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MARCH 16, 1903 VOL. IV, PP. 1–2

PROCEEDINGS

OF THE

NEW ENGLAND ZOÖLOGICAL CLUB

A NEW RACE OF THE CAROLINA CHICKADEE FROM SOUTHERN FLORIDA.

BY OUTRAM BANGS.

LIKE so many other of the resident species of birds of southern Florida, the Carolina Chickadee has yielded to the modifying influences of the great peninsula and has developed a strongly marked South Floridian race. This tiny form of *Parus carolinensis* is by no means common in collections; and though for a long time aware of its existence, I have only lately secured typical specimens. These were taken by C. J. Maynard in March, 1901, near the upper St. John's River, where he found the bird in pairs and breeding.

This dwarf race of the Carolina Chickadee I propose to call

Parus carolinensis impiger[1] subsp. nov.

Type, from Deep Creek (about three miles from Lake Ashby), Florida, ♀ adult, no. 11,854, coll. of E. A. and O. Bangs, collected March 19, 1901, by C. J. Maynard.

Characters.— Similar in distribution of colors to true *P. carolinensis*, from which it differs in very much smaller size, all the parts — wing, tail, tarsus, foot and bill — being much shorter than in the more northern form, and in the color of the back, which in the new bird is decidedly more drabby or brownish gray — less pure gray.

[1] *Impiger* — active.

MEASUREMENTS (in millimeters).

Parus carolinensis impiger Bangs.

No.	Sex and age	Wing	Tail	Tarsus	Exposed culmen
11,855 (topotype)	♂ ad.	53.	46.5	14.6	7.8
11,854 (type)	♀ ad.	51.	44.0	14.4	7.6

Parus carolinensis carolinensis Aud.

No.	Sex and age	Locality	Wing	Tail	Tarsus	Exposed culmen
365	♂ ad.	W. Va. (Union)	58.5	49.5	16.0	8.8
12,188	♂ ad.	N. C. (Statesville)	61.0	50.5	15.6	8.2
308	♀ ad.	N. C. (Statesville)	61.0	50.0	15.8	8.6
307	♀ ad.	N. C. (Smithville)	57.0	47.0	15.8	8.2
11,802	♀ ad.	S. C. (Mt. Pleasant)	58.0	48.5	15.2	8.4
3253	♂ ad.	Ga. (Cumberland Isd.)	57.5	49.0	15.2	8.6
3254	♂ ad.	Ga. (Barrington)	59.0	49.0	16.0	8.4

Remarks. — All the specimens taken by Mr. Maynard in the spring of 1901 were equally small, and all were in worn breeding plumage. In this stage of plumage the Carolina chickadee loses almost entirely the buffy wash on the sides, the under parts appearing nearly uniform, dull, grayish white. The Florida form does not appear to differ in color from true *P. carolinensis* otherwise than in the general tone of the gray of the back, which is decidedly more brownish — less pure gray. Its very much smaller size — a really very great difference in such tiny birds — is its chief character and alone would entitle it to stand as an easily recognizable subspecies.

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PROCEEDINGS

OF THE

NEW ENGLAND ZOÖLOGICAL CLUB

A NEW WREN FROM SAN MIGUEL ISLAND, BAY OF PANAMA.

BY OUTRAM BANGS.

As I several times already have had occasion to state, the birds collected by W. W. Brown, Jr., on San Miguel Island, Bay of Panama, in April and May, 1900, were not compared with sufficient care, when I published a list of them,[1] with material of corresponding dates from the mainland; and since then I have felt obliged to describe several of them as new forms.

Lately, on re-examining the wren of the island, and carefully comparing it with a fine series of true *Thryophilus galbraithi* Lawr. from the adjacent mainland, I have found it to differ considerably, and I propose for it a new trinomial, characterized as follows: —

Thryophilus galbraithi conditus[2] subsp. nov.

Type, from San Miguel Island, Bay of Panama, ♂ adult, no. 4944, coll. of E. A. and O. Bangs, collected May 4, 1900, by W. W. Brown, Jr.

Characters.— Similar in general to true *Thryophilus galbraithi*, but slightly larger; upper parts decidedly redder, less olivaceous brown — in the new form almost russet, in true *T. galbraithi* almost bistre; sides of breast, belly, flanks and under tail coverts, much brighter reddish brown — deep tawny in the island bird, dull tawny-ochraceous in true *T. galbraithi*. In the new form the feathers of the back have a tendency to show rather distinct dusky cross-bars. These

[1] Auk, Vol. XVIII, pp. 24–32, Jan., 1901.

[2] *Conditus* — close, concealed.

markings are not always altogether wanting in true *T. galbraithi*, as a very close inspection of the feathers will show; but they are indistinct at best, and ever pronounced as is often the case in the island bird.

MEASUREMENTS (in millimeters).

Thryophilus galbraithi conditus Bangs.

No.	Sex and age	Wing	Tail	Tarsus	Exposed culmen
4944 (type)	♂ ad.	65.0	44.0	24.2	19.0
4941 (topotype)	♂ ad.	65.5	43.5	24.2	18.4
4945 "	♂ ad.	65.0	43.0	24.0	18.0
4943 "	♀ ad.	62.5	42.5	24.0	—
4946 "	♀ ad.	62.0	42.0	23.4	17.2
4942 "	♀ ad.	61.5	42.5	23.2	—

Thryophilus galbraithi galbraithi Lawr.

No.	Sex and age	Locality	Wing	Tail	Tarsus	Exposed culmen
7356	♂ ad.	Loma del Leon, Panama	62.	44.5	23.0	18.
7359	♂ ad.	" " " "	62.	45.	23.2	17.
7357	♀ ad.	" " " "	60.	41.5	22.6	16.
7358	♀ ad.	" " " "	60.	41.0	23.0	17.

March 24, 1903 Vol. IV, pp. 5–7

PROCEEDINGS

OF THE

NEW ENGLAND ZOÖLOGICAL CLUB

THE LOUISIANA CARDINAL.

BY OUTRAM BANGS.

In a footnote on pages 641 and 642 of his 'Birds of North and Middle America'[1] Ridgway gave measurements and some account of four male cardinals from Louisiana, suggesting that probably the form is a valid subspecies and eventually must be recognized.

A short time ago I received a series of twelve nicely made skins of cardinals from Louisiana, collected by A. Allison, F. N. Carruth, Jr., and J. N. Carruth; and upon comparing these with ample material from other points in eastern North America, I find Ridgway's suggestion to be well founded and the Louisiana race to be perhaps the best and most easily recognized of the forms of the *Cardinalis cardinalis* group, — the group in which the capistrum in the female is dull grayish. While most like the form of the Florida peninsula, — *Cardinalis cardinalis floridanus*, — the Louisiana cardinal differs slightly in color and measurements, and very much in the size of the bill, which is larger than in any of the other races of this group.

The Louisiana bird may be known as

[1] Bull. U. S. Nat. Mus., no. 50, part 1, 1901.

Cardinalis cardinalis magnirostris subsp. nov.

Type, from West Baton Rouge Parish, Louisiana, ♂ adult, no. 10,834, coll. of E. A. and O. Bangs, collected Jan. 26, 1903, by F. N. Carruth, Jr.

Characters.— Bill larger and heavier than in any of the other races of the *Cardinalis cardinalis* group (*C. cardinalis cardinalis*, *C. cardinalis floridanus*, or *C. cardinalis canicaudus*); otherwise, most like *C. cardinalis floridanus*, but wing slightly longer, tail shorter, and foot and tarsus larger. In color the male has the same olivaceous edging to the feathers of the back, but the red of head and under parts is not so dark as in the Florida bird, though decidedly more intense than is usual in *C. cardinalis cardinalis*. The female is colored as in *C. cardinalis floridanus*, the back being olivaceous and the under parts strongly buffy; the middle of belly, however, is rather paler — more whitish.

In both sexes the area occupied by the capistrum is greater than in the other races; and in the female the capistrum is not only more extended but decidedly darker, more sooty grayish in color, and much more conspicuous.

Measurements (in millimeters) of seven males and five females from West Baton Rouge Parish, Louisiana.

No.	Sex	Wing	Tail	Culmen from base	Depth of bill at base	Width of mandible at base	Tarsus
10,834 (type)	♂	94.5	102.0	19.4	16.4	13.8	25.0
10,833	♂	94.0	98.0	19.0	16.8	13.0	25.4
10,835	♂	94.0	102.0	19.6	16.4	13.2	25.0
10,827	♂	92.5	95.5	19.6	16.6	13.2	25.2
10,825	♂	91.0	97.5	19.0	16.8	13.0	25.4
10,826	♂	91.0	95.0	19.6	16.2	13.4	25.0
10,824	♂	89.0	91.0	19.0	15.4	12.6	24.0
Average		92.28	97.29	19.31	16.37	13.17	25.00
10,830	♀	90.5	93.	18.6	15.8	12.8	25.2
10,831	♀	89.5	90.	19.2	16.0	13.2	24.8
10,832	♀	89.0	95.	19.0	15.6	13.0	25.0
10,829	♀	88.5	96.	18.8	15.2	12.4	24.4
10,828	♀	87.0	94.	18.2	15.2	12.0	24.0
Average		88.90	93.60	18.76	15.56	12.68	24.68

Note.— From these measurements it will be seen that the wing and tail average longer than in the Louisiana birds measured by Ridgway (footnote, p.

641). My measurement of "culmen from base" is about one millimeter shorter than that of Ridgway, but in a large series of Florida birds that I have just measured my "culmen from base" falls short of Ridgway's for his *Cardinalis cardinalis floridanus* by just about one millimeter. Thus Ridgway and I have found the same difference between series from Louisiana and Florida, and I therefore suspect that, in some way, we use slightly different methods in taking this measurement.

March 24, 1903 Vol. IV, pp. 9–10

PROCEEDINGS

OF THE

NEW ENGLAND ZOÖLOGICAL CLUB

A NEW RACE OF *VIREOSYLVA JOSEPHÆ* FROM CHIRIQUI.

BY OUTRAM BANGS.

After a study of all available material, Dr. Robert Ridgway has called my attention to the necessity of subdividing *Vireosylva josephæ* (Sclater),[1] and has suggested that I name the Chiriqui form from the seven specimens collected in the winter and spring of 1901 by W. W. Brown, Jr.; accordingly I propose for this well-marked race the trinomial

Vireosylva josephæ chiriquensis subsp. nov.

Type, from Boquete, Volcan de Chiriqui, 4000 feet altitude, ♂ adult, no. 8692, coll. of E. A. and O. Bangs, collected April 8, 1901, by W. W. Brown, Jr.

Characters. — Differing from true *V. josephæ* in much greater amount of yellow on the under parts and in the richer shade of that color; in the brighter, much less dusky, olive green of the back, which is more sharply contrasted with the color of the head.

Color. — Sexes alike. Pileum dull grayish hair-brown, darker, more dusky, on sides of crown, and tinged with reddish brown on frontal apex; a conspic-

[1] Originally described (P. Z. S., 1859, p. 137, pl. 154) from Pallatanga, Ecuador, and usually given as ranging from Peru to Costa Rica.

uous, whitish, superciliary streak; cheeks grayish white passing into pale hair-brown below the superciliary streak, on both lores and auriculars; back, wing edgings and outer edges of rectrices, olive green, slightly paler and brighter on rump; narrow inner edges of rectrices yellowish; throat white, flecked with yellow; rest of under parts, including lining of wing and under tail coverts, bright, pale lemon-yellow.

Measurements. — Adult male, type: wing, 62.5; tail, 45.5; tarsus, 17.6: exposed culmen, 12.2 mm. Adult female, topotype, no. 8694: wing, 61.; tail, 45.; tarsus, 16.2; exposed culmen, 11.6 mm.

FEBRUARY 28, 1905 VOL. IV, PP. 11–15

PROCEEDINGS

OF THE

NEW ENGLAND ZOÖLOGICAL CLUB

NOTES ON THE DEER MICE *(PEROMYSCUS)* OF SOME OF THE ISLANDS OFF THE SOUTHERN NEW ENGLAND COAST.

BY OUTRAM BANGS.

DURING twelve years past I have made several collecting trips to the various islands lying off the southern coast of New England, in the course of which Monomoy, Muskeget, Martha's Vineyard, Nantucket and Block Island have been thoroughly explored. On two of these trips I was accompanied by Gerrit S. Miller, Jr., and on one by Miller and Charles F. Batchelder. All of these islands are inhabited by *Peromyscus*, as well as by several other species of small mammals; but in what way these little creatures reached the islands, or how long a time they have been on each, are questions it is idle to discuss. In some cases the amount of differentiation from the mainland stock can perhaps be taken as a criterion of the length of time the island has been inhabited. For instance, the deer mouse of Martha's Vineyard is a well-marked island form, while that of Nantucket cannot be told with any certainty from the one of the mainland. Neither of these

islands presents to a small mammal any surroundings particularly different from what he would find on the adjacent mainland, and the inference naturally is that the deer mouse has been on Nantucket a much shorter time than on Martha's Vineyard.

On Monomoy it is easy enough to see how change must be very rapid. The white sand dunes covered with *Ammophila* and other sand-loving plants, but where no trees of any sort can grow, offer to the deer mouse a home entirely different from the oak woods, the bushy old fields and maple swamps of the mainland. In such a place food is in the greatest abundance, and the deer mouse fairly swarms on the sand-hills of Monomoy, but if he wore his usual coat of reddish brown he would stand out like a red rag on the white sand and among the gray grasses. Nature has seen to this, however, and the Monomoy *Peromyscus* is clothed in a coat of pale gray, with the hairs of the belly white to their very roots. So far as color goes, he is an exact counterpart of *Peromyscus niveiventris*, which lives under precisely similar conditions on the beach of the east peninsula of the Indian River in Florida.

Martha's Vineyard and Monomoy are, among the islands I have visited, the only ones upon which the deer mouse has become sufficiently differentiated to need a special name. Specimens from the other islands — Nantucket, Tuckernuck (only in recent years separated from Nantucket), Muskeget, Block Island, and even Plum Island and Montauk Point, Long Island,[1] — represent collectively a form slightly — too slightly to be recognized in nomenclature — different from that of the mainland, and strangely enough the specimens from these various islands can hardly be told apart. In color this series does not differ from an equal series from the mainland, but the island examples are rather more robust and have slightly heavier skulls and dentition.

Wilfred H. Osgood has carefully gone over all my material during the preliminary work on his forthcoming review of the genus *Peromyscus*, and agrees with me in all the conclusions here set forth.

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[1] Specimens from the last two places, from the U. S. Biological Survey collection, have been kindly lent me for comparison by W. H. Osgood.

Peromyscus leucopus fusus[1] subsp. nov.

Martha's Vineyard Deer Mouse.

Distribution. — Martha's Vineyard Island, Massachusetts. Found in the oak woods, along the edges of the swamps, and occasionally in old buildings near woods, and in stone walls and brushy pastures. Not abundant anywhere that I have trapped.

Type, from West Tisbury, Martha's Vineyard Island, Massachusetts, adult ♂, no. 9737, Bangs coll., coll. of Museum of Comparative Zoölogy, collected June 17, 1899, by O. Bangs.

Characters. — Similar in color and general appearance to *Peromyscus leucopus noveboracensis*, but much larger; skull larger and rather heavier, the rostral portion of the skull much longer (this character well marked and constant); teeth larger, though perhaps not more than proportionately so.

Color. — Type, in summer: upper parts rich brown (a color somewhat between tawny and Prout's brown); darker along middle of back where the dusky-tipped hairs form an irregular dorsal stripe; under parts white, the base of the hairs gray; feet and hands white; ears dusky; tail bicolored, blackish above, white below.

Other summer examples are much duller in color, being almost hair-brown. In color, and in variations in color with age, season, etc., this form agrees with *P. leucopus noveboracensis*, and cannot be distinguished from it.

MEASUREMENTS (in millimeters).

No.	Sex and age	Total length	Tail vertebræ	Hind foot
9737 (type)	♂ ad.	197.0	92.0	23.5
9738	♂ ad.	190.0	85.0	22.0
9740	♀ ad.	187.0	88.0	22.0
9739	♂ ad.	199.0	96.0	22.5
1253	♂ ad.	199.0	89.5	21.5
1254	♂ ad.	192.5	87.0	23.0
1252	♀ ad.	203.0	95.0	22.0

Skull, type, old adult ♂: basal length, 25.8; occipito-nasal length, 28.4; length of nasals, 10.6; length of palatal slits, 5.4; length of palate, to palatal notch, 11.4, to end of pterygoid, 16.2; upper molar series, 3.8; zygomatic width, 14.6; mastoid width, 12.; interorbital width, 4.4; length of single half of mandible, 15.8; lower molar series, 3.6 mm.

[1] *Fusus* — large.

Peromyscus leucopus ammodytes[1] subsp. nov.

Monomoy Island Deer Mouse.

Distribution.— Monomoy Island, Massachusetts,— occurring, in the greatest abundance possible for a small mammal, on the sand-hills and in the clumps of beach plum and other small shrubs. We found no nests of any sort above ground, but numerous little round burrows in the sand, at the mouths of which we caught mouse after mouse as long as we kept traps set there.

Type, from Monomoy Island, Massachusetts, adult ♂, no. 828, Bangs coll., coll. of Museum of Comparative Zoölogy, collected Dec. 28, 1893, by G. S. Miller, Jr., and O. Bangs.

Characters.— Rather smaller than *Peromyscus leucopus noveboracensis*, with a shorter tail — not relatively shorter, as all the proportions are about the same. Colors very pale,— above pale gray, below pure white to base of hairs. Skull small, but robust; tail, above very pale grayish, below white.

Color.— Extreme individuals,— the type and similar specimens,— upper parts pale grayish fawn color, an ill-defined darker dorsal stripe drab; under parts pure white to base of hairs; feet and hands white; tail indistinctly bicolor, pale gray above, white below; ears (in dried skin) pale drab, nearly naked, the few short hairs silvery.

Variations in color.— While the pale grayish specimens, with pure white bellies, greatly predominate on Monomoy Island, there is still a wide range of variation in color, and a few individuals caught with the others are not distinguishable in any way from mainland specimens, and between these and the palest examples every degree of intermediate occurs. The reason for this is, I think, very simple. Monomoy, though often in the course of its history an island, has been at other times joined to the mainland by a long beach. At such times skunks, cottontail rabbits and foxes have worked their way to the island, and have established themselves there for at least a time. The deer mouse from the mainland probably has come in the same way, and from time to time has infused into the island form the very characters it was struggling to eliminate.

Miller and I tried many interesting experiments with these mice. Taking two,— one, a mouse similar in color to that of the mainland, and very ill adapted to its sandy environment, and one, the characteristic mouse of the island, with its highly developed protective coloration,— and placing them, backs up, on the sand, we would walk away from them. Very soon the gray individual would entirely merge into its surroundings and become invisible, while for a long distance more — in fact until it became too small, from distance, to see at all — the other one would stand out in sharp outline on the white sand.

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[1] *Ammodytes* — sand-burrower.

MEASUREMENTS (in millimeters)

of a series of twenty-four adults of both sexes.

No.	Sex	Total length	Tail vertebræ	Hind foot
803	♀	163.5	71.0	20.0
825	♂	163.0	74.0	20.0
813	♂	170.0	77.0	21.0
828 (type)	♂	185.0	88.0	20.4
810	♀	181.0	86.0	20.0
824	♀	160.0	75.0	20.0
817	♀	155.0	69.0	18.8
59	♂	153.0	70.5	20.0
815	♂	158.0	74.0	20.0
805	♀	157.0	72.5	19.0
71	♂	150.0	67.0	19.5
822	♀	168.0	73.0	20.0
72	♂	153.0	67.5	20.0
56	♀	152.0	71.0	19.5
55	♂	154.0	70.0	20.0
806	♀	151.5	70.0	19.0
811	♂	173.0	81.0	21.0
66	♂	177.0	79.5	21.0
818	♂	168.0	75.0	19.8
807	♂	162.0	76.0	20.0
64	♂	168.0	77.0	20.0
827	♂	166.0	78.0	21.0
821	♀	155.0	72.0	19.8
812	♀	188.0	88.0	20.4

Skull, type, old adult ♂ : basal length, 23.8; occipito-nasal length, 26.; length of nasals, 10.; length of palatal slits, 5.2; length of palate, to palatal notch, 10.4; to end of pterygoid, 15.2; upper molar series, 3.4; zygomatic width, 13.6; mastoid width, 11.2; interorbital width, 4.; length of single half of mandible, 14.2; lower molar series, 3. mm.

April 30, 1907 Vol. IV, pp. 17–18

PROCEEDINGS

OF THE

NEW ENGLAND ZOÖLOGICAL CLUB

A NEW RACE OF THE CALIFORNIAN THRASHER FROM LOWER CALIFORNIA.

BY JOHN E. THAYER AND OUTRAM BANGS.

In the autumn of 1906 Mr. W. W. Brown, Jr., made a large collection of birds, for the Thayer Museum at Lancaster, Massachusetts, in the vicinity of San Quintin, Lower California. At Rosario he took a fine series of the Californian Thrasher, that represents a subspecies easily distinguished from true *Toxostoma rediviva* or *T. rediviva pasadenensis*, which we propose to call

Toxostoma rediviva helva subsp. nov.

Type, from Rosario, Lower California (latitude 30°), adult ♀, no. 6000, coll. of John E. Thayer, Lancaster, Massachusetts, collected Nov. 19, 1906, by W. W. Brown, Jr.

Characters.— Similar in size and proportions to true *T. rediviva*; colors all much paler than in true *T. rediviva* or *T. rediviva pasadenensis* — back grayer, less brownish; pectoral collar much paler, less strongly

marked; rest of under parts much paler, the belly varying from almost buff in some individuals to dull ochraceous buff, the sides and flanks much less brownish.

MEASUREMENTS (in millimeters)

of six adults taken at Rosario.

No.	Sex	Wing	Tail	Tarsus	Culmen
6000 (type)	♀	99.	135.0	33.	38.
6001	♀	100.	134.0	35.	36.
6002	♀	96.	134.0	33.	35.
6003	♂	102.	133.5	34.	38.
6004	♂	103.	142.0	35.	37.

March 6, 1908 Vol. IV, pp. 19–21

PROCEEDINGS

OF THE

NEW ENGLAND ZOÖLOGICAL CLUB

NOTES ON THE MAMMALS OF BLOCK ISLAND, RHODE ISLAND.

BY OUTRAM BANGS.

In August, 1899, I made a stay of about ten days on Block Island for the purpose of securing a series of the indigenous mammals of the island, but for one reason or another I never until now have published an account of the results of my trip.

Block Island lies about nine miles directly out to sea off the coast of Rhode Island, and is about fourteen and a half miles from Montauk Point, Long Island. It is under high cultivation, and is entirely without woods, or even trees, except for a few willows and poplars planted near some of the houses. The island is composed of a series of low hills, of a gravelly soil, with innumerable little ponds in the valleys among them.

Mammals were not at all common on the island, and, apart from the house mouse (*Mus musculus musculus* Linn.) and the Norway rat (*Mus norvegicus norvegicus* Erxl.), both of which have been established and occur in a feral state, I found but two species, a *Microtus* and a *Peromyscus*. Nowhere could I find traces of the work of the mole (*Scalops*), nor did *Blarina*, *Sorex*, nor *Zapus*, fall into any of the hundreds of traps with which I covered the island. All of these genera occur on the islands off the southern coast of Massachusetts, and I had expected to find some of them, at least, on Block Island.

The *Peromyscus* of Block Island, as I have already stated in another paper,[1] is like that of most of the other islands of the south-

[1] Proc. New England Zoöl. Club, Vol. IV, pp. 11–15, Feb. 28, 1905.

ern New England coast, and slightly different from mainland specimens. It, however, is not different enough to be recognized as a subspecies, and must be known as *Peromyscus leucopus noveboracensis* (Fischer). The *Microtus*, which was much commoner than the *Peromyscus* on the island, and which I found chiefly in the marshy edges of the ponds, appears to be a very well-marked island form of the *pennsylvanicus* group, somewhat related to *M. breweri* (Baird) of Muskeget Island, and not at all nearly to (the now extinct?) *M. nesophilus* Bailey of Great Gull Island off the eastern extremity of Long Island.

It may be characterized as follows:

Microtus provectus sp. nov.

Type, from Block Island, Rhode Island, middle-aged adult ♀, no. 9794, Bangs coll., coll. Museum of Comparative Zoölogy, collected Aug. 5, 1899, by Outram Bangs.

Characters.— Size rather larger than in true *M. pennsylvanicus*; colors similar to those of southeastern Massachusetts examples of *M. pennsylvanicus*, except that the belly is always gray.[1] Skull peculiar, and much more like that of *M. breweri* than *M. pennsylvanicus*; interparietal very wide and extended far forward between parietals; nasals wide posteriorly and ending squarely — not rounding or pointed behind as in *M. pennsylvanicus*; audital bullæ rather large. In old age the skull is longer and narrower than that of *M. pennsylvanicus*.

From *M. breweri* the Block Island form can be told by much darker colors, normal pelage (not long and coarse), smaller size, smaller skull with less spoon-shaped nasals and wider interparietal.

Color.— Summer pelage. Whole upper parts yellowish bistre, somewhat varied by dark brown tips to many of the hairs; tail indistinctly bicolor — dusky above, grayish below; feet and hands dusky brown; under parts clear gray, becoming whitish along middle of belly and between arms.

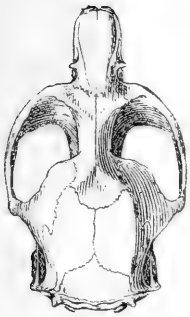
[1] Specimens from the Cape Cod region of eastern Massachusetts and the islands of Martha's Vineyard, Nantucket, etc., except of course Muskeget, where the very different *M. breweri* occurs, are rather different from true *M. pennsylvanicus* of the Middle States, being larger and much more reddish brown, the upper parts very often of a dull chestnut color, and the under parts usually much suffused with buffy or ochraceous shades. If this vole is considered, at any time, to represent a valid subspecies, it must bear, I think, the name *Microtus pennsylvanicus rufidorsum* (Baird), type locality, Holmes Hole, Martha's Vineyard Island, Massachusetts.

MEASUREMENTS (in millimeters)

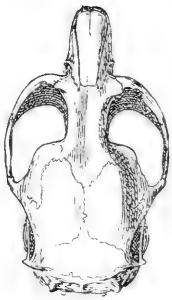
of twelve adults.

No.	Sex	Total length	Tail vertebræ	Hind foot
9792	♂	184	50.0	23.0
9793	♀	187	54.0	23.0
9794	♀	178	48.0	22.0
9795	♀	181	50.0	23.0
9796	♀	173	43.5	21.5
9797	♂	167	43.0	22.5
9799	♀	166	45.0	22.5
9800	♂	174	51.0	22.0
9801	♂	181	54.0	23.0
9802	♀	170	44.0	22.0
9803	♀	173	45.0	22.5
9804	♀	169	44.0	22.0

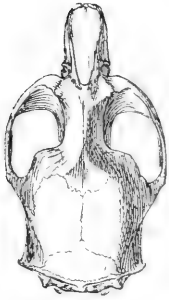
Skull, type, middle-aged adult ♀: basal length, 28.6; occipitonasal length 29.; length of nasals 8.8; zygomatic width, 17.; interorbital width, 4.; width of nasals, 3.4; mastoid width, 11.6; upper molar series, 7.; length of palate, to palatal notch, 14.6, to end of pterygoid, 19.4; length of palatal slits, 5.2; length of single half of mandible, 18.4; lower molar series, 6.8 mm.



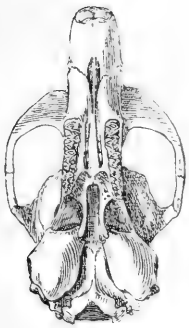
Microtus breweri
Muskeget Isd., Mass.
No. 727

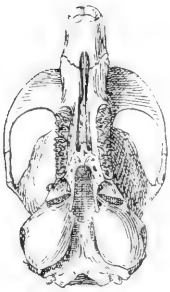


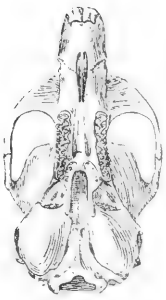
Microtus provectus
Block Island, R. I.
No. 9794 (type)



Microtus pennsylvanicus
Wareham, Mass.
No. 5415







SKULLS OF MICROTUS BREWERI, MICROTUS PROVECTUS AND MICROTUS PENNSYLVANICUS

About 1½ natural size

March 19, 1908 Vol. IV, pp. 23–35

PROCEEDINGS

OF THE

NEW ENGLAND ZOÖLOGICAL CLUB

ON CERTAIN COSTA RICAN BIRDS.

BY OUTRAM BANGS.

The following notes, records, and descriptions of a few new birds from Costa Rica and Panama, are based on material received, for the most part, from C. F. Underwood during the last few years, and are here all published together for the sake of convenience.

Ridgway in his great work, 'The Birds of North and Middle America,' has clearly pointed out the characters of some of the forms to which I now give names. In such cases of course I claim no new discoveries by myself, but merely that the accession of more ample or better material proves Ridgway to have been right in suspecting that these forms represented valid subspecies.

Coccyzus americanus occidentalis Ridg.

In Costa Rica true *Coccyzus americanus* is by far the commoner yellow-billed cuckoo, occurring, probably, only as an autumn and winter visitor, though I have a specimen taken as early as August; but the much larger bird that breeds in the Pacific coast region of North America — *C. americanus occidentalis* — also occasionally reaches Costa Rica on migration, as proved by an extremely characteristic example taken at San José, Oct. 25, 1905. This specimen, an adult male, no. 19,221, Bangs coll., had not undergone a complete autumnal moult; the rectrices are abraded, with the ends of

the feathers much worn, and some of the wing feathers are discolored and show signs of wear. Its measurements are: wing, 151; tail, 150; tarsus, 25; exposed culmen, 29 mm.

Trogon underwoodi sp. nov.

Type, from Volcan Miravalles, Costa Rica, ♂ adult, no. 16,581, coll. of E. A. and O. Bangs, collected Oct. 28, 1895, by C. F. Underwood.

Characters.— Adult male [1] similar in color to the same sex of *T. puella*, except in having the abdomen, sides and under tail coverts flame-scarlet, (those of *T. puella* being scarlet-vermilion). Similar also to *T. auranteiventris* except that the latter has the abdomen, sides and under tail coverts cadmium-orange.

Remarks.— Although the color of the under parts of *T. underwoodi* is intermediate in shade between that of *T. puella* and *T. auranteiventris*, I do not consider the bird to represent an intermediate form, because in regions where *T. puella* and *T. auranteiventris* occur together they do not intergrade.

In 1896 Salvin mentioned the peculiarities of the Miravalles trogon, but considered it an intermediate, and one specimen (also thought to be an intermediate), that is apparently similar to those from Miravalles, is recorded in the 'Catalogue of the Birds of the British Museum,' Vol. XVII, p. 455, from Barranca, Costa Rica. Very probably this example came from the mountains above Boca Barranca (all the trogons of this sort — *T. puella*, *T. auranteiventris* and *T. underwoodi* — are strictly mountain birds), for these mountains are not far from, and in the same general watershed as, Miravalles.

I therefore consider the new bird a distinct species, and I think it probably will prove to have an extensive distribution in the broken mountain ranges of northwestern Costa Rica, a region where, so far as I know, neither of the allied forms — *T. puella* and *T. auranteiventris* — has ever been found to occur.

I have named this species for Mr. C. F. Underwood, in partial recognition of what he has done in the field of Costa Rican ornithology.

[1] I have seen but one, immature, female of the new form. This skin does not differ much from young females of *T. auranteiventris*.

Panterpe insignis Cab. and Heine.

While on Irazú in December, 1906, and January, 1907, Mr. Underwood secured a large number of specimens of *Panterpe insignis*. Among these is one individual exhibiting strikingly abnormal coloration, possibly due to melanism. It is a male, and was killed Dec. 8, 1906. It entirely lacks the glittering green of the back, belly, sides and under tail coverts of the normal bird, being of a general dusky coloration, the under parts inclining to slaty, with slight purplish metallic reflections on back and breast; the wing coverts are dull green; the throat, dull metallic greenish, changing to leaden on the chin; the crown (glittering violet blue in the normal bird) is dull, shining, leaden gray; the tail, dark blue, slightly darker and duller than in normally colored examples.

Abnormally colored hummingbirds are not infrequent, and have turned up in a number of genera, many having been described as 'species'; and this, at first sight, extraordinary-looking bird is but another instance of the tendency to color 'freaks' exhibited by the Trochilidæ.

Lophornis delattrii (Less.).

In October, 1900, Mr. Underwood took a young male of this species at San Pedro, Costa Rica, and at the same place in October, 1906, he secured two more, both young males. All three skins are in my collection.

L. delattrii is not uncommon throughout Panama, and its occasional occurrence in Costa Rica was to be expected; however, I believe, these three specimens are the first actually to be recorded.

Chætura spinicauda fumosa (Salv.) and **Chætura cinereiventris phæopygos** Hellmayr.

In 'Das Tierreich,' Mæropterygidæ, 1897, Hartert gave two gray-rumped swifts as inhabiting Costa Rica, calling them by the names,

Chætura cinereiventris guianensis Hartert, and *Chætura fumosa* Salvin. Lately Hellmayr [1] has said that Costa Rican birds were wrongly referred to *Chætura fumosa* (originally described from Veragua), and has named, as a new subspecies, *Chætura cinereiventris phæopygos* from eastern Costa Rica,— type locality, Carrillo. Probably Hellmayr had no specimens from the Pacific side of the Cordillera in Costa Rica before him when he wrote.

In reality two very distinct species (in addition to *Chætura gaumeri* Lawr. and *C. vauxi* (Towns.)) inhabit Costa Rica. One, *Chætura cinereiventris phæopygos* Hellmayr, a form closely related to both *C. cinereiventris lawrencei* Ridg. of Grenada and *C. cinereiventris guianensis* Hart. of Guiana, Venezuela, Trinidad and Tobago, occupies eastern Costa Rica. I have specimens from Carrillo — the type locality — and from Juan Vinas.

The other, *Chætura spinicauda fumosa* (Salv.), a northern form of *C. spinicauda*, differing from the typical bird of Cayenne and Guiana in wider gray band across rump and slightly darker under parts, occupies the Pacific slope of Costa Rica, and extends thence south through Veragua and Chiriqui to northern Colombia and Amazonia (Para and Santarem). I have a series of skins from Pozo Azul Pirris.

From one another these two Costa Rican swifts are easily told; *C. cinereicauda phæopygos* has a dark gray rump, with the upper tail coverts of practically the same color, and the belly dark brown; *C. spinicauda fumosa* has a pale gray rump, with the longer upper tail coverts black and the belly blackish.

The case of these two swifts is but another instance of that extraordinary development of bird life in Costa Rica, where the Atlantic (or perhaps better Caribbean) slope of the main cordillera is inhabited by one form, and the Pacific slope by another.

Pachyrhamphus versicolor costaricensis subsp. nov.

Type, from Irazú, Costa Rica, ♂ adult, no. 17,089, coll. of E. A. and O. Bangs, collected Sept. 6, 1898, by C. F. Underwood.

[1] Bull. British Ornith. Club, Vol. XVI, No. CXXIV, p. 83, May 8, 1906.

Characters.— Of about the same size as true *P. versicolor* (Hartl.) of Colombia, but differing considerably in markings and color. The adult male of the new form has the barring below much more strongly pronounced, the dark bars wider and blacker, and the sides of head, neck and throat much brighter olive yellow. The adult female has the sides of head and throat much darker — more strongly olive yellow, and the whole under parts rather yellower.

Remarks.— In Part IV of his great work Ridgway pointed out the differences shown by the Costa Rican form of *P. versicolor*, and although he did not give it a name, he has told me he was much tempted to do so. At that time he had but two specimens from Costa Rica before him — adults, male and female — both from my collection. Since then I have received from Underwood one more, an adult female, killed as were the others on Irazú, and I have not the slightest hesitation in giving the form, which is well marked, a name. The bird is very seldom taken by collectors, being either very rare or singularly hard to shoot.

Myiobius xanthopygus aureatus subsp. nov.

Type, from Divala, Chiriqui, Panama, ♂ adult, no. 8036, coll. of E. A. and O. Bangs, collected April 21, 1900, by W. W. Brown, Jr.

Characters.— Similar to *Myiobius xanthopygus sulphureipygius* (Sclater) of southern Mexico, but slightly smaller; decidedly paler in color below — the tawny brown of chest and sides lighter, the yellow of belly clearer and usually brighter; under tail coverts *pale yellow*, usually, though not always, with U- or V-shaped brownish markings. (The under tail coverts in *M. xanthopygus sulphureipygius* are always light cinnamon-brown). From *M. xanthopygus xanthopygus* of eastern Brazil the new form differs in the olive of back being darker, and the under tail coverts being yellow, and from *M. xanthopygus villosus* of Colombia, Peru and Bolivia in less brownish color of back, paler chest and sides, and larger yellow belly patch.

Measurements.— Adult male, type: wing, 63.5; tail, 53.; tarsus, 18.; exposed culmen, 11.5 mm. (Numerous other skins measured by me correspond so closely to the figures given by Ridgway on page 490, Part IV, Birds of North and Middle America, that I do not list them).

Remarks.— Since Ridgway [1] so clearly pointed out the characters that distinguish the Mexican and Central American forms of

[1] Birds of North and Middle America, Part IV, pp. 490–491, foot-note.

Myiobius xanthopygus, I have had an opportunity of examining much additional material — upward of thirty skins from Costa Rica and a very interesting little series from British Honduras. There is no question that two distinct subspecies occur in Middle America, and Ridgway was right, I think, in supposing that the more northern one is confined to southern Mexico. Skins from British Honduras are intermediate, some being very nearly like Mexican ones, others showing an approach to the Central American form. Probably the bird of northern Guatemala, which I have not seen, would be the same. Thence southward over the whole of Central America, from Honduras to Panama, occurs only the new form, easily told from *M. xanthopygus sulphureipygius* (Sclater) of southern Mexico (type locality, Cordova, Vera Cruz, Mexico) by smaller size, paler under parts and light yellow instead of pale cinnamon-brown, under tail coverts.

Zeledonia coronata Ridg.

Twenty skins of this species, taken on Irazú in December, 1906, and January, 1907, prove inseparable in any way from specimens from Poás, Costa Rica, on the one hand, and from the Volcan de Chiriqui, Panama, on the other.

Zeledonia insperata Cherrie was evidently therefore — as suggested by Ridgway ('Birds of North and Middle America,' Part IV, p. 72, foot-note) — based on an abnormally colored, probably partially albinistic, individual.

Troglodytes ochraceus Ridg.

At the time Ridgway wrote his account of this wren for Part III of his great work, but little material was available; he had, I believe, only the type of *ochraceus* from Irazú, Costa Rica, and four skins from the Volcan de Chiriqui, Panama, taken by Brown. Since then I have received from Underwood seven examples of *T. ochraceus* from Irazú, and comparing these critically with the Chiriqui

specimens, I have come to the conclusion that the two volcanoes are inhabited by different subspecies. Both differ from *T. solstitialis* Sclater of Ecuador in having unbarred flanks. From each other they differ in constant, though slight, differences in the shades of the browns of the upper parts, and in the bill being slightly larger in the Chiriqui form. Restricting true *Troglodytes ochraceus* Ridg. to Irazú, I propose for the form of the Volcan de Chiriqui the name

Troglodytes ochraceus ligea subsp. nov.

Type, from Boquete (4000 feet altitude), Volcan de Chiriqui, Panama, ♂ adult, no. 8627, coll. of E. A. and O. Bangs, collected March 2, 1901, by W. W. Brown, Jr.

Characters.— Similar to true *T. ochraceus* Ridg., but with a slightly larger bill; upper parts darker, more tawny, less ochraceous brown,— this is especially noticeable on forehead and crown; lores, superciliary streak and cheeks, redder or more tawny brown, less ochraceous.

MEASUREMENTS (in millimeters).

Troglodytes ochraceus ochraceus Ridg. from Irazú, Costa Rica.

No.	Sex and age	Wing	Tail	Tarsus	Exposed culmen
17,180	♂ ad.	46.0	30.0	17.0	13.0
19,153	♂ ad.	45.5	27.5	17.5	13.5
19,154	♂ ad.	46.0	32.0	18.0	13.0
19,156	♂ ad.	47.0	29.5	17.5	13.0
19,155	♀ ad.	43.5	27.5	17.0	12.5
19,152	♀ ad.	43.5	——	16.5	12.5

Troglodytes ochraceus ligea subsp. nov. from Volcan de Chiriqui, Panama.

No.	Sex and age	Wing	Tail	Tarsus	Exposed culmen
8627	♂ ad.	46.5	31.0	17.5	14.0
8629	♂ ad.	47.5	33.0	18.0	13.5
8630	♂ ad.	46.0	30.0	17.5	14.0
8628	(♀ ?)[1] ad.	46.0	31.5	17.5	13.5

[1] This was marked '♀' by the collector, but I doubt this being correct, as it is as large as the males.

Thryorchilus ridgwayi Bangs.

On his last trip to Irazú in December, 1906, and January, 1907, Mr. Underwood made special efforts to get specimens of Ridgway's wren, and succeeded in taking four. These are all in very fresh plumage, with the feathers long and unworn, and the colors of the back are rather brighter than in the type. They are darker and browner, however, than in *T. browni* of the Volcan de Chiriqui. The under parts, especially the throat and belly, are whiter, less grayish, than in *T. browni.*

The larger size of *T. ridgwayi* is borne out by the present series which affords the following measurements (in millimeters).

No.	Sex and age	Wing	Tail	Tarsus	Exposed culmen
19,147	♂ ad.	51.5	29.0	23.0	——
19,146	♀ ad.	48.0	28.0	21.5	11.5
19,148	♀ ad.	49.0	28.5	22.0	12.5
19,149	♀ ad.	49.0	29.0	22.0	——

Myioborus aurantiacus (Baird).

Recently I compared, for the first time a large series of *Myioborus aurantiacus* from Costa Rica with the five examples taken in 1901 by Brown on the Volcan de Chiriqui, and was quite surprised to find that the latter represent a form easily distinguished from true *M. aurantiacus* by the paler, yellower, less orange, color of the under parts. It therefore seems necessary to restrict true *M. aurantiacus* to the highlands of Costa Rica, and to give the Chiriqui bird a name, and I propose for it

Myioborus aurantiacus acceptus subsp. nov.

Type, from Boquete (4000 feet altitude), Volcan de Chiriqui, Panama, ♀ adult, no. 9564, coll. of E. A. and O. Bangs, collected Jan. 17, 1901, by W. W. Brown, Jr.

Characters.— Similar to true *M. aurantiacus* (Baird) of the highlands of Costa Rica, and of the same size, but the yellow of the under parts

constantly much paler — less orange, being chrome-yellow to gamboge, whereas in true *M. aurantiacus* the color of the under parts is saffron or cadmium. The under parts in the Chiriqui bird are almost exactly intermediate in color between those of true *M. aurantiacus* of Costa Rica and *M. verticalis* of northern South America. The latter bird, however, though it belongs to this group, has other good characters — gray instead of black forehead and sides of crown — and is probably a distinct species.

Phlogothraupis sanguinolenta aprica subsp. nov.

Type, from Carrillo, Costa Rica, ♂ adult, no. 17,445, coll. of E. A. and O. Bangs, collected Nov. 11, 1897, by C. F. Underwood.

Characters.— Similar in color to true *P. sanguinolenta* of southeastern Mexico, Guatemala and Honduras, but much smaller in all dimensions. Adult males average: wing, 87.3; tail, 75.1; tarsus, 21.3; exposed culmen, 15.6 mm. Adult females average: wing, 82.3; tail, 72.; tarsus, 20.2; exposed culmen, 15.7 mm. In true *P. sanguinolenta* the adult male averages, wing, 91., tail, 80.3, tarsus, 21.8, exposed culmen, 16.6 mm.; the adult female averages, wing, 88.2, tail, 79.9, tarsus, 21.4, exposed culmen, 16.6 mm.

Measurements. I append the following lists of measurements, of all specimens in the U. S. National Museum (kindly made for me by J. H. Riley), all those in the Bureau of Biological Survey collection, U. S. Department of Agriculture (kindly made by E. W. Nelson), and all in my own collection (taken by myself), in order to show the range of individual variation in each form. All are adults.

Phlogothraupis sanguinolenta aprica Bangs.

No.	Sex	Locality	Wing	Tail	Tarsus	Exposed culmen
126,940[1]	♂	Nicaragua, Escondido R.	88.0	77.5	21.5	——
33,320[1]	♂	Costa Rica, San Carlos	91.0	79.5	22.5	16.5
34,709[1]	♂	" " Angostura	86.0	71.5	21.5	15.5
199,876[1]	♂	" " Jimenez	89.5	74.0	21.0	16.0
17,446[2]	♂	" " Cariblanco de Sarapiqui	89.0	75.0	20.5	14.5
17,445[2]	♂	" " Carrillo	87.0	76.0	20.5	15.0
19,598[2]	♂	" " "	86.0	76.0	21.0	16.0
19,599[2]	♂	" " "	84.0	74.0	21.0	15.5
19,600[2]	♂	" " "	85.0	72.0	22.0	16.0
17,444[2]	♀	" " "	81.0	72.0	20.0	15.5
34,710[1]	♀	" " Angostura	83.5	72.0	20.5	16.0

[1] Coll. U. S. National Museum.
[2] Coll. of E. A. and O. Bangs.

Phlogothraupis sanguinolenta sanguinolenta (Lesson).

No.	Sex	Locality	Wing	Tail	Tarsus	Exposed culmen
143,578[3]	♂	Mexico, V. C., Motzorongo	90.5	79.0	21.0	16.5
143,579[3]	♂	" " "	91.0	80.5	21.5	16.0
143,581[3]	♂	" " "	90.5	78.5	22.5	17.0
143,582[3]	♂	" " "	91.0	81.5	22.3	17.5
166,229[3]	♂	Mexico, Tabasco, Teapa	91.5	77.0	23.0	16.4
2392[2]	♂	Mexico, V. C., Buena Vista	91.0	83.0	21.5	15.5
2393[2]	♂	" " " "	89.5	79.0	22.0	16.5
2394[2]	♂	" " " "	91.0	81.0	22.0	16.5
13,846[2]	♂	Guatemala, Gualan	92.0	81.0	22.5	17.0
13,847[2]	♂	" "	91.0	79.0	22.0	16.0
13,848[2]	♂	" "	92.0	83.0	22.5	17.0
146,575[1]	♂	Guatemala	94.5	82.0	21.5	16.0
20,001[2]	♂	British Honduras, Toledo	91.0	80.5	22.0	16.5
20,002[2]	♂	" " "	90.0	80.0	21.0	17.0
10,056[2]	♂	Honduras, Yaruca	90.0	81.0	21.0	17.0
10,057[2]	♂	" "	90.0	81.0	22.0	16.0
10,058[2]	♂	" "	90.5	82.0	21.0	17.0
112,091[1]	♂	Honduras, Segovia River	90.0	77.0	20.0	17.0
143,580[3]	♀	Mexico, V. C., Motzorongo	88.0	81.0	21.3	17.7
166,230[3]	♀	Mexico, Tabasco, Teapa	90.5	81.2	22.4	17.3
166,231[3]	♀	" " "	88.5	79.0	21.4	17.0
166,232[3]	♀	" " "	89.0	80.0	22.5	18.0
146,576[1]	♀	Guatemala	90.0	80.0	22.0	17.0
50,515[1]	♀	"	88.5	80.0	21.5	16.0
30,741[1]	♀	Vera Paz, Choctun	89.0	79.5	21.0	16.0
19,873[2]	♀	British Honduras, Toledo	86.0	78.0	21.0	16.0
10,055[2]	♀	Honduras, Yaruca	86.0	78.0	20.5	15.5
10,059[2]	♀	Honduras, Ceiba	87.0	80.0	21.0	15.5
10,060[2]	♀	" "	87.0	80.0	21.5	17.0
10,061[2]	♀	" "	86.0	78.5	21.0	16.0
161,651[1]	♀	Honduras, San Pedro Sula	90.5	84.5	21.5	16.5

Remarks.— In dividing *Phlogothraupis sanguinolenta* into two subspecies, I should restrict true *P. sanguinolenta* (type locality, 'Mexico') to the region from southeastern Mexico south to southern Honduras, and limit the range of the new form, *P. sanguinolenta aprica*, to southeastern Nicaragua and eastern Costa Rica.

[1] Coll. of U. S. National Museum.
[2] Coll. of E. A. and O. Bangs.
[3] Coll. of Biological Survey, U. S. Dept. of Agriculture.

In 'Birds of North and Middle America,' Part II, p. 121, Ridgway gave average measurements for Guatemalan specimens, that are too small. This was done because he included no. 146,574, U. S. Nat. Mus. coll., from Guatemala, marked on the label as a male, in his averages. This skin affords the following measurements: wing, 84.; tail, 76.; tarsus, 20.5; exposed culmen, 16. mm. I feel sure the sex was wrongly determined and that it is a female. All undoubted males from Guatemala are quite as large as those from southeastern Mexico, and Honduras specimens are only a trifle smaller.

Some ornithologists may not agree with me as to the advisability of separating subspecies on differences of size alone, but it is being done more and more as time goes on, and in this particular case it seems justifiable. Here we have the extreme northern form bearing one name, and the extreme southern, the other. Each has a well-defined range, and the difference in size is well marked. No northern individual, in the large number examined, is as small as the average of the southern series, and it seems to me better to have a name for the little southern bird, rather than to have to repeat every time we mention it, that it is much smaller than true *P. sanguinolenta* of southeastern Mexico and Guatemala.

Chlorospingus zeledoni Ridg.

At my special request Mr. Underwood secured as large a series of the black-capped chlorospingas on Irazú, on his last trip, as time would allow, taking forty-six specimens. Of these, nine are referable to the bird lately named *C. zeledoni* by Ridgway. There is no doubt that this latter is a fine, distinct species. In the present series there is not a single skin that could in any way be called intermediate. Some three or four examples are in color (nearly wholly gray beneath, and with very dull grayish olive-green backs) like the skin from Turrialba, doubtfully referred to *C. zeledoni* by Ridgway, and this phase of plumage I take to merely represent the extreme of the species.

While occurring with *C. pileatus* on both Irazú and Turrialba,

C. zeledoni does not apparently range so far south as the Volcan de Chiriqui, the large number of specimens, taken by Brown on this volcano, being all typical of *C. pileatus*.

Spinus xanthogaster bryanti (Cassin).

I now have a fine suite of specimens of *Spinus xanthogaster* from Costa Rica, including a number of adult males. Unfortunately I have but one adult male from Colombia (a Bogotá skin) for comparison, but this one is so very different from any of the Costa Rican specimens that I have not the slightest doubt that *bryanti* (type locality, Dota, Costa Rica) is a perfectly valid subspecies.

The Colombian skin — true *S. xanthogaster* (DuBus) — is slightly smaller than the Costa Rican specimens, but has an actually larger, heavier bill. Its under parts — breast, belly and under tail coverts — are much darker, more saturated yellow; the yellow spot in the wings is smaller; and the yellow at the base of the tail feathers is much more restricted, occupying considerably less than half of the length of the feathers, whereas in every Costa Rican adult male it occupies more than half of the length of the feathers.

Emberizoides sphenura lucaris subsp. nov.

Type, from Boruca, Costa Rica, ♂ adult, no. 18,590, coll. of E. A. and O. Bangs, collected May 5, 1906, by C. F. Underwood.

Characters.— Similar to *E. sphenura hypochondriacus* (Hellmayr) of Frances, Volcan de Chiriqui, Panama, and of about the same size except that the tail appears to be a little longer; but color of chest, sides and flanks much brighter and darker buffy brown; rump more rufescent; sides uniform buffy brown, the flanks only narrowly striped with dusky (in *E. sphenura hypochondriacus* both sides and flanks are heavily striped with blackish).

MEASUREMENTS (in millimeters).

No.	Sex and age	Locality	Wing	Tail	Tarsus	Exposed culmen
18,590	♂ ad.	Boruca, C. R.	63.5	93	22.0	12.5
18,586	♀ ad.	" "	64.0	88	22.5	13.0
18,585	♂ ad.	Barranca, C. R.	64.5	89	22.5	13.0
18,587	♀ ad.	" "	62.0	—	21.5	13.0
18,588	♀ ad.	" "	61.0	—	22.0	12.5
18,589	♀ ad.	" "	61.0	—	21.5	13.0

Remarks.— In my paper on Underwood's collection from the Boruca region of southwestern Costa Rica [1] I referred the long-tailed finches he took to the recently described *Emberizoides sphenura hypochondriacus* (Hellmayr) of Chiriqui. Afterward, not being able to reconcile my specimens with Hellmayr's description, I sent them to him and he most kindly compared them with the original seven skins at the Tring Museum. He subsequently wrote me that the two lots of skins represented quite distinct forms, carefully pointing out the differences.

The Costa Rican form of *E. sphenura* is the darkest of all the races, on fore neck and chest, the intensity of the color of these parts being unequalled among the other subspecies.

[1] Auk, Vol. XXIV, p. 309, July, 1907.

JUNE 24, 1908 VOL. IV, PP. 37–38

PROCEEDINGS

OF THE

NEW ENGLAND ZOÖLOGICAL CLUB

THE NEWFOUNDLAND HAIRY WOODPECKER.

BY CHARLES FOSTER BATCHELDER.

THE HAIRY WOODPECKER of Newfoundland differs so much from the forms of this species inhabiting the neighboring portions of North America that it must be recognized as a distinct subspecies. It may be named and characterized as follows.

Dryobates villosus terrænovæ subsp. nov.

Type, from Placentia, Newfoundland, ♂ adult, no. 5227, coll. of C. F. Batchelder, collected May 30, 1890, by J. C. Cahoon.

Characters.— Similar to typical *Dryobates villosus*, but slightly larger, the black areas of the upper parts increased, the white areas reduced both in number and in size, especially in the remiges and wing coverts.

Description.— Above black; nasal feathers whitish, some of them black or tipped with black, the white often obscured by brownish staining; two white stripes on each side of head; a scarlet nuchal band; a white stripe down the middle of the back. Wings black, spotted with white; the spots small, relatively few on the coverts, and largely lacking on distal portion of inner web of primaries; the spots tend to be shortened in the direction of the longitudinal axis of the feather, and thus to produce an approach toward transverse barring. Middle two pairs of tail-feathers black; third pair white only distally on the margin of the outer web and on small portions of the inner web, the extreme tip usually black; fourth and fifth pairs white, with a varying but considerable part of the proximal

half of the feather black and not infrequently with a strong tendency to black barring on the distal portion. Beneath white, the under tail coverts occasionally showing a faint tendency toward black barring.

Measurements.— Fifteen adult males taken in the months of May, June and October, yield the following average measurements: wing, 124.9; tail, 84.6; culmen, 31.7; tarsus, 24.1 mm.

Geographic distribution.— The subspecies apparently occurs throughout all the forested parts of the island of Newfoundland.

Dryobates villosus terrænovæ is much smaller than *D. v. leucomelas*, and is, of course, even more remote from it in coloring than from true *villosus*. Between it and *D. v. hyloscopus* and *D. v. monticola* there is a striking resemblance in coloring, but the wide area — occupied throughout its extent either by *villosus* or by *leucomelas* — that intervenes between the ranges of these two Western subspecies and that of *terrænovæ*, precludes the possibility of immediate intergradation, while the utter dissimilarity of the climatic conditions of their respective habitats forbids the supposition that like causes in environment have developed like characters; apparently this is a case where superficial resemblances have arisen entirely independently of climatic influences. Comparison with other subspecies of *Dryobates villosus* obviously is unnecessary.

April 29, 1909 Vol. IV, pp. 39–41

PROCEEDINGS

OF THE

NEW ENGLAND ZOÖLOGICAL CLUB

DESCRIPTION OF A NEW SUBSPECIES OF THE SNOWY HERON.

BY JOHN E. THAYER AND OUTRAM BANGS.

One of the important discoveries made by W. W. Brown, Jr., while collecting birds in Lower California, for the Thayer Museum, was finding a large colony of Snowy Herons nesting at San José Island in the Gulf of California, about sixty miles north of La Paz.

From this colony Mr. Brown took several sets of eggs; he also made a dozen skins of the birds, then in full breeding plumage. When unpacking these birds, we were at once struck by their large size,— especially by their long bills and huge legs,— and upon comparison with an extensive series from the southeastern United States we found the differences to be so great that we propose to call the Lower Californian bird, in honor of William Brewster, as a

slight acknowledgment of the excellence of his 'Birds of the Cape Region of Lower California,'

Egretta candidissima brewsteri subsp. nov.

Type, from San José Island, Gulf of California (near La Paz, Lower California), ♂ adult, no. 11,419, coll. of John E. Thayer, Lancaster, Mass., collected June 20, 1908, by W. W. Brown, Jr.

Characters.— Similar to true *E. candidissima* (Gmel.), but larger, bill longer, tarsus longer, and whole leg *very much* heavier or thicker.

Remarks.— *Egretta candidissima* (Gmel.) was named from Cartagena, Colombia, and specimens from eastern South America are said to be even smaller than those from the southeastern United States; unfortunately we have seen no skins from near the type locality, and compare our new Lower Californian giant with birds from Florida, Georgia, etc. The enormously heavy legs of the new form are enough to distinguish it; but in addition to this it is a much larger bird, the measurements of wing, tail and bill only partially indicating the great difference in actual bulk between it and the form found in the southeastern United States. In both forms females are rather smaller than males.

As to the range of the new form, we can say but little, though it is probable that it extends, or did extend, north to southern California and across the Gulf to western Mexico.[1]

---

[1] Four skins, all immature or in non-breeding plumage, three of them females and the other a young male, in Mr. Brewster's collection, from places not far away, afford the following measurements, and we are rather inclined to think that they belong to our *Egretta candidissima brewsteri*.

No.	Sex	Locality	Wing	Tail	Tarsus	Culmen
4,803	♀	California, Riverside	245	89	97.5	79.0
18,139	♀	Lower Cal. San José del Cabo	254	88	103.0	85.0
18,140	♀	" " " " " "	258	87	103.0	90.0
25,024	♂	Sonora, Guaymas	272	93	107.0	95.5

MEASUREMENTS (in millimeters) OF ADULTS.

Egretta candidissima brewsteri Thayer and Bangs.

No.	Sex	Locality	Wing	Tail	Tarsus	Culmen
11,418	♂	Lower Cal. San José Isd.	261	89.0	112	86
11,419	♂	" " " " "	271	96.0	114	95
11,421	♂	" " " " "	282	98.0	110	98
11,422	♂	" " " " "	283	98.0	114	99
11,410	♀	" " " " "	261	95.0	103	87
11,411	♀	" " " " "	260	91.0	99	84
11,412	♀	" " " " "	252	91.0	98	84
11,417	♀	" " " " "	260	92.0	105	94
20,279[1]	♀	" " " " "	276	94.0	108	86
10,142	♀	Lower Cal. La Paz	255	92.5	103	85

Egretta candidissima candidissima (Gmel.).

No.	Sex	Locality	Wing	Tail	Tarsus	Culmen
8,794	♂	South Carolina, near Charleston	260	84.0	105.0	87.0
8,795	♂	" " " "	270	89.0	106.0	86.0
25,415	♂	South Carolina, Frogmore	258	89.0	100.0	87.0
25,417	♂	Georgia, Broro Neck	265	86.5	105.0	88.0
25,418	♂	" " "	255	88.0	96.0	83.5
25,419	♂	" " "	251	83.5	96.5	87.0
25,420	♂	" " "	251	92.0	97.0	83.0
25,421	♂	" " "	248	85.0	95.0	76.0
25,416	♂	" " "	257	90.0	94.5	88.0
26,637	♂	Georgia, McIntosh Co.	259	83.0	93.0	79.0
26,638	♂	" " "	245	87.0	83.0	82.0
26,639	♂	" " "	268	88.0	99.0	85.0
26,640	♂	" " "	261	90.0	106.0	83.0
3,972	♂	Florida, Cedar Keys	250	84.0	97.5	81.5
29,226	♂	Florida, Tarpon Springs	265	83.0	94.5	74.0
29,227	♂	" " "	255	92.0	93.0	77.0
1,093[2]	♂	Florida, Georgiana	240	85.0	95.0	79.0
6,483	♂	Texas, Point Isabel	247	87.0	97.0	84.0
25,422	♀	Georgia, Broro Neck	243	85.0	88.0	80.0
26,641	♀	Georgia, McIntosh Co.	241	80.0	83.0	78.0
26,642	♀	" " "	248	78.0	84.0	82.0
26,643	♀	" " "	237	83.0	86.0	79.0
26,644	♀	" " "	240	75.0	89.0	79.0
26,645	♀	" " "	247	85.0	88.0	78.0
26,646	♀	" " "	243	81.0	84.0	78.5
26,647	♀	" " "	230	74.0	84.0	76.0
29,228	♀	Florida, Tarpon Springs	242	75.0	86.0	74.0
29,229	♀	" " "	254	80.0	94.0	72.5
29,230	♀	" " "	242	79.0	74.0	73.0

[1] Coll. of E. A. and O. Bangs. The other specimens of this series are in the collection of John E. Thayer.

[2] Coll. of E. A. and O. Bangs. The other specimens here tabulated are in the collection of William Brewster.

JULY 12, 1909 VOL. IV, PP. 43–46

PROCEEDINGS

OF THE

NEW ENGLAND ZOÖLOGICAL CLUB

A NEW MARSUPIAL FROM NETHERLANDS' NEW GUINEA.

BY GLOVER M. ALLEN AND THOMAS BARBOUR.

DURING a collecting trip among various islands of the Dutch East Indies and New Guinea in 1906 and 1907, the junior author obtained a considerable number of interesting mammals. These have been given to the Museum of Comparative Zoölogy, Cambridge, Massachusetts. Among them is the skin, accompanied by a nearly perfect skull, of a small marsupial that appears to represent a new genus of the polyprotodont family Peramelidæ.

The village whence it came lies in northern Papua, quite near the entrance to the Great Geelvink Bay and opposite the Jobi Straits.

SUILLOMELES genus novum.

External appearance much like that of a very small *Perameles*; first and fifth digits of the manus clawless, the second, third and fourth with strong claws; first digit of the pes small and clawless, the second and third united as far as the bases of the claws, fourth and fifth digits large and armed with strong claws; soles naked, their surface finely granulated.

Skull smooth and rounded, with a slightly elongate, narrow rostrum. Dental formula as in the Papuan genus *Echymipera*, but the premolars differ remarkably in that the third upper and lower premolars (p^4, p_4) are minute and practically functionless instead of being larger than the anterior two premolars, or equalling them.

The type of the genus is the species represented by this specimen, which may be known as

Suillomeles hispida species nova.

Type,— skin and skull, no. 7006, Museum of Comparative Zoölogy, from Manokwari, Doreh Bay, Dutch New Guinea, collected February 23, 1907, by Thomas Barbour.

General characters.— Size small; tail short; pelage hispid; skull light, rounded, with two pairs of palatal vacuities; audital bullæ small, somewhat hemispherical, but apparently complete. Dentition as above characterized.

Form.— In general proportions this species is much like a very small Bandicoot, *Isoodon obesula*. The body is stout, the head rather large, nearly one half the length of the body in the dry skin; the limbs are short and strong, larger digits armed with strong claws. The ears are oval. round-tipped, apparently not reaching beyond the eye when laid forward, The naked rhinarium extends 8 mm. back from the tip of the snout, and shows a slight median groove distally.

The entire pelage is stiff and spiny, with numerous somewhat coarser and flattened hairs on the dorsal surface. Both surfaces of the ears and the tail are thinly covered with minute stiff hairs, and the upper sides of the feet are clothed with shorter hair than the body.

Color.— Mid-dorsal area shining black, less intense on the head, and slightly grizzled with tawny (*cf.* Ridgway's 'Nomenclature of Colors'). Towards the sides of the neck and body the tawny becomes increasingly more prominent, and the black is reduced, until the sides are clear, rich tawny. The hairs are dark at their bases, however. The clear tawny of the sides shades rather abruptly into the color of the under parts, which is a bright buff, slightly yellower than Ridgway's ' buff.' This color extends from the chin to the anus and includes the inner sides of the thighs and both surfaces of the fore feet. The dorsal surface of the pes is nearly ochraceous buff. The minute hairs of the tail and ears are blackish.

Skull and teeth.— The skull (Pl. II, figs. 1–3) appears to be that of an adult, though not old, animal. The occipital region unfortunately is incomplete, and the two posterior upper molars of each side have become broken away and lost. In general, the skull resembles in outline that of the related genera *Isoodon*, *Perameles*, *Echymipera*, but the zygomata are very compressed instead of conspicuously bowing outward. The antorbital

region is slightly swollen dorsally, making the frontals nearly parallel-sided. The rostrum is distinctly compressed, and the nasals are roundly expanded at their posterior extremity. There are two pairs of irregular palatal vacuities; the anterior pair lies about opposite the first premolar, the posterior, more rounded, pair is opposite the point of contact of the first two molars. Palate is nearly straight across, with a slight median projection posteriorly.

The dental formula, allowing for the loss of two upper molars on each side, is: $I\frac{4}{3}$, $C\frac{1}{1}$, $P\frac{3}{3}$, $M\frac{4}{4}$. Of the four upper incisors, which are of the usual compressed or laterally flattened type, the first is smallest, and somewhat rounded in outline; the two incisors following are rather squarish, subequal, the posterior slightly the larger; the fourth upper incisor has a portion of the root exposed, but the crown is slightly smaller than that of the third (this is not correctly shown in the figure). A diastema of about 1.4 mm. separates the weak and slightly recurved canine from the incisors, and a second diastema of 1 mm. intervenes between the canine and the premolars. The first upper premolar is slightly smaller than the second, triangular, and with an anterior cingulum cusp; the second premolar has in addition a posterior cingulum cusp. The third upper premolar is a minute tooth, at the outer side of the tooth row, in the angle between the second premolar and the first molar; it scarcely projects beyond the cingulum cusp of the preceding tooth. The first two upper molars are subquadrate in section, narrowing internally, with four sharp triangular W-shaped cusps and an internal basal ledge that is produced into a strong cusp at its antero-internal edge, and a much smaller cusp at its posterior, narrower portion.

The lower incisors are compressed and proclivous, the third provided with a small rounded cusp at the posterior end of the crown. The canine abuts closely against the third lower incisor, which it equals in height; its crown is triangular and about as large as that of the preceding tooth. A small diastema separates it from the premolars, of which the first two are subequal, large and triangular. The third premolar is a minute spicule, scarcely appreciable without a lens. It is about one third the height of the first molar and is practically in the tooth row, though apparently forced a little to the exterior. The first three lower molars are somewhat rectangular in outline, with five prominent cusps. The fourth molar in each ramus has been lost in cleaning, though its cavity is present.

Measurements.— The dried skin presents the following dimensions, in millimeters: total length, 162; tail, 33; hind foot, 33; naked rhinarium, 8.

The skull measures: approximate length, 48.; basal length, 45.5; palatal length, 22.; incisive foramina, 4.; median length of nasals, 14.; tip of premaxillaries to orbit, 18.4; zygomatic breadth, 19.; mastoid breadth, 14.5; interorbital breadth, 10.8; length of upper molars, 1.2 to 7.6; mandible, 2.9.

Remarks.— In the reduction of the incisors to $\frac{4}{3}$, the new genus resembles the Papuan genus *Echymipera,* to which it is doubtless related. The reduction in size of the last premolar, however, is the more remarkable, since this usually is the largest of the premolars in the related genera. The bone above the premolars was carefully broken away on one side of the skull, to discover if any unerupted tooth were there present. Since none was found, it seems fairly certain that the permanent dentition had been attained.

This specimen was brought in by a native collector who caught it on the hillside back of the village of Manokwari. This hill is not far from the foot of Mt. Arfak. The Papuans considered the animal an unusual find and displayed considerable interest in the little captive. It was wonderfully tame, but refused food, so that efforts to keep it alive proved unavailing.

EXPLANATION OF PLATES.

Plate II.

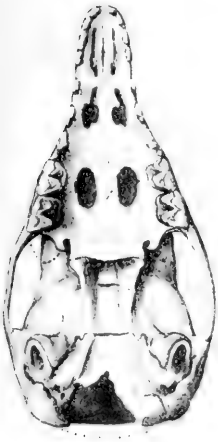
(Each figure is enlarged one and one half times.)

Figure 1. Lateral view of skull.
Figure 2. Palatal view of skull.
Figure 3. Dorsal view of skull.
Figure 4. Plantar view of right manus.
Figure 5. Plantar view of right pes.

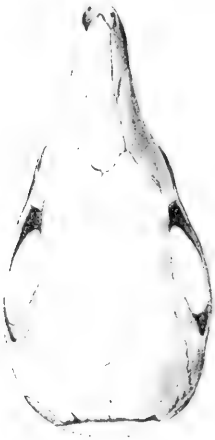
Plate III.

Colored lateral view of type of *Suillomeles hispida.*

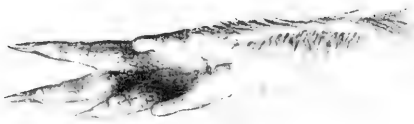
1



2



3



4

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E. N. Fischer, del.

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Sept. 4, 1909 Vol. IV, pp. 47–52

PROCEEDINGS

OF THE

NEW ENGLAND ZOÖLOGICAL CLUB

SOME NEW SOUTH AMERICAN COLD-BLOODED VERTEBRATES.

BY THOMAS BARBOUR.

From October, 1908, to May, 1909, I made a somewhat extended journey in South America. The opportunity to represent Harvard University at the first Pan-American Scientific Congress, which was held in December in Santiago de Chile, was the real occasion of the trip. The larger part of the time, however, was utilized in making collections of the lower vertebrates and insects, to supplement the already very large collections from tropical America, which are in the Museum of Comparative Zoölogy. Material was obtained from Petropolis, Brazil; several stations in the Argentine; north, central, and southern Chile; the highlands of Bolivia and of Peru, as well as the lower-lying coastal region of Peru; Panama, Jamaica, and Cuba.

The collection as a whole, while fairly extensive, does not contain many new forms, though a number are of interest because of their scarcity in museums. To one who has collected considerably through the tropical portions of Asia and the East Indies, the reptile life of even Panama, with its heavy rainfall and luxuriant vegetation, seems scant and disappointing. The remarkably abundant

lizards on very many of the West Indies are, in their naturally restricted areas, probably the commonest reptiles existing. This abundance is not so general on the mainland, though there are, of course, circumscribed areas where very many lizards occur. This is borne out by the published notes of a number of observers. The abundance of individuals of many species of lizards, especially scincs, notably on Ceram and Halmahera in the Moluccas, as well as on Waigiu, Jobi, and other Papuan islands, and to some extent on New Guinea itself, calls at once to mind the conditions in the West Indies, already remarked upon. As far as my experience goes, I believe that Cuba and many of the Bahamas support a larger lizard population than do islands of the same size in the East Indies. From the relative abundance of insect life, and from other factors such as climate and vegetation, one would expect a reversed condition of affairs. Including all classes of reptiles and amphibians, the writer has been able to gather more individuals in a given time in Western Java than in any other region, indeed so many more that it seems improbable that the excellent native assistance in collecting was entirely accountable for this result, especially as the same natives were carried about and used elsewhere. These other localities were, however, strange to them, which would naturally result in a somewhat smaller average daily bag. Reptiles are markedly abundant in various localities in Burma, Malaya, and about Saigon in Cochin China, but they simply teem in the country lying between Buitenzorg and the Preanger Regencies, especially in the forests on the slopes of the Gedeh, Pangerango, Papandaiang, Tangkuban Prau, and other mountains near by.

It is worth while to mention that at Petropolis, in Brazil, *Siphonops braziliensis* Lütk. occurred in about equal numbers with *S. annulatus* (Mikan), though the former has always been very rare in museums. It was found by digging in the moist earth under manure heaps about stables. In the shrubbery of the garden of the American Embassy the rasping, heavy snore of *Hyla circumdata* (Cope) was audible, during showery weather, nearly every night. The sound could be located, and then the frog found by means of a lantern. They seldom fled from the light. On stone walls near-by the curious lichen-like *Thoropa miliaris* (Spix) was not at all un-

common. This species was not represented in the British Museum when Boulenger wrote his catalogue, nor was it, up to now, in either the United States National Museum or the Museum of Comparative Zoölogy. In southern Chile, in small ponds, *Rhinoderma darwinii* D. and B. was abundant. In December eight males, out of about sixty individuals of both sexes, were found to be carrying tadpoles in the throat pouch. In the Cordillera of the Argentine *Liolaemus fitzgeraldi* Blgr. was found in the Horcones Valley near Mt. Aconcagua, whence came the types, and the species was observed at an elevation of about 12,000 feet near Las Cuevas, the Argentine frontier post on the Transandine route to Chile. On a hill not far from Tiaguanaco in Bolivia, at an altitude of a little over 13,000 feet, three specimens of the recently described *Liolaemus lenzii* Boettger, as well as the new species of the same genus described below, were found. A specimen, from Bolivia, of the rare *Drepanodon anomalus* (Jan) has been identified for me by Dr. Stejneger.

My thanks are due to the companions whose loyalty to Harvard University prompted them not only to render every aid in making the various collections, but also made their efforts pleasures. I mention especially Prof. A. C. Coolidge, Dr. H. Bingham, and Mr. C. L. Hay. To my wife, my most consistent helper in many climes, and to our friend Mrs. W. A. Russell, my deepest thanks are also due.

As so often, I owe a great deal to Dr. L. Stejneger for kind criticism and advice.

While I was in Bolivia several foreigners with mining interests in the tropical eastern part of the country, described to me a peculiar lizard, which from their description appeared quite new. Thanks to the efforts of one of these friends, a specimen was waiting for me on my return to the Museum. I took it to Washington, where Dr. Leonhard Stejneger agreed that it represented a very remarkable, hitherto unknown, species. It may be known as

Diploglossus resplendens sp. nov.

Plate 4.

Type,— a single example, no. 7286, Museum of Comparative Zoölogy, from the junction of the Kaka and Beni Rivers, tropical eastern Bolivia; Frank J. Dunleavy, collector.

This species belongs to the genus in which it is placed, in its restricted sense. The digits terminating in a large compressed sheath, into which the claw may be retracted, distinguish it at once from a *Celestus*, in which genus the ungual sheath is wanting.

Lateral teeth simple, recurved, with rather obtuse crowns. Head depressed; not distinct from neck; snout short; canthus rostralis rather rounded; ear opening easily visible, roundish in outline; three praefrontals, azygos a little smaller, broader than long, separated from the frontal; frontal nearly twice as long as broad; parietal on each side separated from the frontal and supraoculars by two shields; nasal separated from the rostral; two postnasals; rostral somewhat broader than the mental; the suture between the sixth and seventh supralabial falls below the centre of the eye; four chin shields on each side, of which only the anterior is in contact with the infralabials. Body somewhat squarish in cross section, but depressed. Forty-four rows of striate scales around the middle of the body. The adpressed limbs do not meet. Digits not markedly shortened, slender. Tail cylindrical, longer than head and body.

Color very striking. Upper surfaces black, the back with nine white cross-bars, the tail, with eight. Of these, the distal three show a suffusion of yellow and pink. The ninth band on the body runs out onto the thighs. Lower surfaces of body rosy to deep pink; a fine red spot in the middle of each black band on the ventral surface of the tail. Limbs, laterally, grayish to brownish.

This beautiful lizard is most nearly related to *D. fasciatus* (Gray) from Brazil. It is strikingly different in many respects, however, and its discovery has greatly increased the hitherto recorded range of the genus.

Liolaemus alticolor sp. nov.

Plate 5, upper figure.

Types,— two specimens, no. 7287, Museum of Comparative Zoölogy, from near Tiaguanaco, Bolivia, altitude about 13,100 feet; T. Barbour, collector.

Nostrils lateral. Upper head-scales rather small, smooth, somewhat convex; a small frontal; interparietal smaller than parietals; two or three greatly enlarged supraoculars; a single series of scales between the supralabials and the infraocular; temporal scales slightly swollen but smooth; anterior border of ear with one or two very small projecting scales. Sides of neck with a few granular scales, not conspicuously folded. Dorsal scales rather large, strongly imbricate, keeled, mucronate; lateral scales smaller; ventrals smaller than dorsals, rounded, smooth; fifty to fifty-four scales around middle of body. The adpressed hind limb reaches to between shoulder and ear. Hinder side of thighs granular. Male with three preanal pores.

Color complicated in pattern. Above with longitudinal lines and stripes of black, grayish, light and dark brown. Sides of male red, of female brown. Belly silvery gray.

These specimens were caught as they ran into a very ancient stone wall, during a flurry of snow. No others of the species were seen.

Among a number of tree frogs taken by Mr. Hay and me, while in Petropolis, is a specimen which does not seem referable to any described species; it may be known as

Hyla hayii sp. nov.

Plate 5, lower figure.

Type,— a single example, no. 2513, Museum of Comparative Zoölogy, from Petropolis, Brazil.

Tongue subcircular, slightly nicked and scarcely free behind. Vomerine teeth in a single, very slightly curved, series between the posterior limits

of the choanae. Head as broad as long; snout flat, rather prominent, once and one-third the diameter of the eye; canthus rostralis indistinct; sides of snout slightly concave; eye large, prominent; tympanum distinct, about half the diameter of the eye. Fingers absolutely unwebbed, toes fully webbed; discs of fingers very well developed, broader than long; discs of toes round and smaller than those of fingers; subarticular tubercles inconspicuous; no tarsal fold. A very slight rudiment of a pollux. The hind limb being carried along the body, the tibio-tarsal articulation reaches between the eye and nostril. Upper surfaces smooth, lower surfaces finely granulate. In life, green above, with a gray, almost colorless, spot between the shoulders; yellowish below; hinder side of thighs with a brilliant marbling of black and yellow, this marking extends to the posterior portion of the sides. In alcohol the green has changed to a dusky brown, the yellow to dirty white.

Named for Mr. Clarence L. Hay, an enthusiastic helper on many collecting excursions.

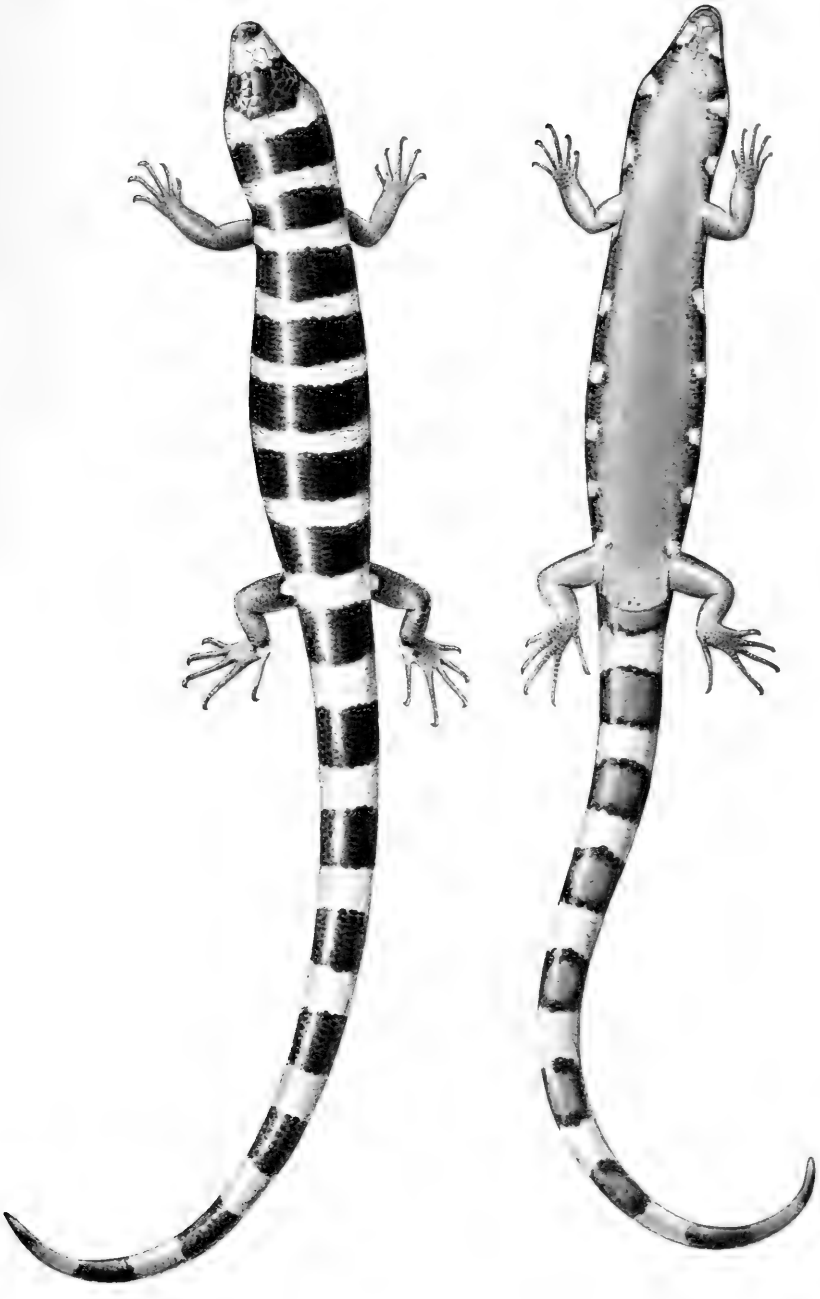
EXPLANATION OF THE PLATES.

Plate IV.

Diploglossus resplendens. Dorsal and ventral views.

Plate V.

Upper figure. Dorso-lateral view of type of *Liolaemus alticolor.*
Lower figure. Dorso-lateral view of type of *Hyla hayii.*



E. N. FISCHER, del.

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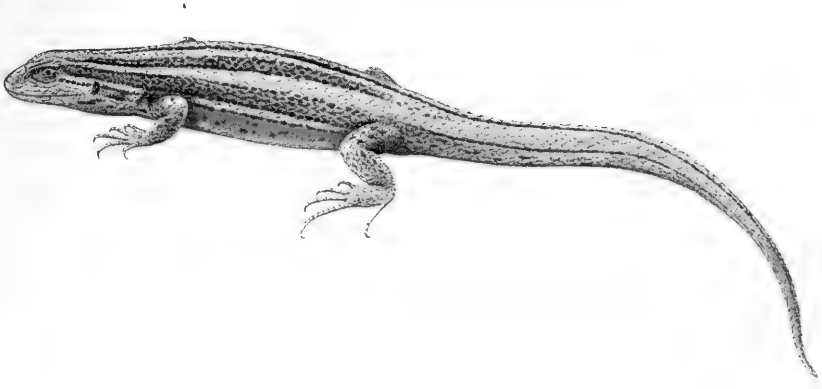

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PROCEEDINGS

OF THE

NEW ENGLAND ZOÖLOGICAL CLUB

NOTES ON AMPHIBIA AND REPTILIA FROM EASTERN ASIA.

BY THOMAS BARBOUR.

While the writer was in Yokohama, selections were made from the stock of Mr. Alan Owston. The material embraced marine invertebrates, fishes, reptiles, etc., in considerable variety. The present list contains the species of amphibians and reptiles from Japan proper, the Riu Kiuan groups, Formosa, Hainan and a few other scattered localities. On my arrival home, in 1907, I found Dr. Stejneger's splendid Herpetology of Japan[1] awaiting me. It has covered the field of these collections very completely; nevertheless it seems worth while to put this material on record that future students may know where it can be consulted.[2] A few of the species were either new or hitherto unrecorded from the localities represented, so that their publication was evidently desirable.

For convenience of reference the original descriptions of *Bufo bankorensis, Microhyla hainanensis, Rana subaspera, Goniosaurus hainanensis, Natrix aquifasciata, Pseudoxenodon stejnegeri* and *Holarchus nesiotis*, are repeated here.

It is a great pleasure to thank Dr. Stejneger for the kindly way in which he has so often aided me.

[1] Bulletin 58 of the United States National Museum, Washington, D. C., 1907.

[2] Except where otherwise stated, all the specimens mentioned in this paper are in the Museum of Comparative Zoölogy, Cambridge.

Tylototriton andersoni Boulenger.

Boulenger, Ann. Mag. N. H., (6), Vol. X, 1892, p. 304.
Stejneger, Herp. of Japan, 1907, pp. 12–14.

It is interesting to record the finding of two additional specimens of this hitherto very rare newt. Both agree perfectly with Stejneger's description of the example in the Imperial College of Science at Tokyo. Both of these two before me came from Nago, Okinawa shima, Riu Kiu Islands. From this same island came both the type and the specimen in Tokyo.

Diemictylus pyrrhogaster (Boie).

Boie, Isis, 1826, p. 215.
Stejneger, Herp. of Japan, 1907, pp. 16–21.

This common species is here represented by six examples from a pond on Mt. Fuji, Hondo, Japan, Owston collection, and thirty-two specimens from Kanagawa and Tokyo. (Mus. Comp. Zoöl., 1607, 1865, 1915, Gulick collector).

Diemictylus ensicauda (Hallowell).

Hallowell, Proc. Acad. Nat. Sci. Phila., 1860, p. 494.
Stejneger, Herp. of Japan, 1907, pp. 21–24.

Five specimens from Nago, Okinawa shima, Riu Kius, Owston collection.

Onychodactylus japonicus (Houttuyn).

Houttuyn, Verh. Genoot. Wet. Vlissingen, Vol. IX, 1782, p. 329, pl. facing p. 336, fig. 3.
Stejneger, Herp. of Japan, 1907, pp. 42–46.

Four adults from Hakone Lake, Hondo, and eighteen larvæ from the same locality, Owston collection. There is a specimen from Tokyo, Mus. Comp. Zoöl., no. 1864.

Salamandrella keyserlingii Dybowski.

Dybowski, Verh. Zool.-Bot. Ges. Wien, XX, 1870, p. 237.
Stejneger, Herp. of Japan, 1907, pp. 37–42.

It may be worth while to record that there are two topotypes of this species from Lake Baikal, in the Museum of Comparative Zoölogy (M. C. Z., no. 1288).

Bufo bankorensis Barbour.

Plate VI.

Barbour, Bull. Mus. Comp. Zoöl., Vol. 51, 1908, p. 323.

Habit very similar to *B. himalayanus* (Günther) and *B. melanostictus* Schneider. It differs markedly from the former in the smoother crown, in that the warts on the upper surfaces of the body, and especially on the legs, are much smaller, more scattered, and subequal. It differs conspicuously from the second mentioned species in the absence of the cephalic ridges.

Crown deeply concave, smooth; ridges between eye and nostril very weak; snout short and blunt; interorbital space much wider than upper eyelid; tympanum small, vertically oval, partially covered by a fold of skin. First finger a very little longer than second; a small inner and an outer palmar tubercle, which is nearly three times as large as the inner one; subarticular tubercles single, rather prominent. There are many other tubercles on palm and digits. The hind limb being carried forward, the tarso-metatarsal articulation reaches beyond the tip of the snout; toes less than half webbed, the webs with their outer edges denticulate; small, single, subarticular tubercles on all but fourth toe, where they are double; two subequal metatarsal tubercles, the inner the more prominent; lower surfaces of feet richly tuberculate like the hands. A slightly developed tarsal fold, more conspicuous in the male than in the female. Upper surfaces with subequal warts well separated by areas of smooth skin; in the female specimen the warts show a tendency toward spinosity. The parotoid glands are large, suboval, or tending toward kidney shape. I do not find an internal vocal sac in the male; in this particular especially is the tendency toward *B. himalayanus*. In the specimen of this sex nuptial asperities are present on the first and second finger.

Color (in alcohol) dark brown above, lighter below; a blackish band begins at posterior border of eye, covers the lower half of the parotoid gland,

and runs along the side, ending in a series of spots. In the female many of the warts have black apices, a character frequent in *B. melanostictus.*

Types,— no. 2432, Mus. Comp. Zoöl., two specimens, male and female, Bankoro, central Formosa. Taken by a Japanese collector of Mr. Alan Owston.

This strongly marked species is evidently closely related to *Bufo melanostictus*; it also tends toward *Bufo himalayanus.* This opinion is also held by Dr. Stejneger, who has most kindly examined the types.

Bufo formosus Boulenger.

Boulenger, P. Z. S. Lond., 1883, p. 140, pl. XXIII.
Stejneger, Herp. of Japan, 1907, pp. 60–64.

A single topotype, Yokohama, Japan, from Owston.

This form is definitely known only from the vicinity of the type locality, Yokohama, Hondo, Japan.

There are two large specimens in the Museum of Comparative Zoölogy (M. C. Z., no. 309), which were taken many years ago at Kanagawa.

Bufo bufo asiaticus (Steindachner).

Steindachner, Novara Exp., Zool., I, Amphib., p. 39.
Stejneger, Herp. of Japan, 1907, pp. 66–69.

One specimen, marked 'North China' (M. C. Z., no. 1904). This specimen differs considerably from Stejneger's diagram in that the tympanum is less than one fourth the diameter of the eye. The parotoid gland is considerably shorter, for in the figure it equals in length its distance from the tip of the snout, while in this specimen its length only equals that to the nostril. This probably is only an aberrant individual, and unfortunately the locality record is provokingly vague.

Type locality: Shanghai.

It is known from Eastern Mongolia, Amurland, Korea and northeastern China. Stejneger remarks further that south of the

type locality it is replaced by *Bufo bufo gargarizans*. This is one of the many unfortunate instances where the type locality has not turned out to be in the central part of a form's range.

Hyla arborea japonica Günther.

Günther, Cat. Batr. Sal., 1858, p. 109.
Stejneger, Herp. of Japan, 1907, pp. 76–82.

Four examples from Mt. Fuji, Japan. This species was extremely abundant during July, 1907, on the trees of the grove about Daibutsu, at Kamakura, and also locally in the hills about Lake Chusenji.

Cacopoides borealis (Barbour).

Barbour, Bull. Mus. Comp. Zoöl., Vol. 51, 1908, p. 321.

Material of *Callula verrucosa* Boulenger from the type locality shows that I was incorrect in considering *C. borealis* synonymous with Boulenger's engystomatid from Yunnan. (*Cf.* Barbour, Proc. Biol. Soc. Wash., Vol. XXII, p. 89, 1909.) A paper comparing the characters of these two genera is in process of publication.

Microhyla hainanensis Barbour.

Barbour, Bull. Mus. Comp. Zoöl., Vol. 51, 1908, pp. 322–323.

Habit stout. Snout rather rounded, longer than orbital diameter; interorbital space about equal to upper eyelid. Fingers moderate; first much shorter than second; fourth much the longest; toes moderate, nearly one half webbed; tips of fingers and toes not dilated; subarticular tubercles present, inconspicuous on fingers but very pronounced beneath the toes; two palmar tubercles, the outer by far the larger; two small metatarsal tubercles, the outer the more prominent. The hind limb being carried

forward along the body, the tibio-tarsal articulation reaches to or beyond the tip of the snout. Skin mostly smooth, with a few scattered tubercles on the posterior part of the back and a larger number on the outer sides of the thighs.

Color olive or pinkish brown in various shades: several chevron-like bands of a darker tone on the back; a dark band between the eyes, which may be interrupted on the median line; a dark band along each side and many cross-bars on the limbs; a large, very dark brown — almost black — spot on each side of the vent. Throat and sides of chest clouded with dusky brown; the remainder of the lower parts immaculate. Male with a subgular vocal sac.

Types, no. 2435, Mus. Comp. Zoöl., four specimens from Mt. Wuchi, central Hainan. Taken by a Japanese collector of Mr. Allan Owston.

This form is evidently a near relative of *M. pulchra* (Hallowell), but is easily distinguished by the stout form of body and hind limbs, the scattered tubercles, and the conspicuous black spots.

Microhyla okinavensis Stejneger.

Stejneger, Proc. Biol. Soc. Wash., Vol. XIV, 1901, p. 189; Herp. of Japan, 1907, pp. 89–92.

Six specimens from Ishigaki shima, Yaeyama group, Riu Kius, Owston collection; and two obtained from Dr. Stejneger in exchange.

Rana subaspera Barbour.

Barbour, Proc. Biol. Soc. Wash., Vol. XXI, 1908, pp. 189–190.

This species is one of the largest of frogs, being the size of a fully adult *Rana catesbiana*.

The single specimen was sent to Dr. Stejneger for examination. His letter, confirming the surmise that it was undescribed, said: "It is * * * probably nearest related to *Rana fœ*, and also to *Rana liebigii* and *Rana boulengeri*." He then calls attention to the enormously developed first metacarpal, "somewhat recalling

that of *R. holsti*, with which species, however, the present one has nothing to do." He adds: "The large gland above the axil is also very remarkable."

Description.— Vomerine teeth in two small oblique groups, situated very slightly behind the choanae. The distance between these is a little less than their distance from the choanae. Habit rather stout. Head much broader than long; snout very short, well rounded; no canthus rostralis; nostril much nearer tip of snout than eye; interorbital space narrower than upper eyelid; tympanum distinct, three fourths the diameter of the eye. Fingers moderate, first much longer than second; first metacarpal very greatly developed (similar to *R. holsti*); toes rather long, entirely webbed; subarticular tubercles well developed; tips of fingers and toes slightly dilated; inner metatarsal tubercle narrow and elongate, two thirds the length of the inner toe; outer metatarsal tubercle indistinct; no inner tarsal fold. The tibio-tarsal articulation reaches the eye; tibia one half the length of the body.

Body warty, all upper parts and sides of body and limbs with many round, prominent warts. No fold from eye to shoulder as in *R. feœ*. A large kidney-shaped gland above each axil. Uniform olive brown on all upper surfaces and sides; tympanum lighter; under surfaces chestnut brown with olive marblings. Male without internal vocal sacs. The type, a male, evidently taken in the breeding season, has light-colored spine-like asperities on the two inner fingers; there are, as in *R. liebigii*, asperities on the inner side of the arms and, unlike that frog, these are plentifully sprinkled over the entire chest and throat region to the very edges of the lips.

Type, no. 2440 of the amphibian collection in the Museum of Comparative Zoölogy. Taken in the Riu Kiu Islands, May, 1904, by a Japanese collector of Mr. Alan Owston.

Rana amurensis Boulenger.

Boulenger, Bull. Soc. Zool. France, 1886, p. 598.
Stejneger, Herp. of Japan, 1907, pp. 119–121.

In the Owston collection are two adults and six young specimens of this rather rare species. They were collected in the West Taipai-shiang district of northern China. The reader is referred to Stejneger (*l. c.*) for a detailed account of this form's habitat.

Rana nigromaculata Hallowell.

Hallowell, Proc. Acad. Nat. Sci. Phila. 1860, p. 500.
Stejneger, Herp. of Japan, 1907, pp. 94–100.

There are specimens of this species in the Museum of Comparative Zoölogy from Pekin, China (M. C. Z., no. 1701), and also from Kanagawa, Japan (M. C. Z., 1611). These latter are the types of Cope's *Tomopterna porosa*. In the Owston collection was a very large specimen from Antung, Manchuria. This was with the new genus *Cacopoides*; but as the species is widely spread in eastern Asia, this is not conclusive proof that the new genus must have come from Manchuria. *Rana nigromaculata* is, however, very characteristic of this locality.

Rana temporaria Linné.

Linné, Syst. Nat., 1758, I, p. 212.
Stejneger, Herp. of Japan, 1907, pp. 113–116.

Two specimens from Yezo (Hokkaido), Japan. A third specimen in the bottle differs considerably from these two. It is, I think, almost surely a young *R. japonica*. Stejneger's work shows that the Yezo records for this species "need confirmation." This frog is too young to identify with certainty, but it seems very likely that both the above species do occur on this island.

Polypedates viridis Hallowell.

Hallowell, Proc. Acad. Nat. Sci. Phila., 1860, p. 500.
Stejneger, Herp. of Japan, 1907, pp. 147–149.

A single example from the type locality, Okinawa shima, Riu Kiu Archipelago, Owston collection. With no examples of *P. schlegelii* at hand, I cannot verify the questions regarding the dissimilarity of these two species, which Stejneger has raised.

This species is reported common on this one group, to which it seems to be confined.

Polypedates owstoni Stejneger.

Stejneger, Herp. of Japan, 1907, pp. 149–150.

A single specimen from the type locality, the only one from which this species is so far known, Ishigaki shima, Yaeyama Island, of the southern Riu Kiu Archipelago, Owston collection.

Gekko japonicus Duméril & Bibron.

Duméril et Bibron, Erp. Gén., III, 1836, p. 337.
Stejneger, Herp. of Japan, 1907, pp. 165–169, pl. XIII.

An example from Kanagawa, Japan.

Gekko swinhonis Günther.

Günther, Rept. Brit., 1864, p. 104, pl. XII, fig. A.
Boulenger, Cat. Liz. Br. Mus., I, 1885, p. 189.

Dr. Boulenger says that this form may be distinguished from the preceding by the few dorsal tubercles, the small, separated, inner pair of chin shields, and the lack of webbing between the toes. Five specimens from Sian, Shensi, China, substantiate the validity of the two characters first mentioned; but, as for the feet, I cannot see that these differ from those of the Japanese specimen.

Sian or Singan is in the southern part of Shensi, of which province it is the capital. It is about six hundred miles southwest of Pekin, the type locality of this species, and whence all the previously recorded specimens have come.

Goniurosaurus hainanensis Barbour.

Pl. VII, fig. 7.

Barbour, Bull. Mus. Comp. Zoöl., Vol. 51, 1908, p. 316.

Habit slender. Head depressed, subtriangular, distinct from neck;

snout pointed, distance from anterior border of eye to tip of snout equal to distance from posterior border of eye to ear opening; ear opening a small, narrow, almost vertical slit. Body long, somewhat depressed. Limbs rather long, thin. Scales of top of head, body, limbs, and tail small, uniform flat granules, of varying shapes; among these on the back more or less regular longitudinal series of enlarged tubercular scales occur; these are also scattered over the upper surfaces of the limbs and are present on the proximal half of the tail in twelve whorls, which are not complete below. Scales of all the lower surfaces larger than the contour scales of the upper surfaces, polygonal, subequal. Male with twenty-nine preanal pores in an angular series. Rostral scale one and one half times as broad as high; separated from the nostril by two enlarged superposed scales, the anterior nasals; the nostril lies behind these, and is surrounded elsewhere by small scales; it is not in contact with a supralabial. There are no other enlarged scales except the supralabials, ten in number, and a few enlarged granules on top of the nose. Mental large, an imperfect equilateral triangle. Tail long, slender, a little shorter than the distance from vent to tip of nose.

Color very dark brown, almost black; limbs brown, belly white. A white band reaching around the back of the head from eye to eye; a white band across body near the fore limbs, one across the middle of the body and one across the body near the hind limbs. Three white rings around the tail, which is almost black above and below. The extreme tip of the tail is white.

Type,— no. 7104, Mus. Comp. Zoöl., a single specimen, taken 16 November, 1906, on Mt. Wuchi, central Hainan, by a Japanese collector of Mr. Alan Owston.

Hemidactylus bowringii (Gray).

Gray, Cat. Liz. Br. Mus. 1845, p. 156.
Stejneger, Herp. of Japan, 1907, pp. 176–178.

Two from Formosa.

Calotes versicolor (Daudin).

Daudin, Rept., III, 1802, p. 395, pl. 54.
Boulenger, Cat. Liz. Br. Mus., I, 1885, pp. 321–322.

A single adult male specimen, typical in all respects except that the gular scales are more than "feebly keeled." From Mt. Wuchi, Hainan.

Japalura swinhonis Günther.

Günther, Rept. Brit. Ind., 1864, p. 133, pl. XIV, fig. B.
Stejneger, Herp. of Japan, 1907, pp. 184–188.

Two typical examples from Bankoro, central Formosa.

Japalura polygonata (Hallowell).

Hallowell, Proc. Acad. Nat. Sci. Phila., 1860, p. 490.

Six examples from localities as follows: one each from Okinawa shima and Amami Oshima and four from Ishigaki shima, Riu Kiu Islands.

Draco whiteheadi Boulenger.

Boulenger, P. Z. S. Lond., 1899, pp. 956–957, pl. LXVI, fig. 1.

It was a great pleasure to find two examples of this species hitherto known only from the type. They are an adult male, agreeing well with Boulenger's excellent figure, and a young specimen, both from Mt. Wuchi, in the interior of Hainan.

Eumeces latiscutatus (Hallowell).

Hallowell, Proc. Acad. Nat. Sci. Phila., 1860, p. 496.
Stejneger, Herp. of Japan, 1907, pp. 195–200.

In the collection are two specimens of this common Japanese species from Yokohama.

Eumeces marginatus (Hallowell).

Hallowell, Proc. Acad. Nat. Sci. Phila., 1860, p. 492.
Stejneger, Herp. of Japan, 1907, pp. 205–208.

Three topotypes from Okinawa shima, Riu Kiu Islands.

Eumeces kishinouyei Stejneger.

Stejneger, Proc. Biol. Soc. Wash., Vol. XIV, Dec. 12, 1901, p. 190; Herp. of Japan, 1907, pp. 210–213.

A fine example from Ishigaki shima, Yaeyama group, Riu Kiu Islands.

Mabuya longicaudata (Hallowell).

Hallowell, Trans. Amer. Phil. Soc., (2), Vol. XI, 1856, p. 77, pl. IV, fig. 1.
Stejneger, Herp. of Japan, 1907, pp. 214–216, pl. XVI.

In the Owston collection was an adult specimen of this species from Mt. Wuchi, Hainan, and the Museum of Comparative Zoölogy has another, taken by the author near Saigon, Anam. These two specimens agree perfectly with one another, and with plate XVI in Stejneger's book, taken from Fischer (Abh. Nat. Ver. Hamb., IX, 6, pl. 1), except in one particular. They have three strong keels on each scale; on a few scales the Saigon example has four. Fischer's figure shows only two, but Hallowell's shows three, albeit somewhat indistinctly. This may not be a character of any value; certainly it does not separate specimens from Hainan and Cochin China. We must remember, however, that Fischer's figure was taken from the type of his *Euprepes ruhstrati*, and this came from South Formosa. I suspect that this may prove to be a valid species.

Sphenomorphus indicus (Gray).

Gray, Ann. Mag. N. H., (2), Vol. XII, 1853, p. 388.
Stejneger, Herp. of Japan, 1907, pp. 216–218, pl. XVII.

Two examples of this species from Bankoro, central Formosa. Only once previously taken in Formosa.

Lygosoma smaragdinum (Lesson).

Lesson, Voy. Coquille, Zool., II, 1830, p. 43, Reptiles pl. III, fig. 1.
Boulenger, Cat. Liz. Br. Mus., III, 1887, p. 250.

Dr. Stejneger, "after a very detailed comparison," identifies a small scinc as the young of this species. It has not been reported from Formosa previously. This example is from Bankoro in the central part of the island.

Lygosaurus pellopleurus Hallowell.

Hallowell, Proc. Acad. Nat. Sci. Phila., 1860, p. 496.
Stejneger, Herp. of Japan, 1907, pp. 222–224.

A single specimen, said to have come fom Awa, Shikoku, Japan, but doubtless incorrectly labelled, for the species is confined to the upper and middle groups of the Riu Kiu Islands.

Cryptoblepharus boutonii nigropunctatus (Hallowell).

Hallowell, Proc. Acad. Nat. Sci., Phila., 1860, p. 489.
Stejneger, Herp. of Japan, 1907, pp. 225–228.

Three specimens from Haha shima, Bonin Islands.

Takydromus smaragdinus Boulenger.

Boulenger, Cat. Liz. Br. Mus. III, 1887, p. 509.
Stejneger, Herp. of Japan, 1907, pp. 236–238.

Two examples from Okinawa shima, Riu Kiu Islands.

Takydromus tachydromoides (Schlegel).

Schlegel, Fauna Jap. Rept., 1838, pp. 101, 139.
Stejneger, Herp. of Japan, 1907, pp. 238–245, pl. XVIII.

Two from Mt. Fuji, Japan.

Natrix vibakari (Boie).

Boie, Isis, 1827, p. 207.
Stejneger, Herp. of Japan, 1907, pp. 266–271.

A single half-grown example of this common species agrees well with Stejneger's description of a specimen from Yokohama. It was taken at Hiuga, Kiusiu, Japan.

Natrix tigrina (Boie).

Boie, Isis, 1826, p. 205.
Stejneger, Herp. of Japan, 1907, pp. 272–277.

Three specimens, two young and one half-grown, from Yokohama, add nothing to our knowledge of this species. There is no irregularity of the pre- or postocular scales in any of these.

Natrix æquifasciata Barbour.

Pl. VII, figs. 1–4.

Barbour, Bull. Mus. Comp. Zoöl., Vol. 51, 1908, p. 317.

Eye rather large. Rostral broader than deep, just visible from above; internasals almost wedge-shaped, twice as long as broad, one and one half times as long as prefrontals; frontal once and two thirds as long as broad, as long as distance from end of the snout, shorter than the parietals; loreal as long as deep; two preoculars and two or three postoculars; one or two suboculars may be present,— these are very small and separated by the fifth upper labial. Temporals 2 + 3, — these may be broken into several scales; nine upper labials, the seventh largest, and the fifth always entering orbit,— the fourth and sixth may do so also, or they may be excluded by the suboculars; five pairs of lower labials in contact with anterior chin shields, which are a very little shorter than the posterior. Scales in nineteen rows, strongly keeled, except the outer row, on which the carination is weak. Ventrals 148–151; anal divided; subcaudals 74–75.

Color (in alcohol): Boldly banded with twenty or twenty-one black bars on the body and twelve on the tail. The interspaces narrower than the

bars, but less narrow laterally than dorsally, white with a slight brownish tinge. Ventral surface ivory white, with black markings of the bars; these often end abruptly at the median line. The black blotches are roughly alternate.

Types, no. 7101, Mus. Comp. Zoöl., two specimens, each about 20 cm. long, from Mt. Wuchi, central Hainan. Taken by one of Mr. Owston's Japanese collectors.

This strongly differentiated species shows a probable relationship to both *N. tigrina* and *N. piscator*.

Cope's *Trimerodytes balteatus* (Proc. Acad. Nat. Sci. Phila., 1894, p. 426) probably represents an abnormal *Natrix*, which, however, cannot be identified with this species.

Natrix stolata (Linné).

Linné, Syst. Nat., 1758, I, p. 219.
Stejneger, Herp. of Japan, 1907, pp. 280–283.

Two specimens, one from Ting an, Hainan, and one from Mt. Arizan, central Formosa; 19 scale rows in each.

Pseudoxenodon stejnegeri Barbour.

Pl. VII, fig. 8.

Barbour, Bull. Mus. Comp. Zoöl., Vol. 51, 1908, pp. 317–318.

Rostral just visible from above; internasals shorter than prefrontals; frontal almost one and one half times as long as broad, shorter than distance to tip of snout, much shorter than parietals; loreal as long as deep; two preoculars; three postoculars; temporals 2 + 2; eight upper labials, fourth and fifth entering orbit; five lower labials in contact with the anterior chin shields, which are very nearly the same size as the posterior. Eleven dorsal rows of scales keeled, only the dorsal five strongly; scales in nineteen rows anteriorly, in seventeen rows on middle of body, and in fifteen rows near the tail. Ventrals 153; anal divided; subcaudals in 68 pairs.

Color olive above, with an indistinct lateral series of dark blotches; head with a black stripe from the posterior border of the orbit to the angle of the jaws; upper labials with sharp black markings along their posterior

edges; upper lip yellowish. Lower surfaces dull white; confluent dark olive puncticulations form three irregular bands, one along the middle and one on each end of the gastrosteges; there are many scattered spots elsewhere, also larger diffuse brown blotches. On the under surface of the tail the dots are irregularly scattered and produce a gray effect. Along the sides of the tail is a white line formed by spots on the outer end of each subcaudal scale. There are no spots on the throat, which is pure white. Length of body 370 mm.; length of tail 100 mm.

Type,— no. 7103, Mus. Comp. Zoöl., a single specimen, from Mt. Arizan, central Formosa, taken 29 November, 1906, by one of Mr. Owston's Japanese collectors.

This species seems to be related, as naturally would be expected, to *P. dorsalis* (Günther) from China. It differs in having two preoculars instead of one, in the number of ventral and subcaudal scales, and in coloration.

It was a privilege to associate with this interesting new species of a genus hitherto unrecorded from Formosa, the name of a kindly friend and generous helper, Dr. Leonhard Stejneger.

Enhydris plumbea (Boie).

Boie, Isis, 1827, p. 550.
Stejneger, Herp. of Japan, 1907, pp. 300–302.

Two typical examples from Ting an, Hainan, and one from Bankoro, central Formosa.

Elaphe quadrivirgata (Boie).

Boie, Isis, 1826, p. 209.
Stejneger, Herp. of Japan, 1907, pp. 327–333.

A single young specimen from Yokohama. A very common form.

Elaphe conspicillata (Boie).

Boie, Isis, 1826, p. 211.
Stejneger, Herp. of Japan, 1907, pp. 334–337.

After the long and excellent review of this species which Stejneger

has given, it only remains for me to mention briefly the fact that in the Owston collection came four specimens of this species. They are all typical examples and add nothing to the known range of the variation of this species. Two are from Mt. Fuji, one is from Yokohama, and one is from Hiuga, Kiushiu.

As Dr. Stejneger notes, this does not seem to be a very abundant form. It probably is confined to Japan, but it is possible that it occurs in the Russian Coast Province of the mainland.

Type locality: Japan. Probably the Kiusiu specimen mentioned above is an approximate topotype.

Liopeltis major (Günther).

Günther, Cat. Colubrine Snakes Brit. Mus., 1858, p. 120.
Stejneger, Herp. of Japan, 1907, pp. 338–340.

Among the Formosan specimens received from Mr. Owston is a fine specimen of this species, which Dr. Stejneger kindly identified for me. It bears no definite locality other than Formosa, and it was taken during November, 1905. According to Stejneger (*l. c.*) six Formosan specimens are already known, four in the British Museum from the Swinhoe collection, and two in the Hong Kong City Hall Museum.

Type locality: Ningpo, China.

Range, according to Stejneger, lower Yangtse Valley, coasts of China from Hong Kong to Shanghai, and Formosa. In Fokien it has been found at an altitude of from 3000 to 4000 feet. Lately received here also from Ichang, Hupeh.

Holarchus formosanus (Günther).

Günther, Ann. Mag. Nat. Hist., (4), IX, 1872, p. 20.
Stejneger, Herp. of Japan, 1907, pp. 354–356.

In the collection obtained from Mr. Owston were five specimens of this incompletely known snake. Two came from Mt. Arizan,

central Formosa, were typically colored, and had 161, 162 ventrals, and 51, 55 subcaudals.

Three specimens were from Hainan, two of them from Ting an, and one from Mt. Wuchi in the interior. These undoubtedly represent what Boettger considered a distinct species; they are however, apparently a well-defined local color variety, but nothing more. We may then call them

Holarchus formosanus hainanensis (Boettger).

Boettger, Ber. Senckberg. Nat. Ges., 1894, p. 133, pl. iii, figs. 2 a–c.

The intricate head markings are indistinct compared to Formosan examples; the body is decidedly reddish, without a vertebral light line, and without the heavy dorsal blotches of a darker color. In this form there are only light zigzag lines or scattered spots of the dark color which on the sides of the Formosan individuals make large distinct markings.

The Ting an specimens have V. 167, 167; C. 58, 40. The lepidosis is the same as for specimens from Formosa. The Mt. Wuchi specimen has but seven supralabials on one side and V. 169, C. 45.

Type locality: Takao, Formosa.

This species is now known from a number of Formosan stations, as well as from Swatow and Fumun in Kwangtung, China.

Of this form Cope's *H. dolleyanus* (Proc. Acad. Nat. Sci. Phila., 1884, p. 423) must be considered a synonym. Boettger's paper (Ber. Senck. Nat. Ges., 1893–94) was received at the library of the Museum of Comparative Zoölogy, Oct. 16, 1894. Cope's paper did not appear until Feb. 13, 1895.

Holarchus tæniatus (Günther).

Günther, Proc. Zoöl. Soc., 1861, p. 189.
Boulenger, Cat. Sn. Brit. Mus., II, 1894, pp. 227–228.

Six specimens of this species show no variation whatever in coloration from Günther's figure (Rept. Brit. Ind., p. 216, pl. xx,

fig. A). These are Mus. Comp. Zoöl., no. 5980, from Cochin China. This stability of coloration greatly contrasts with the condition in other members of the same genus.

Type locality: Cambodia.

This species is known from Siam and the Indo-Chinese Peninsula. Boettger (Ber. Senckberg. Nat. Ges., 1894, p. 134) makes this note, "Simotes quadrilineatus D. B.=S. taeniatus Günth." The authority for this synonymous name should read Jan (Nouv. Arch. Mus. Paris, 1866, Bull. p. 7; also Icon. Gén., 1865, Livr. 12, pl. iv, fig. 3). The explanation of the plates of Livraison 12 of Jan's Iconographie Général is by error a repetition of the explanation of the plates for Livraison 11, so that no details are given as to the history of the specimen figured.

Holarchus nesiotis Barbour.

Plate VII, figs. 5, 6.

Barbour, Bull. Mus. Comp. Zoöl., Vol. 51, 1908, pp. 318–319.

Nasal divided; rostral reaching far back above, completely separating the internasals and coming into contact with the prefrontals. Frontal very large, much longer than distance to tip of snout, longer than the parietals. Loreal square; two pre- and two postoculars; temporals 1 + 2, the lower of the two temporals is the smaller, while the opposite is the condition in *H. formosanus* figured by Stejneger (Herp. of Japan, 1907, p. 355). Eight upper labials on each side, fourth and fifth entering eye; four labials in contact with anterior chin shield, which measures about one and one third the size of the posterior. Scales in 19 rows, perfectly smooth. Ventrals distinctly angulate, 169; anal divided; subcaudals 56 pairs.

Color pale brown above, with an indistinct light vertebral line and four dorsal and dorso-lateral longitudinal bands of slightly darker brown. Sides and belly ivory-white. There are dark brown spots on the parietals, also a symmetrical square brown, almost black, blotch below the eye on supralabials 5 and 6. A chevron-like band on the nape, with its apex directed forward.

Type,— no. 7107, Mus. Comp. Zoöl., a single specimen, about 355 mm. long, from Ting an, Hainan Island. Taken by a collector for Mr. Owston.

Holarchus nesiotis is related to *H. formosanus hainanensis* (Boettger).

Dinodon orientale (Hilgendorf).

Hilgendorf, Sitz.-ber. Ges. Nat. Fr. Berlin, 1880, p. 115, pl., figs. 1–5.
Stejneger, Herp. of Japan, 1907, pp. 372–375.

A single typical adult from Yokohama. Sc. 17; V. 207; C. 75. Supralabials, 8–8; no pre-, 2 postoculars. Forty dark bands on body and fourteen on tail.

Boiga multomaculata (Boie).

Boie, Isis, 1827, p. 549.
Boulenger, Cat. Sn. Br. Mus., III, 1896, pp. 63–64.

A single specimen of this arboreal species comes from Ting an, Hainan; it has a formula as follows: Sc. 19; V. 208; C. 97.

Hemibungarus japonicus (Günther).

Günther, Ann. Mag. Nat. Hist., (4), I, 1868, p. 428, pl. xvii, fig. c.
Stejneger, Herp. of Japan, 1907, pp. 387–389.

A single specimen of this species from Amami Oshima, Riu Kiu Islands. The species still is known only from this one group of islands.

Type locality: Nagasaki. Stejneger has shown that the type almost certainly came from this Riu Kiuan group.

Naia naia atra (Cantor).

Cantor, Ann. Mag. Nat. Hist., IX, 1842, p. 482.
Stejneger, Herp. of Japan, 1907, pp. 394–397.

To this form a single specimen, from Ting an, Hainan, seems referable; its scales: 25/21; 173; 43. It is a young specimen, agreeing in color and squamation with Stejneger's description of a young Formosan example. It does differ, however, in having the

'white-rimmed spectacles' lying in a broad band of black, while the general ground color is olive green.

Agkistrodon blomhoffii (Boie).

Boie, Isis, 1826, p. 214.
Stejneger, Herp. of Japan, 1907, pp. 457–460.

Three specimens, one adult and two young, of the typical form of this species from Yokohama. For a full discussion of this form and its related subspecies, see Stejneger, *loc. cit.*

Type locality: Japan.

This snake has been divided into races by Stejneger. *A. blomhoffii* is confined to Japan proper. Subspecies *affinis* (Gray), *brevicaudus* Stej., and *intermedius* (Strauch), occur, respectively, in the southern Riu Kius, in eastern China, and in Korea and Formosa, the last-named ranging widely in southern Siberia, Tartary, Mongolia, and eastern Turkestan.

In the young specimens the characteristic yellow tip to the tail is conspicuous.

Agkistrodon blomhoffii intermedius (Strauch).

Strauch, Trudi Perv. Siezda Russkikh Yestestv., Zool. (p. 294); Mém. Acad. Sci. St. Pét., (7), XXI, 4, 1873, pp. 245, 282.
Stejneger, Herp. of Japan, 1907, pp. 464–465.

Two specimens which seem referable to this race have come from the vicinity of Mt. Taipaishiang, northern China. The fact that in both there are seven supralabials on each side, shows that in these specimens, as we might expect from the locality, there is a tendency toward the condition in *A. b. brevicaudus* Stej. The number of ventral scales is rather low for this form, viz. 157 and 161, while the single example which has a complete tail has 47 pairs of subcaudals, which is quite normal. There are 21 rows of scales on each, the most usual number being 23, though Stejneger knew of one speci-

men with 21 rows, as he did also one with 25. These came from Altai, Siberia. Stejneger's subspecies has been found in inland mountain ranges, further south, about Ichang, Ningpo, Chekiang, and Kiu Kiang; while this race has been known from an enormous belt to the northward.

Type locality: Government of Irkutsk.

Trimerésurus monticola Günther.

Günther, Rept. Brit. Ind., 1864, p. 388, pl. xxiv, fig. B.
Boulenger, Cat. Sn. Brit. Mus., III, 1896, pp. 548–549.

Stejneger (Herp. of Japan, 1907, p. 480) wrote at the end of his remarks on *T. okinavensis* that no near ally of this species was known from Formosa. He notes its relationship to *T. monticola*, and says, "the latter or a related form may be expected to occur in that island [Formosa]." It is interesting to record now how correct Stejneger's surmise was. A fine specimen from Tapposha, Mt. Arizan, central Formosa, was acquired with the Owston material. It is colored as Indian specimens are, but differs very slightly in having 10 scales separating the supraoculars and 10 supralabials. The scale rows are 27 in number, which Boulenger states is a rare condition. V. 155; anal entire; C. 46.

Type locality: Nepal and Sikkim.

Range: Himalayas, Tibet, Assam Hills, Upper Burma, Malay Peninsula, Sumatra; also Szechuen and Formosa.

Trimeresurus okinavensis Boulenger.

Boulenger, Ann. Mag. Nat. Hist., (6), X, Oct., 1892, p. 302.
Stejneger, Herp. of Japan, 1907, pp. 479–480.

It is interesting to record a specimen of this species from Amami Oshima, Riu Kiu Islands. Dr. Stejneger (*l. c.*) wrote, "The few specimens known of this species have nearly all come from Okinawa shima. According to a recent paper by Dr. Wall, the collector of

Mr. Owston's obtained not only four specimens in Okinawa shima, but also three in Amami Oshima, and one in Yaku shima. The latter occurrence is so extraordinary, however, that it would be well to await corroborative evidence, as some mistake in labelling may have occurred." The specimen before me was picked out, the only one which Mr. Owston had at the time, from a lot of specimens which seemed to have full data. It was taken 10 April, 1907, and thus cannot be one of the three examples mentioned above. There can now be no doubt whatever as to the species occurring on Amami Oshima. Unfortunately no corroborative evidence can be offered as to the validity of the Yaku shima record. The formula for this example follows: V. 129; anal entire; C. 42; interorbitals, 9; supralabials, 8. This is precisely the condition in Okinawa specimens. Variation within this form is very slight.

Trimeresurus flavoviridis (Hallowell).

Hallowell, Proc. Acad. Nat. Sci. Phila., 1860, p. 492.
Stejneger, Herp. of Japan, 1907, pp. 475–478, pl. XXVII.

A truly formidable serpent, which reaches a length of nearly five and a half feet. This specimen was taken at Amami Oshima, Riu Kiu Islands, 19 September, 1904, by one of Mr. Owston's men. The interorbitals are 13 in number, and supralabials 9. V. 225; anal entire; C. 84. This formula is only approximate, as the specimen is slightly mutilated.

Trimeresurus mucrosquamatus (Cantor).

Cantor, Proc. Zoöl. Soc., 1839, p. 32.
Stejneger, Herp. of Japan, 1907, pp. 467–470.

A single specimen from Bankoro, in the highlands of central Formosa. It differs slightly from the specimen which Stejneger described, in that there are 18 scales in a line between the supra-oculars. These latter are extremely narrow. There are also 10 supralabials, instead of 9. Ventrals 215; anal entire; subcaudals 88.

Type locality: Naga Hills, Assam.

Range: Very incompletely known; see Stejneger's discussion as to this snake's range and relationship with other allied forms.

Trimeresurus gramineus (Shaw).

Shaw, Gen. Zoöl., III, pt. ii, p. 420.
Stejneger, Herp. of Japan, 1907, pp. 480–483.

Two specimens from Bankoro, central Formosa.

Clemmys japonica (Temminck & Schlegel).

Temminck and Schlegel, Fauna Jap., Rept., 1835, p. 53.
Stejneger, Herp. of Japan, 1907, pp. 492–496, pl. XXIX.

A single typical example from the Yaeyama group, Riu Kius. It has never been reported from the locality, and was doubtless introduced from Japan — probably into some temple pond.

Geoemyda spengleri (Gmelin).

Gmelin, Syst. Nat., I, 3, 1789, p. 1043.
Stejneger, Herp. of Japan, 1907, pp. 501–503, pls. XXXI, XXXII.

Three specimens of this interesting and rare turtle, two from Nago and the other from Nawa, both localities on Okinawa shima, Riu Kiu Islands.

Cyclemys flavomarginata (Gray).

Gray, P. Z. S. Lond., 1863, p. 175.
Stejneger, Herp. of Japan, 1907, p. 503, pl. XXXIII.

An adult specimen from Ishigaki shima, Yaeyama group, Riu Kius. This is the only locality whence the species is known in the archipelago.

Amyda sinensis (Wiegmann).

Wiegmann, Nova Acta Ac. Leo. Car., XVII, 1834, p. 189.
Stejneger, Herp. of Japan, 1907, pp. 524–526.

A single specimen from Kagi, Formosa.

Amyda schlegelii (Brandt).

Brandt, Mél. Biol. Acad. Sci. St. Pét., II, 1857, p. 610.
Stejneger, Herp. of Japan, 1907, pp. 526–529.

One specimen from Antung, Manchuria.

EXPLANATION OF THE PLATES.

Plate VI.

Bufo bankorensis Barbour.

Fig. 1. Lower side, manus of male.
Fig. 2. Lower side, manus of female.
Fig. 3. Latero-dorsal view of male.

Plate VII.

Fig. 1–4. *Natrix aequifasciata* Barbour, both sides of heads of the two known specimens.
Fig. 5. Lateral view, head of *Holarchus nesiotis* Barbour.
Fig. 6. Dorsal view, head of *Holarchus nesiotis* Barbour.
Fig. 7. Dorsal view of *Goniurosaurus hainanensis* Barbour.
Fig. 8. Lateral view, head of *Pseudoxenodon stejnegeri* Barbour.

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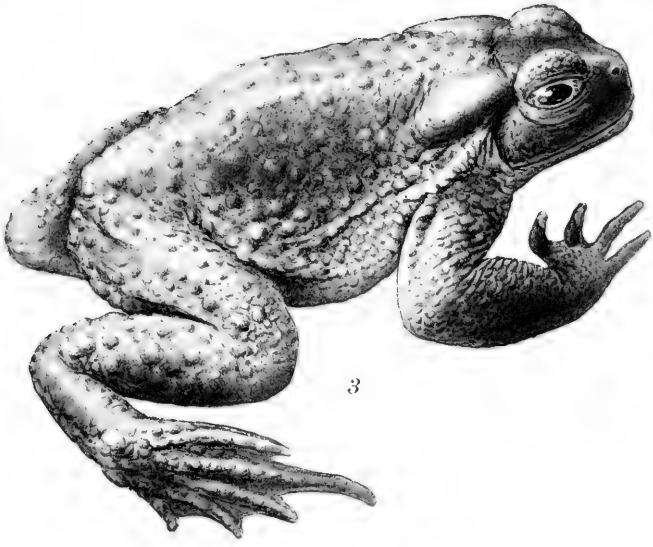

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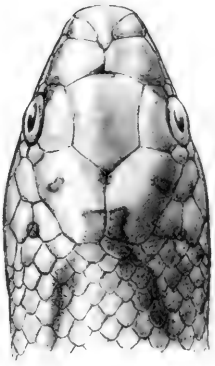

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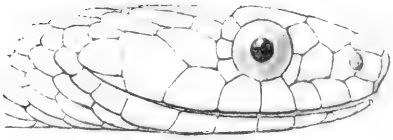

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April 2, 1910 Vol. IV, pp. 79–80

PROCEEDINGS

OF THE

NEW ENGLAND ZOÖLOGICAL CLUB

A NEW RACE OF THE PILEATED WOODPECKER.

BY OUTRAM BANGS.

As long ago as 1898, when I separated the pileated woodpecker of the Northeastern States from the typical form, I knew that still another race, inhabiting the Northwest Coast region, must be recognized. Ever since then I have intended to publish a name for this bird, and I am surprised that in the mean time no one else has done so. It may be known as

Phlœotomus pileatus picinus subsp. nov.

Type, from Sumas, British Columbia, adult ♀, no. 4516, Bangs Collection, Museum of Comparative Zoölogy. Collected by Allan C. Brooks, April 1, 1897.

Characters.— As large as, or even larger than, *P. pileatus abieticola* (Bangs), but color sooty black as in *P. pileatus pileatus* (Linn.), the throat usually much marked with sooty, and the sides and flanks but slightly marked with grayish. The type affords the following measurements: wing, 238; tail, 158; tarsus 31; culmen, 53 mm. These figures agree closely with the averages of a large number of specimens measured (several in the Bangs Collection and a long series in the collection of William Brewster).

Remarks.— The three races of the pileated woodpecker may be characterized in a few words, as follows.

A small form, sooty black in general color, with the white markings of sides and flanks much less pronounced, inhabiting the South Atlantic States — *Phlœotomus pileatus pileatus* (Linn.).

A large form, of similar coloration, but with the throat much more clouded with black, inhabiting the Northwest Coast region — *P. pileatus picinus* Bangs.

A large form, slaty black in general color, and with all the white markings much more pronounced, inhabiting the Northeastern States and eastern British America — *P. pileatus abieticola* (Bangs).

April 2, 1910 Vol. IV, pp. 81–82

PROCEEDINGS

OF THE

NEW ENGLAND ZOÖLOGICAL CLUB

A NEW GALLINULE FROM THE LESSER ANTILLES.

BY OUTRAM BANGS.

In the 'Catalogue of Birds in the British Museum,' Vol. XXIII, Sharpe, as long ago as 1894, pointed out the distinguishing characters of the Lesser Antillean gallinule, expressing the opinion that it represented a recognizable race.

Wholly independently, I arrived at the same conclusions, only finding Sharpe's note on the subject upon looking up references, etc. Though Sharpe spoke of this form as "The birds from the West Indies," I think he really must have had in mind Lesser Antillean skins only. At all events our specimens from the larger islands — we have, in the Museum of Comparative Zoölogy, a number from Jamaica, Porto Rico and Grand Caman — are quite the same as North American examples, and strikingly different from the gallinule of the Lesser Antilles. As the latter appears to have no name, it may be known as

Gallinula galeata cerceris subsp. nov.

Type, from the Island of St. Lucia, Lesser Antilles, adult, no. 27,430, Museum of Comparative Zoölogy. Collected in 1878 or 1879, by John Semper.

Characters.— Slightly smaller than *Gallinula galeata galeata* (Licht.) of North, Middle, and northern South America, and the Greater Antilles, and *much smaller* than *G. galeata garmani* Allen of Bolivia, Chili and Peru. Much blacker than *G. galeata galeata* with, in adult plumage, the whole chest and breast dark blackish slate (nearly slate-black), scarcely paler than head and neck; belly *very much* less marked with white; white stripes on sides and flanks much narrower.

Young examples are, of course, not so black as old ones; they are, however, much blacker than continental specimens of corresponding age, and, in addition to this character, can be distinguished by their darker bellies, the feathers of this region being much less tipped and edged with white.

The type, like all Semper's skins, did not have the sex determined. It affords the following measurements: wing, 171.; tail, 68.; tarsus, 54.5; culmen, from a line drawn between forward corners of eyes, 37. mm.

April 2, 1910 Vol. IV, pp. 81–82

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FEBRUARY 23, 1912 VOL. IV, PP. 83–84

PROCEEDINGS

OF THE

NEW ENGLAND ZOÖLOGICAL CLUB

A NEW RACE OF GREAT BLUE HERON FROM ESPIRITU SANTO ISLAND, LOWER CALIFORNIA.

BY JOHN E. THAYER AND OUTRAM BANGS.

WHILE collecting birds and eggs in Lower California for the Thayer Museum at Lancaster, Massachusetts, Mr. W. W. Brown, Jr., discovered a large 'rookery' of Great Blue Herons in Espiritu Santo Island, and secured there six adult, breeding birds. The skins agree in very large size and peculiarly pale coloration with the example which Brewster discussed at length in his 'Birds of the Cape Region of Lower California,' and although in color very like *Ardea herodias cognata* of the Galapagos, the Cape San Lucas race is so much larger that it seems to deserve recognition as —

Ardea herodias sancti-lucæ subsp. nov.

Type, from Espiritu Santo Island, Lower California, adult ♂, no. 18,303, coll. of John E. Thayer, collected June 13, 1910, by W. W. Brown, Jr.

Characters.— A very large Great Blue Heron, with all the colors very pale. Size nearly as great as in *Ardea herodias wardi* Ridg. of Florida. Colors almost exactly as in *Ardea herodias cognata* Bangs of the Galapagos, from which it differs in much larger size.

MEASUREMENTS (in millimeters).

No.	Sex and age	Date		Wing	Tail	Culmen	Tarsus
18,303	♂ ad.	June 13, 1910	Type	500	195	147.0	193.0
18,305	♂ ad.	June 14, 1910	Topotype	498	190	151.0	192.0
18,304	♂ ad.	June 15, 1910	"	475	186	154.0	187.5
18,302	♂ ad.	June 16, 1910	"	475	183	148.5	197.0
18,301	♂ ad.	June 18, 1910	"	476	179	157.0	191.0
18,306	♀ ad.	June 17, 1910	"	455	175	132.0	169.5

These measurements were made by H. C. Oberholser, for his forthcoming review of the subspecies of *Ardea herodias,* and he has kindly allowed us to use them here.

Remarks.— Another, smaller, colony of the Cape San Lucas Heron was found by Mr. Brown in a mangrove swamp in San José Island near La Paz. In this rookery between Feb. 15 and Feb. 18, 1909, Mr. Brown took nine sets of eggs. The nests, well-made platforms of sticks, about four feet in diameter, were placed in the trees at about forty feet from the ground.

The average measurements of the eggs contained in six sets, are 2.37 × 1.75 inches. Average measurements of three sets of *Ardea herodias wardi* Ridg. are 2.54 × 1.74 inches.

June 5, 1912 Vol. IV, pp. 85–87

PROCEEDINGS

OF THE

NEW ENGLAND ZOÖLOGICAL CLUB

THE FLORIDA SONG SPARROW.

BY OUTRAM BANGS.

In the collection of the late Dr. Henry Bryant, when it came to the Museum of Comparative Zoölogy, was a pair of Song Sparrows, taken at Enterprise, Florida, April 17, 1859, by Dr. Bryant himself. These two specimens have enormous bills, that cannot be matched in a series of over one hundred skins from points in eastern North America, north of the Carolinas, and that are, besides, of a dark grayish coloration.

They are in slightly abraded plumage, and of course were breeding birds. Ever since I first noticed their peculiarities, I have been trying to get additional records of the Song Sparrow in Florida, with but little success. Undoubtedly it does occur as a very rare and local resident species at other points in the Florida peninsula, though little appears to be known about its distribution there.

Mr. C. J. Maynard very kindly searched through his voluminous

field notes made in Florida during many trips, and found but three mentions of the Song Sparrow, as follows:—

1869. *Melospiza melodia* common at Jacksonville, January 1 to 9. Among tall grass at the edges of cultivated fields.

1872. *Melospiza melodia* common at Blue Springs, January 1 to March 30.

1883–84. *Melospiza melodia* rare at Rosewood, November 5 to January 15. Along borders of old fields.

Furthermore, Judge C. F. Jenney informs me that on December 25 and 26, 1911, he was at Blue Springs, a few miles from Enterprise, Florida, and there saw a few song sparrows on each of these two days.

The only other Florida specimen seen by me, is one from Hibernia, taken January 30, 1869, by J. A. Allen. This is not like the Enterprise examples, and is undoubtedly a northern bird that was wintering there. Probably Maynard's Jacksonville birds also were winter visitors, but the ones seen at Blue Springs, March 30, must have been breeders.

The type of *Fringilla melodia* Wilson was a bird in winter plumage, of large size, and very rusty coloration. Through the courtesy of Chas. W. Johnson, curator of the Boston Society of Natural History, I have before me a mounted specimen, that I have every reason to believe is Wilson's actual type, which was no. 6573, Peale's Museum. Most of the birds from Peale's Museum were acquired by the Boston Museum, and when this historic theatre was pulled down a few years ago, they were transferred to the rooms of the Boston Society of Natural History. The bird I believe to be Wilson's type was in the Boston Museum, but has no original label. It exactly matches Wilson's drawing, even to being an unusually heavily spotted example; all its measurements are the same, and when placed against Wilson's figure it fits the outline exactly except the hinder part of the body and tail, which Wilson tilted upwards in order to fit in better with the other figures on the plate.

Such birds, large and very rusty, occur on migration in the Eastern States, and I have always believed that they represented a race different from the breeding bird of the Atlantic seaboard

from Massachusetts to the Carolinas. I have, however, never been able to find where this large, red form breeds. I think that some day three races of the Song Sparrow will have to be recognized in eastern North America; but until the large, red bird, the type of *Melospiza melodia melodia* (Wils.), is found to have a definite breeding area, I shall content myself by describing, as new, the other extreme — the breeding race of peninsula Florida:

Melospiza melodia beata subsp. nov.

Type, from Enterprise, Florida, adult ♂, no. 44,704, coll. Mus. Comp. Zoöl., collected April 17, 1859, by Dr. Henry Bryant.

Characters.— Similar to *M. melodia melodia* (Wils.), but the bill very much larger and rather differently shaped, the maxilla much swollen basally, therefore less evenly conical in outline; commissural tooth much larger and more pronounced; general color darker and grayer, with little admixture of rusty in the upper parts; black striping of back heavy and pronounced; lateral crown stripes very dark brown.

MEASUREMENTS (in millimeters).

No.	Sex and age	Wing	Tail	Tarsus	Culmen	Breadth of bill
44,704	♂ ad. (type)	69.0	67.0	23.0	14	7
44,705	♀ ad. (topotype)	63.5	61.5	21.5	13	7

March 31, 1913 Vol. IV, pp. 89–92

PROCEEDINGS

OF THE

NEW ENGLAND ZOÖLOGICAL CLUB

NEW BIRDS FROM CUBA AND THE ISLE OF PINES.

BY OUTRAM BANGS.

During a recent collecting trip to Cuba (January to March, 1913) Dr. Thomas Barbour made a special effort to secure specimens of certain species of Cuban birds which were imperfectly represented in the collection of the Museum of Comparative Zoölogy. During the first two weeks he was accompanied by Prof. W. M. Wheeler and Mr. Louis Agassiz Shaw, and throughout all the journey by Prof. Carlos de la Torre and his assistant Señor V. J. Rodriguez, to whom hearty thanks are due. Exceptional good fortune made possible the capture of some of the rarest and most interesting species, such as *Geotrygon caniceps* Gundlach, *Agelaius assimilis* Lembeye, and many others which are rare in collections.

Podilymbus podiceps antillarum subsp. nov.

Type, adult (female?), No. 61,100, M. C. Z., from Bueycito, Province of Oriente, Cuba, collected by V. J. Rodriguez, March 9, 1913.

The resident Antillean Pied-billed Grebe merits recognition as a subspecies. It differs from the Continental bird in having a very restricted black throat-patch, a rather weaker bill, and in having the black marking on the side of the bill nearly obsolete, even in a perfectly fresh specimen.

The plumage of the upper parts is of a slightly darker brown, and it is very probable that a large series would show that the West Indian breeding race averages decidedly smaller than the Continental.

Measurements of Type: — wing, 114; tarsus, 38; middle toe with claw, 51; exposed culmen, 19.5 mm.

Limnopardalis maculatus inoptatus subsp. nov.

Type, adult male, M. C. Z., no. 61,101, from near Jaruco, Province of Havana, Cuba, shot by a market gunner, Feb. 14, 1913, skinned by V. J. Rodriguez.

This form differs at once from *L. maculatus maculatus*. The under parts are in general much darker, since the black markings on the feathers are larger and the white spots smaller. This is true of the upper parts as well. The rump is entirely unspotted with white, and the longer under tail coverts have narrow black tips. The wings are much less spotted, and all the spots are much smaller, than in the typical form. Compared with the type of *L. m. insolitus* Bangs & Peck from British Honduras, it differs strikingly in having a white throat like the South American bird. The brown of the upper parts is much lighter, again more like the typical race.

Measurements of Type:— wing, 122; tail, 48; tarsus, 41; exposed culmen, 50 mm.

This bird is excessively rare in Cuba. Besides the type, we have another example taken many years ago by Prof. Carlos de la Torre, and this was the only one he ever secured. It came from near Havana. The species is now in immediate danger of being exterminated by the mongoose which is already abundant about Havana and which will probably spread over the whole island. So far as could be learned, the Spotted Rail (Spanish *Gallinuela escribano*) has not been taken except in the region near Havana and in the Zapata Swamp. It is unknown to the Cuban hunters of most of the island. There is one mounted specimen in the Gundlach Museum of the Institute of Secondary Instruction in Havana. The Spotted Rail of Jamaica has undoubtedly become extinct, without a single example having been preserved, so far as I am aware. Through

the kindness of Mr. C. W. Johnson I have been able to make direct comparison with a South American specimen from the Lafresnaye Collection in the Museum of the Boston Society of Natural History.

Gymnasio lawrencei exsul subsp. nov.

Type, adult male, no. 13,469, Bangs coll., M. C. Z., from Santa Sevilla, Isla de Pinos, collected by W. R. Zappey, May 31, 1904.

Three specimens from the Isla de Pinos and one from the Cienaga de Zapata, Cuba, differ markedly from two others taken in eastern Cuba. They are less reddish and more dusky brown, and have larger and more numerous white spots on the dorsal region. The under parts are much paler, less suffused with reddish brown, and with finer dusky markings.

Measurements of Type:— wing, 142; tail, 76; tarsus, 35; exposed culmen, 19 mm.

When *G. lawrencei* was described by Sclater and Salvin, they had two specimens, one from Remedios and one from Monte Verde which was the name of an old "cafetal" in the Sierre de Yateras, not far from Guantanamo, eastern Cuba. The figure (P. Z. S. Lond., 1868, pl. 29) probably was drawn from Wright's specimen from Monte Verde, since it represents finely the dark, richly colored race of the eastern part of the island.

Cyanerpes cyaneus ramsdeni subsp. nov.

Type, adult male, no. 61,102, M. C. Z., from the woods at Rio Seco, near Guantanamo, Cuba. Collected by T. Barbour, March 8, 1913.

The Cuban Blue Honey-Creeper differs from the other subspecies of *C. cyaneus* by having the pale blue crown-patch in the adult male very small and restricted to the crown itself and not extending to the occiput. The female is rather darker above, and paler, more yellowish, below.

Measurements of Type:— wing, 63; tail, 34.5; tarsus, 14; exposed culmen, 16 mm.

This bird is not rare in eastern Cuba, but is difficult to obtain, owing to its feeding habits. At the time of Barbour's visit the individuals observed were all feeding on the flowers of the "Cupey"

tree. As this tree is a parasite which extends far above the level of its host, the birds were so far from the ground that a specimen was only obtained after much difficulty. The female is represented by two skins from near Santiago de Cuba.

This race is named for my friend Mr. C. T. Ramsden, the well-known ornithologist of Guantanamo, who was a kindly host during Barbour's stay in that part of the island.

Agelaius subniger sp. nov.

Type, adult female, no. 13,372, Bangs coll., M. C. Z., from the Cienaga, Isla de Pinos, collected by W. R. Zappey, April 24, 1904.

This Red-wing differs fundamentally from *A. assimilis* Lambeye of the Zapata Swamp, Cuba, with which it has been confused, by being entirely very dark brown (except for the red and buff shoulders of the male), instead of glistening blue-black. In addition the bill has a tendency to be rather longer and with a slightly rounder, less flattened, culmen.

MEASUREMENTS (in millimeters).

No.	Sex	Locality	Wing	Tail	Tarsus	Exposed culmen
Bangs coll. 13,372	♀	Cienaga, Isla de Pinos	90	72	25.5	19.5
Bangs coll. 13,366	♂	Cienaga, Isla de Pinos	105	79	27.0	24.0

This winter eleven examples of *A. assimilis* were secured from within a few miles of Zarabanda, the exact locality whence Gundlach obtained the specimens upon which Lembeye based his name of *Agelaius assimilis*. The bird is extremely local in its distribution, even within the limits of the Cienaga de Zapata. A comparison with the series of seven specimens taken by Zappey in the Cienaga of the Isla de Pinos, shows at once how strikingly different are birds from the two islands. The brown color of the birds from the Isla de Pinos is very evident in the males, but is still more impressive in the females, and is in sharp contrast to the brilliant blue-black of both males and females of the Cuban species.

November 26, 1913 Vol. IV, pp. 93–94

PROCEEDINGS

OF THE

NEW ENGLAND ZOÖLOGICAL CLUB

AN UNNAMED RACE OF THE CAROLINA PAROQUET.

BY OUTRAM BANGS.

For many years it has been common knowledge among the older set of American ornithologists that the Carolina paroquet divided into two very distinct geographical races. One of these in former days occupied the austro-riparian region of the United States, from Maryland southward. The other was spread, in summer, at least, over an immense area of the interior prairies from eastern Colorado and Texas to Wisconsin. The prairie form is now quite extinct; and the coastal race, while it may still occur very locally in Florida, — which I much doubt,— is to all purposes a vanished bird.

The paroquet of the interior prairie region would long ago have had a name given it, had it not been for a stumbling block in *Psittacus ludovicianus* Gmelin, from "Louisiana." The Louisiana bird might have belonged to either of the two races, and no specimens were known in any of our large museums, to prove upon which race Gmelin's name, and its synonym *Psittacus thalassinus* Vieillot, had been based. Few discoveries, therefore, have ever given me more pleasure than when I found two beautiful specimens from Louisiana (probably from near New Orleans), actually collected by Sallé, in the famous De Lafresnaye Collection that has just been transferred from the Boston Society of Natural History to the Museum of Comparative Zoölogy.

One of these is adult, the other youngish. Both have been

mounted for more than half a century, but, as is usual with parrots, they have not suffered in the least from exposure to light, and are neither faded nor discolored. They are exactly similar in every way to Florida specimens, and show no approach whatever to the pale glaucous bird of the prairie region. The names *Psittacus ludovicianus* Gmel. and *Psittacus thalassinus* Vieill., thus both become synonyms of *Conuropsis carolinensis carolinensis* (Linn.).

The two forms of the Carolina Paroquet therefore apparently should stand as follows: —

1. **Conuropsis carolinensis carolinensis** (Linn.).

Type Locality.— South Carolina.

Range.— Austro-riparian region of the United States formerly, from Maryland to Florida and west along the Gulf Coast to Louisiana. Now extinct, save possibly very locally in Florida.

2. **Conuropsis carolinensis interior** subsp. nov.

Type, from Bald Island, Nebraska, adult female, no. 43,215 M. C. Z. (from the collection of the late Dr. Henry Bryant), taken April 24, ——.

Range.— Formerly the interior prairie region of the United States, from Texas and eastern Colorado to Wisconsin and the southern shores of the Great Lakes, and south, *probably*, to about Cairo, Illinois.[1]

Characters.— A much paler bird than *Conuropsis c. carolinensis* (Linn.); yellow portions of head and neck pale lemon yellow or picric yellow, instead of lemon yellow or lemon chrome; green of upper parts much paler and more bluish, verdigris green to variscite green on wing coverts and sides of neck; under parts dull green-yellow glossed with variscite green; bend of wing and feathers of tibia paler, purer yellow, less orange.

Measurements.— Type, ♀ adult: wing, 181; (tail-feathers too much abraded at tips to afford a measurement); tarsus, 17; exposed culmen, 24 mm.

Note.— Names of colors are according to Ridgway's 'Color Standards and Color Nomenclature,' Washington, 1912.

[1] Now that we know the Louisiana bird belonged to the austro-riparian form, I think it is safe to assume that it ranged north in the Mississippi Valley to about Cairo, Illinois. This locality marks a natural faunal boundary, where the two forms might be expected to meet.

February 7, 1914 Vol. IV, pp. 95–98

PROCEEDINGS

OF THE

NEW ENGLAND ZOÖLOGICAL CLUB

SOME NEW REPTILES.

BY THOMAS BARBOUR.

During the last few years it has been the good fortune of the Museum of Comparative Zoölogy to acquire several remarkable collections from southern Kamerun, especially rich in rare and interesting forms of reptiles and amphibians. The material was gathered by the Rev. George Schwab, a former missionary in this region. Among the snakes, one appears undescribed and is now characterized.

The nearest ally of this new species, *Crotaphopeltis hotamboia* (Laurenti), usually has been included in the Neotropical genus *Leptodeira;* but, so far as I am aware, all the American species have the anal shield divided, while the African form mentioned above has it entire, as is also the case with this new species and with *C. degeni* (Boulenger) from Uganda. Taking this fact into consideration, with the radically different type of coloration, I feel sure that the African snakes are not congeneric with those in America. The new form may be called

Crotaphopeltis elongata sp. nov.

Type, an adult, no. 9260 Mus. Comp. Zoölogy, from Lolodorf, southern Kamerun, collected by the Rev. George Schwab in 1912.

This species differs from *C. hotamboia* in having a smaller head, a larger eye, a larger number of both ventral and subcaudal scales and different coloration.

Description.— Rostral broader than deep, hardly visible from above; internasals much shorter than praefrontals, less than one half the length; frontal once and one half as long as broad, about as long as its distance from the end of the snout, shorter than the parietals; loreal square; one prae- and two postoculars; temporals 1 + 1; eight upper labials, fourth and fifth entering the orbit; first pair of infralabials in contact behind the symphysial; two pairs of large chin shields, the anterior in contact with five infralabials. Scales smooth, in seventeen rows. Ventrals, 219; anal undivided; subcaudals, 80. Blue-black above, uniform throughout, steely blue below.

Total length 112 cm.; tail 24.5 cm.

Among the great number of reptiles secured by Professor Louis Agassiz and his assistants in Brazil, during the explorations of the Thayer Expedition, is a single specimen of a curious Amphisbænoid lizard which appears to represent a genus and species hitherto unknown.

Aulura gen. nov. Amphisbænidarum.

Generic characters.— Similar in general to *Lepidosternon*, only having the nostrils pierced in large separate nasals, instead of in the rostral, and in having a groove-like constriction about the tail just posterior to the third complete caudal annulus, which is marked by the presence of an extremely narrow intercalated annulus, the distal portion of the tail beyond this sulcus being rather more swollen than the short interspace between the groove and the vent.

Type species, *Aulura anomala* sp. nov.

Aulura anomala sp. nov.

Type, an adult from Brazil,[1] no. 4660, Mus. Comp. Zoölogy, collected in 1865 by the Thayer Expedition under the leadership of Louis Agassiz.

Description.— Praemaxillary teeth, 1; maxillaries 4–4; mandibulars 6–6.

[1] Unfortunately this is one of the very few specimens in this collection for which there are no more definite data.

Snout rather prominent, smooth; rostral small; a large nasal on each side of rostral meeting behind that shield on the midcephalic line; a pair of large praefrontals separating the pair of frontals from the nasals; the contour scales extend to these shields, except for several slightly enlarged scales which might be considered occipitals. It is not impossible that some would consider the scutes here called frontals, as really parietals. Eye invisible in a medium-sized ocular; this is bounded anteriorly by the first labial (which extends upward to the praefrontal), inferiorly by the third labial, and posteriorly by the upper of the two first temporals. These two temporals are followed by three smaller ones. There are but three supralabials. The infralabials are also three, the second largest. A large median chin shield is in contact with the first and second lower labials; also a pair of large chin shields are in contact with the second and third lower labials and are separated from each other by five other shields posterior to the large median chin shield mentioned above.

One hundred and ninety-one annuli on body; three complete caudal annuli anterior to the ring-groove, and ten posterior to it. An annulus about the middle of the body contains sixteen dorsal and twenty ventral segments, the ventral segments being much larger than the dorsal. The pectoral shields consist of about sixteen scutes, four rows of four scales each, the two median rows largest. All the scales somewhat irregular in shape and position and a few partially fused together. Preanal scales, two large in median position, flanked on each side by three smaller scales.

Color yellowish, in spirits, somewhat darker above than below.

Among a collection of reptiles made by Dr. Glover M. Allen in British East Africa appears a small series of specimens which apparently represent a new species closely related to *Algiroides africanus* Boulenger (P. Z. S. 1906, p. 570, fig. 96) from Entebbe, Uganda. This lizard may be called

Algiroides alleni sp. nov.

Type, an adult from near the "tree limit," northeast slope of Mt. Kenia, British East Africa, no. 9280, Mus. Comp. Zoölogy, taken Sept. 9, 1909, by Dr. G. M. Allen. There are four paratypes from the same locality.

This species differs from *A. africanus* in having much larger, hence fewer, gular scales than shown in Boulenger's figure; in having the collar of four

instead of six scales; in having a greater number of transverse series of ventral plates, 24 as against 18; and in having a different coloration.

In the several specimens the number of ventral transverse series varies from 24 to 28. The keels of the dorsal scales are also apparently less well developed on the average than in the one figured by Boulenger. The color is characterized by the absence in all the specimens of "the small dark brown spots on the back" and by the presence of a well-marked dark vertebral streak. Above and below the broad dark lateral bands, which are present as in Boulenger's species, there are white bounding lines extending practically from head to tail.

It gives me pleasure to name this species for Dr. Allen in recognition of his skilful collecting in many parts of the world.

March 9, 1914 Vol. IV, pp. 99–100

PROCEEDINGS

OF THE

NEW ENGLAND ZOÖLOGICAL CLUB

THE GEOGRAPHIC RACES OF THE SCALED QUAIL.

BY OUTRAM BANGS.

The monotypic genus of American partridges, *Callipepla*, for many years has been universally regarded by ornithologists as containing two geographic races only. A study lately made of the series in the Museum of Comparative Zoölogy, however, has convinced me that three instead of two subspecies must be recognized. These briefly are as follows:—

Callipepla squamata squamata (Vig.).

Ortyx squamatus Vigors, Zool. Journ., Vol. V, 1830, p. 275, "Mexico."

Range.— Valley of Mexico, from San Louis Potosi south to near City of Mexico, and north probably to southern parts of Coahuila and Chihuahua.

Characters.— Breast and upper back distinctly plumbeous gray, very much darker than in the next form; lower back and rump dark smoke-gray; belly, especially in the male, strongly suffused with yellowish brown.

Remarks.— Of this form I have examined but four skins, two males and two females from San Louis Potosi, collected by Dr. Edward Palmer. These, however, are so strikingly different from the pallid birds of farther north that they cannot be regarded as belonging to the same subspecies.

Callipepla squamata pallida Brewst.

Callipepla squamata pallida Brewster, Bull. Nutt. Orn. Club, VI, 1881, p. 72. Rio San Pedro, Arizona.

Range.— Arizona, New Mexico, and western Texas, north to southern Colorado, and south probably to northern parts of Sonora, Chihuahua and Coahuila.

Characters.— A very pallid race; the breast and upper back pale dull gray; lower back and rump much paler and duller than in *C. s. squamata;* belly cream-buff to buff, not suffused, in either sex, with yellowish brown.

Remarks.— Vigors's type locality of 'Mexico' of course included all three of the races of the scaled quail. His description, however, best fits the southern form, and in such a case Brewster had the right to choose.

Callipepla squamata castanogastris Brewst.

Callipepla squamata castanogastris Brewster, Bull. Nutt. Orn. Club, VIII, 1883, p. 34. Rio Grande City, Texas.

Range.— Lower Rio Grande valley in Texas, south to northern parts of Coahuila, Nuevo Leon and Tamaulipas.

Characters.— General color dark as in *C. s. squamata*, but distinguished at once from either of the other races by having in the male a chestnut patch in middle of belly and usually an indication of it in the female.

March 24, 1914 Vol. IV, pp. 103–107

PROCEEDINGS

OF THE

NEW ENGLAND ZOÖLOGICAL CLUB

THE BARREN-GROUND CARIBOU OF LABRADOR.

BY GLOVER M. ALLEN.

While in London in 1912, I was much struck by the appearance of a fine mounted head of a barren-ground caribou on exhibition in the rooms of a well-known taxidermist, and on learning that it came from Labrador, I resolved to make further investigation of the peninsular animal. In this I have had the assistance of Mr. William B. Cabot, of Boston, who, in the course of several pioneer expeditions into the interior of that country, has secured many photographs of antlers and has examined a number of specimens, of which, unfortunately, none was preserved. Hitherto, the barren-ground caribou of Labrador has been tacitly referred to *Rangifer arcticus,* the "*Cervus tarandus,* var. *α., arctica*" of Richardson.[1] This name is based on the animal of the barren grounds to the northwest of Hudson Bay. Richardson says: "On the coast of Hudson's Bay the Barren-Ground Caribou migrate further south than those on the Coppermine or Mackenzie Rivers; but none of them go to the southward of Churchill." The southerly extension of James Bay thus separates for a long distance the eastward range of true *arcticus* from the westward bounds of the Labrador barren-ground caribou, which probably does not pass farther south than Great Whale River on the west coast. These

[1] Richardson, J. Fauna Boreali-Americana, Vol. 1, Quadrupeds, p. 241, 1829.

caribou have therefore been isolated for a very long period in the northern part of the peninsula, and it is not surprising that they should have developed certain peculiarities which, as in other caribou, seem to show noticeably in the form of the antlers. These are remarkable for their long heavy beams with a wide backward sweep and forward curve, and for the great palmation of the brow

Fig. 1.— *Rangifer arcticus caboti*, the type antler, from a camera drawing.

and bez tines. In view of these facts I propose to recognize the barren-ground caribou of Labrador as a distinct race which may be known as

Rangifer arcticus caboti, subsp. nov.

Type.— A shed antler, no. 15,372, collection of the Museum of Comparative Zoölogy, collected about thirty miles north of Nachvak, northeast coast of Labrador, by Owen Bryant.

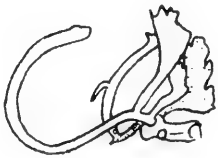
General Characters.— Resembles *R. arcticus* of Arctic America, but the antlers have, in the adult males, a more sweeping backward curve, and their

tips are carried farther forward. The beam is subcircular in section, with occasionally a small tine given off near the end of the proximal half or third of the length. The terminal portion is compressed, as usual, and palmate, but commonly only a few points are given off from the upper edge, and these are comparatively short. Both brow tine and bez tine are greatly developed. The large triangular palmation of the former has usually a nearly straight front edge, with small and sometimes numerous projections. The bez tine is less expanded, but more so than in typical *arcticus*.

Color.— The summer pelage is of the usual gray above, with a marked white eye ring. The winter condition I do not know.

Measurements.— The type antler measures 1390 mm. on the outside of the curve; the brow tine, 360 mm. in length, and 265 mm. in greatest width of the palmation. The bez tine is 540 mm. from its upper base to tip of longest point, and 230 in greatest breadth. The greatest breadth of the palmation at the end of the main beam is 120 mm., and the longest tine at that part measures 220 mm.

2



3

Figs. 2, 3.— *Rangifer arcticus caboti*, tracings from photographs by W. B. Cabot — northeastern Labrador.

Remarks.— A comparison of figures of antlers from the northwest coast of Hudson Bay, published by Richardson, Dr. J. A. Allen,[1] and Madison Grant,[2] and representing true *arcticus*, shows that the latter does not attain the tremendous sweeping curve of beam that is rather characteristic of Labrador heads, but instead the upward bend of the antler is often at almost an angle with the backward portion; nor is the upward curve carried so far forward.

[1] Allen, J. A. The Peary Caribou (*Rangifer pearyi* Allen). Bull. Amer. Mus. Nat. Hist., vol. 24, figs. 7–10, 1908.

[2] Grant, Madison. The Caribou. 7th Ann. Rep. N. Y. Zool. Soc., pls. [6, 7], 1902.

The bez tine is less expanded, and the brow tine though sometimes of large size does not show the extreme development seen, for example, in the heads from Fort Chimo, Labrador, figured by Grant from specimens in the U. S. National Museum. The specimen taken as the type is rather below the average in the characters named.

It is unfortunate that at the present time no skins or body measurements are available; a comparison of cranial measurements with those of true *arcticus* would also be welcome.

The Labrador barren-ground caribou is a migratory animal, and in autumn and winter may reach the more southern portions of the unforested part of the peninsula, meeting the woodland caribou, which, as Mr. Cabot tells me, sometimes associates with the smaller species at such times. On the east coast it follows the barrens quite to the Straits of Belle Isle, and in early July, 1906, I saw numerous tracks at Caribou Island and vicinity, which had been made by the animals a month or so previously. On the west side of the Peninsula, they probably do not come so far to the southward, as the forested area reaches the coast near Great Whale River, on Hudson Bay.

During the summer the big herds are well to the north and on them the Nascaupee Indians of the interior largely depend for their supply of meat. In the account of her journey to Lake Michikamau and down the George River, Mrs. Hubbard [1] gives an interesting relation of her experience with these caribou which she found in great numbers north of that lake in early August, 1905. Mr. Cabot found them the following year in late August along the height of land west of Davis Inlet. Though the great herd had passed, the Indians "had killed near a thousand." From Mr. John Ford, the Hudson's Bay Company's Agent at the George River post, Mrs. Hubbard learned "that they cross [the river] in the neighborhood of the post at different times of the year. He has seen them there in July and August, in October and November, in January, February, and March. They are seen only a few days

[1] Hubbard, Mrs. Leonidas, Jr. A Woman's Way Through Unknown Labrador. New York, 1908. (Chapter 12 on the caribou.)

in the summer time, but in winter stay much longer — sometimes two months. . . . From the George River post they hunt west for the caribou, which are more often found in the vicinity of Whale River post than at either George River or Fort Chimo to the west. For the five years preceding my visit [1905] the caribou had crossed regularly in November at Whale River. . . . That the caribou of Labrador have greatly decreased in numbers seems certain. Mr. Peter M'Kenzie, Chief Factor of the Hudson's Bay Company in the east, ... told me that many years ago while in charge of Fort Chimo he had seen the caribou passing steadily for three days. . . . not in thousands, but hundreds of thousands. The depletion of the great herds of former days is attributed to the unreasoning slaughter of the animals at the time of migration by Indians in the interior and Eskimo of the coast. . . . The fires also which have swept the country, destroying the moss on which they feed, have had their share in the work of destruction." The wolves "hunt the caribou in packs, cutting out a single deer, and following him till his strength is gone, when they jump on him and pull him down."

It seems fitting that Mr. Cabot's name should be associated with this handsome caribou, which but few other white men have ever followed into the inner stretches of Labrador. I would also express my obligation to him for the use of many photographs, and to Mr. Charles W. Johnson, Curator of the Boston Society of Natural History, for permission to study the caribou in its collection.

INDEX

In references to subspecies the name of the species is omitted. New scientific names are in heavy-faced type.

PLATES.

Facing page

PLATE V. 52

Upper figure. Dorso-lateral view of type of *Liolaemus alticolor*.
Lower figure. Dorso-lateral view of type of *Hyla hayii*.

PLATE VI. 78

Bufo bankorensis Barbour.

Fig. 1. Lower side, manus of male.
2. Lower side, manus of female.
3. Latero-dorsal view of male.

PLATE VII. 78

Figs 1–4. *Natrix aequifasciata* Barbour, both sides of heads of the two known specimens.
5. Lateral view, head of *Holarchus nesiotis* Barbour.
6. Dorsal view, head of *Holarchus nesiotis* Barbour.
7. Dorsal view of *Goniurosaurus hainanensis* Barbour.
8. Lateral view, head of *Pseudoxenodon stejnegeri* Barbour.

ERRATUM.

Page 53, line 20, for *Goniosaurus* read *Goniurosaurus*.

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PL. 2–3.

A NEW MARSUPIAL FROM NETHERLANDS' NEW GUINEA.

BY GLOVER M. ALLEN AND THOMAS BARBOUR.

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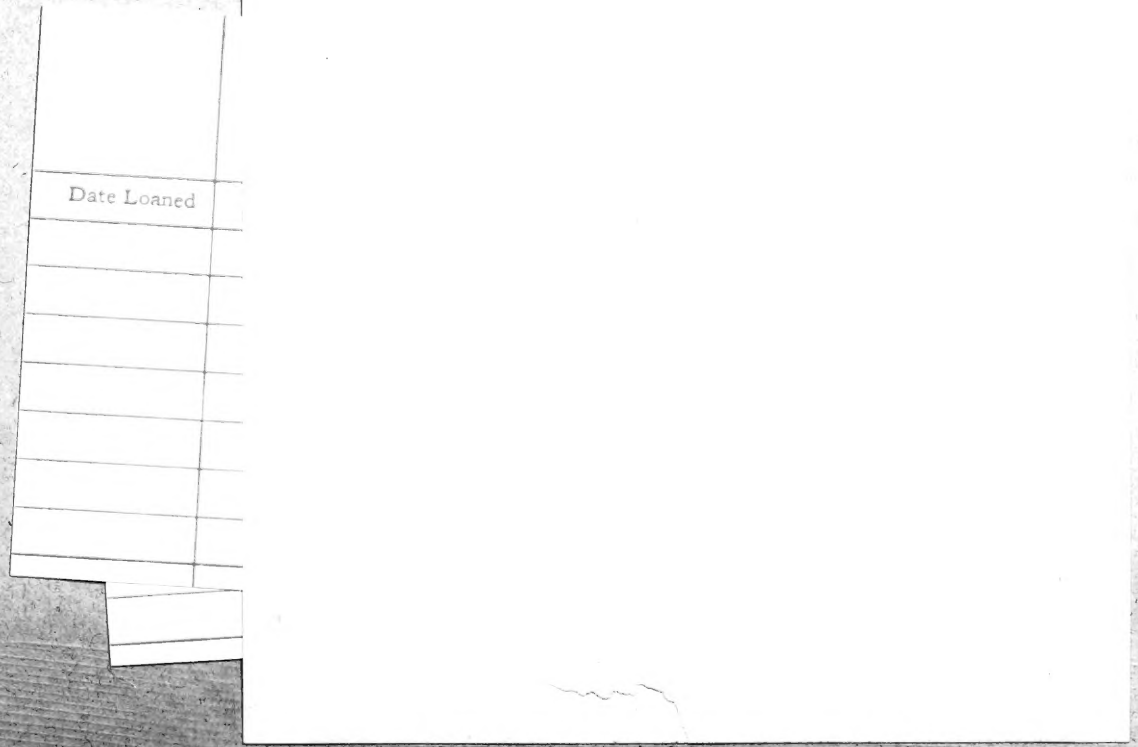
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