Herpetology Notes 19: 779–783, published on 18 November 2026

New locality records and range extension of *Amphisbaena caetitensis* Almeida et al., 2018 in the state of Bahia, Brazil

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Amphisbaenians are limbless reptiles, whose annulated appearance is a result of rings of juxtaposed rectangular scales surrounding the body and tail (Vitt and Caldwell, 2014). Approximately 203 species are recognised in this group, distributed into six families: Amphisbaenidae, Bipedidae, Blanidae, Cadeidae, Rhineuridae, and Trogonophidae. With 184 described species, Amphisbaenidae is the most diverse and is the most widely distributed throughout the planet, occurring in Africa as well as South and Central America (Uetz et al., 2025).

Amphisbaena caetitensis Almeida et al., 2018 is a small species described from the municipality of Caetité, in the Espinhaço Massif between the sertaneja depression and the midcourse of the Contas River. The regional vegetation is predominately Cerrado/Caatinga, Seasonal Forest, and Seasonal Decidual Forest, with contact or transition vegetation zones (Ab'Sáber, 1983). The specimens used for the original description of the species were captured at Fazenda Engenho (13.8467°S, -42.2747°W, elevation 854 m), near the city of Caetité (Almeida et al., 2018).

Here, we provide new records of *A. caetitensis* from the southwestern portion of the state of Bahia, information concerning the geographic range of this recently described species, and morphometric data for the collected specimens.

We recorded four individuals during vegetation suppression activities at a mining operation in Urandi (Bahia, Brazil) between 16 January and 20 March 2023, one at each of four points: FFV1 (-14.7720°S, -42.6830°W; 824 m elevation), FFV2 (-14.7715°S,-42.6805°W; 774 m elevation), FFV3 (-14.7768°S, -42.6864°W; 811 m elevation) and FFV4 (-14.7760°S, -42.6875°W; 858 m elevation) (Fig. 1). The specimens were fixed in formalin 10%, preserved in 70% ethanol, and subsequently deposited in the Coleção Científica Herpetológica do Laboratório de Zoologia (LABZOO) do Instituto Multidisciplinar de Saúde, Campus Anísio Teixeira, Universidade Federal da Bahia, municipality of Vitória da Conquista, state of Bahia, Brazil. The collection identification numbers, RCCH (Registro da Coleção Científica Herpetológica), were RCCH 329–332.

The municipality of Urandi in Bahia is situated in the Espinhaço Range geomorphological formation, with a predominance of the Caatinga biome in the area, transitioning with Cerrado. Shrub vegetation predominates at higher elevations, with riparian forests in the valleys (tributaries of the São Francisco River and local streams). The economy of Urandi is based on agriculture, livestock, mining, industries, and wind farms (IBGE, 2024).

These records in the municipality of Urandi, Bahia, expand the geographic range of *Amphisbaena caetitensis* approximately 111 km towards the south of the type locality (Fazenda de Engenho, Caetité, Bahia) (Fig. 1). Considering the type locality at Fazenda do Engenho (FE), point FE1 is 1 km away from FE2; point FVV1 (at Fazenda Ferro Verde) is 276 m from FVV2; FFV3 is 869 m from FFV 2; and FFV4 is 141 m from FFV3. The distance from the type locality (FE1) to the farthest point in Urandi (FFV3) is 111 km, and represents the greatest currently known geographic range of the species.

Morphometric measurements of the *A. caetitensis* specimens were performed on the following anatomical features: body annuli (BA), body diameter (BD; median region of the trunk), dorsal segments (DS), head height (HH), head length (HL), head width (HW),

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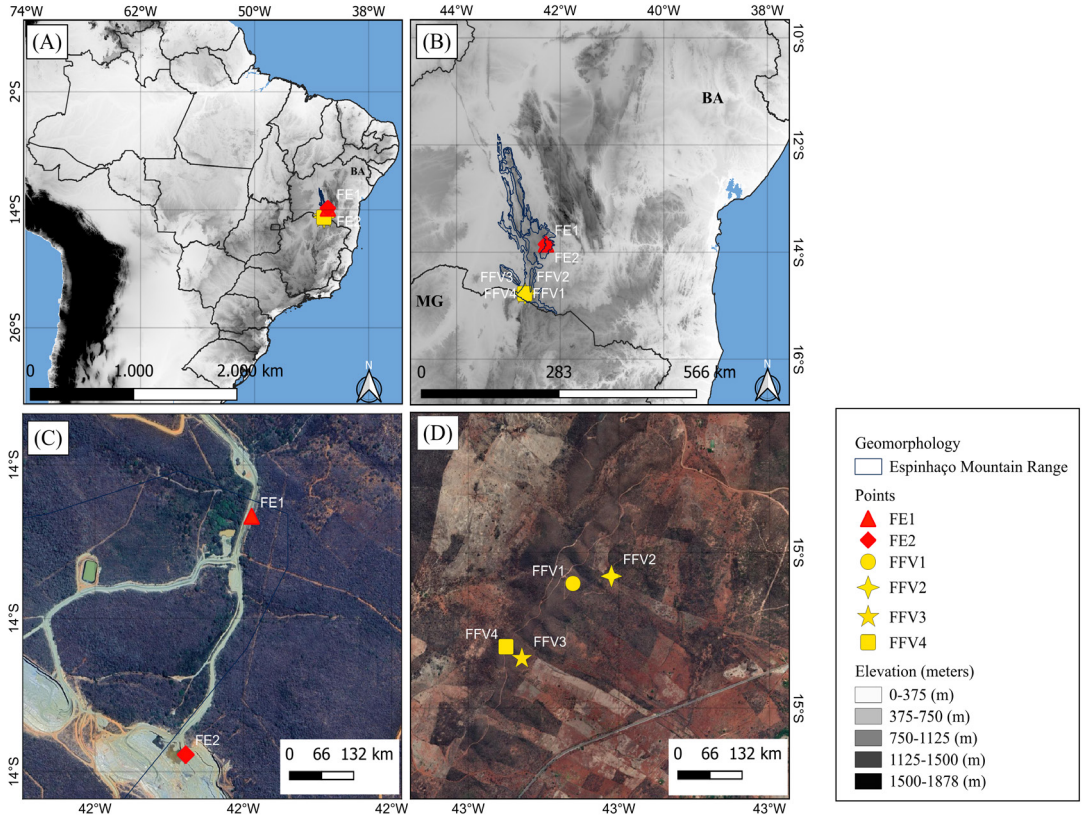


Figure 1. Geographic range of *Amphisbaena caetitensis*; red symbols represent recorded occurrences of the species in the municipality of Caetité,Bahia (Almeida et al., 2018); yellow symbols represent new records in the municipality of Urandi,Bahia. (A) Map of Brazil highlighting the locations of *A. caetitensis*; (B) Partial maps of the states of Bahia (BA) and Minas Gerais (MG) indicating all the points of occurrence of *A. caetitensis*; (C) Satellite view, highlighting the points of occurrence of *A. caetitensis* in its type locality, Fazenda do Engenho (FE) in Caetité; (D) Satellite view, highlighting the points of occurrence of *A. caetitensis* at Fazenda Ferro Verde (FFV) in Urandi.

snout-vent length (SVL), tail annuli (TA), tail length (TL), tail diameter at the fourth tail annulus (TD), and ventral segments (VS), as recommended by Gans and Alexander (1962). Measurements were made using a digital calliper (precision 0.1 mm), except for the SVL, which was measured with a flexible ruler to the nearest millimetre. As all specimens were immature, it was not possible to determine the sex. An updated occurrence map of *Amphisbaena caetitensis* was generated using QGIS software.

The diagnostic characteristics of *Amphisbaena caetitensis* are the presence of four cloacal pores, 186–194 body rings, 10–12 caudal rings, 16 dorsal and 19–20 ventral segments. Individuals can have a total length of up to 235 mm and can be easily distinguished from their congeners by the presence of modified, pointed, and triangular scales at the tip of the tail that are easily visible and identifiable (Fig. 2). *Amphisbaena uroxena* resembles *Amphisbaena caetitensis*, although the former has a brownish colour and oval caudal spines. the two species have a genetic divergence of 7.65% in terms of their mitochondrial *16S* rRNA (Almeida et al., 2018).

Despite the overall morphological similarity between *Amphisbaena caetitensis* and *A. uroxena*, the analysed specimens herein can be unambiguously assigned to *A. caetitensis* based on a consistent combination of diagnostic characters (see Table 1). All examined individuals exhibit four sequential precloacal pores, a character absent in *A. uroxena*, which lacks precloacal pores. In addition, the specimens present 186–210 body annuli (including the new records), 10–13 tail annuli, and

Table 1. Meristic and morphometric characters of *Amphisbaena caetitensis* from Urandi, Bahia, Brazil. BA = body annuli; BD = body diameter; DS = dorsal segments; HH = head height; HL = head length; HW = head width; SVL = snout-vent length; TA = tail annuli; TL = tail length; TD = tail diameter at the fourth tail annulus; VS = ventral segments. Comparisons concern those of morphometrics of *Amphisbaena caetitensis* from the present study with those from Almeida et al. (2018). RCCH = Registro da Coleção Científica Herpetológica do Laboratório de Zoologia IMS/CAT/UFBA.

Specimen	BA	TA	DS/VS	SVL (mm)	TL (mm)	BD (mm)	TD (mm)	HL (mm)	HH (mm)	HW (mm)
RCCH329	202	12	17/20	204	13.1	6.2	6.1	5.9	4.3	4.9
RCHH330	194	12	16/20	119	6.9	4.3	4.5	4.3	3.0	3.6
RCHH331	197	12	16/17	107	6.4	3.6	3.7	4.5	2.9	2.80
RCHH332	210	13	18/19	203	12.3	7.11	7.0	5.60	5.1	4.77
Almeida et al., 2018	186–194	10–12	16/19–20	187–221	13–16	6.5–8.3	6.7–8.3	6.6–7.5	4.2–5.7	4.9–6.2

16–18 dorsal and 17–20 ventral segments per midbody annulus, values that fall within or slightly expand the known variation for *A. caetitensis* and clearly differ from those reported for *A. uroxena*, which shows lower numbers of dorsal and ventral segments per annulus. The morphology of the tail tip further supports this assignment, as all individuals display pointed, triangular tubercles on the caudal apex, readily visible in lateral and dorsal views, whereas *A. uroxena* is characterised by rounded, conical tubercles restricted to a small dorsal area of the tail. Moreover, the new records presented here are geographically consistent with the previously known range of *A. caetitensis* along the Espinhaço Range in Bahia and do not overlap with confirmed localities of *A. uroxena*, which remains restricted to the Chapada Diamantina region. This morphological and biogeographic evidence corroborates the identification of all examined specimens as *A. caetitensis*.

Amphisbaena caetitensis is only known from a few specimens in Bahia State: seven in the municipality of Caetité (Almeida et al., 2018) and four in Urandi (present study). There are notable differences in the morphometric characteristics of the specimens already collected. *Amphisbaena caetitensis* specimens from the municipality of Urandi evidenced greater variations in body annuli (BA) and tail annuli (TA). The morphometric variables related to length, height, width, and body diameter (SVL, TL, BD, TD, HL, HH, and HW respectively) were smaller than those cited by Almeida et al. (2018).

The *A. caetitensis* specimens from the new locality exhibit, on average, smaller snout-vent length and other body measurements when compared to those reported for the type series. However, these differences do not exceed the range of morphometric variation currently known for the species (Almeida et al., 2018) and are here interpreted exclusively as intraspecific variation, likely associated with ontogenetic differences and developmental stage of the sampled individuals, a common pattern in fossorial reptiles and amphisbaenians (Gans and Alexander, 1962; Vitt and Caldwell, 2014). Given the reduced sample size and the lack of comparable ontogenetic series, it is not possible to infer population-level, environmental, or methodological patterns from these variations. Therefore, the measurements presented in this study should be regarded as an expansion of the known morphometric variation of *A. caetitensis*, rather than as evidence of population differentiation.

Other variables (such as diet) could be investigated to better understand the size differences seen in these individuals. Reflecting their fossorial habit, amphisbaenians generally feed on arthropods, mainly ants and termites (Esteves et al., 2008). However, amphisbaenians are still poorly studied and often neglected from a conservation point of view (Hortal et al., 2015).

Amphisbaena caetitensis is endemic to the Espinhaço Range in Bahia, a region considered to be among the most important centres of endemism and biodiversity in Brazil (Almeida et al., 2018). Continued research in the Caatinga biome will be extremely important to protect this threatened environment and contribute to understanding the distribution patterns of endemic species in the region.

Acknowledgments. The authors thank the biologist Artur Sena for donating the new specimens.

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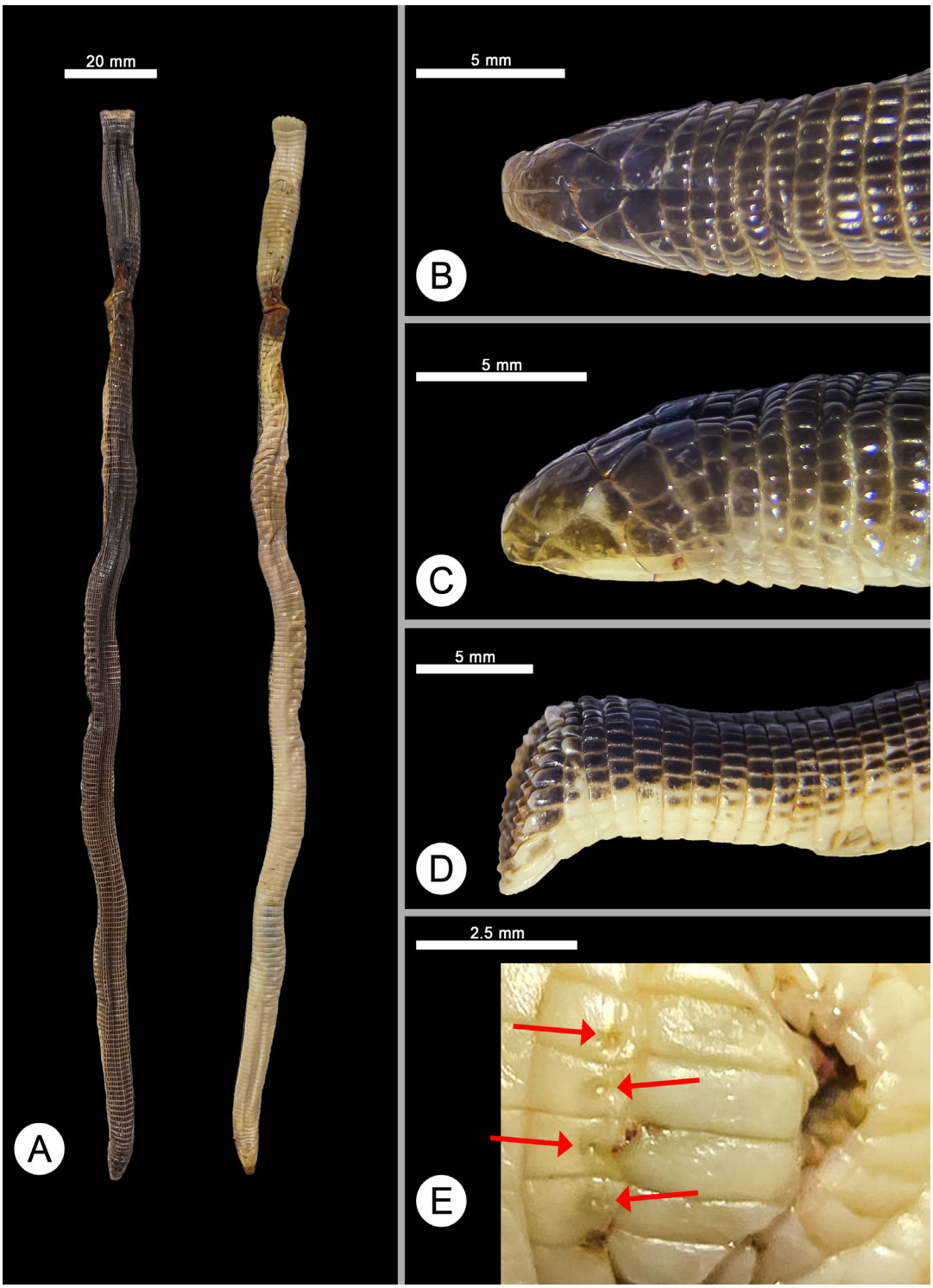


Figure 2. *Amphisbaena caetitensis* (RCCH 329): (A) Dorsal and ventral views; (B) Dorsal view of the head; (C) Lateral view of the head; (D) Lateral view of the caudal spines; (E) Cloacal region with pre-cloacal pores indicated by red arrows. Photos by Leandro B. Ferreira.

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Accepted by Andressa Bezerra