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A CONTRIBUTION TO THE HERPETOLOGY OF THE  
ISTHMUS OF TEHUANTEPEC

## III. THREE NEW SNAKES FROM THE PACIFIC SLOPE

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WHILE collecting reptiles and amphibians in the vicinity of the village of Tehuantepec, Oaxaca, during the summer of 1936, we made several visits to a pond some three miles northeast of the village. By far the most conspicuous reptilian inhabitant of this pond was a garter snake of the *radix* group which we believe to represent an undescribed species. Our great admiration for A. G. Ruthven's (1908) contribution to the knowledge of systematics, especially that of the garter snakes, prompts us to name the form

*Thamnophis ruthveni*, n. sp.

HOLOTYPE.—U.M.M.Z. No. 82469; male, collected by Norman Hartweg and James Oliver in a semipermanent pond about three miles northeast of Tehuantepec, Oaxaca, July 5, 1936.

PARATYPES.—U.M.M.Z. Nos. 82470–82510, all from the vicinity of Tehuantepec.

DIAGNOSIS.—A *Thamnophis* of large size (maximum length, 938 mm.); dorsal scale rows usually 21–19–17; abdominal scutes, 141 to 154; subcaudal scutes, 57 to 73; upper labials, 8, lower labials, usually 10; preoculars, usually 1, postoculars,

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usually 4, lateral stripe on third row anteriorly, indistinct; dorsal stripe narrow, ground color light with dark blotches.

DESCRIPTION OF HOLOTYPE.—Dorsal scale rows, 21–19–17; abdominal scutes, 152; subcaudal scutes, 72; upper labials, 8; lower labials, 10; preoculars, 1; postoculars, 4; temporals, 1–1–3. Tail length, 22 per cent of total length; snout to vent, 559 mm.; tail, 125 mm.; total length, 684 mm.

Ground color brown with three rows of alternating black spots on each side of mid-line; lower row of spots limited above by light lateral line which is confined to third row of scales; upper row limited by median dorsal light line one scale wide; a large postoccipital black patch; top of head brown with a light spot on each parietal plate; upper labials light olive-brown, the sutures edged with black; lower labials, chin shields, and throat yellowish white; abdominals grayish, black-edged laterally; subcaudals a grayish white.

VARIATION.—The dorsal scale rows of the paratypes are 21–19–17 in 39 individuals and 21–19–15 in 1. The abdominal scutes range from 147 to 154 (151) in the males and from 141 to 150 (145) in the females. The subcaudal scutes range from 66 to 73 (70) in the males and from 57 to 66 (60) in the females. The upper labials are invariably 8/8, the lower labials are 10/10 in all except 3 specimens whose lower labials number 9/9, 9/9, 10/8. One specimen has preoculars 2/2, another 1/2, but the remaining 38 all have 1/1. The postocular scales are 4/4 in all except 9 specimens of which 5 are 3/3, 3 are 3/4 and 1 is 5/4. Of the 40 paratypes, 18 have the temporal formula 1–1–3/1–1–3, 13 have the temporal formula 1–2–3/1–2–3; the others are irregular in having such formulae as 1–2/1–2, 1–1–3/1–2–3, 1–1–3/1–2–4, 1–3/1–3, 1–2–3/1–2–4.

The proportion of the tail length to the total length ranges from 21 per cent to 23 per cent in the males and 20 per cent to 22 per cent in the females. The greatest lengths exhibited by the paratype series are: male (645 mm. snout to vent + 146 mm. tail), 791 mm.; and female (743 mm. snout to vent + 195 mm. tail), 938 mm.

There is no essential departure from the coloration and color pattern described for the holotype. In 18 specimens the lateral stripe is on the third row of scales as far posteriorly as the immediate tail region; in 21 specimens this stripe is on the second and third rows posteriorly; and in 2 specimens on the second row.

RELATIONSHIPS.—*Thamnophis ruthveni* is apparently a close relative of *T. marciana* and *T. megalops*. Using Ruthven's measurements for the bases of comparison we find that *ruthveni* has characteristics which are similar to those of *megalops* in some respects and to those of *marciana* in others.

Coloration and color pattern are remarkably alike in *marciana* and *ruthveni*. In each the lateral line is on the third row of scales anteriorly. The distribution of the black spots on the body is similar, although the spots are smaller in *ruthveni* and are nearly lost posteriorly. In the males the abdominal scutes range from 157 to 162 in *marciana* and from 147 to 154 in *ruthveni*; in the females the range is from 151 to 156 in *marciana* and 141 to 150 in *ruthveni*. Although the similarity of coloration and the suggestive approach of the abdominal-scute counts might be used as criteria for subspecific relations between *marciana* and *ruthveni* the geographical ranges of the forms do not permit such an arrangement. As far as is known, *ruthveni* is confined to the Pacific slope of the Tehuantepec area; *marciana* has apparently never been found farther south than northern Tamaulipas. The gap between the ranges is great geographically and probably more significant climatically.

It is frequently (Ruthven, 1908: 55-58) found that in *megalops* the posterior part of the body loses its spots and is therefore unicolor. As stated elsewhere the tendency toward this condition is found in *ruthveni*. In *megalops* the lateral line is on the third and fourth rows and in *ruthveni* on the third row only. The total range of abdominal scutes in both sexes of *megalops* is from 152 to 173, in *ruthveni* from 141 to 154. Ruthven (1908: 51-52) shows that the average number of abdominal scutes in *megalops* from the southern part of its

range is 165 in the males and 160 in the females; in *ruthveni* the average is 160 in the males and 145 in the females.

The habitat preference of *ruthveni* appears to be more like that of *megalops* than that of *marciana*. Each of our 41 specimens of *ruthveni* were found in water.

If we follow Ruthven's thesis that *marciana* is a derivative of *megalops* there can be but little doubt that *ruthveni* belongs to the same group, both from a morphological and a geographical stand. On this basis we present the following theories:

1. A *marciana*-like complex once ranged along either the west or east coast of Mexico; that the range became discontinuous due to the intervention of unfavorable climatic conditions or the adverse competition of a spreading form, *megalops*-like.

2. Both *marciana* to the north and *ruthveni* to the south are parallel derivatives of a central *megalops*-like form.

Another conspicuous novelty of the Tehuantepec area is a *Coniophanes* of the *imperialis* group. In memory of E. D. Cope, who did so much to further our knowledge of Tropical American snakes, we name this form

*Coniophanes imperialis copei*, n. subsp.

HOLOTYPE.—U.M.M.Z. No. 82666; male, collected by Norman Hartweg and James Oliver between Quiengola Mountain and Tehuantepec, Oaxaca, July 25, 1936.

PARATYPES.—U.M.M.Z. Nos. 82667–82721, all collected within a radius of fifteen miles from Tehuantepec.

DIAGNOSIS.—A *Coniophanes* with dorsal scale formulae 19–15 or 19–17; abdominal scutes, 127 to 141; subcaudal scutes, 65 to 80; a narrow, sharply defined black stripe confined to the median third of the middorsal row; greatest total length (380 mm., body + 169 mm., tail), 549 mm.

DESCRIPTION OF HOLOTYPE.—Dorsal scale rows, 19–17; abdominal scutes, 129; subcaudal scutes, 76; upper labials, 8, fourth and fifth bordering eye, seventh largest; lower labials, 8–9, first 4 and first 5 in contact with chin shields; preoculars, 1; postoculars, 2; temporals, 1–2. Total length (213 mm., body + 104 mm., tail), 317 mm.

Dorsal ground color light brown; a sharply defined black stripe occupies the median third of the middorsal scale row, becoming progressively lighter on the tail; first dorsal rows buffy-brown, gradually darkening, culminating in a dense brown line of demarcation on the lower half of the fifth row anteriorly and the fourth posteriorly, this line of demarcation becoming progressively fainter on the tail. Head and neck brown; a light stripe from rostral to eye terminating in a slight enlargement on the second upper temporal; a prominent yellow spot on each side 2 scales behind the second upper temporals; a yellow speck on the central median border of each parietal; upper and lower labials white, finely punctate with brown. Ventrals light with a few specks of brown anteriorly; subcaudals light.

VARIATION.—The dorsal scale row formulae of 19–15 or 19–17 are found in both sexes; the formula 19–15 occurs in 81 per cent of the females and in 40 per cent of the males; the 19–17 combination occurs in 60 per cent of the males and in only 19 per cent of the females. The abdominal scutes range from 127 to 133 (130) in the males and from 130 to 141 (135) in the females. The subcaudal scutes range from 72 to 80 (75) in the males and from 65 to 75 (70) in the females. The greatest length exhibited by the males is (278 mm., body + 132 mm., tail) 410 mm.; by the females (380 mm., body + 169 mm., tail), 549 mm.

The color patterns of the paratype series are remarkably like that of the type. In two specimens the light dorsal neck spots are connected with the light dorsal bands.

*Coniophanes imperialis copei* is a close relative of *C. i. clavatus* from which it is distinguished by the higher number of subcaudals and the lower number of abdominals, a difference made more apparent by the device of subtracting the number of subcaudals from the number of abdominals. Joseph Bailey has kindly given us the opportunity to examine his data on *clavatus* and on *clavatus-copei* intermediates.

We were fortunate in securing 11 females and 5 males of the local hog-nose pit viper, genus *Trimeresurus*. In appreciation

of his work on American snake fauna, we name this animal after E. R. Dunn.<sup>1</sup>

*Trimeresurus dunnii*, n. sp.

HOLOTYPE.—U.M.M.Z. No. 82732; female, collected by Norman Hartweg and James Oliver in a milpa in the immediate vicinity of the village of Tehuantepec, July 7, 1936.

PARATYPES.—U.M.M.Z. Nos. 82731, 82733–36, vicinity of Tehuantepec; Nos. 82737–82744, San Pedro Mountain, fifteen miles west of Tehuantepec; No. 82745, between Tehuantepec and San Pedro Mountain; No. 82746, Mixtequilla Mountain, north of the town of Mixtequilla. M.C.Z. Nos. 27813–18, Tapanatepec, Oaxaca.

DIAGNOSIS.—A pallid, dark-blotched pit viper; snout conspicuously elevated; canthus rostralis formed by the internasal, canthal, and preocular; dorsal scale rows, usually 23–23–19; abdominal scutes, 147–158; subcaudal scutes, 30–41; preoculars, 3.

DESCRIPTION OF HOLOTYPE.—Dorsal scale rows, 23–23–19; abdominal scutes, 152; subcaudal scutes, 33; upper labials, 10/9; lower labials, 10/11; preoculars, 3. Total length (358 mm., body + 46 mm., tail), 404 mm.

Ground color a pale brown-gray with 16 pairs of dark brown bands on each side of a narrow white vertebral line extending ventrad to the first or second scale row. Anteriorly the bands are divided longitudinally by the ground color 1 whole and 2 half scales in depth; posteriorly the longitudinal division becomes narrower and almost occluded by encroachment of the dark pigment of the bands; 5 bands on tail. Ventrals a gray-white with fine specks of dark brown which become more concentrated on the lateral edges, forming more or less consolidated blotches. Head a pale gray with very fine specks of brown.

VARIATION.—The paratypes denote this species as remarkably homogeneous both in scale counts and color pattern. The

<sup>1</sup> The senior author is particularly indebted to Dr. Dunn for his excellent criticisms and advice concerning the relationships of the various forms of the hog-nose pit vipers.

males are darker, the bands more numerous, the subcaudal scale numbers higher.

Eleven of the paratypes are females, and 9 are males. In the data given below the measurements of the type are included.

The dorsal scale rows 23-23-19 in 19 specimens, 23-21-19 in 1, and 21-21-19 in 1. The abdominal scutes range from 147 to 153 (151) in the males, and from 147 to 158 (152) in the females. The subcaudal scutes range from 36 to 41 (38) in the males, and from 30 to 36 (33) in the females. The preoculars are invariably 3. The upper labials are usually 10, but 9 are infrequently present and rarely 8 or 11, the lower labials equally 10 or 11, rarely 9. The lateral bands range from 15 to 22 (19) in the males, and from 14 to 16 (15) in the females.

RELATIONSHIPS.—The close relationship of *dunni* with *lansbergii* is apparent. Yet the character of the lateral bands (double in *dunni*, single in *lansbergii*)<sup>2</sup> and the number of subcaudal scutes in the males (36-41 [38] in *dunni*, 31-36 [33] in *lansbergii*) and the arrangement of the preocular scales serve to differentiate the forms. The middle preocular scale is large and forms part of the orbital border in *dunni*; it is small and excluded from the orbital border in *lansbergii*.<sup>2</sup>

*Trimeresurus dunni* has been reported on in literature as *Bothrops (Bothriopsis) brachystoma*, Sumichrast (1882: 287); *Bothriechis lansbergii*, Günther, part (1895: 190); *Bothriopsis brachystoma*, Cope, part (1887: 89); *Lachesis brachystoma*, Boulenger, part (1896: 547); *Bothrops lansbergii*, Amaral, part (1927: 22; 1929: 21-23); and Dunn, part (1928: 29-30).

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<sup>2</sup> See Plate I.

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#### PLATE I

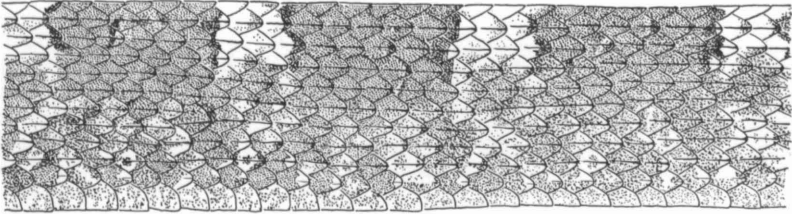
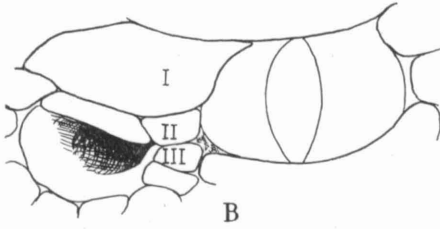
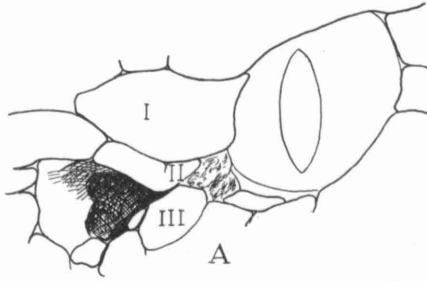
FIG. A.—Preocular arrangement of *Trimeresurus lansbergii* showing preocular II excluded from the orbital border by mucous tissue. (U.M.M.Z. No. 45537, Colombia.)

FIG. B.—Preocular arrangement of *Trimeresurus dunnii* showing preocular II forming part of the orbital border. (U.M.M.Z. No. 82732, Tehuantepec.)

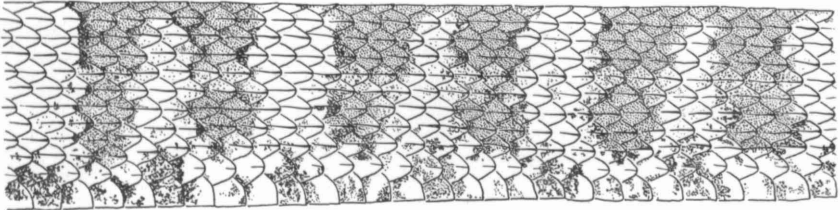
FIG. C.—Color pattern of *Trimeresurus lansbergii* showing the large single bands, confluent ventrally. (U.M.M.Z. No. 45537, Colombia.)

FIG. D.—Color pattern of *Trimeresurus dunnii* showing the double bands, distinct and not merging ventrally. (U.M.M.Z. No. 82732, Tehuantepec.)





C



D





