

ON THE SNAKES OF FLORIDA.

BY E. D. COPE.

(With Plate XXXVI, Figs. 3, 4.)

Recent explorations have brought to light a good many additions to the snake fauna of Florida, and the present opportunity is taken for the purpose of making them known, as well as of discussing the nomenclature of some of the species already known.*

Tantilla coronata B. & G. The most eastern locality for this species is Volusia, on Lake George.

Contia pygæa Cope. Known from but two localities, Volusia and Gainesville (Gorman).

Osceola elapsoidea Holbr. Not uncommon throughout the State.

Cemophora coccinea Blum. Not uncommon; found as far south as Georgiana County.

Ophibolus doliatus sypsilus Cope, subsp. nov.

The brown and red spotted and ringed species of *Ophibolus* form a continuous series of color modifications, commencing with the spotted *O. d. triangulus*† and terminating with the *O. d. coccineus*, which approaches the *Osceola elapsoidea*. As a whole the *Ophibolus doliatus* L. differs from the other species of the genus in the number of its temporal shields. These are 2 (1)–2–3, while in the others, including *O. rhombomaculatus*‡ and *O. calligaster*, exhibit 2–3–4, with occasional irregularities.

The *O. triangulum* and *O. coccineus* have been always regarded as distinct species; and so numerous are their differential characters, in coloration, size, and squamation, that this view would seem to rest on a satisfactory foundation. I find, however, that individuals exist which represent every stage of development of each character which distinguishes them, although certain types appear to be more abundant than the intermediate ones. *O. triangulum* is a species of larger size, with two anterior temporals, a row of large dorsal spots, and other smaller ones on the sides, on a grayish ground; with a chevron, and often other marks on the top of the head, and a band posterior to the eye. *O. coccineus* is a small snake with a small loreal plate and one anterior temporal; color red, with pairs of black rings extending around the body, and no markings on the head excepting that the anterior ring of the anterior pair crosses the posterior edge of the occipital shields, forming

* A list of the species of cold-blooded vertebrata of Volusia, Florida, is given in the Proceed. Amer. Philosoph. Soc., 1877, p. 64.

† As pointed out in the preface to the Check-List of the Batrachia and Reptilia of North America, Bull. U. S. Nat. Mus., I, p. 1.

‡ This species is not rare in Virginia, two specimens having been taken in the neighborhood of Alexandria, one by Dr. A. K. Fisher, of the Agricultural Department.

a half collar. The transition is accomplished thus : The lateral borders of the dorsal spots of *O. triangulum* break up, and the lateral spots become attached to their anterior and posterior dark borders. The chevron of the top of the head first breaks into spots, and then its posterior portions unite with each other. The borders of the old dorsal spots continue to the abdomen, where the remaining lateral portions finally meet on the middle line, forming a black line. This breaks up and disappears, leaving the annuli open ; and these are then completed in many specimens. The general colors become more brilliant and the size smaller. The head is more depressed ; in immediate relation to this form, the loreal plate is reduced in size, and the two temporal shields of *O. triangulum* are reduced to one. Every form of combination of these characters can be found, which represents six species of the books (in North America), viz: *O. triangulum*, *O. doliatus*, *O. annulatus*, *O. gentilis*, *O. amaurus*, and *O. coccineus*. The oldest name is the *O. doliatus* Linn. Another series of specimens resemble very closely those of the subspecies *coccineus* ; in fact, are identical with them in color. The loreal shield is, however, extinguished, and the rows of scales are reduced by one on each side. These specimens simply carry one degree further the modifications already described. Yet, on account of the constancy of these characters, I am compelled to regard these individuals not only as a distinct species, but, on account of the absence of the loreal plate, as belonging to another genus. This is the *Calamaria elapsoidea* of Holbrook ; the *Osceola elapsoidea* of Baird and Girard. It affords an illustration of the principle, which I have elsewhere insisted on, "that adjacent species of allied genera may be more alike than remote species of identical generic characters," which indicates that generic characters originate independently of the specific.

The transitions above noted are not, however, without mutual correlations. The characters are found so associated in such a great majority of the specimens as to indicate the existence of subspecies, whose definitions are given below ; exceptions to these are given under the head of each subspecies.

I. No yellow band posteriorly from orbit (a yellow half collar).

α. Dorsal spots or saddles (red) open at the sides, their adjacent borders forming pairs of black rings.

Interspaces between red saddles, open below ; scales not black tipped ; front black ; first black ring on nape only *O. d. coccineus*.

Interspaces between red saddles closed by black spots below ; scales black tipped ; front black ; first black ring complete *O. d. polyzonus*.

Interspaces not closed ; rings, including first, complete on belly ; first yellow band crossing occipital plates ; front black ; scales not black tipped *O. d. occipitalis*.

αα. Dorsal saddle-spots closed at the sides.

β. Saddles closed by a single black tract on the middle of the belly ; no spots between saddles.

Dorsal spots not divided medially ; front black ; first black ring complete *O. d. annulatus*.

- Dorsal spots divided longitudinally by a median black connection; front black..... *O. d. gentilis*.
- ββ. Lateral borders of saddles not confluent with each other below.
- Saddles completed on gastrosteges; no alternating spots; no black collar *O. d. parallelus*.
- Saddles completed on gastrosteges; spots opposite intervals forming a single series on the middle line of the belly..... *O. d. syspilus*.
- Saddles completed above the gastrosteges; alternating spots which do not meet on the middle line of the belly..... *O. d. doliatus*.
- II. A yellow band from orbit, bounded below by a black or brown one. (Saddle spots closed laterally above gastrosteges; superciliary light spots or bands.)
- A half collar touching occipital plates; no neck bands; alternate spots largely on gastrosteges *O. d. collaris*.
- Neck with longitudinal bands; alternate spots on gastrosteges..... *O. d. clericus*.
- Neck with bands; alternate spots entirely on scales..... *O. d. triangulus*.

The more detailed transition from the simple head coloration of the *O. d. coccineus* to the complex pattern of the *O. d. triangulum* is accomplished as follows:

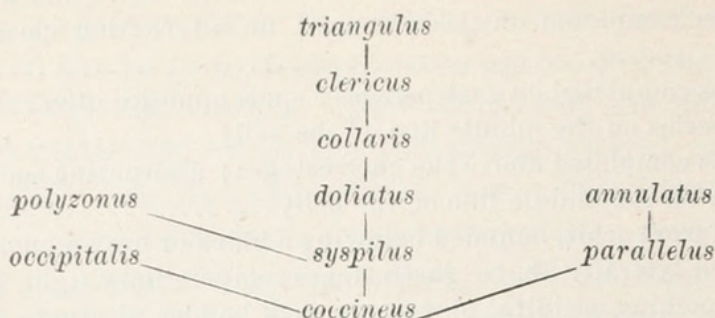
A yellowish spot is seen on the superciliary plate of the single specimen of the *O. d. parallelus* known, and on three of the fifteen specimens of the *O. d. syspilus*. It appears in all of the thirteen *O. d. doliatus*, and in two of these they nearly join across the front, and in three they join, forming a cross-band. In four specimens of the *O. d. doliatus* a notch of the black anterior border of the nuchal collar appears on each side. The deepening of this notch till it reaches the eye defines the two postocular stripes of the subspecies of section II of the preceding table. It has not quite reached the orbit in Nos. 7849 and 2192 of *O. d. collaris*. The superciliary spots have not united across the front in any of the five specimens of *O. d. collaris*, excepting in No. 5449. In No. 2433 it is nearly completed. The interorbital and postorbital bands are complete in the subspecies *O. d. clericus* and *O. d. triangulus*. Finally, the completion of the head ornamentation is seen in the perfect definition of the anterior boundary of the brown band in front of the interorbital light band. This is seen in three individuals of the *O. d. clericus* and in three of the five *O. d. triangulus*. In one of the latter it is simply indistinct; in another it is converted into a median spot by a yellow band, which extends from the interorbital band round the canthus rostralis and end of muzzle.

This species furnishes, then, a most instructive illustration of the origin of color character.

The geographical distribution of the *Ophibolus doliatus* extends from latitude 48° through the eastern Austroriparian and southern part of the central district, and throughout Mexico and Central America to Panama. It is wanting from the Pacific and from the Sonoran districts. It does not appear on the west coast of Mexico north of Colima and Michoacan.

The phylogenetic relations of these subspecies may be sketched as follows. Which is the ancestral form is uncertain; but as the region

inhabited by the *O. d. triangulus* is much older geologically than that where the *O. d. coccineus* is found, the former is probably the primitive type.



The geographical distribution of the subspecies is related to their characters. *O. d. coccineus* is exclusively a form of the Gulf border, and the *O. d. triangulus* is northern, and is not known from south of Washington, D. C. The other forms in the same series occupy the intermediate latitudes. The *polyzonus*, *occipitalis*, and *annulatus* are Mexican, and the *O. d. parallelus* is Floridan. The color increases in brilliancy to the south, as the *O. d. triangulus* is brown-spotted, and the *O. d. coccineus* crimson. The size diminishes in general in the same direction, the species recovering its size in Mexico.

The characters of the *Ophibolus doliatus syspilus* are as follows:

Head small, flattened above, with the snout rounded; neck slightly contracted; body elongated, rather slender; scarlet above, and marked with black rings in pairs; between each pair is a white ring.

The head is rather small, flattened above, with the snout rounded; the vertical plate is pentagonal, with an acute angle behind; the superior orbitals are oblong-quadrilateral, broadest behind, and not projecting over the eye; the occipitals are polygonal and very large; the frontal is broad and pentagonal, narrowest externally, where it descends to join an elongate quadrilateral loreal plate. The anterior frontals are also quadrilateral, smaller than the posterior, and broadest externally. The rostral plate is large, heptagonal, and concave below. There are two nasal plates, the posterior square, the anterior emarginated behind for the nostril, which does not enter the posterior, but comes out at its anterior border. There is a single anterior orbital plate, oblong, slightly concave behind, and two small, subround, posterior orbitals. The inferior wall of the orbit is made up of the third and fourth superior labial plates, of which there are seven.

The nostrils are lateral, and near the snout. The eyes are small, the iris bright reddish-gray. The neck is but slightly contracted, and is covered with small, smooth, subhexagonal scales. The body is long, tolerably stout, and covered above with scales similar to those of the neck, but larger. The tail is rather short, thick at its root, but soon becomes smaller, and terminates in an acute tip.

The anterior top of the head is crossed with a black band at the extremities of the occipitals, and the dark color may extend as far as the

prefrontal plates inclusive. The body is scarlet, banded with twenty-two pairs of jet black rings, with a white ring between each pair of black. These rings do not completely surround the body, as in *Osceola elapsoidea*, but the lower part of the anterior ring of one pair is continued within the margin of the gastrosteges, with the posterior ring of another pair; but always at a considerable distance on each side of the middle line.

The belly is marked with a single series of median black spots, which are opposite the spaces between the dorsal saddles, or opposite the yellow rings. These spots represent the confluent lateral spots of the *O. d. doliatus*, *clericus*, etc., as shown in the analytical table of the subspecies. Their complete fusion with the black rings, and the obliteration of the lateral crossing lines of the saddle spots, would give us the *O. d. annulatus*. The division of these median spots on the middle line, and their transposition to the sides, with the elevation of the lateral closing lines of the saddles to a point above the gastrosteges, would give us the *O. d. doliatus*.

This subspecies has not been previously recognized, but its validity is well sustained by fifteen specimens in the U. S. National Museum.

Three or four partly distinct types of head coloration are among these specimens. In 13008, 12925, and 8345 the front is black to the end of the muzzles. In 1846, 2296, and 4291 the end of the muzzle only is red. In 303 and 7850 the top of the head is reddish brown, and superciliary spots are present; and in 13361, 13380, and an unnumbered specimen the top of the head is a uniform red or reddish-gray.

4291: scales 21, 7: scuta 210 + 1 + 44: total length 692, tail 95^{mm}.
13380: scales 21, 7: scuta 209 + 1 + 48: total length 762, tail 115^{mm}.
(Type.)

Ophibolus doliatus syspilus Cope.

4291	1	Republican River, Kansas.....	Dr. W. A. Hammond, U. S. Army...	Alcoholic.
1846	2	Fort Towson, Ark.	Dr. L. A. Edwards, U. S. Army	Do.
2296	1	Prairie Mer Rouge, La.	James Fairie.....	Do.
13008	1	New Orleans, La.	Dr. R. W. Shufeldt, U. S. Army.....	Do.
12925	1	do	do	Do.
13045	1	do	do	Do.
12297	3	Georgiana, Fla	G. Wittefield	Do.
8435	1	Apache, Ariz.....	H. W. Henshaw	Do.
5188	1	Louisiana	J. W. Wallace	Do.
303	1	Independence, Mo.....	Dr. J. G. Cooper.....	Do.
7650	1	Abbeville, S. C	Do.
13361	1	Wheatland, Ind.....	Robert Ridgway.....	Do.
13380	1	Richland, Ill.....	do	Alcoholic (type).

A specimen is in my private collection from Fort Harker, Kans.

Ophibolus doliatus parallelus, subsp. nov.

Scales in twenty-one rows, rather short and wide. Head distinct, muzzle not prominent. Rostral plate very little visible from above. Muzzle short. Frontal wide; occipital nearly as long as frontal and prefrontals. Loreal well developed, longer than high; oculars 1-2; temporals 2-2-3. The seven superior labials are all higher than long; the

third and fourth bounding orbit. Postgeneials half as long as pregeneials.

Back crossed by saddles of brownish-red (in alcohol), with black borders, which extend to the gastrosteges, and thus close the saddles by the longitudinal direction of the black border. These borders of opposite sides form parallel longitudinal black lines. The saddles are long, covering on an average nine scales. There are twenty of them in front of the anus in the type specimen. They are separated by yellow intervals of one and a half scales in width. There are no lateral or ventral spots opposite to these, alternating with the principal ones. The ground color below is yellowish. The top of the head is reddish-brown, bounded posteriorly by black, which crosses the posterior border of the occipital scuta. This is followed by a yellow half collar, which is followed by the black anterior border of the first dorsal saddle, and which turns backwards along the ends of the gastrosteges like the others; a yellowish-black edged spot on each superciliary plate and a similar one on the canthus rostralis, which sends a short branch along the anterior border of the frontal. Superior parts of superior labials black, inferior parts yellow.

10544: 21, 7: 210 + 1 + 146: 325, 42.

This subspecies occupies an interesting intermediate position between *O. d. annulatus* and *O. d. sypilus*. It differs from the former in the fusion of the lateral saddle-borders and the absence of a black collar; from the latter in the absence of intermediate spots on the middle of the belly and the close approximations of the borders of the saddles.

Ophibolus doliatus parallelus Cope.

10544	1	Gainesville, Fla.....	James Bell.....	Alcoholic.
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Ophibolus getulus getulus L.

Specimens of this species from Florida have the scales in twenty-three longitudinal rows instead of in twenty-one, the normal number for the species. In this respect they agree with the *O. g. boylii* of the Pacific district.

Dromicus flavilatus Cope.

Besides the specimens I have noted from Volusia, the National Museum has received four from G. Wittefield, Georgiana, in southeast Florida, and Mr. S. W. Garman reports it from another locality.

Coluber obsoletus lemniscatus, subsp. nov.

This snake differs from the typical *C. o. obsoletus* in the distinctness of the color pattern, which shows the lateral spots confluent into a broad band which extends from the neck to the end of the tail. The dorsal spots are distinct, and the angles of the anterior are continued as two parallel nuchal bands to the parietal scuta. Below clouded, but not spotted. No head bands. Several rows of dorsal scales keeled.

This form is intermediate between the *C. quadrivittatus* and the *C. obsoletus*. The lateral band is much wider than that of the former species. A specimen was sent me from Mobile, Ala., by Dr. Joseph Corson, U. S. Army, and it is therefore probably found in Florida, though it has not yet been actually obtained there. A second specimen is in the National Museum from Whitfield County, in northern Georgia. Two other specimens—one from Mobile and one from Georgia—show the lateral bands interrupted into spots posteriorly, and hence connect with the *C. o. spiloides*, D. & B. (*C. o. confinis*, B. & G. Cope., *olim*).

Coluber quadrivittatus Daudin. Common over the State.

A series of twenty young of different ages from Georgiana show that they are all spotted, and considerably resemble the *C. o. spiloides* in the early stages, and that the lateral spots become first confluent into bands, and later the angles of the dorsal spots are produced so as to form the two dorsal stripes. Later the dorsal spots disappear in most specimens; in a few individuals they remain. In the young the spots are considerably more numerous than in the *C. o. spiloides*.

Coluber guttatus guttatus L. From Arlington, Fla., G. B. Goode, of the typical form and coloration.

Coluber guttatus sellatus, subsp. nov.

This subspecies does not differ in any structural character from the typical *C. guttatus guttatus*, excepting that the scales are in twenty-nine instead of twenty-seven longitudinal rows. The value of this point is uncertain, as but two specimens are known. The essential differences are seen in the color. The head-bands, so conspicuous in the *C. g. guttatus*, are wanting here, except the postocular, which is present, and is black bordered above and below. The parietal band is indicated by a black external border which extends to the edge of the parietal plate. It is further faintly indicated by a shade which joins that of the opposite side on the front of the frontal scute. A second character is seen in the absence of lateral spots on the body, their places being clear pink or yellowish, like the ground of the belly. The spaces between the dorsal spots and those between the lateral clear spaces are gray dusted. The scales at the superior edge of the lateral pale spots are sometimes black bordered, partially outlining a lateral spot. This is most distinct anteriorly, where these borders form interrupted longitudinal lines. The dorsal spots are red and have narrow serrate black anterior and posterior borders. The spots are wider than in the *C. g. guttatus*, covering nineteen and twenty-one longitudinal rows of scales, while in the former they cover but from ten to fifteen rows of scales. The belly is tessellated with black spots, as in *C. g. guttatus*, each spot covering the external half of two or three gastrosteges. A delicate black line connects them externally, running along the angle of the gastrosteges.

9692: 237 + 1 - 64: 29: 918, 173.

6507: 234 + 1 - 65: 29.

This subspecies inhabits Florida along with the typical one, which

displays its full characters in the same region. The *C. g. sellatus* is evidently annectant to the *C. rosaceus* of southern Florida.

9692	1	Arlington, Fla	G. Brown Goode.....	Alcoholic.
6507	1	Palatka, Fla	Dr. T. H. Bean.....	Do.

Coluber rosaceus, sp. nov. (Plate xxxvi, Fig. 3.)

Head oval, distinct from body. Rostral plate visible from above; internasals much shorter than prefrontals. Frontal wider than in allied species, as broad as it is long, with straight anterior border. Parietals longer than muzzle from frontal plate. Loreal longer than high; preocular not reaching frontal, but separated by the very narrow anterior extremity of the superciliary. Temporals 2-3-4, the posterior small. Scales of body smooth, rather wide, the first row a little wider than the second. Postgenaeals smaller than pregenaeals, but distinct from gular scales. Gastrosteges bent up at the sides. Tail probably long, as in *C. quadrivittatus*, but the end is lost. The urosteges remaining number 47.

The ground color of the superior surfaces, in the rather fresh alcoholic specimen, is buff, each scale with a dusky band within and parallel to the border, surrounding a buff center. This band may be broken up into spots. The greater part of the superior surfaces is occupied by a series of vermilion-tinted pink spots, which extend across the back to within two and three scales of the gastrosteges, thus covering from twenty-one to twenty-three scales transversely. Their length covers six scales everywhere, though as the scales are more elongate anteriorly the spots are also more elongate. The lateral spots of other species are here represented by pale tracts continuous with the light yellow of the belly, which alternate with the dorsal spots, extending to an apex on the fourth and fifth row. In other words, the cross-bands of dusky ground color bifurcate on the flanks, and terminate at the extremities of the gastrosteges. Below their termini, at the lateral angle of the gastrosteges, is a short longitudinal black bar or spot crossing one or two gastrosteges. This represents the black line which occupies a similar position in the *C. guttatus*. At the anterior and posterior parts of the body the dorsal spots have short serrate anterior and posterior borders. Four indistinct longitudinal bands traverse the length of the body, on the fourth and fifth and tenth and eleventh rows of scales on each side. The inferior band is very obscure, especially anteriorly, and both are less distinct on the true skin than on the epidermis.

The head is of a reddish color above; below yellowish. A faint dusky band extends across the temporal region and parts of the superciliary and frontal plates, meeting a corresponding one of the opposite side. This represents the space between the bands of the *C. guttatus*, which consists in this species of ground color only. Superior and posterior margin of the upper labials obscurely dusky.

14418: 239-2: 27: 970?

This beautiful species is of considerable interest from the intermediate position it occupies between the *C. guttatus* and the *C. quadrivittatus*. The absence of keels of the scales and the dorsal color spots ally it to the former, and especially to the subspecies *C. g. sellatus*; but the absence of lateral and ventral spots and head-bands and presence of longitudinal stripes ally it to the latter. The width of the frontal plate is also characteristic. It is a very handsome animal.

Coluber rosaceus Cope.

Catalogue number.	Locality.	From whom received.	No. of specimens.
14418	Key West, Fla	Henry Hemphill	1

The proper application of the Linnæan generic name *Coluber* only appears after considerable criticism of the work of the earlier writers on reptiles. The first author to use the name after Linnaeus was Laurenti, in 1768, in his *Specimen Synopsis Reptilium*, published at Vienna. He includes in it ten species, of which eight can be determined. Of these three are Viperidæ, one is a crotalid, and four are harmless snakes. All of the venomous and three of the harmless species bear Linnæan names, and all of them are members of the Linnæan genus *Coluber*. It remains to be determined for which of these types the name *Coluber* of Laurenti must be retained. The evidence is furnished by the author in the following foot-note attached to the generic character:

Colubri venenati absque ulla injuria accepta ferocissima irruunt in hominem.

In the opinion of Laurenti the *Colubri* were poisonous, and this was probably due to the fact that the only species of his list with which he was acquainted by actual observation were the European vipers he included in it. The poisonous species are then the types of the *Coluber* of Laurenti.

The next author to use the name *Coluber* was Treviranus in his *Biologie ad Philosophie d. natur*, Göttingen, 1802. He indicated but one species, *C. natrix*. As this species is the type of the *Natrix* of Laurenti of 1798, it can not be used in that connection.

Oppel, in his work on *Reptilia* published in 1811, gave the following species under the genus *Coluber*:

<i>C. melanocephala</i> L.	<i>C. natrix</i> L.
<i>C. cursor</i> .	<i>C. mycterizans</i> L.
<i>C. æsculapii</i> Gmel., Linn., 1788.	<i>C. ibiboca</i> .
<i>C. canus</i> L.	<i>C. cyaneus</i> L.
<i>C. viperinus</i> L.	<i>C. carinatus</i> L.

Of these species the *C. cursor* and *C. ibiboca* are not Linnæan, and the *C. viperinus* and *C. natrix* belong to a genus which had been already

established, the *Natrix* of Laurenti. We are therefore restricted to six species in our search for the type of the genus *Coluber*. They received generic names at the following dates:

C. melanocephala; Tantilla B. & G., 1853.

C. æsculapii; *Coluber* Günther, 1858.

C. canus; *Pseudaspis* Cope, 1864.

C. mycterizans; *Passerita* Gray, 1825.

C. cyaneus; unidentified.

C. carinatus; *Herpetodyas* Boie, 1826.

Günther in 1858 selected the *C. æsculapii* as the type of *Coluber*, and to this species that generic name must be applied.

Mr. Garman, of Cambridge, has followed Duméril in using the name *Coluber* for the *C. constrictor* Linn. The way in which this conclusion has been reached is as follows:

The first author whom we have to consider is Fitzinger, whose *Neue Classification der Reptilien* appeared in June, 1826, in Vienna. Seventy-one species of *Coluber* are enumerated in this work (p. 57), of which only twenty-two are of Linnæan origin, and to these we must therefore confine our attention. In the following list of them the names of the genera to which these species were successively referred is given, and the date of each:

C. minervæ (unidentified).

C. typhlus, *Opheomorphus* Cope, 1862; *Xenodon* Boie & Schleg., 1837.

C. cyaneus L. (unidentified).

C. constrictor; *Bascanium* Bd. & Gird., 1853.

C. saturninus, *Herpetodyas* Boie, 1826.

C. reginæ, *Liophis* Wagl., 1830.

C. miliaris (unidentified).

C. cobella, *Opheomorphus* Cope, 1862; *Liophis* Wagl., 1830.

C. rhombeatus, *Psammophylax* Wagl., 1830.

C. domesticus, the same as

C. hippocrepis, *Zamenis* Wagl., 1830.

C. lineatus, *Lygophis* Cope 1862; *Dromicus* Bibr., 1853.

C. pethola, *Oxyrrhopus* Wagl., 1830.

C. vittatus, *Tropidonotus* Kuhl, 1826.

C. æstivus, *Herpetodyas* Wagl.; Dum. & Bibr., 1853.

C. scaber, *Dasypeltis* Wagl., 1830.

C. ordinatus, *Eutænia* Bd. & Gird., 1853; *Tropidonotus* Kuhl, 1826.

C. striatulus, *Haldea* Bd. & Gird., 1853.

C. natrix, *Tropidonotus* Kuhl, 1826.

C. stolatus, *Ampiesma* Dum. 1853; *Tropidonotus* Kuhl, 1826.

C. saurita, *Eutænia* Bd. & Gird., 1853; *Tropidonotus* Kuhl, 1826.

C. fasciatus, *Tropidonotus* Kuhl, 1826.

The latest date only can be considered in this connection, since the names of genera are retained in accordance with the priority of date of each. The latest date at which species of this restricted division *Coluber* are referred to other genera is 1853. In that year four of them were referred to genera distinct from *Coluber*, and of these genera three were newly established. These three are *Bascanium* B. & G., *Drom-*

icus Bibron, and Haldea B. & G. Now Duméril, who published the prodromous of his classification of the serpents in 1853, expressly retains the name *Coluber* for the *C. constrictor* of Linnæus, type of *Bascanium*. But as the *C. constrictor* is not included in the Oppelian genus *Coluber* of 1811, it can not be considered here at all.

Shortly after the appearance of the work of Fitzinger, Boie furnished a synopsis of his systematic work on Reptiles to the *Bulletin des Sciences Naturelles*, edited by Férussac, 1826, ix, page 237. He gives a list of thirty-five species of the genus *Coluber*, of which only six are Linnæan. Of these but three appear in the list from Fitzinger, given above. These are *C. cyaneus*, *C. hippocrepis*, and *C. constrictor*, thus restricting the name to the *C. constrictor*.

Soon after, however, Boie gave a list of the genera of snakes, with a typical species for each, in the *Isis von Oken*, 1827, page 982. Here he cites the *C. elaphis* (*Elaphis quateradiatus* Gem., Dum. & Bibr.) of Europe as the type, and adds "u. v. a," which means, *und viel andere*—species belonging to the genus. What these other species are, may be derived from a perusal of a previous paper by Boie in the same volume, page 209, where he describes three closely allied species from Japan, the whole belonging to the genus *Elaphis* of Duméril and Bibron, and one of them (*Coluber conspicillatus*), being a member of the genus *Coluber* of Günther. Dr. Günther has regarded this reference as an indication of the meaning of Boie in his use of the name *Coluber*, and this determination must stand on the ground of previous determination by Oppel.

Pitycphis melanoleucus Holbr. Distributed throughout the State.

Spilotes corais erebennus Cope. Volusia.

Cyclophis æstivus L. Generally distributed.

Bascanium constrictor Linn. Volusia and Key West.

Bascanium flagelliforme Catesby. Throughout the State. Georgiana.

Heterodon platyrhinus Latr. Generally distributed.

Heterodon simus. From the northern and western parts of the State.

Storeria occipitomaculata Holbr. Volusia.

Allied to this genus is *Tropidoclonium* Cope, which has the anal shield entire. I have referred to this genus the *Regina kirtlandi* of Kennicott. This species, however, has a divided anal plate, and must be therefore assigned to a distinct genus. This I call *Clonophis*, with the following characters: Teeth equal; anal plate divided; nasal plate partly divided, loreal present; scales keeled. Head not distinct from body.

Allied to this form is the *Virginia inornata* of Garman, from Texas. It agrees with *Tropidoclonium* except in the absence of preocular plate, the loreal extending to the orbit. It must be referred to a distinct genus, which I call *Amphiardis*, with the following characters: Teeth equal; anal plate entire; nasals two; internasals two; no preocular, its place taken by the loreal; scales keeled. Head not distinct.

The *Tropidoclonium storerioides* Cope, of Mexico, can not be referred to either of the above genera, but agrees with *Natrix* (*Tropidonotus*), to which I refer it under the name *Natrix storerioides*.

Natrix taxispilota Holbr. Lake Okeechobee, Heilprin.

Professor Heilprin has referred an individual of this species to a distinct subspecies, under the name of *Tropidonotus taxispilota brockii*, on account of the subdivision of the parietal shield. This is, however, the normal condition of the species.

Natrix fasciata fasciata Linn. Northern Florida.

The generic name *Natrix* antedates *Tropidonotus* of Kuhl. It was proposed by Laurenti in 1789 for a heterogeneous collection of species, but the *N. vulgaris* (*Tropidonotus natrix* Kuhl) was clearly indicated as the type. Kuhl's name dates from 1826.

Natrix fasciata erythrogaster Shaw. Northern Florida.

Natrix usta Cope. *Tropidonatus ustus* Cope.

The typical specimen was taken at Charlotte Harbor. A second was sent to the National Museum from Key West.

Natrix compressicauda walkeri. Yarrow.

Natrix compressicauda compsolæmus Cope.

Natrix compressicauda compressicauda Kenn. Five specimens from Georgiana, and one from another locality.

Natrix compressicauda bivittata, subsp. nov.

Head oval, distinct from neck; tail long, moderately compressed at base; less than in types of species. Rostral plate elevated; internasals longer than wide; frontal elongate and with parallel sides. Loreal oblique, longer than high; oculars 1-3, the inferior posterior not below the orbit, but nearly cutting the fifth superior labial out of its border. Temporals 1-3; superior labials eight, middle of orbit above suture between fourth and fifth. Inferior labials ten; postgeneials longer than pregeneials. Scales of body in twenty-one series, all keeled.

Ground color above light brownish-ash, below light yellow. The former region is crossed in the typical specimen by thirty-six blackish-brown cross-bars, which are wide and close together on the median dorsal region, and tapering and therefore separated on the sides. The dorsal parts of the spots join and form two wide longitudinal bands on the anterior fifth of the length. A pale-brown band passes from the superciliary plate to the side of the neck, leaving a dark postorbital band below. All the plates of the lips and throat are yellow, and have narrow black borders. On the yellow of the belly there are black spots on the gastrosteges, which incline to fuse transversely, leaving a part of the ground visible in the middle. Anteriorly this arrangement assumes the form of two longitudinal black bands, which are well defined on the anterior fourth of the length, leaving a yellow band between and one on the outer side of each of them.

13659: 131 + 1 + 93: 336, 97^{mm}.

The two specimens representing this species are intermediate in characters between the typical *N. compressicauda* and the *N. sipedon fasciata*, but are quite distinct from either. The tail is longer than in any specimens of either. From the *N. c. walkeri* the *N. c. bivittata* differs in a number of minor points. These are the much wider dorsal bands, the postocular band, the distinct black bands of the nape and of the inferior region, and the reduced number of dorsal rows of scales:

13659	1	Georgiana, Fla.....	1883	William Wittfield.....	Alcoholic.
13692	1do.....	1883do.....	Do.

Eutaenia sirtalis Linn. Volusia.

Eutaenia sackeni Kennicott.

This species is distributed over Florida generally, and ranges as far westward as Mobile, Ala., from which point specimens were sent me by my friend, Dr. Joseph Corson, U. S. Army. It is the most slender species of the genus, and is characterized by the form of the first row of scales. These are narrow, differing very little from those of the other rows. Like them they are strongly keeled, and are notched at the apex. The form originally described has no dorsal stripe. Specimens of this kind were sent me from Volusia. Specimens from Georgiana, belonging to the National Museum, and from Mobile, have a dorsal stripe with blackish borders. Two Volusia specimens have seven superior labials, while one has eight. Two specimens from Mobile have eight superior labials, and four from Georgiana have the same. In one of the latter the colors, including the stripes, are obscure.

Liodytes alleni Garman. *Helicops alleni* Garman; *Liodytes* Cope. Not uncommon throughout the peninsula.

Ancistrodon piscivorus L. Generally distributed.

Crotalophorus miliarius L. Generally distributed.

Crotalus adamanteus adamanteus Beauv. Found everywhere.

The largest specimen in the National Museum measures 6 feet in length. Holbrook writes of specimens of 8 feet, and Admiral McCauley informs me that he has seen specimens of that size on the islands off Pensacola. This species is, then, the largest of the venomous snakes of the Western Hemisphere, and only exceeded in length by two or three of the larger Najidæ of the Old World, which are, however, of much more slender form.

GENERAL REMARKS.

Of the species and subspecies above described, there are peculiar to Florida the following:

<i>Contia pygæa</i> Cope.	<i>Natrix compressicauda walkeri</i> Yarrow.
<i>Ophibolus doliatus parallelus</i> Cope.	<i>Natrix compressicauda compressicauda</i> Kenn.
<i>Coluber guttatus sellatus</i> Cope.	<i>Natrix compressicauda bivittata</i> Cope.
<i>Coluber rosaceus</i> Cope.	<i>Eutaenia sackeni</i> Kenn. (Ranges to Mobile.)
<i>Natrix usta</i> Cope.	<i>Liodytes alleni</i> Garman.
<i>Natrix compressicauda compsolæma</i> Cope.	

In all, six species and six subspecies. Of these but one represents a genus which has not yet been found out of the peninsula. The total number of species and subspecies included in the list is thirty-five. Of these only six are not confined to the Austroriparian region ; as follows:

Ophibolus getulus getulus L.

Pityophis melanoleucus Holbr.

Coluber constrictor L.

Heterodon platyrhinus Latr.

Storeria occipitomaculata Holbr.

Eutania sirtalis L.

All of these are distributed throughout the eastern region, and the *Coluber constrictor* and *Eutania sirtalis* throughout the central region as well.



Cope, E. D. 1889. "On the snakes of Florida." *Proceedings of the United States National Museum* 11(727), 381–394.

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