

## First record and geographic distribution of *Epictia borapeliotes* (Vanzolini, 1996) (Squamata: Leptotyphlopidae) in the state of Piauí, northeastern Brazil

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Recibida: 11 Abril 2020  
 Revisada: 25 Abril 2020  
 Aceptada: 22 Junio 2020  
 Editor Asociado: D. Baldo

doi: 10.31017/CdH.2020.(2020-017)

### ABSTRACT

*Epictia borapeliotes* belongs to the family Leptotyphlopidae, composed of the smallest snakes known in the world. Currently, there are records of this species for the states of Alagoas, Bahia, Ceará, Paraíba, Pernambuco, Rio Grande do Norte, and Sergipe. However, due to its underground habits and small size, little is known about its actual distribution. Herein, we present the first record of *E. borapeliotes* for the state of Piauí, northeastern Brazil, expanding its geographical distribution about 270 km northwest from Aratuba municipality, state of Ceará, and about 750 km north of the type locality, the Santo Inácio district, Gentio do Ouro municipality, state of Bahia. In addition, we present an updated map of the geographic distribution of this species in northeastern Brazil.

Key Words: Snake; Caatinga biome; Brazilian semiarid; fossorial snakes.

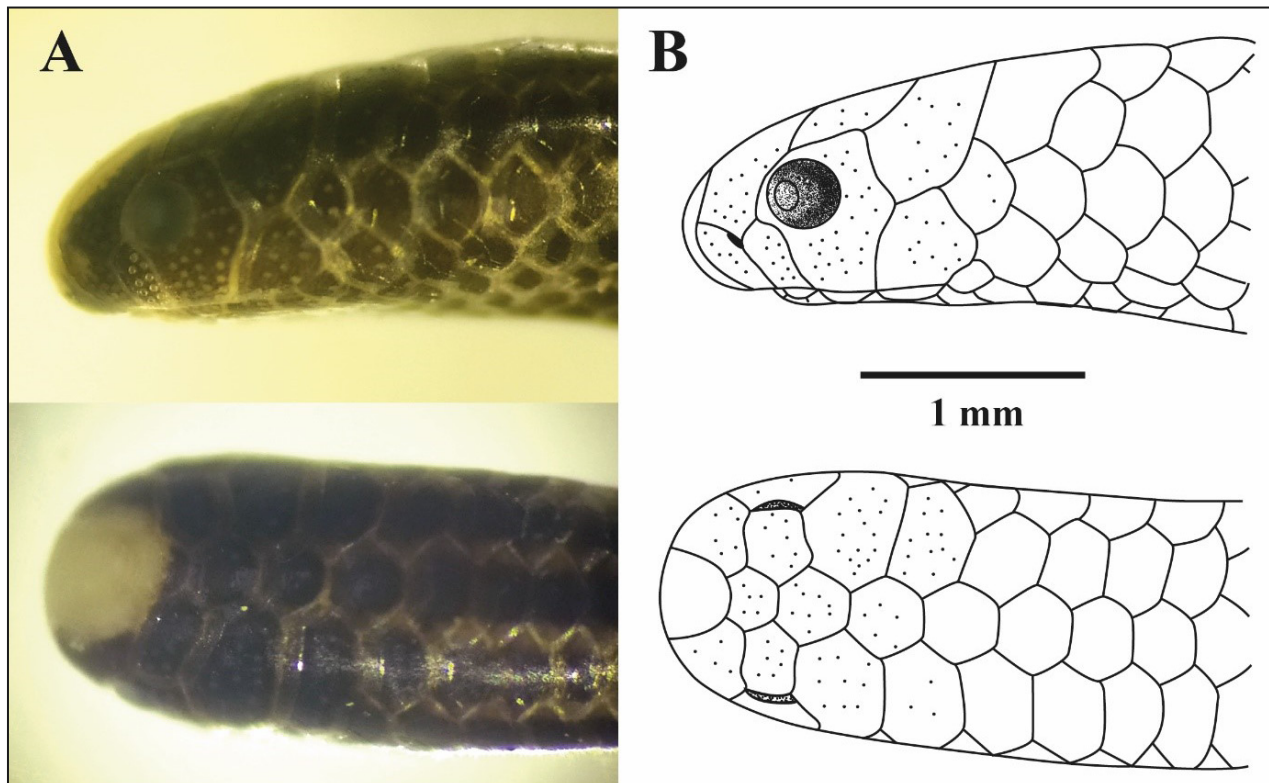
The family Leptotyphlopidae, currently represented by 14 genera and about 143 species (Martins *et al.*, 2019; Uetz *et al.*, 2020), is widely distributed in Africa, Central and South America, and West Indies, some few species in North America, Arabia, and Asia, in which occupy several types of environments, such as deserts, forests, savannas, wet areas, and even in anthropized environments (Adalsteinsson *et al.*, 2009). The group of leptotyphlopids includes the smallest known snakes in the world, usually measuring less than 30 cm, in which they have a slender body, shiny and smooth scales, and undifferentiated ventral scales (Adalsteinsson *et al.*, 2009). They are fossorial or semifossorial animals that feed on larvae or adults of small social insects; however, information about the diet of these animals is quite scarce (Sampaio *et al.*, 2018; Vanzolini, 1970; Adalsteinsson *et al.*, 2009).

In Brazil are recognized 19 species of Leptotyphlopidae distributed in four genera (*Epictia*, *Habrophallos*, *Siagonodon*, *Trilepida*): *Epictia albifrons*, *E. australis*, *E. borapeliotes*, *E. clinorostris*, *E. munoai*, *E. striatula*, *E. tenella*, *E. vellardi*, *Habrophallos collaris*, *Siagonodon acutirostris*, *S. cupinensis*, *S. septemstriatus*, *Trilepida brasiliensis*, *T. dimidiata*,

*T. fuliginosa*, *T. jani*, *T. koppesi*, *T. macrolepis*, and *T. salgueiroi* (Costa and Bérnils, 2018; Hoogmoed and Lima, 2018; Martins *et al.*, 2019). Of these, only *E. borapeliotes* is endemic to the Caatinga biome, also occurring in enclaves of Cerrado and forested areas of the coastal region of the northeastern Brazilian (Guedes *et al.*, 2014; Costa and Bérnils, 2018). This species has wide ecological tolerance, occurring both in hot and dry areas of the Brazilian semiarid as well as in wet areas of the coastal zone (Vanzolini, 1996; Guedes *et al.*, 2014). It can be found at different altitude levels, with records ranging from 0 to 938 m a.s.l (Freitas *et al.*, 2012; Guedes *et al.*, 2014), in addition to being well adapted to anthropic environments (Sampaio *et al.*, 2018; present study).

*Epictia borapeliotes* is currently distributed in seven states of the Northeast region of Brazil, however, due to its small size and fossorial habits, little is known about the real distribution of this species. Herein, we present the first record of *E. borapeliotes* for the state of Piauí and an updated map of the geographic distribution of the species in northeastern Brazil.

A small individual of *E. borapeliotes* (total length= 81 mm, sex not determined; Fig. 1) was

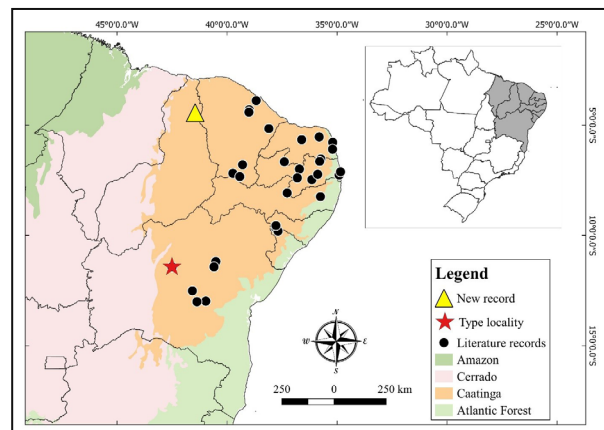


**Figure 1.** Lateral (A) and dorsal (B) view of the head of *Epictia borapeliotes* (CBPII 125) recorded in the Pedro II municipality, state of Piauí, northeastern Brazil.

accidentally found in the urban area of the Pedro II municipality, state of Piauí, northeastern Brazil ( $4^{\circ}26'2.14''$  S;  $41^{\circ}27'13.68''$  W, 600 m a.s.l). Pedro II municipality is located in Serra dos Matões, central-northern region of the state of Piauí, and inserted in the Serra da Ibiapaba Environmental Protection Area (Brasil, 1996), presenting transitional vegetation between Caatinga and Cerrado (Barros *et al.*, 2014; Santos *et al.*, 2019). The specimen was found under cashew foliage during the cleaning of a residential yard on July 13, 2019, collected manually and sent dead, fixed in 70% ethanol, to the Biology Laboratory of the Federal Institute of Education, Science and Technology of Piauí – IFPI (Instituto Federal de Educação, Ciência e Tecnologia do Piauí), *Campus* Pedro II, for identification. The individual was deposited in the Biological Collection of the IFPI, *Campus* Pedro II (CBPII 125).

Species identification was carried out by comparing the diagnostic characteristics proposed by Vanzolini (1996). The species was previously recorded for the Brazilian states of Alagoas, Bahia, Ceará, Paraíba, Pernambuco, Rio Grande do Norte, and Sergipe (e.g., Guedes *et al.*, 2014; Table 1). The states of Paraíba, Ceará, and Bahia are those with the

highest number of records of the species (see Table 1). However, to date, no record of this species has been made for the state of Piauí. Thus, the present work records the first occurrence of *E. borapeliotes* for the state of Piauí (Fig. 2), increasing its geographical distribution about 270 km in a straight line northwest from the Aratuba municipality, state of Ceará (Roberto and Veiga, 2009; Roberto and



**Figure 2.** Geographic distribution map of *Epictia borapeliotes*, with a new record (yellow triangle) for the state of Piauí, northeastern Brazil, and data from literature records (black dots). For occurrence locations, see Table 1.

**Table 1.** Localities of the Northeast region of Brazil with records of *Epictia borapeliotes* (– = information not available in consulted references).

State	Municipality	Latitude (S)	Longitude (W)	Reference
Alagoas	Olho D'Água do Casado	9°30'14.00"	37°49'48.00"	Vanzolini (1996); Guedes <i>et al.</i> (2014)
	Piranhas	9°30'05.00"	37°49'44.00"	Vanzolini (1996); Guedes <i>et al.</i> (2014)
Bahia	Mucugê	13°09'00.00"	41°24'00.00"	Freitas <i>et al.</i> (2012)
	Gentio do Ouro	11°25'47.00"	42°30'16.00"	Vanzolini (1996); Guedes <i>et al.</i> (2014)
	Itaetê	12°59'00.00"	40°58'05.00"	Guedes <i>et al.</i> (2014)
	Jacobina	11°10'53.00"	40°30'45.00"	Vanzolini (1996); Guedes <i>et al.</i> (2014)
	Miguel Calmon	11°25'41.00"	40°35'40.00"	Guedes <i>et al.</i> (2014)
	Palmeiras	12°31'00.00"	41°33'00.00"	Magalhães <i>et al.</i> (2015)
Ceará	Aratuba	4°24'41.00"	39°02'21.00"	Roberto and Veiga (2009); Roberto and Loebmann (2016); Guedes <i>et al.</i> (2014)
	Chapada do Araripe	-	-	Ribeiro <i>et al.</i> (2012)
	Limoeiro do Norte	5°09'19.00"	38°06'07.00"	Roberto and Loebmann (2016)
	Maranguape	3°53'16.00"	38°40'32.00"	Roberto and Loebmann (2016)
	Mulungu	4°18'27.00"	38°59'58.00"	Roberto and Loebmann (2016)
	Santana do Cariri	7°11'11.00"	39°44'16.00"	Roberto and Loebmann (2016)
	Várzea Alegre	6°47'46.00"	39°17'51.00"	Roberto and Loebmann (2016)
Paraíba	Araruna	6°27'13.00"	35°40'49.00"	Arzabe <i>et al.</i> (2005)
	Boqueirão	7°28'54.00"	36°08'05.00"	Guedes <i>et al.</i> (2014)
	Cacimba de Dentro	6°41'00.00"	35°44'59.00"	Arzabe <i>et al.</i> (2005)
	Campina Grande	7°13'44.00"	35°52'51.00"	Guedes <i>et al.</i> (2014)
	Conde	7°15'26.42"	34°54'21.98"	Vanzolini (1996)
	João Pessoa	7°09'26.92"	34°48'40.80"	Vanzolini (1996); Sampaio <i>et al.</i> (2018)
	Junco do Seridó	6°59'39.00"	36°42'50.00"	Vanzolini (1996); Guedes <i>et al.</i> (2014)
São José dos Cordeiros	7°28'15.00"	36°52'51.00"	Brito (2017)	
Pernambuco	Bezerros	8°14'31.00"	35°45'25.00"	Guedes <i>et al.</i> (2014)
	Sertânia	8°04'00.00"	37°16'00.00"	Cordeiro and Hoge (1974); Vanzolini (1996);
Rio Grande do Norte	Angicos	5°35'45.00"	36°36'01.00"	Guedes <i>et al.</i> (2014)
	João Câmara	5°25'38.00"	35°54'38.00"	Calixto and Morato (2017)
	Natal	5°50'24.00"	35°12'07.00"	Sales <i>et al.</i> (2009)
	Nísia Floresta	6°06'47.67"	35°10'59.25"	Vanzolini (1996)
	Serra Negra do Norte	6°39'38.00"	37°23'56.00"	Guedes <i>et al.</i> (2014); Caldas <i>et al.</i> (2016)
Sergipe	Canindé de São Francisco	9°39'52.00"	37°47'05.00"	Guedes <i>et al.</i> (2014); Souza and Bocchiglieri (2018)
	Poço Redondo	9°39'44.00"	37°47'05.00"	Guedes <i>et al.</i> (2014); Souza and Bocchiglieri (2018)

Loebmann, 2016; Guedes *et al.*, 2014), and about 750 km in a straight line north of the type locality of the species, the Santo Inácio district, Gentio do Ouro municipality, state of Bahia (Vanzolini, 1996). This new record corresponds to the westernmost known occurrence of the species. This work presents additional information about the geographic distribution of *E. borapeliotes* in a poorly studied area, reinforcing the need to conduct long-term herpetological surveys in the northern region of the state of Piauí

(Santos *et al.*, 2019).

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