting with hounds, which is the only successful way to kill them in Florida."

Lepus palustris.

Lepus palustris. Bachm., Jour. Acad. Nat. Scien. Phil., 1837, p. 194, pls. 15, 16.

One specimen, New Berlin, Florida.

“At New Berlin,” Mr. Surber writes, “I took one specimen in a steel trap set for coons, but it was not at all common in the extensive marshes there, nor back from the St. John’s River among the hardwood swamps. It was unknown in the section of North Carolina I visited, and also at Catawba, South Carolina.

Lepus palustris paludicola.

Lepus p. paludicola. Miller and Bangs, Proc. Biol. Soc. Wash., 1894, p. 105.

Four examples from Enterprise, Florida.

Mr. Surber writes: “If the marsh rabbit found at Enterprise proves to be of this form (*paludicola*), it will extend its range slightly. I found it extremely abundant at Enterprise in March, though on my first visit in January I failed to see a single one. Being the love season no doubt made them more noticeable in March, for they were then hopping about everywhere, even as early in the afternoon as 4 o’clock, while about sunset they were seen everywhere about the roads and clearings. They inhabit sparingly the sand ridges with the cotton-tails, but appear to be as much at home on the higher land, among the broom grass, as they are in the wet hummocks, where I found them even more commonly than in the palmetto hummocks and swamps. They appear to me to be fleet of foot than the cotton-tails.”

Procyon lotor.

Procyon lotor. (Linn.) Syst. Nat., 1, 1758, p. 48.

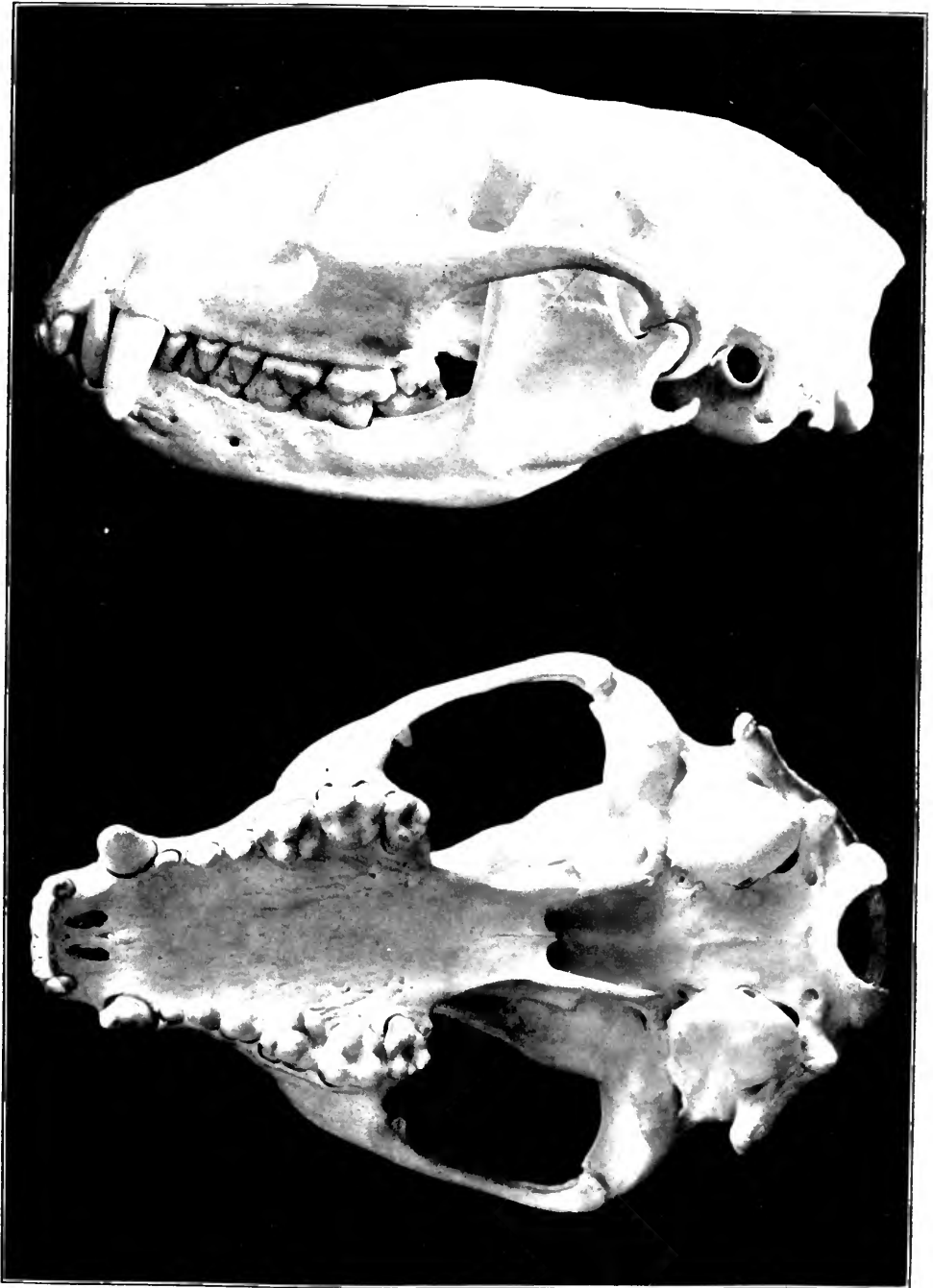
Five examples: 1, St. Marys, Georgia; 4, New Berlin.

This is what I suppose Mr. Bangs would call his *P. l. elucus*. My specimens are few and consequently I am unable to give any opinion upon the value of that subspecies, but after careful comparison of the skin, skull and measurements of the large example (No. 7,) with others from northern localities, I am unable to separate it from *P. lotor*. I do not wish to be understood as intimating there is no valid subspecies of *Procyon* in Florida, only that the large example does not show it. In

size the raccoon is very variable everywhere, even among adults, and little dependence can be placed upon *size* as a character. To show this, a small table of measurements is here given of my Florida specimens, and of Mr. Bangs' type, and of others from northern localities, typical *P. lotor*:

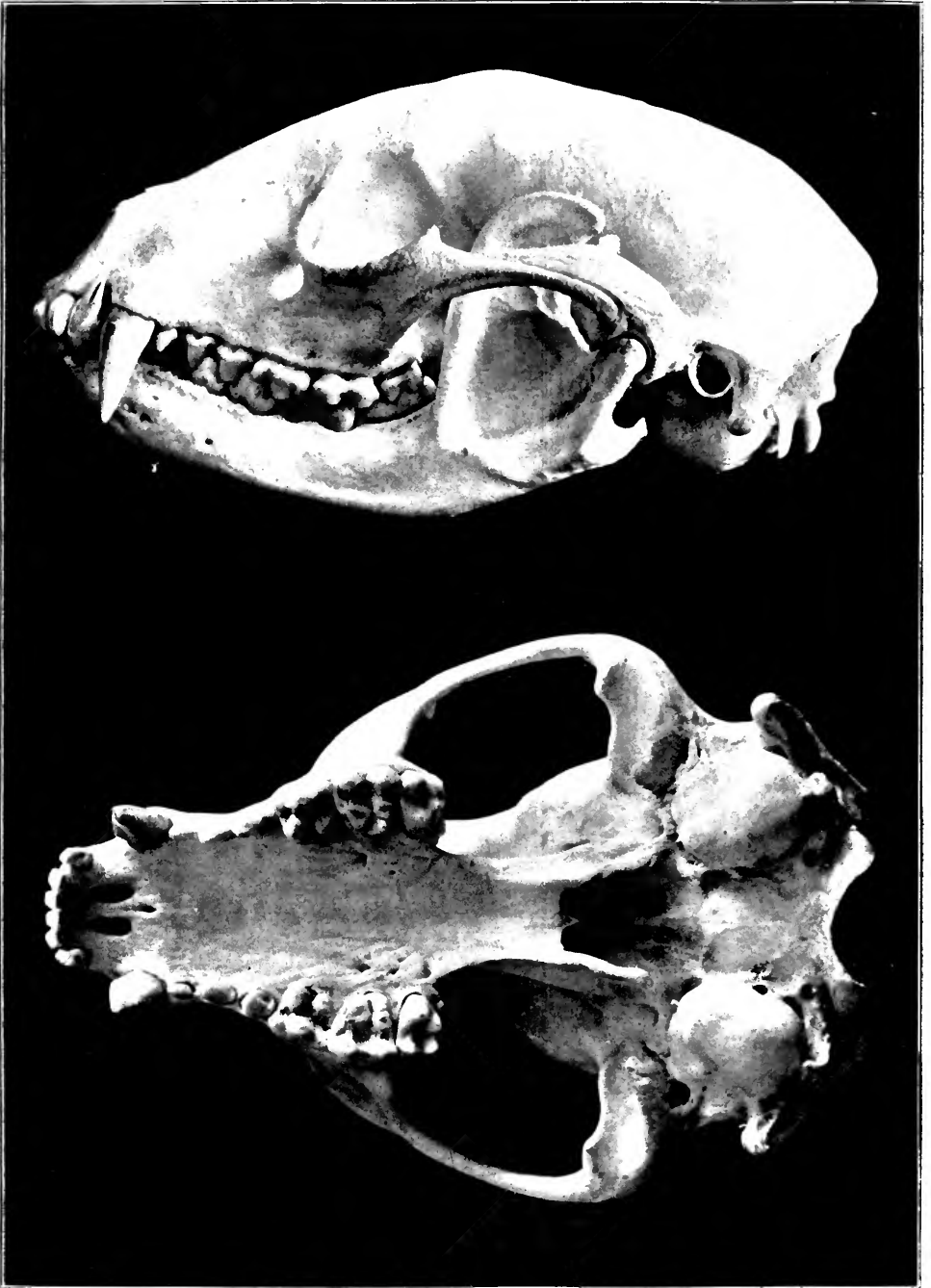
LOCALITY.	Total length.	Tail vertebræ.	Hind foot.
1. Hastings, N. Y.....	876.	241.	101.
2. White Sulphur, W. Va.....	775.	262.	105.50
3. Black Mountain, W. Va.....	825.	280.	115.
4. Black Mountain, W. Va.....	825.	230.	110.
5. Black Mountain, W. Va.....	645.	230.	99.
6. St. Marys, Ga.....	710.	230.	105.
7. New Berlin, Fla.....	786.	250.	115.
8. New Berlin, Fla.....	694.	245.	110.
9. New Berlin, Fla.....	690.	217.	103.
10. New Berlin, Fla.....	690.	230.	102.
11. Oak Lodge—Bangs' type....	892.	286.	125.

It will thus be seen that while none of the typical *P. lotor* specimens equal Bangs' type, one or two come very near it; but none of the Florida specimens approach it at all in size; the largest, Mr. Surber's "timber coon," (No. 7,) being considerably smaller. The New Berlin examples are very adult, the one whose measurements are given last but one (No. 10), having the molar series worn smooth. Bangs does not say if his type is one of his largest specimens, or if it is of an average size. If it is the latter, then the raccoons south of New Berlin must grow larger than those in that locality. Among the cranial characters given are "never so abruptly constricted behind postorbital process," and "frontal region higher and more arched." The Florida skulls before me vary greatly, and the postorbital constriction and height of frontal region are by no means alike among them. Two of the smaller skulls have no postorbital processes and differ from the rest in this respect. The frontal region in them all is high and arched, but this "character" is nearly equalled by the skull of the example from Black Mountain, W. Va. (No. 3), whose measurements are given in the table. There is more difference between the skulls of the large and small examples from New Berlin than there is between those of No. 7 and Virginia specimens, and it would seem that if there is a subspecies of *P. lotor*



PROCYON LOTOR, BLACK MOUNTAIN, W. VA., NO. 3
No. 789 Field Columbian Mus. Coll. Nat. size.

STONING IS A DISGRACE
OF THE
MUSLIMS



PROCYON LOTOR, NEW BERLIN, FLORIDA, NO. 7.
No. 784 Field Columbian Mus. Coll. Nat. size.

in Florida, it would more probably be found in the small animal known as "marsh coon" than in the larger kind named by Mr. Bangs. In color of pelage I can see no difference worthy of remark, and the shoulder patches of northern specimens are quite as deep as are those in Florida examples.

The plates exhibit skulls of raccoons from West Virginia and Florida, Nos. 1 and 7, both being of rather an extreme type in the frontal elevation; and some of the Florida skulls have the superior outline considerably less curved.

Mr. Surber's notes of the Florida raccoon are the following:

"No coons were taken in the Carolinas or Georgia,* but I found them very common at New Berlin, in the sea marsh, where several specimens were taken. This small, yellowish marsh coon is very different in appearance from typical *lotor*, and they must be seen in the flesh to fully appreciate the difference. One of the greatest peculiarities I found about this small coon was its habit of barking, when one is approached in a trap, this bark closely resembling that of a small rat terrier. Each one I took invariably began barking as soon as it saw me, its bark sometimes changing to a sort of chattering growl. Had I the privilege of giving this coon a common name, I should certainly call it the "Barking coon," for it seems to me to well deserve the title. I have taken a great many specimens of *P. lotor* in the mountains of West Virginia and elsewhere, but have never noticed this peculiarity before. In a hardwood hummock, well back from the St. John's River, at New Berlin, I took a very large coon, (No. 7), closely resembling *P. lotor*, and all the hunters and trappers who saw it at once pronounced it the "timber coon." If this should eventually prove to be so, will the so-called "timber coon" prove to be typical *P. lotor*? All along the east coast I was told of the two varieties, one large and dark, the other small and yellowish with very long legs, the former known as the "timber" variety, the latter as the "marsh" coon. It is to be regretted very much that I was unable to get specimens at Enterprise, where I heard of but the one species. Raccoons are by far the commonest mammal on the salt marsh near New Berlin, their paths leading in every direction through the tall marsh grass. They are also fairly common on the East Peninsula near Oak Lodge, but the only one trapped bit its foot off and escaped."

* Specimen taken at St. Marys, Ga., after these notes were sent in.

FAM. MUSTELIDÆ.

MEPHITIS.

Mephitis elongata.

Mephitis elongata. Bangs, Proc. Biol. Soc. Wash., 1896, p. 142.

One specimen, Enterprise, Florida.

Mr. Surber's notes give this account of the single specimen. "I met with skunks nowhere but at Enterprise where I trapped a specimen near the shore of Gleason's pond. A few days later while lying for an alligator in the tall grass on the edge of this same lake, another skunk came trotting along, and I shot it with my .500-bore express rifle and of course ruined all but the skull. They were not at all common at any of the places visited in the State."

SPILOGALE.

Spilogale ambarvalis.

Spilogale ambarvalis. Bangs, Proc. Bost. Soc. Nat. Hist., 1898, p. 222.

Two specimens, Oak Lodge, Florida.

"Two specimens" writes Mr. Surber, "of this beautiful little skunk were taken just south of Oak Lodge, and the foot of another secured at the same place, but it was apparently rare at the time of my visit, as I saw tracks of but one individual. This species is unknown in the region about Enterprise, but it may yet be discovered along the beach near the mouth of the St. John's, as a skunk described to me from Fort George Island, must be of this species."

PUTORIUS.

Putorius vison lutrecephalus.

Putorius vison lutrecephalus. (Harlan,) Faun. Amer., 1825, p. 63.

One specimen, Calhoun Falls, South Carolina.

"With the exception of a fine specimen," says Mr. Surber, "that I trapped at Calhoun Falls, South Carolina, no minks were secured on the trip. They were apparently rare through the Carolinas and Georgia. The salt marsh mink, *P. lutensis*, was formerly common in the vicinity of New Berlin, but not a single one was taken during the past winter. Mr. Thos. Grey

of New Berlin, a veteran mink trapper, helped me explore the marshes thoroughly, but we had no success, not even finding a track. While pushing my boat through the marsh at St. Charles Creek early in March I saw a mink, but it disappeared beneath the water before I could reach my gun. This was the nearest I came to getting a mink in that whole region. Apparently minks are not found at Enterprise, nor at Micco.

Putorius peninsulæ.

Putorius peninsulæ. Rhoads, Proc. Acad. Nat. Scien. Phila., 1894, p. 152.

One example, Enterprise, Florida.

“I did not meet with weasels,” says Mr. Surber, “anywhere, but they are found in the region about Enterprise, where Mr. Otto H. Voss presented me with a skin of an individual taken in the neighborhood some time previously. An old negro shot one last year (1899), in a hummock at the north end of Gleason’s pond, but thought it was a rat until informed otherwise. It must be a very rare animal everywhere.”

ORDER INSECTIVORA.

FAM. I. SORICIDÆ.

BLARINA.

Blarina brevicauda carolinensis.

Blarina brevicauda carolinensis. (Bachm.,) Jour. Acad. Nat. Scien. Phila., 1837, p. 366.

One specimen, Apex, North Carolina.

“Only two were taken on the trip, both in North Carolina, one in a low and damp woodland, the other in an old field grown up in broom grass.”

Blarina floridana.

Blarina floridana. Merr. N. Am. Faun., No. 10, 1895, p. 19.

One example, Enterprise, Florida.

“One specimen of this pretty shrew was taken in a damp palmetto hummock at Enterprise, the only one secured in the State. It was taken in a trap baited with oatmeal. The ants are so numerous in Florida, that they devour all the bait with which shrews are usually taken (the flesh of birds, etc.), and it was likely for that reason I did not get more.”

FAM. TALPIDÆ.

SCALOPS.

Scalops aquaticus.

Scalops aquaticus. (Linn.) Syst. Nat., 1758, p. 53.

Four specimens: 1 Apex, North Carolina; 2, Catawba; 1, Calhoun Falls, South Carolina.

At both Apex and Catawba Mr. Surber found this species fairly abundant, but rare at Calhoun Falls; but in Georgia he failed to obtain any specimens.

Scalops aquaticus australis.

Scalops aquaticus australis. Chapman. Bull. Am. Mus. Nat. Hist., 1893, p. 339.

Scalops anastasiæ. Bangs, Proc. Bost. Soc. Nat. Hist., 1898, p. 212.

Sixteen specimens: 3, New Berlin; 1, St. Charles Creek; 4, Enterprise; 4, Gainesville; 4, Espanita, Anastasia Island, Florida.

I have placed *S. anastasiæ* Bangs as a synonym of *S. aquaticus australis*, as my specimens from Espanita cannot be distinguished from those obtained in the various localities on the main land, for neither in color, nor in the shape or peculiarities of skull or mandible can I detect any appreciable differences from the other examples. On the mandible of one of the examples from Gainesville, between the coronoid process and the condyle is a well developed secondary process, thus showing that this cannot always be relied upon as a character for distinguishing *australis* from *aquaticus*. I do not observe it on any mandibles of the other specimens, but it is very prominent in this one.

On the east coast Mr. Surber states that moles were "very rare in the hummock land, but everywhere common in the flat woods and on the sand hills. They were very rare at Micco and on the East Peninsula opposite, I saw none of their work at all." At Gainesville, he says, "they are very common about the city and surrounding country, and next to *Sigmodon hispidus* it is the most abundant species." On Anastasia Island, which he visited in January, he says, "moles and their runways are scarce, and hard to trap owing to the looseness of the sand. Apparently they do not differ from other moles in their habits, and are found in the more level interior of the island, as well as about the sand hills."

ORDER CHIROPTERA.

FAM. VESPERTILIONIDÆ.

LASIURUS.

Lasiurus borealis.

Lasiurus borealis. (Müll.,) *Naturg.*, Suppl., 1776, p. 21.

One specimen, Catawba, South Carolina.

This was the only bat seen north of Florida.

NYCTINOMUS.

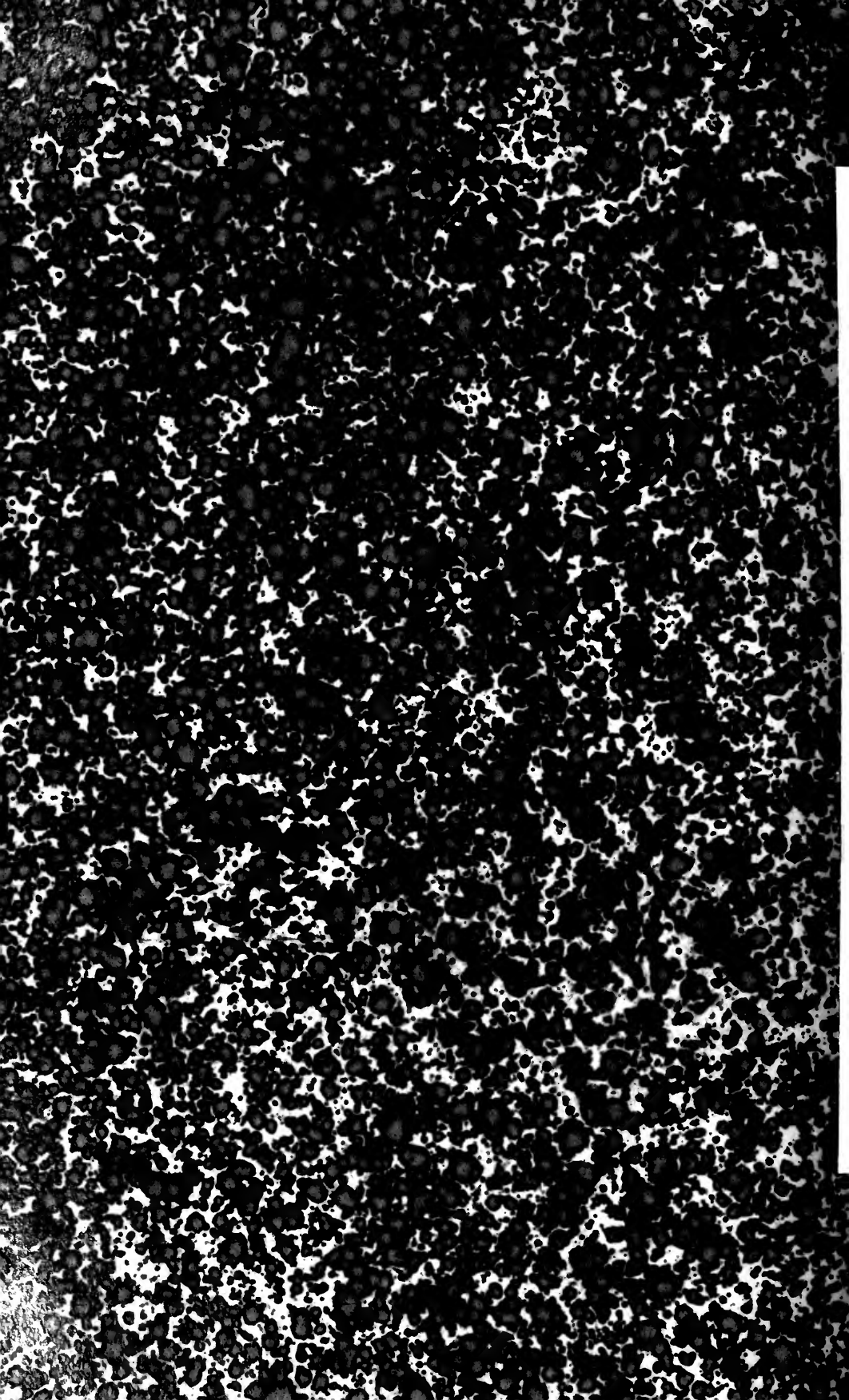
Nyctinomus brasiliensis.

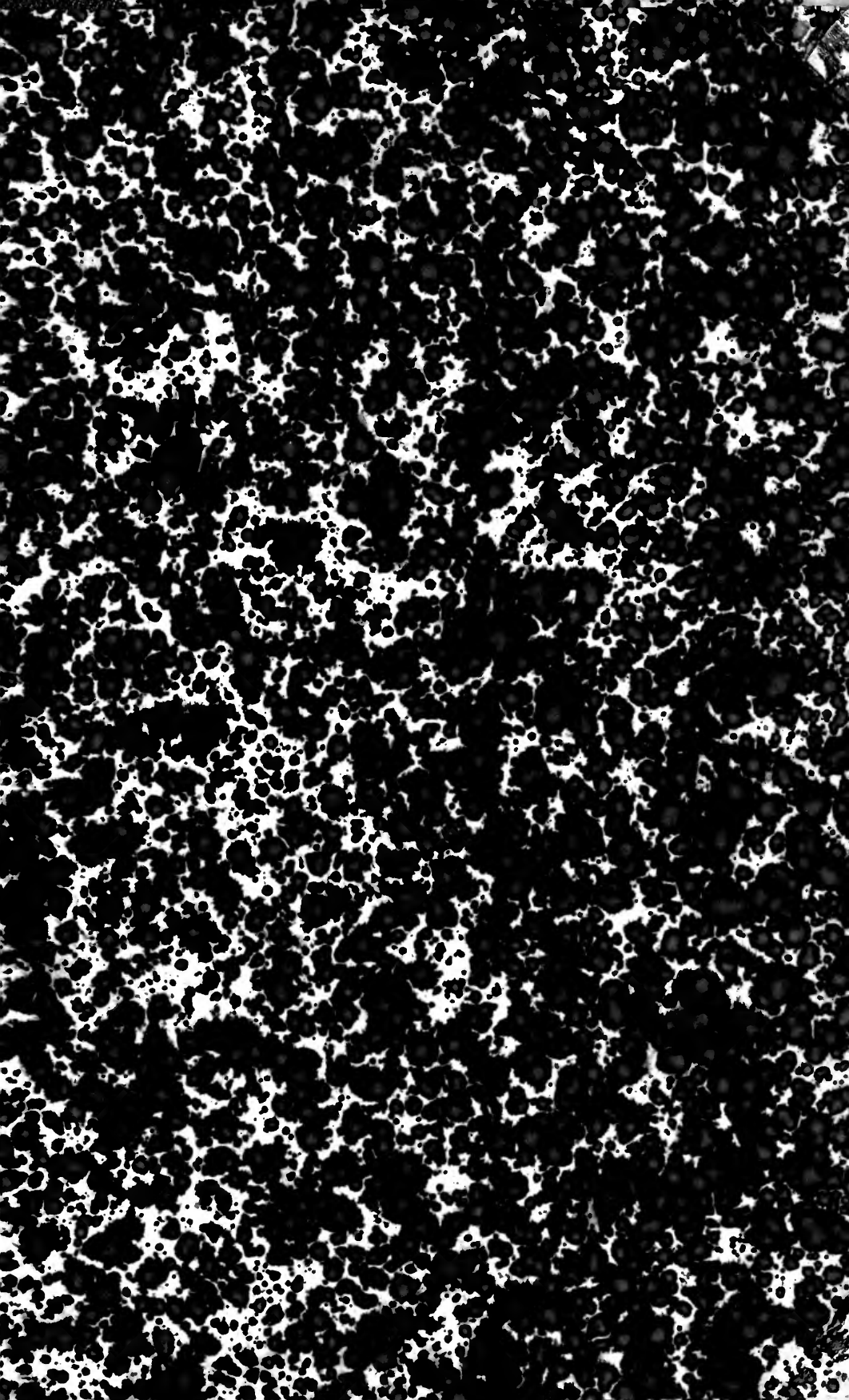
Nyctinomus brasiliensis. Geoff., *Am. Scien. Nat.*, 1, 1824, p. 337.

Twenty-six specimens, Enterprise, Florida.

Mr. Surber's account of the capture of these examples is as follows:

“At the home of Mr. Otto H. Voss, near Enterprise, quite a colony of these bats had taken up their residence in the boxing underneath a martin box erected on a tall pole, and had been domiciled there about two years when I made a raid on them in January, securing fifteen specimens. Probably more on account of the odor than anything else, for it was almost sickening in its intensity, they had driven away the martins the year before, and though none were in the martin house proper, they had full possession. A portion of the colony was left undisturbed, but they shortly afterwards deserted the place, and on my return to Enterprise, in March, Mr. Voss informed me he hadn't seen any for some time. On this second visit to Enterprise, late one afternoon, I saw issuing from a shutter in the upper story of the large building in which the postoffice is now located, several bats, and on investigating the matter next day I found, clinging to the inside of the darkened shutter next to the window sash, eleven more specimens of this same species which I easily secured with my hands. They are the only bats I saw anywhere in Florida.”





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