Tantilla cascadae Wilson and Meyer, 1981. Until recently, this species was known only from the type locality, Cascada de Tzaráracua, Uruapan, Michoacán, Mexico. A second locality now is known from 20 km NE Pihuamo, Jalisco, where a single individual was found (D. Cruz-Sáenz, pers. comm.; submitted). Peter Heimes also collected and photographed the individual illustrated, which he found at the type locality, but the specimen was not placed in a museum collection. This small centipede snake is one of a number of poorly known Mexican species of *Tantilla*. Its EVS is calculated as 15, which places it in the lower portion of the high vulnerability category. Its IUCN status is Data Deficient.

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Snakes of the genus *Tantilla* (Squamata: Colubridae) in Mexico: taxonomy, distribution, and conservation

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Abstract: Thirty of the 62 species of the colubrid snake genus *Tantilla* are known to occur in Mexico. We summarize the taxonomy and distribution of each of the Mexican species, provide distributional maps, and where pertinent discuss geographical variation and ecological data. We base our identification key on color, pattern, and scutellation. The geographic and ecological ranges of most species are restricted. The genus *Tantilla* has been recorded from every state in Mexico, except for Campeche, Tabasco, and Tlaxcala. The largest number of species have been recorded from the state of Oaxaca (10), live in the Sierra Madre Oriental and the Pacific lowlands from Sinaloa to western Chiapas (nine in each), occur at moderate elevations (22), and inhabit Tropical Dry Forest and Subtropical Moist Forest vegetation zones (16 in each). *Tantilla bocourti* is the widest-ranging species, recorded from 17 states, six physiographic regions, at elevations from near sea level to 2,750 m, and in seven vegetation zones. Mexico is the center of diversity for the genus *Tantilla*, as it contains 17 endemic species. We utilized three systems for scoring conservation status. Assessments for only 15 of the species found in Mexico are available with the SEMARNAT system: six are judged as Threatened and nine under the category of Special Protection. Assessments for 27 species are available with the IUCN system: two are considered Endangered, 10 Data Deficient, and 15 of Least Concern. All the species are covered with the EVS system: four are categorized in the low, 13 in the medium, and 13 in the high levels of vulnerability. We provide morphological characteristics that define the genus *Tantilla*, indicate the phenetic species groups that have been assigned and comment on several unassigned species, and emphasize the need for future molecular studies.

Key Words: Centipede snakes, ecological distribution, endemism, EVS, SEMARNAT, and IUCN categorizations

Resumen: Treinta de 62 especies de culebras del género *Tantilla* son conocidas en México. Resumimos la taxonomía y la distribución de cada especie, proporcionamos mapas de distribución, y discutimos la variación geográfica y datos ecológicos cuando se consideró pertinente. Nuestra clave de identificación está basada en color, patrón y escutelación. El rango geográfico y ecológico de la mayoría de las especies es restringido. El género *Tantilla* ha sido registrado en cada estado de México, con excepción de Campeche, Tabasco, y Tlaxcala. El mayor número de especies se ha registrado en el estado de Oaxaca (10), habita en la Sierra Madre Oriental y las tierras bajas de la vertiente del Pacífico desde Sinaloa hasta el oeste de

Chiapas (nueve en cada región), ocurre en altitudes moderadas (22), y habita en los bosques tropicales secos y en las zonas de vegetación de los bosques subtropicales húmedos (16 en cada uno). *Tantilla bocourti* es la especie con el mayor rango geográfico, registrada en 17 estados y seis regiones fisiográficas, desde el nivel del mar hasta 2,570 m, y en siete zonas de vegetación. México es el centro de diversidad del género *Tantilla*, y alberga 17 especies endémicas. Utilizamos tres sistemas para evaluar el estado de conservación. El sistema de SEMARNAT proporciona evaluaciones solamente para 15 de las 30 especies: seis consideradas como Amenazada y nueve especies como Sujeta a Protección Especial. Evaluaciones para 27 especies están disponibles con el sistema de UICN: dos especies consideradas En Peligro, 10 como Datos Insuficientes, y 15 como Preocupación Menor. Todas las especies están evaluadas con el sistema de EVS: cuatro especies en la categoría baja, 13 en la categoría media, y 13 en la categoría de alta vulnerabilidad. Proporcionamos características morfológicas que definen al género *Tantilla*, indicamos los grupos fenéticos a los que las especies han sido asignadas y comentamos en algunas especies que no han sido asignadas, y enfatizamos la necesidad de estudios moleculares en el futuro.

Palabras Claves: Categorizaciones de EVS, SEMARNAT y UICN, culebras de ciempiés, distribución ecológica, endemismo

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INTRODUCTION

The colubrid snake genus *Tantilla* currently consists of 62 species with a coast-to-coast distribution in the mid- and southern regions of the United States, throughout most of Mexico and Central America, and in South America as far south as southern Peru, Bolivia, Uruguay, and northern Argentina (Wilson, 1982b, 1999; Townsend et al., 2013 [the last reference, however, incorrectly cited the number as 63]). Only two other snake genera contain more species than *Tantilla*: *Atractus*, a largely South American dipsadid genus, with 136 species, and *Oligodon*, a colubrid genus distributed in southern and eastern Asia, with 75 species (www.Reptile-Database.org; accessed 28 January 2014). *Tantilla*, therefore, is the second-largest snake genus in the Western Hemisphere.

The center of diversity for the genus *Tantilla* is in Mexico. In this paper, the third and final in a series describing the taxonomy and distribution of *Tantilla* in Latin America, we provide information on 30 species known to occur in Mexico. The initial paper dealt with 17 species then known to occur in Central America (Wilson, 1982a); that number now is 24 (Townsend et al., 2013). The second paper included 12 species then known from South America (Wilson, 1987a); that number now is 13 (Wilson, 1999; Sawaya and Sazima, 2003; de Lema, 2004). A lower number of species (11) reside in the United States; of these, seven are found in Mexico (Wilson, 1999).

Smith (1942) provided the most recent treatment of the genus *Tantilla* for Mexico. He recognized 19 species, of which the following 12 currently are considered valid: *Tantilla atriceps* (Günther), 1895; *Tantilla bocourti* (Günther), 1895; *Tantilla calamarina* Cope, 1866; *Tantilla cuniculator* Smith, 1939; *Tantilla deppei* (Bocourt), 1883; *Tantilla hobartsmithi* Taylor, "1936" (1937); *Tantilla moesta* (Günther), 1863; *Tantilla nigriceps* Kennicott, 1860; *Tantilla rubra* Cope, "1875" (1876); *Tantilla striata* Dunn, 1928; *Tantilla wilcoxi* Stejneger, 1902; and *Tantilla yaquia* Smith, 1942.

Taxonomic changes in the other species listed by Smith (1942) are as follows: *Tantilla canula* Cope "1875" (1876) was transferred to the genus *Tantillita* by Smith et al. (1993); *Tantilla deviatrix* Barbour, 1916, long considered a subspecies of *T. bocourti* (McDiarmid et al., 1976), now is placed in the synonymy of *Tantilla wilcoxi* Stejneger, 1902 (McDiarmid, 1992); *Tantilla jani* Günther, 1895, is a name correctly applied to a Guatemalan/

Mexican member of the genus (Campbell, 1998a), leaving the taxon to which this name had been applied nameless; Campbell (1998a), however, provided the name *Tantilla vulcani* for this snake; *Tantilla martindelcampoi* Taylor, "1936" (1937) is a synonym of *T. calamarina* (Wilson and Meyer, 1981); Wilson and Mena (1980) synonymized *Tantilla mexicana* (Günther), 1862, based on a holotype with incorrect locality data, with the extralimital *T. melanocephala*. Dixon et al. (2000) synonymized *Tantilla miniata* Cope, 1863, with *T. rubra*; and Wilson (1982a) synonymized *Tantilla phrenetica* Smith, 1942, with *T. schistosa*.

Since Smith's (1942) résumé, additional species of *Tantilla* have been described from Mexico, of which the following 13 are considered valid: *Tantilla briggsi* Savitzky and Smith, 1971; *Tantilla cascadae* Wilson and Meyer, 1981; *Tantilla ceboruca* Canseco-Márquez et al., 2007; *Tantilla coronadoi* Hartweg, 1944; *Tantilla flavilineata* Smith and Burger, 1950; *Tantilla johnsoni* Wilson et al., 1999; *Tantilla oaxacae* Wilson and Meyer, 1971; *Tantilla robusta* Canseco-Márquez, Mendelson, and Gutiérrez-Mayén, 2002; *Tantilla sertula* Wilson and Campbell, 2000; *Tantilla shawi* Taylor, 1949; *Tantilla slavensi* Pérez-Higareda et al., 1985; *Tantilla tayrae* Wilson, 1983a; and *Tantilla triseriata* Smith and Smith, 1951.

The following two species were described since Smith's (1942) work, but subsequently synonymized by other workers (indicated parenthetically): *Tantilla bogerti* Hartweg, 1944 (= *T. yaquia*, *fide* McDiarmid, 1968); and *Tantilla morgani* Hartweg, 1944 (= *T. rubra*, *fide* Dixon et al., 2000).

Because of these actions and others, the following five species of *Tantilla* now are considered to occur in Mexico: *Tantilla gracilis* (*fide* Savitzky and Collins, 1971); *Tantilla impensa* (*fide* Wilson and McCranie, 1999); *Tantilla planiceps* (*fide* Cole and Hardy, 1981); *Tantilla schistosa* (Wilson, 1982a); and *Tantilla vulcani* (Campbell, 1998a, this paper). With the 12 species reported by Smith (1942) that are considered valid, the 13 species described subsequently, and the five reported from Mexico or synonymized, the total number of species of *Tantilla* known from the country is 30.

Our reasons for writing this paper are four-fold: (1) to summarize the available information on the taxonomy and distribution of the species of *Tantilla* known from Mexico, amassing data published in a variety of sources, including a number written by Wilson and his colleagues concerning Mexican species, in total or in part (Wilson and Meyer, 1971; Wilson et al., 1977; Wilson and Mena, 1980; Wilson and Meyer, 1981; Wilson, 1982a, 1983a; Wilson et al., 1999; Dixon et al., 2000; Wilson and Campbell, 2000); (2) to include data that have accrued since these revisions and that of Cole and Hardy (1981); (3) to discuss the conservation status of the 30 species, and (4) to set the stage for a much-needed molecular-based study of the inter- and intrageneric relationships of the genus *Tantilla*.

Even with the relatively advanced state of our knowledge of the Mexican herpetofauna, due to the work of legions of herpetologists who have worked in this country and most prominently the late Hobart M. and Rozella B. Smith, we still know very little about the biology of most Mexican snakes, including those in the genus *Tantilla*. Cole and Hardy (1981: 217) alluded to this problem with the following eloquent comment, "No specifics on food habits are known, but body size and geographic distribution preclude the possibility that *T. yaquia* normally eats wart hogs." Two of the 30 Mexican species (*T. briggsi* and *T. robusta*) still are known only from their respective holotypes, and several other species are known from only a handful of specimens. The explosive growth rate of the Mexican human population, with concomitant habitat alteration, seems likely to deliver unto many of these tiny snakes the ultimate insult of extinction. Whatever their fate, it probably will be played out in the next few decades.

MATERIALS AND METHODS

Over the last 43 years, the senior author has described or reviewed (by himself or in collaboration with others) 16 of the 30 Mexican species of *Tantilla* (Wilson and Meyer, 1971, 1981; Wilson, 1982a, 1983a, 1985b, 1991, Dixon et al., 2000; Wilson et al., 1999; Wilson and Campbell, 2000), and also has written accounts of 14 Mexican species for the *Catalogue of American Amphibians and Reptiles* (see Literature Cited). With the current study, we attempted to amass most of the material of this genus from Mexico residing in the United States that has accrued since those papers were written, with the exception of that studied by Cole and Hardy (1981). Where necessary, we examined or reexamined, pertinent type material.

As with the South American paper (Wilson, 1987a), we departed somewhat from the format used in the Central American paper (Wilson, 1982a), given Wilson's earlier work on this genus and that of Cole and Hardy (1981). We provide abbreviated synonymies for most species, emphasizing the recent literature, but these essentially are complete for *Tantilla bocourti, T. briggsi, T. cascadae, T. ceboruca, T. robusta, T. rubra, T. sertula, T. shawi, T. slavensi, T. tayrae*, and *T. wilcoxi*.

We include definitions for all species and descriptions consistent with those from Central America, but did not repeat geographic variation information for *T. moesta* and *T. schistosa*, which was published in Wilson (1982a). Locality records for all species, based primarily on material in United States collections, are as complete as we could make them.

The species accounts cover the following sequence of topics: synonymy (abbreviated, if necessary); type material; type-locality; definition; description (or reference thereto); distribution; geographic variation (if pertinent); ecological observations (if pertinent); remarks (if pertinent); and specimens examined and/or specimens not examined. We indicate the number of specimens examined in the last of the above-mentioned sections, and also provide a table summarizing the critical characters for all the species included.

As with the paper on Central and South American *Tantilla*, we used the elevational categories of Stuart (1963), as follows: low elevations, = 0–600 m; moderate, = 600–1,500 m; intermediate, = 1,500–2,700 m; and high, = 2,700 m and above. We made scale counts according to accepted methods, including that of Dowling (1951) for counting ventrals. In attempting to determine the conservation status of the Mexican species of *Tantilla*, we used the following three systems: SEMARNAT, IUCN, and EVS. The nature of these systems is detailed in Wilson et al. (2013) and Alvarado-Díaz et al. (2013).

The Genus *Tantilla*

Tantilla is a cryptozoic colubrine snake genus with a wide distribution in the Western Hemisphere. Linnaeus (1758) described the first species (*T. melanocephala*) in the early days of zoological nomenclature, 21 species were described in the 1800s, 32 in the 1900s, and eight in the current century. Interestingly, the pace of descriptions has continued to increase, as during the 1800s the rate was 0.21/yr, in the 1900s 0.32/yr, and in the current century it has surged to 0.62/yr. We doubt if this phenomenal rate will continue, but if it does six more species should be named within the next decade.

One of the difficulties with determining phylogenetic relationships among members of this genus is that the external morphological features commonly used in snake systematics to diagnose taxa do not vary much within *Tantilla*. The genus, thus, is characterized by the presence of the following scutellational features: the scales on top of the head consist of a rostral, two internasals, two prefrontals, two supraoculars, one frontal, and two parietals; the scales on the side of the head are a divided nasal, of which the posterior portion is in contact with the single preocular or not (loreal absent), one or two (usually two) postoculars, one anterior and one posterior temporal, and usually six or seven supralabials, with the 3rd and 4th generally entering the eye; the scales on the chin are a single mental, usually six infralabials, with the first pair in medial contact or not, and two pairs of chin shields; the dorsal scale rows are 15 one head length past the parietals, at midbody, and one head length prior to the vent; the ventrals range from a low of 106 in male *T. calamarina* to a high of 197 in female *T. planiceps* (Table 1); the subcaudals range from a low of 19 in female *T. vermiformis* to a high of 85 in male *T. miyatai* (Table 1 and Wilson, 1987a); the ventrals plus subcaudals range from a low of 140 in female *T. vermiformis* to a high of 260 in female *T. planiceps* (Table 1 and Wilson, 1982a); and the cloacal scute (= anal plate) is divided.

Species discrimination in this genus largely has been based on differences in color pattern. Groupings of *Tantilla* species essentially have depended on similarities in color pattern, and Wilson (1999) delineated the *calamarina*, *coronata*, *melanocephala*, *planiceps*, and *taeniata* groups. Since then, several new species that can be allocated to these groups have been described, and we indicate their members below.

Table 1. Critical characteristics of *Tantilla* species occurring in Mexico. Data for *T. gracilis* are from Hardy and Cole (1968). Data for *T. gracilis* (7 males/13 females) and *T. nigriceps* (13 males/11 females), indicated by asterisks, are from specimens in The University of Texas at El Paso collection.

Character	*T. atriceps*	*T. bocourti*	*T. briggsi*	*T. calamarina*	*T. cascadae*	*T. ceboruca*
Sample size (male/female)	13/4	17/21	1/-	20/27	-/3	2/1
Total length (in mm)	168–230	123–358	301	72–202	158–196	175–200
Tail length (in mm)	44–59	19–77	68	13–36	30	33–35
Tail length/total length ratio	0.204–0.306	0.160–0.225	0.226	0.110–0.211	0.138–0.190	0.179–0.194
Ventrals in males	123–140 (129.2)	164–182 (173.9)	172	106–133 (119.7)	—	138–146
Ventrals in females	—	168–195 (178.8)	—	118–140 (129.0)	139–146	153
Subcaudals in males	45–66 (57.4)	39–61 (54.1)	68	30–43 (36.8)	—	42–47
Subcaudals in females	—	38–63 (52.1)	—	22–43 (28.8)	30–48	36
Ventrals + subcaudals in males	179–194 (186.1)	210–241 (227.6)	240	145–166 (156.9)	—	180–193
Ventrals + subcaudals in females	—	206–248 (231.6)	—	146–179 (158.0)	176–192	189
Postnasal in contact with preocular	Yes or no	Usually	Yes	Yes or no	Yes	Yes or no
Number of postoculars	Usually 1	Usually 2	2	1	2	2
Number of supralabials (number entering orbit)	7 (3+4)	Usually 7 (3+4)	7 (3+4)	Usually 6 (3+4)	6 (3+4)	7 (3+4)
First pair of infralabials separated	Yes or no	Usually not	Yes	Yes	Yes	Yes
Head pattern	Brown to black head cap with straight or convex posterior border extends 1–2 scales beyond parietals, followed by pale neck band 1 scale long	Dark brown to very dark brown head cap usually terminates before posterior portion of parietals, followed by usually complete pale nuchal collar and a dark brown to black nape band about ½–2 scales long	Very dark brown with pale snout marking and medially-divided pale nuchal band	Spatulate dark anterior extension of middorsal dark stripe flanked by two pale spots	Spatulate dark anterior extension of middorsal dark stripe flanked by pale narrow longitudinal markings confluent with pale postparietal spots, or narrowly separated	Spatulate extension of middorsal dark stripe flanked by pale longitudinal markings confluent with pale postparietal spots, and extends anteriorly along sides of parietals, and across supraoculars and prefrontals to join on internasals
Dorsal body pattern	Uniform beige to pale brown	Uniform tan to brown	Brown with interrupted pale lateral stripe on adjacent halves of rows 3 and 4; pale middorsal stripe absent	Tan to brown with variously-sized dark middorsal stripe, and a dark brown lateral stripe on rows 3 and 4	Pale to dark brown with dark middorsal stripe covering middle of middorsal scale row; dark lateral stripe on rows 3 and 4 only in neck region or length of body	Dark brown with dark middorsal stripe covering middle of middorsal scale on most of body; dark lateral stripe on adjacent halves of rows 3 and 4
Ventral pattern	Immaculate cream	Immaculate cream	Immaculate cream grading to pink posteriorly	Immaculate cream	Cream with slight amount of dark pigment at lateral apices	Immaculate cream

Character	*T. coronadoi*	*T. cuniculator*	*T. deppei*	*T. flavilineata*	*T. gracilis*	*T. hobartsmithi*
Sample size (male/female)	1/1	2/6	11/11	5/7	139/107	164/149
Total length (in mm)	171–183	94–227	95–273	101–293	75–249	93–313
Tail length (in mm)	28–31	19–48	16–62	20–52	16–53	20–80
Tail length/total length ratio	0.164–0.169	0.197–0.229	0.166–0.254	0.177–0.206	0.170–0.270	0.183–0.313
Ventrals in males	158	139–145 (142.0)	142–151 (145.9)	154–166 (160.0)	117–131 (122.3)	124–166 (141.1)
Ventrals in females	165	140–154 (148.0)	153–168 (160.1)	152–168 (161.3)	122–137 (130.8)	130–169 (150.3)
Subcaudals in males	35+ (?)	53–55 (54.0)	54–62 (57.2)	51–56 (53.4)	43–55 (48.4)	48–74 (62.6)
Subcaudals in females	40	48–53 (49.4)	43–50 (46.2)	43–49 (46.2)	37–47 (42.0)	47–67 (55.4)
Ventrals + subcaudals in males	—	194–198 (196.0)	196–213 (203.1)	206–222 (213.4)	151–177 (165.1)*	180–239 (203.5)
Ventrals + subcaudals in females	205	189–207 (198.0)	196–214 (206.3)	195–215 (207.3)	156–179 (170.7)*	186–231 (204.8)
Postnasal in contact with preocular	Yes	Yes	Yes	Usually	Yes or no	Yes or no
Number of postoculars	2	2	2	2	1	Usually 2
Number of supralabials (number entering orbit)	7 (3+4)	Usually 7 (3+4)	Usually 7 (3+4)	7 (3+4)	Usually 6 (3+4)	7 (3+4)
First pair of infralabials separated	Yes or no	Yes	Usually	Usually	Yes	Yes or no
Head pattern	Spatulate dark anterior extension of middorsal dark stripe flanked by pale anterior extensions of dorsolateral ground color	Dark brown head cap bounded posteriorly by complete pale nuchal collar	Spatulate dark anterior extension of middorsal dark stripe flanked by pale anterior extensions of middorsally-divided pale nuchal band	Brown head cap bounded posteriorly by complete pale nuchal band	Same color as dorsum or slightly darker	Brown to black head cap with straight or convex posterior border extends ½–3 scales beyond parietals, followed by pale neck band ½–2 scales long
Dorsal body pattern	Tan to pale brown with dark middorsal stripe covering middle of middorsal scale row, and dark lateral stripe on rows 3 and 4	Dark brown with barely discernible pale lateral stripe on rows 3 and 4	Tan to brown with diffused dark variously-sized middorsal stripe, and dark lateral stripe on row 3 or rows 2 and 3; diffuse dark stripe on row 5	Cream to pale tan with pale middorsal stripe covering middorsal row and adjacent halves of paravertebral rows, and pale lateral stripe on row 4 and adjacent halves of rows 3 and 5	Uniform golden brown through gray-brown to reddish brown	Uniform beige to pale brown
Ventral pattern	Immaculate cream	Immaculate reddish orange	Immaculate cream	Immaculate creamy white	Cream on chin, grading to salmon pink to orange	Immaculate cream

Character	*T. impensa*	*T. johnsoni*	*T. moesta*	*T. nigriceps*	*T. oaxacae*	*T. planiceps*
Sample size (male/female)	6/10	2/-	10/5	13/11	5/2	39/28
Total length (in mm)	310–642	337	155–592	154–384	217–284	143–386
Tail length (in mm)	75–142	76	31–107	25–63	46–58	27–91
Tail length/total length ratio	0.211–0.249	0.225	0.181–0.225	0.135–0.401*	0.199–0.212	0.181–0.268
Ventrals in males	162–165 (163.8)	146–159 (152.5)	138–151 (146.2)	123–153	151–158 (153.2)	134–184 (168.3)
Ventrals in females	164–172 (168.1)	—	150–152 (151.3)	135–168	145	148–197 (178.0)
Subcaudals in males	68–72 (70.8)	62	53–62 (57.6)	43–66	46–52 (48.3)	57–73 (65.7)
Subcaudals in females	65–72 (69.5)	—	52–57 (54.4)	33–58	45–48 (46.5)	49–70 (61.1)
Ventrals + subcaudals in males	233–237 (235.8)	221	192–210 (203.3)	192–206*	199–205 (201.8)	194–257 (235.5)
Ventrals + subcaudals in females	234–241 (237.5)	—	203–207 (205.0)	176–208*	193	197–260 (240.1)
Postnasal in contact with preocular	Yes	Yes	Usually	Sometimes	Yes or no	Usually
Number of postoculars	2	2	Usually 2	Usually 2	2	2
Number of supralabials (number entering orbit)	7 (3+4)	7 (3+4)	7 (3+4)	7 (3+4)	7 (3+4)	7 (3+4)
First pair of infralabials separated	Yes	No	Yes	No	No	Usually
Head pattern	Pale brown head cap followed by complete or middorsally-divided pale nuchal band about 1½ scales long	Dark brown head cap with complete pale nuchal collar followed by very dark brown nape band about 2½–3 scales long	Dark brown to black with long pale nuchal band	Black head cap with convex or pointed posterior border extends2–5 scales beyond parietals	Brown head cap bounded posteriorly by complete or middorsally-divided pale nuchal collar that does not cross last supralabial	Brown to black head cap with straight or convex posterior border extends 2–3 scales beyond parietals, followed by pale neck band ½–1 scales long, that often is bounded by several distinct brown spots
Dorsal body pattern	Pale brown dorsolateral coloration crossed by pale middorsal stripe on medial 2/3 of middorsal row, separated from dark gray-brown ventrolateral coloration by pale lateral stripe on adjacent halves of rows 3 and 4	Tan to dark tan with both pale middorsal stripe and pale lateral stripe absent, or short pale lateral stripe present on adjacent halves of rows 3 and 4 on anterior portion of trunk	Uniform dark brown to black	Uniform yellowish brown to brownish gray	Brown with pale middorsal stripe on middorsal row and adjacent halves of paravertebral rows, and pale lateral stripe on row 4 and adjacent halves of rows 3 and 5, bounded below by dark stripe on adjacent halves of rows 2 and 3	Uniform beige to pale brown
Ventral pattern	Immaculate cream	Immaculate cream	Uniform dark brown to black	White with broad midventral pink to pale orange area	Cream	Immaculate cream

Character	*T. robusta*	*T. rubra*	*T. schistosa*	*T. sertula*	*T. shawi*	*T. slavensi*
Sample size (male/female)	-/1	27/28	24/24	-/1	1/2	-/2
Total length (in mm)	426+	112–594	99–316	99	362–690	285–346
Tail length (in mm)	31+	23–130	15–67	12	69–117	69–70
Tail length/total length ratio	—	0.185–0.270	0.128–0.212	0.121	0.170–0.191	0.199–0.246
Ventrals in males	—	144–174 (154.4)	119–145 (133.4)	—	166	—
Ventrals in females	153	146–174 (158.2)	117–147 (135.9)	161	184–189 (186.5)	158–159 (158.5)
Subcaudals in males	—	43–81 (64.4)	32–44 (37.0)	—	48	—
Subcaudals in females	13+	48–74 (62.1)	24–41 (34.0)	30	48–50 (49.0)	52–56 (54.0)
Ventrals + subcaudals in males	—	194–241 (219.0)	155–185 (170.2)	—	214	—
Ventrals + subcaudals in females	—	196–242 (220.3)	151–180 (169.9)	191	234–237 (235.5)	210–215 (212.5)
Postnasal in contact with preocular	No	Usually	Yes	Yes	No	No
Number of postoculars	2	2	Usually 2	2	2	2
Number of supralabials (number entering orbit)	7 (3+4)	7 (3+4)	7 (3+4)	7 (3+4)	7 (3+4)	7 (3+4)
First pair of infralabials separated	No	Usually	Yes	Yes	No	No
Head pattern	Dark brown head cap bounded posteriorly by complete pale nuchal collar that crosses last supralabial	Black head cap with white nuchal collar about ½–3½ scales long, followed by black nape band about ½–5½ scales long	Usually same color as dorsum of body	Spatulate dark anterior extension of middorsal dark stripe flanked by pale narrow irregular longitudinal markings separated from pale postparietal spots	Black head cap with pale snout band and bounded posteriorly by short pale nuchal band	Dark brown head cap separated from dark brown nape band by medially-divided pale nuchal band
Dorsal body pattern	Uniform dark brown	Uniform reddish-tan, reddish brown, pale coral red, or bright coral red	Usually uniform pale or dark brown	Pale brown with dark middorsal stripe on middle of middorsal scale row; dark lateral stripe absent	Bluish black to black dorsum traversed on anterior $^{1}/_{3}$ to $^{2}/_{3}$ by short bands that usually are divided middorsally and longitudinally offset	Pale brown with pale middorsal stripe confined to middorsal scale row, which becomes obscured posteriorly, and pale lateral stripe on adjacent thirds of rows 3 and 4
Ventral pattern	Immaculate cream	Immaculate pink to pinkish red	Immaculate cream to salmon red	Immaculate cream	Pale pink with dark gray spot at lateral apex of each ventral	Immaculate orange

Character	*T. striata*	*T. tayrae*	*T. triseriata*	*T. vulcani*	*T. wilcoxi*	*T. yaquia*
Sample size (male/female)	17/9	5/4	-/3	16/14	15/5	17/22
Total length (in mm)	93–217	140–360	173–375	111–247	129–364	93–325
Tail length (in mm)	13–35	26–68	35–74	18–50	27–101	18–74
Tail length/total length ratio	0.130–0.170	0.185–0.203	0.197–0.222	0.154–0.220	0.209–0.277	0.172–0.285
Ventrals in males	146–161 (155.4)	140–144 (142.2)	—	136–146 (141.8)	135–160 (151.4)	134–157 (146.2)
Ventrals in females	145–163 (153.8)	146–154 (149.0)	159–167 (163.3)	141–154 (149.7)	144–161 (154.6)	145–165 (152.6)
Subcaudals in males	33–42 (37.1)	46–49 (47.2)	—	39–50 (46.4)	49–71 (62.5)	50–73 (59.8)
Subcaudals in females	31–34 (33.1)	44–51 (47.3)	58–63 (61.0)	38–47 (41.9)	55–63 (58.3)	46–75 (61.6)
Ventrals + subcaudals in males	182–201 (192.0)	186–193 (189.4)	—	175–195 (188.2)	199–222 (212.1)	186–230 (205.9)
Ventrals + subcaudals in females	178–197 (187.1)	190–201 (196.3)	221–227 (224.3)	186–199 (192.1)	201–219 (212.5)	194–233 (214.0)
Postnasal in contact with preocular	Yes	Yes	Yes or no	Usually	Yes or no	Yes or no
Number of postoculars	2	2	2	2	Usually 2	2
Number of supralabials (number entering orbit)	7 (3+4)	7 (3+4)	7 (3+4)	7 (3+4)	7 (3+4)	7 (3+4)
First pair of infralabials separated	Yes	Yes or no	Yes or no	Usually not	Yes or no	Usually not
Head pattern	Brown to dark brown head cap followed by two pale postparietal spots	Brown to dark brown with narrow, poorly-developed, pale nuchal collar confined to scales posterior to parietals	Dark head cap with complete pale nuchal band	Brown with cream snout marking and usually complete pale nuchal collar	Dark brown to black head cap extends posteriorly to or near posterior tips of parietals and ventrolaterally to or below angle of mouth, followed by narrow dark nape band ½–1½ scales long	Brown to black head cap with straight posterior border that extends 2–4 scales beyond parietals, followed by pale neck band ½–1½ scales long that often is bordered by several distinct brown spots
Dorsal body pattern	Tan to brown with pale middorsal stripe on middorsal row and adjacent halves of paravertebral rows, and pale lateral stripe on adjacent halves of rows 3 and 4	Dark brown with pale middorsal stripe barely evident or absent, and pale lateral stripe absent or barely evident on adjacent halves of rows 3 and 4	Dark brown with pale middorsal stripe on middorsal scale row on anterior 1/3 of body, which expands posteriorly onto adjacent portions of paravertebral rows	Brown with pale middorsal stripe confined to middorsal row, and pale lateral stripe on adjacent halves of rows 3 and 4; rows 5–7 with diffuse dark median stripe	Uniform pale to dark brown, gray, or olive green	Uniform beige to pale brown
Ventral pattern	Immaculate cream	Cream anteriorly, grading to pinkish orange posteriorly	Immaculate pale yellow	Immaculate cream	Immaculate white to rose red	Immaculate cream

The *calamarina* group currently consists of seven species (*T. calamarina*, *T. cascadae*, *T. ceboruca*, *T. coronadoi*, *T. deppei*, *T. sertula*, and *T. vermiformis*), of which the distribution of all but *T. vermiformis* is restricted to Mexico (Wilson and Meyer, 1981; Wilson et al., 1999; Wilson and Campbell, 2000; Canseco-Márquez et al., 2007).

The *coronata* group contains three species (*T. coronata*, *T. oolitica*, and *T. relicta*), and all are extralimital to Mexico (Telford, 1966). Their distribution is in the eastern United States, east of the Mississippi River (Conant and Collins, 1998).

The *melanocephala* group consists of 10 species (*T. andinista*, *T. armillata*, *T. boipiranga*, *T. capistrata*, *T. insulamontana*, *T. lempira*, *T. marcovani*, *T. melanocephala*, *T. miyatai*, and *T. ruficeps*) with a distribution outside of Mexico (Wilson and Mena, 1980; Wilson, 1987a; Savage, 2002; Sawaya and Sazima, 2003; Lema, 2004; Greenbaum et al., 2004). They occur from Guatemala southward to southern South America, with three species (*T. armillata*, *T. lempira*, and *T. ruficeps*) endemic to Central America and seven to South America.

The *planiceps* group contains seven species (*T. atriceps*, *T. gracilis*, *T. hobartsmithi*, *T. nigriceps*, *T. planiceps*, *T. wilcoxi*, and *T. yaquia*) with a portion of their range in northern Mexico (Cole and Hardy, 1981). The other portion of their distribution is in the United States, essentially west of the Mississippi River (*T. gracilis* also is found on the eastern side of this river in southwestern Illinois; Conant and Collins, 1998).

The *taeniata* group, with 21 species, is the largest phenetic group (Townsend et al., 2013), and its distribution is in Mexico, Central America, and northwestern South America (Wilson and Meyer, 1971; Wilson, 1982a, 1987a; Townsend et al., 2013). Eleven species (*T. briggsi*, *T. cuniculator*, *T. flavilineata*, *T. impensa*, *T. johnsoni*, *T. oaxacae*, *T. slavensi*, *T. striata*, *T. tayrae*, *T. triseriata*, and *T. vulcani*) are found in Mexico, with seven endemic to southern Mexico and the remaining four (*T. cuniculator*, *T. impensa*, *T. moesta*, and *T. vulcani*) occurring in southern Mexico and northern Central America. The distribution of eight of the remaining 10 members (*T. brevicauda*, *T. hendersoni*, *T. jani*, *T. olympia*, *T. psittaca*, *T. taeniata*, *T. tecta*, and *T. tritaeniata*) is limited to Central America. Although *T. reticulata* is found in Central America, it also inhabits northwestern Colombia (Wilson, 1982a). Wilson (1999) provisionally allocated *T. trilineata* to the *taeniata* group, as this species is known only from the holotype, which is listed from an imprecise and probably incorrect type locality ("Brazil").

Currently, 48 of the 62 species of *Tantilla* have been assigned to one of the five phenetic groups, leaving 14 species unallocated. Three of these species (*T. bocourti*, *T. cucullata*, and *T. rubra*) might be placed in the *rubra* group, as they resemble one another in color pattern because a dark head cap is followed by a pale nuchal band and a dark neck band (*T. cucullata*, however, exists in two phases, and only one fits this description; the other is characterized by the presence of an entirely black head and nape). The coloration of the remainder of the dorsum is some shade of tan to coral red (McDiarmid and Folke, 1991; Dixon et al., 2000), and the venter is immaculate white to cream. These three species are moderately large (*T. bocourti* with a recorded maximum total length of 396 mm; [McDiarmid and Folke, 1991]) or very large (*T. cucullata*, 678 mm [Dixon et al., 2000]; *T. rubra*, 659 mm [Farr et al., 2007]). Their segmental counts are similar to one another (Wilson et al., 2000, this paper [Table 1]). The range in ventrals is as follows (males, females): *T. bocourti* (164–182, 168–195); *T. cucullata* (164–180, 160–180); and *T. rubra* (144–174, 146–174). The range in subcaudals is: *T. bocourti* (39–61, 38–63); *T. cucullata* (63–81, 68–83); and *T. rubra* (43–81, 48–74). Finally, ventral plus subcaudal ranges are: *T. bocourti* (210–241, 206–248); *T. cucullata* (233–260, 236–263); and *T. rubra* (194–241, 196–242). All these values are near the upper end of variation for the genus. Finally, the distribution of these three species is limited largely to the mountainous regions to the west (*T. bocourti*) and the east (*T. rubra*) of the Mexican Plateau in Mexico, and in the United States the region of Texas in the vicinity of the Pecos River and on westward into the Trans-Pecos area (*T. cucullata*), even though *T. bocourti* and *T. rubra* have been recorded at elevations near sea level. The ranges of *T. bocourti* and *T. rubra* largely are dichopatric, but they overlap somewhat in the southern portions of their respective ranges (see maps in McDiarmid and Folke, 1991, and Wilson et al., 2000).

Little molecular work is available for members of this genus, and most of what has been reported appeared in an unpublished doctoral dissertation (Holm, 2008) that primarily dealt with the systematics of the burrowing snake genus *Chilomeniscus*. Holm placed this genus in the tribe Sonorini within the subfamily Colubrinae of the family Colubridae, and indicated it to be part of a clade with *Chionactis* and *Sonora*, with the three genera forming a morphocline of increasing fossorial specialization (from *Sonora* to *Chionactis* to *Chilomeniscus*). He placed the *Sonora* clade in the Sonorini along with two others, the *Ficimia* and *Tantilla* clades, and hypothesized the *Ficimia*

clade to be the sister of the *Sonora* clade, with the former including the genera *Conopsis*, *Ficimia*, *Gyalopion*, *Pseudoficimia*, *Stenorrhina*, and *Sympholis*. Holm envisioned the *Tantilla* clade to be the sister of the *Sonora* + *Ficimia* clade and to contain the genera *Geagras*, *Scolecophis*, *Tantilla*, and *Tantillita*. Importantly, Holm (2008: 9) hypothesized that "the putative genera *Geagras* and *Tantillita* are nested within the *Tantilla calamarina* and *T. taeniata* species groups, respectively." Holm's hypothesis concerning the relationships of *Geagras redimitus* is consistent with the opinion expressed by Wilson and Meyer (1981: 22), who stated that "it is of interest to note that *T. calamarina* appears to be the species of *Tantilla* most highly specialized for a fossorial existence and *Geagras redimitus* appears to be another step in a morphocline of increased fossorial adaptation. In addition to the departures made by *T. calamarina*, *Geagras* has a more attenuate head, smaller eye and lower number of supralabials." These features are evident when comparing figures 3 and 8 in Wilson and Meyer (1981). Although it is clear from Holm's (2008: fig. 4) phylogenetic hypothesis that *Geagras* is nested within the *Tantilla calamarina* group and a sister species of *T. calamarina*, the conclusions are in an unpublished dissertation. For Holm's conclusions to be formalized his dissertation needs to be published, or someone should duplicate his work and place *Geagras* in the synonymy of *Tantilla*. Thus, we chose not to include *G. redimitus* in this treatment. We take the same position with regard to *Tantillita*, even though the distribution of all three species generally considered to comprise this genus extends into Mexico (Köhler, 2008).

SPECIES ACCOUNTS

Tantilla atriceps (Günther)

Mexican Black-headed Snake

Homalocranium atriceps Günther, 1895: 146.

Tantilla atriceps: Amaral, "1929" (1930): 219; Cole and Hardy, 1981: 217, 1983a: 317.1; Flores-Villela, 1993: 33, 64; Campbell et al., 1995: 122; Contreras-Arquieta and Lazcano-Villareal, 1995: 61; Liner, 1996b: 170; Roze, 1996: 180; Wilson, 1999: 5; Hernández-Ibarra and Ramírez-Bautista, 2006: 62, 72; Mendoza-Quijano et al., 2006: 40; Lemos-Espinal and Smith, 2007b: 353, 531, 548; Liner, 2007: 44; Lemos-Espinal and Smith, 2009: 11; Lavín-Murcio and Lazcano, 2010: 292; Wilson and Johnson, 2010: 134; Lemos-Espinal and Dixon, 2013: 223, 290, 299; Narváez-Torres and Lazcano-Villarreal, 2013: 211; Ramírez-Bautista et al., 2013: 87; Wilson et al., 2013: 41; Ochoa-Ochoa et al., 2014: table S3.

Tantilla planiceps atriceps: Tanner, 1966: 135.

Syntypes: British Museum of Natural History (BMNH) 1946.1.8.81–82 (original numbers 89.7.3.36–37, respectively), both males, obtained in 1889 from W. Taylor.

Type-locality: "Nuevo León, México."

Definition: (Table 1). A brown to black head cap extends posteriorly 1–2 scales beyond the parietals, does not extend ventrolaterally below the angle of the mouth, usually is convex or straight posteriorly, and is followed by a pale (white or cream) nuchal collar one scale long. A dark nape band and dark spots along the posterior edge of the pale nuchal collar are absent. The body is beige to pale brown. The venter is immaculate. The ventrals and subcaudals in males range from 123 to 140 and 45 to 66, respectively. The hemipenis is not capitate.

Description: (Fig. 1). A brown to black head cap does not extend ventrolaterally below the oral rictus, but continues 1–2 scales beyond the posterior end of the interparietal suture. The posterior edge of the head cap usually is convex or straight, followed by a white or cream neck band one scale long. A dark band or dark spots along the posterior edge of the neck band are absent. The body is uniform beige to pale brown. The venter is immaculate cream. The variation in scutellation is as follows: the postnasal and a single preocular are in contact or separated by contact of the prefrontal and a second supralabial; the supralabials are 7, with the 3rd and 4th entering the orbit; the infralabials are 6, with the first four in contact with the anterior chinshields, the 4th is the largest, the first pair usually is in medial contact, but sometimes is separated by the contact of the mental and the anterior chinshields; the postoculars are 1 or 2 (usually 1); the temporals are 1+1; the dorsal scale rows are 15 throughout; the ventrals in males are 123–140 (129.2); the cloacal scute is divided; the subcaudals in males are 45–66 (57.4); and the ventrals

+ subcaudals in males are 179–194 (186.1). The specimens measured 168–230 mm in total length and 44–59 mm in tail length, with a relative tail length of 0.204–0.306.

Distribution: Low, moderate, and intermediate elevations in southeastern Chihuahua, Coahuila, northwestern and southern Nuevo León, western San Luis Potosí, southern Durango, and northeastern Zacatecas, Mexico, with apparently disjunct populations in Tamaulipas, Mexico, and southern Texas, United States (Fig. 2).

Ecological observations: Data associated with USNM 257936 indicates that it was collected from "under [a] railroad tie." Lemos-Espinal and Smith (2007b: 353) reported this species as "characteristic of the Chihuahuan Desert, but isolated populations occur in the forested mountains of Tamaulipas and the brushy flats of southern Texas." They also indicated it to be "a secretive species, rarely seen in the open in the daytime, and usually found hidden under rocks, logs or other surface litter, especially in somewhat humid areas in the midst of otherwise arid conditions."

Remarks: Cole and Hardy (1981) regarded *T. atriceps* as a member of the *planiceps* group, and demonstrated that *T. atriceps* and *T. hobartsmithi* are sibling species that differ strikingly from one another in the morphology of the hemipenes. The organ of *T. atriceps* is not capitate, whereas that of *T. hobartsmithi* is distinctly so. As a consequence, only males of both taxa with suitably prepared hemipenes can distinguish the species. Two specimens treated by Cole and Hardy (1981: 279) as "*T. atriceps* or *T. hobartsmithi*" came from eastern Durango (RGW 5404 = UTEP 6035) and northeastern Zacatecas (RGW 4980 = UTEP 6036), respectively. UTEP 6035 is from 3 mi (= 4.8 km) SSE Sombreretillo (name now changed to Doce de Diciembre, a town located about 15 mi (= 24.1 km) SE Cuencamé on Hwy. 49). The specimen is a juvenile male (thus, Cole and Hardy, 1981, did not examine its hemipenes) measuring 145 mm in total length and 37 mm in tail length, 1-1 postoculars, the mental and anterior chin shields are in contact, 138 ventrals (not 136, as noted in Table 29 in Cole and Hardy, 1981), and 63 subcaudals. The other specimen (UTEP 6036) is a female from 6 mi (= 9.6 km) N San Tiburcio, 5,800' (= 1,768 m), Zacatecas, measuring 191 mm in total length and 48 mm in tail length, 2-2 postoculars, the mental and anterior chinshields are not in contact, 143 ventrals, and 59 subcaudals. Cole and Hardy (1981) regarded a third specimen (UIMNH 48787) from 25.6 mi (= 41.2 km) S Tlahualilo, Durango, as *T. atriceps*. They examined its hemipenes, but the scale features are those of *T. hobartsmithi* (postoculars 2-2; narrow contact between the mental and the anterior chinshields). It measures 197 + 45 mm, and the ventrals are 143 and the subcaudals 55. Another specimen (UTEP 3707), collected after Cole and Hardy (1981) completed their work, is a female (253 + 65 mm) with 2-2 postoculars, the mental and the anterior chinshields are in contact, 148 ventrals, and 64 subcaudals. It came from 2 mi (= 3.3 km) SSE El Palmito, Durango. Robert G. Webb supplied the senior author with information on these specimens, and considers them *T. atriceps*. He stated (*in litt.*), "one or two postoculars seem to vary as does the mental-chin shield contact." Hemipenial structure, therefore, presently is the only secure means of distinguishing *T. atriceps* from *T. hobartsmithi*. The color notes in life on USNM 257936 are as follows: "head black, dorsum light gray + venter dull white with central rose pink stripe (indistinct borders)." Crother (2000) listed the common name of this species as "Mexican Black-headed Snake," but Lemos-Espinal and Smith (2007b) criticized the name because it was applicable to a number of species of *Tantilla* found in Mexico. Whereas this statement is true, the same can be said of the specific portion of this snake's scientific name, *atriceps* (see etymology below). This situation emphasizes that one of the most important features of a scientific name in zoological nomenclature is that it applies to only one species of animal; in the same sense, a formal vernacular name should apply to only one species. Because the descriptive ability of a common name is of secondary consideration, we maintained the name used for this snake by Crother (2000).

Etymology: The name *atriceps* is derived from the Latin words *ater*, meaning "black," and *caput*, meaning "head," in reference to the black head cap.

Specimens examined (6): MEXICO, Chihuahua, 13.8 mi (= 22.3 km) SE Mesoque (= Meoqui) on Rt. 45 (UNM 9304); Coahuila, 15 mi (= 24.2 km) S Allende (FMNH 47093), 8 mi (= 12.9 km) SW Piedra Blanca, 7,000' (= 2,134 m), Sierra del Carmen (MVZ 58363), 2 mi (= 3.2 km) E, 18 mi (= 29 km) N Ocampo (KU 38200); Durango, 3 mi (= 4.8 km) SSE Sombreretillo, 6,200' (= 1,890 m) (UTEP 6035); San Luis Potosí, 14 mi (= 22.6 km) S Matehuala, 4,950' (= 1,509 m) (KU 67721).

Specimens not examined (39): MEXICO, Chihuahua, No data (MSB 9303, AMNH160361, AMNH 160366), Rancho Ignacio, SW of Rancho Diana (USNM 257936); Coahuila, No data (AMNH 160362, AMNH 160363, AMNH 160365), 129 km N of Saltillo (SDNHM 57014, SDNHM 57237), 10 mi (= 16.0 km) S Saltillo, Mexico Hwy. 57 (LSU 14524), Cuatro Cienegas de

Carranza (CM 42823, CM 53875), 1–3 km E of Cuatro Cienegas (CM 48156–58), 2 mi (= 3.2 km) NW of Nueva Las Delicias on slope above mine (CM 60090); Nuevo León, No data (UTA 17804, FLMNH39626–27), 5.2 mi (= 8.3 km) NE Garcia, 25°51'N, 100°32'W, elev. 9,300' (= 2,835 m) (TCWC 44386), 20 mi (= 32.1 km) W Monterrey (LSU 14523), 7 mi (= 11.2 km) W Doctor Arroyo (KU 318791), 23 mi (= 37.0 km) E of Matehuala (S.L.P.) on road to Doctor Arroyo (CM 60083–84), 22 mi (= 35.4 km) E of Matehuala (S.L.P.) on road to Doctor Arroyo (CM 60085), 14 mi (= 22.5 km) W of Doctor Arroyo (CM 60087–88), 7 mi (= 11.2 km) W Doctor Arroyo (CM 60089); Parque Nacional Cumbres de Monterrey (Narváez-Torres and Lazcano-Villareal (2013); San Luis Potosí, 16 km NW of Tepeyac (Lemos-Espinal and Dixon, 2013), Pozas de Santa Ana (Lemos-Espinal and Dixon, 2013), Nuñez (Lemos-Espinal and Dixon, 2013), El Milagro de Guadalupe (Lemos-Espinal and Dixon, 2013), San Luis Potosí (Lemos-Espinal and Dixon, 2013); Tamaulipas, 2.6 mi (= 4.1 km) WNW San Carlos, 1,600' (= 488 m) (TCWC 48205–07), 0.2 mi (= 0.3 km) WNW of San Carlos, San Carlos Mts. (TCWC49939); Zacatecas, Mpio. Mazapil (prob.) 6 mi (= 9.6 km) N San Tiburcio, 5,800' (= 1,768 m) (UTEP 6036).

***Tantilla bocourti* (Günther)**

Bocourt's Black-headed Snake

Homalocranion coronatum (*nec* Baird and Girard): Bocourt, 1883: 589.

Homalocranium melanocephalum var. *bocourti* Günther, 1895: 148.

Homalocranium bocourti Günther, 1895: 149; Boulenger, 1896: 224; Gadow, 1905: 231, 1911: 17; Phisalix, 1922: 322; Werner, 1925: 147.

Tantilla bocourti: Cope, 1896: 1021, 1900: 1229; Dugès, 1896: 481; Dunn, 1928: 2; Amaral, "1929" (1930): 219; Taylor, "1936" (1937): 336, "1939" (1940): 481; Taylor and Smith, 1939: 254; Smith, 1941: 115, 1942: 34, 1943: 474; Hartweg, 1944: 7; Smith and Taylor, 1945: 136, 1950: 330; Martín del Campo, 1955: 67; Davis and Dixon, 1959: 87; Duellman, 1961: 110, 1965b: 655, 681, 683, 684; Dixon et al., 1962: 96; Webb and Baker, 1962: 330; McDiarmid et al., 1976: 3; McCranie, 1977: 275; Wilson and McCranie, 1979: 277; McCranie and Wilson, 1984: 22, 1987: 15, 19, 24; McDiarmid and Folke, 1991: 526.1; Pérez-Higareda and Smith, 1991: 44; McDiarmid, 1992: 303; Flores-Villela, 1993: 33; Flores-Villela and Muñoz Alonso, 1993: 415, 416, 421; Castro-Franco and Bustos-Zagal, 1994: 173; Eliosa-León and Yañes-Gómez, 1994: 31; Flores-Villela and Gerez, 1994: 321, 372; García and Ceballos, 1994: 156; Campbell et al., 1995: 122; Ramírez-Bautista, 1994: 84; 1995: 122; Liner, 1996c: 11; Benítez-Gálvez, 1997: 65; Vázquez-Díaz and Quintero-Díaz, 1997: 110; Wilson, 1999: 5; McCranie and Wilson, 2001: 30; Canseco-Márquez and Gutiérrez-Mayén, 2006a: 60; González-Hernández and Garza-Castro, 2006: 151; Ramírez-Bautista and Moreno, 2006:95; Canseco-Márquez et al., 2007: 223; Liner, 2007: 44; Enderson et al., 2009: 666; Canseco-Márquez and Gutiérrez-Mayén, 2010: 236, 237; Dixon and Lemos-Espinal, 2010: 276, 417, 427; Ramírez-Bautista et al., 2010: 74; Flores-Villela et al., 2010: 312, 320; Lavín-Murcio and Lazcano, 2010: 280, 282, 292; Wilson and Johnson, 2010: 134; Medina-Aguilar et al., 2011: 1202; Santiago-Pérez et al., 2012: Alvarado-Díaz et al., 2013: 152; Lemos-Espinal and Dixon, 2013: 224, 180, 181; 290, 299; García-Padilla and Mata-Silva, 2013: 630; Hernández-Salinas et al., 2013: 104; Ramírez-Bautista et al., 2013: 80, 87; Wilson et al., 2013: 41; Ochoa-Ochoa et al., 2014: table S3.

Homalocranion bocourti: Stejneger, 1902: 157.

Tantilla bocourti bocourti: Smith and Laufe, 1945: 348; Smith, 1947: 412; Beltrán, 1953: 124; Davis and Smith, 1953: 137; Clark, 1970: 130; Ramírez-Bautista, 1994: 84; Aguilar et al., 1997: 13, 44.

Lectotype: British Museum of Natural History (BMNH) 1946.1.8.70 (formerly BMNH 94.10.2.1), obtained from Muséum National d'Histoire Naturelle, Paris (formerly MNHN 3694), adult male, collected by Dr. Alfredo Dugés, date of collection unknown (see *Remarks*).

Type-locality: "Guanajuato, Mexico," restricted to city of Guanajuato by Smith and Taylor (1950), herein accepted.

Definition: (Table 1). A dark brown to very dark brown head cap usually is followed by a complete pale (cream) nuchal collar, which generally crosses the tips of the parietals. The nuchal collar is bounded posteriorly by a dark brown to black nape band about ½–2 scales long, which usually is distinct from the dorsal ground color. The posterior temporal is about as long as broad. The body is tan to dark brown. The ventrals and subcaudals range from 160 to 195 and 38 to 63, respectively.

Description: (Fig. 3). The dorsal coloration of the head is dark to very dark brown, with varying amounts of pale markings usually present on the internasals and prefrontals and sometimes on the anterior portion of the

supraoculars and parietals. In some cases, the dark head cap is blotched heavily with the pale color. Poorly defined pre- and postocular pale spots extend below the eye, inasmuch as the dark subocular blotch does not reach the lip and generally only rims the ventral portion of the eye. The pale nuchal collar is complete (although sometimes narrow at the dorsal median), and is about 1–2 middorsal scales long. The collar usually begins on the posterior tips of the parietals, or just posteriorly, and extends laterally to grade into the pale gular coloration; it also crosses the posterior portion of the ultimate supralabial. The nuchal collar is bounded posteriorly by a dark nape band about 1–2 scales long, which is not sharply delimited and can grade into the dorsal part of the body, which is uniform tan, pale reddish brown, or brown. The chin and venter are cream, and this color grades with the dorsal coloration. The variation in scutellation is as follows: the postnasal and the single preocular usually are in contact, but can be separated by contact of the prefrontal and the 2nd supralabial; the supralabials are 7, with the 3rd and 4th entering the orbit (the supralabials are 6-6 in one specimen, with the 2nd and 3rd entering the orbit); the infralabials are 6, with the first four in contact with the anterior chinshields, the 4th is the largest (5 infralabials are present on one side), the 1st pair usually are in medial contact, but sometimes are separated by contact of the mental and the anterior chinshields (in contact in 33 of 40 specimens [82.5%]); the postoculars usually are 2 (1-2 in 3 of 40 specimens); the temporals usually are 1+1 (infrequently, the anterior or posterior temporal is divided vertically into two scales); the dorsal scale rows are 15 throughout; the ventrals in males are 164–182 ($\bar{x}$ = 173.9), and in females 168–195 ($\bar{x}$ = 178.8); the cloacal scute is divided; the subcaudals in males are 39–61 ($\bar{x}$ = 54.1), and in females 38–63 ($\bar{x}$ = 52.1); and the ventrals + subcaudals in males are 210–241 ($\bar{x}$ = 227.6), and in females 206–248 ($\bar{x}$ = 231.6). The specimens measured 123–358 mm in total length and 19–77 mm in tail length (McDiarmid and Folke [1991] reported the maximum total length as 396 mm), with a relative tail length of 0.160–0.225.

Distribution: Low to marginally high elevations of the Pacific versant from northeastern Sinaloa and western Zacatecas, through Jalisco, Colima, Michoacán, Guerrero, and Oaxaca, as well as southeastward to Guanajuato through Puebla, Mexico (including the Tres Marías Islands [= Las Islas Marías]); also on the Atlantic versant in southeastern Coahuila, San Luis Potosí, Hidalgo, Puebla, and central Veracruz, Mexico (Fig. 4).

Geographic variation: McDiarmid and Folke (1991: 526.3) noted, "Taylor and Smith (1938) discerned a slight increase from east to west in ventral plus subcaudal counts, and commented that specimens from near Cuernavaca were usually darker than specimens from Tehuacan, Puebla." They further indicated (p. 526.3) that, "Later Smith (1942) argued that considerable overlap existed between the eastern and western populations." The data the senior author accumulated on ventrals, subcaudals, and ventrals + subcaudals indicate no discernible trends in their variation (Table 2).

Fig. 1. Adult *Tantilla atriceps* from Aramberri, Nuevo León, Mexico. EVS 11 (medium vulnerability species). © Timothy Burkhardt

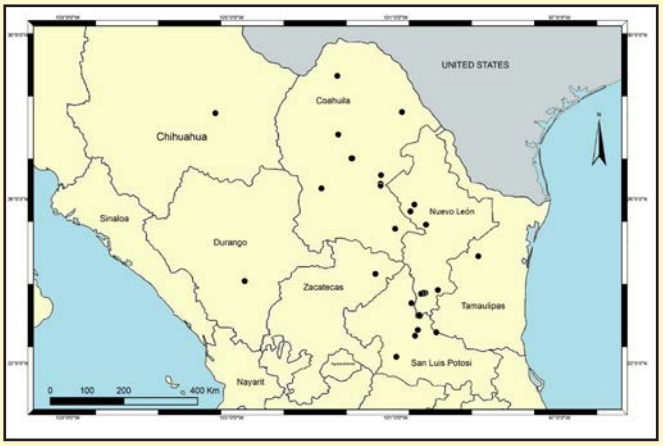

Fig. 2. Distribution map of the reported localities for *Tantilla atriceps*.

Fig. 3. Adult *Tantilla bocourti* from 13 km NW Valparaiso, Zacatecas, Mexico. EVS 9 (low vulnerability species). © Ed Cassano

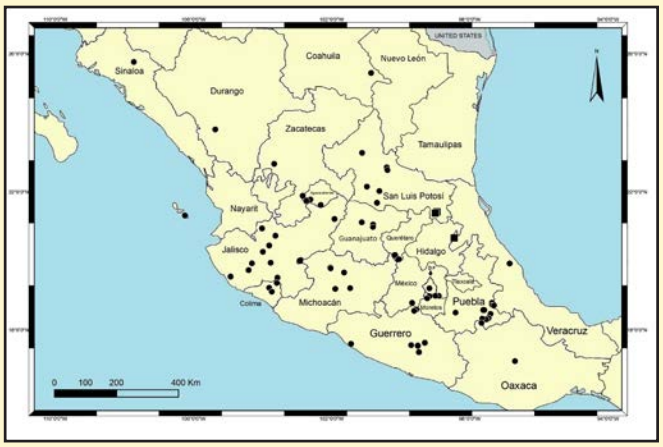

Fig. 4. Distribution map of the reported localities for *Tantilla bocourti* (circles) and *T. shawi* (squares).

Table 2. Data on variation in ventrals, subcaudals, and ventrals plus subcaudals for *Tantilla bocourti*.

State	Ventrals		Subcaudals		Ventrals + Subcaudals	
	Males	Females	Males	Females	Males	Females
Sinaloa	—	179	—	59	—	238
Durango	—	195	—	53	—	248
Zacatecas	182	—	59	—	241	—
Aguascalientes	179	173–177 (175.0)	—	54–63 (58.5)	—	231–236 (233.5)
Guanajuato	174	181	56	52	230	233
Michoacán	—	174–180 (177.0)	—	51–52 (51.5)	—	226–231 (228.5)
Querétaro	175	—	48	—	223	—
Jalisco	169–176 (172.5)	168–184 (175.2)	57–58 (57.5)	38–58 (50.3)	226–234 (230.0)	206–237 (223.3)
Colima	171–177 (174.0)	—	39	—	210	—
Hidalgo	—	—	—	—	—	—
México	—	189	—	54	—	243
Guerrero	176	180–188 (183.8)	60	49–52 (50.8)	236	230–240 (234.5)
Morelos	174–181 (176.0)	—	44–61 (51.3)	—	218–235 (227.3)	—
Puebla	164–172 (168.3)	179	56–61 (58.3)	52	220–233 (226.0)	231
Nayarit	—	171–173 (172.0)	—	45	—	216–218 (217.0)
Oaxaca	—	173	—	55	—	228
Veracruz	—	—	—	—	—	—

Ecological observations: Taylor ("1939" [1940]: 481) reported 11 specimens of this species from "a hillside between Zitácuaro and the Rio Tuxpan in Eastern Michoacán." Davis and Dixon (1959) registered *T. bocourti* from pine-oak forest and tropical deciduous forest in central Guerrero. Duellman (1961: 110) noted this species to be "an inhabitant of the coniferous forests and the pine-oak forests on the Cordillera Volcánica." McDiarmid et al. (1976: 3) recorded the first (and only known) specimen of this taxon from Las Islas Marías (from Isla María Cleofas). The specimen came from "leaf litter along a dry stream bed" and was collected on 29 March 1964. McCranie (1977: 275) reported a specimen of *T. bocourti* from "under a log in the Upper Sonoran Zone of Goldman." Castro-Franco and Bustos-Zagal (1994) listed *T. bocourti* as an inhabitant of pine-oak forest in Morelos. Eliosa-León and

Yañes-Gómez (1994) reported *T. bocourti* from dry forest (*matorral xerófilo*) in Puebla. Benítez-Gálvez (1997) noted that in Puebla *T. bocourti* feeds on centipedes, insect larvae, and spiders, produces 6–7 eggs, and lives underground in pine-oak forests and *cardonales*. Vásquez-Díaz and Quintero-Díaz (1997) indicated that in Aguascalientes *T. bocourti* feeds on small insects, is diurnal, produces up to seven eggs, and lives principally underground or beneath leaf litter in wooded, mountainous regions, as well as in pastures. A specimen of *T. bocourti* (USNM 304282) was found under a rock below a manzanilla bush, and another (USNM 346650) beneath a rock. A third (USNM 346651) was collected from under a rock along a rock wall passing through a grove of oaks. McCranie and Wilson (2001) reported all these specimens from the state of Aguascalientes. Canseco-Márquez and Gutiérrez-Mayén (2010) indicated that this species is rare in the Tehuacán Valley, where it occurs in xerophytic scrub at elevations from 1,500 to 1,992 m. They noted it to be fossorial and nocturnal and during the day can be found within barrel cacti or beneath rocks, that its diet consists of insects, principally scarabid beetles, and that it is oviparous. Dixon and Lemos-Espinal (2010: 276; 2013: 224) provided some generalized information on this species in their books on the herpetofauna of Querétaro and San Luis Potosí. With regard to habitat they noted the following: "This species is fossorial, and may be found under stones, rotten logs, and other types of debris left by humans. [It] is usually found as high as 2750 m in pine-oak forest, or in open, abandoned cultivated fields." On behavior, they stated the following: "The behavior is to writhe and defecate when molested. It has no other defense because of its small size. Little is known of its breeding behavior. The genus is known for its small clutch size, usually one, two or three eggs. In Mexico, it lives in more of a temperate climate, and the breeding, egg laying, and incubation are probably very similar to those in the United States." Referring to diet, they noted the following: "In Mexico, most species of this genus probably consume similar prey items, which include spiders, centipedes, and millipedes."

Remarks: For almost half a century, the taxon described as *Tantilla deviatrix* by Barbour (1916) was regarded as a subspecies of the wide-ranging *T. bocourti*. Smith and Laufe (1945) recognized it as such based on a specimen (TCWC 700) they considered intermediate between *T. bocourti* and *T. deviatrix*, both in structural features and geographic locality. This decision perhaps was strengthened by the data provided by Hartweg (1944) on a specimen (UMMZ 56492) from an unspecified locality in the state of Puebla, which he thought represented an intergrade between the two. Hartweg stated (1944: 8) that these data "probably [indicate] subspecific ranking for *T. bocourti* and for *T. deviatrix*." Clark (1970) reported, however, that two oviducts are present in *Tantilla bocourti*, but only one in *T. deviatrix*. As noted by McDiarmid (1992), Clark argued that this difference justified a specific (rather than a subspecific) ranking. McDiarmid (1992) reevaluated this problem and examined all the pertinent material, and concluded that the holotype of *Tantilla deviatrix* Barbour (MCZ 6195) actually is a specimen of *Tantilla wilcoxi* Stejneger. After *T. deviatrix* was described, three other specimens were associated with this name. Smith (1942) considered *deviatrix* a distinct species, basing his decision on the original description and information secured from another specimen (MCZ 25005) from Álvarez, San Luis Potosí. McDiarmid (1992), however, demonstrated it to be a specimen of *Tantilla rubra* Cope. The specimen (MCZ 25005) reported by Hartweg (1944) and used by Smith and Laufe (1945) to support the recognition of *deviatrix* as a subspecies of *T. bocourti* was judged by McDiarmid (1992) to represent typical *bocourti*. McDiarmid (1992) identified the third specimen (TCWC 700), which also was used by Smith and Laufe (1945) to support the trivialization of the name *deviatrix* and by Clark (1970) as representative of the same taxon, as *Tantilla rubra* Cope. In summary, McDiarmid (1992) demonstrated that the holotype of *Tantilla deviatrix* Barbour is a specimen of *Tantilla wilcoxi* Stejneger, and based on that discovery he placed the former name in the synonymy of the latter. McDiarmid allocated two of the other confounding specimens to *T. rubra* and the third to *T. bocourti*, and thus resolved a troubling problem in the systematics of Mexican *Tantilla*. McDiarmid and Folke (1991) summarized these conclusions. McDiarmid and Folke (1991) also indicated that the initial reference to this taxon by Bocourt (1883), as *Homalocranion coronatum*, was based on two specimens in the Paris Museum from Guanajuato, Mexico, which formerly were catalogued together as MNHN 3694. One of these specimens was sent to another museum in 1894, and McDiarmid and Folke's (1991) analysis indicates that it was sent to the British Museum (now BMNH 1946.1.8.70). After McDiarmid and Folke (1991) examined the specimen at the Paris Museum (MNHN 3694) and compared it to the information in Bocourt (1883), Günther (1895), and Boulenger (1896), they concluded that this specimen is the lectoparatype of *T. bocourti*.

Etymology: The name *bocourti* is a patronym honoring French zoologist and artist Marie Firmin Bocourt (1819–1904), one of the authors of the influential work *Mission scientifique au Mexique et dans l'Amérique Centrale*.

Specimens examined (41): MEXICO, Aguascalientes, Mesa La Canoa, 2,350 m (USNM 346651), 4 km S Cienega, Sierra de Laurel, 2,450 m (USNM 304282), 2.5 mi (= 4.0 km) W Cienega, 2,580 m (USNM 346650); Colima, 3.5 mi (= 5.6 km) SW Colima (LACM 37333), 9.3 mi (= 14.9 km) S Colima (LACM 75135); Durango, 2 mi (= 3.2 km) N Pueblo Nuevo, 6,600' (= 2,012 m) (MSUM H-4174); Guanajuato, no other data (BMNH 1946.1.8.70), no other data (CAS 4406), Taboada, 6 mi (= 9.6 km) NW San Miguel de Allende, 6,300' (= 1,921 m) (FMNH 70761); Guerrero, 14 mi (= 22.4 km) S Ixtapan, Mirador, 5,100' (= 1,555 m) (KU 67722), Tasco (= Taxco) (USNM 122058), 4.4 mi (= 7.0 km) NE Taxco, 6,000' (= 1,829 m) (UF 61793), Omilteme (MCZ 42676), Chilpancingo (FMNH 38491–92), near Chilpancingo (MVZ 45198); Jalisco, 3 mi (= 4.8 km) NE Magdalena (KU 38064), 5 mi (= 8 km) SW Unión Tula, 4,900' (= 1,494 m) (KU 67724), 5 km SW Autlán (BYU 23897), 10 mi (= 16 km) S Lagos de Moreno (AMNH 82023), Tapalpa (UTACV R-6366), 8.2 mi (= 13.1 km) S Agua Caliente (LSUMZ 37124), 19 mi (= 30.4 km) SE Tequila (CAS 143366); México, 1 mi (= 1.6 km) S Tonatico, 5,300' (= 1,616 m) (KU 67723); Michoacán, 5 mi (= 8 km) S Carapa (USNM 110397), 21.7 km W Jiquilpan, 2,106 m (KU 182689); Morelos, Cuernavaca (LACM 64506–08), 8 km W Cuernavaca, toward Tepoztlán (USNM 110396); Nayarit, Islas Tres Marías, Isla María Cleofas (LACM 25251); Puebla, 7.7 km S San Antonio Texcala, 1,567 m (KU 187309); 7.6 mi (= 12.2 km) SSE Izucar de Matamoros, 5,000' (= 1,524 m) (UF 24773), 1.5 mi (= 2.4 km) W Cacaloapán, 5,500–5,800' (= 1,677–1,768 m) (AMNH 104469), km 266, NW Tehuacán (FMNH 111077), 18 mi (= 28.8 km) N Tehuacán (FMNH 111078), km 226, 35 km N Tehuacán (USNM 110395); Querétaro, 0.7 mi (= 1.1 km) E Mexquititlán-Amealco Hwy. on road to La Piedad (LACM 109139); Sinaloa, Sierra Surutato, 1.1 mi (= 1.8 km) by road N La Joya, ca. 1,525 m (CAS 155923); Zacatecas, 8 mi (= 12.8 km) NW Valparaiso, 2,260 m (LACM 122012).

Specimens not examined (52): MEXICO, Coahuila, near La Gruta de Arteaga (SDHM 40247); Colima, 14 mi (= 22.5 km) NE (by road) Colima; Distrito Federal, no other data (AMNH 19735); Guanajuato 5.6 mi (= 9.0 km) NE Santa Rosa (TCWC 41023–24); Guerrero, no other data (AMNH 160915–16, AMNH 725508, FLMNH 61793), Acahuizotla (TCWC 7449, TCWC 9527), 0.5 mi (= 0.8 km) S Almolonga (TCWC 11632); Jalisco, 8 mi (= 12.8 km) W Atenquique, at microwave tower on ridge near Nevado de Colima 6,800' (= 2,073 m), Mpio. Tuxpan (UTEP 10083), 4.5 (= 7.2 km) SW of station 6, along a dry creek bed on Volcán de Colima (NLU 45019), along volcano road to microwave tower up 6,300' (= 1,920 m), collected on Volcán de Colima, elev. 6,400' (= 1,951 m) (NLU45239), 12.8 km W Encarnacion de Diaz (KU 95966), Chamela (Ramírez-Bautista, 1994); Sierra de Quila (Santiago-Pérez, 2012); Michoacán, 3 mi (= 4.8 km) S Carapan (MSUMHE 7226–29), 7 mi (= 11.2 km) W Quiroga (OMNH 19735), Villa Eréndira, Mpio. Nuevo Urecho (González-Hernández and Garza-Castro, 2006), Tacámbaro (Medina-Aguilar et al., 2011); Morelos, 20 km NE Cuautla (TCWC 7379–83), 12 mi (= 19.3 km) N Cuautla (TCWC 7384–85);Oaxaca, 11.4 mi (= 18.4 km) S Oaxaca-Puebla border on highway to Zapotitlán, 3 km N Santiago Chazumba (EBUAP [Escuela de Biología Benemerita Universidad Autonoma de Puebla] 1855), Mpio. Oaxaca de Juárez: Agencia de San Luis Beltrán (García-Padilla and Mata-Silva, 2013); Puebla, No other data (FLMNH 24773); near Cacaloapan, 22 km NW Tehuacán (FMNH 111091), San Lucas Peteletitlán, between San Juan Raya and San Lucas (EBUAP 1854), Tehuacán (FMNH 111082), La Virgen (UIMNH 48776), Zapotitlán Salinas (EBUAP 484), 5.6 km SSW Zapotitlán Salinas (UTA 12459); Querétaro, 0.4 mi (= 0.6 km) SE Amealco-Mexquititlan Hwy., on road to La Piedad (TCWC 53065), 640 m SE Amealco-Mexquititlán Hwy., on road to La Piedad (Dixon and Lemos-Espinal, 2010), 1.1 km E Amealco-Mexquititlán Hwy., on road to La Piedad (Dixon and Lemos-Espinal, 2010); San Luis Potosí, no other data (AMNH 162384), Charcas (Lemos-Espinal and Dixon, 2013), Las Lagunas (Lemos-Espinal and Dixon, 2013), Abrego (Lemos-Espinal and Dixon, 2013), San Luis Potosí (Lemos-Espinal and Dixon, 2013), 16 km S of Santa María del Río, Álvarez (Lemos-Espinal and Dixon, 2013); Veracruz, Mirador (USNM 25032–33), Acultzingo (Pérez-Higareda and Smith, 1991).

***Tantilla briggsi* Savitzky and Smith**

Briggs' Centipede Snake

Tantilla briggsi Savitzky and Smith, 1971: 167; Smith and Smith, 1976: S-B-195, S-C-65, S-D-6, S-F-31, S-G-6; Wilson, 1982a: 33, 1982b: 307.1, 1983a: 57, 1985a: 365.1, 1999: 6; Pérez-Higareda et al., 1985: 291; Flores-Villela, 1993: 33, 57; Flores-Villela and Gerez, 1994: 321, 372; Casas-Andreu et al., 1996: 34; Campbell et al., 1995: 122; Campbell and Smith, 1997: 333; Campbell, 1998a: 2; Wilson, 1999: 6; Wilson et al., 1999: 1; Wilson and McCranie, 1999: 326; Casas-Andreu et al., 2004: 388; Liner, 2007: 44; Wilson and Johnson, 2010: 135; Wilson et al., 2013: 41; Ochoa-Ochoa et al., 2014: table S3.

Holotype: University of Colorado Museum (UCM) 40000, adult male, collected between July and September 1968, by Thomas MacDougall.

Type-locality: 12 de Julio, Oaxaca, Mexico.

Definition: (Table 1). The head pattern consists of a pale nuchal collar that is narrowly divided medially and crosses the posterior tips of the parietals and the ultimate supralabial. The remainder of the head is very dark brown, except for a pale snout spot and pale pre- and postocular spots. A pale middorsal stripe is absent on the body, but an interrupted pale lateral stripe is present on the adjacent halves of dorsal scale rows 3 and 4. The ground color is brown above the upper portion of scale row 1. The venter is cream anteriorly and grades to pale pink (red-orange in life?) posteriorly. The ventral and subcaudal counts are 172 and 68, respectively.

Description: The dorsal coloration of the head is very dark brown, with pale beige on the median portions of the internasals and prefrontals and the upper portion of the rostral. Pale pre- and postocular spots are present. A cream nuchal collar extends from the posterior quarter of the parietals posteriorly to cover one and one-half middorsal scales and three lateral scales, and crosses the posterior quarter of the ultimate supralabial. The collar is almost completely divided medially by a fine dark line, and is bounded posteriorly by a dark nape band three dorsal scales long. The body is brown and gradually darkens posteriorly, and a pale middorsal stripe is absent. A pale lateral stripe is present on the adjacent halves of scale rows 3 and 4, originating five scale lengths posterior to the pale nuchal collar and interrupted at intervals of one scale or less, fading gradually posteriorly until lost at about the level of ventral 46, originating again at about the level of ventral 139, and continuing interrupted for another 18 dorsal scale lengths until lost approximately at the level of subcaudal 43. The lateral stripe is bounded below by dark brown pigment. The 1st scale row is divided into dark upper and pale lower halves. The venter is white anteriorly, grades to pink posteriorly for about three-quarters the length of the body, and gradually turns white on the posterior end of the tail. The scutellation of the male holotype is as follows: the postnasal and the single preocular are in narrow contact; the supralabials are 7, with the 3rd and 4th entering the orbit; the infralabials are 6, with the first four in contact with the anterior chinshields, the 4th is the largest, and the first pair is separated by contact of the mental and the anterior chinshields; the postoculars are 2; the temporals are 1+1; the dorsal scale rows are 15 throughout; the ventrals are 172; the cloacal scute is divided; the subcaudals are 68; and the ventrals + subcaudals, are 240. The specimen measured 301 mm in total length and 68 mm in tail length, with a relative tail length of 0.226.

Distribution: Known only from the type locality (Fig. 5).

Remarks: Hobart M. Smith (*in litt.*) indicated that 12 de Julio is an *ejido* (= area of common land used for agriculture) located 12 km W (apparently E) of Donají (= Tolosa), a few kilometers south of the Veracruz border in the Oaxacan portion of the Isthmus of Tehuantepec, at ca. 200 m in elevation. He stated that the *ejido* lies on the Trans-isthmian railway. Map 30 in Anonymous (1967), however, shows the railroad passing east (not west) of the Trans-isthmian highway upon which Donají lies (at km 155, according to Duellman, 1960: 34). Duellman (1960) gave the coordinates for Donají as 17°13'N, 95°02'W and the elevation as 90 m, and the vegetation as "rainforest." Perusal of Google Earth, however, indicates that the elevation of Donají actually is 73 m and the coordinates as 17°56' 64"N, 95°03' 87"W.The Trans-isthmian railway can be seen to pass along the eastern periphery of the town, so it appears unlikely that 12 de Julio is (or was) located on the railway. If Smith was correct in stating the *ejido* as 12 km west of the town, then the holotype might have come from a low ridge of hills that appears to rise to an elevation of about 230 m. If it came from east of the town, the elevations decrease until they reach about 40 m at the bridge that crosses the Río Coatzacoalcos, just west of the town of Morelos. Given that we cannot locate the *ejido* 12 de Julio with any degree of certainty, we have no basis on which to modify the information Hobart M. Smith provided us several years ago, but it seems likely that the *ejido* lies at an elevation closer to 100 m than 200 m. *Tantilla briggsi* is a member of the *taeniata* group (Savitzky and Smith, 1971).

Etymology: The name *briggsi* is a patronym honoring William T. Briggs, then dean of the College of Arts and Sciences of the University of Colorado at Boulder.

Specimens examined (1): MEXICO, Oaxaca, 12 de Julio (UCM 40000).

Tantilla calamarina Cope

Pacific Coast Centipede Snake

Tantilla calamarina Cope, 1866: 320; Oliver, 1937: 24; Duellman, 1954: 21, 1961: 110, 1965: 655, 660, 680 (as *Tantilla martindelcampoi*); Zweifel, 1960: 110; Wilson and Meyer, 1981: 10; Wilson, 1982b: 307.1, 1988a: 433.1, 1999: 6; Flores-Villela, 1993: 33, 64; Myers and Zweifel, 1993: 139; Smith et al., 1993: 1; Castro-Franco and Bustos Zagal, 1994: 173; Flores-Villela and Gerez, 1994: 321, 372; García and Ceballos, 1994: 156; Ramírez-Bautista, 1994: 84; Campbell et al., 1995: 122; Alvarado Díaz and del Carmen Huacuz Elías, 1996: 9, 81; Benítez Gálvez, 1997: 65; Smith et al., 1997: 160; Aguilar et al., 1997: 45; Wilson and McCranie, 1998: 37; Wilson, 1999: 6; García-Vázquez et al., 2006: 158; Ramírez-Bautista and Moreno, 2006: 95; Vargas-Santamaría and Flores-Villela, 2006: 121, 127, 139; Liner, 2007: 44; Enderson et al., 2009: 666; Flores-Villela et al., 2010: 312, 321; Lavín-Murcio and Lazcano, 2010: 292; Wilson and Johnson, 2010: 135; Medina-Aguilar et al., 2011: 1202; Alvarado-Díaz et al., 2013: 152; Wilson et al., 2013: 41; Ochoa-Ochoa et al., 2014: table S3; Ramírez-Bautista et al., *In Press*.

Tantilla bimaculata Cope, "1875" (1876): 143.

Homalocranion bimaculatum: Bocourt, 1883: 580.

Tantilla gracilis calamarina: Garman, 1884: 87, 163.

Homalocranium bimaculatum: Günther, 1895: 154.

Homalocranium calamarinum: Boulenger, 1896: 227.

Tantilla martindelcampoi Taylor, "1936" (1937): 347.

Geophis gertschi Bogert and Porter, 1966: 1.

Geagras redimitus: Flores et al., 1991: 182 (misidentification).

Holotype: National Museum of Natural History (USNM) 6600, adult female, collected by J. J. Major, date of collection unknown.

Type-locality: Guadalajara, Jalisco, Mexico (locality questioned by Peters, 1954, and Zweifel, 1959; the latter suggested the state of Colima as the most likely source of the holotype).

Definition: (Table 1). The head pattern consists of a spatulate anterior extension of a dark middorsal stripe, flanked by two pale postparietal spots. The dorsum of the body is tan to brown, and a dark middorsal stripe covers from as little as the middle of the middorsal scale row to as much as the middorsal row and the adjacent halves of the paravertebral rows; a dark lateral stripe also is present on scale rows 3 and 4 (frequently on the adjacent halves). The venter is immaculate cream. The ventrals and subcaudals range from 106 to 140 and 22 to 43, respectively.

Description: (Fig. 6). A spatulate extension of a dark middorsal stripe covers most of the dorsal surface of the head; the pattern is flanked on both sides by a pale and narrow anterior extension of the dorsolateral coloration, which, in its best-developed form, passes along the lateral edge of the parietals, supraoculars, prefrontals, and internasals to join its partner on the upper portion of the rostral scale. The lateral stripe continues anteriorly along the side of the head, across the temporals and the lower portion of the postocular, around the eye, and onto the preocular and postnasal. The lower edge of this "mask" passes along the upper portion of the supralabials, which otherwise are cream in color. The dorsal ground color is tan to brown, and grades to cream ventrolaterally. A brown to dark brown middorsal stripe covers from as little as the middle of the middorsal scale row to as much as the entire middorsal row and the adjacent halves of scale rows 7 and 9. A brown to dark brown lateral stripe also covers from as little as the adjacent edges of scale rows 3 and 4 or the middle of rows 3 and 4, or as much as the adjacent halves of rows 3 and 4. The venter is immaculate cream. The variation in scutellation is as follows: a single preocular usually is present on both sides, but can be present only on one side, or absent; if a preocular is present, it can be in contact with the postnasal on both sides of the head, only on one side, or on neither side; the supralabials are 5 or 6 (usually 6), with the 3rd and 4th entering the orbit; the infralabials are 5 or 6 (usually 6), with the first three or four in contact with the anterior chinshields, the 3rd or 4th are the largest, with the first pair separated from one another; the temporals are 1+1; the 5th supralabial can be separated from the parietal, barely separated, barely in contact, or in marked contact; the dorsal scale rows are 15 throughout; the ventrals in males are 106–133 ($\bar{x}$ = 119.7), and in females 118–140 ($\bar{x}$ = 129.0); the cloacal scute is divided; the subcaudals in males are 30–43 ($\bar{x}$ = 36.8), and in females 22–43 ($\bar{x}$ = 28.8);

and the ventrals + subcaudals in males are 145–166 ($\bar{x}$ = 156.9), and in females 146–179 ($\bar{x}$ = 158.0). The specimens measured 72–202 mm in total length and 13–36 mm in tail length, with a relative tail length of 0.110–0.211.

Distribution: Low, moderate, and intermediate elevations of the Pacific versant from Sinaloa, through Nayarit (including Las Islas Marías), Jalisco, Colima, and Michoacán to Guerrero, México, the Distrito Federal, Morelos, and western Puebla, (Fig. 7). An unconfirmed record exists for Tezuitlán, Puebla, Mexico. The type locality likely is in error (see above).

Geographic variation: Wilson and Meyer (1981) discussed geographic variation in features of scutellation and color pattern in this taxon. They noted that a preocular is in contact with the postnasal in all specimens from the northern sector of the range (Sinaloa, and Nayarit [including Las Islas Marías]). In the southern sector (Colima, Jalisco, Mexico, Distrito Federal, Morelos, and Guerrero), a preocular sometimes is absent (ca. 26% lack the scale on one or both sides of the head). In addition, the preocular in these southern specimens is smaller than in their northern counterparts, as indicated by the lack of contact between the preocular and postnasal (50% of these specimens lack the contact). The number of ventrals tends to decrease clinally from north to south, from Colima southward to Guerrero, but increases again in northern Guerrero, Mexico, Morelos, and the Distrito Federal. The ventral count in the single male specimen from the Las Islas Marías resembles that of specimens from Colima, Jalisco, and central Guerrero, as opposed to those from mainland Nayarit. Geographic variation also exists in color pattern. In almost all the specimens from the northern segment of the range, the middorsal stripe is confined to the middle of the middorsal scale row, and the dark lateral stripe covers the upper edge of dorsal scale row 3 and lower edge of row 4, or the middle of rows 3 and 4. In specimens from the southern segment, the dark middorsal stripe covers the entire middorsal scale row and the adjacent halves of the paravertebral rows, and the dark lateral stripe is present on the upper half of row 3 and the lower half of row 4.

Ecological observations: Taylor ("1936" [1937]: 348) indicated that the holotype of *Tantilla martindelcampoi* "was dug up from the base of a forest tree where the earth consisted of rotting leaves and bark." Oliver (1937: 1) reported specimens from Queseria, Colima, which came from "beneath rocks." Queseria was described as being in the "plateau section" of Colima, "which is higher and drier than the coastal region. This area is composed of arid hills and elevated plains dissected by deep barrancas and covered with scattered patches of short grass and xerophytic shrubbery. In the more humid portions there are occasional hardwood forests, and the barrancas are often filled with heavy growths of vegetation more characteristic of the coastal region." Taylor ("1939" [1940]: 483) cited specimens of this taxon collected "in an old lava flow between Cuernavaca and Tepoztlán." Smith (1943: 474) mentioned a specimen of *T. calamarina* "found under a stone in an ancient lava flow" 8 km NW Cuernavaca (USNM 110386). Peters (1954: 30) listed a specimen from La Placita, Michoacán (presumably UMMZ 104499 from 0.5 mi [= 0.8 km] SW La Placita) "found in a coconut grove beneath a pile of palm fronds." La Placita lies near the coast of northwestern Michoacán, but is described by Peters (1954) as located in a valley separated from Coahuayana (on the border of Michoacán and Colima) by a foothill outlier ending in the rocky promontory called Cabeza Negra. He said (p. 2) "the valleys immediately behind the swamp and lagoon areas are covered with a heavy thorn forest, made up primarily of *Mimosa* and *Acacia*, with organ pipe, *Opuntia*, and other cacti common. Bananas and coconut palms are cultivated wherever the scrub has been cleared." Duellman (1958) noted the occurrence of *T. calamarina* in the lowlands of Colima, the lowlands north of Colima, the Balsas Basin, and the western portion of the Mexican Plateau. Based on climate data, the area around Manzanillo would be in Lowland Deciduous Forest (Savage, 1975). The region around the city of Colima would fall into Lowland Semiarid Forest. Zweifel (1960: 110) reported the first specimen of *T. calamarina* (AMNH 78745) from Las Islas Marías, from Arroyo Hondo on María Madre Island; it "was found on April 7 in an insect channel in a log resting on moist sand by the stream." The stream referred to is in "a canyon at the northern end" of the island and is "nowhere more than 2 or 3 feet wide and a few inches deep. A few small pools of greater dimensions were present, the largest of which measured about 7 feet by 4 feet, by 16 inches deep" (p. 86). Duellman (1961: 110) stated that, "the specimens from Michoacán are from arid scrub forest at elevations of less than 400 meters." Bogert and Porter (1966: 1) indicated that the holotype of *Geophis gertschi* (AMNH 94877) was "found in moist soil beneath a rock … on August 28, 1965." The elevation of the type locality is approximately 1,200 m. "Pines and oaks are the most conspicuous elements of the flora in the area" (p. 2). McDiarmid et al. (1976) reported a specimen (JFC 69-91, now CAS 155924) "found in a rock crevice along a trail in mixed oak and tropical deciduous forest in the Cañon Tarahumares at Vado Ceboletas, ca. 1190 m, on 20 February 1969." This specimen is the northernmost record for the species. Castro-Franco and Bustos Zagal (1994) listed *T.*

calamarina as an inhabitant of pine-oak forest and tropical deciduous forest in Morelos. Alvarado-Díaz and del Carmen-Huacuz Elías (1996) reported collecting this species beneath palm fronds on the ground. Benítez Gálvez (1997) indicated that in Puebla *T. calamarina* feeds on centipedes, insect larvae, and spiders, produces 1–3 eggs, and lives beneath rocks and xerophitic shrubs. García-Vázquez et al. (2006) noted *T. calamarina*, from the Mixteca region of Puebla, as a diurnal and nocturnal terrestrial species that feeds on insects.

Remarks: Wilson and Meyer (1981: 12) gave 1,653 m as the upper range of elevational occurrence, but cited a specimen (TCWC 7433) from 5,500' (= ca. 1,677 m) at 8 mi (= 12.8 km) N Taxco in Guerrero. We indicate this correction in the section on distributional patterns. *Tantilla calamarina* is the type species of the *calamarina* group (Wilson and Meyer, 1981).

Etymology: The name *calamarina* is derived from the Latin word "*calamarius*, meaning 'a writing reed' and the suffix *–ina*, used in forming feminine names, in reference to the slender habitus of this species" (Wilson, 1988a).

Specimens examined (56): MEXICO, no other data (AMNH 19744, FMNH 105246); Colima, no other data (FMNH 1682), 4 mi (= 6.4 km) N Colima (AMNH 12775); Ejido de Tepextle, 4 mi (= 6.4 km) ENE Manzanillo (UMMZ 115587), Manzanillo (CAS 121076); 12 mi (= 19.2 km) E Manzanillo (AMNH 91593), 13 mi (= 20.8 km) (by Mexico Hwy. 180) SE Manzanillo (UMMZ 125722), 11.7 mi (= 18.7 km) NE Manzanillo on Mexico Hwy. 110 (UF 29872), 25 mi (= 40 km) S Manzanillo (UIMNH 53056), 23 mi (= 36.8 km) (by road) SE Manzanillo (UMMZ 125723), between Manzanillo and Barra de Navidad (CAS 132164–66), 20.5 km E Manzanillo (KU 129236), Paso del Río (UMMZ 110872), Queseria (UMMZ 80223–25), near Queseria (UIMNH 18787–88), 2.7 mi (= 4.3 km) ENE Tecolapa, 800' (= 244 m) (UF 24758), Tecomán (AMNH 12776), 5 mi (= 8 km) E Tecomán (AMNH 19746), 2 mi (= 3.2 km) S Tonila, Jalisco (AMNH 94877); Distrito Federal, S of Santa Fe (AMNH 19750); Guerrero, Acapulco (SDNHM 46306), summit, 4 mi (= 6.4 km) W Cacahuamilpa (AMNH 99141), El Limoncito (UIMNH 25062), 8 mi (= 12.8 km) N Taxco, elev. 5,500' (= 1,677 m) (TCWC 7433), near El Treinta, 1 mi (= 1.6 km) N Organos (UIMNH 25062), 3.8 mi (= 6.1 km) SW Xochipala, elev. 4,500' (= 1,372 m) (UF 29871); Jalisco, Guadalajara (USNM 6600; not mapped); México, valley of México and Toluca (USNM 32290); Michoacán, 0.5 mi (= 0.8 km) SW La Placita (UMMZ 104499), 3 mi (= 4.8 km) S San Juan de Lima (UMMZ 11446–47); Morelos, Acatlipa (USNM 150614), Progreso (UIMNH 24696–97), Cuernavaca (USNM 110386), Tepoztlán (FMNH 105243), near Tepoztlán (FMNH 105244), km. 78, 4 mi (= 6.4 km) S Cuernavaca (FMNH 105245), 14.6 km E Cuernavaca (KU 129237); Nayarit, 7.1 mi (= 11.4 km) Compostela, elev. 3,200' (= 976 m) (UF 24789), near Ocotillo (AMNH 19743), San Blas (BMNH 81.10.1.11), 7.5 mi (= 12 km) E San Blas (CAS 95770), San Blas at old fort (CAS 132571), between Santa Cruz and Tepic (CAS 104979), 16.3 mi (= 26 km) NW Tepic, elev. 450' (= 137 m) (UF 24788), Tres Marías Islands, María Madre Island (AMNH 78745); Sinaloa, Mazatlán (USNM 6834), 18 mi (= 28.8 km) N Mazatlán (MCZ 61430), Sierra Surutato, Cañon Tarahumares at Vado Ceboletas, elev. ca. 1,900 m (CAS 155924).

Specimens not examined (23): MEXICO, Colima, No other data (FLMNH 29872, FLMNH 24758), Rancho San Miguel, ca. 4 km SW Armeria (UAZ 26447), A.O.R., 3.1 mi (= 4.9 km) E of Cuyutlan, sea level (NLU 40780), 10 km ESE of San Antonio (NLU 40781); Guerrero, no other data (AMNH 99141, FLMNH 102792–96); Jalisco, no other data (AMNH 3892), Volcán de Colima (NLU 45001), Volcán de Colima, volcano road, elev. 4,900' (= 1,494 m) (NLU 45004), Chamela (Ramírez-Bautista, 1994); México, 5 mi W Laguna Zempoala, Mpio. Ocuilan (UTEP 13999); Michoacán, Tacámbaro (Medina-Aguilar et al., 2011); Nayarit, no other data (FLMNH 24788–89), 3 km W of Compostela (UCM 55582); Puebla, Izucar de Matamoros (MZFC 12486); Sinaloa, no other data (AMNH 162385), Plomosas (LACM 126550).

Tantilla cascadae Wilson and Meyer

Michoacán Centipede Snake

Tantilla cascadae Wilson and Meyer, 1981: 13; Wilson, 1982b: 307.1, 1988c: 451.1, 1999: 7; Flores-Villela, 1993: 33, 57; Flores-Villela and Gerez, 1994: 322, 372; Campbell et al., 1995: 122; Wilson, 1999: 7; Liner, 2007: 44; Flores-Villela et al., 2010: 321; Wilson and Johnson, 2010: 135; Alvarado-Díaz et al., 2013: 152; Wilson et al., 2013: 41; Ochoa-Ochoa et al., 2014: table S3; Ramírez-Bautista et al., *In Press*; D. Cruz-Sáenz (pers. comm.; submitted).

Holotype: American Museum of Natural History (AMNH) 107389, female, collected in June, 1939, by D. F. Brand.

Type-locality: "Tzaráracua Falls [= Cascada la Tzaráracua], S of Uruapan [10.5 km south, according to Duellman, 1961], Michoacán, México, collected in June, 1939, by D. F. Brand" (Wilson and Meyer, 1981). The elevation given by Duellman (1961) is 1,430 m.

Definition: (Table 1). The head pattern consists of a spatulate dark anterior extension of a middorsal stripe, flanked by pale narrow longitudinal markings connected to pale postparietal spots. The dorsum of the body is pale brown with a dark middorsal stripe covering the middle of the middorsal scale row. A dark lateral stripe is absent except for on the neck region, where it covers the adjacent edges of scale rows 3 and 4, or it can extend the length of the body along these scale rows. The venter is cream, except for a slight amount of brown pigment on the posterolateral edge of each ventral. The ventral and subcaudal counts are 139–146 and 30–48, respectively.

Description: (See Introductory Page). The head pattern consists of a spatulate extension of a middorsal stripe flanked by two ivory-colored postparietal spots from which emanate narrow anterior extensions that pass along the outer sides of the parietals, across the supraoculars, prefrontals, and internasals, and onto the dorsal portion of the rostral. The spatulate head pattern is mottled with ivory, giving the dorsum of the head a lichenous appearance. The postparietal spots do not grade into the dorsal ground color. The short lateral stripe broadens and continues anteriorly across the temporals and upper portion of the supralabials, around the eye, and onto the preocular and postnasal. The remainder of the supralabials is cream. The dorsal ground color is pale brown. A dark brown middorsal stripe consists of a series of disjunct elongate spots on the middle of the middorsal scale row, which expand anteriorly to cover the middorsal scale row and adjacent halves of the paravertebral rows at a point about three scales posterior to the parietals, and continues posteriorly to the end of the tail. A dark lateral stripe is apparent only on the neck region of the holotype, to a point approximately opposite the 17th ventral, and covers the adjacent edges of rows 3 and 4 (but see below); on the other specimen from the type locality, this stripe is poorly defined, but extends along the length of the body. The chin and venter are cream, except for a slight amount of brown pigment on the posterolateral edge of each ventral. Peter Heimes (*in litt*; unpublished) described a second, undeposited specimen as follows: "The dorsum of the head is slightly darker brown than the body, appearing as a dark head cap in the shape of a spatula. This configuration is created by a light brown border that begins on the dorsal apex of the rostral scale and continues on each side of the head across the internasal, prefrontal and supraocular scales and along the parietal. The pale border is narrowly separated from a yellow postparietal spot. The dark lateral stripe broadens and continues anteriorly onto the sides of the head including the upper portion of the supralabials, which are otherwise cream-colored. The dorsum of the body is dark brown anteriorly, grading to a darker grayish brown posteriorly. An indistinct black middorsal stripe consisting of a series of spots is located at the posterior portion of each middorsal scale. This stripe expands anteriorly on the neck to cover the middorsal row and adjacent halves of the paravertebral rows, and continues posteriorly to the end of the tail. A poorly defined, narrow dark lateral stripe on the adjacent edges of scale rows 3 and 4 extends the length of the body. The venter is cream except for a slight amount of brown pigment on the edges of each ventral." The scutellation of the female holotype is as follows: the postnasal and the single preocular are in contact; the supralabials are 6, with the 3rd and 4th entering the orbit; the infralabials are 5-6, with three in contact with the anterior chinshields on the left (the 3rd is the largest) and four on the right (the 4th is the largest), with the first pair separated medially by contact of the mental and the anterior chindshields; the postoculars are 2; the temporals are 1+1; the dorsal scale rows are 15 throughout; the ventrals are 139; the cloacal scute is divided; the subcaudals, are 37; the ventrals + subcaudals are 176. The scutellation of the Heimes specimen, also a female, is as follows: the supralabials are 6, the preocular is single, the postoculars are 2, the temporals are 1+1, the ventrals are 146, the subcaudals are 30, and the ventrals + subcaudals are 176. The Jalisco specimen is indicated by D. Cruz-Sáenz (pers. comm; submitted) to have the following scutellational features: the supralabials are 6, the postoculars are 2, the ventrals are 144, the subcaudals 48, and the ventrals + subcaudals are 192. The measurements and proportions of the holotype cannot be determined due to its desiccated condition. The Heimes specimen measured 196 mm in total length, with a tail/total length ratio of 0.138. The Jalisco specimen measured 158 mm in total length, with a tail/total length ratio of 0.190.

Distribution: Known from the type locality in west-central Michoacán, and an additional locality in southeastern Jalisco, Mexico (Fig. 8).

*Ecological observation*s: The holotype was found in "an area covered by oak forest with a few scattered pines" (Wilson and Meyer, 1981). The Heimes specimen was collected in July, 2000 "near the Tzaráracua Falls in oak forest interspersed with pines," and "after being exposed from its hiding-place under a small rock the snake tried to retreat quickly into a deeper subterranean passage" (P. Heimes, *in litt*; unpublished). The Jalisco specimen was collected in vegetation "composed of pine forest with scattered oak trees" (D. Cruz-Sáenz, pers comm.; submitted).

Remarks: Wilson and Meyer (1981) incorrectly placed the type locality of *T. cascadae* in the Lower Montane Moist Forest formation, but it should have been in the Premontane Moist Forest formation. Some data on the Heimes specimen are incorporated into the description above, but the specimen, which was supposed to be deposited in the UNAM collection by a friend of Heimes never made it to the museum. *Tantilla cascadae* is a member of the *calamarina* group (Wilson and Meyer, 1981). For comments on an enigmatic specimen, see the *T. coronadoi* species account.

Etymology: The name *cascadae* is derived from the Spanish word *cascada*, meaning "waterfall," in reference to Cascada Tzaráracua, the type locality of the species.

Specimens examined (2): MEXICO: Jalisco, 20 km SE of Pihuamo (CZUG-R304); Michoacán, Tzaráracua Falls (= Cascada la Tzaráracua), S of Uruapan (AMNH 107389).

Tantilla ceboruca Canseco-Márquez, Smith, Flores-Villela, and Campbell

Ceboruco Centipede Snake

Tantilla ceboruca Canseco-Márquez et al., 2007: 221; Wilson and Johnson, 2010: 135; Wilson et al., 2013: 41; Ochoa-Ochoa et al., 2014: table S3; Ramírez-Bautista et al., *In Press*; D. Cruz-Sáenz (pers. comm.; submitted).

Holotype: Museo de Zoología Facultad de Ciencias 17048, adult male, collected 17 July 2004, by E. N. Smith, P. Ponce-Campos, and J. Malone.

Type-locality: "Volcán Ceboruco, Nayarit, Mexico" (Canseco-Márquez et al., 2007).

Definition: (Table 1). The head pattern consists of a spatulate anterior extension of a dark middorsal stripe, flanked by narrow pale markings that extend from the internasals and connect with two black-bordered white postparietal spots. The dorsum of the body is dark brown, with a narrow darker brown middorsal stripe present along the middle half of the middorsal scale row; the stripe extends from the parietal region of the head onto the dorsal surface of the tail. A dark lateral stripe also is present from the snout to the level of the cloaca, along the adjacent edges of dorsal scale rows 3 and 4. The venter is immaculate cream, except for an extension of the dorsal ground color onto the lateral edges of the ventral scales. The ventral and subcaudal counts are 138 and 42, respectively.

Description: A spatulate extension of a middorsal stripe is flanked by two black-bordered white postparietal spots, from which narrow anterior extensions along the sides of the parietals emanate and extend across the supraoculars and prefrontals to join on the internasals. The spatulate head pattern is mottled with pale pigment. A dark stripe broadens and continues anteriorly across the temporals and upper edges of the supralabials, around the eye, and onto the preocular and nasal. The lower portion of the supralabials is cream. The dorsal ground color is dark brown, and a darker brown middorsal stripe is present on the middle half of the middorsal scale row, along the length of the body and onto the tail. Anteriorly, the stripe expands to cover the middorsal scale row and the adjacent halves of the paravertebral rows at a point about three scales posterior to the parietals. A dark lateral stripe is present on the adjacent edges of scale rows 3 and 4, which extends posteriorly to the level of the cloaca. The chin is cream with small brown spots on the anterior margin of the infralabials; a few small brown spots also are present on the throat. The venter is cream, except for where the dorsal coloration spreads onto the lateral edges. The scutellation of the male holotype is as follows: the postnasal and a single preocular are in contact on the left side, and slightly separated on the right side; the supralabials are 7, with the 3rd and 4th entering the orbit; the infralabials are 6, with four in contact with the anterior chinshields (the 4th is the largest), and the first pair is separated medially by the contact of the mental and the anterior chindshields; the postoculars are 2; the temporals are 1+1; the dorsal scale rows are 15 throughout; the ventrals are 138; the cloacal scute is divided; the subcaudals are 42; and the ventrals + subcaudals are 180. The single known male specimen measured 195 mm in total length and 35 mm in tail length, with a relative tail length of 0.217.

Distribution: Known only from the type locality in south-central Nayarit, and an additional locality in west-central Jalisco, Mexico (Fig. 8).

*Ecological observation*s: The holotype was found under a rock in fragmented pine-oak forest. The Jalisco specimens were collected in a dry streambed in pine-oak forest, at an elevation of 1,233 m.

Remarks: *Tantilla ceboruca* is a member of the *calamarina* group (Canseco-Márquez et al., 2007).

Etymology: The name *ceboruca* is derived from the name of the volcano, Volcán Ceboruco, the type locality of the species.

Specimens not examined (1): MEXICO, Jalisco, 8.1 km NW of Hostotipaquillo (CZUG-R 302–303); Nayarit, Carretera Jala-Cerro microhondas, Volcán Ceboruco, 2,094 m (21.13199°N, 104.50462°W) (MZFC 17048).

***Tantilla coronadoi* Hartweg**

Guerreran Centipede Snake

Tantilla coronadoi Hartweg, 1944: 4; Smith and Taylor, 1950: 331; Duellman, 1965: 683, 685; Wilson and Meyer, 1981: 15; Wilson, 1982b: 307.1, 1990b: 501.1, 1999: 7; Flores-Villela, 1993: 33; Flores-Villela and Gerez, 1994: 322, 372; Campbell et al., 1995: 122; Wilson, 1999: 7; Liner, 2007: 44; Flores-Villela et al., 2010: 321; Wilson and Johnson, 2010: 135; Wilson et al., 2013: 41; Ochoa-Ochoa et al., 2014: table S3; Ramírez-Bautista et al., *In Press*.

Holotype: University of Michigan Museum of Zoology (UMMZ) 85697, female, collected by Wilmot W. Brown, date of collection unknown.

Type-locality: Vicinity of Chilpancingo, Guerrero, Mexico.

Definition: (Table 1). The head pattern consists of a spatulate dark anterior extension of a dark middorsal stripe, flanked by two pale anterior extensions of the dorsolateral coloration. The dorsum of the body is tan to pale brown, with a dark middorsal stripe present along the middle of the middorsal row and a dark lateral stripe on row 3 and the adjacent one-half to all of row 4. The venter is immaculate cream. The ventrals and subcaudals range from 158 to 165 and 35+ to 40, respectively.

Description: A spatulate extension of a dark middorsal stripe covers much of the upper surface of the head. On each side of this pattern, a pale and narrow anterior extension of the dorsolateral coloration extends along the outer portion of the parietals, across the supraoculars, and onto the prefrontals and internasals to join its partner on the upper portion of the rostral. The dark lateral stripe, which fuses with a dark stripe on scale row 5 just behind the head, continues anteriorly across the temporals and upper portions of the supralabials, around the eye, and onto the preocular and postnasals. The remainder of the supralabials is cream. The dorsal ground color is tan to pale brown. A dark brown middorsal stripe is confined to the medial third of the middorsal scale row, except for the first 5–7 scales posterior to the parietals, where it involves the entire middorsal row and adjacent halves of the paravertebral rows. A poorly- to well-developed brown to dark brown lateral stripe is present on all of scale row 3 and from one-half to all of row 4. Diffuse dark narrow lines also are evident on rows 5, 6, and 7. The venter is immaculate cream. The variation in scutellation is as follows: a single preocular is present and in contact with the postnasal, separating the prefrontal and 2nd supralabial; the supralabials are 7, with the 3rd and 4th entering the orbit, and the 5th supralabial is separated from the parietal; the infralabials are 6, with four in contact with the anterior chinshields, the 4th is the largest, and the first pair sometimes is in medial contact; the postoculars usually are 2; the temporals are 1+1, with the anterior and posterior temporals separated by contact of the 7th supralabial and the parietal; the dorsal scale rows are 15 throughout; the ventrals are 158 in one male, and 165 in one female; the cloacal scute is divided; the subcaudals are 35+ in the male, and 40 in the female; and the ventrals + subcaudals in the female are 205. The male measured 171 mm in total length and 28 mm in tail length, with a relative tail length of 0.164. The respective values for the female were 183 mm, 31 mm, and 0.169.

Distribution: Moderate and intermediate elevations of the Pacific versant in central Guerrero, Mexico (Fig. 9).

Remarks: A peculiar specimen of *Tantilla* (BMNH 1906.6.1.241), obviously in the *calamarina* group (*sensu* Wilson and Meyer, 1981) and collected by Hans Gadow in 1904, is available for study. Features diagnostic of both *T. cascadae* and *T. coronadoi* are present in this specimen. In common with *T. cascadae*, the anterior and

posterior temporals are not separated by contact of the 7th supralabial and the parietal, and a dark lateral stripe does not extend along the length of the body. Seven supralabials are present in the BMNH specimen, as in *T. coronadoi*. Furthermore, a similar number of ventrals (156) are present in the female BMNH specimen, and 165 in the only known female of *T. coronadoi*, as opposed to 139 ventrals in the female holotype of *T. cascadae*. The BMNH specimen was collected at Tezonapam (now Tecoanapa) in southeastern Guerrero at an elevation of 462 m (information supplied by A. F. Stimson), about 60 km SE of the type locality of *T. coronadoi* (the vicinity of Chilpancingo). Apparently, the BMNH specimen is an example of *T. coronadoi* (thus the diagnostic feature of the parietal-7th supralabial contact for this taxon is not invariable) or of a closely related (and unnamed) taxon, but the meager data on the few available specimens do not allow us to resolve this question. *Tantilla coronadoi* is a member of the *calamarina* group (Wilson and Meyer, 1981).

Etymology: "The name *coronadoi* is a patronym honoring Salvador Coronado, then head of the Mexican Departamento de Pesca y Marítima" (Wilson, 1990b).

Specimens examined (2): MEXICO, Guerrero, vicinity of Chilpancingo (UMMZ 85697), 3 mi (= 4.8 km) W Chilpancingo (TCWC 9528).

Tantilla cuniculator Smith

Petén Centipede Snake

Tantilla moesta cuniculator Smith, 1939: 32.

Tantilla cuniculator: Smith, 1942: 33, 35, 42; Wilson, 1982a: 35, 1982b: 307.1, 1983a: 57, 1985b: 367.1, 1999: 8; Pérez-Higareda et al., 1985: 291; Flores-Villela, 1993: 33; Bahena-Basave, 1994: 14; Flores-Villela and Gerez, 1994: 322, 372; Lee, 1996: 374; Campbell and Smith, 1997: 333; Campbell, 1998a: 2, 1998b: 252; Campbell et al., 1995: 122; Wilson and McCranie, 1998: 19, 1999: 326; Wilson, 1999: 8; Wilson et al., 1999: 1; Lee, 2000: 338; Liner, 2007: 44; Köhler, 2008: 287; Johnson et al., 2010: 367; Wilson and Johnson, 2010: 135; Wilson et al., 2013: 41; Ochoa-Ochoa et al., 2014: table S3.

Holotype: Field Museum of Natural History (FMNH) 19408, juvenile female, collected in 1934 by Eunice Blackburn.

Type-locality: Mérida, Yucatán, Mexico.

Definition: (Table 1). The head is very dark brown, with a pale orange-brown to ocher complete nuchal band involving the posterior tips of the parietals and 2–2½ scales beyond. The dorsum of the body is dark brown, with and a barely discernible pale lateral stripe present on the adjacent halves of scale rows 3 and 4, which often extends along the length of the body but in some cases is restricted to the upper half of row 3 and becomes less discernible posteriorly. A pale middorsal stripe is absent in most specimens but evident in others, or sometimes is disjunct on the anterior portion of the body. The venter is reddish orange. The ventrals and subcaudals range from 139 to 154 and 48 to 55, respectively.

Description: (Fig. 10). The dorsum of the head is dark brown with paler punctations, and a pale yellow-orange spot is present on the upper portion of the rostral, internasals, and prefrontals. A complete pale yellow-orange nuchal collar involves the posterior portion of the parietals and extends posteriorly to cover 2–2½ middorsal scales, and laterally crosses the last supralabial. A postocular pale spot is present. The dorsal ground color is dark brown (which can fade to tan in preservative), and grades to a slightly paler brown on the first two dorsal scale rows. Evidence of a pale middorsal stripe usually is absent, although one is barely evident on the anterior portion of the body of MPM 7608. A pale lateral stripe extends along the adjacent halves of dorsal scale rows 3 and 4 and onto the tail, although the stripe is less discernible posteriorly. The lateral stripe is bounded below (and sometimes above) by dark pigment. The ventrolateral coloration sometimes is slightly darker than that of the dorsolateral area. The venter is reddish orange, but fades to cream in preservative. The variation in scutellation is as follows: the postnasal and a single preocular are in contact, barely separated, or broadly separated; the supralabials are 6 or 7 (usually 7), with the 3rd and 4th entering the orbit; the infralabials are 6 or 7 (usually 6), with the first four in contact with the anterior chinshields, the 4th is the largest, and the first pair is separated by contact of the mental and the anterior chinshields; the postoculars are 2; the temporals are 1+ 1; the dorsal scale rows are 15 throughout; the ventrals in

males are 139–145 (142.0), and in females 140–154 (148.0); the cloacal scute is divided; the subcaudals in males are 53–55 (54.0), and in females 48–53 (49.4); and the ventrals + subcaudals in males are 194–198 (196.0), and in females 189–207 (198.0). The specimens measured 94–227 mm in total length and 19–48 mm in tail length, with a relative tail length of 0.197–0.229.

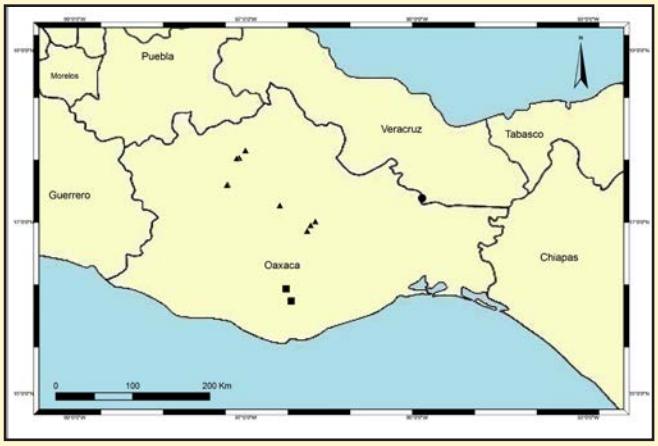

Fig. 5. Distribution map of the reported localities for *Tantilla briggsi* (circle), *T. flavilineata* (triangles), and *T. oaxacae* (squares).

Fig. 6. Adult *Tantilla calamarina* from San Andrés de la Cal, Morelos, Mexico. EVS 12 (medium vulnerability species). © Peter Heimes

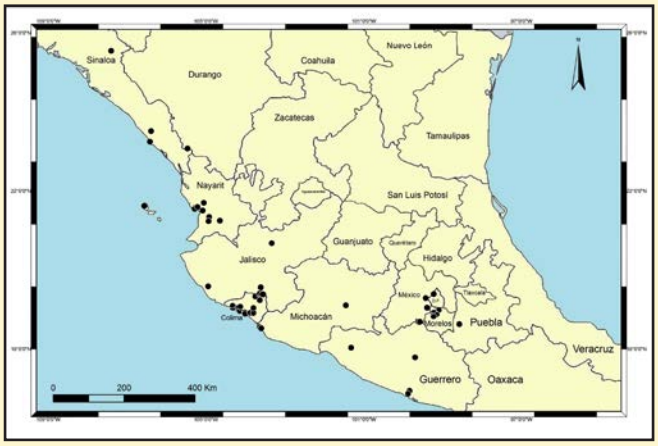

Fig. 7. Distribution map of the reported localities for *Tantilla calamarina*.

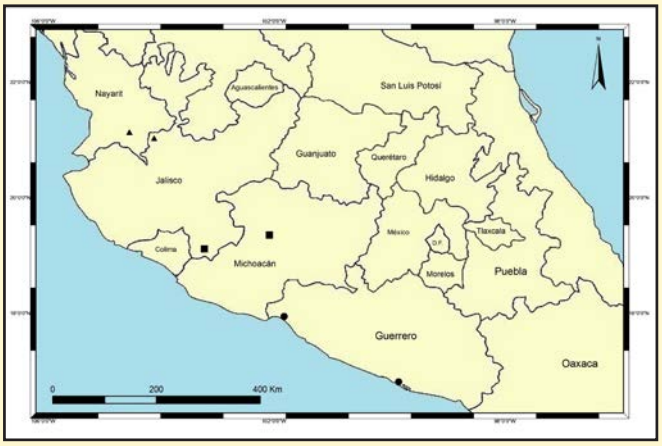

Fig. 8. Distribution map of the reported localities for *Tantilla cascadae* (squares) *T. ceboruca* (triangles), and *T. sertula* (circles).

Fig. 9. Distribution map of the reported localities for *Tantilla coronadoi* (triangles) and *T. deppei* (circles).

Fig. 10. Adult *Tantilla cuniculator* from Pueblo Nuevo X-Can, Quintana Roo, Mexico. EVS 13 (medium vulnerability species). © Ed Cassano

Distribution: "Low elevations of the Yucatan Peninsula in the Mexican states of Yucatán and Quintana Roo and in the northern portion of Belize" (Wilson, 1982a) (Fig. 11).

Ecological observations: Lee (2000: 340) noted the following: "Uncommon; little known. Apparently a secretive, terrestrial inhabitant of thorn forest, tropical evergreen forest, where specimens have been found beneath surface debris and abroad at night. Presumably lays eggs, but nothing specific known concerning reproduction. Diet unknown."

Remarks: For this paper, the senior author examined two unreported specimens (CAS 154145, KU 171745), and one (KU 70895) examined by Duellman (1965a). Data from these specimens require some minor adjustments to the color pattern description provided by Wilson (1982a). Wilson (1982a: 35) stated that, "there is usually no evidence of a pale middorsal stripe (although MPM 7608 [from Belize] shows barely discernible evidence of one on the anterior portion of the body)." On KU 70895, the specimen reported by Duellman (1965a), a pale middorsal stripe is visible on about the first 6 or 7 middorsal scales behind the pale nuchal band, where it is confined to the middle of those scales. On CAS 154145 the pale middorsal stripe is evident only as a series of isolated dots at the anterior end of the middorsal scales on the anterior portion of the body. Wilson (1982a: 35) also indicated that, "a pale lateral stripe is present on the adjacent halves of dorsal scale rows 3 and 4 and extends the length of the body and tail, although it becomes less discernible posteriorly." On KU 70895 and CAS 154145 the pale lateral stripe is evident on adjacent halves of rows 3 and 4 anteriorly on the body, but gradually becomes restricted to the upper half of row 3 and less discernible posteriorly. In all three specimens, the area below the pale lateral stripe is slightly darker than that above. Wilson (1982a: 36) described the pale nuchal band as "extending posteriorly to cover 2 to 2½ middorsal scales…." This condition is evident in KU 171745 (two scales) and CAS 154145 (two and one half scales), but in KU 70895 the pale nuchal band extends three and one-half scales posterior to the parietals. Wilson (1982a: 34) gave the maximum known total length for *T. cuniculator* as 193 mm, but the total length of KU 171745 is 227 mm. Wilson et al. (1977) briefly discussed the relationships of *T. cuniculator* to other members of the *taeniata* group, to which they allocated it. They concluded (p. 54), based on facets of coloration and scutellation, that *T. taeniata* "appears to be the most likely candidate for close relationship with *T. cuniculator*…." While examining the material alluded to above, the senior author was struck by the resemblance of *T. cuniculator* to *T. vulcani* in color pattern, contrary to the statement of Wilson et al. (1977). These two species share a prominent pale spot on portions of the rostral, internasals, and prefrontals, a pale nuchal band with the anterior edge not clearly defined but grading into the color of the dorsum of the head, a poorly-defined middorsal pale stripe (better so in *vulcani*, but usually composed of a series of pale spots confined to the anterior portion of each middorsal scale in this taxon), a relatively dull pale lateral stripe (described for *T. vulcani* [as *T. jani*] by Wilson and Meyer, 1971: 24, as "not so distinctly set off from the ground color as in *taeniata* and *striata*"), similar ventral scale counts (Table 1), and moderate numbers of subcaudals compared to other members of the *taeniata* group (Table 1; Wilson, 1982a, 1983a). The two species differ most conspicuously in that more poorly developed pale middorsal and lateral stripes and a higher number of subcaudals and ventrals + subcaudals are present in *T. cuniculator* than in *T. vulcani* (Table 1). Also, *T. cuniculator* lacks the diffuse dark median stripes on dorsal rows 5 through 7 seen in *T. vulcani*. Conceivably, *T. cuniculator* and *T. vulcani* are sister species. *Tantilla cuniculator* is a member of the *taeniata* species group (Townsend et al., 2013).

Etymology: The name *cuniculator* is derived from "the Latin *cuniculus*, meaning 'a rabbit or underground passage' and by extension, a 'burrow' and *–ator*, meaning 'of or characterized by,' in reference to the semifossorial habits of this snake" (Wilson, 1985b).

Specimens examined (6): MEXICO, Quintana Roo, vic. Pueblo Nuevo X-Can (LSUMZ 28599), 9.7 km SE Cobá (KU 171745), 26 km NNW Tulum (CAS 154145); Yucatán, no other data (UCM 40619), Mérida (FMNH 19408), Pisté (KU 70895).

Specimens not examined (8): MEXICO, Quintana Roo, 2.6 km SE Cobá (UMRC 79-274), 3.5 mi (= 5.6 km) N Felipe Carrillo Puerto (TCWC 58691), 1.3 km S Pueblo Nuevo X-Can (UMRC 84-39), 2.6 km SE Coba (KU 301327), 1.3 km S Pueblo Nuevo X-can (KU 301329); Yucatán, 1 km N Celestún (UMRC 84-162), Mérida (MCZ 53940), 1 km N Celestún (KU 301329).

Tantilla deppei (Bocourt)

Deppe's Centipede Snake

Homalocranion deppei Bocourt, 1883: 584.

Tantilla deppei: Cope, 1887: 83; Smith and Taylor, 1950: 321; Duellman, 1965: 683; Wilson and Meyer, 1981: 17; Wilson, 1982b: 307.1, 1988d: 452.1, 1999: 8; Flores-Villela and Hernández-García, 1989: 16; Flores-Villela, 1993: 33; McCranie, 1993: 275; Castro-Franco and Bustos Zagal, 1994: 173; Flores-Villela and Gerez, 1994: 322, 372; Campbell et al., 1995: 122; Aguilar et al., 1997: 45; Wilson, 1999: 8; Flores-Villela and Hernández-García, 2006: 272, 282; Ramírez-Bautista and Moreno, 2006: 95; Liner, 2007: 44; Flores-Villela et al., 2010: 321; Wilson and Johnson, 2010: 135; Wilson et al., 2013: 41; Ochoa-Ochoa, et al., 2014: table S3; Ramírez-Bautista et al., *In Press*.

Homalocranium deppei: Günther, 1895: 151.

Homalocranium miniatum (*nec* Cope): Boulenger, 1896: 222.

Lectotype: Muséum National d'Histoire Naturelle (MNHN) 54, adult male, collected by M. Ghiesbreght, date of collection unknown.

Type-locality: "México," restricted to vicinity of Huitzilac, Morelos, Mexico, by Davis and Smith (1953), herein accepted.

Definition: (Table 1). The head pattern consists of a spatulate dark anterior extension of a dark middorsal stripe, flanked by narrow longitudinal pale markings and a short middorsally interrupted pale nuchal collar. The dorsum of the body is tan to brown, and a dark middorsal stripe covers as little as all of the middorsal scale row to as much as the middorsal row and the adjacent halves of the paravertebral rows, and a dark lateral stripe is present on scale row 3 or rows 2 and 3.The ventrals and subcaudals range from 142 to 168 and 43 to 62, respectively.

Description: (Fig. 12). A spatulate extension of a dark middorsal stripe covers most of the upper surface of the head. The pattern is flanked by pale narrow markings that begin on the parietals and extend anteriorly across the supraoculars, prefrontals, and internasals to meet on the dorsal portion of the rostral. Below this marking, a dark band extends from the posterior temporal and passes across the anterior temporal and upper edges of the supralabials onto the preocular and nasal. The remainder of the supralabials is cream. The head cap is bounded posteriorly by a short pale nuchal collar, which is broken middorsally by a dark middorsal stripe, and contrasts the dorsolateral ground color. The dorsal ground color is tan to brown. A diffuse brown to dark brown middorsal stripe covers from as little as all of the middorsal row to as much as the middorsal row and the adjacent halves of rows 7 and 9. A diffuse brown lateral stripe generally is present in as little as most of row 3, or as much as the adjacent halves of rows 2 and 3. A dark stripe, usually more poorly defined than the lateral stripe, is present on row 5, and sometimes another on row 1, although more often it entails a series of dark dots. The venter is immaculate cream. The variation in scutellation is as follows: a single preocular is in contact with the postnasal, separating the prefrontal and 2nd supralabial; the supralabials are 6 or 7 (usually 7), with the 3rd and 4th entering the orbit, and the 5th supralabial is separated from the parietal; the infralabials are 5 or 6 (usually 6), with three or four in contact with the anterior chinshields, the 4th (but sometimes the 3rd) is the largest, the first pair usually is separated by contact of the mental and the anterior chinshields, but sometimes is in contact medially; the postoculars are 2; the temporals are 1+1; the dorsal scale rows are 15 throughout; the ventrals in males are 142–151 (145.9), and in females 153–168 (160.1); the cloacal scute is divided; the subcaudals in males are 54–62 (57.2), and in females 43–50 (46.2); and the ventrals + subcaudals in males are 196–213 (203.1), and in females 196–214 (206.3). The specimens measured 95–273 mm in total length and 16–62 mm in tail length, with a relative tail length of 0.166–0.254.

Distribution: Intermediate elevations of the Pacific versant in northern Morelos, northern Guerrero, and northwestern Oaxaca, Mexico (Fig. 9).

Ecological observations: Castro-Franco and Bustos Zagal (1994) reported *T. deppei* as occurring in pine-oak forest and tropical deciduous forest in Morelos.

Remarks: Wilson and Meyer (1981) assigned *Tantilla deppei* to the *calamarina* group. The number of teeth on the extracted right maxilla of KU 61161 is 14+2.

Etymology: The name *deppei* is a patronym honoring Ferdinand Deppe (1794–1861), a German naturalist, explorer, and artist who collected specimens in Mexico in 1824.

Specimens examined (21): MEXICO, "Southern Mexico" (BMNH 90.4.24.34); Morelos, no other data, restricted to vicinity of Huitzilac (MNHN 54), 6 mi (= 9.6 km) NW Coajomulco (INHS 8232), ca. 15 mi (= 24.0 km) NNE Cuautla, near Totolapan (AMNH 94718–19), 20 km NE Cuautla, 6,500' (= 1,982 m) (TCWC 7347–48, 7354), Cuernavaca (LACM 64505), 1.5 mi (= 2.4 km) SE Huitzilac (TCWC 7346, 7349–53; UIMNH 25933–34), 1.5 mi (= 2.4 km) SW Huitzilac, 8,000' (= 2,439 m) (KU 61160–61), 6 mi (= 9.6 km) NE Tepoztlán (AMNH 108913); Oaxaca, 12 km N intersection with road to Tlaxiaco on Rt. 190 (KU 140078).

Specimens not examined (4): MEXICO, Guerrero, El Saltre River, Mpio. Ixcateopan de Cuahutemoc (MZFC 3615); Morelos, 20 km NE Cuautla (TCWC 7355), 0.5 mi (= 0.8 km) E Tepoztlan (UCM 9126–27).

Tantilla flavilineata Smith and Burger

Yellow-lined Centipede Snake

Tantilla flavilineata Smith and Burger, 1950: 117; Smith and Smith, 1951: 98; Cochran, 1961; 217; Savitzky and Smith, 1971: 170; Wilson and Meyer, 1971: 21; Wilson et al., 1977: 55; Wilson, 1982a: 33, 1982b: 307.1, 1983a: 57, 1985c: 368.1, 1999: 9; Pérez-Higareda et al., 1985: 291; Flores-Villela, 1993: 33; Flores-Villela and Gerez, 1994: 322, 372; Campbell et al., 1995: 122; Casas-Andreu et al., 1996: 34; Campbell and Smith, 1997: 333; Campbell, 1998a: 2; Wilson, 1999: 9; Wilson et al., 1999: 1; Wilson and McCranie, 1999: 326; Casas-Andreu et al., 2004: 389; Liner, 2007: 44; Canseco-Márquez and Gutiérrez-Mayén, 2010: 237, 238; Flores-Villela et al., 2010: 321; Wilson and Johnson, 2010: 135; Wilson et al., 2013: 41; Ochoa-Ochoa et al., 2014: table S3.

Holotype: University of Illinois Museum of Natural History (UIMNH) 6321, adult female, collected 23 August 1949 by Jack and W. Leslie Burger.

Type-locality: 8 miles SE Nochixtlán, Oaxaca, Mexico.

Definition: (Table 1). A complete nuchal collar is present on the head, which sometimes crosses the posterior portion of the parietals, except for the ultimate supralabial. Other than pale markings on the supralabials, usually in the form of pre- and postocular spots, the remainder of the head is uniform brown. The dorsal ground color is cream to pale tan. A pale middorsal stripe extends along the middorsal scale row and adjacent halves of the paravertebral rows, and a pale lateral stripe, slightly paler than the ground color, is present on row 4 and the adjacent halves of rows 3 and 5. A diffuse dark stripe, which varies in intensity, is evident along the middle of most dorsal scale rows. The venter is creamy white. The ventrals and subcaudals range from 152 to 168 and 43 to 56, respectively.

Description: (Fig. 13). The head is uniform in color, except for pale pre- and postoculars spots. A complete nuchal collar expands laterally to cross the posterior portion of the ultimate supralabial and sometimes extends onto the parietals, but usually for no more than one dorsal scale length. The dorsal ground color is cream to pale tan. A concentration of dark brown pigment is present on the center of each dorsal scale, causing a diffuse median stripe on each scale row. Depending on the amount of dark pigment, the pattern varies in intensity and the amount of area occupied. On casual observation, the pattern consists of a pale middorsal stripe that covers the middorsal scale row and the adjacent halves of the paravertebral rows, and a dark stripe on either side of the middorsal stripe that covers scale row 6 and the adjacent halves of rows 5 and 7. The lateral areas of the dorsum (rows 1 through 4 and the lower half of row 5) appear lineate, but a dark stripe on scale row 3 produces a "dorsolateral pale stripe" on scale row 4 and the adjacent halves of scales rows 3 and 5. On closer inspection, the first two scale rows are relatively pale, with some dark brown reticulations concentrated at the posterior edge of each scale. An irregular dark brown line is present through the middle of scale row 3. Scale row 4 is pale tan, with dark pigment concentrated at the posterior edge of each scale. The lower half of scale row 7 is brown and the upper half is cream; dark pigment is present along the length of the scale. Scale row 8 is cream, with only a scattering of dark pigment on the posterior of each scale. The pale middorsal stripe extends the length of the body and tail, and either can be confluent with the collar or separated from it by a space about one dorsal scale long. In the latter case, the middorsal stripe begins 2–3 scales posterior to the parietals. The venter is creamy white, with a scattering of brown pigment on the lateral edges of the ventrals. The variation in scutellation is as follows: the prefrontal and supralabials usually are not in contact, separated by contact of the postnasal and preocular, but the prefrontals and supralabials can be in contact on one or both sides; the supralabials are 7, with the 3rd and 4th entering the orbit; the infralabials are 6, with four in contact

with anterior chinshields, the 4th is the largest, the first pair usually is in medial contact, but can be separated by contact of the mental with one or both of the anterior chinshields; the postoculars are 2; the temporals are 1+1; the dorsal scale rows are 15 throughout; the ventrals in males are 154–166 (160.0), and in females 152–168 (161.3); the cloacal scute is divided; the subcaudals in males are 51–56 (53.4), and in females 43–49 (46.2); and the ventrals + subcaudals in males are 206–222 (213.4), and in females 195–215 (207.3). The specimens measured 101–293 mm in total length and 20–52 mm in tail length, with a relative tail length of 0.177–0.206.

Distribution: Intermediate elevations of the central portion of the Mexican state of Oaxaca (Fig. 5).

Ecological observations: Wilson and Meyer (1971: 22–23) stated that "according to data accompanying specimens, AMNH 91902 was found 'under rock in oak, madroño assn.'," and AMNH 97984 was taken "under rock." According to the data on the tags, UNM 22122–23 were collected from "under rocks in moist terrain in oak forest." Canseco-Márquez and Gutiérrez-Mayén (2010) reported this species as a very rare inhabitant of oak forests on rocky slopes at elevations from 2,190 to 2,340 m. They noted it to be fossorial and noctural, found under rocks during the day, as well as within trunks, and among roots. An adult female with a body length of 275 mm contained a large centipede (71.4 mm in length); they also reported it as oviparous, as the specimen, found in June, contained 12 vitellogenic follicles.

Remarks: The material accrued since the revision by Wilson and Meyer (1971) allowed us to expand the ranges of some scutellational features. *Tantilla flavilineata* is a member of the *taeniata* group (Wilson and Meyer, 1981).

Etymology: The name *flavilineata* is "derived from the Latin *flavus*, meaning 'yellow,' and *lineatus*, past participle of *lineare*, meaning 'to fashion into a straight line,' in reference to the pale middorsal stripe present in this species" (Wilson, 1985c).

Specimens examined (15): MEXICO, Oaxaca, 5 mi (= 8 km) NE Mitla (AMNH 91092), 9.7 (= 15.5 km) NE Mitla (AMNH 97984); 6 mi (= 9.6 km) ESE Nochixtlán (UTEP 6037), 8 mi (= 12.8 km) SE Nochixtlán (MCZ 51534; UIMNH 6321–22, 6324; USNM 129524; UMMZ 114077), 16.4 km N Mexico Hwy. 190 (Ciudad Oaxaca) on Mexico Hwy. 175 (DEH 9882), km 455 on Mexico Hwy. 190 (ca. 92 km N Oaxaca City along Mexico Hwy. 190) (CAS 103438–40), summit of Cerro Guirone, Distr. Tlacolula (UNM 22122–23).

Specimens not examined (3): MEXICO, Oaxaca, 4 km E San Miguel Huautla (EBUAP 1859–60); 2.5 km S San Pedro Jocotipac (EBUAP 1858).

Tantilla gracilis Baird and Girard

Flathead Snake

Tantilla gracilis Baird and Girard, 1853: 132; Kirn et al., 1949: 238; Hardy and Cole, 1968: 615; Savitzky and Collins, 1971: 86; Cole and Hardy, 1981: 273; Flores-Villela, 1993: 33, 57; Campbell et al., 1995: 122; Roze, 1996: 180; Wilson, 1999: 9; Mendoza-Quijano et al., 2006: 40; Lemos-Espinal and Smith, 2007: 354; Liner, 2007: 44; Lemos-Espinal and Smith, 2009: 11; Lavín-Murcio and Lazcano, 2010: 293; Wilson and Johnson, 2010: 135; Ramírez-Bautista et al., 2013: 87; Wilson et al., 2013: 41; Ochoa-Ochoa et al., 2014: table S3.

Holotype: Stated to be the University of Michigan Museum of Zoology (UMMZ) 3781 by Kluge (1984), but the previous number assigned to this specimen is USNM 4500, a number for a lot of 11 specimens, of which two still are in the USNM collection; these specimens likely were not available to Baird and Girard (1853), because this lot was collected by Captain Pope on the Pacific Railroad Survey at about the same time the Baird and Girard work was published (dated 5 January 1853). The actual holotype probably is USNM 2040 or 2041, as both specimens are listed in the USNM catalogue to be from Indianola, Texas, and collected by J. D. Graham. Neither of these specimens, however, has been located (Gotte and Wilson 2005).

Type-locality: Indianola, Calhoun Co., Texas (but see above).

Definition: (Table 1). The head pattern is uniform in color, like that of the dorsum of the body, to a dark brown. When a head cap is present, the posterior border is concave. A pale nuchal band or dark nape band is absent. The supralabials usually are 6, and a single postocular generally is present. The dorsum of the body is uniform golden- or gray-brown to reddish brown. The ventrals and subcaudals range from 106 to 138 and 36 to 57, respectively.

Description: The dorsum of the head is the same color as the body, or slightly darker. If a head cap is distinguishable, the posterior edge is concave. The dorsum of the body is uniform golden brown, through gray-brown to reddish brown. The chin is cream, and the venter grades from salmon pink to orange. The variation in scutellation is as follows: the postnasal and a single preocular sometimes are in contact; the supralabials are 4–8 (usually 6), with 3rd and 4th entering the orbit; the infralabials are 4–7 (usually 6), with the first four in contact with the anterior chinshields and the 4th the largest, with the first pair sometimes in medial contact; the postoculars are 1; the temporals are 1+1; the dorsal scale rows are 15 throughout; the ventrals in males are 106–131 ($\bar{x}$ = 120.0), and in females 115–138 ($\bar{x}$ = 128.7); the cloacal scute is divided; the subcaudals in males are 40–57 ($\bar{x}$ = 49.3), and in females 36–51 ($\bar{x}$ = 43.3); and the ventrals + subcaudals in males are 151–177 ($\bar{x}$ = 165.1), and females 156–179 ($\bar{x}$ = 170.7). The specimens measured 75–249 mm in total length and 16–53 mm in tail length, with a relative tail length of 0.160–0.295.

Distribution: Low and moderate elevations from eastern Kansas, southern Missouri, and extreme southwestern Illinois south to northwestern Louisiana, eastern and southern Texas, United States, and northeastern Coahuila, Mexico. Isolated populations occur in northern Missouri, southwestern Louisiana, and the Texas Panhandle, United States (Fig. 14).

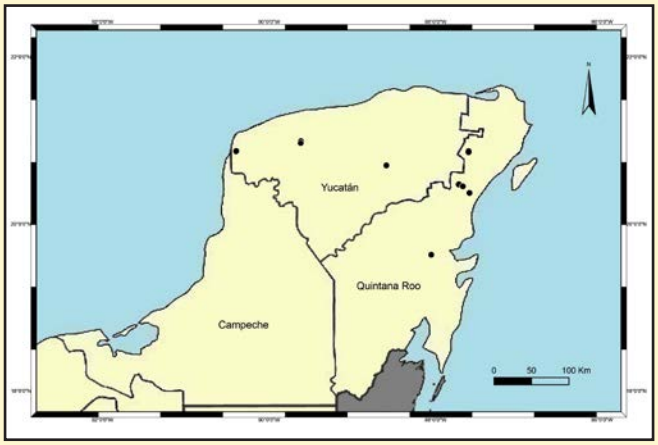

Fig. 11. Distribution map of the reported localities for *Tantilla cuniculator*.

Fig. 12. Adult *Tantilla deppei* from Tlacotenoco, Morelos, Mexico. EVS 13 (medium vulnerability species). © Peter Heimes

Fig. 13. Adult *Tantilla flavilineata* from San Pedro Jocotipac, Oaxaca, Mexico. EVS 14 (high vulnerability species). © Luis Canseco-Márquez

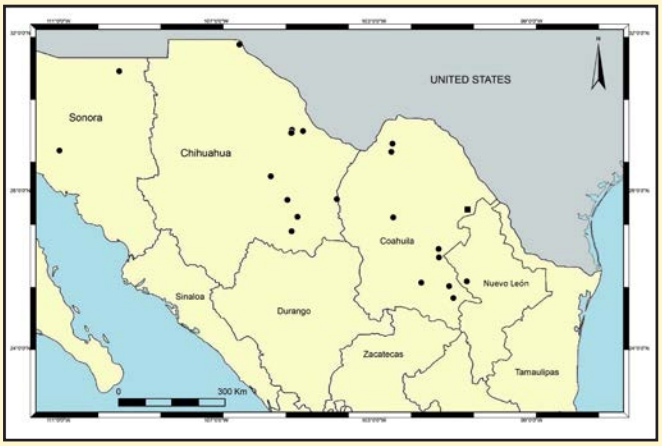

Fig. 14. Distribution map of the reported localities for *Tantilla gracilis* (square) and *T. hobartsmithi* (circles).

Ecological observations: Savitzky and Collins (1971: 86) reported the single specimen of this snake (KU 128805) known from a specific locality in Mexico. The snake was found "under a rock, at the ruins of the Hotel Club Deportivo…." This locality is about 68 km SE of Sabinas, in the northeastern corner of Coahuila. The elevation

was not provided, but according to map 10 in Anonymous (1967) apparently is below 200 m. Based on geographic locality and elevation, the KU 128805 probably came from the Lowland Arid Forest. Lemos-Espinal and Smith (2007: 354) provided information on the habitat, behavior, and food of this species. They noted the following about the habitat: "Warmth, low altitude, surface cover and at least moderate humidity are essential features of the habitat of this species. Penetration into semiarid regions is possible only where humidity is relatively high. Both wooded regions and plains are occupied, and under optimum conditions the species can be very abundant." Concerning behavior, they indicated the following: "Most frequently these snakes are found under stones, especially flat ones, or other objects such as logs and trash on the surface of the ground, especially after rains, when soil moisture is high and where earthworms and other invertebrate prey also take refuge under the same protection. As indicated by the head structure, they are adapted for burrowing in a variety of soils, depending on its moisture. Even where common they are seldom found in the open; they appear to have a small home range, and are seldom found together." They also noted that "one to four small eggs 13–25 mm long are laid in late spring or early summer, under objects on the ground where moisture is retained for considerable periods. Incubation requires 50–80 days, depending on temperature. Breeding takes place as early as the second or third year after hatching." Regarding food habits, Lemos-Espinal and Smith stated that, "soft-bodied invertebrates are the preferred food, including insect larvae and earthworms. However, centipedes and scorpions are also eaten, subdued in part by the weak venom conducted through the two small fangs at the rear of the upper jaw. Rapidly chewing motions keep the venom flowing until the prey is quiet."

Remarks: Hardy and Cole (1968) provided extensive morphological data on a large collection of this species from Kansas. Savitzky and Collins (1971) gave a total length of 125 mm for KU 128805 (the tail is incomplete); the snake actually measures 205 mm.

Etymology: The name *gracilis* is from the same word in Latin and means "slender or thin," in reference to the slender habitus of this snake.

Specimens examined (1). MEXICO: Coahuila, Hotel Club Deportivo, S end Don Martín Dam (KU 128805).

Specimens not examined (1). MEXICO: No other data (AMNH 4299).

***Tantilla hobartsmithi* Taylor**

Southwestern Black-headed Snake

Tantilla nigriceps (*nec* Kennicott): Van Denburgh and Slevin, 1913: 423.

Tantilla planiceps (*nec* Blainville): Stejneger and Barbour, 1917: 105 (part).

Tantilla nigriceps eiseni (*nec* Stejneger): Woodbury, 1931: 107.

Tantilla atriceps (*nec* Günther): Taylor, "1936" (1937): 339 (part).

Tantilla hobartsmithi Taylor, "1936" (1937): 340; Cole and Hardy, 1981: 220, 1983b: 318.1; Flores-Villela, 1993: 33, 64; Campbell et al., 1995: 122; Wilson, 1999: 9; Lemos-Espinal et al., 2004: 82; Mendoza-Quijano et al., 2006:40; Lemos-Espinal and Smith, 2007a: 405; 2007b: 354; Liner, 2007: 44; Rorabaugh, 2008: 51; Enderson et al., 2009: 666; Lemos-Espinal and Smith 2009: 11; 51; Lavín-Murcio and Lazcano, 2010: 293; Wilson and Johnson, 2010: 135; Ramírez-Bautista et al., 2013: 87; Wilson et al., 2013: 41; Ochoa-Ochoa et al., 2014: table S3.

Tantilla utahensis Blanchard, 1938: 372.

Tantilla eiseni (*nec* Stejneger): Miller and Stebbins, 1964: 424.

Tantilla planiceps atriceps (*nec* Günther): Tanner, 1966: 134.

Tantilla planiceps utahensis: Tanner, 1966: 134.

Holotype: University of Illinois Museum of Natural History (UIMNH) 25066, male, collected 3 July 1934 by Edward H. Taylor.

Type-locality: Near La Posa, 10 mi (= 16 km) NW Guaymas, Sonora, Mexico.

Definition: (Table 1). A brown to black head cap, usually convex or straight posteriorly, extends ½–3 scales beyond the parietals and does not continue ventrolaterally below the angle of the mouth. The head cap is followed

by a pale (white or cream) nuchal collar ½–2 scales long. A dark nape band or dark spots are absent along the posterior edge of the pale nuchal collar. The dorsum of the body is beige to pale brown. The venter is immaculate. The ventrals and subcaudals range from 124 to 169 and 47 to 74, respectively. The hemipenis is distinctly capitate.

Description: (Fig. 15). A brown to black head cap does not extend ventrolaterally below the oral rictus. The head cap extends ½–3 scales beyond the posterior end of the interparietal suture, and its posterior edge usually is convex or straight and followed by a white or cream neck band ½–2 scales long. A dark band or dark spots are absent along the posterior edge of the neck band. The dorsum of the body is uniform beige to pale brown. The venter is immaculate cream. The variation in scutellation is as follows: the postnasal and a single preocular are in contact and separate the prefrontal from the 2nd supralabial; the supralabials are 7, with the 3rd and 4th entering the orbit; the infralabials are 6, with the first four in contact with anterior chinshields, the 4th is the largest, and the first pair is in medial contact and separate the mental and anterior chinshields; the postoculars are 1 or 2 (usually 2); the temporals are 1+1; the dorsal scale rows are 15 throughout; the ventrals in males are 124–166 (141.1), and in females 130–169 (150.3); the cloacal scute is divided; the subcaudals in males are 48–74 (62.6), and in females 47–67 (55.4); and the ventrals + subcaudals in males are 180–239 (203.5), and in females 186–231 (204.8). The specimens measured 93–313 mm in total length and 20–80 mm in tail length, with a relative tail length of 0.183–0.313.

Distribution: Low, moderate, and intermediate elevations in a series of apparently disjunct populations from southern California through southern Nevada and Utah, western Colorado, Arizona, southern New Mexico, western Texas, United States, and western Sonora, eastern Chihuahua, northern Coahuila, and western Nuevo León, Mexico (Fig. 14).

Ecological observations: Lemos-Espinal and Smith (2007: 355) reported that, "these snakes inhabit a wide variety of vegetation and soil types, in arid or semiarid regions that are well drained but also have underground moisture available. Grasses are usually present, whether in open or forested areas. They are most frequently found on hillsides under stones, logs and other surface litter that overlie the burrows or crevices where they live most of the time. They also inhabit abandoned mammal burrows." With respect to behavior these authors noted that, "the species is almost exclusively nocturnal, probably emerging from their burrows only periodically. They are fast-moving when exposed. Anal gland secretions and feces are usually released upon capture. Usually but a single egg is laid, although a clutch of three has been recorded. The eggs are unusually slender and elongate, 6–7 × 23–28 mm." With regard to diet these authors indicated that, "small invertebrates of a wide variety are eaten, including beetle larvae, centipedes, millipedes, spiders and caterpillars." Rorabaugh (2008) reported this species to occur in the Sonoran Desert, thornscrub, and the highlands.

Remarks: See the *T. atriceps* species account. *Tantilla hobartsmithi* is a member of the *planiceps* group (Cole and Hardy, 1981).

Etymology: The name *hobartsmithi* is a patronym honoring Hobart Muir Smith (1912–2013), the American herpetologist considered to be the father of Mexican herpetology, among his many other accomplishments.

Specimens examined (4). MEXICO: Chihuahua, E side of Ciudad Juárez, Sangamo Electric Co. (UTEP 9415); Coahuila, 10 mi (= 16 km) S Saltillo, Mexico Hwy. 57 (LSUMZ 14524); Nuevo León, 20 mi (= 32 km) W Monterrey (LSUMZ 14523); Sonora, 29 mi (= 46.4 km) W, 6.6 mi (= 10.6 km) S (by road) Agua Prieta (AMNH 111168).

Specimens not examined (20). MEXICO: Chihuahua, Sierra Pequis, 18.6 mi (= 29.9 km) W (by road) El Ancon (29.6 mi [= 47.6 km] W of Ojinaga) (UAZ 35044), Coyame (UAZ 35045), 12 mi (= 19.3 km) S Jaco, Sierra Almagre (KU 33984), 16 mi (= 25.7 km) NE Jiménez on Chihuahua 22 (CM 60086), 74.8 km N Jiménez (SRSU3074), Ciudad Coyame (Lemos-Espinal and Smith, 2007a), 25.6 km SW Jiménez (Lemos-Espinal and Smith, 2007a), 16.5 km NW Meoqui (Lemos-Espinal and Smith, 2007a), Sierra Pegüis, 29.8 km W El Ancon (Lemos-Espinal and Smith, 2007a); Coahuila, no other data (FLMNH 106622), 11.6 mi (= 18.6 km) NNW Saltillo (TCWC 33983), 8.6 mi (13.8 km) W Ocampo (TCWC 53164), 95 mi (= 152.8 km) N Saltillo, 27 mi (= 43.4 km) S Monclova, on Mexico Hwy. 57 (UAZ 23763), ca. 5.3 mi (= 8.5 km) (by road) E Piedra Blanca (UAZ 32819–20), 6 mi (= 9.6 km) N San Lazaro on Mexico Hwy. 51 (UAZ 37740), 4.4 mi (= 7.0 km) N Cuesta La Muralla Restaurant, Mexico Hwy. 57 (UAZ 42202), 25.2 mi (= 40.5 km) (by road) SE La Linda (Stillwell), 8 mi (= 12.8 km) SW Piedra Blanca, Sierra del Carmen (MVZ 58363); Sonora, no other data (AMNH 107377), 1 mi (= 1.6 km) S Hermosillo (LACM 20473).

Tantilla impensa Campbell

Greater Centipede Snake

Tantilla impensa Campbell, 1998a: 6; Wilson, 1999: 10; Wilson and McCranie, 1999: 326; Liner, 2007: 44; Köhler, 2008: 287; Johnson et al., 2010: 367; Wilson and Johnson, 2010: 135; McCranie, 2011a: 219; Reynoso et al., 2011: 506; McCranie and Valdés-Orellana, 2013: 662; Wilson et al., 2013: 41; Ochoa-Ochoa et al., 2014: table S3.

Holotype: University of Texas at Arlington (UTA) R-38196, adult female, collected by Eric N. Smith on 2 July 1994.

Type-locality: Aldea San Miguelito (51°22'N, 88°43'W), elevation 460 m, Sierra de Caral, Municipio de Morales, Depto. Izabal, Guatemala.

Definition: (Table 1). The head pattern consists of a complete or middorsally-divided pale nuchal band, about one and one-half scales long middorsally, which begins just posterior to the parietals and secondary temporals. The dorsal coloration is pale brown dorsolaterally and dark gray-brown ventrolaterally, separated by a pale lateral stripe that covers the adjacent halves of scale rows 3 and 4. A tan to rust middorsal stripe is present on about the medial two-thirds of the middorsal row, which contains a series of dark brown dashes on the lateral edges of the middorsal scales. Above the pale lateral stripe, a dark gray-brown stripe extends along the upper half of scale row 4. The lower half of the paraventral scale row is cream, and the upper half is dark gray-brown. The ventrals and subcaudals range from 162 to 172 and 65 to 72, respectively.

Description: A pale brown head cap, outlined with dark gray-brown, is present on the lateral and posterior portions of the parietals. The head cap is followed by a complete or middorsally-divided white to beige nuchal collar, which usually begins posterior to the parietals and is 1–2 scales long. The nuchal collar is bordered posteriorly with dark gray-brown. A poorly divided pale preocular spot and a prominent white postocular spot are present. The dorsolateral ground color is pale brown and the ventrolateral ground color is dark gray-brown, separated by a pale lateral stripe that is white anteriorly and grades from yellow to buff posteriorly, and is present on the adjacent halves of scale rows 3 and 4. A tan to rust middorsal stripe covers about the medial two-thirds of the middorsal scale row, and is outlined by a series of dark brown dashes along the lateral portion of the middorsal scales. The lower portion of the paraventral scale row is cream. The chin is mostly cream, with dark spots or mottling along the mental and the first two pairs of infralabials, and large dark spots are present on the posterior portion of the 3rd infralabial and the lower half of the 4th. The remainder of the venter is immaculate cream. The variation in scutellation is as follows: the postnasal and a single preocular are in contact, and separate the prefrontal and the 2nd supralabial; the supralabials are 7, with the 3rd and 4th entering the orbit; the infralabials are 6, with first four in contact with the anterior chinshields, the 4th is the largest, the first pair is in contact and separates the mental and the anterior chinshields; the postoculars are 2; the temporals are 1+1; the dorsal scale rows are 15 throughout; the ventrals in males are 162–165 ($\bar{x}$ = 163.8), and in females 164–172 ($\bar{x}$ = 168.1); the cloacal scute is divided; the subcaudals in males are 68–72 ($\bar{x}$ = 70.8), and in females 65–72 ($\bar{x}$ = 69.5); and the ventrals + subcaudals in males are 233–237 ($\bar{x}$ = 235.8), and in females 234–241 ($\bar{x}$ = 237.5). The specimens measured 310–642 mm in total length and 75–142 mm in tail length, with a relative tail length of 0.211–0.249.

Distribution: Near sea level to intermediate elevations of the Caribbean versant from eastern Chiapas, Mexico, through the mountains of central Guatemala to western Honduras (Fig. 16).

Ecological observations: Campbell (1998: 9) provided the following information on this taxon: "This snake has been found crawling across trails or in leaf-litter at various times throughout the day from 630 am to 1830 hr at ambient temperatures of 25–27°C; one individual was encountered along a trail in the forest shortly after dusk at 1910 hr when the ambient temperature had dropped to 20.5°C. Most individuals were in primary forest on slopes covered with leaf litter; only a single snake was in a coffee grove, but this was near primary forest. One individual was along a stream at midmorning and three were collected in rotting logs. A large centipede is in the stomach of KU 191103." Campbell (1998: 9) reported this species to occur in "tropical and subtropical wet forest at elevations from near sea level to 1200 m." These correspond to the Lowland Evergreen Forest and Premontane Evergreen Forest formations of Savage (1975), respectively. Wilson and McCranie (1999) reported specimens from the Premontane Evergreen Forest and Lower Montane Evergreen Forest formations. McCranie and Valdés Orellana (2013) documented the presence of two shelled oviductal eggs in a specimen from Honduras.

Remarks: Wilson and McCranie (1999) reported this species to occur in Chiapas, Mexico, and in western Honduras. Campbell (1998a) described it as a member of the *taeniata* group. Wilson (1982a) mentioned four species of *Tantilla* for which total lengths approach or exceed 600 mm, including *T. moesta*, *T. rubra*, *T. semicincta*, and *T. supracincta* (as *T. annulata*); he provided no actual measurement for *T. rubra*, however, as this information was based on personal communication from Louis Porras (see Porras, 1982), which at that time applied to *T. rubra cucullata* (= *T. cucullata*). Farr et al. (2007) reported on a specimen of *T. rubra* from Tamaulipas that measured 659 mm in total length (SVL = 545 mm, TL = 114 mm). Campbell et al. (1995) reported on two specimens of *T. shawi* from Veracruz with total lengths of 653 and 690 mm, so *T. shawi* can be added to the list. Subsequently, Dixon et al. (2000) reported on a specimen of *T. cucullata* measuring 678 mm in total length. Campbell (1998a) reported on an intact female specimen of *T. impensa* that measured 642 mm in total length, and further mentioned a larger female with an SVL of 563 mm and an incomplete tail; he estimated that the snake would have measured about 725 mm in total length. *Tantilla impensa*, therefore, appears to be the longest reported species in the genus, with six other species approaching or exceeding total lengths of 600 mm. Campbell (1998a) and Wilson and McCranie (1999) can be referenced for information on Guatemalan and Honduran material of this taxon, respectively.

Etymology: The name *impensa* is derived from the Latin word *impensus*, meaning "ample, great, large, or strong" in reference to the large size of this snake.

Specimens examined (1): MEXICO, Chiapas, Santa Rosa (UF 53616).

Tantilla johnsoni Wilson, Vaughan, and Dixon

Johnson's Centipede Snake

Tantilla johnsoni Wilson, et al., 1999: 1; Wilson, 1999: 11; Wilson and McCranie, 1999: 326; Liner, 2007: 44; Johnson, et al., 2010: 344, 353, 354, 367; Wilson and Johnson, 2010: 135; Reynoso et al., 2011: 506; Wilson et al., 2013: 41; Ochoa-Ochoa et al., 2014: table S3; Johnson et al., submitted.

Holotype: Carnegie Museum of Natural History (CM) 51741, adult (?) male collected 11 August 1968 by E. C. Welling M.

Type-locality: Musté, Municipio Motozintla, approximate elevation 450 m, Chiapas, Mexico.

Definition: (Table 1). A well-developed pale nuchal collar extends from the posterior portion of the parietals for 1–1½ dorsal scales, and is followed by a dark nape band 2–2½ dorsal scales long. The dorsal ground color is tan to dark tan, a pale middorsal stripe is absent, and anteriorly on the body a pale lateral stripe is absent or a short pale lateral stripe is present on the adjacent halves of dorsal scale rows 3 and 4. The ventrals and subcaudals range from 146 to 159 and 40+ to 62, respectively.

Description: A dark brown head cap grades to very dark brown on the anterior and posterior edges, as well as on the labial extensions; it extends posteriorly to cover the dorsal body scale behind the medial parietal suture. A pale tan spot covers the upper portion of the rostral, all of the internasals, and the anterior one-third of the prefrontals. A well-developed pale nuchal collar is complete and extends from the posterior tips of the parietals for about two scales, and expands laterally to cover the posterior portion of the last supralabial. A dark brown nape band, about 2½–3 scales long, follows the nuchal collar. Spots are present on the preocular (confluent with pale pigment on the dorsum of the snout) and postocular scales. The dorsal ground color is tan on dorsal scale rows 5–11, and posteriorly this color gradually invades the upper half of row 4. A pale middorsal stripe is absent. A pale lateral stripe is poorly developed but most evident on the anterior portion of the body (especially in the neck region), where it covers the adjacent halves of dorsal scale rows 3 and 4 (in the paratopotype, the only evidence of this stripe is a series of pale disjunct spots on the anteromedian portion of the first four to five dorsal scales, in row 4). The chin is cream with very dark brown spots on the posterior edge of the 3rd infralabial, the lingual half of the 4th, and the lingual edge of the 5th. The venter is immaculate cream. The variation in scutellation is as follows: the postnasal and a single preocular are in narrow to somewhat broad contact, and separate the prefrontal and 2nd supralabial; the supralabials are 7, with the 3rd and 4th entering the orbit; the infralabials are 6, with the first four in contact with the anterior chinshields, the 4th is the largest, the first pair is in contact, and separates the mental and the anterior

chinshields, or is narrowly separated by the anterior extension of the left anterior chinsheld; the postoculars are 2; the temporals are 1+1; the dorsal scale rows are in 15 rows throughout; the ventrals in two males are 146–159 ($\bar{x}$ = 152.5); the cloacal scute is divided; the subcaudals in one male are 62 (40+ in the other male); and the ventrals + subcaudals in one male are 221. The holotype measured 337 mm in total length and 76 mm in tail length, with a relative tail length of 0.225.

Distribution: Known only from the type locality (Fig. 16).

Remarks: This species was described as a member of the *Tantilla taeniata* group (Wilson et al., 1999). Wilson et al. (1999) were unable to pinpoint the type locality, but presumed it to be on the road into the Grijalva Valley north of Motozintla on the Atlantic versant. Jerry D. Johnson (pers. comm.), however, determined the type locality to lie on the Pacific versant of Chiapas, on the highway between Motozintla and Huitzla at an elevation of 518 m.

Etymology: The name *johnsoni* is a patronym honoring the American herpetologist Jerry D. Johnson, widely known for his work in Mexico, especially in the state of Chiapas.

Specimens examined (2): MEXICO, Chiapas, Musté, elevation ca. 450 m, Mpio. Motozintla (CM 51741–42).

***Tantilla moesta* (Günther)**

Black-bellied Centipede Snake

Homalocranium moestum Günther, 1863: 352.

Tantilla moesta: Cope, 1866: 126, Wilson, 1982a: 43, 1982b: 307.1, 1988e: 454.1, 1999: 12; Flores-Villela, 1993: 33; Bahena-Basave, 1994: 14; Flores-Villela and Gerez, 1994: 322, 372; Campbell et al., 1995: 122; Lee, 1996: 376; Campbell, 1998b: 253; Wilson and McCranie, 1998: 19; Wilson, 1999: 12; Lee, 2000: 340; Liner, 2007: 44; Köhler, 2008: 287; Johnson et al., 2010: 367; Wilson and Johnson, 2010: 135; Wilson et al., 2013: 41; Ochoa-Ochoa et al., 2014: table S3.

Homalocranion moestum: Bocourt, 1883: 583.

Tantilla moestum: Stuart, 1934: 5.

Tantilla moesta moesta: Smith, 1939: 34.

Tantilla moestra: Müller, 1973: 13.

Holotype: British Museum of Natural History (BMNH) 1946.1.9.74, female.

Type-locality: "Province of Peten" (Depto. El Petén, Guatemala); restricted to Flores, Depto. El Petén, Guatemala, by Smith and Taylor (1950), herein accepted.

Definition: (Table 1). The head pattern consists of a long pale band that covers a varying amount of the frontal and parietals, and 2–7 scales beyond the parietals. The band extends laterally and merges with pale coloration on the chin. The dorsum of the body and venter are dark brown to black. The ventrals and subcaudals range from 138 to 152 and 52 to 62, respectively.

Description: (Fig. 17). A long pale nuchal band extends from the posterior tip of the frontal and the anterior edges of the parietals to the posterior tips of the parietals. The band continues laterally behind the eye and covers supralabials 5–7, and sometimes from ½–⅔ of supralabial 4. Small spots of dark pigment usually are present on any of the posterior supralabials (5th–7th). The nuchal band then continues onto the chin, and usually covers all of it except for the outer edges of infralabials 1–4 (or 5) and the mental (some specimens, however, lack dark pigment on the chin), and generally extends posteriorly on the venter from ventrals 2–6 (we consider ventrals that are at least half covered with pale pigment as an extension of the pale color on the head; pale pigment is absent on the ventrals of one specimen). Dorsally, the pale band extends 2–7 middorsal scales beyond the parietals. The dorsal and ventral coloration is uniform dark brown to black, but occasionally the area around the vent is paler. The variation in scutellation is as follows: the postnasal and a single preocular are separated, barely in contact, or (usually) in contact; the supralabials are 7, with the 3rd and 4th entering the orbit; the infralabials are 6, with the first four in contact with the anterior chinshields, the 4th is the largest, and the first pair is separated by contact of the mental and the anterior

chinshields; the postoculars are 1–2 (usually 2); the temporals are 1+1; the dorsal scale rows are 15 throughout; the ventrals in males are 138–151 (146.2), and in females 150–152 (151.3); the cloacal scute usually is divided, but occasionally is single; the subcaudals in males are 53–62 (57.6), and in females 52–57 (54.4); and the ventrals + subcaudals in males are 192–210 (203.3), and in females 203–207 (205.0). The specimens measured 155–592 mm in total length and 31–107 mm in tail length, with a relative tail length of 0.181–0.225.

Distribution: "Low elevations of the Yucatan Peninsula in the Mexican states of Yucatán and Quintana Roo and the northern portion of the Guatemalan department of El Petén" (Wilson, 1982a) (Fig. 18).

Geographic variation: See discussion in Wilson (1982a).

Ecological observations: Lee (2000: 340) reported the following: "Uncommon. Specimens found on forest floor and beneath logs in thorn forest, tropical evergreen forest. Secretive; terrestrial; largely nocturnal. Presumably lays eggs, but nothing is known concerning reproduction. Diet unknown."

Remarks: For a discussion of large size in the species of *Tantilla*, see the Remarks section of the *T. impensa* species account.

Etymology: The name *moesta* derives from the Latin *moestus*, meaning "sad" or "sorrowful," "perhaps an allusion to this snake's somber coloration" (Lee, 1996).

Fig. 15. Adult *Tantilla hobartsmithi* from Terrell County, Texas, United States. EVS 11 (medium vulnerability species) © Timothy Burkhardt

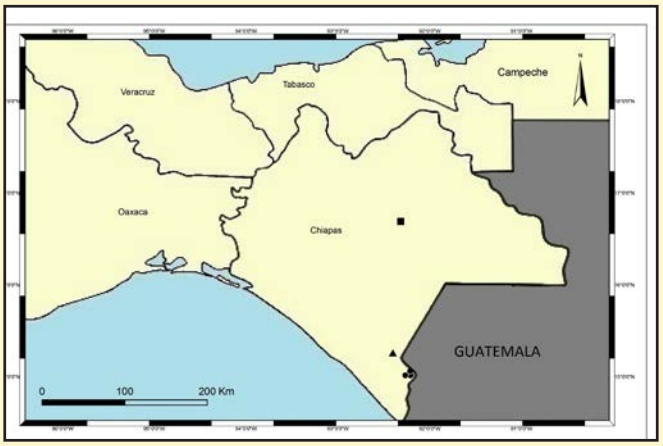

Fig. 16. Distribution map of the reported localities for *Tantilla impensa* (square), *T. johnsoni* (triangles), and *T. tayrae* (circles).

Fig. 17. Adult *Tantilla moesta* from Cozumel, Quintana Roo, Mexico. EVS 13 (medium vulnerability species). © Chris Harrison

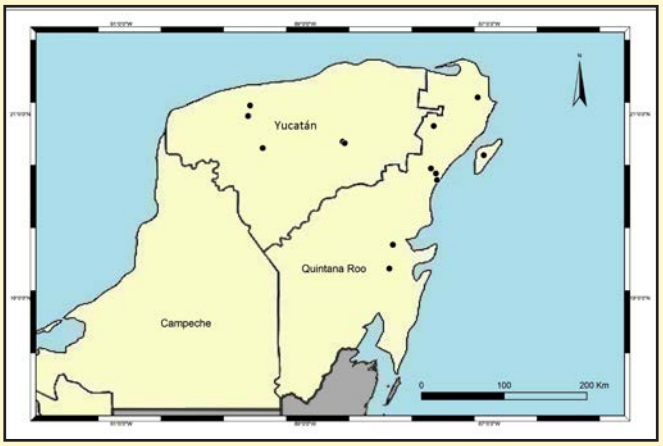

Fig. 18. Distribution map of the reported localities for *Tantilla moesta*.

Specimens examined (8): MEXICO, Quintana Roo, 33.2 km SE Coba (KU 171713), 18 mi (= 28.8 km) S Felipe Carrillo Puerto (LSUMZ 33299), 25 mi (= 40 km) W Puerto Juárez (USNM 157815); Yucatán, no other data (USNM 24883); Chichén Itzá (FMNH 36321), Dzibilchaltun (FMNH 153515), Mayapán (FMNH 40716), Mérida (USNM 6565).

Specimens not examined (10): MEXICO, Quintana Roo, 14 mi (22.4 km) SE Cobá (UMRC 89–51), Felipe Carrillo Puerto (UMMZ 113583), Pueblo Nuevo X-Can (UCM 40617), 14 km SE Coba (KU 301330); Yucatán, Mérida (FMNH 19406–08, 20605), Pisté (UCM 40618–19).

Tantilla nigriceps Kennicott

Plains Black-headed Snake

Tantilla nigriceps Kennicott, 1860: 328; Cole and Hardy, 1981: 273; Reynolds, 1982: 163; Flores-Villela, 1993: 33; Campbell et al., 1995: 122; Wilson, 1999: 12; Lemos-Espinal et al., 2004: 82; Mendoza-Quijano et al., 2006:40; Lemos-Espinal and Smith, 2007a: 406; 2007b: 355; Liner, 2007: 44; Rorabaugh, 2008: 22, 51; Enderson et al., 2009: 666; Lemos-Espinal and Smith, 2009: 11; Lavín-Murcio and Lazcano, 2010: 293; Wilson and Johnson, 2010: 135; Farr et al., 2013: 641; Narváez Torres and Lazcano Villarreal, 2013: 211; Wilson et al., 2013: 41; Ochoa-Ochoa et al., 2014: table S3.

Scolecophis fumiceps Cope, "1860" (1861): 371.

Homalocranion praeoculum Bocourt, 1883: 582.

Tantilla kirnia Blanchard, 1938: 373.

Tantilla nigriceps nigriceps: Smith, 1938: 149.

Tantilla nigriceps fumiceps: Smith, 1942: 38; Liner et al., 1978: 22; Contreras-Arquieta and Lazcano-Villareal, 1995: 61.

Syntypes: National Museum of Natural History (USNM) 2046, not USNM 2040, as indicated by Smith and Taylor (1945: 140), collected by Captain Page, and USNM 4491, collected by Dr. S. W. Crawford. These specimens currently are not in the USNM collection (Gotte and Wilson, 2005).

Type-locality: Indianola to Nueces, Texas, and Fort Bliss, El Paso Co., Texas, restricted to the latter locality by Smith and Taylor (1950); this restriction is invalid, however, because no lectotype was designated.

Definition: (Table 1). A black head cap usually is sharply convex or pointed posteriorly and well demarcated from the dorsal color, and extends 2–5 scales beyond the parietals. A pale nuchal collar and a pale band are absent behind the head cap. The dorsum of the body is uniform yellowish brown to brownish gray. The venter is white with a broad midventral pink to pale orange area. The ventrals and subcaudals range from 130 to 161 and 33 to 62, respectively.

Description: (Fig. 19). A black head cap extends 2–5 scales beyond the parietals; the posterior end of the head cap usually is sharply convex or pointed, and distinctly contrasts the dorsal color. The dorsal coloration is uniform yellowish brown to brownish gray, and the venter is white with a broad pink to pale orange midvental area. The variation in scutellation is as follows: the postnasal and a single preocular (rarely 2) sometimes are in contact; the supralabials are 7, with the 3rd and 4th entering the orbit; the infralabials are 6–7 (usually 6), with the first four in contact with the anterior chinshields, the 4th is the largest, and the first pair is in medial contact; the postoculars are 1–2 (usually 2); the temporals are 1+1; the dorsal scale rows are 15 throughout; the ventrals in males are 123–153 ($\bar{x}$ = 146.1), and in females 135–168 ($\bar{x}$ = 153.3); the subcaudals in males are 43–66 ($\bar{x}$ = 54.0), and in females 21–58 ($\bar{x}$ = 43.4); the ventrals + subcaudals in males are 192–206 ($\bar{x}$ = 200.2), and in females 176–208 ($\bar{x}$ = 196.8). The specimens measured 154–384 in total length and 25–63 in tail length, with a relative tail length of 0.093–0.257.

Distribution: Low, moderate, and intermediate elevations from southwestern Nebraska, eastern Colorado, and western Kansas (with an isolated population in eastern Wyoming) south through eastern and southern New Mexico, southeastern Arizona, and central and western Texas, United States, to northern and eastern Chihuahua, northern and eastern Durango, eastern Coahuila, central Nuevo León, and Tamaulipas, Mexico (Fig. 20).

Ecological observations: Lemos-Espinal and Smith (2007: 355) described the habitat of this snake, as follows: "sandy or gravelly soils are preferred, in open grassy places near moisture although well drained. The snakes are burrowers, and are seldom found except under rocks and surface debris of almost any sort, where some moisture

is retained. Prolonged dry weather drives them deeper under ground." They also described the behavior of this species, as follows: "These snakes are active only at night, when they may forage at some distance from their burrows, as indicated by detection on roads. Clutches of 1–4 are the norm for the genus. A clutch of 3 eggs was observed to hatch in close to 3 months, and the hatchlings were 123–128 mm in TTL [total length]; others have been observed as short as 100 mm TTL. Only the right oviduct is present." With regard to diet, these authors stated the following: "Living underground or under surface objects, and being active only at night, the snake's prey consists of invertebrates of similar habits, including millipedes and centipedes. One specimen was observed to bite a centipede behind the head, holding on for 3–5 minutes, apparently awaiting action of its venom, before swallowing it." Rorabaugh (2008) indicated that the occurrence of *T. nigriceps* is unconfirmed in Sonora, but that it likely inhabits the highlands of the state.

Etymology: The name *nigriceps* is derived from the Latin words *niger*, meaning "black, dark, or dusky" and *caput*, meaning "head," in reference to the black head cap.

Specimens examined (14): MEXICO, Chihuahua, 26 mi (= 41.6 km) SE Ciudad Chihuahua, 4,200' (= 1,280 m) (UTEP 6034), NW section of Ciudad Chihuahua (UNM 33220), Ciudad Chihuahua, Diego de Vilchis St. (UNM 33221), 11.6 mi (= 18.6 km) E Aldama Pemex Station on Mexico Hwy. 16, 1,280 m (UNM 34377), 35.2 mi (= 56.3 km) E Aldama Pemex Station on Mexico Hwy. 16 (UNM 34378), 35.7 mi (= 57.0 km) E Aldama Pemex Station on Mexico Hwy. 16 (UNM 34379), Río Santa María, near Progreso (USNM 104674), 1.5 mi (= 2.4 km) N San Francisco (KU 45764); Coahuila, S end Don Martin Dam, Hotel Club (KU 128804); Durango, 2 mi (= 3.2 km) S El Palmito, 4,850' (= 1,479 m) (MSUM H-2545), 18 mi (= 29 km) SE Cuencame, 6,200' (= 1,890 m) (MSUM H-9820); Tamaulipas, Mier (USNM 46584–85), 16.7 mi (= 26.7 km) S Nuevo Laredo on Mexico Hwy. 85 (UTACV R-8829).

Specimens not examined (32): MEXICO, Chihuahua, 1.1 mi (= 1.7 km) SW Nuevo Casas Grandes (UAZ 34413), 7.1 mi (= 11.4 km) SE Nuevo Casas Grandes on Mexico Hwy. 10 (UAZ 34414), 11.6 mi (= 18.6 km) N Galeana on Mexico Hwy. 10 (UAZ 34415), 13.4 mi (= 21.5 km) N Villa Ahumada on Mexico Hwy. 45 (UAZ 34796), 4.2 mi (= 6.7 km) S Samalayuca by Mexico Hwy. 45 (UAZ 35043), 3–5 mi (= 4.8 – 8.0 km) W town of Sueco, Mexico Hwy. 10 (MVZ 149196), 21.4 km al N de Villa Ahumada (Lemos-Espinal and Smith, 2007a), hills at eastern extreme of Colonia Juárez (BYU 14299), Ciudad Chihuahua (BYU 14340), 4.2 km SE de Galeana (Lemos-Espinal and Smith, 2007a), 18.6 km N Galeana (Lemos-Espinal and Smith, 2007a), 12.8 km NE Jiménez (Lemos-Espinal and Smith, 2007a), 6.7 km S Samalayuca (Lemos-Espinal and Smith, 2007a), 1.8 km SW Nuevo Casas Grandes (Lemos-Espinal and Smith, 2007a), 11.4 km SE Nuevo Casas Grandes (Lemos-Espinal and Smith, 2007a); Coahuila, 19.1 mi (= 30.7 km) E Casas Colorados (TCWC 44013); Durango, 18 mi (= 28.9 km) SE of Cuencamé (MSUMH 9821); Nuevo León, no other data (AMNH 160360), Parque Nacional Cumbres de Monterrey (Narváez-Torres and Lazcano-Villareal, 2013); Tamaulipas, no other data (AMNH 160359), 2.6 mi (= 2.6 km) WNW San Carlos (TCWC 48204), 2.7 mi (= 4.3 km) SE San Carlos (TCWC 58114), 3 mi (= 4.8 km) SE San Carlos (TCWC 58120), 12 km S of Camargo, on the road to Comales (UANL 6536), 16. 7 mi (= 26.8 km) S Nuevo Laredo on Mexico Hwy. 85 (UTA 8829), km 196 on Mexico Hwy. 85 between Ciudad Victoria and Ciudad Mante (UANL 4443), Cañón del Novillo (UANL 8086).

Tantilla oaxacae Wilson and Meyer

Oaxacan Centipede Snake

Tantilla oaxacae Wilson and Meyer, 1971: 26; Wilson, 1982a: 33, 1982b: 307.1, 1983a: 57, 1990c: 503.1, 1999: 13; Pérez-Higareda et al., 1985: 291; Casas-Andreu and Reyna-Trujillo, 1991: IV.8.6; Flores-Villela, 1993: 33, 58; Flores-Villela and Gerez, 1994: 322, 372; Campbell et al., 1995: 122; Casas-Andreu et al., 1996: 34; Campbell and Smith, 1997: 333; Campbell, 1998a: 2; Wilson, 1999: 13; Wilson et al., 1999: 1; Wilson and McCranie, 1999: 326; Casas-Andreu et al., 2004: 389; Liner, 2007: 44; Flores-Villela et al., 2010: 321; Wilson and Johnson, 2010: 135; Wilson et al., 2013: 41; Ochoa-Ochoa et al., 2014: table S3.

Holotype: University of Illinois Museum of Natural History (UIMNH) 40910, adult male.

Type-locality: Santo Tomás Teipan, Oaxaca, Mexico.

Definition: (Table 1). The head pattern generally consists of an incomplete pale nuchal collar that crosses the posterior portion of the parietals, but not the ultimate supralabial. The sides of the head are a darker brown than the dorsum, and pale markings are present on the otherwise dark supralabials. The dorsal ground color is brown, and a

pale middorsal stripe extends along the middorsal row and adjacent halves of the paravertebral rows. A pale lateral stripe, slightly paler than the ground color, is present on scale row 4 and the adjacent halves of rows 3 and 5. An irregular dark brown stripe also covers the adjacent halves of rows 2 and 3. The venter is cream. The ventrals and subcaudals range from 145 to 158 and 45 to 52, respectively.

Description: (Fig. 21) The dorsum of the head is brown, darker on the temporal region. Poorly defined pale pre- and postocular pale spots are present and confluent below the eye, or separated by a dark subocular blotch. A cream nuchal collar extends slightly posterolaterally from the midpoint to the posterior portion of the common parietal suture, to cover portions of the two scales immediately posterior to the ultimate supralabial, but does not cross this scale. The dorsum of the body is brown. A tan middorsal stripe begins 2–4 scales beyond the parietals; anteriorly the stripe is present only the middorsal scale row, but posteriorly it widens to cover the adjacent halves of the paravertebral rows on the body and most of the tail. The stripe is bounded on both sides by a somewhat diffuse, irregular, very dark brown stripe along the middle of the paravertebral row. A somewhat less well-defined tan to pale brown lateral stripe is present on scale row 4 and the adjacent halves of rows 3 and 5, which is bounded above by an irregular, narrow, very dark brown stripe, and below by an irregular broad stripe on the adjacent halves of rows 2 and 3. The lower half of row 2 and all of row 1 are tan to pale brown. The venter is cream, except that the color of the 1st dorsal scale row extends slightly onto the lateral edges of the ventrals. The variation in scutellation is as follows: the postnasal and a single preocular sometimes are in contact; the supralabials are 7, with the 3rd and 4th entering the orbit; the infralabials are 6, with the first four in contact with the anterior chinshields, the 4th is the largest, and the first pair is in medial contact; the postoculars are 2; the temporals are 1+1; the dorsal rows are 15 throughout; the ventrals in males are 151–158 ($\bar{x}$ =153.2), and in females 145; the cloacal scute is divided; the subcaudals in males are 46–52 ($\bar{x}$ = 48.3), and in females 45–48 ($\bar{x}$ = 46.5), and the ventrals + subcaudals in males are 199–205 ($\bar{x}$ = 201.8), and in females 193. The specimens measured 217–284 mm in total length and 46–58 mm in tail length, with a relative tail length of 0.199–0.212.

Distribution: Moderate and intermediate elevations along the Pacific versant of southeast-central Oaxaca, Mexico (Fig. 5).

Remarks: All of the material listed below is part of the hypodigm of the species, except for KU 137656. The data on this specimen all fit within the previously published ranges. Wilson and Meyer (1971) assigned *T. oaxacae* to the *taeniata* group.

Etymology: The name *oaxacae* comes from the name of the Mexican state where the type locality is situated.

Specimens examined (7): MEXICO, Oaxaca, Santo Tomás Teipan (UIMNH 40817, 40910–12), Lachishonase (= Lachixonace) (UIMNH 40818), Río Molina, 1.5 mi (= 2.4 km) SW Suchixtepec (CAS 101424), ca. 10 km N San José Pacífico (KU 137656).

***Tantilla planiceps* (Blainville)**

Western Black-headed Snake

Coluber planiceps Blainville, 1835: 294.

Homalocranion planiceps: Duméril, 1853: 490.

Tantilla planiceps: Cope, 1861: 74; Cole and Hardy, 1981: 211, 1983c: 319.1; Flores-Villela, 1993: 33; McGuire and Grismer, 1993: 363; Grismer, 1994a: 73, 75, 77, 1994b: 110, 117, 2002: 307; Campbell et al., 1995: 122; Wilson, 1999: 13; Grismer, 2002: 307; Liner, 2007: 44; Enderson et al., 2009: 666; Murphy and Méndez de la Cruz, 2010: 246, 255, 260; Wilson and Johnson, 2010: 135; Wilson et al., 2013: 41; Ochoa-Ochoa et al., 2014: table S3.

Tantilla nigriceps (nec Kennicott): Yarrow, 1883: 85 (part).

Homalocranium planiceps: Günther, 1895: 145.

Tantilla eiseni Stejneger. "1895" (1896): 117.

Tantilla eiseni transmontana Klauber, 1943: 71.

Tantilla planiceps eiseni: Tanner, 1966: 134.

Tantilla planiceps transmontanta: Tanner, 1966: 134.

Holotype: Muséum National d'Histoire Naturelle (MNHN) 818, adult male.

Type-locality: "Californie," restricted to southern Baja California Sur (Cabo San Lucas) by Smith and Taylor (1950); restriction accepted by Cole and Hardy (1981) and herein.

Definition: (Table 1). A black head cap extends 2–3 scales beyond the parietals, and ventrolaterally below the angle of the mouth, usually is convex or straight posteriorly, and is followed by a pale (white or cream) collar ½–1 scale long. Several disjunct brown spots often are present along the posterior edge of the nuchal collar. The dorsum of the body is beige to pale brown. The venter is immaculate cream. The ventrals and subcaudals range from 134 to 197 and 49 to 73, respectively.

Description: (Fig. 22). A brown to black head cap extends 2–3 scales beyond the posterior end of the interparietal suture, and ventrolaterally below the oral rictus. The posterior edge of the head cap usually is convex or straight, followed by a white or cream neck band ½–1 scale long. Several distinct brown spots often are present along the posterior edge of the neck band. The venter is immaculate cream. The variation in scutellation is as follows: the postnasal and a single preocular usually are in contact, but sometimes are separated by contact of the prefrontal and the second 2nd supralabial; the supralabials are 7, with the 3rd and 4th entering the orbit; the infralabials are 6, with the first four in contact with the anterior chinshields, the 4th is the largest, and the first pair usually is separated by contact of the mental and the anterior chinshields, but sometimes the scales are in medial contact; the postoculars are 2; the temporals are 1+1; the dorsal scale rows are 15 throughout; the ventrals in males are 134–184 (168.3), and in females 148–197 (178.0); the cloacal scute is divided; the subcaudals in males are 57–73 (65.7), and in females 49–70 (61.1); and the ventrals + subcaudals in males are 194–257 (235.5), and in females 197–260 (240.1). The specimens measured 143–386 mm in total length and 27–91 mm in tail length, with a relative tail length of 0.181–0.268.

Distribution: Low and moderate elevations from southern California, United States, to the cape region of Baja California Sur, Mexico; also known from Isla del Carmen in the Gulf of California (Fig. 23).

Ecological observations: Grismer (2002: 308) provided the following information on this species: "Because of its very secretive nature, little is known about the natural history of *T. planiceps* in Baja California or elsewhere. The majority of the specimens collected in Baja California have been found inadvertently, through excavation while searching for other species…*Tantilla planiceps* has been collected in the coastal scrub of the California Region…, scrub vegetation of the Vizcaíno Region…, and vegetated areas farther south…In all these areas, Western Black-Headed Snakes are most common near rocks. Specimens I have observed in Baja California have been from the rocky eastern face of the Sierra Juárez, the lava flows in the vicinity of San Ignacio, or rocky areas along the eastern and western sides of the Sierra la Laguna in the Cape Region. Other specimens have been found beneath rocks at La Cumbre in the Sierra Guadalupe. Alvarez et al. (1988) report *T. planiceps* as being uncommon in the scrubland of the Arid Tropical Region and note that it extends into the oak woodland of the Sierra la Laguna." In addition, he indicated the following: "Although *T. planiceps* has been collected throughout the year through excavations and rock-turning, it has been observed above ground and active only from mid-March through July. It is likely that it is occasionally active above ground through other warm months of the year as well, but it apparently spends the majority of its life underground or beneath rocks, surfacing infrequently on warm nights. The majority of specimens I have observed in the field have been beneath rocks and logs or in wells, mine shafts, and flumes where they had become trapped. Nothing is known of the reproductive biology of this snake in Baja California."

Remarks: Grismer (1994a) placed *T. planiceps* in his Southern Miocene Vicariant Complex, a group of species whose origin is connected to the initial formation of the Gulf of California and the resultant separation of the southern portion of the peninsula of Baja California from western mainland Mexico in the Miocene. He hypothesized that *T. yaquia*, distributed in western Mexico, is its sister species. Grismer (1994b) included *T. planiceps* in his Northern Transpeninsular Mesophilic ecogeographic group, a group of four species widely distributed in Californian and/or Baja Californian coniferous forests, and disjunctly distributed in areas around artesian oases in the arid regions of central Baja California. He also noted that *T. planiceps* also is found in the Cape Region of Baja California in mesophilic settings, stated that it evolved in southern Baja California, and dispersed northward prior to the formation of the mid-peninsular deserts. *Tantilla planiceps* is the type species of the *planiceps* group (Cole and Hardy, 1981).

Etymology: The name *planiceps* is derived from the Latin words *planus*, meaning "even, flat, or level" and *caput*, meaning "head," in reference to the flat crown.

Specimens examined (14): MEXICO, Baja California, 10 mi (= 16 km) N Catavinia by Mexico Hwy. 1 (CAS 143458), 14.5 mi (= 23.2 km) WNW by road to Bahía de Los Angeles (CAS 143554), 10 mi (= 16 km) SE El Rosarito by Mexico Hwy. 1 (CAS 143736), 11 km E jct. Mexico Hwy. 1 by road to Bahía de Los Angeles (CAS 146890), 11 km E Mexico Hwy. 1 by road to Bahía de Los Angeles (MVZ 161440, 182260); Baja California Sur, Canyon Ojo de Agua (= Cañon Ojo de Agua), 3 km E Rancho La Burrera, Sierra de la Laguna (USNM 240239–41), 12.1 mi (= 19.2 km) NW San Bartolo (CAS 91394), 1 mi (= 1.6 km) W Punta Arena (MCZ 160126–27), 5 km (by Mexico Hwy. 1) ESE San Ignacio (BYU 37157), 13 km S San Pedro (CAS 138093).

Fig. 19. Adult *Tantilla nigriceps* from Municipalidad de Químicas de Rey, Coahuila, Mexico. EVS 11 (medium vulnerability species). © Peter Heimes

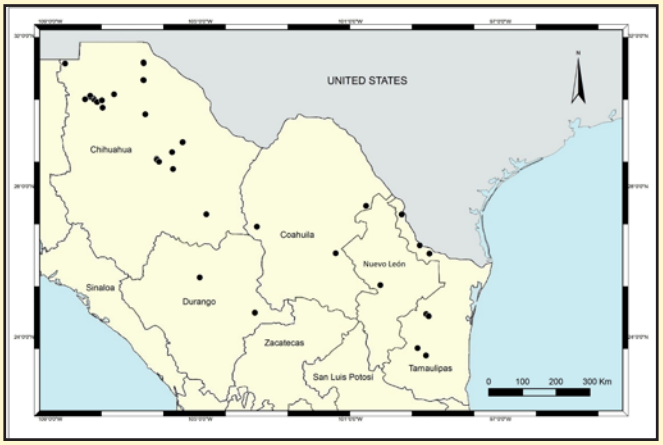

Fig. 20. Distribution map of the reported localities for *Tantilla nigriceps*.

Fig. 21. Adult *Tantilla oaxacae* from Santo Tomás Teipan, Oaxaca, Mexico. EVS 15 (high vulnerability species). © Peter Heimes

Fig. 22. Adult *Tantilla planiceps* from San Diego County, California, United States. EVS 9 (low vulnerability species). © Timothy Burkhardt

Specimens not examined (39): MEXICO, Baja California, lower California (CAS 2208), 4 mi (= 6.4 km) S of San Vicente (SDNHM 39714), arroyo El Tajo (SDNHM 45001), 1 mi (= 1.6 km) S of Cerro El Potrero (SDNHM 45138), 23.5 mi (= 37.8 km) SE of El Rosario (SDNHM 45949), 10 mi (= 16.0 km) SE San Quintín, 2 mi (= 3.2 km) N Socorro Beach (LACM2728), El Progreso, head of El Taja Canyon, Sierra Juarez Mts. (LACM 2729), Punta Banda (LACM 103740–41, KU 176974), 5 mi (= 8.0 km) W Mike's Sky Ranch Airport toward Rancho Coyote (LACM 109573), 10 mi (= 16.0 km) SE (via Mexico Hwy. 1) El Rosario (MVZ 178448), 11 km (via road to Bahía de los Angeles) of junction with Mexico Hwy. 1 (MVZ 173650), Matanuco, lower California (CAS 66419); Baja California Sur, no other data (AMNH 97174–75), Isla del Carmen (SDNHM 44388), La Burrera, or La Laguna (SDNHM 45216), near Rancho San Sebastian (SDNHM 68735), Rancho Boca de la Sierra (SDNHM

68769), Rancho La Burrera (LACM 6999), 1 mi (= 1.6 km) W Boca de la Sierra, under rock on S slope of canyon, 10 m from stream (LACM 138194), 1 mi (= 1.6 km) W Boca de la Sierra, crawling on surface of rocky side of canyon, 10 m from running stream (LACM 138195), 3 mi (= 4.8 km) SE San Bartolo (MCZ 133774), 23 mi (= 37.0 km) E (via Mexico Hwy. 1) Villa Insurgentes (MVZ 128491), Lagoons of Mira Flores (MVZ 182234–35), San José del Cabo, lower California (CAS 3541, CAS 440–46, CAS 996, CAS 4114), Sierra La Laguna, lower California (CAS 537), 1.3 mi (= 2.0 km) N of El Triunfo (CAS 91477), Las Martiles, 5 mi (= 8.0 km) S Rancho Buena Vista del sur (LACM 20462).

Tantilla robusta Canseco-Márquez, Mendelson, and Gutiérrez-Mayén

Pueblan Centipede Snake

Tantilla morgani: Canseco-Márquez et al., 2000: 262 (misapplication).

Tantilla robusta Canseco-Márquez, Mendelson, and Gutiérrez-Mayén, 2002: 493; Canseco-Márquez and Gutiérrez-Mayén, 2006b: 188; Liner, 2007: 44; Wilson and Johnson, 2010: 135; Wilson et al., 2013: 41; Ochoa-Ochoa et al., 2014: table S3.

Holotype: Laboratorio de Herpetología, Escuela de Biología, Benemérita Universidad Autónoma de Puebla (EBUAP) 1031, adult female, collected 4 March 1998, by local collectors for Luis Canseco-Márquez.

Type-locality: Octimaxal Norte (20°02.743'N, 97°30.103'W), Municipio de Cuetzalan del Progreso, Sierra Norte de Puebla, Puebla, Mexico, elevation 930 m.

Definition: (Table 1). The head is uniform brown, followed by a complete pale nuchal band that begins on the posterior portion of the parietals and extends about one scale beyond. Pre- and postocular pale spots are present. The dorsum of the body is uniform brown. The venter is immaculate cream. The ventral and subcaudal counts are 153 and 13+ (tail incomplete), respectively.

Description: A brown head cap, which lacks the darker brown flecking of the dorsal body scales, is followed by a complete cream-colored nuchal band that begins on the posterior tips of the parietals and extends for one and one-quarter scales (not two scales, as stated by Canseco-Márquez, et al., 2002, as judged by their drawing of the dorsal aspect of the head of the holotype). The nuchal band expands laterally and extends onto the posterior portion of the ultimate supralabial. A preocular pale spot covers the 1st supralabial, portions of the 2nd and 3rd supralabials, and the ventral portion of the posterior nasal. Small cream spots are present on the rostral, portions of the internasal and prefrontal, and a small portion of the anterior nasal. The infralabials are cream, with dark brown spots present on the lingual edges of infralabials 1–5. The dorsum of the body is brown, and each scale contains tiny, scattered, dark brown flecks that are more concentrated along their periphery. The dorsal coloration extends onto the lateral edges of the anterior ventral scales, and posteriorly becomes restricted to their posterolateral edges. The remainder of the venter is immaculate cream. The scutellation of the female holotype is as follows: the postnasal and a single preocular are barely in contact; the supralabials are 7, with the 3rd and 4th entering the orbit; the infralabials are 6, with the first four in contact with the anterior chinshields, the 4th is the largest, and the first pair is in medial contact and separates the mental from the anterior chinshields; the postoculars are 2; the temporals are 1+1; the dorsal scale rows are 15 throughout; the ventrals in the single known female are 153; the cloacal scute is divided; the subcaudals in the single known female are 13+ (tail incomplete); and the ventrals + subcaudals are not determinable. The single known female measured 426 mm in total length and 31 mm in tail length (tail incomplete), and a snout-vent length of 395 mm; the relative tail length was not determinable.

Distribution: Known only from the type locality (Fig. 24).

Remarks: Canseco-Márquez et al. (2002: 495) noted, "The color pattern of *T. robusta* is quite similar to that of *T. schistosa* and the two species may be closely related." *Tantilla robusta* might be related to the poorly known *T. bairdi* (see Wilson, 1982a, Wilson, 1985a, and Wilson, 1985f for information on this species).

Etymology: The name *robusta* is derived from the Latin word *robustus*, meaning "stout," in reference to the robust habitus of this snake.

Specimens not examined (1): MEXICO, Puebla, Octimaxal Norte Mpio. Cuetzalan del Progreso, Sierra Norte de Puebla (EBUAP 1031).

Tantilla rubra Cope

Red Black-headed Snake

Tantilla miniator Cope, 1863: 100 (holotype, USNM 25031; type-locality, Mirador, Veracruz, Mexico); Troschel, 1864: 215; Cochran, 1961: 217.

Tantilla miniata: Cope, 1865: 197, 1887: 84, 1892: 597; Sumichrast, 1882: 42; Amaral, "1929" (1930): 221; Smith, 1941: 115, 1942: 33, 1943: 475; Smith and Taylor, 1945: 139, 1950: 349; Pérez-Higareda and Smith, 1991: 45; Flores-Villela, 1993: 33; Flores-Villela and Gerez, 1994: 322, 372; Flores-Villela et al., 2010: 321; Ramírez-Bautista et al., 2010: 74.

Tantilla rubra Cope, "1875" (1876): 144, 1879: 271, 1887: 83, 1892: 597, 1895: fig., pl., 1900: fig., pl.; Troschel, 1877: 110; Sumichrast, 1880: 181, 1881: 269, 283, 1882: 42; Velasco, 1895: 38, 1896: 37, 1898: 62; Amaral, "1929" (1930): 221; Taylor and Smith, 1939: 253; Taylor, "1939" (1940): 482, 1949: 170, 207; Hartweg and Oliver, 1940: 28; Smith, 1942: 33, 42, 1943: 476, 1944: 149; Stickel, 1943: 110; Woodbury and Woodbury, 1944: 370; Smith and Taylor, 1945: 141, 1950: 339; Hartweg, 1944: 7; Smith and Langebartel, 1949: 412; Beltrán, 1953: 130; Martín del Campo, 1953: 144; Martin, 1955a: 354, 1955b: 173, 176, 1958: 67, 73; Álvarez del Toro and Smith, 1956: 14; Booth, 1959: 9; Álvarez del Toro, 1960: 173, 202, 1973: 135, 1982: 180; Cochran, 1961: 218; Fouquette and Potter, 1961: 144; Hensley and Smith, 1962: 70; Lynch and Smith, 1966: 58; Aseff-Martínez, 1967: 45; Taub, 1967: 12, 25, 45; Dixon, et al., 1972: 229; Morafka, 1977: 77, 81, 93; Johnson, 1990: 278; Savage and Slowinski, 1992: 248; Flores-Villela, 1993: 33; Flores-Villela and Gerez, 1994: 322, 372; Morafka and Reyes, 1994: 83; Campbell et al., 1995: 122; Casas-Andreu et al., 1996: 34; Benítez-Gálvez, 1997: 65; Wilson and McCranie, 1998: 19; Dixon et al., 2000: 149–151; Spencer et al., 1999: 169; Wilson, 1999: 14; Casas-Andreu et al., 2004: 389; Canseco-Márquez and Gutiérrez-Mayén, 2006b: 188; Mendoza-Quijano et al., 2006:109; Liner, 2007: 44; Köhler, 2008: 287; Canseco-Márquez and Gutiérrez-Mayén, 2010: 238, 239; Dixon and Lemos-Espinal, 2010: 276, 277, 417, 427; Johnson et al., 2010: 367; Lavín-Murcio and Lazcano, 2010: 293; Ramírez-Bautista et al., 2010: 74; Wilson and Johnson, 2010: 135; Martín-Regalado et all., 2011: 365, 367; 368; Reynoso et al., 2011: 506; Hernández-Salinas et al., 2013: 104; Narváez-Torres and Lazcano Villarreal, 2013: 211; Ramírez-Bautista et al., 2013: 87; Wilson et al., 2013: 41.

Homalocranium rubrum: Bocourt, 1883: 590; Günther, 1895: 155; Boulenger, 1896: 219; Gadow, 1911: 10, 17; Phisalix, 1922: 322; Werner, 1925: 147.

Homalocranion rubrum: Boulenger, 1884: 14.

Homalocranium miniatum: Günther, 1895: 146; Boulenger, 1896: 222; Gadow, 1905: 196; Werner, 1925: 147.

Homalocranium boulengeri Günther, 1895: 148 (holotype, BMNH 1946.1.8.89; type-locality, Huatuzco, Veracruz, Mexico); Boulenger, 1896: 221; Phisalix, 1922: 322; Werner, 1925: 147; Smith and Taylor, 1950: 348.

Tantilla boulengeri: Amaral, "1929" (1930): 219; Stickel, 1943: 110.

Tantilla deviatrix (*nec* Barbour): Smith, 1942: 36 (part).

Tantilla morgani Hartweg, 1944: 5 (holotype, UMMZ 85968; type-locality, Necaxa, Puebla, Mexico); Smith and Taylor, 1945: 140, 1950: 341; Peters, 1952: 51; Schmidt, 1958: 204; Wilson, 1982b: 307.1; Flores-Villela, 1993: 33; Flores-Villela and Gerez, 1994: 322, 372; Benítez Gálvez, 1997: 65.

Tantilla bocourti deviatrix (*nec* Barbour): Smith and Laufe, 1945: 348; Clark, 1970: 130.

Tantilla rubra rubra: Smith and Werler, 1969: 173; Pérez-Higareda and Smith, 1991: 45; Contreras-Arquieta and Lazcano-Villareal, 1995: 61; Liner, 1996a: 128.

Tantilla ruber: Roze, 1996: 179 (lapsus).

Holotype: National Museum of Natural History (USNM) 26500, male, collected by Francois Sumichrast, catalogued 9 January 1900, when returned to USNM from Cope's estate.

Type-locality: "Japana" [= Tapanatepec], Oaxaca, Mexico.

Definition: (Table 1). A black head cap is followed by a white nuchal collar 1½–3½ scales long, which usually crosses the tips of the parietals. The nuchal collar is bounded posteriorly by a black nape band, about ½–5½ scales long. The posterior temporal is elongate. The dorsum of the body is uniform reddish tan or reddish brown to bright coral red. The venter is immaculate pink to pinkish red. The ventrals and subcaudals range from 144 to 174 and 43 to 81, respectively.

Description: (Fig. 25). The dorsum of the head is black, followed by a pale nuchal collar ½–3 ½ scales long, that usually crosses the tips of the parietals. The nuchal collar is bounded posteriorly by a black nape band ½–5½ scales long. The dorsal coloration of the body is uniform reddish tan, reddish brown, pale coral red, or bright coral red. The venter is immaculate pink to pinkish red. The variation in scutellation is as follows: the postnasal and a single preocular usually are in contact, but sometimes are separated by contact of the prefrontal and the 2nd supralabial; the supralabials are 7, with the 3rd and 4th entering the orbit; the infralabials are 6, with the first four in contact with the anterior chinshields, the 4th is the largest, the first pair usually is not in medial contact but separated by contact of the mental and the anterior chinshields (sometimes, however, the first pair is in contact and separate the mental and anterior chinshields); the postoculars are 2; the temporals usually are 1+1; the dorsal scale rows are 15 throughout; the ventrals in males are 144–174 ($\bar{x}$= 154.4), and in females 146–174 ($\bar{x}$ = 158.2); the cloacal scute is divided; the subcaudals in males are 43–81 ($\bar{x}$ = 64.4), and in females 48–74 ($\bar{x}$ = 62.1); and the ventrals + subcaudals in males are 194–241 ($\bar{x}$ = 219.0), and in females 196–242 ($\bar{x}$ = 220.3). The specimens measured 112–594 mm in total length and 23–130 mm in tail length, with a relative tail length of 0.185–0.270.

Distribution: Low, moderate, and intermediate elevations of the Atlantic versant from central Nuevo León, Mexico, to western Guatemala; also on the Pacific versant in Guerrero and Oaxaca, Mexico (Fig. 24).

Geographic variation: Dixon et al. (2000) studied variation in scutellation, color pattern, and mensural features in 101 specimens allocated to *T. rubra* (including the holotypes of *T. miniata* and *T. morgani* [see below]), and found little evidence of geographic variation. They reported that the mean length in the dorsal scales of the dark nape band varies from population to population, and generally is greater at lower and lesser at higher elevations. Other morphological features showed no convincing relationship of their variation to geography.

Ecological observations: Smith (1943: 476) discussed a specimen of this species that "was found inside a large mound of *Mammillaria* cactus, but [was] already dead, stiffened, and slightly discolored." He also reported seven other specimens (p. 476) that were collected in the vicinity of Tehuantepec, Oaxaca, and "were found under piles of earth, brush, and leaves in banana patches." Benítez Gálvez (1997) noted that in Puebla, *T. rubra* is known to feed on centipedes, insect larvae, and spiders, produces 1–3 eggs, and lives underground, under leaf litter, and beneath rocks in pine-oak forests. Spencer et al. (1999) reported *T. rubra* as a component of the diet of *Micrurus browni*. Farr et al. (2007) reported a specimen of *T. rubra* from 25.5 km NNE Jaumave, Tamaulipas, at 1,016 m where "the habitat in the area is a transition zone between arid thorn scrub of the Jaumave valley and oak forest at higher elevations in the Sierra Madre [Oriental]." Canseco-Márquez and Gutiérrez-Mayén (2010) reported this species as rare and an inhabitant of tree yucca stands at 2,045 m, and that along with *T. bocourti* co-inhabits the region of Cacaloapan, Puebla. They also noted it to be diurnal, terrestrial, and generally found under rocks. Dixon and Lemos-Espinal (2010: 133) provided information on habitat preferences, behavior, and diet of this species. With reference to habitat, they noted the following: "The species is semi-fossorial, and most often found abroad after dark. During the day, it may be found beneath stones, under logs, and other debris." On behavior, they stated the following: "The species has not attempted to bite when handled. It writhes, defecates, and attempts to escape in that manner. The number of eggs is unknown. It is closely related to *T. cucullata*, a Texas species, which is known to lay one or two eggs. Nothing more is known about the species." With respect to diet, they indicated the following: "The prey consumed is much the same for all flat-headed snakes. It is primarily centipedes."

Remarks: Dixon et al. (2000) studied *Tantilla rubra* and its allies and synonymized *T. miniata* and *T. morgani* with *T. rubra*. They also elevated *T. cucullata* to species level, and restricted its distribution to the United States. For information on large species in the genus, see the *T. impensa* species account.

Etymology: The name *rubra* is derived from the Latin word *ruber*, meaning "red," in reference to the typical dorsal coloration of this snake.

Specimens examined (46): MEXICO, no other data (FMNH 105339); S. Mexico (BMNH 90.4.24.32–33); Chiapas, Cerro San Felipe (UCM 41202), 11.2 km E Chiapa de Corzo (EAL 1727), 28 km SW Cintalapa (SM 8179), Rizo de Oro (UTA R-21773), Mexico Hwy. 190, 1.6 mi (= 2.6 km) E Rizo de Oro, 6.9 mi (= 11.0 km) E Chiapas-Oaxaca border (UF 61794), Tuxtla Gutiérrez (UIMNH 37991, 38041); Hidalgo, 15.5 mi (= 24.8 km) E Huichapan (MSUM H-4022), 26 km E Zimapán (TCWC 700); Nuevo León, 6.1 mi (= 9.8 km) SW, 10.4 mi (= 16.6 km) W Cerralvo (EAL 4566), 5 mi (= 8 km) N Las Ajuntas (EAL 4641), Horsetail Falls, Santiago, 42 mi (= 67.2 km) S Monterrey (FMNH 30825), San Pedro Garza García, Meseta de Chipinque (UANL 226,

2479, 3973, 2 unnumbered), Laguna de Sánchez (UANL 2129), General Zaragoza (UANL 1244), Canyon Huasteca (UANL 2196), Carmen de la Presa La Boca (UANL 486), Santiago Province, 500 m de Corral de Piedra a Puerto Genovevo (UANL 2685); Oaxaca, Cerro Guengola (FMNH 105340), Cerro San Pedro (UIMNH 3773), Coatlán, Tehuantepec (AMNH 89625), Distr. de Etla, Cerro de la Rosa, W of Tejocotes, 8,500' (= 2,591 m) (UNM 22121), Japana (=Tapanatepec) (USNM 26500), Lachiguiri, 7,000' (UCM 39998), 18 mi (= 28.8 km) N Matías Romero (AMNH 89627), 3 km NE Mitla, 5,900' (= 1,799 m) (AMNH 97983), 5 km NE Mitla (AMNH 91093), Mixtequilla (CAS 73651), 2 mi (= 3.2km) N El Moral, 6,800' (= 2,073 m) (AMNH 97981), 12 mi (= 19.2 km) SE Nochixtlán (CAS 84175), Escurano, near Tehuantepec (AMNH 66796, 66959), Río Seco, north of Tehuantepec (UIMNH 37145–46), vic. San Antonio (AMNH 65141), San Felipe de Agua, 5,800' (= 1,768 m) (AMNH 100918), 1 mi (=1.6 km) above San Felipe (AMNH 89626), Santa Rosa, near Lachao, Dist. Juquila (UCM 52611–12), Tapana (= Tapanatepec) (BMNH 81.10.20.11), Tapanatepec (MCZ 27833), 5.3 mi (= 8.5 km) E Tapanatepec (UTEP 5172), Tehuantepec (AMNH 62644–45, 62923–25, 65884, FMNH 105342, 105344, MCZ 46477–78, UCM 41201, UIMNH 3774, 36815, 48561–62, USNM 110388–91, 110393–94), vic. Tehuantepec (AMNH 68025, 68883), near Tehuantepec (San Pedro) (AMNH 66796, 66959, 68883), Barrias, Tehuantepec (USNM 30530), Tlalixtac Canyon (AMNH 97982), 4 mi (= 6.4 km) N Tlalixtac de Cabrera (AMNH 89628), El Tejocote, 2,377 m (UTACV R-12457–58, 25839), Tres Cruces (USNM 110392); Puebla, near Cacaloapan at km 226, 22 km NW Tehuacán (FMNH 105341), vic. La Mesa/Necaxa (MCZ 56219), Necaxa (AMNH 76428, UMMZ 85968), km 226, 22 km NW Tehuacán, near Cacaloapan (FMNH 105341, 105343, UIMNH 48503), km 226, 35 km N Tehuacán (USNM 110387), Río Necaxa, Necaxa (AMNH 76428); Querétaro, near El Lobo (TCWC 29510), 2.7 mi (= 4.3 km) W El Lobo (TCWC 32936), 3.2 mi (= 5.1 km) W El Lobo (TCWC 29509), 3.7 mi (= 5.9 km) W El Lobo (TCWC 36434), 1 mi (= 1.6 km) W Jalpán (TCWC 32938), vic. Lizaro Vega, 7.5 km W jct. Mexico Hwy. 120 (TCWC 53066); San Luis Potosí, 4 mi (= 6.4 km) E Ahuacatlán (TCWC 32937), Alvarez (UTACV 6364), Alvarez, km marker 58 (MCZ 25005), El Salto Falls (AMNH 79960), 1 mi (=1.6 km) W La Chance off Mexico Hwy. 80, near jct. Mexico Hwy. 101 (UTACV 6365), 4.8 km E San Francisco, Valle de las Fantasmas (UTACV 12455), 8.0 km E San Francisco, Valle de las Fantasmas (UTACV 12456), Tamazunchale (AMNH 66161), Xilitla region (LSUMZ 305), 2 mi (= 3.2 km) W Xilitla (MVZ 36603); Tamaulipas, El Chihue, 35 km NW Victoria (UMMZ 111050), Gomez Farias (TCWC 71632), 5 mi (= 8 km) NW Gomez Farias (UMMZ 111051–52), 7.2 mi (= 11.5 km) N Ocampo (UMMZ 111045–49), San Carlos Mountains (TCWC 58177), 0.7 mi (= 1.1 km) NE Rancho Carricitos (TCWC 49940), 1.0 mi (= 1.6 km) SW Rancho Carricitos (TCWC 67384); Veracruz, Mirador (USNM 25031).

Specimens not examined (45): MEXICO, Chiapas, no other data (AMNH 160367, FLMNH 61794), Mt. Ovando (UCM 39712), Mapastepec (UCM 39713–14), San Jeronimo, Volcán Tacaná (UCM 45819–20), Ocozocuautla, N of road to Mal Paso (CAS 244031), Guerrero, 11.3 mi (= 18.1 km) NE Atoyac on road to Puerto del Gallo, Sierra Madre del Sur (MVZ 17193), Hidalgo, Mpio. Tlanchinol (Mendoza-Quijano et al., 2006); Nuevo León, no other data (AMNH 160368–69), 6.1 mi (= 9.8 km) (by road) S La Escondida on Mexico Hwy. 68? [maybe Mexico Hwy. 61] (UAZ 46370), Parque Nacional Cumbres de Monterrey (Narváez-Torres and Lazcano-Villareal, 2013); Oaxaca, no other data (AMNH 65141), Tehuantepec (UCM 41201, USNM 110388–91, USNM 110393–94), near Tehuantepec (MCZ 46477–78), Portillo Nejapa, 61 mi (= 98.1 km) NW of Tehuantepec (SDNHM 19710); Puebla, 22 km NW Tehuacán (UIMNH 48563); 3 km S Cacaloapan (EBUAP 1856); Querétaro, Boye, La Nopalera (Dixon and Lemos-Espinal, 2010), Mesa de León (Dixon and Lemos-Espinal, 2010), vicinity of Lazaro Vega, 12 km W of intersection of Mexico Hwy. 120 with road to San Joaquin (Dixon and Lemos-Espinal, 2010), Rancho Nuevo (Dixon and Lemos-Espinal, 2010); San Luis Potosí, no other data (AMNH 79960), 0.4 mi (= 0.6 km) E San Francisco on Mexico Hwy. 70, E San Luis Potosi city (UAZ 42232), 3.1 mi (= 4.9 km) E San Francisco, 33 mi (= 53.1 km) E San Luis Potosi city, on Mexico Hwy. 70 (UAZ 47060), 3.8 mi (= 6.1 km) E San Francisco, 34 mi (= 54.7 km) E San Luis Potosi city, on Mexico Hwy. 70 (UAZ 47061), 9 km S, 5 km W of Ahualulco (Lemos-Espinal and Dixon, 2013), El Salto (Lemos-Espinal and Dixon, 2013), Tamazunchale (Lemos-Espinal and Dixon, 2013), Xilitla (Lemos-Espinal and Dixon, 2013), 640 m E of San Francisco, on Mexico Hwy. 70 (Lemos-Espinal and Dixon, 2013), 5 km E of San Francisco (Lemos-Espinal and Dixon, 2013); Veracruz, Veracruz-Llave (FLMNH 61793), Huatusco (Pérez-Higareda and Smith, 1991), Orizaba (Günther, 1895: 155).

Tantilla schistosa (Bocourt)

Red Earth Centipede Snake

Homalocranion schistosum Bocourt, 1883: 584.

Tantilla schistosa: Cope, 1887: 83; Wilson, 1982a: 49, 1982b: 307.1, 1984: 9, 1987b: 409.1, 1999: 15; Wilson and Meyer, 1982: 108, 1985: 102; Pérez-Higareda and Smith, 1991: 45; Flores-Villela, 1993: 33; Flores-Villela and Gerez, 1994: 322, 372; Casas-Andreu et al., 1996: 34; Lee, 1996: 377; Ramírez-Bautista and Nieto-Montes de Oca, *In* González Soriano et al., 1997: 532; Vogt, *In* González Soriano et al., 1997: 503; Vogt et al., *In* González Soriano et al., 1997: 520; Campbell, 1998b: 253;

Rodriguez-García et al., 1998: 45; Wilson, 1999: 15; Wilson et al., 1999: 1; Lee, 2000: 341; Casas-Andreu et al., 2004: 389; Ferreira-García and Canseco-Márquez, 2006: 310; Luja, 2006: 501; Ramírez-Bautista and Moreno, 2006: 95; Liner, 2007: 44; Köhler, 2008: 287; Johnson et al., 2010: 367; Wilson and Johnson, 2010: 135; Reynoso et al., 2011: 506; Wilson et al., 2013: 41; Ochoa-Ochoa et al., 2014: table S3.

Homalocranium schistosum: Günther, 1895: 152.

Tantilla phrenetica Smith, 1942: 33, 39, 42.

Tantilla schistosa phrenetica: Smith, 1962: 13.

Tantilla schistosa schistosa: Smith, 1962: 17.

Lectotype: Muséum National d'Histoire Naturelle (MNHN) 1883-506, collected by M.-F. Bocourt (designated by Smith, 1942), herein accepted.

Type-locality: "Alta Verapaz and Mexico," restricted to Depto. Alta Verapaz, Guatemala, by Smith, 1942, herein accepted.

Definition: (Table 1). The coloration of the head and dorsum is separated by a complete or medially divided pale nuchal band. The nuchal band extends ½–2 scales from the posterior part of the parietals. A postocular pale spot sometimes is present. The dorsum of the body is olive to reddish brown, but some individuals show some degree of paling along the middorsal scale row. The venter is immaculate cream or reddish orange. The ventrals and subcaudals range from 117 to 147 and 24 to 44, respectively.

Description: The dorsum of the head usually is the same color as the body, but markedly paler in a few specimens. A cream nuchal band extends from the middle to posterior portion of the parietals, and beyond for ½–2 scales. The nuchal band usually is complete, but occasionally is divided and generally extends laterally to cross the ultimate supralabial. In a few specimens, however, the nuchal collar is so obscure that it can be overlooked. A preocular spot is absent, but a pale postocular spot can cover as little as the adjacent sutures of the lower postocular, the anterior temporal, and the 5th and 6th supralabials, or as much as the anteroventral portion of the anterior temporal, all of the 5th supralabial, and the anterior half of the 6th supralabial. The infralabials are lightly-to-well pigmented. The dorsum of the body is olive to reddish brown (pale to dark brown in preservative). Some specimens show a slight paling of the middorsal scale row and row 4, but in most the dorsal coloration is uniform. The venter is immaculate cream to salmon red, with some encroachment of the dorsal ground color onto the lateral edges of the ventrals. The variation in scutellation is as follows: the postnasal and a single preocular usually are in contact; the supralabials are 7, with the 3rd and 4th entering the orbit; the infralabials are 5–6, with first three or four in contact with the anterior chinshields and the 3rd or 4th the largest, and the first pair is separated by contact of the mental and the anterior chinshields; the postoculars are 1–2 (usually 2); the temporals are 1+1 or 1+1+1, (usually 1+1); the dorsal scale rows are 15 throughout; the ventrals in males are 119–145 (133.4), and in females 117–147 (135.9); the cloacal scute is divided; the subcaudals in males are 32–44 (37.0), and in females (24–41 (34.0); and the ventrals + subcaudals in males are 155–185 (170.2), and in females 151–180 (169.9). The specimens measured 99–316 mm in total length and 15–67 mm in tail length, with a relative tail length of 0.128–0.212.

Distribution: "Low, moderate, and intermediate elevations of the Atlantic versant from Veracruz, Oaxaca [and Chiapas], México to Panamá" (Wilson, 1982a) (Fig. 26). This species also is known from Quintana Roo (Luja, 2006).

Geographic variation: See discussion in Wilson (1982a).

Ecological observations: Vogt, *In* González Soriano et al. (1997), assigned *T. schistosa* and its congener, *T. slavensi*, to a guild of fossorial snakes that feed on small invertebrates; other members of the guild include *Adelphicos quadrivirgatus*, *Amastridium veliferum*, *Ficimia publia*, *Geophis carinosus*, *G. semidoliatus*, *Stenorrhina degenhardti*, *Tantillita lintoni*, *Leptotyphlops goudotii*, and *Typhlops tenuis*. Vogt et al., *In* González Soriano et al. (1997), noted that *T. schistosa* lives in rainforest habitats and is rare. Rodriguez García et al. (1998) indicated that captive *Micrurus diastema* and *M. limbatus* refused to feed on *T. schistosa*. Lee (2000: 342) provided the following natural history information: "Secretive, terrestrial inhabitant of leaf litter of humid forests. Probably largely nocturnal; occasionally abroad during day. Feeds predominantly on centipedes, to lesser extent on insect larvae. Presumably lays eggs."

Etymology: The name *schistosa* is derived from the Latin or Greek word *schistos*, meaning "split," "in presumed allusion to the separation of the dark head and body color by the pale nuchal band" (Wilson 1987b).

Specimens examined (18): MEXICO, no other data (MNHN 6221); Oaxaca, San Lucas Camotlán (USNM 123707), Vista Hermosa, Sierra Juarez (UTACV R-12454), 23 mi (= 36.8 km) E (by Mexico Hwy. 190) La Ventosa (CAS 143899), Totontepec (actually Fatontepec) (USNM 20835), Yalalag (AMNH 89624); Veracruz, 9 mi SE Alvarado (LACM 51799), Cuautlapan (AMNH 76120; BYU 13254; KU 105884; LACM 121852; UIMNH 27404–05, 110381), Barranca de San Miguel, 4 km E Cuautlapan (MVZ 106427), Cerro Chicahuaxtla, Coatlapam, ca. 1,250 m (MVZ 109490), El Limón Totalco (UIMNH 27403), Volcán San Martín (UIMNH 33861).

Specimens not examined (12): MEXICO, Chiapas, Yaxchilán (Ferreira-García and Canseco-Márquez, 2006); Quintana Roo, Municipality of Othon P. Blanco, Nueva España Lagoon, 23 km S Ejido Caobas (ECO-CH-H-2579); Veracruz, Cuautlapán (USNM 110379–85, KU 105884, MVZ 146973), 0.5 km S Dos Amates, Mpio. Catemaco (UTEP 11360).

Tantilla sertula Wilson and Campbell

Garland Centipede Snake

Tantilla sertula Wilson and Campbell, 2000: 821; Canseco-Márquez et al., 2007: 223; Liner, 2007: 44; Wilson and Johnson, 2010: 135; Wilson et al., 2013: 41; Ochoa-Ochoa et al., 2014: table S3; Ramírez-Bautista et al., *In Press*.

Holotype: University of Texas at Arlington (UTA) R-38145, juvenile female, collected July 1978, by Jonathan A. Campbell.

Type-locality: 0.8 km NNE of the junction of Mexico highway 200 on the road to La Unión (17°59'N, 101°49'W), Guerrero, México, approximate elevation slightly above 150 m.

Definition: (Table 1). The dorsal head pattern consists of a spatulate dark anterior extension of a middorsal dark stripe flanked by pale, narrow, longitudinal stripes that are separated broadly from pale postparietal spots. The supralabials are uniform dark brown. The dorsum of the body is pale brown, with a dark middorsal stripe present along the middle of the middorsal scale row. A lateral stripe is absent. The ventral and subcaudal counts are 153–161 and 30–37, respectively.

Description: The dorsum of the head is very dark brown, appearing as a dark head cap in the vague shape of a blunt arrowhead. This configuration is created by a pale border that begins on the dorsal apex of the rostral and continues, in gradually diminishing width and intensity, across the anterodorsal corner of the anterior nasal, the middle of the internasal, the canthal region of the prefrontal, the orbital edge of the supraocular, and the dorsal corner of the upper postocular. Beyond this point, the border is narrow and broken until it reaches the lateral edge of the parietal opposite the suture between the anterior and posterior temporal, where it expands into a teardrop-shaped spot. The border is separated from a postparietal pale spot present along portions of three dorsal scales immediately posterior to the posterolateral portion of the parietal. The postparietal spot grades posteriorly into the dorsal ground color. The lateral portion of the head below the pale dorsal border is uniform dark brown. The dorsum of the body is pale brown, with the middle of each scale patterned with an irregular concentration of dark pigment. A narrow, irregular, dark brown middorsal stripe extends down the middle of the middorsal scale row. The stripe expands anteriorly to cover the entire middorsal row, and the adjacent halves of the paravertebral rows about three dorsal scales posterior to the parietal notch, just before joining the dark head cap. The middorsal row is complete anteriorly, but increasingly disjunct posteriorly. The chin is cream, with vague smudging along the lingual edge of the infralabials. The venter is immaculate cream. The scutellation of the female holotype is as follows: the postnasal and a single preocular are in contact; the supralabials are 7, with the 3rd and 4th entering the orbit; the infralabials are 6, with the first four in contact with the anterior chinshields, the 4th is the largest, and the first pair is broadly separated by contact of the mental and the anterior chinshields; the postoculars are 2; the temporals are 1+1; the dorsal scale rows are 15 throughout; the ventrals in one female are 161; the cloacal scute is divided; the subcaudals are 30; and the ventrals + subcaudals are 191. Another specimen reported by Canseco-Márquez et al. (2007: 223), whose sex was unspecified, was indicated to "agree with all the characteristics of *T. sertula*," except for the ventrals (153) and subcaudals (37). These counts might be those of a male. The holotype measured 99 mm in total length and 12 mm in

tail length, with a relative tail length of 0.121. The respective data for the Canseco-Márquez et al. (2007) specimen are 89.1 mm, 14 mm, and 0.157.

Distribution: Known from the type locality and a second locality in Guerrero reported by Canseco-Márquez et al. (2007) (Fig. 8).

Ecological observations: Wilson and Campbell (2000) noted that the holotype of *T. sertula* came from the Pacific coastal plain of southwestern Guerrero, a seasonally dry area that falls within the Lowland Deciduous Forest bioclimate (Savage, 1975). Canseco-Márquez et al. (2007) provided no ecological observations for the second specimen.

Remarks: Canseco-Márquez et al. (2007) reported the presence of "2+2 supraoculars" in MZFC 3169; presumably, this is a lapsus for the number of postoculars.

Etymology: The name *sertula* is derived from the dimunitive of the Latin word *serta*, meaning "little garland or wreath," in reference to the distinctive pattern on the dorsum of the head (Wilson and Campbell, 2000).

Specimens examined (1). MEXICO: Guerrero, 0.8 km NNE jct. Mexico Hwy. 200 on the road to La Unión (UTA R-38145).

Specimens not examined (1). MEXICO: Guerrero, 2.5 km W Puerto Marquez (MZFC 3169).

***Tantilla shawi* Taylor**

Potosí Centipede Snake

Tantilla shawi Taylor, 1949: 207; Smith and Taylor, 1950: 343, 1966: 26; Smith and Smith, 1976, S-B-199, S-C-68, S-D-37, S-F-36, S-G-6; Wilson, 1976: 46, 1982b: 307.1, 1991: 528.1, 1999: 15; Flores-Villela, 1993: 33; Flores-Villela and Gerez, 1994: 322, 372; Campbell et al., 1995: 120; Wilson, 1999: 15; Liner, 2007: 44; Wilson and Johnson, 2010: 135; Lemos-Espinal and Dixon, 2013: 225–226, 290, 300; Wilson et al., 2013: 41; Ochoa-Ochoa et al., 2014: table S3.

Holotype: Louisiana State University Museum of Zoology (LSUMZ) 306, subadult (?) male.

Type-locality: Xilitla region (Rancho Miramar Grande), San Luis Potosí, Mexico, ca. 4,500 feet (= ca. 1,372 m); Campbell et al. (1995) indicated the elevation of the type-locality as 2,200 feet (= 670 m), based on Taylor's (1950) determination; Taylor (1949: 173), on a previous page of the paper in which this species was described, also indicated this locality as 2,200 m.

Definition: (Table 1). A black head cap is present, with a cream band that crosses the snout behind the black tip. A pale nuchal band about one scale long follows the head cap, and then by a dark nape band 2½–3½ scales long. The dorsal color pattern consists of narrow transverse cream bands on the anterior part of the body, divided medially and with the halves longitudinally offset from one another, and separated by segments of the bluish black to black ground color (dark gray in preservative). The venter is white to cream anteriorly, and pale pink to salmon posteriorly. The ventral and subcaudal counts are 166 to 189 and 48 to 50, respectively.

Description: The dorsum of the head is black (dark gray in preservative), and is bounded posteriorly by a short pale nuchal band that begins on the posterior tips of the parietals and extends about one scale beyond. Laterally, the nuchal band grades into the pale coloration on the underside of the head. A cream band is present on the snout, along the internasals and the anterior one-third of the prefrontals, and extends laterally to the lip line. A postocular pale spot is present, with a narrow dorsal extension that reaches the posterolateral corner or posterior portion of the supraocular. The dorsal ground color is bluish black to black (dark gray in preservative), with approximately the anterior ⅓–⅔ crossed by short transverse cream bands (about two-thirds of a scale long). The bands frequently are divided middorsally, and the halves offset along the long axis of the body to alternate with one another (and sometimes are reduced to lateral spots posteriorly). The bands gradually fade at the beginning of the middle one-third to posterior two-thirds of the body, with the remaining pattern on the body grading into the narrow pale edging of the dorsal scales. The chin is cream with dark markings on the infralabials. The venter is pale pink to salmon. The variation in scutellation is as follows: the postnasal and a single preocular are separated by contact of the prefrontal and 2nd supralabial; the supralabials are 7, with the 3rd and 4th entering the orbit; the infralabials are 6, with the first four in contact with the anterior chinshields, the 4th is the largest, and the first pair is in contact and separates

the mental from the anterior chinshields; the postoculars are 2; the temporals are 1+1; the dorsal scale rows are 15 throughout; the ventrals in one male are 166 (the count in Taylor [1949] was 169), and in females 184–189 ($\bar{x}$= 186.5); the cloacal scute is divided; the subcaudals in one male are 48, and in females 48–50 ($\bar{x}$ = 49.0); and the ventrals + subcaudals in one male are 214, and in females 234–237 ($\bar{x}$ = 235.5). The specimens measured 362–690 mm in total length and 69–117 mm in tail length, with a relative tail length of 0.170–0.191.

Distribution: Moderate elevations of the Atlantic versant on the eastern slopes of the Sierra Madre Oriental of southwestern San Luis Potosí and northwestern Veracruz, Mexico (Fig. 4).

Ecological observations: Campbell et al. (1995) reported the vegetation around the San Antonio Ixtatetla collecting site as primarily cloud forest. Based on the elevational data, the area around the type locality probably falls within the Premontane Wet Forest formation.

Remarks: A field party from Louisiana State University collected the holotype of *Tantilla shawi* more than four decades ago. Subsequent extensive work in eastern Mexico by a long list of people did not turn up additional specimens, until Campbell et al. (1995) reported two females from a locality in northwestern Veracruz, Mexico. For a discussion of large size in species of *Tantilla*, see the Remarks section of the *T. impensa* species account.

Etymology: The name *shawi* is a patronym honoring Charles R. Shaw, the collector of the holotype of this species.

Specimens examined (1): MEXICO, San Luis Potosí, Xilitla region (Rancho Miramar Grande) (LSUMZ 306).

Specimens not examined (3): MEXICO, San Luis Potosí. Xilitla (Lemos-Espinal and Dixon, 2013); Veracruz, San Antonio Ixtatetla (20°40'N, 98°27'W), approximate elevation 1,400 m (ENEPI 4169, UTA R-36810).

Tantilla slavensi Pérez-Higareda, Smith, and Smith

Slavens' Centipede Snake

Tantilla slavensi Pérez-Higareda et al., 1985: 290; Pérez-Higareda and Smith, 1991: 46; Flores-Villela, 1993: 33, 58; Flores-Villela and Gerez, 1994: 322, 372; Campbell et al., 1995: 122; Campbell and Smith, 1997: 333; Ramírez-Bautista and Nieto-Montes de Oca, *In* González Soriano et al., 1997; 532; Vogt, *In* González Soriano et al., 1997: 503; Vogt et al., *In* González Soriano et al., 1997: 520; Campbell, 1998a: 2, 1998b: 255; Wilson et al., 1999: 1; Wilson, 1999: 16; Wilson and McCranie, 1999: 326; Ramírez-Bautista and Moreno, 2006: 96; Liner, 2007: 44; Johnson et al., 2010: 344; Johnson et al., 2010: 367; Wilson and Johnson, 2010: 135; Wilson et al., 2013: 41; Ochoa-Ochoa et al., 2014: table S3.

Holotype: Herpetological collection of the Estación de Biología Tropical "Los Tuxtlas," Univ. Nac. Autónoma Mexico 1668, adult female.

Type-locality: Cerro Chochobi, El Acuyal area, 8 km NW Catemaco, Veracruz, Mexico, elevation 800 m.

Definition: (Table 1). A dark brown head cap darkens posteriorly and laterally, and is separated from a dark nape band by a medially divided pale nuchal band. The nuchal band crosses the ultimate supralabial. The dorsum of the body is pale brown, with a pale middorsal stripe confined to the middorsal scale row but becomes increasingly obscured and fragmented posteriorly, and a pale lateral stripe is present on the adjacent thirds of scale rows 3 and 4. Both pale stripes are outlined by narrow dark borders, which gradually fade posteriorly. The lower portion of the paraventral scale row pales in color, and gradually decreases in extent toward the vent. The upper portion of the paravertebral scale row is dark brown. The venter is orange in life. The ventrals and subcaudals range from 158 to 159 and 52 to 56, respectively.

Description: (Fig. 27). The dorsum of the head is dark brown, and darkens posteriorly and laterally. A pale, dark-edged marking is present on the upper portion of the rostral and along the edges of the adjacent scales. A pale preocular spot covers the 1st and 2nd supralabials and the lower portion of the nasal. A pale postocular spot also is present on most of the 5th supralabial (except for the posteroventral corner), the posterior portion of the lower postocular, the anterior half of the anterior temporal, and the anterodorsal corner of the 6th supralabial. A middorsally-divided pale nuchal collar, about one and one-half scales long, crosses the posterior portion of the ultimate supralabial and

is confluent with the lateral gular coloration. A dark nape band about two scales long follows the collar, and grades into the dorsal ground color. The dorsolateral ground color is uniform pale brown (between the middorsal and lateral pale stripes), and a pale middorsal stripe is confined to the middorsal scale row. The stripe is continuous anteriorly on the body, and bounded laterally by narrow dark edging confined to the lateral apices of the middorsal scales, but posteriorly it becomes increasingly interrupted, indistinct, and unbordered by dark pigment, and sometimes disappears altogether. A pale lateral stripe covers the adjacent thirds of scale rows 3 and 4, and is bounded on both sides by narrow dark edging, which posteriorly gradually merges with the surrounding ground color. The area below the pale lateral stripe and the paraventral portion of the 1st scale row is brown, and grades to dark brown posteriorly. The paraventral portion of the 1st scale row is the same color as the venter. The venter is orange in life and immaculate white in preservative. The variation in scutellation is as follows: the postnasal and a single preocular are narrowly in contact, or narrowly separated by contact of the prefrontal and the 2nd supralabial; the supralabials are 7, with the 3rd and 4th entering the orbit; the infralabials are 6, with the first four in contact with the anterior chinshields, the 4th is the largest, and the first pair is in broad medial contact or narrowly separated by contact of mental and the anterior chinshields; the postoculars are 2; the temporals are 1+1; the dorsal scale rows are 15 throughout; the ventrals in one male, are 159, and in two females 158–159; the cloacal scute is divided; the subcaudals are 52–56 in two females; and the ventrals + subcaudals are 210–215. The specimens measured 285–354+ mm in total length and 69–70 mm in tail length, with a relative tail length of 0.199–0.246 (we restructured the description from that in Pérez-Higareda et al., [1985], with additional data from a single male specimen we examined).

Distribution: Low to moderate elevations (50–800 m) of the Atlantic versant in southeastern Veracruz (the Los Tuxtlas area), Mexico (Fig. 28).

Ecological observations: Pérez-Higareda et al. (1985: 292) noted that the "type locality is an isolated mountain in a chain surrounded by cultivated plains. The habitat is tropical rain forest, with abundant fog and an annual rainfall of more than 4000 mm." They also indicated that, "the holotype contained four white, elongate oviductal eggs." Jessica Hitandegüi Swanson Santiago, who provided us with the photograph of the specimen of *T. slavensi* used as Fig. 27, indicated that there is "little known of its behavior," that it is "ground dwelling and oviparous" and "found on leaf covered ground in perennial forest areas." Vogt et al., *In* González Soriano et al. (1997), indicated that *T. slavensi* lives in lowland rainforest habitats and is rare. For commentary on the guild association of *T. slavensi*, see the *Tantilla schistosa* species account.

Remarks: The assessment of the relationships of *T. slavensi* to the other 10 members of the *Tantilla taeniata* group (for a recent summary, see Townsend et al., 2013) made by Pérez-Higareda et al. (1985) appears accurate. They indicated that the species seems to be intermediate in pattern and ventral scale counts between *T. vulcani* [as *T. jani*] and *T. taeniata* (for a discussion of a specimen from El Salvador allocated to *T. taeniata*, but also exhibits features reminiscent of *T. vulcani* [as *T. jani*] see Wilson [1974]). *Tantilla slavensi*, however, occurs north of the range of either *T. taeniata* or *T. vulcani*, and apparently represents a distinct taxon.

Etymology: The name *slavensi* is a patronym honoring Frank Slavens, retired Curator of Reptiles at the Woodland Park Zoo in Seattle, Washington, United States.

Specimens examined (1): MEXICO, Veracruz, Balzapote, 50 m, Municipalidad de San Andrés Tuxtla (UCM 55630).

Specimens not examined (3): MEXICO, Veracruz, Cerro Chochobi, El Acuyal area, 8 km NW Catemaco (Herpetological Coll. Estación de Biología Tropical "Los Tuxtlas," UNAM 1668), Balzapote, Municipalidad de San Andrés Tuxtla (Herpetological Coll. Estación de Biología Tropical "Los Tuxtlas," UNAM 1671), Laguna Escondida (Pérez-Higareda, 1991).

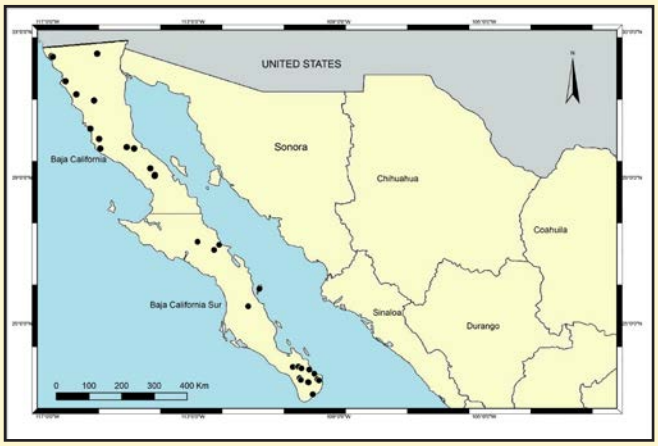

Fig. 23. Distribution map of the reported localities for *Tantilla planiceps*.

Fig. 24. Distribution map of the reported localities for *Tantilla robusta* (square) and *T. rubra* (circles).

Fig. 25. Adult *Tantilla rubra* from below Avila y Urbina (23.60189N, 99.60243W), ca. 1,730 m elevation, Tamaulipas, Mexico. EVS 5 (low vulnerability species). © Robert W. Hansen

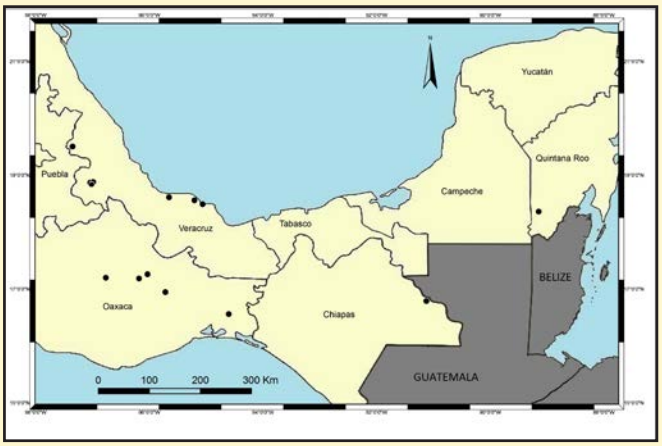

Fig. 26. Distribution map of the reported localities for *Tantilla schistosa*.

Fig. 27. Adult *Tantilla slavensi* from Los Tuxtlas, Veracruz, Mexico. EVS 14 (high vulnerability species). © Jessica Hitandegüi Swanson Santiago

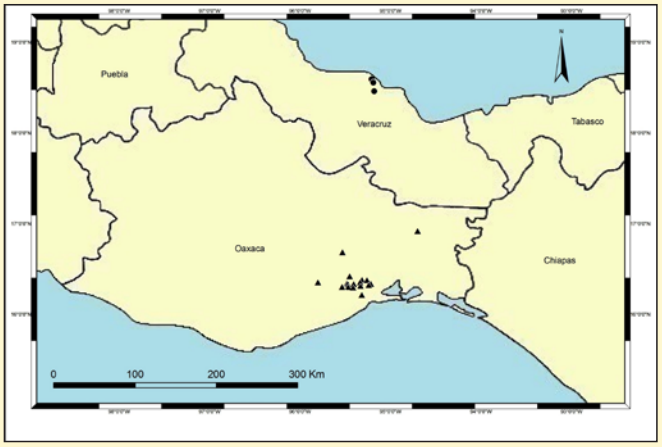

Fig. 28. Distribution map of the reported localities for *Tantilla slavensi* (circles) and *T. striata* (triangles).

Tantilla striata Dunn

Striped Centipede Snake

Tantilla striata Dunn, 1928: 3; Amaral, "1929" (1930): 222; Hartweg and Oliver, 1940: 28; Smith, 1942: 40, 1943: 477; Smith and Taylor, 1945: 141, 1950: 338; Smith and Burger, 1950: 117; Smith and Smith, 1951: 98; Beltrán, 1953: 130; Smith and Williams, 1966: 485; Savitzky and Smith, 1971: 170; Wilson and Meyer, 1971: 30; Wilson, 1982a: 33, 1982b: 307.1, 1983a: 57, 1990d: 504.1, 1999: 16; Pérez-Higareda et al., 1985: 291; Flores-Villela, 1993: 34; Flores-Villela and Gerez, 1994: 322, 373; Campbell et al., 1995: 122; Casas-Andreu et al., 1996: 34; Campbell and Smith, 1997: 333; Campbell, 1998a: 2; Wilson and McCranie, 1998: 19, 1999: 326; Wilson, 1999: 16; Wilson et al., 1999: 1; Casas-Andreu et al., 2004: 389; Liner, 2007: 44; Wilson and Johnson, 2010: 135; Wilson et al., 2013: 41; Ochoa-Ochoa et al., 2014: table S3.

Holotype: American Museum of Natural History (AMNH) 19745, adult male.

Type-locality: Mixtequillo, Oaxaca, Mexico.

Definition: (Table 1). The head pattern consists of a pale nuchal collar reduced to two nuchal spots posterolateral to the parietals, which sometimes extend slightly onto the parietals but not to the ultimate supralabial. The remainder of the head is brown to dark brown, except for pale pre- and postocular spots. The dorsal ground color is tan to brown. A pale middorsal stripe is present on the middorsal row and adjacent halves of the paravertebral rows, and a complete pale lateral stripe, bounded below by dark pigment, is located on the adjacent halves of dorsal scale rows 3 and 4. The venter is immaculate cream. The ventrals and subcaudals range from 145 to 163 and 31 to 42, respectively.

Description: The ground color of the head often is a shade darker than that of the body. Pale pigmentation is indistinct or absent on the snout, and a spot is present on each preocular and postocular. A collar is restricted to two spots on the nape posterolateral to the parietals, and it sometimes extends slightly onto the parietals. Each spot covers an area equal to about 2–3 dorsal scales. The dorsal ground color is tan to brown. A cream middorsal stripe is present along the middorsal scale row and the adjacent halves of the paravertebral rows. The stripe is not narrow anteriorly and usually begins three scales posterior to the parietals, and generally does not continue onto the tail. A cream lateral stripe is present along the adjacent halves of scale rows 3 and 4, and usually does not extend onto the tail. The lowermost dorsal scale row is uniform in color. The venter is immaculate cream. The variation in scutellation is as follows: the prefrontal and the 2nd supralabial are separated by contact of the postnasal and preocular; the supralabials are 7, with the 3rd and 4th entering the orbit; the infralabials are 6, with the first four in contact with the anterior chinshields, the 4th is the largest, and the first pair is separated by contact of the mental and the anterior chinshields; the postoculars are 2; the temporals are 1+1; the dorsal scale rows are 15 throughout; the ventrals in males are 146–161 (155.4), and in females 145–163 (153.8); the cloacal scute is divided; the subcaudals in males are 33–42 (37.1), and in females 31–34 (33.1); and the ventrals + subcaudals in males are 182–201 (192.0), and in females 178–197 (187.1). The specimens measured 93–217 mm in total length and 13–35 mm in tail length, with a relative tail length of 0.130–0.170.

Distribution: Low and moderate elevations along the Pacific versant of the Isthmus of Tehuantepec in the Mexican state of Oaxaca (Fig. 28).

Remarks: Wilson and Meyer (1971) assigned *Tantilla striata* to the *taeniata* group.

Etymology: The name *striata* is "derived from the Latin *striatus*, meaning 'grooved or furrowed' and, by extension, 'striped,' in reference to the striped dorsal pattern" (Wilson, 1990d).

Specimens examined (28): MEXICO, Oaxaca, Buena Vista, 3 leagues (ca. 9 mi or 14.5 km) SW Tehuantepec (FMNH 105118, 105120; UIMNH 18800–01), Cajón de Piedra (USNM 110376), Cerro de Arenal, near Tehuantepec (UIMNH 6223), Cerro de Arenal, near Tenango (AMNH 68033), Cerro de San Pedro (UCM 39999, UIMNH 36813), Cerro de San Pedro, Tehuantepec (AMNH 65867), San Pedro Mt. (= Cerro de San Pedro), 24 km W Tehuantepec (UMMZ 82729), foot of Mt. Quiengola (= Cerro de Guiengola), Tehuantepec (AMNH 64584), Escurano (= Escurana or Oscuranos) (AMNH 68034; FMNH 105119; UIMNH 6224, 18799), Guie-la-du Jalapa (= Guieladú, near Jalapa) (UIMNH 36812), Lachiguiri, Cerro de Lachiguiri, 7,000' (UCM 44522–24), El Limón (FMNH 105122, UCM 41203), near Mixtequilla (USNM 110375), E of Mixtequillo (= Mixtequilla) (AMNH 19745), Las Pilas (USNM 110585), Las Tejas, near Tehuantepec (AMNH 68032; UIMNH 6222), Bisilana, near

Quiengola (= Guiengola) (AMNH 68035), Quiengola (= Guiengola), Tehuantepec (AMNH 65153), Río Los Milagros, Santa María Chimalapa (AMNH 65154), Tehuantepec (UIMNH 35557), Yerba Santa (AMNH 65152), Zarsa-Mora (= Zarzamora) (UIMNH 36814).

Specimens not examined (4): MEXICO, Oaxaca, Limón, Tehuantepec (UCM 41203), Lachiguiri, Cerro de Lachiguiri (UCM 44522–24).

***Tantilla tayrae* Wilson**

Volcán Tacaná Centipede Snake

Tantilla tayrae Wilson, 1983a: 54, 1984: 9, 1990a: 479.1, 1999: 17; Pérez-Higareda et al., 1985: 291; Flores-Villela, 1993: 34, 58; Flores-Villela and Gerez, 1994: 322, 373; Campbell et al., 1995: 122; Campbell and Smith, 1997: 333; Campbell, 1998a: 2; Wilson, 1999: 17; Wilson et al., 1999: 1; Wilson and McCranie, 1999: 326; Liner, 2007: 44; Köhler, 2008: 287; Johnson et al., 2010: 367; Wilson and Johnson, 2010: 135; Reynoso et al., 2011: 507; Wilson et al., 2013: 41; Ochoa-Ochoa et al., 2014: table S3.

Holotype: Museum of Vertebrate Zoology (MVZ) 159203, adult male.

Type-locality: Finca San Jerónimo. 7.5 km N (by road) Cacaohatán [= Cacahoatán or Cacahuatán], elevation 760 m, Volcán Tacaná, Municipio de Unión Juárez, Chiapas, Mexico.

Definition: (Table 1). The head is brown to dark brown, except for pale pre- and postocular spots. A narrow and poorly developed pale nuchal collar is confined to the scales posterior to the parietals; the collar is broadly divided middorsally, and laterally crosses the ultimate supralabial. The dorsal ground color is dark brown. A pale middorsal stripe is absent or barely evident; a pale lateral stripe is absent or barely evident on the adjacent halves of dorsal scale rows 3 and 4 (only on the anterior portion of the body). The venter is cream anteriorly and grades to pinkish orange (red-orange in life?) posteriorly, with the extreme anterolateral edge of each ventral scale containing a dark brown spot. The ventrals and subcaudals range from 140 to 154 and 44 to 51, respectively.

Description: A brown head cap is followed by a poorly developed pale nuchal collar, which is broadly divided middorsally, or middorsally and laterally, and is restricted to the scale posterior to the parietals and crosses the posterior tip of the ultimate supralabial. Pre- and postocular pale spots are present, which are variable and separated from one another by a dark subocular blotch. The dorsal ground color is dark brown. A pale middorsal stripe is absent, or if present consists of a series of slightly paler disjunct spots on the anterior end of each middorsal scale along the length of the body, or some portion of its anterior end. A pale lateral stripe is absent or barely evident anteriorly on the body, along the adjacent halves of scale rows 3 and 4. The venter is cream and grades to pinkish orange on the posterior portion of the body and tail. A dark brown spot is present on the extreme anterolateral edge of each ventral scale. The variation in scutellation is as follows: the postnasal and a single preocular are in contact; the supralabials are 7, with the 3rd and 4th entering the orbit; the infralabials are 6, with the first four in contact with the anterior chinshields, the 4th is the largest, and the first pair sometimes is in medial contact; the postoculars are 2; the temporals are 1+1; the dorsal scale rows are 15 throughout; the ventrals in males are 140–144 ($\bar{x}$ = 142.2), and in females 146–154 ($\bar{x}$ = 149.0); the cloacal scute is divided; the subcaudals in males are 46–49 ($\bar{x}$ = 47.2), and in females 44–51 ($\bar{x}$ = 47.3); and the ventrals + subcaudals in males are 186–193 ($\bar{x}$ = 189.4), and in females 190–201 ($\bar{x}$ = 196.3). The specimens measured 140–360 mm in total length and 26–68 in tail length, with a relative tail length of 0.185–0.203.

Distribution: Moderate elevations along the slopes of Volcán Tacaná on the Pacific versant of Chiapas, Mexico (Fig. 16).

Ecological observations: Wilson (1983a: 58) reported that "all five [specimens of *Tantilla tayrae* known at the time] came from underneath leaf litter on the ground in a cafetal with shade trees…in an area within the Subtropical [= Premontane] Wet Forest formation…" at 760 m on the slopes of Volcán Tacaná. The specimens discussed by Wilson (1984) came from 960 m on the same mountain.

Remarks: Wilson (1983) assigned *Tantilla tayrae* to the *taeniata* group. Campbell (1998a) included some comments on the status of this taxon.

Etymology: The name *tayrae* is a patronym honoring the senior author's younger daughter Tayra Barbara Wilson, who was 10 years old at the time of the snake's description, 31 years ago.

Specimens examined (9): MEXICO, Chiapas, Finca San Jerónimo, 7.5 km N (by road) Cacaohatán [= Cacahoatán or Cacahuatán], Volcán Tacaná, Mpio. Unión Juárez (MVZ 159114, 159203, 167117, 169587–88, 177105), Finca Monte Perla, 18.8 km NE (by road) Cacaohatán (MVZ 177106–08).

Specimens not examined (1): MEXICO, Chiapas, San Jerónimo, Volcan Tacaná (UCM 45818).

***Tantilla triseriata* Smith and Smith**

Three-lined Centipede Snake

Tantilla triseriata Smith and Smith, 1951: 97; Wilson and Meyer, 1971: 11; Smith, et al., 1998: 374; Campbell, 1998a: 7; Wilson, 1999: 18; Wilson and McCranie, 1999: 326; Liner, 2007: 44; Köhler, 2008: 287; Wilson and Johnson, 2010: 135; Wilson et al., 2013: 41; Ochoa-Ochoa et al., 2014: table S3.

Tantilla taeniata: Wilson and Meyer, 1971: 11 (part); Casas-Andreu et al., 1996: 34 (part).

Holotype: University of Illinois Museum of Natural History (UIMNH) 20198, subadult female, collected 9 October 1949, by Thomas MacDougall.

Type-locality: Coatlán, Oaxaca, Mexico.

Definition: (Table 1). The head pattern consists of a complete pale nuchal collar that begins on the posterior portion of the parietals, and crosses the last supralabial. The scales of the 1st dorsal row are unpigmented on the anterior one-half (or more) of the body, after which their upper portion is darkly pigmented. The ground color is dark brown, on which a pale middorsal stripe is confined to the middorsal scale row on about the anterior one-third of the body, and expands posteriorly onto the adjacent portions of the paravertebral rows. A pale lateral stripe extends along the length of the body, on the adjacent halves of the 3rd and 4th dorsal scale rows. The ventrals and subcaudals range from 163 to 167 and 58 to 63, respectively.

Description: The head is dark brown, with a complete pale nuchal collar that crosses the posterior portion of the parietals and extends about one scale beyond to laterally cross the last supralabial. The ground color is dark brown. A pale middorsal stripe extends along the middorsal scale row anteriorly on the body, and posteriorly expands to the adjacent portions of the paravertebral rows. A pale lateral stripe is present on the adjacent halves of scale rows 3 and 4, and continues almost to the tail tip. The venter is immaculate pale yellow. The variation in scutellation is as follows: the postnasal and a single preocular sometimes are in contact; the supralabials are 7, with the 3rd and 4th entering the orbit; the infralabials are 6 or 7, with 4 or 5 in contact with the anterior chinshields, the 4th or 5th are the largest, and the first pair sometimes is in medial contact; the postoculars are 2; the temporals are 1+1; the dorsal scales are 15 throughout; the ventrals in females are 159–167 ($\bar{x}$ = 163.3); the cloacal scute is divided; the subcaudals in females are 58–63 ($\bar{x}$ = 61.0); and the ventrals + subcaudals in females are 221–227 ($\bar{x}$ = 224.3). The specimens measured 173–375 mm in total length and 35–74 mm tail length, with a relative tail length of 0.197–0.222.

Distribution: Intermediate elevations of south-central Oaxaca, Mexico (Fig. 29).

Remarks: This taxon was synonymized with *T. taeniata* by Wilson and Meyer (1971), but was resurrected by Smith et al. (1998), who included it as part of the *taeniata* group. The counts for ventrals and subcaudals for the holotype (UIMNH 20198) provided by Smith and Smith (1951) in the original description are 163 and 61, respectively. Our comparable counts are 159 and 62.

Etymology: The name *triseriata* is derived from the Latin words *tres*, meaning "three," *series*, meaning "row," and "*-atus*, meaning "provided with," in reference to the three pale stripes on the dorsum of the body.

Specimens examined (3): MEXICO, Oaxaca, Coatlán (UIMNH 20198), Cumbre at Río Grande (UIMNH 36816); vicinity of Vista Hermosa (UCM 40001).

Tantilla vulcani Campbell

Vulcan Centipede Snake

Homalocranium fuscum: Boulenger, 1896: 220 (part).

Tantilla fusca: Slevin, 1939: 411.

Tantilla jani: Smith, 1942: 36; Smith and Taylor, 1950: 317; Smith and Smith, 1951: 98; Wilson, 1982a: 39, 1982b: 307.1; 1983a: 57, 1984: 8, 1985d: 369.1; Pérez-Higareda et al., 1985: 291; Flores-Villela, 1993: 33; Flores-Villela and Gerez, 1994: 372; Campbell et al., 1995: 122; Casas-Andreu et al., 1996: 34; Campbell and Smith, 1997: 333; Campbell, 1998b: 255; Wilson and McCranie, 1998: 40; Wilson et al., 1999: 1; Casas-Andreu et al., 2004: 389; Johnson et al., 2010: 368; Wilson and Johnson, 2010: 135; Reynoso et al., 2011: 506.

Tantilla janni: Beltrán, 1953: 132.

Tantilla vulcani Campbell, 1998a: 11; Wilson, 1999: 19; Wilson and McCranie, 1999: 326; Liner, 2007: 44; Köhler, 2008: 287; Wilson et al., 2013: 41; Ochoa-Ochoa et al., 2014: table S3.

Holotype: University of Texas at Arlington (UTA) R-21772, adult female collected by Carlos Mirón, April–May 1986.

Type-locality: Finca El Carmen, km 197.5 on CA-2, 518 m elevation, Depto. Quezaltenango, Guatemala.

Definition: (Table 1). The head pattern consists of a usually complete pale nuchal band on a brown ground color, which crosses the last supralabial. A prominent pale spot is present on the upper portion of the rostral, most of the internasals, and the anterior portion of the prefrontals. The dorsum of the body is brown, on which a pale middorsal stripe is reduced to a series of spots (one per middorsal scale) along the length of body, but poorly defined posteriorly. A pale lateral stripe on the adjacent thirds of scale rows 3 and 4 extends to the vent, but is inconspicuous posteriorly on the body. Dark borders are absent on the middorsal stripe, but sometimes present on the lateral one. The lower portion of the paraventral scale row contains dark pigment, similar to that on the upper portion of scale. The venter is immaculate cream, except for some dark pigment on the lateral apices of each ventral. The ventrals and subcaudals range from 136 to 155 and 37 to 51, respectively.

Description: A dark brown head cap is followed by a complete pale nuchal collar that begins on the posterior ¼–⅓ of the parietals and extends 1–1½ scales posterior to the parietals, and laterally to cross the ultimate supralabial. The collar is a shade darker anteriorly than posteriorly. A prominent pale spot is present on the upper portion of the rostral, most of the internasals, and the anterior part of the prefrontals, which is a shade darker posteriorly than anteriorly. Both pre- and postocular spots are present. The dorsolateral color is pale brown to brown, and is separated from a mottled gray-brown ventrolateral color by a beige lateral stripe along the adjacent thirds of scale rows 3 and 4; the stripe extends to about the level of the vent, but becomes obscure posteriorly. A pale middorsal stripe along the middorsal row is reduced to a series of spots (one per scale) and extends the length of the body, but is poorly defined on the tail. The paraventral scale row is uniformly mottled on the upper and lower halves. The venter is immaculate white. The variation in scutellation is as follows: the postnasal and a single preocular usually are in contact, separating the prefrontals and the 2nd supralabial, but the prefrontals and supralabials can be in contact on one or both sides; the supralabials are 7, with the 3rd and 4th entering the orbit; the infralabials usually are 6, with the first four in contact with the anterior chinshields, the 4th is the largest, and the first pair is in medial contact or separated by contact of the mental and the anterior chinshields; the postoculars are 2; the temporals usually are 1+1, but sometimes are fused; the dorsal scales rows are 15 throughout; the ventrals in males are 136–146 ($\bar{x}$ = 141.8), and in females 141–154 ($\bar{x}$ = 149.7); the cloacal scute is divided; the subcaudals in males are 39–50 ($\bar{x}$ = 46.4), and in females 38–47 ($\bar{x}$ = 41.9); and the ventrals + subcaudals in males are 175–195 ($\bar{x}$ =188.2), and in females 186–199 ($\bar{x}$ = 192.1). The specimens measured 111–247 mm in total length and 18–50 mm in tail length, with a relative tail length of 0.154–0.220.

Distribution: Low to moderate elevations (518–610 m) of the Pacific versant from eastern Oaxaca, Mexico, to south-central Guatemala (Fig. 29).

Ecological observations: Wilson and Meyer (1971: 25) cited Smith (1943: 475), who "reported finding one individual under [actually Smith, 1943: 475, said "in"] a rotten log in the dry season and a second one under leaves in the wet season…." They also pointed out that "Slevin (1939) included a photograph of a pile of debris similar to

those from which *T. jani* had been taken in a coffee finca…." Campbell (1998a) reported a specimen of *T. vulcani* collected "at about 2030 hr on 29 March 1997 as it crossed a road in a coffee grove."

Remarks: For a long time, this taxon was confused with *T. jani*, apparently based on the misidentification of a large series of specimens from the base of Volcán Zunil in Guatemala by Slevin (1939). The confusion persisted through a series of papers published by Smith (1942), Wilson and Meyer (1971), Wilson et al. (1977), and Wilson (1982a, 1984, 1985e), until Campbell (1998a) settled this issue. He examined the lectotype of *Tantilla jani* and found it to be conspecific with the holotype of *Tantilla cuesta*, described by Wilson (1982a). Thus, the specimens referred to as *Tantilla fusca* by Slevin (1939) and as *T. jani* by Smith (1942), Wilson and Meyer (1971), Wilson et al. (1977), and Wilson (1982a, 1984, 1985e) required a new name, *Tantilla vulcani*, which Campbell (1998a) provided. *Tantilla vulcani* is part of the *taeniata* group (Campbell, 1998a).

Etymology: The name *vulcani* is derived from Vulcan, the name of the Roman god of fire, "in allusion to the habitat of this species on the Pacific versant of Guatemala which is dominated by a series of spectacular Quaternary volcanoes, some still active" (Campbell, 1998a).

Specimens examined (6). MEXICO: Chiapas, Finca Monte Perla, 18.8 km NE (by road) Cacaohatán [= Cacahoatán or Cacahuatán] (MVZ 177109), La Esperanza (USNM 110377–78), l km N jct. with Mexico Hwy. 200 NE Tapachula on road to Unión Juárez (CAS 140961), *cafetal* along road from Tapachula to Nueva Alemania, 13.6 km (by road) N jct. Mexico Hwy. 200 (MVZ 132936); Oaxaca, Tapanatepec (MCZ 27828).

***Tantilla wilcoxi* Stejneger**

Chihuahuan Black-headed Snake

Tantilla coronata (*nec* Baird and Girard): Garman, 1887: 128.

Tantilla wilcoxi Stejneger, 1902: 156; Stejneger and Barbour, 1917: 106, 1939: 142, 1943: 178; Slevin, 1934: 41, 56; Ditmars, 1936: 305; Taylor and Knobloch, 1940: 130; Smith, 1941: 115; Savage, 1949: 24, 1959: 25; Schmidt, 1953: 222; Lowe, 1956: 10, Cagle, 1957: 351, 1968: 263; Lowe, 1964: 172; McCoy, 1964a: 216; Harrison, 1971: 68; Leviton, 1972: 182; McDiarmid et al., 1976: 13; Cole and Hardy, 1981: 273; Liner, 1983: 345.1; McCranie and Wilson, 1987: 16, 20; Flores-Villela, 1993: 34; Flores-Villela and Gerez, 1994: 322, 373; Campbell et al., 1995: 122; Contreras-Arquieto and Lazcano-Villareal, 1995: 61; Liner, 1996: 170; Wilson, 1999: 19; Goldberg, 2004: 73; Lemos-Espinal et al., 2004: 82; Hernández-Ibarra and Ramírez-Bautista, 2006: 62, 72; Mendoza-Quijano et al., 2006:40; Ramírez-Bautista and Moreno, 2006:96; Lemos-Espinal and Smith, 2007a: 407, 591, 610; 2007b: 356; Liner, 2007: 44; Rorabaugh, 2008: 51; Enderson et al., 2009: 666; Lemos-Espinal and Smith, 2009: 11; Lavín-Murcio and Lazcano, 2010: 293; Wilson and Johnson, 2010: 135; Lemos-Espinal and Dixon, 2013: 226, 227, 290, 300; Narváez-Torres and Lazcano-Villarreal, 2013: 211; Ramírez-Bautista et al., 2013: 87; Rorabaugh, 2013b: 77; Wilson et al., 2013: 41; Ochoa-Ochoa et al., 2014: table S3; Enderson et al., 2014.

Tantilla deviatrix Barbour, 1916: 93 (holotype, MCZ 6195; type-locality, San Luis Potosí, San Luis Potosí, Mexico), 1929: 348; Dunn, 1928: 2; Amaral, "1929" (1930): 220; Smith, 1943: 33, 1944: 149; Hartweg, 1944: 1; Smith and Taylor, 1945: 138, 1950: 342; Taylor, 1949: 170.

Homalocranium wilcoxi: Phisalix, 1922: 322.

Homalocranium deviatrix: Werner, 1925: 147.

Tantilla wilcoxi wilcoxi: Smith, 1942: 40; Bogert and Oliver, 1945: 416; Smith and Taylor, 1945: 141, 1950: 353; Perkins, 1949: 12, 20, 63; Woodin, 1953: 285, 292; Stebbins, 1954: 448, 452, 503, 1966: 182; Wright and Wright, 1957: 26, 723, 752; Webb and Hensley, 1959: 256; McCoy, 1964b: 48; Conant, 1965: 25; Fowlie, 1965: 115.

Tantilla wilcoxi rubricata Smith, 1942: 40 (holotype, USNM 110399; type locality, 15 mi [= 24 km] SE Galeana, Nuevo León, Mexico), 1943: 477, 1944: 149, Taylor, 1944: 186, 1949: 170; Smith and Taylor, 1945: 141, 1950: 337; Taylor and Smith, 1945: 541; Martín del Campo, 1953: 144; Cochran, 1961: 218; McCoy, 1964b: 48.

Tantilla bocourti deviatrix (*nec* Barbour): Smith and Laufe, 1945: 348; Beltrán, 1953: 125. Smith and Taylor, 1966: 26; Clark, 1970: 130.

Holotype: National Museum of Natural History (USNM) 19674, juvenile male.

Type-locality: Fort Huachuca, Huachuca Mts., Cochise Co., Arizona.

Definition: (Table 1). A dark brown to black head cap extends posteriorly to a point at or near (within one dorsal scale length) of the posterior tips of the parietals, and ventrolaterally to or below the angle of the mouth, followed by a pale (white or cream) collar 1–2 scales long. The nuchal band is followed by a narrow dark nape band ½–1½ scales long. The dorsum of the body is uniform pale to dark brown, gray, or olive-green. The venter is immaculate white to rose-red. The ventrals and subcaudals range from 135 to 161 and 49 to 71, respectively.

Description: (Fig. 30). A dark brown to black head cap extends downward to or below the oral rictus, including portions of the 6th and 7th infralabials. The head cap is delimited posteriorly by a complete or middorsally-divided white or cream nuchal band 1–2 scales long, which crosses the posterior tips of the parietals. The nuchal band is bounded posteriorly by a series of dark spots or a black nape band ½–1½ scales long. The dorsum of the body is uniform pale to dark brown, gray, or olive-green. The venter is immaculate dull white, and grades posteriorly to red or orange. The variation in scutellation is as follows: the postnasal and a single preocular usually are in contact; the supralabials are 7, with the 3rd and 4th entering the orbit; the infralabials are 6, with the first four in contact with anterior chinshields, the 4th is the largest, and the first pair usually is not separated by contact of the mental and the anterior chinshields; the postoculars are 2 (a single postocular on the right side of the head is present in one specimen); the temporals are 1+1 or 1+1+1; the dorsal scales are 15 throughout; the ventrals in males are 135–160 ($\bar{x}$ = 151.4), and in females 144–161 ($\bar{x}$ = 154.6); the cloacal scute is divided; the subcaudals in males are 49–71 ($\bar{x}$ = 62.5), and in females 55–63 ($\bar{x}$ = 58.3); and the ventrals + subcaudals in males are 199–222 ($\bar{x}$ = 212.1), and in females 201–219 ($\bar{x}$ = 212.5). The specimens measured 129–364 mm in total length and 27–101 mm in tail length, with a relative tail length of 0.209–0.277.

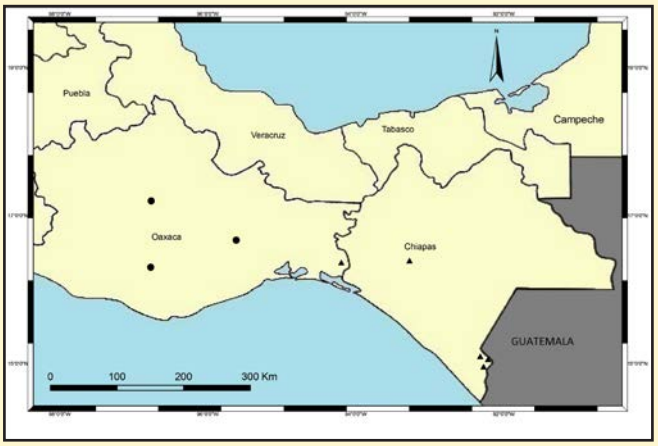

Fig. 29. Distribution map of the reported localities for *Tantilla triseriata* (circles) and *T. vulcani* (triangles).

Fig. 30. Adult *Tantilla wilcoxi* from Galeana,Nuevo León, Mexico. EVS 10 (medium vulnerability species). © Peter Heimes

Distribution: Moderate to intermediate elevations of both versants from extreme southern Arizona, United States, southward and eastward through southwestern Chihuahua, northeastern Sinaloa, central Durango, Zacatecas, southeastern Coahuila, southern Nuevo León, and western San Luis Potosí in Mexico (Fig. 31).

Ecological observations: Smith (1943: 47) stated that, "the two types [USNM] (Nos. 110398–9) were found under stones in a semi-arid region, during a period of drizzling showers…" Lowe (1964: 172) indicated that *T. wilcoxi* occurs "in woodland and grassland associations" where it is "found under rocks, logs, and dead plants such as yucca, agave, and sotol in shaded rocky canyons and on relatively open and sunny rocky slopes in the desert-grassland and evergreen woodland." Fowlie (1965: 116) described the habitat of this species at Carr Canyon in the Huachuca Mountains as "moist to semi-moist woodland of acacias and oaks with abundant leaf litter, and is situated at the base of large talus slopes with a lot of loose rubble and rocks in partial shade." The snake is "most often found under dead agave plants on the side of the hills…its food seems to consist primarily of spiders. It may also be found in nearby dumps and trash piles adjacent to the prime habitat." McDiarmid et al. (1976: 13) reported, "a single specimen…collected in a rock crevice in a road cut in pine-oak madrone forest…." Liner (1983: 345.1)

stated that he "observed a specimen of *T. wilcoxi* being engulfed by a *Hypsiglena torquata texana* in the collecting bag. Specimens collected by myself and associates were found either in grassy areas under rocks or under rocks on a barren hillside." Goldberg (2004) provided data on one clutch of eggs from this snake, and the testicular cycle. Lemos-Espinal and Smith (2007) described the habitat of this species as follows: "This is a species mostly restricted to mountainous areas, and thus parts of its range are discontinuous where only scattered mountain ridges occur. Examples have been found in both oak-pine forests and rocky, semiarid habitats." With respect to behavior, they noted that "little is known, other than that the species is nocturnal and usually found under rocks or rotted vegetation. Eggs number 1–3/clutch, laid in spring and summer. Males undergo spermiogenesis at least July–September (Goldberg, 2004)." They described food habits as follows: "Undoubtedly, much as in other species of its genus, this species subsists largely on small invertebrates, perhaps primarily on millipedes, centipedes and scorpions." Rorabaugh (2008: 51) reported that in Sonora this species inhabits montane woodland communities in the highlands where it "can be found under rocks, logs, or dead agaves in rocky, wooded canyons."

Remarks: For a discussion of the status of *Tantilla deviatrix* Barbour, see the *Tantilla bocourti* species account.

Etymology: The name *wilcoxi* is a patronym honoring Timothy E. Wilcox, M.D., who collected the holotype.

Specimens examined (23): MEXICO, Chihuahua, 50 mi (= 80 km) W Chihuahua, just E of Cuauhtémoc (BYU 13849), 25 mi (= 40 km) S Creel on La Bufa Road (BYU 16863), Majarachic (FMNH 105474–76), Red Rock, 12 mi (= 19.2 km) up Tinaja Canyon, NW Colonia Juárez (BYU 13847–48), Santa Bárbara (AMNH 68206), vic. Santa Bárbara (AMNH 67897–99), 5 mi (= 8 km) W Santa Bárbara (AMNH 67719), Sierra de la Campana, 7.5 mi (= 12 km) by road to Camp 88, W Bella Vista, 2,020 m (UTEP 8821); Durango, 1 mi (= 1.6 km) N Chorro (KU 39970), Mexico Hwy. 40, ca. 15 km WSW Durango, 2,450 m (MCZ 133773), 2.5 mi (= 4 km) W Tapias, 6,400' (= 1,951 m) (UTEP 8639), Río Chico (UTEP 8640); Nuevo León, 9 mi (= 14.4 km) ENE San Roberto, 6,600' (= 2,012 m) (MSUM H-9825); San Luis Potosí, 21.2 mi (= 33.9 km) S San Luis Potosí on Mexico Hwy. 57 (LACM 114069); Sinaloa, Sierra Surutato, 4.8 mi (= 7.7 km) by road SE Los Hornos, 2,075 m (CAS 155925); Zacatecas, 26 km WNW Ahualulco (San Luis Potosí) on Mexico Hwy. 49, 2,200 m (MCZ 152668), 2 mi. (= 3.2 km) SE Villa de Cos, 6,200' (= 1,890 m) (UTEP 8641), 6 mi (= 9.6 km) NNW Pinos, 7,900' (= 2,408 m) (UTEP 8642).

Specimens not examined (30): MEXICO, Chihuahua, Rancho Cocono, ca. 1 mi (= 1.6 km) W Rio Negro (UAZ 46148), entre Puerto Justo y Balleza (Lemos-Espinal and Smith, 2007a), 80 km W Ciudad Chihuahua (Lemos-Espinal and Smith, 2007a); Coahuila, no other data (AMNH 160370–73, AMNH 129139), 10.8 mi (= 16.3 km) S, 0.1 mi (= 0.16 km) E Arteaga at Los Piños (TCWC 51827–30); Durango, 0.4 mi (= 0.64 km) E Carlos Real (EAL 2676), 22 mi (= 35.4 km) S Durango just W Flor Road (UAZ 42687); Nuevo León, 2 mi (= 3.2 km) W Iturbide, ca. 5,000' (= 1,524 m) (UMMZ 126185), 15 mi (= 24 km) W Galeana (USNM 110398–99), 2 mi (= 3.2 km) W, 1.4 mi (= 2.2 km) S San Antonio de las Alazanas (Coahuila), on Cienega del Tovo road (EAL 4178), 2 mi (= 3.2 km) W Mexico Hwy. 68, just S of Mexico Hwy. 60 (UAZ 42233–34), 17 mi (= 27.3 km) (by road) N Galeana on road to San Antonio de la Alazanas (UAZ 46338), Parque Nacional Cumbres de Monterrey (Narváez-Torres and Lazcano-Villareal, 2013); San Luis Potosí, San Luis Potosí (MCZ 6195); Sonora, no other data (UTA 17805), La Cuesta, ca. 10.2 mi (= 16.4 km) E Santa Ana (on road to Yecora) (UAZ 28201), Charcas (Lemos-Espinal and Dixon, 2013); Zacatecas, Calabazal, 7,500' (= 2,286 m) (UCM 13917), 11 mi (= 17.6 km) NW, 37 mi (= 59.2 km) NE Zacatecas, 6,900' (= 2,104 m) (TCWC 38587), 5.5 mi (= 8.8 km) NW Sarteneja, 7,000' (= 2134 m), Zacatecas (AMNH 85262), 1.5 mi E San Luis Potosi border on Mexico Hwy. 49 (UAZ 38037).

***Tantilla yaquia* Smith**

Yaquia Black-headed Snake

Tantilla yaquia Smith, 1942: 41; McDiarmid, 1968: 159, 1977: 198.1; Cole and Hardy, 1981: 215; Flores-Villela, 1993: 34, 64; Flores-Villela and Gerez, 1994: 322, 373; Grismer, 1994a: 73; Campbell et al., 1995: 122; Wilson, 1999: 19; Lemos-Espinal et al., 2004: 82; Lemos-Espinal and Smith, 2007a: 407, 591, 610; Liner, 2007: 44; Rorabaugh, 2008: 51; Bogan et al., 2009: 458; Enderson et al., 2009: 666; Lemos-Espinal and Smith, 2009: 11; Lavín-Murcio and Lazcano, 2010: 293; Wilson and Johnson, 2010: 135; Ramírez-Bautista et al., 2013: 87; Rorabaugh, 2013a: 61; Wilson et al., 2013: 41; Ochoa-Ochoa et al., 2014: table S3.

Tantilla bogerti Hartweg, 1944: 1; Myers and Zweifel, 1993: 138.

Tantilla yaquia yaquia: Zweifel and Norris, 1955: 243.

Tantilla yaquia bogerti: Zweifel and Norris, 1955: 243.

Tantilla atriceps (*nec* Günther): Wright and Wright, 1957: 729.

Tantilla planiceps yaquia: Tanner, 1966: 135.

Tantilla planiceps bogerti: Tanner, 1966: 135.

Holotype: Museum of Comparative Zoology (MCZ) 43274, female, collected August 1936, by Howard S. Gentry.

Type-locality: Guasaremos, Río Mayo, Chihuahua, Mexico.

Definition: (Table 1). A brown to black head cap, usually straight posteriorly, extends 2–4 scales beyond the parietals and ventrolaterally to below the angle of the mouth, followed by a pale (white or cream) nuchal collar ½–1½ scales long. Several distinct brown spots often are present along the posterior edge of the nuchal collar. A prominent pale postocular spot covers most of supralabials 4, 5, and 6, as well as the lower ⅓ – ½ of the anterior temporal. The dorsum of the body is beige to pale brown. The venter is immaculate. The ventrals and subcaudals range from 134 to 165 and 46 to 75, respectively.

Description: A brown to black head cap extends ventrolaterally below the oral rictus, and for 2–4 scales beyond the posterior end of the interparietal suture. The posterior edge of the head cap usually is straight, and followed by a white or cream neck band ½–1½ scales long. A pale preocular spot is present on the 1st supralabial, and a prominent pale postocular spot on the lower ⅓ –½ of the anterior temporal and the majority of the 4th, 5th, and 6th supralabials Several distinct brown spots often are present along the posterior edge of the nuchal collar. The dorsum of the body is beige to pale brown. The venter is immaculate cream. The variation in scutellation is as follows: the postnasal and a single preocular usually are in contact, but sometimes are separated by contact of the prefrontal and 2nd supralabial; the supralabials are 7, with the 3rd and 4th entering the orbit; the infralabials are 6, with the first four in contact with the anterior chinshields, the 4th is the largest, and the first pair usually is in medial contact, but sometimes is separated by contact of the mental and the anterior chinshields; the postoculars are 2; the temporals are 1+1; the dorsal scale rows are 15 throughout; the ventrals in males are 134–157 (146.2), and in females 145–165 (152.6); the cloacal scute is divided; the subcaudals in males are 50–73 (59.8), and in females 46–75 (61.6); and the ventrals + subcaudals in males are 186–230 (205.9), and in females 194–233 (214.0). The specimens measured 93–325 mm in total length and 18–74 mm in tail length, with a relative tail length of 0.172–0.285.

Distribution: Low, moderate, and intermediate elevations of the Pacific versant from southeastern Arizona, United States, to Nayarit, Mexico (Fig. 31).

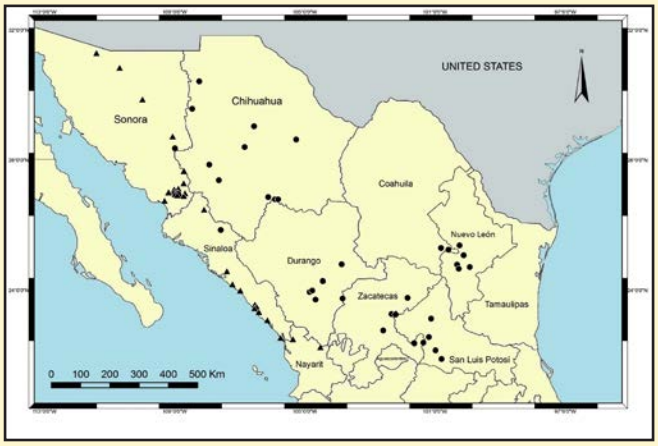

Fig. 31. Distribution map of the reported localities for *Tantilla wilcoxi* (circles) and *T. yaquia* (triangles).

Ecological observations: McDiarmid (1968: 169) noted that this species is found in "evergreen and raparian [= riparian] woodland" at elevations above 1,000 m in the northern portion of its range. He reported that "in southern Sonora, Chihuahua, and northern Sinaloa," "*T. yaquia* commonly occurs in the deciduous short tree forest…and occasionally ranges into the drier thorn woodland." In southern Sinaloa and Nayarit, this species inhabits "tropical semiarid and dry forests" (McDiarmid, 1968: 169). McDiarmid (1968: 170) further noted *T. yaquia* to be "a nocturnal, secretive form, that spends much of its time beneath rocks and in crevices. Most specimens in the north have been found beneath rocks and surface litter, especially in March, April, August, and September, when the soil is damp after winter and summer rains. In Arizona individuals have been collected in or near streams. One specimen (MVZ 59778) was found in the stomach of a *Rana* [=*Lithobates*] *tarahumarae*, a frog that is rarely taken away from water. Another snake (UAZ 23574)…was found just before dark as it was swimming in a swift portion of the stream in Sycamore Canyon. Near Alamos, specimens have been collected in December, January and February, although a few have been taken in July and August. A specimen was dug from the interstices between the roots and surrounding soil of a large mesquite (*Prosopis*) south of Navojoa in December. Another

specimen was taken at 1945 hours on July 6 on the road north of Mázatlan [= Mazatlán], Sinaloa. The ambient termperature was 26.4°C." In Sonora, Rorabaugh (2008: 51) reported this species to occupy thornscrub, tropical deciduous forest, and the highlands, where it can be found "under rocks, logs, and other surface debris." Bogan et al. (2009: 458) reported a biogeographically significant locality record for this species from the Sonoran Desert that "represents an isolated locality that is well removed from the main distribution of *T. yaquia* in the Sierra Madre Occidental region where it occurs in oak woodland, tropical deciduous forest, and thornscrub." They indicated that the snake "was discovered on an open, south-facing rocky hillside located about 15 m upslope from a subtropical riparian-lined canyon [supporting] *Sabal uresana* and *Ficus petiolaris*."

Etymology: The name *yaquia* "refers to the Yaqui Indians, whose influence was often felt in the area of the type locality" (McDiarmid, 1977).

Specimens examined (13): MEXICO, Nayarit, Acaponeta (AMNH 62260), Jesús María (AMNH 74949); Sinaloa, 22.4 mi (= 35.8 km) S Río Piaxtla, via Mexico Hwy. 15 (CAS 23788), Laborados (CAS 64976), 61 mi (= 97.6 km) S Culiacán on Cosala Road (CAS 140865), 5.8 mi (= 9.3 km) N Mazatlán (LACM 6998), 0.75 mi (= 1.2 km) ENE El Cajón, 3,200' (= 976 m) (KU 93500); Sonora, Alamos (AMNH 109447, MVZ 78758), 5 mi (= 8 km) E Alamos (CAS 138870), Arroyo Cuchujaquí, 8 mi (= 12.8 km) Alamos (LACM 8475); 25 mi (= 40 km) S Navajoa (= Navojoa) (LACM 6997).

Specimens not examined (32): MEXICO, Chihuahua, Guasaremos, Río Mayo (MCZ 43274), Guasaremos (Lemos-Espinal and Smith, 2007a); Nayarit, Acaponeta (AMNH 62259); Sinaloa, Costa Rica, 16 km S Culiacán (UIMNH 34921), 43.8 mi (= 70 km) S Culiacán (UAZ 16310), 16 mi (= 25.6 km) N Mazatlán, Mexico Hwy. 15 (JFC 62-53), Teacapán (LACM 7001), 16 mi (= 25.7 km), Mexico Hwy. 15 (CAS 159396); Sonora, Alamos (UAZ 23570), 7.1 mi (= 11.4 km) NE Alamos airport (ASU 5834–36), 6.1 mi (= 9.8 km) WSW Alamos (ASU 5837–38), 5.5 mi (= 8.8 km) W Alamos (ASU 5833), 15 mi (= 24 km) W Alamos (JFC 63-129), 15.7 mi (= 25.1 km) W Alamos (JFC 63-162), Río Alamos, 8 mi (= 12.8 km) SE Alamos (UAZ 23572), 1.7 mi (= 2.7 km) SW Aribabi (UAZ 23569), Canyon Aqua Marín, 6.5 mi (= 10.4 km) W Alamos (ASU 6743), El Zapeta Ranch, about 15 mi (= 24 km) SE Sasabe (UAZ 23571), Mirasol, 16 mi (= 25.6 km) SE Alamos (SDNHM 18190), Rancho La Palma, 24 km (by road) NE Baviacora (UAZ 35165), ca. 4 mi (= 6.4 km) (by trail) above La Aduana, Sierra Alamos (UAZ 39858), ca. 2 mi (= 3.2 km) above La Aduana, Sierra Alamos (UAZ 39859), 9.7 mi (by road to Alamos) SW Milpillas (Chihuahua) (UAZ 40060), ca. 1 mi (= 1.6 km) (by road) SW, above Aduana by road S over Sierra de Alamos (UAZ 45209), vicinity of Choquincahui (UAZ 46680, UAZ 46686), Sierra de Alamos, Agua Escondida (UAZ 49160), Rio Meutidero at crossing of road to El Chinal, 7.5 mi (= 12.0 km) S (by road) of Alamos (UAZ 55720), 11.6 mi (= 18.6 km) SE (by road) of Baomari (MVZ 136786).

Key to the Species of *Tantilla* in Mexico

1a. Dorsum uniform in color or nearly so, without stripes or bands 2
1b. Dorsum with definite stripes or bands 16

2a. Both dorsum and venter dark brown to black . . . . . *T. moesta*
2b. Ventral color much paler than that of dorsum 3

3a. Dorsum of head more or less same color as dorsum of body or only slightly darker 4
3b. Dorsum of head much darker than dorsum of body 7

4a. Postocular usually single . . . . . *T. gracilis*
4b. Postoculars usually 2 5

5a. Pale nuchal collar subdued, confined to scales posterior to parietals and broadly divided middorsally; subcaudals more than 45. . . . . *T. tayrae* (part)
5b. Pale nuchal collar complete or divided middorsally, beginning on posterior portion of parietals; subcaudals fewer than 45 6

6a. Head wider than neck, body robust, ventrals 153 in single female specimen . . . . . *T. robusta*
6b. Head not wider than neck, body slender, ventrals 117–147. . . . . *T. schistosa*

7a. Postocular usually single . . . . . *T. atriceps*
7b. Postoculars usually 2 8

8a. Pale nuchal band absent . . . . . *T. nigriceps*
8b. Pale nuchal band present 9

9a. Pale nuchal band crosses posterior portion of parietals 10
9b. Pale nuchal band borders parietals or present 1–3 scales posterior to parietals 13

10a. Dorsum of body coral red, reddish brown, or reddish tan in life . . . . . *T. rubra*
10b. Dorsum of body not as above 11

11a. Ventrals fewer than 160 . . . . . *T. wilcoxi* (part)
11b. Ventrals 160 or more 12

12a. Secondary temporal elongate; ventrals 140–164; black head cap extends to or below corner of mouth, including parts of 6th and 7th infralabials . . . . . *T. wilcoxi* (part)
12b. Secondary temporal about same size as dorsal body scales; ventrals 160–195; black head cap does not extend to corner of mouth, or below it onto 6th and 7th infralabials . . . . . *T. bocourti* (part)

13a. Pale nuchal band distinct, bordered behind by dark nape band . . . . . *T. bocourti* (part)
13b. Pale nuchal band sometimes distinct, not bordered posteriorly by dark pigment; if so, pigment reduced to series of spots 14

14a. Black head cap does not extend laterally below angle of mouth . . . . . *T. hobartsmithi*
14b. Black head cap extends laterally below angle of mouth 15

15a. Extensive white postocular spot extends onto lower ¼–¾ of anterior temporal . . . . . *T. yaquia*
15b. No white pigment on anterior temporal . . . . . *T. planiceps*

16a. Dorsum patterned with pale crossbands on anterior portion of the body . . . . . *T. shawi*
16b. Dorsum patterned with longitudinal stripes 17

17a. Dorsum with a median dark longitudinal stripe 18
17b. Dorsum with a pale median and/or lateral stripe of variable length and intensity 23

18a. Postocular single . . . . . *T. calamarina*
18b. Postoculars 2 19

19a. No dark lateral stripe on dorsum . . . . . *T. sertula*
19b. Dark lateral stripe present along length of body or on neck region only 20

20a. Supralabials 6 . . . . . *T. cascadae*
20b. Supralabials 7 21

21a. Ultimate supralabial in contact with parietal, separating anterior and posterior temporal . . . . . *T. coronadoi*
21b. Ultimate supralabial separated from parietal, anterior and posterior temporals in mutual contact 22

22a. Dark lateral stripe on adjacent edges of dorsal rows 3 and 4; ventrals fewer than 140; subcaudals fewer than 45 . . . . . *T. ceboruca*
22b. Dark lateral stripe present only on row 3, or on rows 2 and 3; ventrals more than 140; subcaudals more than 50 . . . . . *T. deppei*

23a. Pale middorsal stripe absent, pale lateral stripe present, or portion or portions thereof 24
23b. Pale middorsal stripe present, pale lateral stripe present or absent 27

24a. Pale lateral stripe present along length of body, though barely discernible . . . . . *T. cuniculator*
24b. Pale lateral stripe interrupted along middle of body, or present only on anterior portion of body 25

25a. Pale lateral stripe present, but interrupted along middle of body . . . . . *T. briggsi*
25b. Pale lateral stripe confined to anterior portion of body 26

26a. Pale nuchal band poorly developed, confined to scales posterior to parietals; subcaudals fewer than 60 (44–49) . . . . . *T. tayrae* (part)
26b. Pale nuchal band well developed and crosses posterior portion of parietals; subcaudals more than 60 (single value known, 62) . . . . . *T. johnsoni*

27a. Pale lateral stripe on row 4 and adjacent halves of rows 3 and 5 28
27b. Pale lateral stripe on adjacent halves of rows 3 and 4 29

28a. Pale nuchal band does not cross ultimate supralabial; bold dark lateral stripe on adjacent halves of dorsal rows 2 and 3 . . . . . *T. oaxacae*
28b. Pale nuchal band crosses ultimate supralabial; striping on rows 2 and 3 narrow, diffuse, and confined to middle of respective rows . . . . . *T. flavilineata*

29a. Pale middorsal and lateral stripes barely discernible, with lateral one confined to anterior portion of body . . . . . *T. tayrae* (part)
29b. Pale middorsal and lateral stripes well developed, extending length of body 30

30a. Pale middorsal stripe confined to middorsal scale row 31
30b. Pale middorsal stripe present on middorsal scale row and adjacent halves of paravertebral rows, at least posteriorly 33

31a. Pale nuchal band confined to scales posterior to parietals . . . . . *T. slavensi*
31b. Pale nuchal band crosses posterior portion of parietals 32

32a. Ventrals fewer than 160 (139–154) . . . . . *T. vulcani*
32b. Ventrals more than 160 (163–172) . . . . . *T. impensa*

33a. Pale nuchal band reduced to two nuchal spots; subcaudals fewer than 45 . . . . . *T. striata*
33b. Pale nuchal band complete; subcaudals more than 55 . . . . . *T. triseriata*

DISTRIBUTIONAL PATTERNS

Thirty species of *Tantilla* occur in Mexico, compared with 11 in the United States (Cole and Hardy, 1981; Wilson, 1982b), 24 in Central America (Wilson, 1982a, 1988b; Campbell and Smith, 1997; Campbell, 1998a; Wilson and McCranie, 1999; Dixon et al., 1999; Townsend et al., 2013), and 13 in South America (Wilson, 1987a; Sawaya and Sazima, 2003; Lema, 2004). In Mexico the genus is widespread, ecologically and geographically, and occurs in a broad range of habitats ranging from low to intermediate elevations (0–3,000 m; Wilson and Johnson, 2010). Judged by the number of specimens in collections, members of the genus are encountered more frequently in Mexico than elsewhere in Latin America, although a number of species remain known only from one to a few specimens. Other species likely await discovery, especially in the mountainous areas of the southern portion of the country, inasmuch as eight species (*T. cascadae*, *T. ceboruca*, *T. impensa*, *T. johnsoni*, *T. robusta*, *T. sertula*, *T. slavensi*, and *T. tayrae*) have been described from this region during the last three-plus decades.

Geographic Distribution

Members of the genus *Tantilla* have been recorded from every state in Mexico and the Distrito Federal, except for the states of Campeche, Tabasco, and Tlaxcala (Table 3). Using this measure, *T. bocourti* is the most broadly distributed species, occurring in 17 states and the Distrito Federal (Table 3). At the other extreme, 13 species are known from a single state (Table 3). By far the largest number of species of *Tantilla* occurs in Oaxaca, with 10 (Table 3), four more than in the next most speciose state (Chiapas). Five species are known from each of six states (Chihuahua, Coahuila, Guerrero, Nuevo León, San Luis Potosí, and Veracruz). Four species have been recorded from each of five states (Durango, Jalisco, Nayarit, Puebla, and Sinaloa). The remaining 16 states and the Distrito Federal are known to harbor three or fewer species.

Table 3. Distribution by State and the Distrito Federal for Mexican Species of *Tantilla*. * = species endemic to Mexico.

Species	Mexican States and the Distrito Federal[1]																											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
T. atriceps					x	x		x									x					x			x			x	
*T. bocourti**	x						x	x	x	x	x	x	x	x	x	x		x	x	x			x			x		x	x
*T. briggsi**																		x											
*T. calamarina**							x			x		x	x	x	x	x			x				x						x
*T. cascadae**												x		x															
*T. ceboruca**												x				x													
*T. coronadoi**										x																			
T. cuniculator																					x						x		
*T. deppei**										x					x			x											
*T. flavilineata**																		x											
T. gracilis						x																							
T. hobartsmithi					x	x											x							x				
T. impensa				x																									
*T. johnsoni**				x																									
T. moesta																					x						x		
T. nigriceps					x	x		x									x								x				
*T. oaxacae**																		x											
T. planiceps		x	x																										
*T. robusta**																			x										
T. rubra				x							x						x	x	x	x		x			x	x			
T. schistosa				x														x			x	x				x			
*T. sertula**										x																			
*T. shawi**																						x				x			
*T. slavensi**																										x			
*T. striata**																		x											
*T. tayrae**				x																									
*T. triseriata**																		x											
T. vulcani				x														x											
T. wilcoxi					x	x		x									x					x	x					x	
T. yaquia					x											x							x	x					
Totals	**1**	**1**	**1**	**6**	**5**	**5**	**2**	**4**	**1**	**5**	**2**	**4**	**2**	**3**	**3**	**4**	**5**	**10**	**4**	**2**	**3**	**5**	**4**	**2**	**3**	**5**	**2**	**3**	**2**

[1]1 = Aguascalientes; 2 = Baja California Norte; 3 = Baja California Sur; 4 = Chiapas; 5 = Chihuahua; 6 = Coahuila; 7 = Colima; 8 = Durango; 9 = Guanajuato; 10 = Guerrero; 11 = Hidalgo; 12 = Jalisco; 13 = México; 14 = Michoacán; 15 = Morelos; 16 = Nayarit; 17 = Nuevo León; 18 = Oaxaca; 19 = Puebla; 20 = Querétaro; 21 = Quintana Roo; 22 = San Luis Potosí; 23 = Sinaloa; 24 = Sonora; 25 = Tamaulipas; 26 = Veracruz; 27 = Yucatán; 28 = Zacatecas; and 29 = Distrito Federal.

Mexico is topographically diverse, like Central and South America (Wilson, 1982a, 1987a). We used the data in Wilson and Johnson (2010) to discuss diversity and physiographic distribution. These authors recognized 21 physiographic regions in Mesoamerica, of which 14 are found in Mexico (Table 4), including seven in the Mesoamerican Highlands, three in the Atlantic Coast Lowlands, and four in the Pacific Coast Lowlands. We discuss the known distribution of the Mexican *Tantilla* with reference to these three groups of physiographic regions, as follows.

Table 4. Distribution of Mexican *Tantilla* species within the Physiographic Regions of Wilson and Johnson (2010). Abbreviations of regions are as follows: BC = Baja California and adjacent islands; CG = western Nuclear Central American highlands; EL = Subhumid extratropical lowlands of northeastern Mexico; LT = Sierra de Los Tuxtlas; MC = Meseta Central; NB = North plateau basins and ranges; OCC = Sierra Madre Occidental; ORI = Sierra Madre Oriental; SC = Pacific lowlands from Sinaloa to western Chiapas; SD = Sonoran Desert basins and ranges; SUR = Sierra Madre de Sur; TT = Gulf lowlands from Tamaulipas to Tabasco; and YP = Yucatan Platform.

Species	**Physiographic Regions**													
	Mesoamerican Highlands							**Atlantic Coast Lowlands**			**Pacific Coast Lowlands**			
	NB	ORI	OCC	MC	SUR	LT	CG	EL	TT	YP	SD	SC	CGU	BC
T. atriceps	x	x						x						
T. bocourti	x	x	x	x	x							x		
T. briggsi									x					
T. calamarina				x								x		
T. cascadae				x										
T. ceboruca			x	x										
T. coronadoi					x									
T. cuniculator										x				
T. deppei				x										
T. flavilineata					x									
T. gracilis	x													
T. hobartsmithi	x										x	x		
T. impensa							x							
T. johnsoni							x							
T. moesta										x				
T. nigriceps	x	x	x					x						
T. oaxacae					x									
T. planiceps														x
T. robusta		x												
T. rubra		x		x	x		x		x			x		
T. schistosa		x			x	x			x	x		x		
T. sertula												x		
T. shawi		x												
T. slavensi						x								
T. striata					x							x		
T. tayrae							x							
T. triseriata		x			x									
T. vulcani												x	x	
T. wilcoxi	x	x	x								x			
T. yaquia			x								x	x		
Totals	**6**	**9**	**5**	**6**	**8**	**2**	**4**	**2**	**3**	**3**	**3**	**9**	**1**	**1**

Mesoamerican Highlands: Twenty-four of the 30 species (80.0%) of Mexican *Tantilla* occur in the Mexican segment of the Mesoamerican Highlands (Table 4). Nine species are found in the Sierra Madre Oriental (*T. atriceps*, *T. bocourti*, *T. nigriceps*, *T. robusta*, *T. rubra*, *T. schistosa*, *T. shawi*, *T. triseriata*, and *T. wilcoxi*). Three of these species (*T. atriceps*, *T. nigriceps*, and *T. wilcoxi*) also occur in the United States, and two (*T. rubra* and *T. schistosa*) in Central America. The remaining four species (*T. bocourti*, *T. robusta*, *T. shawi*, and *T. triseriata*) are endemic to Mexico. The next largest number of species (eight) is distributed in the Sierra Madre del Sur (*T. bocourti*, *T. coronadoi*, *T. flavilineata*, *T. oaxacae*, *T. rubra*, *T. schistosa*, *T. striata*, and *T. triseriata*). Of the two species also found in Central America (*T. rubra* and *T. schistosa*), the former is found in Guatemala and the distribution of the latter extends to Panama; the remainder are endemic to Mexico. Of the 24 highland species, 15 are endemic to Mexico (Table 4). In addition to the four species mentioned above, these are *T. calamarina*, *T. cascadae*, *T. ceboruca*, *T. coronadoi*, *T. deppei*, *T. flavilineata*, *T. johnsoni*, *T. oaxacae*, *T. slavensi*, *T. striata*, and *T. tayrae*. Of the 15 Mexican endemic species, 13 also are restricted to the Mexican segment of the Mesoamerican Highlands (*T. cascadae*, *T. ceboruca*, *T. coronadoi*, *T. deppei*, *T. flavilineata*, *T. johnsoni*, *T. oaxacae*, *T. robusta*, *T. shawi*, *T. slavensi*, *T. striata*, *T. tayrae*, and *T. triseriata*). If additional species of *Tantilla* are discovered in Mexico, they likely will be found in the Mexican highlands.

Atlantic Coast Lowlands: Seven of the 30 Mexican species of *Tantilla* (23.3%) are found in the Mexican segment of the Atlantic Coast Lowlands (Table 4). Three of these species occur in two physiographic regions, the Gulf lowlands from Tamaulipas to Tabasco (*T. briggsi*, *T. rubra*, and *T. schistosa*), although none of these actually has been recorded from the state of Tabasco, and the Yucatan Platform (*T. cuniculator*, *T. moesta*, and *T. schistosa*). *Tantilla schistosa* is found in both of these regions. Another two species (*T. atriceps* and *T. nigriceps*) are distributed in the subhumid extratropical lowlands of northeastern Mexico, and both also occur in the United States. Only one of the seven species (*T. briggsi*) is endemic to Mexico. We do not expect that many (if any) of the other species of Mexican *Tantilla* will be found in this general physiographic region. If a species eventually is recorded from Tabasco, however, most likely it will be *T. schistosa*.

Pacific Coast Lowlands: More species of *Tantilla* occur in the Pacific Coast Lowlands than their Atlantic counterpart, i.e., 11 as opposed to seven (Table 4). These 11 constitute 36.7% of the total of 30 species. Only two of these species also are found in the Atlantic Coast Lowlands (the widespread *T. rubra* and *T. schistosa*). The largest number of species (nine of 11) is distributed in the Pacific lowlands from Sinaloa to western Chiapas (*T. bocourti*, *T. calamarina*, *T. hobartsmithi*, *T. rubra*, *T. schistosa*, *T. sertula*, *T. striata*, *T. vulcani*, and *T. yaquia*). Two of these (*T. hobartsmithi* and *T. yaquia*) also are found in the United States and three others (*T. rubra*, *T. schistosa*, and *T. vulcani*) in Central America. The remaining four species, therefore, are endemic to Mexico. Each of the remaining regions that comprise the Pacific Coast Lowlands harbors a few species (1–3), and five collectively. Four of these five species (*T. hobartsmithi*, *T. planiceps*, *T. wilcoxi*, and *T. yaquia*) also inhabit the United States, and the other (*T. vulcani*) also is found in Central America (Guatemala). If new species are found on the Pacific Coast Lowlands, it likely will be in the lowland areas from Sinaloa to western Chiapas.

We summarize the principal features of the geographic distribution of *Tantilla* in Mexico as follows:

1. Limited interchange between Central America and Mexico. Of the 24 species of *Tantilla* known from Central America, only six (*T. cuniculator*, *T. impensa*, *T. moesta*, *T. rubra*, *T. schistosa*, and *T. vulcani*) also are distributed in Mexico. The northern distributional limit of two of these species (*T. cuniculator* and *T. moesta*) is in the Yucatan Peninsula, and to the south in the Petén of Guatemala and/or Belize. *Tantilla impensa* ranges into Mexico only in Chiapas, and it occurs as far south as western Honduras. *Tantilla rubra* ranges as far north as northern Nuevo León in Mexico, and its southern terminus is in western Guatemala. The northern terminus of the range of *Tantilla vulcani* is in the coastal lowlands of Chiapas and Oaxaca, and the southern in southern Guatemala. The northern range of *T. schistosa* is in central Veracruz, and to the south it extends to Panama. The percentage of resemblance (i.e., number shared with other area/total species in area) for Mexico is 20.0, and for Central America 25.0.

2. More substantial interchange occurs between the United States and Mexico. Eleven species of *Tantilla* are recorded from the United States (*T. atriceps*, *T. coronata*, *T. cucullata*, *T. gracilis*, *T. hobartsmithi*, *T. nigriceps*, *T. oolitica*, *T. planiceps*, *T. relicta*, *T. wilcoxi*, and *T. yaquia*). Four of these species (*T. coronata*, *T. cucullata*, *T. oolitica*, and *T. relicta*) are endemic to the United States, and all except for *T. cucullata* occur east of the Mississippi

River (Telford, 1966, 1980a and b, 1982; Dixon et al., 1999). *Tantilla oolitica* and *T. relicta* are limited to Florida (Telford, 1966; Conant and Collins, 1988). All of the remaining seven species also occur in Mexico (Conant and Collins, 1998; Stebbins, 2003). The distribution of four of these taxa is limited in the United States. *Tantilla planiceps* ranges only into southern California, *T. wilcoxi* and *T. yaquia* into extreme southern Arizona, and *T. atriceps* into southern Texas. Three species (*T. gracilis*, *T. hobartsmithi*, and *T. nigriceps*) with broad ranges in the central and western United States are found only in the northern tier of states of Mexico (Savitzky and Collins, 1971; Cole and Hardy, 1981). The southern terminus of the range of *T. planiceps* is the Cape region of Baja California Sur, *T. wilcoxi* in southeastern Zacatecas, and *T. yaquia* in Nayarit. The percentage of resemblance for Mexico is only 36.7, whereas that for the United States is 63.6.

3. A moderately high amount of endemism is present in the country, as well as in the specific physiographic regions discussed above. Seventeen of the 30 species of *Tantilla* (56.7%) recorded for Mexico are endemic, which compares to 36.4% for the United States (4 of 11 species), 60.9% for Central America (14 of 23 species), and 69.2% for South America (10 or 11 of 13 or 14 species, depending on the eventual status of the enigmatic *T. trilineata*; Wilson and Meyer, 1971). In addition, 17 species (56.7%) in Mexico are limited to one of the 14 physiographic regions (Table 4).

4. In Mexico, the largest states with the most topographic relief harbor the greatest number of species of *Tantilla*. The most species (10) occur in Oaxaca, a large, tropically located, topographically diverse state (Table 3). No more than five species are known to occur in any other state (five in Chiapas, Chihuahua, Coahuila, Nuevo León, and Veracruz). Four species occur in five states, three in six, two in seven, and one in four. Most species (22, 73.3%) occur only in 1–3 states. At the other extreme, however, *T. atriceps* and *T. wilcoxi* are found in parts of seven states, *T. calamarina* in parts of eight, *T. rubra* in parts of nine, and *T. bocourti* in parts of 17. Unlike the situations in Central and South America (Wilson, 1982a, 1987a), more species occur in highland (above 600 m) than lowland areas (Table 6). Twenty-five of 30 species (83.3%) have been recorded from highland areas, and 19 (63.3%) from lowland areas. Five species (16.7%) are confined to lowland and 11 (36.7%) to highland elevations.

5. In Mexico, similar numbers of species occur south of a line following the basins of the ríos Balsas and Papaloapan than north of that point. These basins essentially separate the old lands of southern Mexico, the southern Gulf and Pacific coastal lowlands, and the Yucatan Platform from the physiographic regions to the north. Seventeen species occur south of this line (*T. bocourti*, *T. briggsi*, *T. calamarina*, *T. coronadoi*, *T. cuniculator*, *T. flavilineata*, *T. impensa*, *T. johnsoni*, *T. moesta*, *T. oaxacae*, *T. rubra*, *T. schistosa*, *T. slavensi*, *T. striata*, *T. tayrae*, *T. triseriata*, and *T. vulcani*) and 16 to the north (*T. atriceps*, *T. bocourti*, *T. calamarina*, *T. cascadae*, *T. ceboruca*, *T. deppei*, *T. gracilis*, *T. hobartsmithi*, *T. nigriceps*, *T. planiceps*, *T. robusta*, *T. rubra*, *T. schistosa*, *T. shawi*, *T. wilcoxi*, and *T. yaquia*). Only four of the 30 Mexican species (13.3%) range on both sides of this line (*T. bocourti*, *T. calamarina*, *T. rubra*, and *T. schistosa*). The percentage of resemblance for the southern Mexican segment is 23.5, and for the northern 25.0. Although interspecies relationships remain poorly understood, the relationships of most of the species occurring entirely north of the Balsas-Papaloapan line appear to be *inter se*, whereas the relationships of most of those ranging exclusively south of this line seem to be *inter se* or with species found in Central America. The contrast is even greater if the southern Mexican species are joined to the remaining species occurring in Central and South America, and the northern Mexican species with those endemic to the United States. Twenty-eight species found in Central and South America do not range to the north (Wilson, 1982a, 1987a, 1988b; Campbell and Smith, 1997; Campbell, 1998a; Wilson and McCranie, 1999; Savage, 2002; Sawaya and Sazima, 2003; Lema, 2004; Stafford, 2004; McCranie, 2011b; Townsend et al., 2013) and four in the United States do not range to the south (Telford, 1966; Wilson et al., 2000). Thus, 45 species occur south of the Balsas-Papaloapan line and 20 to the north. One species (*T. sertula*) is limited to this depression. The percentage of resemblance for the northern Mexican-United States segment is 20.0, and that for the southern Mexican-Central and South American segment is 8.8.

6. The greatest break between the northern and southern segments of the generic range, however, occurs at the Isthmus of Tehuantepec. Of the 62 currently recognized species of *Tantilla* (Wilson, 1999; Wilson and Campbell, 2000; Canseco-Márquez et al., 2002 Savage, 2002; Sawaya and Sazima, 2003; Greenbaum et al., 2004; Stafford, 2004; McCranie, 2011b; Townsend et al., 2013), 26 occur north of the Isthmus (the 16 Mexican species listed in item 5 as occurring north of the Balsas-Papaloapan line plus the four United States endemics, as well as *T. coronadoi*,

T. flavilineata, *T. oaxacae*, *T. sertula*, *T. slavensi*, and *T. triseriata*). Two species are known only from the Isthmus itself (*T. briggsi* and *T. striata*), 36 range south of the Isthmus (28 Central and South American endemics, two are Yucatan Peninsula endemics, plus *T. impensa*, *T. johnsoni*, *T. rubra*, *T. schistosa*, *T. tayrae*, and *T. vulcani*, and only two (*T. rubra* and *T. schistosa*) occur on both sides of the Isthmus. In addition, only limited extensions on either side of the Isthmus are known to occur. *Tantilla schistosa*, which ranges south to Panama, is found to the north at Totontepec (north of Cerro Cempoaltepetl in east-central Oaxaca, Vista Hermosa [locality on northern periphery of the Sierra de Juárez, SW of Valle Nacional]), Yelagago (= Yalalag, a locality approximately 36 km SE of Ixtlán de Juárez and 17 km SW of Totontepec in north-central Oaxaca), 9 mi (= 14.4 km) SE Alvarado (Gulf coastal locality in Veracruz south of the city of Veracruz), Cuautlapan (between Orizaba and Córdoba in west-central Veracruz), El Limón Totalco (west of Perote in west-central Veracruz), San Andrés Tuxtla (town near the Tuxtlas range in southern Veracruz), and Volcán San Martín (peak in the Tuxtlas range). *Tantilla rubra*, distributed principally to the north of the Isthmus (to northern Nuevo León), also occurs to the south as far as western Guatemala. Excluding the isthmian endemics from consideration, the percentage of resemblance for the Isthmian-north segment is 7.7, and that for the Isthmian-south segment 5.6.

In order to examine relationships among the physiographic provinces of Mexico with respect to the occurrence of species of *Tantilla*, we used the data in Table 4 to construct a Coefficient of Biogeographic Resemblance (CBR) matrix (Table 5). Given the nature of the CBR algorithm, the number of species common to a pair of physiographic provinces depends on the number in the smaller fauna. Thus, the smallest number of species of *Tantilla* (one each) occurs in the CGU and BC provinces, and the number of species these provinces share with the other provinces ranges from zero (all but one of the comparisons for the CGU province) to one (only one comparison between the CGU and SC provinces). At the other extreme, the largest number of species (nine) is found in the ORI and SC provinces. The number of species the ORI province shares with the other provinces ranges from zero (the YP, CGU, and BC provinces) to four (the ORI and SUR provinces); the number shared with the SC province ranges from zero (the EL and BC provinces) to four (the SUR province).

Table 5. Coefficient of Biogeographic Resemblance (CBR) matrix of *Tantilla* species relationships for the 14 physiographic provinces in Mexico. **N** = species in each province; N = species in common between two provinces; *N* = Coefficients of Biogeographic Resemblance. The formula for this algorithm is $CBR = 2C/N_1 + N_2$, where C is the number of species in common to both provinces, N_1 is the number of species in the first province, and N_2 is the number of species in the second province.

	NB	ORI	OCC	MC	SUR	LT	CG	EL	TT	YP	SD	SC	CGU	BC
NB	**6**	4	3	1	1	0	0	2	0	0	2	2	0	0
ORI	*0.53*	**9**	3	2	4	1	1	2	2	0	1	3	0	0
OCC	*0.55*	*0.43*	**5**	2	1	0	0	1	0	0	2	2	0	0
MC	*0.18*	*0.29*	*0.36*	**6**	2	0	1	0	1	0	0	3	0	0
SUR	*0.14*	*0.47*	*0.15*	*0.31*	**8**	1	1	0	2	1	0	4	0	0
LT	*0.00*	*0.18*	*0.00*	*0.00*	*0.20*	**2**	0	0	1	1	1	1	0	0
CG	*0.00*	*0.15*	*0.00*	*0.22*	*0.17*	*0.00*	**4**	0	1	0	0	1	0	0
EL	*0.50*	*0.36*	*0.29*	*0.00*	*0.00*	*0.00*	*0.00*	**2**	0	0	0	0	0	0
TT	*0.00*	*0.33*	*0.00*	*0.25*	*0.36*	*0.40*	*0.29*	*0.00*	**3**	1	0	2	0	0
YP	*0.00*	*0.00*	*0.00*	*0.00*	*0.18*	*0.40*	*0.00*	*0.00*	*0.33*	**3**	0	1	0	0
SD	*0.44*	*0.17*	*0.50*	*0.00*	*0.00*	*0.40*	*0.00*	*0.00*	*0.00*	*0.00*	**3**	2	0	0
SC	*0.27*	*0.33*	*0.29*	*0.43*	*0.47*	*0.18*	*0.15*	*0.00*	*0.33*	*0.17*	*0.33*	**9**	1	0
CGU	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.20*	**1**	0
BC	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	**1**

The number of shared species in Table 5 ranges from zero (most evident in the BC province, which contains only one species, shared with no other province) to four, which is the case in only three comparisons (the SUR with both the ORI and SC provinces and the ORI with the NB province; the ORI, SUR, and SC provinces are the three of the 14 in Mexico with the highest numbers of resident *Tantilla* species [eight or nine]). These four provinces are arranged sequentially in a hair-pin like curve (see Fig. 3.1 in Campbell, 1999) from northern Mexico (NB) through eastern Mexico (ORI) to southern Mexico (SUR), thence northward through western Mexico (SC). Much of this pattern is due to the widespread occurrence of three species (*T. bocourti*, *T. rubra*, and *T. schistosa*). The number of shared species generally is low (Table 5). Of the 91 comparison figures in Table 5, the largest number of figures for shared species is zero (50; 54.9%). The frequency of the number of shared species decreases as the number increases, as follows: one (21; 23.1%); two (13; 14.3%); three (four; 4.4%); and four (three; 3.3%). The average number of shared species is 0.78.

The Coefficient of Biogeographic Resemblance ranges from 0.00 to 0.55 (Table 5). The highest CBR for an area (above 0.00 for the BC province) ranges from 0.20 (between SC and CGU) to 0.55 (between NB and OCC). The relative distinctiveness of the physiographic provinces is evidenced by the average of the CBR values for each province, arranged in descending order as follows:

ORI = 0.25	MC = 0.16
SC = 0.24	SD = 0.14
NB = 0.20	EL = 0.09
OCC = 0.19	CG = 0.08
SUR = 0.19	YP = 0.08
TT = 0.18	CGU = 0.02
LT = 0.14	BC = 0.00

In general, the greater the number of species found in a given physiographic province, the greater the chance that species will be shared with other provinces. The top two provinces in the list above also are the two highest-species areas, with nine species in each. The next two highest-species areas (SUR with eight and NB with six) are in the top five.

The antithesis of the species shared is the species not shared, or those endemic to given provinces. Ten of the 14 provinces contain endemic species. Of the species of *Tantilla* in Mexico, 17 (56.7%) are endemic to a province. Thus, only 13 remain that can be shared with one or more other provinces. Two provinces (CG and SUR) contain three endemic species each, three, (ORI, MC, and YP) harbor two, and the remaining five (NB, LT, TT, SC, and BC) are home to one species each.

Elevational Distribution

In Mexico, the members of the genus *Tantilla* are known to occur from near sea level to 2,750 m (Table 6). The known elevational range for each species throughout its geographic range is as follows:

T. atriceps = near sea level–2,134 m
T. bocourti = near sea level–2,750 m
T. briggsi = ca. 200 m
T. calamarina = near sea level–1,677 m
T. cascadae = 1,430–1,858 m
T. ceboruca = 1,233–2,094 m
T. coronadoi = 1,402–1,524 m
T. cuniculator = 10– ca. 200 m
T. deppei = 1,524–2,438 m
T. flavilineata = 1,890–2,476 m

T. gracilis = near sea level–610 m
T. hobartsmithi = near sea level–ca. 1,981 m
T. impensa = near sea level–1,600 m
T. johnsoni = ca. 450 m
T. moesta = 10–283 m
T. nigriceps = near sea level–2,130 m
T. oaxacae = 2,250–2,286 m
T. planiceps = near sea level–1,220 m
T. robusta = 930 m
T. rubra = near sea level–2,618 m
T. schistosa = 60–1,600 m
T. sertula = ca. 150 m
T. shawi = ca. 1,372–ca. 1,400 m
T. slavensi = 50–800 m
T. striata = 152–1,143 m
T. tayrae = 760–960 m
T. triseriata = ca. 914 m
T. vulcani = ca. 305–960 m
T. wilcoxi = 914–2,438 m
T. yaquia = near sea level–1,680 m

Elevational data are limited for a number of species, but simplifying these data by using the elevational categories of Stuart (1963), as for the South American *Tantilla* (Wilson, 1987a), allows us to discern some patterns (see Table 6). Perusal of the data in this table illustrates that Mexican species of *Tantilla* generally are denizens of low, moderate, and intermediate elevations. Nineteen of the 30 Mexican species (63.3%) are either limited to (six species) or range into low elevations. Twenty-two species (73.3%) occur at moderate elevations, of which eight are not known to occur outside these limits. Sixteen species are found at intermediate elevations (53.3%); only *T. deppei*, *T. flavilineata*, and *T. oaxacae* appear limited there. Only a single species, *T. bocourti*, ranges marginally into high elevations.

Table 6. Elevational distribution of Mexican species of *Tantilla* according to the categories of Stuart (1963).

Species	Low (0–600 m)	Moderate (600–1,500 m)	Intermediate (1,500–2,700 m)	High (2,700–3,500 m)
T. atriceps	x	x	x	
T. bocourti	x	x	x	x
T. briggsi	x			
T. calamarina	x	x	x	
T. cascadae		x	x	
T. ceboruca		x	x	
T. coronadoi		x	x	
T. cuniculator	x			
T. deppei			x	
T. flavilineata			x	
T. gracilis	x	x		
T. hobartsmithi	x	x	x	
T. impensa	x	x	x	
T. johnsoni	x			
T. moesta	x			
T. nigriceps	x	x	x	
T. oaxacae			x	
T. planiceps	x	x		
T. robusta		x		
T. rubra	x	x	x	
T. schistosa	x	x	x	
T. sertula	x			
T. shawi		x		
T. slavensi	x	x		
T. striata	x	x		
T. tayrae		x		
T. triseriata		x		
T. vulcani	x	x		
T. wilcoxi		x	x	
T. yaquia	x	x	x	
Totals	**19**	**22**	**16**	**1**

Ecological Distribution

Many types of vegetative associations are found in Mexico, reflective of the broad variation in climate and elevation in the country. In dealing with the distribution of species of *Tantilla* relative to variation in vegetation zones, we used the system employed by Wilson and Johnson (2010), in turn based on the one used by Campbell (1999). Wilson and Johnson (2010) recognized the same 15 vegetation zones as Campbell (1999), and we indicate the distribution of Mexican species of *Tantilla* in the 13 zones they occupy in Table 7. These zones are organized into four elevational categories, with six comprising the low elevation regions in Mexico, three the moderate elevation regions, three the intermediate elevation regions, and one the high elevation regions. We examined the known distribution of Mexican *Tantilla* based on these four groups of elevational regions, as follows:

Low Elevations: Twenty-one of the 30 species (70.0%) of Mexican *Tantilla* occur at lowland elevations in the country (Table 7). The largest number of species (16) is found in Tropical Dry Forest (*T. atriceps*, *T. bocourti*, *T.*

calamarina, *T. cuniculator*, *T. hobartsmithi*, *T. johnsoni*, *T. moesta*, *T. nigriceps*, *T. rubra*, *T. schistosa*, *T. sertula*, *T. striata*, *T. triseriata*, *T. vulcani*, *T. wilcoxi*, and *T. yaquia*). Five of these species (*T. atriceps*, *T. hobartsmithi*, *T. nigriceps*, *T. wilcoxi*, and *T. yaquia*) also are distributed in the United States, primarily in the region of the Southwest near the international border. Five species (*T. cuniculator*, *T. moesta*, *T. rubra*, *T. schistosa*, and *T. vulcani*) also occur in Central America, usually just across the border in Belize or Guatemala. The remaining six species (*T. bocourti*, *T. calamarina*, *T. johnsoni*, *T. sertula*, *T. striata*, and *T. triseriata*) are endemic to Mexico. Seven species occur in Tropical Moist and Wet forest (*T. briggsi*, *T. impensa*, *T. rubra*, *T. schistosa*, *T. slavensi*, *T. tayrae*, and *T. vulcani*). Four of these species (*T. impensa*, *T. rubra*, *T. schistosa*, and *T. vulcani*) occur, to a limited degree, in Central America. The remaining three species (*T. briggsi*, *T. slavensi*, and *T. tayrae*) are endemic to Mexico. Seven species also are found in Tropical Very Dry Forest (*T. bocourti*, *T. calamarina*, *T. cuniculator*, *T. hobartsmithi*, *T. moesta*, *T. nigriceps*, and *T. rubra*), and all of them also inhabit Tropical Dry Forest (see above). Finally, one species each occurs in the Baja peninsular Desert Basins and Ranges, Pacific Coastal Scrub and Foothill Chaparral, and Sonoran Desert Scrub. *Tantilla planiceps* is found in the first two and *T. hobartsmithi* in the third. Of the 21 taxa distributed at low elevations in Mexico, five (23.8%) are not known to occur outside of these elevations (*T. briggsi*, *T. cuniculator*, *T. johnsoni*, *T. moesta*, and *T. sertula*), although the distribution of *T. cuniculator* and *T. moesta* is limited in Central America.

Moderate Elevations: Twenty-four of the 30 species (80.0%) of *Tantilla* in Mexico are distributed at moderate elevations in the country (Table 7). The largest number (16) is found in Subtropical Moist Forest (*T. atriceps*, *T. bocourti*, *T. calamarina*, *T. cascadae*, *T. coronadoi*, *T. impensa*, *T. oaxacae*, *T. planiceps*, *T. robusta*, *T. rubra*, *T. schistosa*, *T. shawi*, *T. striata*, *T. triseriata*, *T. wilcoxi*, and *T. yaquia*). Nine of these species are common to the Tropical Dry Forest (*T. atriceps*, *T. bocourti*, *T. calamarina*, *T. rubra*, *T. schistosa*, *T. striata*, *T. triseriata*, *T. wilcoxi*, and *T. yaquia*). As with the TDF species, some of these species (*T. atriceps*, *T. planiceps*, *T. wilcoxi*, and *T. yaquia*) also occur in the southwestern United States, some in Central America (*T. impensa*, *T. rubra*, and *T. schistosa*), and some are endemic to Mexico (*T. bocourti*, *T. calamarina*, *T. cascadae*, *T. ceboruca*, *T. coronadoi*, *T. oaxacae*, *T. robusta*, *T. shawi*, *T. striata*, and *T. triseriata*). Seven species are found in Subtropical Wet Forest and Subtropical Rainforest (*T. impensa*, *T. rubra*, *T. schistosa*, *T. slavensi*, *T. tayrae*, *T. triseriata*, and *T. vulcani*), the same number as in the low elevation counterpart, Tropical Wet and Moist Forest. All but one of these species are shared with the TWM vegetation zone. Four of these taxa (*T. impensa*, *T. rubra*, *T. schistosa*, and *T. vulcani*) also are found in Central America, and the remaining three are endemic to Mexico. Eight species (*T. bocourti*, *T. ceboruca*, *T. deppei*, *T. gracilis*, *T. hobartsmithi*, *T. nigriceps*, *T. planiceps*, and *T. rubra*) are found in Subtropical Dry Forest. Four of these species (*T. gracilis*, *T. hobartsmithi*, *T. nigriceps*, and *T. planiceps*) also occur in the United States and one (*T. rubra*) in Central America; the remaining three species are endemic to Mexico. Of the 24 species found at moderate elevations in Mexico, six (25.0%) are limited in distribution to these elevations (*T. cascadae*, *T. coronadoi*, *T. deppei*, *T. gracilis*, *T. robusta*, and *T. shawi*), although *T. gracilis* also is widely distributed in the central United States.

Intermediate Elevations: Fourteen of the 30 species (46.7%) of *Tantilla* in Mexico occur at intermediate elevations in the country (Table 7). The largest number (11) is distributed in Lower Montane Moist Forest (*T. bocourti*, *T. calamarina*, *T. cascadae*, *T. ceboruca*, *T. coronadoi*, *T. deppei*, *T. flavilineata*, *T. impensa*, *T. oaxacae*, *T. planiceps*, *T. rubra*, *T. schistosa*, *T. wilcoxi*, and *T. yaquia*), the higher elevation counterpart of Subtropical Moist Forest. Eight of these species are common to Subtropical Dry Forest (*T.bocourti*, *T. calamarina*, *T. oaxacae*, *T. planiceps*, *T. rubra*, *T. schistosa*, *T. wilcoxi*, and *T. yaquia*). As with the SDF species, some of these species are also are found in the southwestern United States (*T. planiceps*, *T. wilcoxi*, and *T. yaquia*), some in Central America (*T. impensa*, *T. rubra*, and *T. schistosa*), with the remainder endemic to Mexico (*T. bocourti*, *T. calamarina*, *T. cascadae*, *T. ceboruca*, *T. coronadoi*, *T. deppei*, *T. flavilineata*, and *T. oaxacae*). Six species (*T. bocourti*, *T. coronadoi*, *T. deppei*, *T. flavilineata*, *T. planiceps*, and *T. rubra*) occur in Lower Montane Dry Forest, with only one found in the United States (*T. planiceps*) and one in Central America (*T. rubra*). Three species are distributed in Lower Montane Wet Forest (*T. impensa*, *T. rubra*, and *T. schistosa*), and all are found in Central America. Of the 14 species distributed at intermediate elevations in Mexico, only two (14.3%) are not known to occur outside of these elevations (*T. ceboruca* and *T. flavilineata*), and both are endemic to Mexico.

High Elevations: Only one of the 30 species (3.3%) of *Tantilla* in Mexico occurs at high elevations in the country (Table 7). This species (*T. bocourti*) is found only in Montane Moist Forest and is endemic to Mexico, but its distribution is not limited to these elevations.

Table 7. Distribution of Mexican *Tantilla* species within the Vegetation Zones of Wilson and Johnson (2010). Abbreviations of formations are as follows: TWM = Tropical Wet Forest and Tropical Moist Forest; TD = Tropical Dry Forest; TVD = Tropical Very Dry Forest; PD = Baja Peninsular Desert Basins and Ranges; PF = Pacific Coastal Scrub and Foothill Chaparral; SDS = Sonoran Desert Scrub; SRW = Subtropical Rainforest and Subtropical Wet Forest; SM = Subtropical Moist Forest; SD = Subtropical Dry Forest; LMW = Lower Montane Wet Forest; LMM = Lower Montane Moist Forest; LMD = Lower Montane Dry Forest; and MM = Montane Moist Forest. Record for *T. hobartsmithi* in Sonoran Desert Scrub from Rorabaugh (2008).

Species	Vegetation Zones												
	Low Elevations						Moderate Elevations			Intermediate Elevations			High Elevations
	TWM	TD	TVD	PD	PF	SDS	SRW	SM	SD	LMW	LMM	LMD	MM
T. atriceps		x						x					
T. bocourti		x	x					x	x		x	x	x
T. briggsi	x												
T. calamarina		x	x					x			x		
T. cascadae								x			x		
T. ceboruca									x		x		
T. coronadoi								x				x	
T. cuniculator		x	x										
T. deppei									x			x	
T. flavilineata											x	x	
T. gracilis									x				
T. hobartsmithi		x	x			x			x				
T. impensa	x						x	x		x			
T. johnsoni		x											
T. moesta		x	x										
T. nigriceps		x	x						x				
T. oaxacae								x			x		
T. planiceps				x	x			x	x		x	x	
T. robusta								x					
T. rubra	x	x	x				x	x	x	x	x	x	
T. schistosa	x	x					x	x		x	x		
T. sertula		x											
T. shawi								x					
T. slavensi	x						x						
T. striata		x						x					
T. tayrae	x						x						
T. triseriata		x					x	x					
T. vulcani	x	x					x						
T. wilcoxi		x						x			x		
T. yaquia		x						x			x		
Totals	**7**	**16**	**7**	**1**	**1**	**1**	**7**	**16**	**8**	**3**	**11**	**6**	**2**

In terms of distribution among vegetational zones, the most widespread species are *T. bocourti* (occurs in 7 of 13 zones; 53.8%), *T. planiceps* (6 of 13 zones; 46.2%), *T. rubra* (9 of 13 zones; 69.2%), and *T. schistosa* (6 of 13 zones, 46.2%).

In an effort to clarify relationships among the vegetation zones of Mexico with regard to the occurrence of species of *Tantilla*, we utilized the data in Table 7 to create a Coefficient of Habitat Resemblance (CHR) matrix (Table 8). In the same fashion as with the CBR algorithm, the number of species common to a pair of vegetation zones depends on the number in the smaller fauna. Thus, the smallest number of species of *Tantilla* (one) occurs in the PD, PF, SDS, and MM zones, and the number of species these zones share with the other zones ranges from zero to one (29 of the former for all three groups and 20 of the latter). At the other extreme, the largest number of species (16) is found in the TD and SM zones. The number of species the TD zone shares with the others ranges from zero (with the PD and PF zones) to nine (with the SM zone); the number shared with the SM zone ranges from zero (with the SDS zone) to nine (with the TD and LMM zones).

Table 8. Coefficient of Habitat Resemblance (CHR) matrix of *Tantilla* species relationships for the 13 vegetation zones inhabited in Mexico. **N** = species in each province; N = species in common between two provinces; *N* = Coefficients of Habitat Resemblance. The formula for the CHR algorithm is the same as for the CBR algorithm (see Table 5).

	TWM	TD	TVD	PD	PF	SDS	SRW	SM	SD	LMW	LMM	LMD	MM
TWM	**7**	3	1	0	0	0	6	3	1	3	2	1	0
TD	*0.26*	**16**	7	0	0	1	4	9	4	2	6	2	1
TVD	*0.14*	*0.61*	**7**	0	0	1	1	3	4	1	3	1	1
PD	*0.00*	*0.00*	*0.00*	**1**	1	0	0	1	1	0	1	1	0
PF	*0.00*	*0.00*	*0.00*	*1.00*	**1**	0	0	1	1	0	1	1	0
SDS	*0.00*	*0.12*	*0.25*	*0.00*	*0.00*	**1**	0	0	1	0	0	0	0
SRW	*0.88*	*0.35*	*0.14*	*0.00*	*0.00*	*0.00*	**7**	4	1	3	2	1	0
SM	*0.26*	*0.56*	*0.26*	*0.12*	*0.12*	*0.00*	*0.35*	**16**	3	3	9	4	1
SD	*0.14*	*0.35*	*0.57*	*0.25*	*0.25*	*0.25*	*0.14*	*0.26*	**8**	1	4	4	1
LMW	*0.60*	*0.21*	*0.22*	*0.00*	*0.00*	*0.00*	*0.60*	*0.32*	*0.20*	**3**	2	1	0
LMM	*0.24*	*0.46*	*0.35*	*0.18*	*0.18*	*0.00*	*0.24*	*0.67*	*0.42*	*0.31*	**11**	4	1
LMD	*0.15*	*0.18*	*0.15*	*0.29*	*0.29*	*0.00*	*0.15*	*0.36*	*0.62*	*0.22*	*0.50*	**6**	1
MM	*0.00*	*0.11*	*0.22*	*0.00*	*0.00*	*0.00*	*0.00*	*0.11*	*0.22*	*0.00*	*0.17*	*0.29*	**1**

The number of shared species in Table 8 ranges from zero (most evident in the PD, PF, and SDS zones, since they each contain a single species) to nine, the case in two comparisons (the TD with the SM zone and the SM with the LMM zone). Of the 13 vegetation zones, the TD and SM each contain the largest number of *Tantilla* species (16). The number of shared species generally is low to moderate (Table 8). Of the 78 comparison values in Table 8, the largest number for shared species is one (28; 35.9%), and the next highest is zero (24; 30.8%). Thereafter, the frequency of the number of shared species essentially decreases as the number increases, as follows: two (5; 6.4%), three (8; 10.3%), four (7; 9.0%); six (2; 2.6%); seven (1; 1.3%); and nine (2; 2.6%). The average number of shared species is 1.76.

The Coefficient of Habitat Resemblance ranges from 0.00 to 1.00 (Table 8). The highest CHR for area ranges from 0.25 (between TVD and SDS and between SDS and SD) to 1.00 (between PD and PF). The relative distinctiveness of the vegetation zones is evidenced by the average CHR values for each zone, arranged in descending order as follows:

LMM = 0.31	LMW = 0.22
SD = 0.31	TWM = 0.22
SM = 0.28	PD = 0.15
TD = 0.27	PF = 0.15
LMD = 0.24	MM = 0.09
SRW = 0.24	SDS = 0.05
TVD = 0.24	

Unlike the situation with the CBR values for physiographic provinces, no correlation is apparent between the number of species in a vegetation zone and the number of species shared with other zones. The two highest-species zones (SM and TD) are not at the top of the list. One of the three lowest-species zones (SDS, with one species) is at the bottom of the list, but two other areas with one species each (PD and PF) are not.

The species endemic to specific vegetation zones stand in contrast to the species shared. Four of the 13 vegetation zones contain endemic species (*T. briggsi*, *T. gracilis*, *T. robusta*, *T. sertula*, *T. shawi*), 16.7% of the species of *Tantilla* in Mexico. Thus, 25 species are left that can be shared with one or more other zones. Two zones (SM and TD) harbor two species each (*T. robusta* and *T. shawi* for SM, and *T. johnsoni* and *T. sertula* for TD), and three (TWM, SD, and LMM) one species each.

The genus *Tantilla* is more ecologically widespread in Mexico than in any other portion of its range in Latin America (Wilson, 1982a, 1987a; this paper). Members of this genus inhabit 13 forest formations in Mexico, compared to eight in Central America (Wilson, 1982a) and 12 in South America (Wilson, 1987a). In contrast to the situation in Central America and South America, the greatest diversity of *Tantilla* in Mexico is found in lowland and premontane regions receiving 500–1,000 mm of annual precipitation. In Central America, the greatest diversity is in lowland and premontane areas receiving more than 2,000 mm of annual precipitation; in South America, the greatest diversity is found in lowlands receiving this regimen of precipitation. In addition, a large number of species (14) inhabiting intermediate elevation habitats (LMW, LMM, and LMD) is found in Mexico.

CONSERVATION STATUS OF MEXICAN *TANTILLA*

Mexico, the center of diversity of the speciose genus *Tantilla*, is inhabited by 30 of the 62 (48.4%) currently recognized species in the genus. The Mexican members of this genus occur in more ecological zones than in any other portion of the range, and the frequency in which more new species have been added is greater in Mexico than elsewhere. Since Wilson began to work on this genus in 1970, 22 new species have been recognized (Wilson, 1999; Wilson and Campbell, 2000; Canseco-Márquez et al., 2002, 2007; Sawaya and Sazima, 2003; Lema, 2004; Stafford, 2004; McCranie, 2011b; Townsend et al., 2013). Nine of these species were described from Mexico, compared to seven from Central America and six from South America. Seventeen of the Mexican members of the genus (56.7%) are endemic, a percentage exceeded only by that for South America (10 of 13 species; 76.9%; Wilson, 1999; Greenbaum et al., 2004; Sawaya and Sazima, 2003; Lema, 2004) for a fewer number of species.

In recent years, three attempts to assess the conservation status of Mexican reptiles have been undertaken. In Table 9 we summarize the results of these efforts, as they apply to members of the genus *Tantilla*. Two of the three schemes provide only a partial picture of the conservation status of the 30 Mexican members of *Tantilla*. The SEMARNAT system, established by the Secretaría del Medio Ambiente y Recursos Naturales of the Mexican government, consists of three levels of assessment, i.e., Endangered (P), Threatened (A), and Special Protection (Pr). Of the 30 species of Mexican *Tantilla*, however, only 15 have been placed in one of these three categories; the other half have not been provided a status (Ns). Of the species that have been assessed, six are judged as Threatened and nine are considered species of Special Protection. No species have been judged as Endangered (Table 9).

Table 9. Conservation status of Mexican species of *Tantilla*. See text for explanation of numbers and symbols. Environmental Vulnerability Scores from Wilson et al. (2013), with updated scores for *T. cascadae* and *T. ceboruca* based on Cruz-Sáenz et al. (submitted). IUCN categorizations from the IUCN Red List website. SEMARNAT status from NOM-59 (SEMARNAT, 2010). See Materials and Methods for explanation of the scoring systems.

Species	Environmental Vulnerability Score	IUCN Categorization	SEMARNAT Status
T. atriceps	11	LC	A
T. bocourti	9	LC	Ns
T. briggsi	16	DD	A
T. calamarina	12	LC	Pr
T. cascadae	15	DD	A
T. ceboruca	15	NE	Ns
T. coronadoi	15	LC	Pr
T. cuniculator	13	LC	Pr
T. deppei	13	LC	A
T. flavilineata	14	EN	A
T. gracilis	13	LC	A
T. hobartsmithi	11	LC	Ns
T. impensa	10	LC	Ns
T. johnsoni	16	DD	Ns
T. moesta	13	LC	Ns
T. nigriceps	11	LC	Ns
T. oaxacae	15	DD	Pr
T. planiceps	9	LC	Ns
T. robusta	16	DD	Ns
T. rubra	5	LC	Pr
T. schistosa	8	NE	Ns
T. sertula	16	DD	Ns
T. shawi	15	EN	Pr
T. slavensi	14	DD	Pr
T. striata	14	DD	Pr
T. tayrae	15	DD	Pr
T. triseriata	13	DD	Ns
T. vulcani	12	NE	Ns
T. wilcoxi	10	LC	Ns
T. yaquia	10	LC	Ns

The IUCN system has provided assessments for all but three species, which are considered as Not Evaluated (Table 9). Of the remaining 27 species, the following assessments have been provided: Endangered (2 spp.); Least Concern (15); and Data Deficient (10). Thus, only two of the 30 species have been judged in one of the three threat categories, as no species have been considered Critically Endangered, Vulnerable, or Near Threatened. In our opinion, the 10 species currently placed in the Data Deficient category should be shifted to the Critically Endangered category, including *T. cascadae*, which recently was rediscovered at the type locality and now is known from a second locality in Jalisco (D. Cruz-Sáenz, pers comm.; submitted). In addition, at least *T. ceboruca*, among the three non-evaluated species (the other two are *T. schistosa* and *T. vulcani*), should be considered as Critically Endangered, as it now is known from a second locality in Jalisco (D. Cruz-Sáenz, pers comm.; submitted). In our opinion, the other two Not Evaluated species should be judged as Least Concern (*T. schistosa*; Acevedo et al., 2010; Townsend and Wilson, 2010) or as Vulnerable (*T. vulcani*; Acevedo et al., 2010).

In contrast, the EVS system has provided asssessments for all 30 species. The scores in this system range from 5 to 16 (Table 9) within a theoretical range of 3–20, and were calculated by Wilson et al. (2013). Based on information provided by D. Cruz-Sáenz (pers comm.; submitted), we are recalculating two of their scores (for *T. cascadae* and *T. ceboruca*). Wilson et al. (2013) arranged the calculated scores into low (EVS 3–9), medium (EVS 10–13), and high (EVS 14–20) categories of environmental vulnerability. For the Mexican *Tantilla*, four species fall into the low, 13 into the medium, and 13 into the high levels of vulnerability. To further emphasize the utility of the EVS measure over that of the IUCN, the former values were provided in Wilson et al. (2013) in a project that involved all of the reptiles of Mexico, except for the marine species, and took only 13 months to complete. In our opinion, the EVS system provides a more realistic and complete view of the conservation status of the 30 species of *Tantilla* in Mexico than either the SEMARNAT or IUCN systems. In support of this statement, consider that almost one-half of the members of this genus are found in Mexico, and more than one-half of those are endemic to the country. Six of the 30 species are known only from their respective type localities (in the case of two, a second locality), and 12 have been described within the lifetime of the senior author of this paper. The distribution of many of these species and how it relates to the existing system of protected areas in the country are poorly understood, and little information is available on their habitat requirements, reproductive biology, or food preferences.

In light of this reality, we prefer to use a conservation assessment system based on what we know about these snakes, instead of one based on what we do not know or only poorly understand. As a case in point, the IUCN system has allocated all but two of the 30 species to the Least Concern (15 species), Data Deficient (10), or Not Evaluated (3) categories. Thus, one is left to conclude that one-half of the species of *Tantilla* are in "good shape," one-third are not known well enough to place them in any other category, and one in 10 have not been assessed. Based on this information, Mexican *Tantilla* do not appear to be of much conservation significance, when we believe the reverse is the case. We conclude that the Mexican members of the genus *Tantilla* constitute a significant segment of the country's snake fauna (30 of 385 species or 7.8%; Wilson et al., 2013), especially its endemic component (16 of 203 species or 7.9%; Wilson et al., 2013), and that in the immediate future steps should be taken to develop plans for their protection.

This type of categorization offers a rough gauge of the priorities that should be established to protect these and *all other* species, but until that time this type of discussion remains purely academic. The human population of Mexico now numbers 117.6 million (mid-2013 estimate; Population Reference Bureau World Population Data Sheet, 2013), is growing at the rate of 1.5% per year, and is predicted to grow to 132.8 million by 2025 and 150.0 million by 2050 (2013 World Population Data Sheet). Mexico is the center of herpetological diversity in the Western Hemisphere (Wilson and Johnson, 2010), and bringing together areas of high human occupancy and high biodiversity does not bode well for the future of the country's herpetofauna.

A FUTURE FOR *TANTILLA* SYSTEMATICS

One of us (LDW) has been studying the systematics of *Tantilla* for about 44 years, the other one (VMS) for a notably shorter period of time. The genus currently contains 62 species (Townsend et al., 2013, gave an incorrect number), and our understanding of the intra- and inter-relationships of the genus still remains at a primitive level (Townsend et al., 2013). All that currently exists is a crude idea about a number of phenetic species groups that essentially are recognized on the basis of color pattern similarities among the species. Townsend et al. (2013: 197) indicated that

"these groups, as recognized by Wilson (1999) and with their content updated herein, include the *Tantilla calamarina* group (seven species; Wilson, 1999; Wilson and Campbell, 2000; Canseco-Márquez et al., 2007), the *Tantilla coronata* group (three species, Wilson, 1999), the *Tantilla melanocephala* group (ten species; Wilson, 1999, Savage, 2002, Sawaya and Sazima, 2003; Greenbaum et al., 2004; Lema, 2004), the *Tantilla planiceps* group (seven species; Cole and Hardy, 1981), and the *Tantilla taeniata* group (20 species; Wilson, 1999, Stafford, 2004; McCranie, 2011b). Thus, of the 63 [the number actually is 62] currently recognized species of *Tantilla*, 47 are allocated to one of the five phenetic groups…" The species described by Townsend et al. (2013), *T. olympia*, also is a member of the *taeniata* group, bringing the number in that group to 21 and the total for the five groups to 48 (77.4% of the generic total).

Fourteen species have not been allocated to any phenetic grouping [not 16, as stated by Townsend et al., 2013], including *T. albiceps*, *T. alticola*, *T. bairdi*, *T. bocourti*, *T. cucullata*, *T. moesta*, *T. nigra*, *T. petersi*, *T. robusta*, *T. rubra*, *T. schistosa*, *T. semicincta*, *T. shawi*, and *T. supracincta*. Of these species, three (*T. bocourti*, *T. cucullata*, and *T. rubra*) likely make up another phenetic group. Whether the disparately distributed banded species (*T. shawi*, *T. semicincta*, and *T. supracincta*) are closely related to one another remains to be seen. Species such as *T. albiceps*, *T. moesta*, and *T. nigra* lack obvious similarities to other members of the genus, although the dorsum of the body in each is black.

These phenetic groupings do not constitute phylogenetic clades, but they can be used to construct testable hypotheses for molecular-based studies. As an example of such a hypothesis, one could use the *calamarina* group, which currently is envisioned to contain seven species (Wilson and Meyer, 1981; Wilson et al., 1999; Wilson and Campbell, 2000; Canseco-Márquez et al., 2007), including *T. calamarina*, *T. cascadae*, *T. ceboruca*, *T. coronadoi*, *T. sertula*, and *T. vermiformis*. With the exception of *T. vermiformis*, which is distributed from El Salvador to Costa Rica, these species are endemic to Mexico. In describing *T. sertula*, Wilson and Campbell (2000: 826) noted that, "Wilson and Meyer (1981)…hypothesized that the *calamarina* group is monophyletic and that its evolution reflects increasing adaptation to a fossorial lifestyle. In addition, they hypothesized that *T. deppei* is the least derived taxon in the group and that *T. calamarina* the most derived. Finally, they suggested that *T. cascadae* is the sister taxon of *T. calamarina* and that *T. coronadoi* is the sister taxon to a clade containing *T. calamarina* and *T. cascadae*." Neither Wilson and Campbell (2000) nor Canseco-Márquez et al. (2007) attempted to hypothesize a relationship to any of the other species in the group, apart from placing the species they described (*T. sertula* and *T. ceboruca*, respectively) into this group, but apparently both are more closely related to *T. coronadoi* and *T. deppei* than to *T. calamarina* and *T. cascadae*. Attempting to piece together a phylogenetic hypothesis for the relatively compact *calamarina* group can be used as an example of the efforts necessary for other members of the genus. Most members of the *calamarina* group (*T. cascadae*, *T. ceboruca*, *T. coronadoi*, and *T. sertula*) are known from very few (1–3) specimens. We are unaware if molecular material is available for any of the seven species, or how long it would take to assemble enough material to support a molecular assessment, since some species are notoriously difficult to locate. In addition, members of the *calamarina* group occur coextensively in areas where human societal elements are best avoided. Finally, the rate of habitat degradation is commensurate with that of human population growth, which is much more rapid than the rate for efforts to preserve these habitats. These factors make it very difficult to assemble the necessary material to conduct a modern molecular assessment of the phylogenetic relationships among the members of the *Tantilla calamarina* group, or for any of the other phenetic groups that have been recognized in the genus. Apparently, efforts to understand the relationships of the species of *Tantilla* to one another and those of the genus to other genera (*Geagras*, *Scolecophis*, and *Tantillita* commonly are mentioned as possible relatives) will have to proceed in a piecemeal fashion, perhaps starting with the species occurring in the United States and northern Mexico.

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Larry David Wilson (left) is a herpetologist with lengthy experience in Mesoamerica. Larry is the senior editor of *Conservation of Mesoamerican Amphibians and Reptiles* and the co-author of seven of its chapters. He is retired from 35 years of service as a professor of biology at Miami-Dade College in Miami, Florida. Larry is the author or co-author of over 300 peer-reviewed papers and books on herpetology, including the two 2013 papers entitled "A conservation reassessment of the amphibians of Mexico based on the EVS measure" and "A conservation reassessment of the reptiles of Mexico based on the EVS measure." His other books include *The Snakes of Honduras*, *Middle American Herpetology*, *The Amphibians of Honduras*, *Amphibians & Reptiles of the Bay Islands and Cayos Cochinos, Honduras*, *The Amphibians and Reptiles of the Honduran Mosquitia*, and *Guide to the Amphibians & Reptiles of Cusuco National Park, Honduras*. During his career, he has authored or co-authored the descriptions of 70 currently recognized herpetofaunal species. He is currently working on a book on the herpetofauna of Michoacán, Mexico, with co-authors Javier Alvarado-Díaz, Ireri Suazo Ortuño, and Oscar Medina Aguilar.

Vicente Mata-Silva (right) is a passionate herpetologist born in Río Grande, Oaxaca, Mexico, who is interested in the ecology, conservation, natural history, and geographic distribution of amphibians and reptiles in Mexico and the southwestern United States. Vicente currently teaches organismal biology and desert ecology classes at the University of Texas at El Paso, and conducts research primarily focusing on the ecological characteristics of lizard and rattlesnake populations at the Indio Mountains Research Station, located in the Trans-Pecos region of the Chihuahuan Desert. As a member of the Editorial Board of Mesoamerican Herpetology, he is the Section Editor of the Distribution Notes section for Mexico. To date, Vicente has authored or co-authored 53 peer-reviewed scientific publications, including two recent articles on the conservation status of Mexican amphibians and reptiles based on the EVS measure.