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**A Taxonomic Study
of the Middle American Snake,
*Pituophis deppei***

BY

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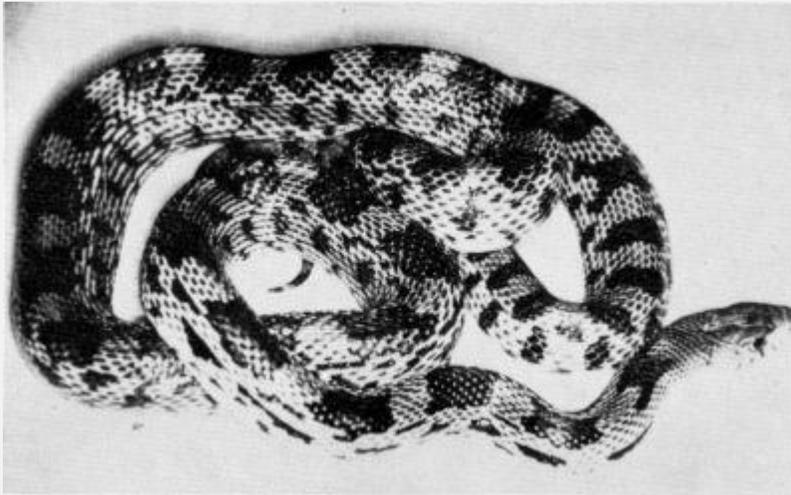


Fig. 1. *Pituophis deppei*
***deppei* from Cumbres de Acultzingo, Veracruz, UMMZ 114596. Approx. 1/2 natural**
size.

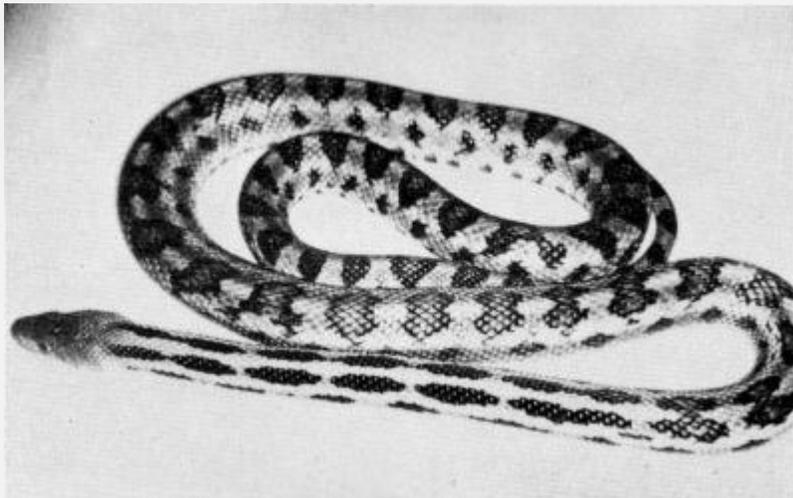


Fig. 2. *Pituophis lineaticollis*
***lineaticollis* from Dos Aguas, Michoacán, UMMZ 119567. Approx. 1/3 natural**
size.

**A Taxonomic Study of the Middle American Snake,
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INTRODUCTION

As a part of a study of the herpetofauna of the Mexican state of Michoacán an attempt was made to ascertain the interspecific and intraspecific relationships of the various populations of *Pituophis* there. Field work in Michoacán revealed that two supposed subspecies of *Pituophis deppei* were sympatric. This discovery led to the examination of all available (124) museum specimens of these snakes.

I am grateful to the following persons who permitted me to examine specimens in their care: Charles M. Bogert, American Museum of Natural History (AMNH); Doris M. Cochran, United States National Museum (USNM); Norman Hartweg, University of Michigan Museum of Zoology (UMMZ); Robert F. Inger, Chicago Natural History Museum (CNHM); Arthur Loveridge, Museum of Comparative Zoology (MCZ); Hobart M. Smith, University of Illinois Museum of Natural History (UIMNH); and Edward H. Taylor, E. H. Taylor—H. M. Smith collection (EHT-HMS). Specimens in the accounts of the species are listed after the abbreviations of the institutions given in parentheses above.

HISTORICAL REVIEW

Duméril (1853: 453) described *Elaphis deppei* from a specimen in the Leiden Museum from "Mexico." This specimen, according to the type description, has 233 ventrals and 67 caudals. In 1863 Jan described *Pituophis deppei* var. *pholidostictus*, also with "Mexico" as the type locality. Subsequent authors (see synonymy of *P. deppei deppei* in Stull, 1940: 25) have treated *pholidostictus* as a synonym of *deppei*. Smith and Taylor (1950: 334) restricted the type localities of *deppei* and *pholidostictus* to San Juan Teotihuacán, México. Cope (1860: 369) described *Arizona jani* on the basis of a specimen in the United States National Museum from Buena Vista, Coahuila. Stull (1932: 2, 1940: 42), Smith (1944: 145) and Smith and Taylor (1945: 107) considered *jani* as a northern subspecies of *Pituophis deppei*. *Arizona lineaticollis* was described by Cope (1861: 300); the type, which originally was in the Academy of Natural Sciences of Philadelphia and is now lost, was said to have come from Jalapa, Veracruz. This locality probably is in error. Smith (1943: 460) placed *lineaticollis* as a southern subspecies of *deppei*. Schmidt and Shannon (1947: 79) described *Pituophis deppei brevilineata* on the basis of five specimens from Tancítaro, Michoacán, and Stuart (1954: 172) described *Pituophis deppei gibsoni* from seven specimens from Departamento Chimaltenango, Guatemala. Thus, at present five subspecies of *Pituophis deppei* are recognized.

CHARACTERS STUDIED

Snakes currently assigned to *Pituophis deppei* differ from other members of the genus by possessing two instead of four prefrontal plates. The subspecies of *P. deppei* have been defined on characters of coloration and scutellation.

Scutellation.—The only scale characters utilized in the present study are the numbers of ventrals and caudals. The number of ventrals varies in the total sample from 210 to 246 ([Table 1](#)); usually the variation in one locality is no more than 15. Number of caudals varies from 52 to 72. There is slight sexual dimorphism in the number of ventrals and somewhat greater differences in the number of caudals.

TABLE 1.—VARIATION IN THE NUMBERS OF VENTRALS AND CAUDALS IN FOUR SUBSPECIES OF PITUOPHIS.

SUBSPECIES	Ventrals		Caudals	
	Range	Mean	Range	Mean
<i>deppei deppei</i>				
34 ♂♂	210-231	220.4	53-69	61.5
16 ♀♀	209-232	218.2	52-61	57.2
<i>deppei jani</i>				
12 ♂♂	215-235	225.1	56-68	62.6
3 ♀♀	228-231	229.0	52-60	56.0
<i>lineaticollis lineaticollis</i>				
13 ♂♂	231-258	239.5	54-72	64.9
9 ♀♀	229-249	241.3	55-68	60.6
<i>lineaticollis gibsoni</i>				
2 ♂♂	234	234.0	61-65	63.0

Coloration.—The dorsal ground color is tan or straw; the dorsal pattern consists basically of dark middorsal blotches and dark lateral intercalary spots. Number of blotches, color of blotches posteriorly, width of pale interspaces between anterior blotches, and color of lateral intercalary spots vary considerably geographically. In some populations (*lineaticollis* and *gibsoni*) the anterior blotches are divided medially forming either a pair of dark stripes on the anterior part of the body or a series of paired spots. Details of coloration are described in the following accounts.

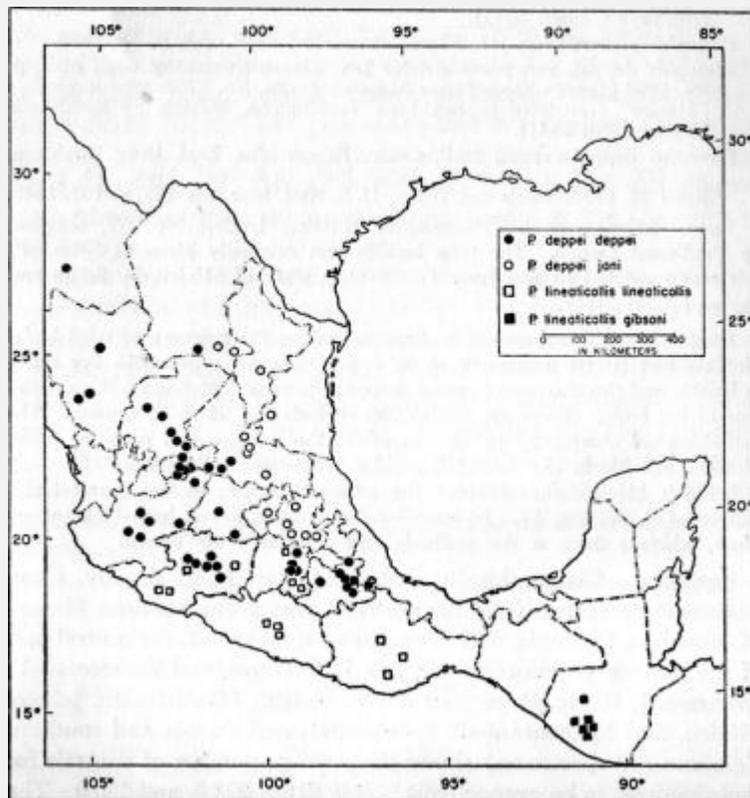


Fig. 1. México and Guatemala showing the distribution of the subspecies of *Pituophis deppei* and *P. lineaticollis*.

ACCOUNTS OF THE SPECIES AND SUBSPECIES

Study of *Pituophis deppei* (*auctorum*) revealed the presence of sympatric populations of two distinct species of *Pituophis* differing from each other in scutellation and coloration. The nomenclature resulting from the required rearrangement necessitates the recognition of 1) *deppei* as a species, 2) *jani* as a subspecies of *deppei*, 3) *lineaticollis* (with *brevilineata* as a synonym) as a species distinct from *deppei*, and 4) *gibsoni* as a subspecies of *lineaticollis*. Known geographic distributions of these named taxa are shown in [Figure 1](#).

***Pituophis deppei deppei* Duméril**

Elaphis deppei Duméril, Mem. Acad. Inst. France, vol. 23, p. 453, 1853; Duméril and Bibron, Erpétologie générale, vol. 7, p. 268, February 25, 1854.

Pituophis deppei, Jan, Elenco sistematico degli ofidi, p. 59, 1863; Günther, Biologia Centrali-Americana, Reptilia, p. 124, February, 1894.

Elaphis pleurostictus Duméril, Mem. Acad. Inst. France, vol. 23, p. 453, 1853 [Type.—Museum d'Histoire Naturelle Paris, No. 6616; type locality—"Monte Video" (restricted to San Juan Teotihuacán, México, by Smith and Taylor, 1950: 334)].

Pituophis pleurostictus, Jan, Elenco sistematico degli ofidi, p. 59, 1863.

Pituophis deppei, var. *pholidostictus* Jan, Elenco sistematico degli ofidi, p. 59, 1863 [Type.—Zoologisches Museum Berlin, No. 1738; type locality—"Mexico" (restricted to San Juan Teotihuacán, México, by Smith and Taylor, 1950: 334)].

Pituophis deppei deppei, Stull, Occas. Papers Mus. Zool. Univ. Michigan, no. 250, p. 1, October 12, 1932; Bull. U. S. Natl. Mus. 175, p. 25, April 23, 1940; Smith and Taylor, U. S. Natl. Mus., no. 187, p. 107, 1945.

Type.—Rijksmuseum van Natuurlijke Histoire, Leiden, No. ???, obtained by Ferdinand Deppe. The type locality was originally given as "Mexico"; this was restricted to San Juan Teotihuacán, state of México, by Smith and Taylor (1950: 334).

Diagnosis.—This subspecies is characterized by the presence of solid body-blotches and lateral intercalary spots, dorsal interspaces less than five scales in length, and the absence of paired stripes or rows of blotches, on the anterior part of the body. There are 209 to 232 ventrals and 52 to 62 caudals. The body-blotches number 27 to 49. In adults the anterior and posterior body-blotches are black; the lateral intercalary spots are solid black. In many individuals black dashes connect the adjacent corners of the dorsal body-blotches ([Pl. 45, Fig. 1](#)). In juveniles the anterior, dorsal body-blotches are black, whereas those at the midbody and posteriorly are brown.

Variation.—Geographically, scutellation varies only slightly. Comparison of specimens from the northern part of the Mexican Plateau (Chihuahua, Coahuila, and Durango—5 specimens), the central part of the plateau (Aguascalientes, San Luis Potosí, and Zacatecas—13 specimens), the southern part of the plateau (Guanajuato, Jalisco, México, and Michoacán—18 specimens), and Puebla and southern Veracruz (12 specimens) shows the average number of ventrals for these samples to be, respectively, 221.6, 216.7, 221.3, and 220.0. The average number of dorsal body-blotches for the same samples are, respectively, 36.6, 37.7, 38.4, and 34.6. Only in the southernmost sample is there a noticeable difference in the number of blotches.

The specimen from Párajó Verde, Veracruz, was considered to be an intergrade between *P. deppei* and *P. lineaticollis* by Smith (1943: 461), who stated that, although the snake had 231 ventrals and dark lateral streaks as does *deppei*, it had light-centered dorsal blotches and stripes on the neck as does *lineaticollis*. This specimen (USNM 110892) has a high number of ventrals for *deppei*; one from Jalisco has 232, and one each from Guanajuato and Veracruz have 229. The blotches posteriorly are lighter than those anteriorly and are slightly lighter in the center than at the periphery. Two anterior blotches are divided medially and narrowly connected by black streaks. Although these are somewhat suggestive of the pattern of *lineaticollis*, they are more nearly like that of *deppei*. Four other specimens from the same area are typically *deppei*. There is some doubt as to the actual provenance of the snake stated to have come from Párajó Verde, for, according to Smith (1943: 460), the snake had been tied to a truck and dragged halfway down the slopes of the Cumbres de Acultzingo, where he found it. He surmised that it probably was dragged no farther than the settlement, Párajó Verde, at the Cumbres de Acultzingo.

Fugler and Webb (1956: 171) commented on the uniformly brown dorsum of a specimen (KU 39564) from 16 miles east and 18 miles north of Ocampo, Coahuila. It has a higher number of ventrals (242) and caudals (88) than is known for *deppei*. It is, without a doubt, a *Pituophis*. It is not *Pituophis catenifer*, as attested to by the presence of only two prefrontals. The high number of ventrals and caudals, together with the uniform dark brown dorsum, provide a combination of characters indicating that this specimen may represent an undescribed species in the *deppei* group of *Pituophis*.

Distribution.—Southern Chihuahua and southern Coahuila southward on the western and central parts of the Mexican Plateau to the Valley of México and to southeastern Puebla and adjacent Veracruz.

Specimens examined.—Total of 63, as follows: *Aguascalientes*: 16 km. N of Aguascalientes, UIMNH 27149; 17 km. E of Aguascalientes, UIMNH 36222; 5 km. SW of Aguascalientes, KU 29495; Cavillito, UIMNH 28134; 11 km. N of Rincon de Romos, UIMNH 40359-60; 2 km. N of San Francisco de los Romos, UIMNH 27569. *Chihuahua*: USNM 8321 (2 specimens); Semachique, CNHM

11825. *Coahuila*: Castanuelas, MCZ 407. *Distrito Federal*: Lago Xochimilco, UIMNH 18709; Pedregal, UMMZ 99790. *Durango*: Coyotes, CNHM 1497; Hacienda Magdalena, USNM 46365; Llano Grande, UMMZ 113634. *Guanajuato*: USNM 16442; Acambaro, KU 45003; Irapuato, UIMNH 35055. *Jalisco*: Atemajac, USNM 46385; Guadalajara, USNM 24969; 5 km. SE of Guadalajara, KU 29508; Jamay, AMNH 19848-9, 19851-2; 3 km. WNW of Lagos de Moreno, KU 27727; 5 km. NW of Sayula, UMMZ 101933. *México*: Atzacozlco, AMNH 19850; Chalco, USNM 110889; San Juan Teotihuacán, EHT-HMS 5378, 5383, MCZ 16051. *Michoacán*: 6 km. E of Carapan, AMNH 69940; 3 km. W of Carapan, UMMZ 114598; 14 km. W of Morelia, UMMZ 104969; Tacambaro, USNM 46557; Tacícuaro, USNM 110888; 11 km. W of Zacapu, UMMZ 104968. *Puebla*: Alseseca, UIMNH 36221; Atlixco, USNM 46433; Puebla, AMNH 19856; 30 km. N of Puebla, USNM 110887; Tecamachalco, UMMZ 88688; 16 km. SSE of Tecamachalco, UMMZ 114597; Tehuacan, UMMZ 88687; 22 km. N of Tehuacan, EHT-HMS 5377. *San Luis Potosí*: USNM 46554; 26 km. SW of San Luis Potosí, UIMNH 28133. *Veracruz*: 3 km. W of Acultzingo, KU 23978; Cumbres de Acultzingo, UIMNH 36224, 36226, UMMZ 114596; Párajó Verde, USNM 110892; questionably from Potrero Viejo, UMMZ 89358-9. *Zacatecas*: 16 km. E of Somberete, UIMNH 27147; 1 km. SW of Tiburcio, KU 33599; 3 km. ESE of Troncoso, KU 29494; 10 km. W of Villa de Arriaga (San Luis Potosí), UIMNH 27151; 24 km. NW of Zacatecas, UIMNH 6393; 13 km. SE of Zacatecas, UIMNH 27148; 26 km. SE of Zacatecas, UIMNH 27568.

***Pituophis deppei jani* Cope**

Arizona jani Cope, Proc. Acad. Nat. Sci. Philadelphia, p. 369, 1860.

Pituophis deppei jani, Stull, Occas. Papers Mus. Zool. Univ. Michigan, no. 250, p. 2, October 12, 1932, Bull. U. S. Natl. Mus., no. 175, p. 42, April 23, 1940; Smith, Zool. Ser. Field Mus. Nat. Hist., vol. 29, p. 145, February 29, 1944; Smith and Taylor, Bull. U. S. Natl. Mus., no. 187, p. 107, 1940.

Type.—United States National Museum, No. 1522, from Buena Vista, Coahuila, obtained by Lieutenant Darius N. Couch.

Diagnosis.—This subspecies is characterized by solid body-blotches that are black anteriorly and brown posteriorly, anterior dorsal interspaces six or more scales in length, and the absence of dark stripes or rows of spots on the anterior part of the body. There are 215 to 235 ventrals, 52 to 68 caudals, and 21 to 31 dorsal body-blotches. The position of the lateral intercalary spots and lateral streaks are the same as in *deppei deppei*.

Variation.—Throughout the range of this subspecies the posterior body-blotches are brown and noticeably lighter than the anterior ones. Juveniles are colored like adults. Specimens from the northern part of the range (Nuevo León and Tamaulipas) have 21

to 28 (average 24.0) dorsal body-blotches and 7 to 11 (average 8.9) scales in the interspace between the first and second dorsal body-blotches, as compared with specimens from the southern part of the range (Hidalgo, Queretaro, and San Luis Potosí), which have 24 to 31 (average 27.7) dorsal body-blotches and 6 to 10 (average 7.8) scales in the first interspace. Likewise, there is a difference in the number of ventrals between the northern and southern samples; those from the north have an average of 228.8 ventrals, and those from the south have 222.0. In all of these characters the southern sample shows trends towards the southern subspecies, *deppei*, which has fewer ventrals, fewer scales in the first interspace, and more dorsal body-blotches.

Distribution.—Eastern part of the Mexican Plateau and lower leeward slopes of the Sierra Madre Oriental from Hidalgo and Queretaro northward to southeastern Coahuila.

Specimens examined.—Total of 28, as follows: *Coahuila*: Buena Vista, USNM 1522; 50 km. W of La Rosa, EHT-HMS 5374. *Hidalgo*: Ixmiquilpan, USNM 110890-1; 24 km. S of Ixmiquilpan, EHT-HMS 5373; Jacala, UMMZ 80937; 35 km. E of Pachuca, UMMZ 99552; 16 km. E of Tulancingo, KU 40357. *Nuevo León*: Ojo de Agua near Galeana, CNHM 33564-5. *Queretaro*: Cadereyta, UMMZ 99791-3. *San Luis Potosí*: Charcas, UMMZ 77256-8; San Diego, UMMZ 77254-5; 24 km. NE of San Luis Potosí, UIMNH 18711; 30 km. NE of San Luis Potosí, UIMNH 27150, 28135. *Tamaulipas*: Miquihuana, MCZ 19544-50.

***Pituophis lineaticollis lineaticollis* Cope, new combination**

Arizona lineaticollis Cope, Proc. Acad. Nat. Sci. Philadelphia, p. 300, 1861.

Pituophis lineaticollis, Stull, Occas. Papers Mus. Zool. Univ. Michigan, no. 250, p. 2, October 12, 1932, Bull. U. S. Natl. Mus., no. 175, p. 47, April 23, 1940.

Pituophis deppei lineaticollis, Smith, Proc. U. S. Natl. Mus., vol. 93, p. 460, 1943; Smith and Taylor, Bull. U. S. Natl. Mus., no. 187, p. 108, 1945.

Pituophis deppei brevilineata Schmidt and Shannon, Fieldiana-Zool., vol. 31, p. 79, February 20, 1947.

Type.—No type specimen is known. Cope (1861: 300 and 1887: 72) stated that the specimen was from the southern Mexican Plateau and that it was collected by Carlos Sartorius. Smith and Taylor (1945: 108 and 1950: 348) gave the type locality as Jalapa, Veracruz. Although this locality was the source of many specimens sent to the United States by Sartorius, it is not within the known range of *lineaticollis*, and therefore cannot appropriately be thought of as the type locality. In the absence of a type specimen and a justifiable type locality, I hereby designate as a neotype, University of Michigan Museum of Zoology, No. 114668. This specimen was collected 24 kilometers northwest of Ciudad Oaxaca, Oaxaca, on February 29, 1956, by William E. Duellman. It is an

adult female having 229 ventrals, 67 caudals, and long black neck-stripes followed posteriorly by 23 light-centered dorsal body-blotches.

Diagnosis.—This subspecies is characterized by the presence of continuous dark paravertebral stripes on the anterior part of the body, and light-centered dorsal body-blotches and lateral intercalary spots (Pl. 45, Fig. 2). There are 229 to 258 ventrals, 54 to 72 caudals, and 23 to 45 dorsal body-blotches posterior to the neck-stripes. The young are colored like the adults.

Variation.—Specimens from the southern part of the range in Oaxaca have 229 to 245 ventrals (average 238.3); to the north on the Mexican Plateau in the state of Michoacán seven specimens have 231 to 243 (average 237.1) ventrals. In the relatively isolated mountain ranges of the Sierra del Sur in Guerrero and the Sierra de Coalcomán in southern Michoacán the ranges of variation and average numbers of ventrals are, respectively, 234 to 258 (245.8) and 236 to 246 (242.2). The longest neck-stripes are found in specimens from Oaxaca and Guerrero; nevertheless, some specimens from the Mexican Plateau in Michoacán and three of the four specimens from the Sierra de Coalcomán have neck-stripes equally long. One specimen from 40 kilometers north of Ciudad México and several from the vicinity of Tancítaro, Michoacán, have rather shorter neck-stripes. One specimen from Dos Aguas, Michoacán, has the neck-stripes partially fragmented into rows of spots as in *gibsoni*.

On the basis of specimens from Tancítaro, Michoacán, Schmidt and Shannon (1947: 79) described the subspecies *brevilineata*, which they diagnosed as differing from *lineaticollis* in having fewer ventrals and shorter neck-stripes. The present data suggest that the characters used to diagnose the subspecies are variable not only in Michoacán, but throughout the range of the species. Consequently, *Pituophis (deppei) brevilineata* Schmidt and Shannon (1947) is placed in the synonymy of *Pituophis lineaticollis lineaticollis* Cope (1861).

Distribution.—The southern part of the Mexican Plateau in the states of Michoacán, México, and Morelos, the Sierra de Coalcomán in southern Michoacán, and the Sierra del Sur in Guerrero and Oaxaca.

Specimens examined.—Total of 25, as follows: *Guerrero*: Acahuizotla, USNM 46537; Chilpancingo, CNHM 38356-9, UIMNH 35000, UMMZ 85724-5; Omiltemi, USNM 46462. *México*: 40 km. N of Ciudad México, UIMNH 36223. *Michoacán*: Acuario de las Lleguas, UMMZ 112565; Dos Aguas, UMMZ 118786, 119567-8; 40 km. E of Morelia, UMMZ 101932; Tancítaro, CNHM 37126, 39069-72. *Morelos*: 1 km. W of Tepoztlán, UMMZ 101931; Tres Cumbres, UIMNH 35001. *Oaxaca*: 25 km. N of El Soledad, UIMNH 6210; 24 km. NW of Oaxaca, UMMZ 114668; San Pedro Quiechapa, USNM 110893.

***Pituophis lineaticollis gibsoni* Stuart, new combination**

Pituophis deppei gibsoni Stuart, Proc. Biol. Soc. Washington, vol. 67, p. 172, August 5, 1954.

Type.—University of Michigan Museum of Zoology No. 107060, obtained by Colvin Gibson. Type locality: Yepocapa, Chimaltenango, Guatemala.

Diagnosis.—This race is characterized by paired, elongated, pale-centered, paravertebral spots on the anterior part of the body. Posterior to the paired spots are 22 to 27 dorsal body-blotches; these and the lateral intercalary spots have pale centers. There are 234 to 246 ventrals and 57 to 65 caudals.

Variation.—The few specimens that are available from a small geographic area do not permit a discussion of geographic variation at this time. All of the specimens have the paired paravertebral spots and blotches with light centers. In this respect the population of *lineaticollis* east of the Isthmus of Tehuantepec is noticeably different from the nominal subspecies in the Mexican highlands. Smith and Taylor (1945: 108) listed a specimen from San Cristobal, Chiapas. I have not seen this specimen and so do not know to which subspecies it belongs. On geographical grounds it probably is *gibsoni*.

Distribution.—Guatemalan highlands and probably highlands of Chiapas. Aside from the specimens examined, two others are known—one from Volcán Agua, Sacatepequez (Slevin, 1939: 400), and one from Dueñas, Sacatepequez (Boulenger, 1894: 65); these localities are not shown in [figure 1](#).

Specimens examined.—Eight, as follows: Guatemala: *Chimaltenango*: Chichavac, CNHM 1927; Finca El Tesoro, 3 km. SE of Acatenango, UMMZ 107062-3; Finca Recreo, 4.5 km. SW of Yepocapa, UMMZ 107381; Río Los Positos, 5.5 km. NE of Yepocapa, UMMZ 107061; Río Sobolopop, 8 km. W of Patzún, UMMZ 107064; Yepocapa, UMMZ 107060. *El Quiche*: Nebaj, UMMZ 89202.

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Transcriber's Notes

"Rijkmuseum van Natuurlijke Histoire" changed to "Rijksmuseum van Natuurlijke Historie" (Rijksmuseum van Natuurlijke Historie, Leiden)

Period changed to comma (Erpétologie générale, vol. 7, p. 268)

"Chipas" changed to "Chiapas" (Guatemalan highlands and probably highlands of Chiapas.)

The style of the majority of citations in this paper are of the form "(year: page)". A small number of citations been ammended to include the space following the colon.

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