

## A NEW SPECIES OF LARGE *TANTILLA* (SQUAMATA: COLUBRIDAE) FROM THE SIERRA MADRE ORIENTAL OF PUEBLA, MEXICO

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**ABSTRACT:** We describe a new large species of *Tantilla* from the Sierra Norte region of the Sierra Madre Oriental of Puebla, Mexico. This species most closely resembles *Tantilla schistosa* in color pattern, but differs by being much larger in size and having different scutellation. It differs from all other species of Mexican *Tantilla* by having a uniformly dark brown dorsum and head, and a pale cream venter.

**Key words:** Colubridae; Mexico; New species; Puebla; *Tantilla robusta*

RECENT advances in our knowledge of the diversity of the notoriously secretive snakes of the genus *Tantilla* are attributable to continued field work in Latin America (e.g., Campbell and Smith, 1997), re-examination of material collected in past decades (e.g., Wilson et al., 1999), and careful revisions of complex groups (e.g., Campbell, 1998a; Dixon et al., 2000). Despite these efforts, a surprising number of species of *Tantilla* are known from only the holotype (see Wilson, 1999). Although some species may be difficult to distinguish (e.g., species in the *T. planiceps* group: Cole and Hardy, 1981), other species are quite distinctive (e.g., *T. shawi*: Campbell et al., 1995). The majority of the species has been placed into phenetic groups (Wilson, 1999), but approximately 15 species remain unallocated; the phylogenetic relationships among species of *Tantilla* are unknown. Mexico has the greatest number of species of *Tantilla* of any region (28 versus only 12 for all of South America; Wilson, 1999). The Mexican state of Puebla covers a relatively large area and includes a wide variety of habitats—from desert to cloud forest. Despite these observations, only four species of *Tantilla* are known from Puebla: *T. bo-*

*courti*, *T. calamarina*, *T. rubra* (sensu Dixon et al., 2000), and the new species described herein.

### MATERIALS AND METHODS

Terminology and characters included in the diagnosis and descriptions follow the format in Campbell (1998a) and citations therein. Sex of the holotype was confirmed by dissection. Head and scale measurements were taken using digital calipers and were rounded to the nearest 0.1 mm. Body and tail measurements were taken with a metal rule. Drawings were made using a stereomicroscope and attached camera lucida. Species groups referred to herein are those of Wilson (1999). Comparisons to other species were made with direct observations of specimens (Appendix I) and comparisons with data presented in the literature (viz., Campbell, 1998a,b; Campbell and Smith, 1997; Campbell et al., 1995; Dixon et al., 2000; Lee, 1996; Pérez-Higareda et al., 1985; Smith, 1942, 1962; Stuart, 1941; Wilson, 1982, 1983, 1985, 1987, 1988, 1999; Wilson and Campbell, 2000; Wilson and Meyer, 1971, 1981, 1985; Wilson et al., 1999). For the sake of brevity, the diagnosis here is formatted to take advantage of the relative similarity of species assigned to the phenetic groups

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FIG. 1.—The holotype and only known specimen of *T. robusta* (EBUAP 1031); an adult female, SVL = 395 mm.

recognized by Wilson (1999). Specific comparisons to species not assigned to these groups (see Wilson, 1999) are presented only for species bearing any superficial similarity to our specimen and/or are known from geographically proximate localities. Museum acronyms are those of Leviton et al. (1985), with the addition of EBUAP (Laboratorio de Herpetología, Escuela de Biología, Benemérita Universidad Autónoma de Puebla) and MZFC (Museo de Zoología, Facultad de Ciencias, Universidad Nacional Autónoma de México).

#### SYSTEMATICS

##### *Tantilla robusta* sp. nov.

*Tantilla morgani*—Canseco-Márquez et al., 2000 [Misapplication]

*Holotype*.—EBUAP 1031, an adult female from Octimaxal Norte, 930 m, Municipio de Cuetzalan del Progreso, Sierra Norte de Puebla, Puebla, Mexico (20° 02.

743' N, 97° 30.103' W); obtained by local collectors for Luis Canseco-Márquez, on 4 March 1998.

*Diagnosis*.—*Tantilla robusta* (Figs. 1, 2) differs from all members of the *T. calamarina*, *T. taeniata*, and *T. melanocephala* species groups by lacking any trace of dorsal or lateral striping. It differs from all members of the *T. planiceps* and *T. coronata* groups by having the dorsal head coloration similar to the dorsal coloration of the body. Among the remaining 17 species not allocated to species groups by Wilson (1999), *T. robusta* resembles only three other species: *T. moesta*, *T. rubra*, and *T. schistosa*. *Tantilla robusta* differs from *T. moesta* by having a uniformly pale cream venter (versus uniformly dark brown) and by having a shorter nuchal collar than is typically seen in *T. moesta* (two dorsal scale rows and tips of parietals versus from 2–7 dorsal scale rows and including variable amount of frontal and/or parietals). *Tantilla robusta* differs from *T. rubra* by

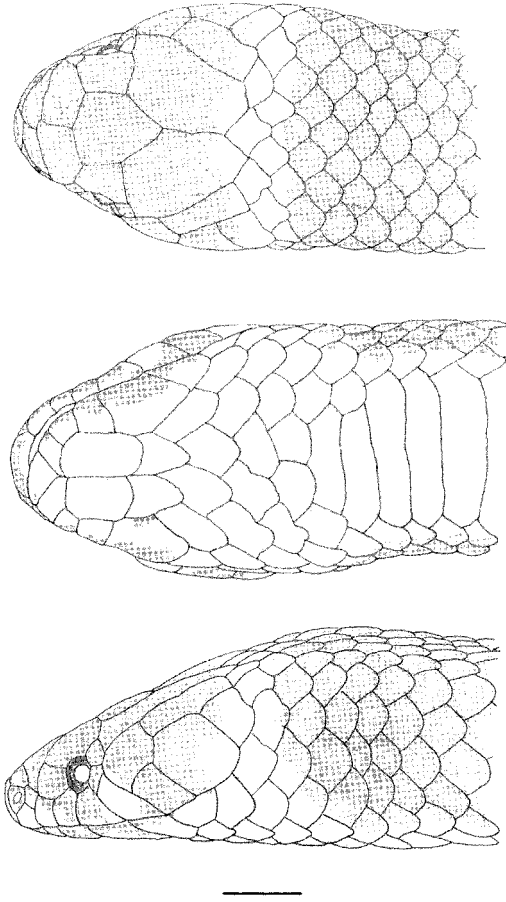


FIG. 2.—Drawings of the dorsal, ventral, and lateral aspects of the head of the holotype of *Tantilla robusta* (EBUAP 1031); scale bar = 5 mm.

having a uniformly dark brown dorsal pattern and a cream venter (both areas pink to pinkish red in *T. rubra*: Dixon et al., 2000) and the head is the same color as the dorsum (darker in *T. rubra*). *Tantilla robusta* is superficially similar to the diminutive species *T. schistosa*, from which it differs by being longer (395 mm SVL versus 293 mm maximum SVL) and distinctly more robust; having more ventral scales (153 versus 147 maximum: Wilson, 1987); by having the head wider than the neck (head not wider than neck in *T. schistosa*); by having a large, distinct postocular pale cream spot and numerous rostral and labial pale cream spots (head mostly, or entirely dark brown; a postocular cream spot sometimes present in *T. schistosa*);

and by having the nuchal collar and venter uniformly pale cream in life (frequently yellowish, reddish, or orange in *T. schistosa*). *Tantilla robusta* is also superficially similar to *T. bairdi*, a species known only from Guatemala, from which it differs by having a cream venter [pink or orange, (in preservative) or bright red (in life) in *T. bairdi*], fewer ventrals (153 versus 163 in the single known female of *T. bairdi*), and by having the nuchal collar that crosses the posterior supralabial (passing posterior to this scale in *T. bairdi*: Wilson, 1985); despite their relatively similar lengths, we note that *T. bairdi* is much more slender than is *T. robusta*.

*Description of holotype*.—Adult female, 426 mm in total length; tail length 31 mm (7.2% of total length; incomplete); head length 13.9 mm from front face of rostral to posterior end of mandible; head width 12.3 mm at broadest point (at level of angle of mouth); head wider than neck; snout rounded in dorsal view; eye small, snout about 2.6 times as long as horizontal distance across eye; pupil circular; rostral about 1.7 times broader than high; internasals about 2.6 times wider than long, laterally in contact with anterior and posterior nasals; prefrontals large, wider than long, laterally in contact with posterior nasal and preocular; median prefrontal suture 0.4 times as long as frontal; frontal about 1.4 times longer than wide; parietals 1.5 times longer than wide, length of median suture 1.4 times length of frontal; nasals completely divided; nostril located mostly in posterior portion of anterior nasal; loreal absent; 1/1 preoculars; 2/2 postoculars; 1/1 anterior temporals; 1/1 posterior temporals, sinstral posterior temporal damaged; 7/7 supralabials; supralabials 6 and 7 not in contact with parietal, first in contact with nasal, second in contact with posterior nasal and preocular, third in contact with preocular and entering the orbit, fourth entering the orbit and in contact with postocular, fifth in contact with postocular and anterior temporal, sixth in contact with anterior temporal, and seventh the largest and in contact with anterior and posterior temporals; width of mental about 1.7 times length, not in con-

tact with anterior pair of chinshields; anterior chinshields well developed, about twice as long as wide; posterior chinshields not well differentiated from gulars, about half of size of anterior chinshields; posterior chinshields separated from first ventral by three pairs of gulars; 6/6 infralabials, first pair in contact along ventral midline, first four pairs in contact with anterior chinshields, fourth pair the largest; dorsals smooth, in 15 longitudinal rows throughout length of body, no apical pits apparent; dorsal scales in four rows at level of tenth subcaudal; ventrals 153; cloacal scute divided; subcaudals 13+ (tail incomplete), in pairs; anal glands extending posteriorly for length of three subcaudals.

In preservative (ethyl alcohol, after formalin), all dorsal scales on body brown with tiny, scattered, dark brown flecks that become more concentrated at periphery of each scale; dorsal coloration extending onto lateral edges of ventral scales anteriorly, becoming limited to posterolateral edges of ventral scales along posterior half of body; pale cream nuchal collar present, complete, including tips of parietals and extending posteriorly for two dorsal scale rows, becoming wider ventrolaterally to include posterior portion of seventh supralabial, continuous with ventral coloration; top of head uniform brown, lacking darker brown flecking; large postocular pale cream spot present, covering majority of area of fifth supralabial and small portions of adjacent scales; supralabial pale cream spots present, covering first, second, and part of third supralabials, and ventral portion of posterior nasal; small, pale cream spots present on rostral, internasals, prefrontals, and small portions of anterior nasal; infralabials pale cream, with five dark brown infralabial spots, becoming larger posteriorly, fourth dextral infralabial with medial dark brown spot; ventral coloration immaculate cream.

Left maxilla bearing 15 teeth, becoming larger posteriorly, the last three greatly enlarged, separated from anterior teeth by short diastema.

*Etymology.*—The specific epithet is derived from the Latin *robustus*, meaning

stout, and is used in reference to the robust habitus of the species.

*Distribution and ecology.*—*Tantilla robusta* is known only from its type locality of Octimaxal Norte, a small village at 930 m elevation near (approximately 20 km by road) the municipality of Cuetzalan del Progreso. This area is known locally as the Sierra Norte and lies on the Atlantic versant of the Sierra Madre Oriental in northern Puebla. The original vegetation was tropical semideciduous forest (Rzedowsky, 1978), but now has been extensively altered by coffee cultivation (Fig. 3). As a result of its geographic position, the municipality usually is affected by frontal systems (“nortes”) and humid tradewinds arising from the Atlantic versant; therefore the rainfall in the municipality is heavy (average around 4000 mm/yr) and cloud cover is common in the afternoons. Other species of amphibians and reptiles that we found at the type locality include *Eleutherodactylus rhodopis*, *E. verrucipes*, an undescribed species of *Pseudoeurycea*, *Anolis naufragus*, *A. sericeus*, *Adelphicos quadrivirgatus*, *Ficimia streckeri*, *Geophis semidoliatus*, *Pliocercus bicolor*, and *Sibon sartorii*.

*Remarks.*—The color pattern of *T. robusta* is quite similar to that of *T. schistosa* and the two species may be closely related. Inasmuch as *T. schistosa* has not been placed in any of the existing phenetic groups of *Tantilla* (Wilson, 1999), we defer from placing *T. robusta* in any of these groups. The holotype of *T. robusta* was originally reported by Canseco-Márquez et al. (2000) as *Tantilla morgani* (recently placed in the synonymy of *T. rubra* by Dixon et al., 2000), and the SVL and ventral counts were inaccurately reported as 440 mm and 151, respectively. We found a specimen of *T. rubra* (EBUAP 1598) at a locality (Barranca Lapolate, 4 km NE Xocoyolo, 1000 m) near the type locality of *T. robusta*; the color pattern of this specimen makes it clearly referable to *T. rubra*. In this region, it appears that *T. rubra* is found mainly at the higher elevations that are dominated by cloud forest (although much of this habitat has also been converted to coffee plantations). Our single



FIG. 3.—Habitat at the type locality of *Tantilla robusta*, showing coffee cultivation and remnant overstory trees in the area.

specimen of *T. robusta* was found in the lower, warmer tropical forest.

#### RESUMEN

Se describe una nueva especie de *Tantilla* de la Sierra Norte de Puebla, México, región perteneciente a la Sierra Madre Oriental. Esta especie parece estar más cercanamente relacionada a *Tantilla schistosa* en patrón de coloración, pero se diferencia por ser de talla más grande y diferencias en escutelación. Difiere de todas las especies mexicanas del género *Tantilla* por tener el dorso y la cabeza uniformemente café oscuro y el vientre crema claro.

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#### LITERATURE CITED

- CAMPBELL, J. A. 1998a. Comments on the identities of certain *Tantilla* (Squamata: Colubridae) from Guatemala, with the descriptions of two new species. *Scientific Papers, Natural History Museum, University of Kansas* 7:1–14.
- . 1998b. *Amphibians and Reptiles of Northern Guatemala, the Yucatán, and Belize*. University of Oklahoma Press, Norman, Oklahoma, U.S.A.
- CAMPBELL, J. A., AND E. N. SMITH. 1997. A new species of *Tantilla* (Serpentes: Colubridae) from northeastern Guatemala. *Proceedings of the Biological Society of Washington* 110:332–337.
- CAMPBELL, J. A., J. L. CAMARILLO, AND P. C. USTACH. 1995. Redescription and rediagnosis of *Tantilla shawi* (Serpentes: Colubridae) from the Sierra Madre Oriental of Mexico. *Southwestern Naturalist* 40:120–123.
- CANSECO-MÁRQUEZ, L., G. GUTIÉRREZ-MAYÉN, AND J. SALAZAR-ARENAS. 2000. New records and range extensions for amphibians and reptiles from Puebla, México. *Herpetological Review* 31:259–263.
- COLE, C. J., AND L. M. HARDY. 1981. Systematics of the North American colubrid snakes related to *Tantilla planiceps* (Blainville). *Bulletin of the American Museum of Natural History* 171:199–284.
- DIXON, J. R., R. K. VAUGHAN, AND L. D. WILSON.

2000. The taxonomy of *Tantilla rubra* and allied taxa (Serpentes: Colubridae). *Southwestern Naturalist* 45:141–153.
- LEE, J. R. 1996. The Amphibians and Reptiles of the Yucatán Peninsula. Comstock Publishing Associates, Ithaca, New York, New York, U.S.A.
- LEVITON, A. E., R. H. GIBBS, JR., E. HEAL, AND C. E. DAWSON. 1985. Standards in herpetology and ichthyology: part I. Standard symbolic codes for institutional resource collections in herpetology and ichthyology. *Copeia* 1985:802–832.
- PÉREZ-HIGAREDA, G., H. M. SMITH, AND R. B. SMITH. 1985. A new species of *Tantilla* from Veracruz, Mexico. *Journal of Herpetology* 19:290–292.
- RZEDOWSKY, J. 1978. *Vegetación de México*. Editorial Limusa. México City, México.
- SMITH, H. M. 1942. A résumé of Mexican snakes of the genus *Tantilla*. *Zoologica* 27:33–42.
- . 1962. The subspecies of *Tantilla schistosa* of Middle America (Reptilia: Serpentes). *Herpetologica* 18:13–18.
- STUART, L. C. 1941. Some new snakes from Guatemala. *Occasional Papers of the Museum of Zoology, University of Michigan* 452:1–7.
- WILSON, L. D. 1982. A review of the colubrid snakes of the genus *Tantilla* of Central America. *Milwaukee Public Museum Contributions in Biology and Geology* 52:1–77.
- . 1983. A new species of *Tantilla* of the *taeniata* group from Chiapas, Mexico. *Journal of Herpetology* 17:54–59.
- . 1985. Rediscovery of *T. bairdi* Stuart and a definite Guatemalan locality for *Tantilla taeniata* (Bocourt). *Herpetological Review* 16:105.
- . 1987. *Tantilla schistosa*. *Catalogue of American Amphibians and Reptiles* 409:1–2.
- . 1988. *Tantilla moesta*. *Catalogue of American Amphibians and Reptiles* 454:1.
- . 1999. Checklist and key to the species of the genus *Tantilla* (Serpentes: Colubridae) with some commentary on distribution. *Smithsonian Herpetological Information Service* 122:1–36.
- WILSON, L. D., AND J. A. CAMPBELL. 2000. A new species of the *calamarina* group of the colubrid snake genus *Tantilla* (Reptilia: Squamata) from Guerrero, Mexico, with a review of a key to members of the group. *Proceedings of the Biological Society of Washington* 113:820–827.
- WILSON, L. D., AND J. R. MEYER. 1971. A revision of the *taeniata* group of the colubrid snake genus *Tantilla*. *Herpetologica* 27:11–40.
- . 1981. Systematics of the *calamarina* group of the colubrid snake genus *Tantilla*. *Milwaukee Public Museum Contributions in Biology and Geology* 42:1–25.
- . 1985. *The Snakes of Honduras*, 2nd ed. Pp. 1–150. Milwaukee Public Museum, Milwaukee, Wisconsin, U.S.A.
- WILSON, L. D., R. K. VAUGHAN, AND J. R. DIXON. 1999. Another new species of *Tantilla* of the *taeniata* group from Chiapas, Mexico. *Journal of Herpetology* 33:1–5.

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## APPENDIX I

### *Specimens Examined*

*Tantilla schistosa*: COSTA RICA: Copal, Provincia de Puntarenas, Canton de Coto Brus (MZFC 13611). MEXICO: VERACRUZ: Barranca de San Miguel, 4 km E Cuautlapan (MVZ 106427); Cerro Chichahuaxtla, Cuautlapan, approximately 1250 m (MVZ 109490, 146973); 9 mi SE Alvarado (LACM 51799). OAXACA: Sierra de Juárez, La Esperanza (MZFC 5083).

*Tantilla rubra*: MEXICO: PUEBLA: Necaxa (UMMZ 85968, holotype of *T. morgani*); Río Necaxa (AMNH 76428); Barranca Lapolate, 4 km NE Xocoyolo, 1000 m (EBUAP 1598).