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NEW RECORDS OF THE INTRODUCED SNAKE *INDOTYPHLOPS BRAMINUS* (SQUAMATA: TYPHLOPIDAE) IN THE STATE OF VERACRUZ, MEXICO.

NUEVOS REGISTROS DE LA SERPIENTE INTRODUCIDA *INDOTYPHLOPS BRAMINUS* (SQUAMATA: TYPHLOPIDAE) EN EL ESTADO DE VERACRUZ, MÉXICO.

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Resumen.— *Indotyphlops braminus* es una serpiente introducida en el territorio mexicano la cual ha sido registrada en diferentes estados de la república. En el estado de Veracruz anteriormente se ha reportado en tres municipios. Nuestras observaciones aportan cuatro nuevos registros para la distribución de *I. braminus* en Veracruz.

Palabras clave.— Culebrilla ciega, especie introducida, distribución, biogeografía, Veracruz.

Abstract.— *Indotyphlops braminus* is a snake introduced into Mexican territory; it can be found in different republic states. In Veracruz, it has previously been reported from three municipalities. Our observations in the present note provide four new records for the distribution of *I. braminus* in Veracruz.

Keywords.— Brahminy blind snake, introduced species, distribution, biogeography, Veracruz.

Indotyphlops braminus (Daudin, 1803) is a snake species native to the Indo-Malayan region (Broadley & Wallach, 2009; Wallach, 2009; Hedges et al., 2014). All individuals of this species are female, and it is obligatorily parthenogenic (Ota et al., 1991). Although it is considered a species of low vagility and limited dispersal capacity (Mateo, 2013), it may be the most widely distributed snake globally (Bamford & Prendergast, 2017; Uezt et al., 2021) due to its ability to survive in flower pots and small containers used for growing plants as well as its ability to reproduce.

In Mexico it has been reported from the states of Aguascalientes, Baja California Sur, Campeche, Chiapas, Chihuahua, Durango, Guanajuato, Guerrero, Hidalgo, Jalisco, Morelos, Michoacán, Nayarit, Nuevo León, Oaxaca, Puebla, Querétaro, Quintana Roo, Sinaloa, Sonora, Tamaulipas, Veracruz, Yucatán and Zacatecas (Álvarez-Romero et al., 2008; Wallach, 2020; Uetz et al., 2021). Recently, González-Sánchez et al. (2021) provided a map of distribution of *I. braminus* in México and briefly discussed its range, nevertheless, does not provide precise locations or information on specimens. We consider only locations with verified vouchers deposited in collections (see Clause et al., 2016). For Veracruz, it has been reported formally from the municipalities of Xalapa (Guzmán-Guzmán & Aranda, 2016; Castañeda-Ortega & Guzmán-Guzmán, 2020), Coatepec (Aguilar-López & Estrada-Contreras, 2021), and Veracruz (Mendoza et al., 1993).

In the present contribution, we report four new municipal records for I. *braminus* from the state of Veracruz (Table 1). These records are the result of casual observations rather than formal surveys for the species. We deposited either a specimen voucher

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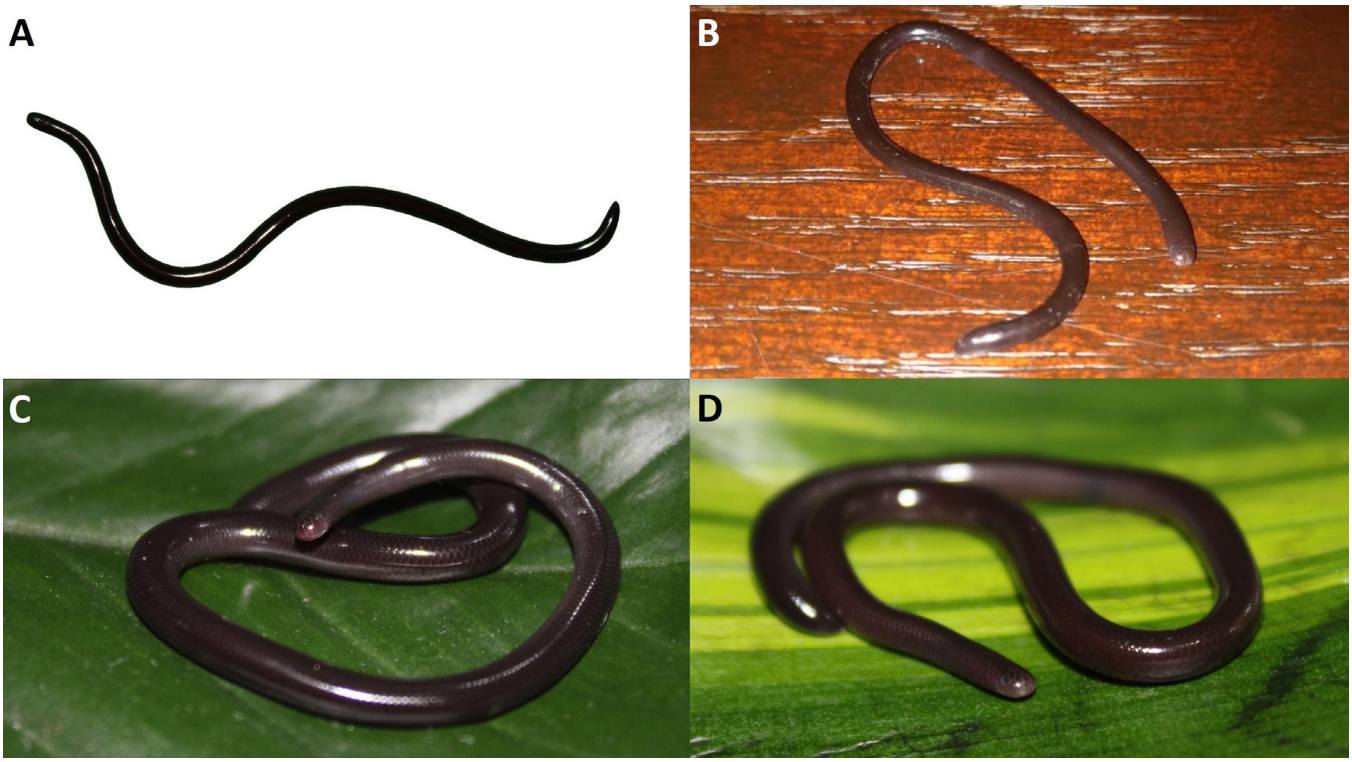

Figura 1. Individuos de *Indotyphlops braminus* de Veracruz, México. A) Municipio de Amatlán de los Reyes. B) Municipio de Alvarado. C) Municipio de Cosamaloapan. D) Municipio de Fortín de las Flores. Foto por EMPG (A), AFM (B), VVC (C, D).

Figure 1. Individuals of *Indotyphlops braminus* from Veracruz, Mexico. A) Municipality of Amatlán de los Reyes. B) Municipality of Alvarado. C) Municipality of Cosamaloapan. D) Municipality of Fortín de las Flores. Photo by EMPG (A), AFM (B), VVC (C, D).

Table 1. Previous and current records of the distribution of *Indotyphlops braminus* in Veracruz, Mexico.
Tabla 1. Registros previos y actuales de la distribución de *Indotyphlops braminus* en Veracruz, México.

Municipality	Locality	Georeference	Voucher/Reference
Alvarado	Colonia Los Aguacates	18.77747° N, 95.769° W	LACM PC 2704/ this work
Coatepec	Coatepec	19.45217° N, 96.9697° W	CARIE 1293/ Aguilar-López and Estrada-Contreras, 2021
Cosamaloapan	Gabino Barreda	18.18987° N, 96.09536° W	ITSZ-R- 261; LACM PC 2705/ this work
Fortín de las Flores	Old railway station	18.90169° N, 97.0001° W	ITSZ-R- 262/ LACM PC 2706/ this work
Amatlán de los Reyes	Venta Parada	18.8528° N, 96.8469° W	LACM PC 2703/ this work
Veracruz	Playa Macambo	19.20889° N, 96.11889°W	MZFC 05480 / Mendoza et al., 1993
Xalapa	"5 de Febrero" cemetery (Xalapa old municipal cemetery)	19.5342° N, 96.91777° W	UV 0899, UV 0900, UV 0901/ Guzmán-Guzmán and Aranda, 2016; Castañeda-Ortega and Guzmán-Guzmán, 2020
Xalapa	Calle Betancourt	19.53204° N, 96.92677° W	UV 0920 / Castañeda-Ortega and Guzmán-Guzmán, 2020
Xalapa	Avenida Manuel Ávila Camacho	19.52862° N, 96.92899° W	UV 0935 / Castañeda-Ortega and Guzmán-Guzmán, 2020
Xalapa	Calle General Adalberto Tejeda	19.529712° N, 96.912170° W	UV 0902 / Castañeda-Ortega and Guzmán-Guzmán, 2020

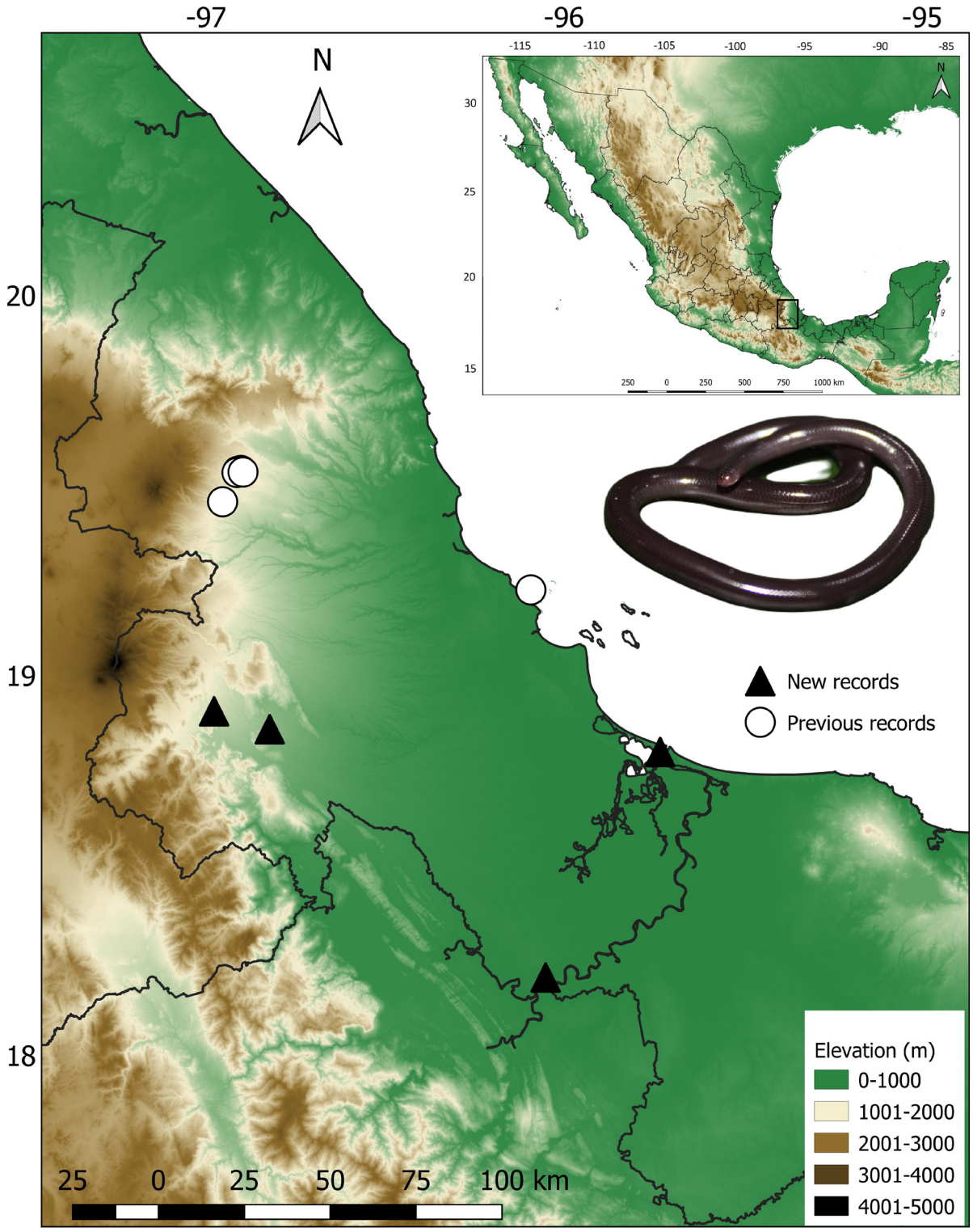

Figura 2. Mapa de distribución de *Indotyphlops braminus* en los estados de Veracruz, México. Registros con vouchers en museos.

Figure 2. Distribution map of *Indotyphlops braminus* in the state of Veracruz, Mexico. Reports with museum voucher.

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at the herpetological collection of the Instituto Tecnológico Superior de Zongolica (ITSZ-R), or a digital photographic voucher at the Natural History Museum of Los Angeles County (LACM PC). We identified *I. braminus* based on two diagnostic characters: ocular scale separated from lip by supralabial, and 20 scale rows around the body (Canseco-Márquez & Gutierrez-Mayén, 2010; Heimes, 2016).

On 9 September 2019, at 18:40h, we observed an individual (LACM PC 2703; Fig. 1A) on the federal highway Córdoba-Boca del Río, at Venta Parada, municipality of Amatlán de los Reyes (18.8528° N, 96.8469° W, WGS 84; elev. 605 m a.s.l.). This record is located at 68 km S (airline distance) from the closest previously reported locality in the municipality of Coatepec (Colección de Anfibios y Reptiles del Instituto de Ecología A. C.; CARIE 1293; Aguilar-López & Estrada-Contreras, 2021).

On 18 June 2020, at 12:30h, we observed an individual (LACM PC 2704; Fig. 1B) in the garden at the Aguacates neighborhood of municipality of Alvarado (18.77747° N, 95.769° W, WGS 84, elev. 35 m a.s.l.). On 30 June 2020, around 13:30h, we observed a second individual at the same locality. This record is located at 60 km SW (airline distance) from the closest previously reported locality Playa Mocambo, municipality of Veracruz (Museo de Zoologia, Facultad de Ciencias, Universidad Nacional Autonoma de Mexico; MZFC 05480; Mendoza et al., 1993).

On 19 November 2020, at approximately 12:00h, we observed an individual (SVL=132 mm; TL= 4 mm) at Gabino Barreda in the municipality of Cosamaloapan de Carpio (18.1898° N, 96.0953° W, WGS 84, elev. 40 m a.s.l.) in a nursery of ornamental plants. This record (LACM PC 2705; ITSZ-R- 261; Fig. 1C) is 111 km S (airline distance) from the closest previously reported from Playa Mocambo, municipality of Veracruz (MZFC 05480; Mendoza et al., 1993).

On 12 February 2021 around 22:00, we observed an individual (LACM PC 2706; Fig. 1D) near the old railway station in Fortín de las Flores, municipality of Fortín de las Flores (18.901686°N, 97.0001°W, WGS 84, elev. 1010 m) under a concrete slab. Additionally, other individual (SVL=122 mm; TL=3 mm) was collected at the same site on 14 May of 2021 (ITSZ-R- 262). This record is 62 km S (airline distance) from the closest previous report in the municipality of Coatepec (CARIE, 1293; Aguilar-López & Estrada-Contreras, 2021).

Based on the records with the most certain of georeference, we consider the distribution of *Indotyphlops braminus* has been documented formality from 10 localities in seven municipalities in the state of Veracruz (Table 1; Fig. 2). These new records are found to the west and south the state of Veracruz. Although we were only able to observe one or two individuals in the localities, the reproductive characteristics of *I. braminus* allows a single individual can to establish a new population (Vitt & Caldwell, 2014). It should be noted that *I. braminus* had not been previously considered in the region known as "Las Altas Montañas" in the center-west of the state of Veracruz, despite the studies on its distribution in Mexico (Wallach, 2020; González- Sánchez et al., 2021) and the recent studies on the diversity of amphibians and reptiles in this region (e.g. Almaráz-Vidal & Cerón, 2016).

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