

OCCASIONAL PAPERS OF THE MUSEUM OF
ZOOLOGY

UNIVERSITY OF MICHIGAN

ANN ARBOR, MICHIGAN

TWO NEW LIZARDS OF THE GENUS *LEPIDOPHYMA*
FROM TAMAULIPAS

BY CHARLES F. WALKER

AN extensive collection of reptiles and amphibians from southern Tamaulipas, made in 1949 by Paul S. Martin, C. Richard Robins, and William B. Heed, and acquired by the University of Michigan Museum of Zoology, included four lizards of the genus *Lepidophyma*, previously unknown from that state. Two quite obviously distinct forms were represented, one unfortunately by a single, tailless specimen. Subsequent field work in the same area by a number of collectors, but principally by Mr. Martin, has produced additional material, permitting the characterization of two new forms. One of these, with strongly differentiated vertical rows of tubercles on the sides, is evidently closely allied to *Lepidophyma flavimaculatum*.

Lepidophyma flavimaculatum tenebrarum, new subspecies

HOLOTYPE.—UMMZ 101374, \pm 5 miles NW (by road) of Gómez Farías, in the Sierra Madre Oriental at "Rancho del Cielo," \pm 3600 feet; May 23, 1950; collected by Byron E. Harrell.

PARATYPES.—UMMZ 101301, 101375, 102978–81, 108013–14, 109763–64; all from localities near "Rancho del Cielo"; UMMZ 102977, lower edge of pine-oak forest along the Gómez Farías–La Joya de Salas trail at 4600 feet elevation; 109765 from the same trail at "Agua Zarca," 5300 feet; 109766, 2.5 miles ESE of La Joya, 6600 feet.

RANGE.—Southwestern Tamaulipas, in forested mountains northwest of Gómez Farías ("Sierra de Guatemala").

DIAGNOSIS.—A race of *Lepidophyma flavimaculatum*, differing from *L. f. flavimaculatum* and *L. f. obscurum* in having the seventh supra-labial in contact with the lower anterior temporal; from *L. f. smithi*,

L. f. tehuanae, and *L. f. occulor* in having more femoral pores, these numbering 12–17 in a row, 24–33 (mean $27.5 \pm .7$, σ 2.7) in combined counts. Lower tubercles in lateral, vertical rows, keeled, nearly or quite as large as upper tubercles; 3–5 rows of granules between paravertebral rows of tubercles; scales around body exclusive of ventral plates numbering 36–46 (mean 40.7 , $\pm .5$, σ 1.9); tail with enlarged verticils of scales usually separated distally by four rows of scales in middorsal line, basally by three such rows; median head scale usually absent or vestigial; adults usually with dark blotches on larger head scales.

DESCRIPTION OF TYPE.—An adult female; snout-vent length 85 mm.; tail 106 mm. (tip regenerated). Rostral barely visible from above, paired anterior nasals forming a short median suture, a single octagonal frontonasal, paired prefrontals (no median), followed by paired frontals and parietals, the latter separated medially by an elongate, hexagonal interparietal which extends forward between the posterior part of the frontals and back between the anterior part of the large, paired postparietals; three temporals visible from above, the second much the largest. In lateral aspect, a nasal, the naris situated at its posteroventral angle; a postnasal, in contact with frontonasal; two loreals, the posterior slightly the larger; a small, subtriangular loreolabial; pre- and postoculars small and indistinct; two scales in primary temporal row, the lower somewhat smaller than the upper; seven supralabials, the fifth, below the eye, abruptly larger than the preceding four; sixth and seventh supralabials subequal, upper margins of both in contact with lower anterior temporal. A granular pretympnic area with a narrow forward extension between secondary temporal and seventh supralabial; 5–7 quadrangular auriculars, somewhat larger than adjacent granules. Three large infralabials, the first pair with medial sutural contact behind mental. Throat granular; a strong gular fold; a pair of parallel folds on side of neck extending back from below tympanum to gular fold.

Body scales heterogeneous. A middorsal area 3–4 granules wide set off on either side by a discontinuous paravertebral row of enlarged, keeled tubercles; lateral to each of these rows an area about 6–7 granules wide with scattered enlarged tubercles forming an irregular longitudinal row; sides with vertical rows of large, keeled, trihedral tubercles, the rows separated by irregular rows of granules, variable in size; 30 vertical rows of tubercles between axilla and groin, those in axillar region short, not reaching ventral plates; tubercles of approximately equal size

throughout the rows, lower tubercles like upper, sharply differentiated from intervening granules; 38-42 tubercles and granules around mid-body between ventral plates.

Limb scales heterogeneous; upper surface of thigh and shank with enlarged, keeled tubercles scattered irregularly among smaller scales and granules. Femoral pores 15-15. Subdigital lamellar formula of fore-foot 8-12-18-19-12, of hind foot 8-14-19-24-20. Ventral plates in 35 transverse rows from gular fold to vent; ten longitudinal rows across belly; two rows of distinctly enlarged preanals, the anterior row including two scales, the posterior four, of which the lateral pair are less than half as large as the medial pair and excluded from margin of vent by small scales.

Tail with verticils of moderately enlarged scales separated by rows of smaller scales; all scales on dorsal surface keeled, those in midventral line smooth; basally eight segments with three rows of small scales in midline dorsally and two rows ventrally between verticils of enlarged scales, followed by nine segments with four rows of small scales dorsally and two rows ventrally between the enlarged verticils; tip of tail (re-generated?) with verticils not differentiated.

Ground color dull grayish brown above; dorsal pattern consisting of paravertebral black stripes narrowly interrupted by yellowish white spots, and dorsolateral black stripes with scattered whitish spots; lower sides mostly blackish with many light tubercles; a pair of large yellowish white spots at base of tail; sides of tail blackish, with dorsolateral and ventrolateral rows of light vertical bars on verticils of enlarged scales; alternating with these and medial in position are other, less well defined grayish bars. Upper surface of head yellowish brown, with numerous blotches and spots of black; an irregular black postocular bar; labials with black centers and whitish margins, producing a strongly mottled pattern; ventral plates yellowish white with strongly contrasting black bases and lateral margins.

VARIATION.—Thirteen paratypes range from 37 to 153 mm. in snout-vent length, from 92 to 259 mm. in total length. The relative size of the posterior two supralabials varies somewhat, the seventh usually being slightly larger than the sixth. A single specimen has numerous irregular small scales in the position of the lower anterior temporal. The latter is normally developed and single in the other 12 and makes contact with the seventh supralabial; the sixth supralabial is excluded from contact with the lower anterior temporal in two specimens. The number of

femoral pores ranges from 12 to 17, combined counts from 24 to 33, the individual counts are: 24, 24, 25, 25, 26, 26, 27, 28, 28, 29, 29, 31, and 33. The number of rows of middorsal granules varies from three to five, the usual range in an individual being four to five. The number of scales around midbody exclusive of the ventral plates varies from 36 to 46, means based on three counts per individual being: 33.7, 37.6, 39.3, 39.3, 39.3, 39.6, 39.6, 40, 40.3, 41, 42.3, 43.3, and 44. Only seven of the paratypes have complete tails without obvious evidence of regeneration. In six of these there are three rows of small scales middorsally between verticils of enlarged scales at the base of the tail, and four such rows distally, the change taking place between the eighth and fourteenth segments posterior to the vent. In one specimen none of the 19 differentiated segments shows more than three rows of small scales. In two of the paratypes there is a well-developed median head scale, and four others have a vestigial scale in this position. Dark blotches are present on the head in all but one of the adults; young specimens have a light-centered dark mark on the interparietal and margins of adjacent scales, but the remaining head scales are unmarked. In two paratypes in which the teeth have been examined the number is the same, 17-16 in the premaxillary-maxillary series, and 16-16 in the mandibular series.

DISCUSSION.—It is noteworthy that in two characters by which *tenebrarum* differs from *occulor*, its nearest neighbor to the south, it approaches the geographically more remote *flavimaculatum*, which is not known north of the Veracruz-Tabasco border (Smith, 1947). In these two characters, moreover, number of femoral pores and number of dorsal scale rows per tail segment, *tenebrarum* breaks down the distinction between the *flavimaculatum* and *smithi* groups, which were accorded specific status by Smith (1942). In number of femoral pores *tenebrarum* broadly overlaps one or more members of each of these groups, although not, so far as known, the neighboring *occulor*. The condition of the caudal scutellation is likewise quite intermediate. The higher number of rows per segment occurs in some but not all Atlantic slope races, *occulor* being the exception; the lower number seems to be constantly present in the Pacific slope races, and in *occulor* on the east, and also in a few individuals of *tenebrarum*; the geographic trends here are similar to those shown by the femoral pore number.

A quite different alignment results when the various forms are grouped according to the presence or absence of a median head scale, since in this respect *tenebrarum*, with occasional individual exceptions,

agrees with the other northern forms, *tehuanae* and *occulator*, while *smithi* is like *flavimaculatum* and *obscurum*.

Other features of scutellation, not utilized by Smith in his review, which show significant geographical variation, are to be found in the relative size of the posterior supralabials, and in the scales of the anterior temporal area. In *flavimaculatum* and *obscurum* the latter scale is usually divided into two or more irregular small scales; the seventh supralabial is much smaller than the sixth, and their common suture lies at a point posterior to the suture between the upper anterior and the middle temporals. In *smithi* and the more northern forms there is usually a single lower anterior temporal scale which is in contact with both the sixth and seventh supralabials; the seventh supralabial is usually as large or very nearly as large as the sixth, and the suture between the two falls opposite the lower anterior temporal. This arrangement, however, also fails as a specific criterion, since in the region of the Isthmus of Tehuantepec there occur lizards, tentatively referred to *L. f. tehuanae*, which combine the labial-temporal arrangement of *flavimaculatum* with the low number of femoral pores and caudal scale rows of *smithi*. Such are UMMZ 82419-22, from Cerro Quiengola, NW of Tehuantepec, AMNH 66890 from Cerro Atravesado, and AMNH 66955 from El Palmar, Oaxaca.

Since all of these forms, so far as known, are allopatric, and all characters fail as constant criteria for their separation into species groups, it seems best to regard them as subspecies of a single species, *flavimaculatum*. Accordingly the forms currently assigned to the "species" *smithi* should be known as:

- Lepidophyma flavimaculatum smithi* Bocourt
- Lepidophyma flavimaculatum tehuanae* Smith
- Lepidophyma flavimaculatum occulator* Smith

These elusive lizards have been taken at a number of stations in the mountains northwest of Gómez Farías, on the eastern slopes of the Sierra Madre. Most were secured from the humid oak-sweet gum forest in the neighborhood of "Rancho del Cielo"; a few were obtained from the oak-pine forest at higher elevations, between "Rancho del Cielo" and La Joya de Salas. Most of those for which field data are available were found in rock crevices or in talus; two were found in logs, one beneath the bark of a standing tree, and one at the entrance of a distinct burrow, presumably made by a rodent. The record from the

trail southeast of La Joya, at 6600 feet, represents a notably high altitude for the species.

Typical specimens of *L. f. tenebrarum* are known only from the mountains between Gómez Fariás and La Joya de Salas. The species *flavimaculatum*, however, occurs also in the isolated Sierra de Tamaulipas, where Paul and Marian Martin collected two specimens (UMMZ 102889-90) near Santa Maria in a region of open oak woodland at an elevation of about 2700 feet. One of these, taken in a mammal trap, was badly mutilated by ants and lacks most diagnostic structures. The second is conspicuously paler than *tenebrarum* and has smaller dorsal spots rather irregularly arranged; the head lacks distinct spots; the femoral pores are 12-12, basally well marked but distally extremely small; the scales around the body number 36 at midbody; basally the tail has eight segments with three rows of small scales between verticils of enlarged scales, distally the scales are not differentiated, the tail having evidently been regenerated in part. Additional material is required to allocate the Sierra de Tamaulipas population subspecifically.

From the west flank of the Sierra Cucharas, between the ranges of *Lepidophyma flavimaculatum tenebrarum* and *L. f. occulor*, but at a lower elevation, comes a small series of a *Lepidophyma* which is quite different in details of body scutellation and which seems to represent a distinct new species.

Lepidophyma micropholis, new species

HOLOTYPE.—UMMZ 101298, from a cave at El Pachon, about 5 miles NNE of Antigua Morelos, Tamaulipas, estimated elevation 600-700 feet; May 19, 1949; collected by P. S. Martin, C. R. Robins, and W. B. Heed. Paratopotypes. UMMZ 101299-300, same data as type, and 102885-8, July 26, 1950, collected by P. S. Martin.

RANGE. Known only from type locality.

DIAGNOSIS.—Differs from *Lepidophyma flavimaculatum* subsp. in having more numerous body scales; 5-8 rows of granules between the paravertebral rows of tubercles; at midbody 53-64 (mean 58.1) tubercles and granules around body between ventral plates; lower tubercles in lateral vertical rows weakly differentiated from the adjacent granules. Femoral pores 15-19 in a row, 31-36 (mean 33.7) in combined counts; basal portion of tail usually, and distal portion always, with four transverse rows of small scales intervening dorsally between verticils of

enlarged scales; seventh supralabial as large as or larger than sixth, in contact with lower anterior temporal; median head scale usually lacking.

DESCRIPTION OF TYPE.—An adult male; snout-vent length 110 mm; tail 136 mm. Head scales essentially as in *L. flavimaculatum*; in dorsal aspect, a rostral, paired anterior nasals in contact medially, a large frontonasal, paired prefrontals (no median), followed by paired frontals and parietals, the latter separated medially by an elongate interparietal with rounded anterior margin and slightly concave lateral margins, a pair of large postparietals; three temporals visible from above, the second much the largest. In lateral aspect, a nasal, the naris situated at its posteroventral angle; a postnasal, in contact above with frontonasal; two loreals, the posterior much the larger; a small, subtriangular loreolabial above fourth supralabial; two scales in primary temporal row, the lower smaller than the upper; seven supralabials, the fifth abruptly larger than the preceding four, the seventh larger than the sixth, in broad contact with lower anterior temporal, on one side completely excluding the sixth from contact with the lower anterior temporal. A granular pretympenic area extending forward between seventh supralabial and secondary temporal; 7–8 slightly enlarged and projecting auricular scales. Three large infralabials following the mental, the first two pairs in medial contact; a much smaller, rounded scale following the third infralabial. Throat granular; a strongly marked gular fold; a pair of parallel folds on sides of neck as in *L. flavimaculatum*.

Body scales heterogeneous. A middorsal area 6–7 granules wide, bounded on either side by a discontinuous, longitudinal, paravertebral row of enlarged, slightly keeled tubercles separated by 1–3 granules or small tubercles; lateral to these rows a granular area 5–6 granules wide; sides with vertical rows of enlarged, keeled, trihedral tubercles, the rows separated by granules in two rather irregular rows; 33 vertical rows of tubercles between axilla and groin, the rows in axillar region short, failing to reach ventral plates; tubercles largest at upper ends of rows, those on the lower ends smaller, not keeled, scarcely differentiated from granules; at midbody, counting to include vertical rows of tubercles, 59–64 tubercles and granules around body between ventral plates.

Limb scales heterogeneous; upper surface of thigh and shank with a few keeled tubercles scattered irregularly among smaller scales and granules. Femoral pores 17–16. Subdigital lamellar formula of forefoot

8-12-15-17-12, of hind foot 9-15-19-25-20. Ventral plates in about 39 transverse rows from gular fold to vent, the anterior rows somewhat irregular; ten longitudinal rows across belly; two rows of distinctly enlarged preanals, the anterior row including two scales, the posterior four, of which the lateral pair are less than one-third as large as the central and excluded from margin of vent by small scales.

Tail with verticils of moderately enlarged scales separated by rows of smaller scales, all scales weakly keeled dorsally and smooth ventrally; basally a single segment with five rows of small scales in midline dorsally and three rows ventrally between verticils of enlarged scales, followed by 19 segments with four rows dorsally and two ventrally between verticils of enlarged scales; farther distally the verticils not distinctly differentiated.

Ground color a dull grayish brown above, paler below. A dorsal pattern of paravertebral rows of blackish, rectangular or hour-glass shaped blotches, separated by narrow whitish areas; dorsolateral rows of similarly shaped but shorter blotches; a pair of whitish spots at base of tail; a few scattered dark flecks on lower sides; sides of tail with poorly defined whitish bars on verticils of enlarged scales, and scattered dark flecks; head shields with irregular dark spots and blotches; labials dark-centered, with light margins; ventral plates with considerable dusky pigment basally.

VARIATION.—The six paratopotypes range from 75–101 mm. in snout-vent length. The number of rows of granules middorsally varies from five to eight, the range in three individuals is 6–7. The number of scales around midbody exclusive of the ventral plates varies from 53 to 64 in the series; means based on three counts per individual are: 54, 55.6, 56.6, 58, 58.6, and 61.6. (In 31 *L. flavimaculatum* subsp. similar values range from 26 to 44.3.) The number of femoral pores in a series ranges from 15 to 19; combined counts from 31 to 36, the individual counts are: 31, 33, 34, 34, 35, and 36. Of the series, five have complete, or nearly complete tails. All of these have four rows of small scales middorsally between the enlarged verticils, at least on the distal half of the tail, and only one has more than two segments basally with less than four such rows. In this one there are seven segments near the base of the tail with only three rows. The seventh supralabial is distinctly larger than the sixth in five specimens, and comes in contact with the lower anterior temporal in all. One paratype has a small median head scale. Dark blotches on the larger head scales are present in four para-

types as in the type; the remaining two show considerable diffuse dark pigment, but no definite spots. None has a distinct postocular stripe. The body pattern shows no important variation, consisting of a dorsal and a dorsolateral row of blotches on each side of the middorsal granular area; a single small paratype has an additional row of rather poorly marked blotches at the level of limb insertion, and scattered small dark spots on a few of the outer row of ventral plates. The pattern tends to be obscure in some of the larger specimens. The ground color is dull grayish brown in all; in general aspect *L. micropholis* is a paler and duller colored lizard than *L. f. tenebrarum*, or indeed than any of the *flavimaculatum* series. In one paratype, in which the teeth were examined, the premaxillary-maxillary series number 19-18, the mandibular series 17-17.

The relationships of this lizard are puzzling. It has decidedly smaller scales than any other species of the genus, and the lateral tubercles are small and not well differentiated at the lower ends of the rows. *L. flavimaculatum* with a wide range from Tamaulipas on the east, Guerrero on the west, south to Panama, breaking up into six known subspecies, exhibits relatively little variation in these characters. Neither *L. f. tenebrarum* nor *L. f. occulor*, the nearby representatives of *flavimaculatum*, shows any approach to *micropholis* in these respects. It seems best, accordingly, to consider *L. micropholis* a distinct species. It should be noted that *Lepidophyma (Gaigea) sylvaticum* Taylor, from high elevations on the plateau in Hidalgo, with rather weakly differentiated tubercles irregularly scattered among the granules of the sides, is also a much more coarsely scaled lizard than *L. micropholis*. Counts of the scales around midbody of a paratype of *L. sylvaticum* ranged from 39 to 45.

The entire series of *micropholis* was taken within the cave at El Pachon, none, however, at any great distance from the mouth. Some were found hiding in rock crevices, others were secured from cracks between the mud floor and the rock walls. It seems quite improbable that the lizard is actually confined to a cave habitat. According to information supplied by Mr. Martin, the hillsides about the cave are covered with tropical deciduous forest.

ACKNOWLEDGMENTS.—Most of the material from Tamaulipas described above was secured through the efforts of Mr. Paul S. Martin, and of Mr. William Francis Harrison, owner of "Rancho del Cielo" and host and guide for numerous field parties. I am indebted to Doris

M. Cochran, of the United States National Museum, and George H. Lowery, of the Louisiana State Museum, for the loan of specimens of *Lepidophyma flavimaculatum occulor*; to Edward H. Taylor, of the University of Kansas, for the loan of a paratype of *Lepidophyma sylvaticum*; to Charles M. Bogert for the privilege of examining specimens in the collection of the American Museum of Natural History; and to Jay M. Savage, of Stanford University, for helpful suggestions as to the terminology of scales.

LITERATURE CITED

SMITH, HOBART M.

- 1942 Mexican Herpetological Miscellany, 5. New Xantusiid Lizards. Proc. U. S. Nat. Mus., 92: 374-80.
- 1947 Notes on Mexican Amphibians and Reptiles. Journ. Wash. Acad. Sci., 37, No. 11: 408-12.

Received for publication October 26, 1954

