



New Southernmost Record and an Updated Distribution Map for the Serra da Mesa Wormlizard, *Amphisbaena anaemariae* (Squamata: Amphisbaenidae)

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Amphisbaenians are fossorial animals that are difficult to find and thus one of the least studied reptilian groups (Vitt and Caldwell 2014; Costa and Garcia 2019). Brazil is home to the greatest diversity of wormlizards in the world (ca. 80 of 200 currently recognized species) (Uetz et al. 2021). However, despite recent advances, the geographic ranges of many species remain poorly known and a large number feature extensive gaps in distribution (Colli et al. 2016). During a visit to the Coleção Zoológica de Referência da Universidade Federal de Mato Grosso do Sul (ZUFMS), we identified a specimen of the Serra da Mesa Wormlizard, *Amphisbaena anaemariae* Vanzolini 1997 (ZUFMS 3343; Fig. 1) from Fazenda de Ensino, Pesquisa e Extensão, Selvíria, Mato Grosso do Sul, Brazil.

Amphisbaena anaemariae is a small (SVL to 172 mm) wormlizard from central Brazil (Vanzolini 1997; S. Ribeiro et al. 2019). A sister taxon, *A. mebengokre*, recently described from a single locality, is distinguished from *A. anaemariae* by genetic distance and by having fewer caudal annuli (12–15) and relatively longer prefrontals (S. Ribeiro et al. 2019). The locality where ZUFMS 3343 was collected is the southernmost record for *A. anaemariae*, 280 km southeast of UHE Ponte de Pedra (nearest record) and 420 km southwest of Nova Ponte (former southernmost record). ZUFMS 3343 (a male) was identified as *A. anaemariae* by its round head, two precloacal pores sequentially arranged, 157 body annuli, 16 dorsal and 14 ventral midbody segments, three supralabials and three infralabials, no postmalars, and “relatively short” prefrontals (less than 30% of head length [26%]) (S. Ribeiro et al. 2019); the tail was autotomized at the fifth annulus.

This discovery triggered a review of the species’ geographic range. We searched for records of “*Amphisbaena anaemariae*” in Google Scholar (3 January 2022), reviewed

all editions of *Herpetological Review* (not always tracked by Google Scholar), and consulted our personal libraries. We did not consult the gray literature. Our search in Google Scholar resulted in 53 records, 17 with information on distribution. Some records were duplicates (i.e., the same specimen cited by two or more sources). Our personal files added two additional records not in Google Scholar (Vanzolini 1997; Vrcibradic and Soares 1999).

Based on those records, the geographic range of *Amphisbaena anaemariae* extends to UHE Luís Eduardo Magalhães in the north, UHE Ponte de Pedra in the west, Selvíria (new record) in the south, and Nova Ponte in the east. The species essentially inhabits the Cerrado ecoregion (Dinerstein et al. 2017) but one record is in the ecotone



Fig. 1. A Serra da Mesa Wormlizard (*Amphisbaena anaemariae*) (ZUFMS 3343) (SVL 142 mm) from Fazenda de Ensino, Pesquisa e Extensão, Selvíria, Mato Grosso do Sul, Brazil. Photograph by Henrique C. Costa.

between the Cerrado and Mato Grosso tropical dry forests (UHE Luís Eduardo Magalhães) and three records are in the ecotone between Cerrado and Alto Paraná Atlantic forests (Goiatuba, Uberlândia, and Selvíria) (Fig. 2). Individuals have been found in dry forests, mesophytic semideciduous forest, and disturbed areas (Santos et al. 2014; Oda et al. 2017).

A specimen (MZUSP 96810) from Parque Estadual Morro do Diabo, São Paulo (22.5597°S, 52.2764°W) previously identified as *A. anaemariae* (Teixeira et al. 2014, 2019; Dal Vechio et al. 2018), represented the previous southern-

most record for the species. However, it was reidentified as *A. alba* (Oliveira et al. 2018). The northernmost records of *A. anaemariae* cited herein were not included in a previous distribution map of the species (S. Ribeiro et al. 2019). We examined those specimens (see appendix in Costa et al. 2018) and, based on criteria listed by S. Ribeiro et al. (2019), we concluded that they were *A. anaemariae* as currently defined.

The geographic range of many amphisbaenians remains poorly known, especially in Brazil (Colli et al. 2016). This hampers our understanding of biodiversity (Hortal et al.

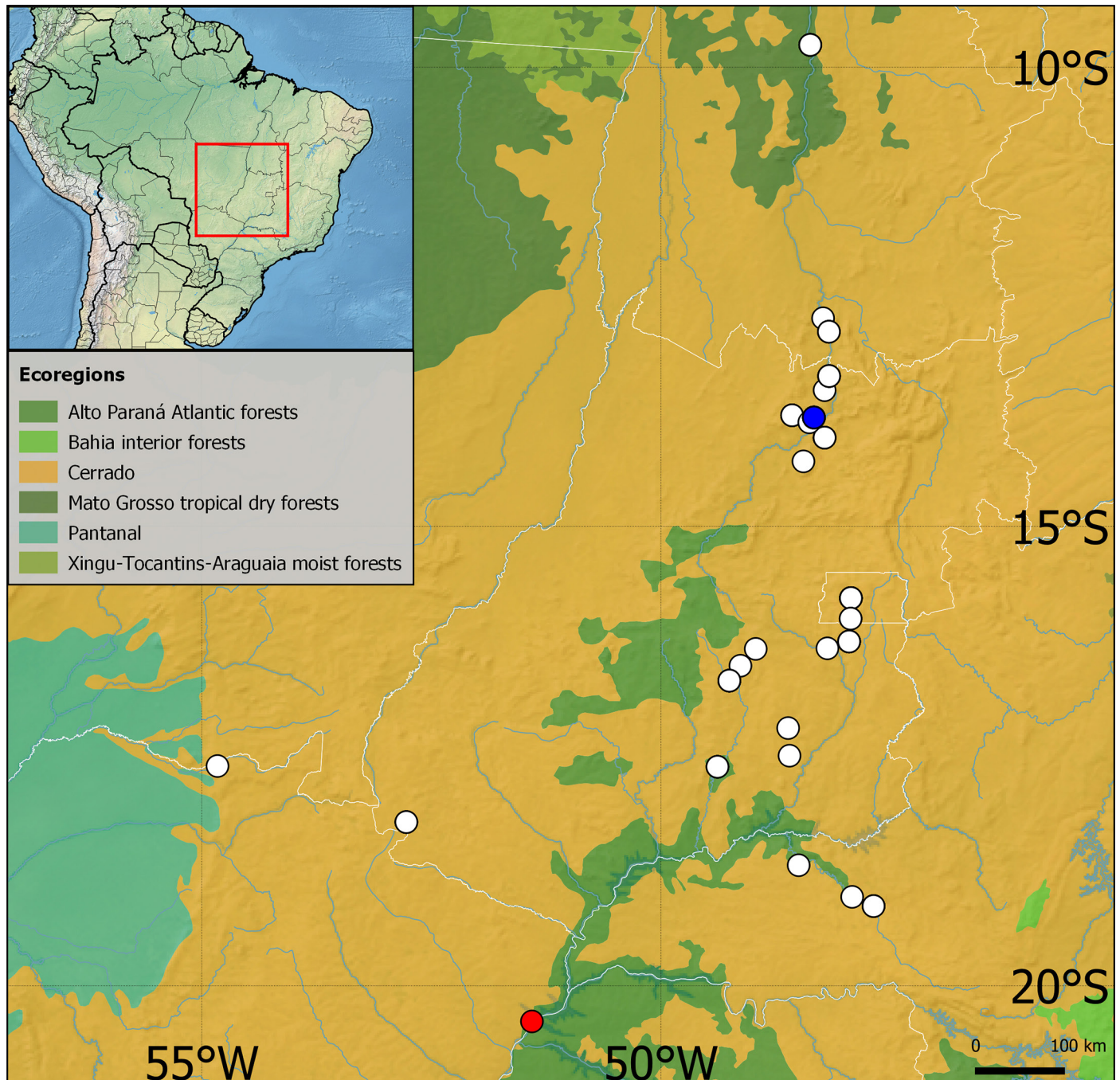


Fig. 2. An updated distribution map of the Serra da Mesa Wormlizard (*Amphisbaena anaemariae*). The type locality is marked by the blue dot, previously documented localities by white dots, and the new southernmost record by the red dot. See also Table 1.

Table 1. Known records of the Serra da Mesa Wormlizard (*Amphisbaena anaemaeriae*). All localities are in Brazil. The voucher number of the holotype and the specimen addressed in this study are indicated by bold type. State: DF = Distrito Federal; GO = Goiás; MG = Minas Gerais; MS = Mato Grosso do Sul; TO = Tocantins. Latitude and longitude in °S and °W, respectively. Coordinate precision in decreasing order: L = local; P = proximate; MS = municipal seat. Museum acronyms: AMNH = American Museum of Natural History; CEPB = Centro de Estudos e Pesquisas Biológicas, Pontifícia Universidade Católica de Goiás; CHUNB = Coleção Herpetológica, Universidade de Brasília; MNRJ = Museu Nacional, Universidade Federal do Rio de Janeiro; MTR = Miguel Trefaut Rodrigues (field series); MZUSP = Museu de Zoologia, Universidade de São Paulo; UFG = Universidade Federal de Goiás; UFMG = Universidade Federal de Minas Gerais; ZUFMS = Coleção Zoológica de Referência da Universidade Federal de Mato Grosso do Sul.

Locality	Source(s)	Voucher(s)
DF, Brasília, Área Alfa (16.0036, 47.9333) MS	Nogueira 2001	MZUSP 88130
DF, Brasília (15.7800, 47.9300) MS	Gomes and Maciel 2012; S. Ribeiro et al. 2016	CHUNB 1850, 25632, 32649–50, 32744–5, 40758, 48346–7
DF, Brasília (15.7800, 47.9300) MS	Mott and Vieites 2009	CHUNB 38647
GO, Anápolis (16.3333, 48.9667) P	Vanzolini 1997	AMNH 62155
GO, Caldas Novas, UHE Corumbá IV (16.3272, 48.1864) P	Moreira et al. 2009	—
GO, Caldas Novas (17.4961, 48.5989) P	Colli et al. 2016	—
GO, Campinacu, UHE Serra da Mesa Ponto 3 (13.8667, 48.3833) P	Vanzolini 1997	MZUSP 80925
GO, Campinacu (13.7900, 48.5708) MS	Teixeira et al. 2014, 2019; Costa et al. 2015; Dal Vecchio et al. 2018; Oliveira et al. 2018	MZUSP 103743
GO, Chapadão do Céu, Parque Nacional das Emas (18.2188, 52.7713) L	Valdujo et al. 2009	CHUNB 33960–1, 33965–6
GO, Cristianópolis (17.1953, 48.6139) P	Colli et al. 2016	—
GO, Cristianópolis, Parque Estadual Altamiro de Moura Pacheco (16.5167, 49.1333) P	Ramalho et al. 2018	CEPB 1838
GO, Goiânia (16.6789, 49.2539) MS	Gomes and Maciel 2012; S. Ribeiro et al. 2016	CHUNB 56370, 56424, 56488, 56509
GO, Goiânia (16.6789, 49.2539) MS	Pinna et al. 2014	CHUNB 56376
GO, Goiânia (16.6789, 49.2539) MS	Angiolana-Larrea et al. 2021	CEPB —
GO, Goiatuba, PCH Mota (17.6167, 49.3833) P	Costa et al. 2018; L.B. Ribeiro et al. 2018	UFMG 2879, 2896
GO, Luizânia (16.2528, 47.9500) MS	Teixeira et al. 2014, 2019; Costa et al. 2015; Dal Vecchio et al. 2016, 2018; Oliveira et al. 2018	MTR 11453
GO, Luizânia (16.2528, 47.9500) MS	Costa et al. 2015; Oliveira et al. 2018	MTR 11454, 115454
GO, Luizânia (16.2528, 47.9500) MS	Teixeira et al. 2014, 2019; Dal Vecchio et al. 2018	—
GO, Luizânia (16.2528, 47.9500) MS	Angiolana-Larrea et al. 2021	CEPB —
GO, Minaçu (13.5167, 48.2167) MS	Angiolana-Larrea et al. 2021	CEPB —
GO, Minaçu, UHE Serra da Mesa (13.8139, 48.3333) P	Moreira et al. 2009	—
GO, Minaçu, UHE Serra da Mesa (13.8139, 48.3333) P	Teixeira et al. 2014, 2019; Costa et al. 2015; Dal Vecchio et al. 2018; Oliveira et al. 2018	MZUSP 97047, 97171
GO, Minaçu, UHE Serra da Mesa (13.8139, 48.3333) P	Moreira et al. 2009	—
GO, Niquelândia, UHE Serra da Mesa Ponto 2 (14.0333, 48.2167) P	Vanzolini 1997; Gomes and Maciel 2012;	MZUSP 80224–5, 80596–601

(continued)

Locality	Source(s)	Voucher(s)
GO, Niquelândia (14.2917, 48.4472) L	S. Ribeiro et al. 2016	—
GO, —, UHE Cana Brava (13.3625, 48.1678) P	Oda et al. 2017	—
GO, —, UHE Cana Brava (13.3625, 48.1678) P	Teixeira et al. 2014, 2019; Costa et al. 2015; Dal Vechio et al. 2016, 2018; Oliveira et al. 2018	MZUSP 97217
GO, —, UHE Cana Brava (13.3625, 48.1678) P	Moreira et al. 2009	—
MS, Selviria, Fazenda de Ensino, Pesquisa e Extensão (20.3892, 51.4039) P	This study	ZUFMS 3343
MS, Sonora, UHE Ponte de Pedra (17.6086, 54.8278) P	Silva et al. 2009	MZUSP —
MG, Nova Ponte (19.1333, 47.6833) MS	Vrcibradic and Soares 1999; Pinna et al. 2014	MNRJ 6463
MG, Nova Ponte (19.1333, 47.6833) MS	Vrcibradic and Soares 1999	MNRJ 7212–4
MG, Indianópolis (19.0333, 47.9167) MS	Vrcibradic and Soares 1999	MNRJ 7309
MG, Uberlândia, PCH Malagone (18.6889, 48.4992) P	Costa et al. 2018; L.B. Ribeiro et al. 2018	UFG 548
TO, Lajeado e Miracema, UHE Luís Eduardo Magalhães (9.7571, 48.3731) P	Costa et al. 2018; L.B. Ribeiro et al. 2018	UFG 341, 343, 356, 373–4, 376, 379, 381
TO, São Salvador do Tocantins (12.7333, 48.2333) MS	Pinna et al. 2014	MZUSP 98293
TO, São Salvador do Tocantins, UHE São Salvador (12.8800, 48.1700) P	Teixeira et al. 2014, 2019; Costa et al. 2015; Dal Vechio et al. 2016, 2018; Oliveira et al. 2018	MZUSP 99394

2015) and renders adequate evaluations of extinction risk difficult (Böhm et al. 2016). Recent advances in understanding the distribution of amphisbaenians (e.g., Costa et al. 2019; Assis and Costa 2020; Roberto et al. 2021; Tavares et al. 2021; Assis et al. 2022; this note) have begun to address the problem — but additional work is necessary.

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