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THE MEXICAN SUBSPECIES OF THE SNAKE *CONIOPHANES FISSIDENS*

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IN the recent revision of the snakes of the genus *Coniophanes* Cope, Bailey¹ tentatively concluded that mainland specimens of *fissidens* must remain under that name, pending the accumulation of further material that would more clearly delimit the geographic races vaguely indicated by material then available.

Since the appearance of this work many specimens of these reptiles have been collected from critical areas in Mexico, chiefly for the National Museum and for the E. H. Taylor-H. M. Smith collection at the University of Kansas. This new material, combined with that already available, has been sufficient to demonstrate rather clearly the existence in Mexico of four distinct races, occupying as many different geographic and faunal areas and differing from one another in details of pattern as well as in average scale counts.

I am indebted to Dr. E. H. Taylor and Dyfrig McH. Forbes for much assistance in the field and for the loan of specimens. The study was completed, and a portion of the material was collected, during my tenure of the Walter Rathbone Bacon Traveling Scholarship of the Smithsonian Institution.

¹ Bailey, Joseph, Papers Michigan Acad. Sci., Arts and Lett., vol. 24, pt. 2, pp. 1-48, figs. 1-5, pls. 1-3, 1939.

CONIOPHANES FISSIDENS FISSIDENS (Günther)

Coronella fissidens GÜNTHER, Catalogue of the colubrine snakes in the collection of the British Museum, p. 36, 1858 (Mexico).

Diagnosis.—Scales in 21 rows (rarely 19); males with supraanal ridges; supralabials 8 (rarely 7); ventrals 117 to 132 in females, 111 to 130 in males; caudals 63 to 79 in females, 62 to 84 in males; ventrals minus caudals 48 to 63 in females, 38 to 56 in males; a relatively large spot toward each end of ventrals (usually in addition to numerous smaller, scattered spots); belly always spotted; median dark borders of dorsolateral light stripe not distinct in front of anus; dorsolateral light stripe visible a considerable length on neck; no spots or irregularities of pattern in dorsal area between lateral stripes.

Discussion.—The limits of variation of this subspecies are established by Bailey, whose tabulations for specimens from Honduras south to Panama are here utilized in addition to data derived from specimens in the National Museum. I have not utilized his tabulations for specimens from British Honduras, Guatemala, and Mexico, since several forms are involved in these countries.

Mexican specimens I have seen are from Teapa, Tabasco (U.S.N.M. No. 46590), and San Andrés Tuxtla, Veracruz. The latter is probably very near the northern limit of the range of the subspecies. Both have higher ventral counts than typical *f. fissidens* and accordingly show a tendency toward *f. proterops*. Four other specimens examined are from very near Mexico (Piedras Negras, Guatemala, U.S.N.M. Nos. 109720–109722, and one specimen, HMS No. 7353, in the EHT–HMS collection). These are typical and have a regular series of relatively large dark spots near the ends of the ventrals.

The eight cotypes of *f. fissidens*, the scutellation of which is given by Boulenger,² almost certainly include *proterops* as well as that here defined as *fissidens*. So far as available data on these cotypes indicate, the preponderance of characters are of *f. fissidens* as here defined, to wit: Ventral and caudal counts typical in three, possible in three; scale rows typical in six; supralabials certainly typical in six. The characters indicating *proterops* are: Ventral and caudal counts typical in two, possible in three; scale rows typical (*vide* Boulenger) in two; supralabials possibly typical in two. Accordingly I restrict the name to the form here defined as *f. fissidens* and to that cotype which most closely corresponds with all characters defining the form.

² Catalogue of the snakes in the British Museum (Natural History), vol. 3, pp. 207, 208, 1896.

CONIOPHANES FISSIDENS PROTEROPS Cope

Coniophanes proterops COPE, Proc. Acad. Nat. Sci. Philadelphia, 1860, p. 249 (Orizaba, Veracruz).

Diagnosis.—Scales usually in 19 rows, sometimes 21; males with supraanal ridges; supralabials usually 7, sometimes 8; ventrals 129 to 138 in females, 126 to 133 in males; caudals 59 to 74 in females, 66 to 76 in males; ventrals minus caudals 55 to 79 in females, 51 to 65 in males; spots on belly very small, scattered; belly sometimes unspotted (except ends of ventrals, dark as sides of body); median border of dorsolateral light stripe usually very poorly defined on tail, or whole dorsal surface light; dorsolateral light stripe disappearing on anterior part of neck; median dark stripe, one scale wide, distinct in young and subadults, which are somewhat orange colored; no spots or irregularities of pattern in dorsal area between lateral stripes.

Discussion.—The form seems well differentiated from *f. fissidens*. The scale rows are usually 19 (69 percent, 24 in 36), 21 in *fissidens* (two exceptions in 132); and the supralabials are usually 7 on one or both sides (58 percent, 20 in 36), rarely in *fissidens* (one in 132). There are conspicuous differences in ventral and ventral minus caudal counts, as shown in the accompanying table.

The most conspicuous pattern difference between *proterops* and *fissidens* is in the disposition of the ventral spots. In the latter there is a row of relatively large spots on each side of the abdomen, one spot near the end of each ventral. These spots occur in addition to numerous other, small flecks. In *proterops* the ventral surface is marked with numerous tiny black flecks, but there is no regular series of relatively large spots forming a row on either side of the belly. In some *proterops* there are no ventral markings whatever, except on the ends of the ventrals where the lateral coloration encroaches upon the ventral surface.

The dorsal pattern as a rule is more subdued in *proterops*. The lateral stripes are sometimes scarcely distinguishable, and the dorsolateral light stripes are very short or not visible at all. The dorsal surface of the tail, which in *fissidens* bears two dorsolateral light stripes separated by a very well defined median stripe, is nearly uniform light in *proterops* as a rule. Some *proterops*, however, do show the median dark stripe.

The young of *proterops* are light orange, and the median dark stripe is very well defined. Larger specimens show but little trace of the orange coloration, the middorsal stripe is diffused, and the general coloration much darker and more like that of typical *fissidens*.

Specimens examined.—Thirty-six, all from the State of Veracruz. The following localities are represented: Cuautlapan (U.S.N.M. Nos. 109764-109766; EHT-HMS Nos. 5199, 23537-23545); Jalapa

(U.S.N.M. No. 5285, type); Mirador (U.S.N.M. Nos. 6369[3], 12112, 25034, 46452-46453); Orizaba (U.S.N.M. Nos. 12117, 30358); Potrero Viejo (U.S.N.M. Nos. 109767-109768; D. McH. Forbes No. 256; EHT-HMS No. 5528); Tequeyutepec, 7 miles west of Jalapa (U.S.N.M. Nos. 109769-109773; D. McH. Forbes Nos. 386-388); San José de Gracia (EHT-HMS No. 5529).

CONIOPHANES FISSIDENS DISPERSUS, new subspecies

Holotype.—EHT-HMS No. 5531, male, El Limoncito, Guerrero, collected by E. H. Taylor.

Paratype.—EHT-HMS No. 5532, same data.

Diagnosis.—Scales in 19 rows; males with supraanal tubercles; supralabials 8; ventrals 120 and 122 in two males; caudals 81 in one male; ventrals minus caudals 41 in one male; spots on belly small, scattered, not forming regular series; middle and posterior part of belly may be completely unspotted (except ends of ventrals); white dorsolateral stripes on nape short, diffuse; inner border of dorsolateral light stripe poorly defined on tail, not evident in front of anus; no spots or irregularities of pattern in dorsal area between lateral stripes; latter poorly defined, diffuse.

Description of holotype.—Rostral much broader than high, portion visible from above a little less than half length of internasals; latter two-thirds length of prefrontals; frontal pentagonal, anterior edge straight, its length (4.8 mm.) greater than its distance from tip of snout (4.3 mm.), less than maximum length of parietal (5.9 mm.), subequal to distance of frontal from posterior edge of parietal (not in median line); sides of frontal parallel; nasal large, divided; a large loreal; one preocular; two subequal postoculars; temporals 1+2+3, the upper secondary and upper tertiary fused to form an elongate scale similar to primary temporal; eight supralabials, fourth and fifth entering orbit, seventh highest and largest, sixth next largest; nine infralabials, five in contact with chin shields; mental separated from anterior chin shields, which are a little longer and larger than posterior.

Dorsals in 19-19-15 rows, smooth, without pits; ventrals 122; caudals 81; anal divided.

Ground color light grayish brown, somewhat darker near middle of body and on sides; a broken, dim dark line extending along adjacent edges of fourth and fifth scale rows, descending posteriorly to middle of fourth; a broken, scarcely discernible vertebral dark line; a dorsolateral area somewhat lighter, well defined only on nape, where it is white; a small white spot three scales back of tertiary temporals, even with end of dorsolateral light line, which terminates two scales behind light nuchal spot; all dorsal scales with a dark edge. A dark stripe

through the upper edges of supralabials, white-edged below; remainder of supralabials stippled, and each (except eighth) with a larger, rounded dark spot near center of light area; chin, infralabial, and gular regions stippled; some larger black dots on certain infralabials. Tail with a dark lateral stripe, black-edged above; area between these, on dorsal surface, darker near middle; edges of subcaudals dark; ends of ventrals dark-spotted; a few small, scattered spots on anterior ventrals; remainder of ventral surface white.

Variation.—The single paratype is a male with 120 ventrals, tail tip missing. The scales are in 19–19–15 rows. Supralabials 8, infralabials 10, one preocular, two postoculars, temporals as described in type.

Coloration as in type, except dorsolateral light stripes somewhat more evident; a faint, broken, very fine temporal stripe; small dark spots irregularly placed near ends of ventrals.

Remarks.—With this subspecies the specimen from Carrizal, Michoacán (Brit. Mus. No. 1914.1.28.141) is to be associated; also perhaps another from Cafetal Mirador, Oaxaca (A. M. N. H. No. 19748). These are mentioned by Bailey (*op. cit.*, p. 23); I have not seen them, nor are counts available.

This subspecies resembles *proterops* in the possession of 19 scale rows but differs in having higher caudal and lower ventral counts and eight supralabials. It resembles *fissidens* in ventral and caudal counts but differs by lacking the regular series of spots near ends of ventrals and by having only 19 scale rows. It resembles *punctigularis* in belly coloration and number of ventrals and caudals but differs in dorsal coloration, ventral minus caudal count, and by having 19 scale rows.

CONIOPHANES FISSIDENS PUNCTIGULARIS Cope

Coniophanes punctigularis COPE, Proc. Acad. Nat. Sci. Philadelphia, 1860, p. 248 (Honduras).—SLEVIN, Proc. California Acad. Sci., ser. 4, vol. 23, pp. 410–411, 1939.

Dromicus chitalonensis MÜLLER, Verh. Naturf. Ges. Basel, vol. 6, p. 407, 1876 (Hacienda de Chitalón, near Mazatenango, Guatemala).

Diagnosis.—Scales in 21 rows; males with supraanal tubercles; supralabials 8, rarely 7; ventrals 119 to 130 in females, 116 to 125 in males; caudals 71 to 85 in females, 80 to 91 in males; ventrals minus caudals 39 to 54 in females, 31 to 38 in males; spots on belly very small, scattered; belly sometimes unspotted (except ends of ventrals, dark as sides of body); median border of dorsolateral light stripes very distinct on posterior part of body as well as on tail; dorsolateral light stripes distinct on much of anterior part of body; a series of spots on each side of middorsal line, about halfway between lateral and middorsal stripe; spots fused with dorsolateral stripe in all except

young specimens, but always distinct laterally; body not orange in young.

Discussion.—This form resembles *proterops* in belly coloration, lacking the large lateral spots of *fissidens*, but with small, scattered spots or belly unspotted. It resembles *fissidens* in number of scale rows, labials, and in ventral and caudal counts, but it is very different in dorsal pattern.

In *punctigularis* a series of rounded dark spots occurs on each side between the lateral and dorsolateral dark stripes. In young specimens the spots are free, but in older ones they merge medially with a vague dark area. Even in the largest specimens the outer edges of the dark spots are well defined, at least anteriorly, and give a scalloped effect to the inner edge of the dorsolateral light stripe.

On the tail two light stripes, broader than in *fissidens*, are separated by a median dark stripe, its outer border well defined. In *fissidens* the inner edge of the light stripe is well defined only at the anus and on the tail, while in *punctigularis* it is distinct on the posterior part of the body as well.

Seven supralabials occur on one side in three specimens. Scale rows 21 in all.

The name *chitalonensis* certainly applies to this subspecies. However, *punctigularis*, proposed 17 years earlier, seems also to refer to the same form. I have not seen the type, but Bailey (*op. cit.*, p. 16) says that "The middorsal band is 5 scales wide anteriorly and 3 wide posteriorly. Anteriorly it is represented by a double row of darker spots, which are evident posteriorly only as scalloped outer borders of the band. This type of coloration is frequent in western Guatemala and Mexico." Accordingly there can be little doubt that this specimen (male, with 125 ventrals) is the same as that here redefined. Its locality, however, is rather far removed from the nearest authentic record in Guatemala. Records show that the collector of the specimen, Dr. J. L. LeConte (and J. S. Hawkins), actually was in Honduras, where he was connected for a few months in 1857 with the Honduras Interoceanic Railway Survey. Faunistically the Pacific coast mountain ranges of El Salvador are known to be much like those of Guatemala and extreme southeastern Chiapas. It is to this faunal area the present form is confined. Accordingly, if the type of *punctigularis* actually is from Honduras, it must have been collected on the Pacific side, and in that case very near El Salvador and probably in the same faunal area as is represented by other specimens. This would account for the difference between the type of *punctigularis* and all other Honduras specimens, which are from the Atlantic coast.

Specimens examined.—Fifty-one, from Tehuantepec (U.S.N.M. Nos. 30167–30169, 30525); Chicharras, Chiapas (U.S.N.M. No. 46443);

various localities in the vicinity of Escuintla, Chiapas (La Esperanza, Cruz de Piedra, Salto de Agua, Finca Juarez, U.S.N.M. Nos. 109723-109763); Tonalá, Chiapas (EHT-HMS No. 5329). The "Tehuantepec" specimens presumably are from extreme eastern Oaxaca, Pacific slope. Slevin (*op. cit.*) records 87 specimens from Finca El Ciprés, Volcán Zunil, Guatemala. Data presented by him are included in the accompanying table.



FIGURE 33.—Distribution of the Mexican forms of *Coniophanes fissidens*: Dots, except as indicated, *punctigularis*; inverted triangles, *fissidens*; triangles not inverted, *dispersus*.

KEY TO THE MEXICAN SUBSPECIES OF CONIOPHANES FISSIDENS

1. A regular row of relatively large dark spots near ends of ventrals, in addition to other dark flecks that may or may not be present; dorsolateral white stripe extending posteriorly a considerable distance on neck; inner dark border of dorsolateral tail stripes absent on posterior part of body, present only on tail----- *fissidens fissidens*
No regular row of relatively large dark spots near ends of ventrals; belly with small flecks of black, or unspotted; dorsolateral white stripes very short (no more than twice length of head), or absent posteriorly, or, inner dark border of dorsolateral tail stripes present on posterior part of body----- 2
2. A series of dark spots between lateral and middorsal light lines; dark border on inner edge of dorsolateral stripes distinct on body as well as tail; scales in 21 rows----- *f. punctigularis*
Color not as described; markings dim, except (in young) a middorsal dark line----- 3
3. Ventrals fewer (120 to 122 in known males); caudals more numerous (81, male); ventral minus caudal index lower (41, male)----- *f. dispersus*
Ventrals more numerous (126 to 133 in males); caudals fewer (64 to 76 in males); ventral minus caudal index higher (51 to 65 in males).
f. proterops

VENTRAL MINUS CAUDAL COUNTS

Sex	Form	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79						
♂	fissidens								1	3	0	1	0	1	2	0	0	1	1	1	1	3	0	0	0	1																														
	proterops																					1	0	0	0	3	0	0	3	0	0	1	1	1	1	1																				
	punctigularis	1	4	3	1	6	3	2	2	2	1	3	3	2	1																																									
	fissidens																	1	1	0	0	1	0	0	1	3	2	0	0	1																										
♀	proterops																										1	0	0	0	1	0	1	0	1	1	1	0	1	1	1	1	1	1	2	1	1	0	0	0	1	0	2			
	punctigularis	1	0	1	0	1	2	3	2	1	2	7	4	4	4	2	4	4	2	4	1	0	0	1																																