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Confirmation of the presence of the Striped Lizard Eater, *Mastigodryas dorsalis* (Bocourt, 1890) (Squamata, Colubridae), in Mexico

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Abstract. The snake *Mastigodryas dorsalis* (Bocourt, 1890) is generally considered absent from Mexico, but a few sources indicate otherwise. Herein we resolve this issue by re-examining a historical specimen and by reporting new records for *M. dorsalis* in Chiapas, Mexico. These records extend the known distribution of the species 87 km northwest of the nearest pre-existing record in Guatemala. Additionally, based on these new records and an exhaustive literature review, we present an updated distribution for the species and revise its known elevational range to 300–2110 m. A complete Spanish translation of this paper is available in the Supplemental Data. Una traducción completa al español de este artículo está disponible en los Datos Suplementarios.

Keywords. Altiplanicie de Chiapas, Chiapas, distribution, Guatemala, Honduras, Nicaragua, snake

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Introduction

Globally, Middle America is a region with high biodiversity (Myers et al. 2000; Mittermeier et al. 2005), and reptiles are a conspicuous part of that biodiversity (Wilson and Johnson 2010). However, the geographic distribution of many reptiles in this region remains poorly understood. This is especially true for snakes, which can be difficult to observe due to their often secretive behavior (Steen 2010; Durso et al. 2011; Durso and Seigel 2015). In Mexico alone, an annual average of five new state records for native snake species have been published from 2020–2022 (de la Torre-Loranca et al. 2020; Cavazos-Camacho and Ahumada-Carillo 2020; Cisneros-Bernal et al. 2020; Fernández-Badillo et al. 2020; Guajardo-Welsh et al. 2020; Hernández-Juárez et al. 2020; Montaño-Ruvalcaba et al. 2020; Clause et al. 2021; McKay et al. 2021; Arrazola-Bohórquez and Palacios-Aguilar 2022; Bernal et al. 2022; Contreras-Calvario et al. 2022; Palacios-Aguilar et al. 2022; Peña-Martínez et al. 2022; Villalobos-Juárez et al. 2022). New national records for Mexican snakes are much rarer. Excluding descriptions of new species, only two such discoveries have been published in the past few decades

(Grünwald et al. 2016; Herr et al. 2017). Of this last type of record, in this article we present the most recent, involving the snake genus *Mastigodryas* Amaral, 1934 in Mexico.

Members of the genus *Mastigodryas* are distributed in the Western Hemisphere from Mexico to Peru, Bolivia, and the Brazilian and Colombian Amazonia, including several islands in the Lesser Antilles (Montingelli et al. 2019: 219). A total of 13 species are currently recognized (Montingelli et al. 2019; Uetz et al. 2022). Several species were historically placed in the genus *Dryadophis*, but after Dixon and Tipton (2004) proposed synonymizing *Dryadophis* with *Mastigodryas*, almost all contemporary taxonomic authorities have used the name *Mastigodryas* (e.g., Tipton 2005; Köhler 2008; Johnson et al. 2010; Wilson and Johnson 2010; Wallach et al. 2014; Heimes 2016; Montingelli et al. 2019). We follow that taxonomic position here. *Mastigodryas* species are diurnal, oviparous, largely terrestrial, and live in savannas, dry forests, and moist forests, often associated with ponds or other water bodies (Montingelli et al. 2019). Many species prey primarily on lizards, but also eat frogs, snakes, and rodents; juveniles often feed on insects (Köhler 2008). Many *Mastigodryas* species undergo a drastic change in color pattern: juveniles have transverse bands or blotches while adults are unicolor or have longitudinal stripes (Montingelli et al. 2019).

Recent works (Wilson and Johnson 2010; Wilson et al. 2013; Wallach et al. 2014; Heimes 2016; Balderas-Valdivia and González-Hernández 2021) consistently recognize only two species of *Mastigodryas* as occurring in Mexico: Clifton's Lizard Eater, *M. cliftoni* (Hardy, 1964), and Lizard Eater, *M. melanolomus* (Cope, 1868). However, the possible occurrence of a third species in Mexico, the Striped Lizard Eater, *M. dorsalis* (Bocourt, 1890), has long been unclear.

The geographic distribution of *M. dorsalis* is generally considered to extend from central Guatemala to northwestern Nicaragua on both Atlantic and Pacific slopes, including parts of El Salvador and Honduras (Köhler 2008; Ariano-Sánchez and Sunyer 2013). However, two lists of the Mexican herpetofauna published by Liner (1994, 2007) included this species (under the synonym *Dryadophis dorsalis*), as did Tipton (2005). None of these three publications provided supporting evidence for the claimed presence of this species in Mexico. Interestingly, in a subsequent list Liner and Casas-Andreu (2008) excluded *M. dorsalis* from the Mexican herpetofauna, again without explanation. *Mastigodryas dorsalis* is similarly excluded from the two most recent comprehensive publications on Mexican snakes (Heimes 2016; Balderas-Valdivia and González-Hernández 2021). It is also excluded from the most recent list of the herpetofauna of Chiapas, Mexico (Johnson et al. 2015), the state that is closest to verified records of *M. dorsalis* in the neighboring country of Guatemala. No other publication on the herpetofauna of Mexico or Chiapas has indicated the presence of *M. dorsalis* in the country (Álvarez del Toro 1973, 1983; Flores-Villela 1993; Flores-Villela and Canseco-Márquez 2004; Köhler 2003, 2008; Johnson et al. 2010; Wilson and Johnson 2010; Luna-Reyes et al. 2013). However, in an appendix of specimens examined, Montingelli et al. (2019) listed a specimen that they identified as *M. dorsalis* from Chiapas, Mexico. This specimen (CAS 163808) was collected in 1974, and thus could explain why Liner (1994, 2007) and Tipton (2005) recognized *M. dorsalis* in Mexico.

In this contribution, we report our re-examination of specimen CAS 163808 and affirm its assignment to *M. dorsalis*. Importantly, we also report two new records of *M. dorsalis* that further document its presence in Chiapas, Mexico. Based on these new records and coupled with a literature review, we update the locality-level distribution of *M. dorsalis* and revise its known elevational range.

Methods

To gather existing published and unpublished distribution records for *Mastigodryas dorsalis*, we comprehensively reviewed multiple data sources. First, we consulted the Global Biodiversity Information Facility (https://doi.org/10.15468/dl.p9kjre) to create a preliminary list of localities for *M. dorsalis*. Second, we did a literature review on the Web of Science platform (accessed March 20, 2022), using an All Databases query with "*Mastigodryas dorsalis*" and "*Dryadophis dorsalis*" as search terms. Third, we queried iNaturalist on April 12, 2022 for relevant photographic records identified as *M. dorsalis*; we excluded iNaturalist records where diagnostic morphology was not visible in the photo(s), and also excluded records for which the accuracy (geospatial error) of the uploaded GPS coordinates was unreported. Fourth, we consulted the University of Texas at Arlington (UTA R), the University of Michigan Museum of Zoology (UMMZ), and the Colección Herpetológica of El Colegio de la Frontera Sur, Unidad San Cristóbal (ECO-SC-H), for original data on museum specimens. We supplemented this review with the results of fieldwork conducted by the lead author as part of his master's thesis (scientific collection permit SGPA/DGVS 01609/16). Additionally, we requested support from the collection managers of the California Academy of Sciences (CAS) and the Illinois Natural History Survey (INHS), who photographed relevant specimens in their care and recorded morphometric measurements and scale counts.

To georeference historical records of *M. dorsalis* that lacked GPS coordinates, we used Google Earth Pro 7.3.3.7786, GEOLocate 3.22 (Ríos and Bart 2010), and the gazetteer of Honduras localities available in McCranie and Wilson (2002). We purged any records for which (1) contradictory elevation or location data exist in the literature, (2) the locality data is too vague to confidently assign the record to a country, (3) no locality data is available except for the country or state where the specimen was collected, (4) the locality name is unidentifiable on any map we could find, or (5) the author who reported the record questioned its taxonomic identity

(e.g., Villa 1971). We considered a locality to be separated from all other localities by at least 1 airline km; if clustered records were separated by less than 1 km, we selected only one record to report and map as a single locality (Clause et al. 2020). We generated the resulting distribution map for *M. dorsalis* (Fig. 1) with QGIS 3.16.3-Hannover (QGIS Development Team 2020) using an elevation baselayer from WorldClim (Hijmans et al. 2005) with a resolution of 0.86 km^2.

Results

Although the specimen is somewhat discolored and deteriorating, after re-examination we conclude that CAS 163808 is a juvenile specimen of *Mastigodryas dorsalis*, consistent with the assessment by Montingelli et al. (2019). We base our conclusion on the presence of the following features on the specimen: (1) a series of dorsal blotches arranged alternately between each other and with the lateral crossbands, (2) an incomplete dark vertebral stripe that is most evident on the posterior part of the body, (3) pale flecking on the anterior border of many dorsal scales, and (4) throat and venter pale and largely immaculate (Stuart 1941; McCranie 2011; Montingelli et al. 2019). Additionally, we report two new and previously unpublished records for *M. dorsalis* in the Mexican state of Chiapas (Fig. 1, Appendix Table A1). The first is a museum specimen more than 15 years old that is deposited in the ECO-SC-H collection. The second is an individual that was captured and released during recent fieldwork by the first author; we deposited voucher images of this snake in the photographic collection of the Natural History Museum of Los Angeles County (LACM PC).

Mastigodryas dorsalis (Bocourt, 1890)

Confirmed historical record. MEXICO – Chiapas • Municipality of La Trinitaria, Lagos de Monte Bello [= Lagunas de Montebello] near Sumidero de Río Comitán; [16.113, −091.717]; 1520 m elev.; 31.VIII.1974; Dennis E. Breedlove; 1 juvenile; CAS 163808 (Fig. 2A).

New records. MEXICO – Chiapas • Municipality of La Trinitaria, 2 km east of Tziscao, near the border with Guatemala; [16.0825, −091.6644]; 1600 m elev.; 20.I.2007; 12:25 h; Theodore Papenfuss, Luis Antonio Muñoz-Alonso, Juan Carlos Windfield and Pedro Tenorio leg.; a dead specimen found at the edge of a coffee field; 1 adult, male; ECO-SC-H-3492 (Fig. 2B) • Municipality of Las Margaritas, 1 km south of Santiago Guelatao in the Altiplanicie de Chiapas; [16.4524, −091.7832]; 2110 m elev.; 28.VII.2016, 9:45 h; Jorge Arturo Hidalgo-García obs.; a live specimen found basking on a rock at the edge of a path, approximately one meter above ground level, on a partially cloudy day (30% cloud cover, 74% humidity), in a scrubby clearing

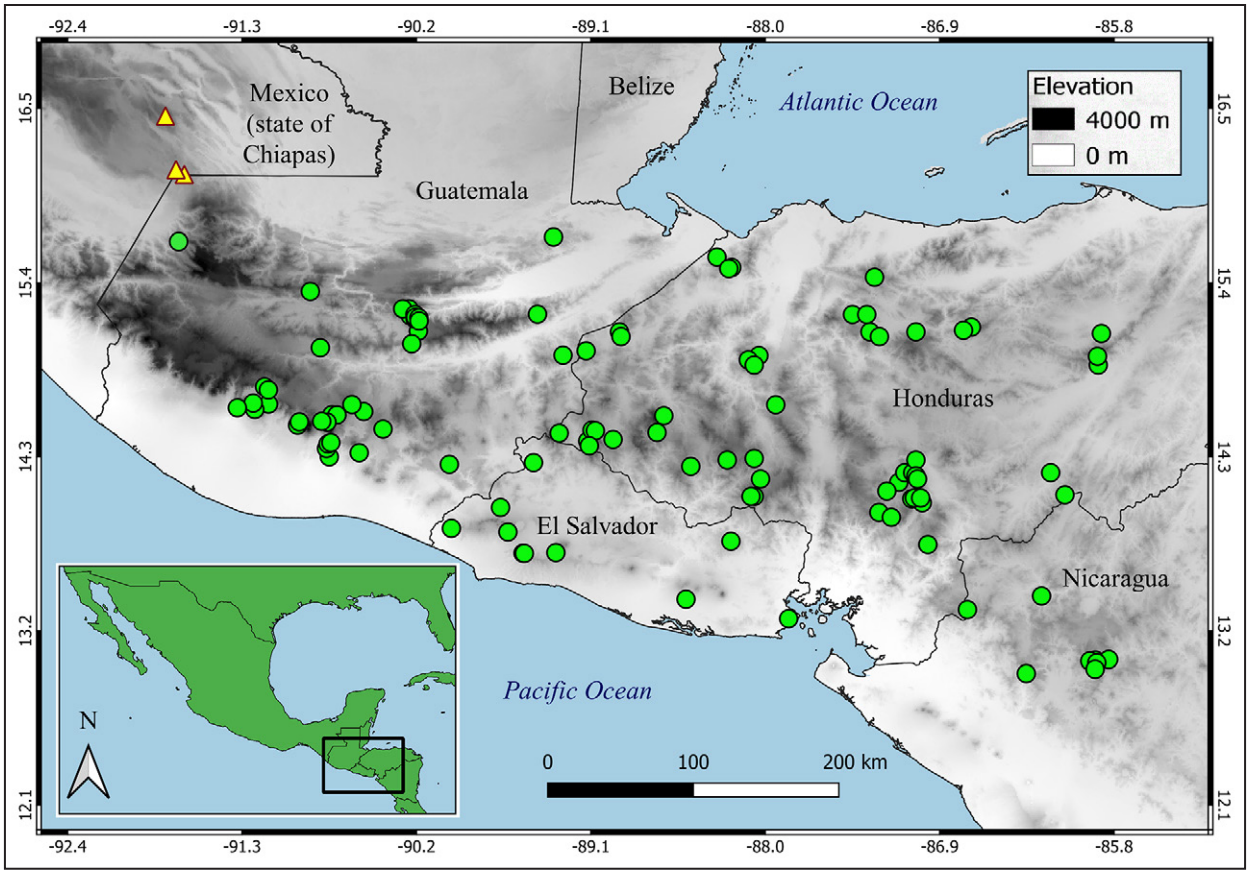

Figure 1. Locality-level geographic distribution for *Mastigodryas dorsalis*. Yellow triangles represent the records for Mexico; from north to south, records are from near Santiago Guelatao, Lagunas de Montebello, and Tziscao, respectively. Green circles represent other documented records (see Appendix Table A1 and the text for more information).

Figure 2. *Mastigodryas dorsalis* recorded from Chiapas, Mexico. **A.** CAS 163808, juvenile from "Lagos de Monte Bello" (=Lagunas de Montebello), Municipality of La Trinitaria. **B.** ECO-SC-H-3492, adult male from near Tziscao, Municipality of La Trinitaria. **C1** (LACM PC 2691) and **C2 (**LACM PC 2690), adult from near Santiago Guelatao, Municipality of Las Margaritas. Photographs: Erica Ely (A) and JAHG (B, C1, and C2).

within pine forest; 1 adult, sex undetermined; LACM PC 2689–2692 (Fig. 2C1, C2); specimen photographed, not collected.

Identification. Juvenile *M. dorsalis* have a diagnostic dorsal pattern consisting of three or four series of dorsal blotches arranged alternately with each other and with lateral transverse bands, together with a dark vertebral stripe on the posterior part of the body (McCranie 2011; Montingelli et al. 2019). Adult *M. dorsalis* have a drastically different color pattern, with transverse markings absent and a distinct dark vertebral stripe present along the entire body (Köhler 2008; McCranie 2011; Montingelli et al. 2019). These respective features are visible in the juvenile specimen that we re-examined (Fig. 2A), and in our two new adult specimens (Fig. 2B, C1, C2). All three specimens also possess a pale, mostly immaculate venter and throat, which is diagnostic of adult *M. dorsalis* according to Stuart (1941). Cumulatively, these characteristics easily distinguish *M. dorsalis* from all other Mexican congeners (*M. cliftoni* and *M. melanolomus*).

Additional detail on these and other relevant morphological features of the three specimens are as follows. CAS 163808: 17 scale rows at midbody; 191 ventral scales; 97 subcaudal scales (incomplete tail); 9 supralabial scales; 2 postocular scales; 1 loreal scale; 2 anterior temporal scales; prefrontal scales unfused; dorsal scales smooth; cloacal scale divided; snout–vent length 404 mm; tail length 116 mm (incomplete tail); dorsum of head and body brown, with alternating dark dorsal and lateral blotches on the anterior part of the body; anterior area of most dorsal scales with pale dots or edges; posterior of body with an incomplete, dark vertebral stripe one scale wide; supralabial and infralabial

scales, throat, and venter mostly immaculate cream, some scales with scattered fine dark flecks (Fig. 2A). ECO-SC-H-3492: 17 scale rows at midbody; 15 scale rows one head length anterior to the cloaca; 180 ventral scales; 120 subcaudal scales; 9 supralabial scales; 2 postocular scales; 1 loreal scale; 2 anterior temporal scales; prefrontal scales unfused; dorsal scales smooth; cloacal scale divided; snout–vent length 596 mm; tail length 244 mm; head width 12 mm; back of head and body olive green with one vertebral and two lateral dark longitudinal stripes, the latter located on the third dorsal scale row above the ventral scales; venter and throat paler than body (Fig. 2B). LACM PC 2689–2692: back of head grayish-green, anterior third of body green, and posterior of body pale brown, with one vertebral and two lateral dark longitudinal stripes, the latter located on the third dorsal scale rows above the ventral scales; venter paler green; head with dark lateral line between nostrils and temporal scales, above which the head is slightly darker green, and below which it is cream-colored; dorsal scales with pale anterior edges (Fig. 2C1, C2).

Discussion

The three records presented herein verify *Mastigodryas dorsalis* as a member of the Mexican herpetofauna, and they represent the northernmost and westernmost records for the species (Fig. 1). The snake that we found in 2016 near Santiago Guelatao, Municipality of Las Margaritas, Chiapas (LACM PC 2689–2692) represents a range extension of 87 km in a straight line northwest of the nearest locality in Jacaltenango, Department of Huehuetenango, Guatemala (UMMZ 89216). In turn, LACM PC 2689–2692 was located 42 km northwest of the *M. dorsalis* specimen that was collected in 2007 from near Tziscao, Municipality of Trinitaria, Chiapas, Mexico (ECO-SC-H-3492). This Tziscao specimen was taken less than 10 km from the historical juvenile specimen CAS 163808 that was collected on 31 August 1974. We confirm that the latter specimen was the first record of *M. dorsalis* from Mexico.

In the literature, a problematic historical record of *Mastigodryas* exists that we briefly discuss here. Lynch and Smith (1966) reported a juvenile *Mastigodryas* specimen (UIMNH 56831) collected in 1963 from "the Sierra Madre, 5,000′, above Zanatepec," in the state of Oaxaca, Mexico. These authors identified this specimen as *Dryadophis melanolomus dorsalis*, but noted that it was "puzzling" and that "its allocation to [*M.*] *dorsalis* needs confirmation." This specimen originated approximately 270 km in a straight line northwest of our new Chiapas localities for *M. dorsalis*. After reviewing photographs of specimen UIMNH 56831 (which measures 377 mm in total length, with 179 ventral scales and 117 subcaudal scales), it is evident that the color pattern of the dorsum, throat, and anterior venter differs substantially from that of a juvenile *M. dorsalis* (see Köhler 2008: 250; Montingelli et al. 2019), and instead corresponds to that of a juvenile *M. melanolomus*. Based solely on distribution, the subspecies to which this specimen corresponds is *M. m. tehuane* (Smith, 1943). However, that subspecies reportedly has only 103–112 subcaudal scales (Smith, 1943), while specimen UIMNH 56831 has 117 subcaudals which corresponds to the 113–118 subcaudals reported for *M. m. stuarti* (Smith, 1943) (Smith 1943; Stuart 1963). Regardless of the *M. melanolomus* subspecies to which specimen UIMNH 56831 belongs, no authors aside from Lynch and Smith (1966) have considered *M. dorsalis* to be a subspecies of the widely distributed *M. melanolomus*. Furthermore, no treatment of the Oaxacan herpetofauna has listed *M. dorsalis* as present in that state (see Mata-Silva et al. 2015, 2021). For these reasons, we recommend that *M. dorsalis* continue to be excluded from the herpetofauna of Oaxaca.

In addition to the three verifiable records of *M. dorsalis* reported here for Mexico, we also present an update on the known elevational range of the species, which has been conflicted and poorly supported in the scientific literature. Wilson and Meyer (1982, 1985) reported an elevational range of 750–1900 m above sea level for *M. dorsalis*, while several later authors reported a slightly different elevational range of 635–1900 m (Köhler 2008; Wilson and Johnson 2010; Ariano-Sánchez and Sunyer 2013). Other recently published elevation ranges are 635–2200 m (McCranie 2011) and 450–2290 m (Wallach et al. 2014). In all cases, the authors offered no evidence to support their reported lower and upper bound. We suspect that this lack of supporting evidence could be due, in part, to the vagueness of many historical localities for the species, which is a challenging and well-known general problem (Clause et al. 2020). Based on our extensive review of the geographic distribution of *M. dorsalis*, we here affirm that the lower elevation limit is ca. 300 m (KU 289864 from Canton El Palmital, El Salvador and MVZ 88456 from Finca El Salto, Guatemala), and the upper elevation limit is 2110 m (our new record from near Santiago Guelatao). However, one imprecise locality from El Salvador (MVZ 40409–40410 from Los Esesmiles) and two from Honduras (USNM 578025–578026 from Sumpul, and iNaturalist 1816573 from 5 km northwest of Las Vegas) suggest that the true upper elevation limit for *M. dorsalis* could exceed 2200 m.

With this confirmation of *M. dorsalis* as a member of the Chiapas herpetofauna, the number of native snakes recorded in the state increases to 115 species based on Johnson et al. (2015), Grünwald et al. (2016), Carbajal-Márquez et al. (2020), and Clause et al. (2021), but see Reyes-Velasco et al. (2022). Following Campbell and Lamar (2004), we exclude the snake *Laticauda colubrina* from this count because there are no voucher specimens or photographs that demonstrate its existence in Chiapas (Reyes-Velasco and Ramírez-Chaparro 2019). Conservatively, we also exclude the snake *Cenaspis aenigma* because it is only known from Cerro Baúl in Los Chimalapas (Campbell et al. 2018), which is an area that is politically contested by the states of Chiapas

and Oaxaca (Clause et al. 2021, but see Mata-Silva et al. [2021] for an alternative point of view). We predict that future sampling in underexplored areas of Chiapas will reveal additional discoveries of comparable biogeographic importance to that reported in this study, and we encourage such field efforts.

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Author Contributions

Conceptualization: JAHG. Data curation: JAHG. Funding acquisition: JAHG, AGC. Investigation: JAHG, AGC, RLR, RACM. Resources: JAHG, LAMA. Visualization: JAHG, RLR. Writing – original draft: JAHG. Writing – review and editing: JAHG, AGC, RLR, RACM, JSR.

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Supplemental Data

Supplemental data is available in the form of a complete Spanish translation of this English version of the manuscript. This supplemental translation has been carefully checked for consistency with the English version.

Appendix

Table A1. Localities for *Mastigodryas dorsalis* obtained from museum collections, review of the scientific literature, iNaturalist, and our fieldwork.

Country	State/ department	Municipality*	Locality**	Latitude	Longitude	Elevation (m)†	Voucher and original source‡
Mexico	Chiapas	Las Margaritas	1 km al sur de Santiago Guelatao	16.4524	−091.7832	2110	LACM PC 2989–2692, present study
Mexico	Chiapas	La Trinitaria	Lagos de Monte Bello near Sumidero de Río Comitán [Lagunas de Montebello near Sumidero of Río Comitan]	16.113	−091.717	1520	CAS 163808, Montingelli et al. 2019
Mexico	Chiapas	La Trinitaria	2 km al este de Tziscao	16.0825	−091.6644	1600	ECO-SC-H-3492, present study
Guatemala	Baja Verapaz	Purulhá	2.1 km W Purulhá	15.235	−090.247	ca. 1620	KU 191021
Guatemala	Baja Verapaz	Purulhá	Cerro Quisis	15.19	−090.24	1800–2200	UTA R-6563, 7103–7104, 7742
Guatemala	Baja Verapaz	Purulhá	Carretera Salamá-Pantin	15.2355	−090.287	1510	UTA R-42409
Guatemala	Baja Verapaz	Salamá	Plantación Santa Teresa, 7.7 km SSE Purulhá	15.1713	−090.2084	1600	UTA R-6489–6491, 6501
Guatemala	Baja Verapaz	Salamá	4.80 mi S Purulhá	15.20	−090.21	1620	UTA R-6083–6084
Guatemala	Baja Verapaz	Salamá	La Unión Barrios	15.1821	−090.2068	1530	KU 187333–187334, UTA R-7749–7750
Guatemala	Baja Verapaz	Salamá	Cerro Verde; W side Cerro Verde	15.18	−090.19	1500–2260	UTA R-6545, 7105–7106
Guatemala	Baja Verapaz	Salamá	3.2 km SE Unión Barrios	15.159	−090.184	ca. 1580	UTA R-6582
Guatemala	Baja Verapaz	San Jerónimo	1 km S Matanzas	15.095	−090.188	ca. 1500	KU 187332, Montingelli et al. 2019
Guatemala	Baja Verapaz	San Jerónimo	CA-14, 27.0 mi N junction of CA-14 and CA-9	15.015	−090.230	ca. 1300	MVZ 146966, Montingelli et al. 2019
Guatemala	Chimaltenango	Acatenango	Quisaché	14.521	−090.939	1750	NHMUK 1907173
Guatemala	Chimaltenango	Yepocapa	Yepocapa	14.50	−090.95	ca. 1400	UMMZ 107044–107048, Montingelli et al. 2019
Guatemala	El Quiché	Joyabaj	Joyabaj	14.99	−090.807	ca. 1370	KU 187335, Montingelli et al. 2019
Guatemala	El Quiché	Uspantán	Uspantán, Aldéa El Chimel [Aldea Laj Chimel]	15.37	−090.87	2000–2400	UTA R-45594
Guatemala	Escuintla	Escuintla	Finca El Salto	14.30	−090.75	ca. 300	MVZ 88456, Montingelli et al. 2019; specimen identified as *M. melanolomus* in VertNet
Guatemala	Escuintla	Masagua	ca. 6.0 km NNE Escuintla, Finca San Fernando	14.353	−090.768	ca. 590	UTA R-26094
Guatemala	Escuintla	Palín	S slope Volcán de Aqua [Agua], Finca Rosario Vista Hermosa	14.382	−090.758	ca. 820	UTA R-22144, 26093, 37284
Guatemala	Escuintla	—	Finca El Rosario Vista Hermosa, Sur Volcán de Agua	14.39	−090.74	900	UTA R-37284, Jadin & Parkhill 2011
Guatemala	Guatemala	Fraijanes	3 airline km NE of Fraijanes	14.4756	−090.411	1740	iNaturalist 46436493
Guatemala	Guatemala	Guatemala	INAFOR	14.586	−090.533	2000–2200	UVGR000005
Guatemala	Guatemala	Mixco	Mixco, Cuidad Satelite	14.631	−090.607	ca. 1720	UTA R-45289
Guatemala	Guatemala	Villa Canales	7.5 airline km SE of the summit of Volcán Pacaya	14.326	−090.561	1150	iNaturalist 9872865
Guatemala	Huehuetenango	Jacaltenango	Jacaltenango	15.66	−091.70	1310	UMMZ 89216, Montingelli et al. 2019
Guatemala	Izabal	El Estor	Sierra de Santa Cruz, Finca Semuc	15.689	−089.336	ca. 920	UTA R-22756
Guatemala	Jutiapa	Jutiapa	7 mi WSW Jutiapa	14.253	−089.993	ca. 920	KU 44119
Guatemala	Sacatepequez	Antigua Guatemala	Antigua Guatemala, San Felipe de Jesus	14.567	−090.733	ca. 1610	UTA R-39562
Guatemala	Sacatepequez	Antigua Guatemala	Antigua Guatemala, Finca Gasconia (Aldea San Juan Gascón)	14.565	−090.702	ca. 1650	UTA R-45874
Guatemala	Sacatepéquez	Ciudad Vieja	Volcán Agua [Volcán de Agua]	14.52	−090.76	ca. 1570	CAS 67002, Montingelli et al. 2019
Guatemala	Sacatepéquez	San Miguel Dueñas	San Antonio	14.52	−090.80	ca. 1470	CAS 67003, Montingelli et al. 2019
Guatemala	Sololá	Panajachel	Panajachel	14.74	−091.16	ca. 1660	UVGR000352, MCZ 22440, Montingelli et al. 2019
Guatemala	Sololá	San Lucas Tolimán	Vol St Lucas [Volcán Atitlán]	14.63	−091.13	ca. 1850	MCZ 25215, 28100
Guatemala	Sololá	Santa Catarina Palopó	Panajachel Hotel Villa Santa Catarina	14.7233	−091.1343	ca. 1590	UTA R-45283
Guatemala	Sololá	Santiago Atitlán	S of Santiago Atitlán, between Lago de Atitlán and Volcán Atitlán	14.60	−091.22	1600–2000	iNaturalist 17504521
Guatemala	Sololá	Santiago Atitlán	Santiago Atitlán	14.64	−091.23	ca. 1600	iNaturalist 107008646
Guatemala	Suchitepéquez	Chicacao	Finca El Naranjo, W slope Volcán Santa Clara	14.61	−091.33	1160–1830	UIMNH 46121, 46131–46135, Smith 1959
Guatemala	Zacapa	Gualán	7.8 km NNW San Lorenzo Sierra de las Minas	15.20	−089.44	ca. 1820	KU 191022
Guatemala	Zacapa	La Unión	La Unión, Sierra del Merendón, Cerro del Mono (Lado Sur), Finca El Chorro	14.94	−089.28	ca. 1460	UTA R-37282
El Salvador	Ahuachapán	San Francisco Menendez	Parque Nacional El Imposible, La Fincona	13.848	−089.980	ca. 800	MUHNES 1109, Köhler et al. 2006

Country	State/ department	Municipality*	Locality**	Latitude	Longitude	Elevation (m)†	Voucher and original source‡
El Salvador	Chalatenango	—	E slope Los Esesmiles [Los Esesmiles, Cerro El Pital]	14.37	−089.11	2000–2300	MVZ 40409–40410, Köhler et al. 2006
El Salvador	Cuscatlán	Tenancingo	0.4 km N Tenancingo	13.840	−088.985	ca. 570	KU 183920, Köhler et al. 2006
El Salvador	La Libertad	Colón	Los Chorros between Nuevo San Salvador [=Santa Tecla] and Colón	13.695	−089.321	700	SMF 43108, Köhler et al. 2006
El Salvador	La Libertad	—	Finca Los Cedros	13.69	−089.52	ca. 1000	SMF 43199, Köhler et al. 2006; this locality may actually lie in the Department of Sonsonate
El Salvador	La Unión	Conchagua	Volcán Conchagua	13.28	−087.85	ca. 920	KU 183918, Köhler et al. 2006
El Salvador	Morazán	—	N slope Mt. Cacahuatique [Cacaquatique, Caraguatigne]	13.77	−088.22	ca. 1350	MVZ 40408, Köhler et al. 2006
El Salvador	Santa Ana	Chalchuapa	Chalchuapa, Laguna Cuscachapa [Cuzcachapa]	13.98	−089.67	690	MUHNES 1214, Köhler et al. 2006
El Salvador	Santa Ana	Metapán	7 airline km SSW of Metapán	14.2637	−089.4618	500	iNaturalist 28877530
El Salvador	Santa Ana	Santa Ana	Cerro Verde [Parque Nacional Cerro Verde]	13.83	−089.62	1960	SMF 81477, Köhler et al. 2006
El Salvador	Usulután	Ozatlan or Tecpan	Canton El Palmital on road between Carretera del Litoral and Santiago de Maria [rd to Santiago de María, 1 km after Desvío a Ozatlán]	13.40	−088.50	ca. 300	KU 289864, Köhler et al. 2006
Honduras	Choluteca	San Marcos de Colón	Las Mesas	13.3344	−086.7252	1300	CM 157707, Espinal et al. 2014
Honduras	Comayagua	Siguatepeque	7 airline km SE of Taulabé	14.6294	−087.9339	1100	iNaturalist 52277117
Honduras	Copán	Copán Ruinas	near Río Amarillo [Parque Arqueológico Río Amarillo]	14.97	−089.13	ca. 800	USNM 507438–507439, McCranie 2011
Honduras	Copán	El Paraíso or San Antonio	Quebrada Grande	15.09	−088.92	1370	UF 157615, USNM 508409, McCranie 2011
Honduras	Copán	San Antonio	near San Joaquín [Oriente de San Joaquín]	15.06	−088.91	ca. 1440	SMF 79135, McCranie 2011
Honduras	Cortés	Santa Cruz de Yojoa	Finca Fé, 1 mi W El Jaral [Finca Los Naranjos]	14.94	−088.04	ca. 660	LSUMZ 23822–23823, Meyer & Wilson 1971
Honduras	Cortés	San Pedro Sula	5 airline km SSE of Cuyamelito	15.563	−088.305	420	iNaturalist 15308830
Honduras	Cortés	San Pedro Sula	El Cusuco [Parque Nacional El Cusuco, Visitors Center]	15.4968	−088.2115	1620	USNM 578027, McCranie 2011
Honduras	Cortés	San Pedro Sula	Guanales Camp [Parque Nacional El Cusuco]	15.49	−088.23	ca. 1300	UF 144700, McCranie 2011
Honduras	El Paraíso	Danlí	near Jamastrán [Valle de Jamastrán]	14.2	−086.2	ca. 400	UNAH 1850, McCranie 2011
Honduras	El Paraíso	San Lucas	2 airline km WNW of San Lucas	13.7456	−086.9746	1530	iNaturalist 41504979
Honduras	El Paraíso	Trojes	Cifuentes	14.06	−086.11	830	UNAH 4992, McCranie 2011
Honduras	Francisco Morazán	Distrito Central	4 airline km W of El Chimbo	14.139	−087.158	1450	iNaturalist 55238845
Honduras	Francisco Morazán	Distrito Central	Cerro El Tigre, Juticalpa [Cerro La Tigra, Parque Nacional La Tigra]	14.20	−087.12	ca. 1800	USNM 580337
Honduras	Francisco Morazán	Distrito Central	Rancho Quemado	14.20	−087.07	1420	AMNH 70206, Wilson & Meyer 1982
Honduras	Francisco Morazán	Distrito Central	Tegucigalpa	14.08	−087.20	ca. 1060	UTA R-53228
Honduras	Francisco Morazán	Ojojona	1.5 airline km NE of Ojojona	13.9494	−087.2835	1410	iNaturalist 94162140
Honduras	Francisco Morazán	San Antonio de Oriente	Northeastern edge of Reserva Biológica Uyuca	14.035	−087.076	1620	UVS-V 1303, van den Berghe & Townsend 2020
Honduras	Francisco Morazán	San Antonio de Oriente	El Zamorano [Escuela Agrícola Panamericana]	14.01	−087.01	ca. 800	AMNH 49798, MCZ 49798–49799, Wilson & Meyer 1982
Honduras	Francisco Morazán	San Antonio de Oriente	8 km WNW El Zamorano	14.04	−087.06	ca. 1300	KU 103261, Wilson & Meyer 1982
Honduras	Francisco Morazán	San Antonio de Oriente	San Antonio de Oriente	14.04	−087.02	1200	AMNH 70163, McCranie 2011
Honduras	Francisco Morazán	San Buenaventura	9 airline km ESE of Ojojona	13.918	−087.205	1350	iNaturalist 48502862
Honduras	Francisco Morazán	San Juan de Flores	El Hatillo	14.28	−087.05	ca. 750	UNAH 2478, McCranie 2011
Honduras	Francisco Morazán	Valle de Ángeles	Las Golondrinas [Sendero Las Golondrinas]	14.18	−087.05	ca. 1550	USNM 578354, McCranie 2011
Honduras	Francisco Morazán	Valle de Ángeles	Valle de Ángeles	14.16	−087.04	1320	UNAH 0756, McCranie 2011
Honduras	Intibucá	Intibucá or La Esperanza	ca. 10 km E La Esperanza	14.29	−088.07	ca. 1700	KU 194337, Wilson & Meyer 1985
Honduras	Intibucá	Yamaranguila	Yamaranguila	14.28	−088.24	ca. 1750	UNAH 5010, Wilson et al. 1976 (listed by McCranie 2011 as UNAH 0009)
Honduras	La Paz	Marcala	Marcala	14.16	−088.03	ca. 1250	CM 69004, Hahn 1971
Honduras	La Paz	—	Cantón Sabaneta, 10.5 km NE Perquín	14.05	−088.07	1900	KU 183916–183917, McCranie 2011
Honduras	La Paz	—	Cantón El Zancudo, 13 km NE Perquín	14.05	−088.09	1900	KU 183919, McCranie 2011; country erroneously listed as El Salvador by Montingelli et al. 2019

Country	State/ department	Municipality*	Locality**	Latitude	Longitude	Elevation (m)†	Voucher and original source‡
Honduras	Lempira	Erandique	Erandique	14.24	−088.47	ca. 1250	CM 69005, Hahn 1971
Honduras	Lempira	Gracias	dam above Parque Nacional Celaque Centro de Visitantes	14.56	−088.64	ca. 1500	UNAH 1764, 2983, McCranie 2011
Honduras	Lempira	San Manuel Colohete	1 airline km NW of San Manuel Colohete	14.454	−088.683	1690	iNaturalist 20015743
Honduras	Ocotepeque	Ocotepeque	Las Hojas	14.45	−089.30	2000	USNM 578024, McCranie 2011
Honduras	Ocotepeque	Ocotepeque	Sumpul	14.40	−089.12	2100–2200	USNM 578025–578026, McCranie 2011
Honduras	Ocotepeque	San Marcos or San Francisco del Valle	near San Marcos de Ocotepeque	14.41	−088.96	ca. 950	UF 116497, McCranie 2011
Honduras	Ocotepeque	Sinuapa	20.1 km [12.5 mi] E Nueva Ocotepeque	14.469	−089.093	ca. 1900	LSUMZ 35310, 35315, Wilson & Meyer 1982
Honduras	Ocotepeque	Sinuapa or La Labor	22.5 km E Nueva Ocotepeque [El Portillo de Ocotepeque]	14.465	−089.072	ca. 2000	Color photograph in Wilson & Meyer 1985; tail in stomach of *Micrurus browni* specimen KU 214785, McCranie 2011
Honduras	Olancho	Catacamas	Piedra Blanca	14.88	−085.90	900–1300	USNM 578353, McCranie 2011
Honduras	Olancho	Catacamas	Quebrada de Agua	14.9355	−085.9046	1300	USNM 565813, McCranie 2011
Honduras	Olancho	Gualaco	near La Venta	15.08	−085.88	ca. 500	KU 200501, Wilson & Meyer 1985
Honduras	Olancho	La Unión	Montaña del Ecuador [Parque Nacional La Muralla]	15.12	−086.70	1000–1700	UNAH 3785, USNM 337505–337509, McCranie 2011
Honduras	Olancho	La Unión	Centro de Vistantes, Parque Nacional La Muralla	15.10	−086.75	1430	UNAH 3731, 3784, USNM 337510–337511, McCranie 2011
Honduras	Santa Bárbara	Las Vegas	5 airline km NW of Las Vegas	14.913	−088.107	2000–2200	iNaturalist 18116573
Honduras	Santa Bárbara or Cortés	Las Vegas or Santa Cruz de Yojoa	El Jaral–El Mochito road	14.88	−088.07	650–1260	AMNH 70149, Wilson & Meyer 1982
Honduras	Yoro	Yoro	2.5 airline km NNE of La Fortuna [Cordillera Nombre de Dios]	15.435	−087.311	ca. 1800	USNM 508407–508408, 559719, McCranie 2011
Honduras	Yoro	Yoro	Montaña La Ruidosa, above Calpules	15.09	−087.05	1000–1620	KU 203010, Wilson & Meyer 1985
Honduras	Yoro	Yoro	Subirana Valley	15.20	−087.45	750–1000	UMMZ 79456, Wilson & Meyer 1982
Honduras	Yoro	Yoro	Mataderos Mountains [Montañas de Mataderos]	15.20	−087.36	ca. 1050	MCZ 38727, Wilson & Meyer 1982 (McCranie 2011 also lists MCZ 38728)
Honduras	Yoro	Yorito	Portillo Grande	15.09	−087.34	1300	FMNH 21878–21879, MCZ 38732, Wilson & Meyer 1982
Honduras	Yoro	Yorito	Yorito [Las Posas, Yorito, 3,800 ft]	15.06	−087.28	1160	MCZ 38734, Wilson & Meyer 1982
Nicaragua	Estelí	Conadega	Finca Venecia, 7 km N and 16 km E de Conadega	13.421	−086.258	ca. 1190	KU 86184, Montingelli et al. 2019
Nicaragua	Estelí	San Nicolás	11 miles S (by Hwy 1) Esteli (town)	12.9318	−086.3538	1010	LACM 74140
Nicaragua	Jinotega	Jinotega	10 km north of Matagalpa	13.016	−085.918	ca. 1520	SMF 78286
Nicaragua	Jinotega	Jinotega	5 mi S, 2 mi E Jinotega	13.011	−085.953	ca. 910	KU 42322, Montingelli et al. 2019
Nicaragua	Jinotega	Jinotega	Santa María de Ostuma	13.005	−085.925	1200–1400	KU 101913, Montingelli et al. 2019
Nicaragua	Matagalpa	Matagalpa	Finca Tepeyac, 10.5 km N, 9 km E Matagalpa	13.02	−085.834	ca. 970	KU 86185, Montingelli et al. 2019
Nicaragua	Matagalpa	Matagalpa	Selva Negra al norte de Matagalpa	13.00	−085.91	ca. 1260	SMF 77811, 77795,78266
Nicaragua	Matagalpa	Matagalpa	4.5 km (by road) from center of Matagalpa on road to Jinotega	12.9587	−085.9197	ca. 940	MVZ 263776

*A dash "—" indicates that the available data are too geographically imprecise to confidently assign the record to one or even two municipalities.

**Square brackets "[]" indicate an alternative or more precise locality description.

†All elevation data are rounded to the nearest 10 m, and values preceded by "ca." are rough estimates due to the imprecision of the available locality data.

‡American Museum of Natural History (AMNH); California Academy of Sciences (CAS); Carnegie Museum of Natural History (CM); El Colegio de la Frontera Sur, Unidad San Cristóbal (ECO-SC-H); Field Museum of Natural History (FMNH); University of Kansas Biodiversity Institute (KU); Natural History Museum of Los Angeles County (LACM); Natural History Museum of Los Angeles County photographic collection (LACM PC); Louisiana Museum of Natural History (LSUMZ); Museum of Comparative Zoology, Harvard University (MCZ); Museo de Historia Natural de El Salvador (MUHNES); Museum of Vertebrate Zoology (MVZ); Natural History Museum Kansas University (NHMUK); Senckenberg Research Institute and Natural History Museum (SMF); University of Colorado Museum of Natural History (UCM); Florida Museum of Natural History (UF); University of Illinois Museum of Natural History (UIMNH); University of Michigan Museum Zoology (UMMZ); Universidad Nacional Autónoma, Honduras (UNAH); Smithsonian Institution National Museum of Natural History (USNM); University of Texas at Arlington (UTA R); Universidad del Valle de Guatemala (UVGR); Universidad Nacional Autónoma de Honduras en Valle de Sula (UVS-V).