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Taxonomy of *Epictia munoai* (Orejas-Miranda, 1961) (Squamata: Serpentes: Leptotyphlopidae)

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Abstract

The wormsnakes Leptotyphlopidae include the smallest and thinnest snakes of the world. This group has historically few taxonomic studies and the descriptions of taxa in general are superficial, frequently preventing an accurate identification. This family includes the genus *Epictia* with many representatives with taxonomic major issues, including *Epictia munoai*. We redescribe and compare *E. munoai* with other related cisandine species in order to evaluate its taxonomic status considering the morphological analysis of specimens. A table with some diagnostic characters of each species is presented. *Epictia munoai* is distinguished from other related species mostly by low number of middorsal and midventral scales, and is distributed in coastal areas in southern Brazil, Uruguay and northeastern Argentina.

Key words: Scolecophidia, wormsnakes, Epictini, redescription, geographic variation, Cisandine species

Introdution

The fossorial and subfossorial/secretive/cryptozoic snakes of the family Leptotyphlopidae are distributed in America, Africa, and Western Asia ranging from Turkey to India (McDiarmid *et al.* 1999), represented by nearly 115 species (Adalsteinsson *et al.* 2009). Snakes from this family could attain 400 mm of total length, being the most miniaturized vertebrates of the World (Kley 2006; Pinto *et al.* 2010). The wormsnakes feed mostly on small arthropods like ants (larvae and pupae) and adults termites (Cundall and Greene 2000; Webb *et al.* 2000; Kley 2006).

Considering the small body size and their fossorial habits, leptotyphlopids are rare in herpetological collections, just as taxonomic and natural history studies (Adalsteinsson *et al.* 2009; Pinto *et al.* 2010; Pinto and Curcio 2011; Pinto and Fernandes 2012). Besides, most taxa are morphologically very similar and original descriptions of many species are often poorly informative, leading to misidentifications (Hahn 1979). Traditionally, morphology and meristic characters, such as contact between supralabial scales, pattern of cephalic shields, and body proportions, are used to diagnose these taxa (Boulenger 1893; Orejas-Miranda 1967; Kley 2006; Pinto *et al.* 2010; Pinto and Curcio 2011; Pinto and Fernandes 2012).

Originally Leptotyphlopidae included one genus *Leptotyphlops* Fitzinger 1843. Peters and Orejas-Miranda (1970) proposed five species groups to *Leptotyphlops*: *albifrons* group – species with small first supralabial not reaching the middle of the eye and not contacting the long supraocular scale; *dulcis* group – species with first supralabial not contacting the small supraocular; *melanotermus* group –12 midcaudal scales and a large supraocular not contacting first supralabial; *septemstriatus* group – rostral without tapered tip and no supraoculars; *tesselatus* group –first supralabial contacts supraocular. Franco and Pinto (2009) considered *Leptotyphlops albifrons* (Wagler *in* Spix 1824) a *nomen dubium* based on the poor description and illustrations of the taxon allied to a missing holotype, precluding a diagnosis of the species. However, another study (V. Wallach, in prep.) will add new information on the taxonomic status of *E. albifrons*. Finally, Adalsteinsson *et al.* (2009) performed a phylogenetic

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analysis of Leptotyphlopidae based on molecular data, allocating the species in two subfamilies: Leptotyphlopinae, with three tribes (Epacrophini, Myriopholini, and Leptotyphlopini), and Epictinae, with the tribes Epictini and Rhinoleptini. Considering this classification, Leptotyphlopidae currently comprises two subfamilies, five tribes, three subtribes, 12 genera and 116 species.

The genus *Epictia* (Gray 1845) comprises species with 14 midbody scales, 10-12 midcaudal scales, two supralabials, the first large, striped color pattern, dorsum with different colors (including red and yellow) and venter brown (Adalsteinsson *et al.* 2009). It is distinguished from *Siagonodon* (Peters 1881), the other genus of the subtribe Epictina, by having a large supraocular scale. *Epictia* contains 25 species distributed from Mexico, lowlands of Honduras, São Salvador and Margarita islands, Bahamas, Bonaire, and Trinidad. In South America the genus occurs in Colombia (including highlands of Andes), Brazil, south to Argentina, and Uruguay (Adalsteinsson *et al.* 2009). *Epictia munoai* (Orejas-Miranda 1961) is distributed in northern Argentina, Uruguay, and the state of Rio Grande do Sul, Brazil (Peters and Orejas-Miranda 1970). The present study aims to evaluate the taxonomic status of different populations assigned to *Epictia munoai* along its distribution, since this taxon has representative series in herpetological collections; to redescribe this taxon based on a set of morphological characters and provide diagnostic features distinguishing *E. munoai* from related taxa; and, moreover, we compare *Epictia munoai* to other species of the genus with cisandine distribution in order to provide a practical identification of this taxon.

Material and methods

We analyzed 99 specimens of *Epictia* from the following collections: Museu Nacional, Universidade Federal do Rio de Janeiro (MNRJ), Rio de Janeiro; Museu de Ciência e Tecnologia da Pontíficia Universidade Católica do Rio Grande do Sul (MCP), Porto Alegre; Universidade Federal do Mato Grosso (UFMT), Cuiabá; Instituto Butantan (IBSP), São Paulo; Museo Nacional de Historia Natural (MHNM), Montevideo; Museo Argentino de Ciencias Naturales Bernardino Rivadavia (MACN), Buenos Aires; National Museum of Natural History, Smithsonian Institution (USNM), Washington.

We compared *E. munoai* with all cisandine species of the genus through the examination of specimens (Apppendix I), photographs and literature data (Appendix II). Species description and comparisons were mostly based on meristic and morphometric character data, although literature data was also considered. Characters terminology followed Pinto and Curcio (2011).

Meristic and morphometric characters follow Wallach and Boundy (2005), Passos *et al.* (2006), Broadley and Wallach (2007), and Pinto and Curcio (2011). Measurements were taken with a dial caliper to the nearest 0.1 mm, except for total length (TL) and tail length (TAL), which were taken with a flexible ruler to the nearest 1.0 mm. Sex determination was verified according to Pinto and Curcio (2011). We tested the presence of sexual dimorphism in the following characters using analysis of variance (ANOVA): middorsal scales, midventral scales, subcaudals, total length (TL), total length/tail length (TL/TAL), tail length in proportion of total length (TAL/TL%), total length/middorsal length (TL/MD), TAL/MT (Zar, 1999). We defined three striped dorsal color patterns found in specimens examined (Fig. 1): (1) line shaped blotches (LB), (2) rectangular blotches (RB), and (3) triangular blotches (TB).

Results

Epictia munoai (Orejas-Miranda, 1961)

Leptotyphlops munoai Orejas-Miranda 1961, Act. Biol. Venezuelica, Caracas, 3: 83–97
Epictia munoai—Hedges, Adalsteinsson and Branch *in* Adalsteisson *et al*. 2009, Zootaxa, 2244:11.

Holotype. MBUCV 4547, Pozo Hondo, Tambores (31º57’S, 056º15’W), Tacuarembó Department, Uruguay, M.A. Klappenback and P.R. San Martin, 12 October, 1956.

Paratypes. MBUCV 4548-49, 4551, Pozo Hondo, Tambores, Tacuarembó Departament, Uruguay, M.A. Klappenback and P.R. San Martin, 12 October, 1956. MHNM 063 Pozo Hondo, Tambores, Tacuarembó Departament, Uruguay, M.A. Klappenback and P.R. San Martin, September, 1956. MHNM 068, Pozo Hondo, Tambores, Tacuarembó Departament, Uruguay, M.A. Klappenback and P.R. San Martin, September, 1956. MHNM

2771-96, Pozo Hondo, Tambores, Tacuarembó Departament, Uruguay, M.A. Klappenback and P.R. San Martin, September, 1956. AMNH 91508 (MHNM 063H), Pozo Hondo, Tambores, Tacuarembó Departament, Uruguay, M.A. Klappenback and P.R. San Martin, September, 1956. CM 38970 (This specimen belongs to MHNM 063 sample; however, no additional information could be found [S.P. Rogers, pers. comm.]), Pozo Hondo, Tambores, Tacuarembó Departament, Uruguay, M.A. Klappenback and P.R. San Martin, September, 1956. MNRJ 3306 (MHNM 068C; Fig. 02), Pozo Hondo, Tambores, Tacuarembó Department, Uruguay, M.A. Klappenback and P. R. San Martin, 12 October, 1956. MHNM 071, Pozo Hondo, Tambores, Tacuarembó Department, Uruguay, M.A. Klappenback and P.R. San Martin, 22 September, 1957. MHNM 2765-70, Pozo Hondo, Tambores, Tacuarembó Department, Uruguay, M.A. Klappenback and P.R. San Martin, 22 September, 1957. CAS 93104 (MHNM 0107G), Pozo Hondo, Tambores, Tacuarembó Departament, Uruguay, M.A. Klappenback and P.R. San Martin, 12 October, 1957. USNM 163506 (MHNM 0107J), Pozo Hondo, Tambores, Tacuarembó Departament, Uruguay, M.A. Klappenback and P.R. San Martin, 12 October, 1957. MHNM 2797-2809, Pozo Hondo, Tambores, Tacuarembó Department, Uruguay, M.A. Klappenback and P.R. San Martin, 12 October, 1957. MHNM 0871, Arroyo Cuaró (30°35'S, 056°50'W), Artigas Departament, Uruguay, A.Y. Ximénez, February, 1960. MHNM 0872, no specific locality, Montevideo Departament, Uruguay 1891. MHNM 0873, no specific locality, Cerro Largo Departament, Uruguay, Lucas, 1925. MHNM 0874, Sierra de la Aurora (31°03'S, 055°43'W), Rivera Departament, Uruguay P.R. San Martin, 24 March, 1961. MACN 1048, San Isidro (34°28'S, 058°30'W), San Isidro Department, Buenos Aires Province, Argentina, J. Plinch, 1895. MACN 12487, Sierra de la Ventana (38°07'S, 061°58'W), Torniquist Department, Buenos Aires Province, Argentina, M. Biraben and I. Scott, February, 1948.

Diagnosis. Distinguished from all congeners by the following combination of characters: (1) snout truncate or rounded in dorsal view, and rounded in ventral and lateral views; (2) two supralabials (1+1); (3) three infralabials; (4) supraocular scale present, not in contact with first supralabial; (5) rostral scale subtriangular or triangular in dorsal view; (6) ocular subpentagonal, with pointed apex; (7) eyes positioned on midanterior portion of ocular; (8) temporals not distinct; (9) occipitals extend to the level of second supralabial; (10) fused caudals absent; (11) middorsal scales 184-225 in males and 202-226 in females; (12) ventral scales 178-219 in males and 184-211 in females; (13) subcaudals 10-13 in males and 10-14 in females; (14) 10 scales around the middle of the tail; (15) striped pattern RB with ground color whitish-cream; and venter light brown.

Redescription of the paratype (MNRJ 3306). Adult female, 149 mm TL, 8 mm TAL; 3.6 mm MB; 2.7 mm MT; 19.6 TL/TAL; 43.6 TL/MB; 2.9 mm HL, 2.5 mm HW; 2.2 relative eye diameter; 0.8 mm rostral width; body cylindrical; snout short and truncate in dorsal and ventral views, rounded and slightly pointed in lateral view.

Head distinguishable from neck; superior border of lip composed by rostral, infranasal, first supralabial, ocular and second supralabial; rostral subtriangular, reaching the anterior edge of ocular scale and supranasals overpassing this level; rostral contacting supranasal and infranasal laterally, and frontal dorsally; two supralabials (1+1); first supralabial overpassing nostril level and inferior edge of the eyes; first supralabial slightly shorter than second supralabial, not contacting supraocular; second supralabial overpassing nostril and eyes levels, contacting parietal and not contacting occipital; three infralabials, two previous rectangular and subequal in size and shape, posterior scale trapezoidal in shape, almost twice wider than first infralabial, as wide as second supralabial; sinfisial divided, two and a half times wider than long; ocular subhexagonal in shape with a narrow base, rectangular apex as high as long; ocular in contact with first supralabial and supranasal anteriorly, second supralabial and parietal posteriorly, and supraocular dorsally; supraocular scale present and not contacting first supralabial, three times longer than wide, rectangular in shape, in contact with supranasal and frontal anteriorly, parietal posteriorly, postfrontal laterally, and ocular ventrally; parietal subhexagonal in shape, elongated dorsoventrally, contacting ocular and supraocular anteriorly, temporal and occipital posteriorly, second supralabial ventrally, postfrontal and interparietal laterally; occipital in subhexagonal shape, elongated dorsoventrally, one and a half time smaller than parietal, contacting parietal anteriorly, first row of middorsal scales posteriorly, temporal ventrally and interparietal and interoccipital laterally, not reaching second supralabial level; temporal scale not differentiated from other dorsal scales, subhexagonal in shape, bordered by second supralabial, parietal and occipital anteriorly, and dorsal scale posteriorly; middle cephalic shields (frontal, postfrontal, interparietal, and interoccipital scales) similar in shape, subpentagonal; frontal almost one and a half time wider than long, contacting rostral and supranasals anteriorly, supraocular laterally, and postfrontal posteriorly; postfrontal almost two times wider than long, contacting frontal and supraoculars anteriorly, parietals laterally, and interparietal

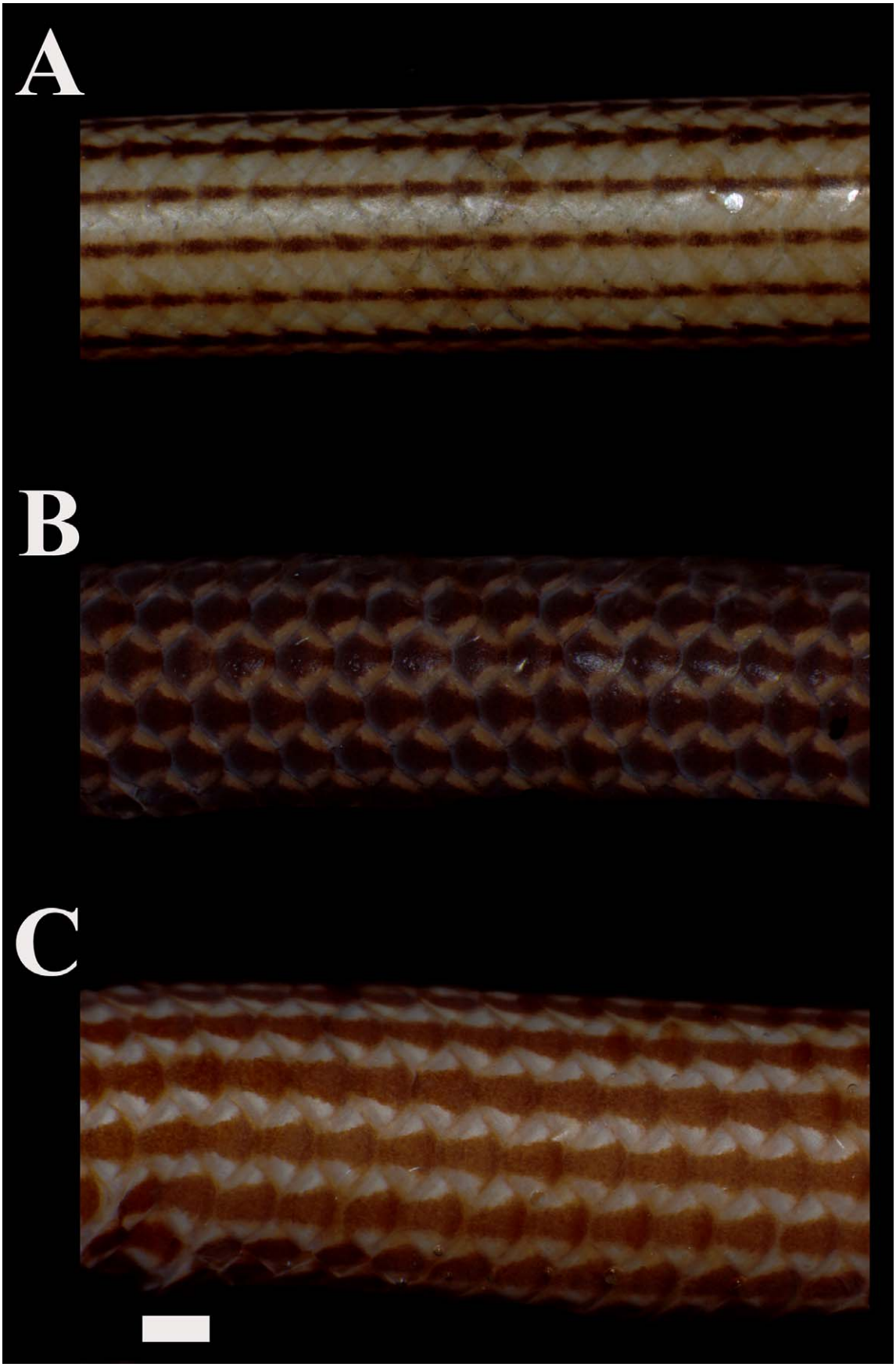

FIGURE 1. The striped dorsal color patterns of examined species of the genus *Epictia*. A: Line blotches (LB) in *Epictia clinorostris* (MNRJ 16503); B: Triangular blotches (TB) in *Epictia borapeliotes* (MNRJ 17054); C: Rectangular blotches (RB) in *Epictia munoai* (MCP 1234). Scale: 1 mm.

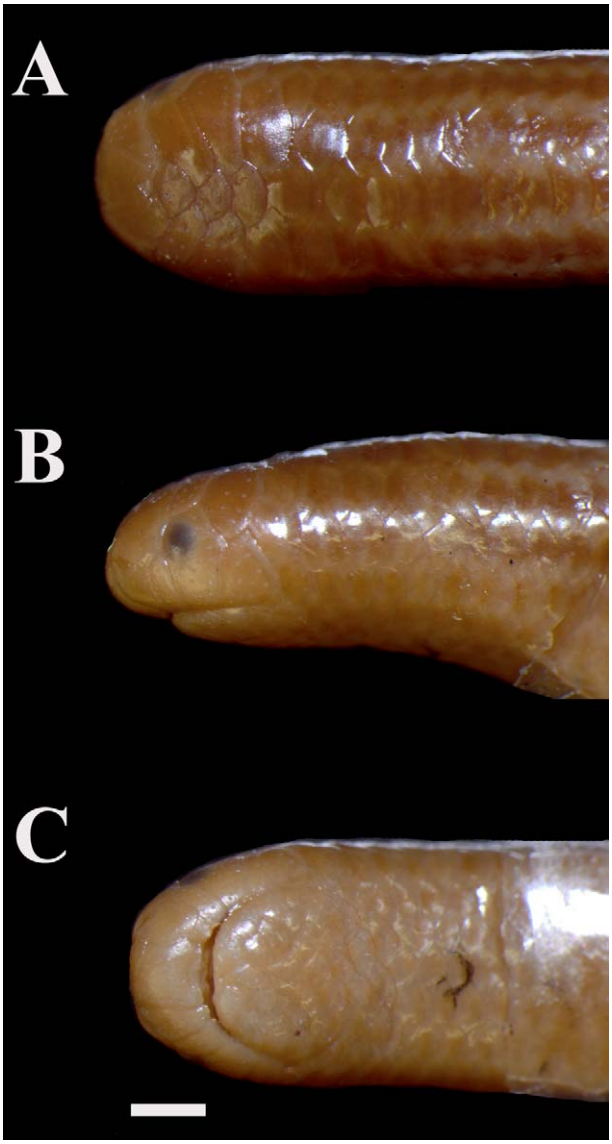

FIGURE 2. Dorsal (A), lateral (B), and ventral (C) views of the paratype of *Epictia munoai* (MNRJ 3306). Scale: 1mm.

posteriorly; interparietal two times wider than long, contacting postfrontal and parietals anteriorly, occipitals laterally, and interoccipital posteriorly; interoccipital almost two times wider than long, wider than interparietal, contacting interparietal and occipital anteriorly, and first middorsal row posteriorly; nasal scale divided; supranasals higher than long, reaching eyes level, not contacting each other, base with same width than infranasals; supranasal contacting rostral anteriorly, first supralabial and ocular posteriorly, and supraocular dorsally; infranasal one and a half time smaller than supranasal, as high as long, contacting rostral anteriorly, first supralabial posteriorly, and supranasal dorsally; nostril obliquely oriented and placed anteriorly in the nasal suture; eyes well developed with domed structure externally, positioned on the anterior portion of ocular scale; cloacal shield rounded, almost three times wider than long; tail short, fused caudals absent; terminal spine short, wider than long; 14 scale rows around midbody; 10 scale rows around the tail; 218 middorsal scales; 203 ventral scales; 13 subcaudals.

Colour in preservative. Dorsal background whitish-cream and stripped pattern with brownish rectangular blotches (RB); venter light brown; head brown, without stripes; infralabials and cloacal shield with same color as the venter; rostral without blotches; terminal spine white.

Variation. Although no sexual dimorphism was found in any analyzed variables, results will be presented for females and males separately. Middorsal scales 184–225 (216.2 ± 10.6, *n* = 25) in males and 202–224 (210 ± 26.9, *n* = 18) in females; midventral scales 178–219 (202.4 ± 10.1, *n* = 25) in males and 182–221 (199.2 ± 7.7, *n* = 18) in

females; subcaudal scales 10–13 (12.1 ± 1.0, *n* = 25) in males and 10–14 (12.4 ± 0.9, *n* = 18) in females; TL 71–184 (130.2 ± 26.5, *n* = 25) in males and 63–162 (104.3 ± 37.1, *n* = 18) in females; TL/TAL 15–23 (17.3 ± 2.3, *n* = 25) in males and 13–24 (18.1 ± 3.1, *n* = 18) in females; TAL/TL% 4.4–7.1 (5.9% ± 0.0, *n* = 25) in males and 4.1–7.6 (5.7% ± 0.0, *n* = 18) in females; TL/MB ratio 37.9–69.8 (52.1 ± 7.5, *n* = 25) in males and 37.9–71.6 (53.5 ± 9.1, *n* = 18) in females; TAL/MT ratio 2.7–5.2 (3.9 ± 0.6, *n* = 25) in males and 2.7–4.7 (3.7 ± 0.7, *n* = 18) in females; relative eye diameter 2.0–3.0 (2.5 ± 0.3, *n* = 25) in males and 1.9–3.3 (2.4 ± 0.3, *n* = 18) in females; rostral width 0.5–0.8 (0.6 ± 0.0, *n* = 25) in males and 0.5–0.8 (0.6 ± 0.1, *n* = 18) in females.

Geographic distribution. Southern Brazil, in the states of Rio Grande do Sul and Santa Catarina, Uruguay and Eastern Argentina (Fig. 3).

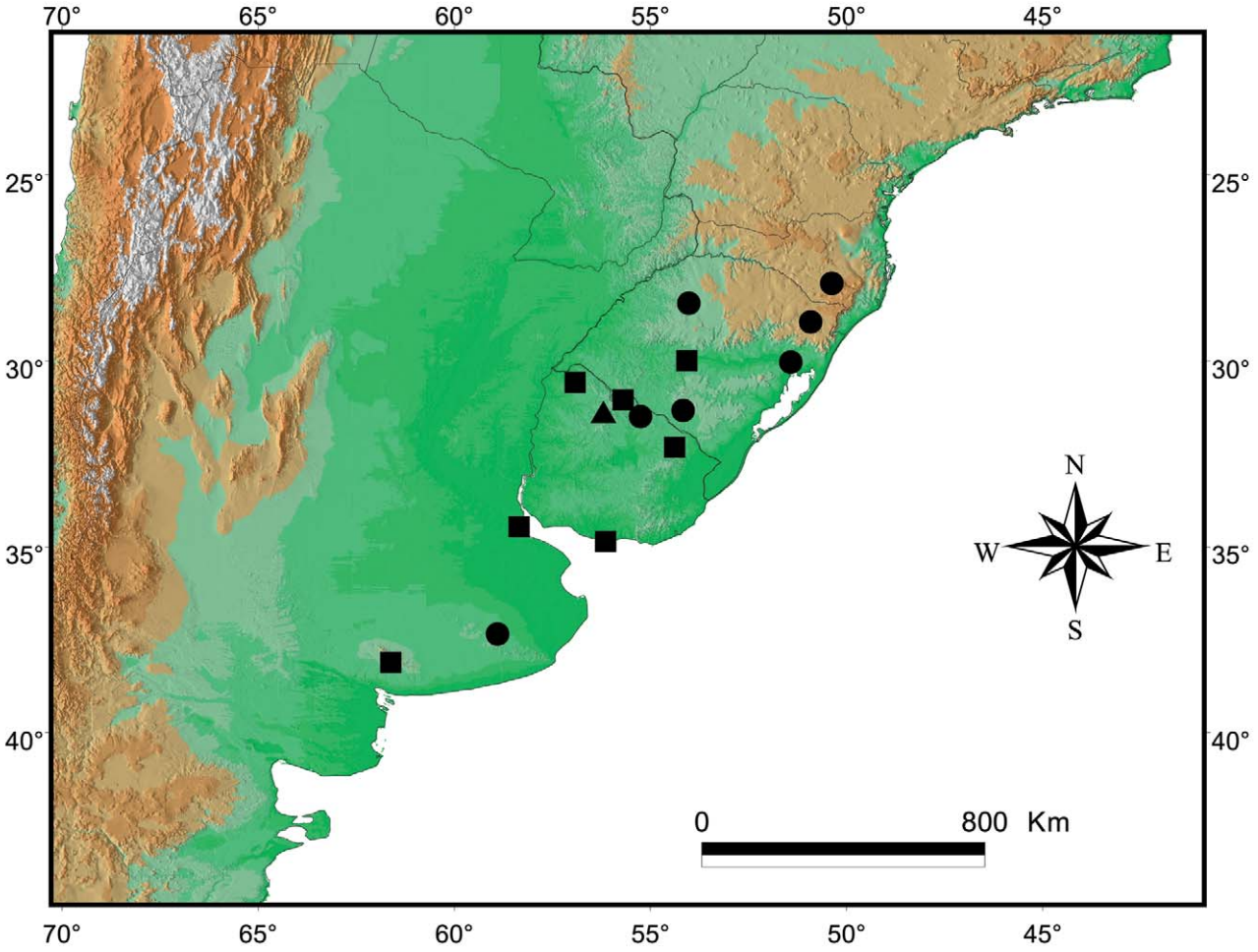

FIGURE 3. Geographic distribution of *Epictia munoai*. Triangle = type locality; rectangles = literature data; circles = specimens examined.

Comparisons with other Cisandine species of the genus *Epictia*. Comparisons were made with all cisandine species: *Epictia undecimstriata* (Schlegel 1839), *E. goudotii* (Duméril and Bibron 1844), *E. albipuncta* (Burmeister 1861), *E. signata* (Jan 1861), *E. columbi* (Klauber 1939), *E. subcrotilla* (Klauber 1939), *E. tenella* (Klauber 1939), *E. magnamaculata* (Taylor 1940), *E. nasalis* (Taylor 1940), *E. striatula* (Smith and Laufe 1945), *E.australis* (Freiberg and Orejas-Miranda 1968), *E. diaplocia* (Orejas-Miranda 1969), *E. collaris* (Hoogmoed 1977), *E. vellardi* (Laurent 1984), *E. borapeliotes* (Vanzolini 1996), *E. clinorostris* (Arredondo and Zaher 2010). Although *Epictia albifrons* (Wagler *in* Spix 1824) is actually assigned as *nomen dubium* (see Franco and Pinto 2009), the validity of this name is under revision (V. Wallach in prep.). For this reason, we did not include this taxon in the comparisons. *Epictia undecimstriata* could not be compared to *E. munoai* because it is known only from the holotype, which is apparently lost according to Hahn (1980) and McDiarmid *et al.* (1999). Pinto *et al.* (2010) recognized *Epictia phenops* as a full species based on molecular data from Adalsteinsson *et al.* (2009). However, this taxon is currently diagnosed only through molecular data, and no specimens were available for

TABLE 1. Meristic and morphometric variation of cisandine species of *Epictia*. LB--line shaped blotches, RB--rectangular blotches, and TB-- triangular blotches.

Species	Sex(n)	Middorsal scales	Midventral scales	Subcaudal Scales	Infralabial scales	Midtail scales	Contact first supralabial – supraocular	Stripped color pattern	Source of data
Epictia albipuncta	F (1)	261 – 285	239 – 258	19 – 26	4	12	Absent	TB	Our data
	M (2)	246	229	23					
Epictia australis	F (1)	243	229	12	3	10	Absent	LB	Our data
	M (3)	233 – 253	201 – 239	9 – 11					
Epictia borapeliotes	F (1)	271	268	12	3	10	Absent	TB	Our data
	M (1)	267	262	15					
	? (53)	256 – 282	?	14 – 18					Vanzolini, 19996
Epictia clinorostris	M (4)	240 – 254	221 – 233	13 – 14	4	10	Absent	LB	Our data; Arredondo & Zaher,2010
	F (2)	241 – 242	?	12 – 16					Arredondo & Zaher,2010
	? (4)	248 – 256	231 – 238	10 – 16				LB	Our data
Epictia collaris	? (9)	155 – 166	144 – 151	14 – 17	3	10	Absent	?	Hoogmoed, 1977
Epictia columbi	? (5)	255 – 263	?	24 – 25	4	10	Absent	?	Klauber, 1939
Epictia diaplocia	? (10)	205 - 233	?	15 – 20	?	10	Absent	?	Orejas-Miranda, 1969
Epictia goudotii	? (8)	225 – 260	213 – 234	12 – 16	4	10	Absent	RB	Pinto *et al.*, 2010
Epictia magnamaculata	? (13)	245 - 262	237 – 246	15 – 18	4	10	Absent	TB	Pinto *et al.*, 2010
Epictia munoai	F (18)	202 – 226	184 – 211	10 – 14	3	10	Absent	RB	Our data
	M (25)	184 – 225	178 – 219	10 – 13					
Epictia nasalis	M (1)	253	?	21	4	10	Absent	Absent	Our data; Villa, 1990
Epictia signata	?(6)	208 – 282	214 -261	14 – 17	4	10	Absent	Absent	Pinto *et al.*, 2010
Epictia striatula	F (4)	218 – 241	216 – 221	15 – 21	4	12	Absent	RB	Our data
	M (1)	226	200	20					
	? (1)	249	?	23				?	Smith & Laufe, 1945
Epictia subcrotilla	? (3)	324 – 331	?	17	?	10	Absent	?	Klauber, 1939; Schmidt & walker, 1943
Epictia tenella	F (10)	212 – 230	183 – 217	12 – 17	4	10	Present	RB	Our data
	M (4)	218 – 229	205 – 212	15 – 17					
Epictia udecimstriata	? (1)	?	?	?	?	?	?	?	Schlegel, 1839
Epictia vellardi	F (12)	224 – 255	211 – 247	13 – 16	4	10	Absent	RB	Our data
	M (8)	231 – 248	220 – 245	13 – 16					

morphological comparisons. Since *E. phenops* was formerly a subspecies of *E. goudotti*, we consider the latter taxon to represent the former when compared to *E. munoai*, concluding that *E. phenops* is morphologically distinct from *E. munoai*.

Epictia munoai differs from *Epictia striatula* and *E. albipuncta* by the presence of 10 scales around the middle of the tail (12 in the latter two), from *E. tenella* by the absence of contact between the supraocular and the first supralabial, and from *E. vellardi*, *E. columbi*, *E. clinorostris*, *E. goudotti*, *E. magnamaculata*, *E. nasalis*, and *E. signata* by the presence of three instead of four infralabials.

Epictia munoai differs from *E. australis* by lacking two black rings around the gular region and one around the tail. Although all species are predominantly brown, *Epictia munoai* has an RB striped pattern that differs from *E. australis* (LB), *E. clinorostris* (LB), *E. borapeliotes* (TB), and *E. striatula* (TB). *Epictia nasalis* has no striped dorsal pattern (uniform brown). *Epictia vellardi* and *E. tenella* has the same pattern of *Epictia munoai*. Meristic and morphological data are presented in Table 1.

Remarks. Recent taxonomic studies of Leptotyphlopidae focused on the elaboration of more objective diagnoses of taxa based on extensive morphological and meristic character data (Passos *et al.* 2005; 2006; Arredondo and Zaher 2010; Pinto *et al.* 2010; Pinto and Curcio 2011; Pinto and Fernandes 2012).

Epictia munoai is currently diagnosed by some conflicting characters, since *Leptotyphlops albifrons* (= *Epictia albifrons*) was assigned as *nomen dubium* by Franco and Pinto (2009). Some species of the *Leptotyphlops albifrons* species group (*sensu* Peters and Orejas-Miranda 1970) were distinguished from *L. albifrons* (= *Epictia albifrons*) by the contact of supraocular and first supralabial scales. However, this character was considered variable by several authors (Jan and Sordelli 1860; Boulenger 1893; Thomas 1965; Hoogmoed and Gruber 1983; Franco and Pinto 2009).

Despite the general conservative morphological features of Leptotyphlopidae, *E. munoai* has well-defined characters that distinguish it from the other congeners, such as low numbers of dorsal and ventral scales. Furthermore, this taxon occurs in sympatry with a few other species of *Epictia* (*E. australis* and *E. albipuncta*), and apparently is a common species that is relatively well represented in herpetological collections.

The 19 examined specimens from the Municipality of Corumbá, state of Mato Grosso do Sul, Brazil, previously identified as *Epictia albifrons* or *Epictia munoai*, was identified in this study as *Epictia vellardi*. *Epictia vellardi* was known only from the type specimens (FML00110 - Holotype and FML00295 - Paratype) from the Municipality of Formosa, Province of Formosa, Argentina, and the specimens reported herein represent the first record of this taxon in Brazil. According to Morrone (2006) and Morrone (2010), both regions (Formosa, Argentina and Corumbá, Brazil) are included in the biogeographic Chaco province, which composes the open corridor of South America along with the biogeographic Cerrado and Caatinga provinces.

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APPENDIX 1. Specimens examined.

***Epictia albipuncta*:** ARGENTINA: Buenos Aires: Tornquist, Sierra de La Ventana (MACN 34521-1); Ciudad Autónoma de Buenos Aires (MACN 39022, MACN 39261).

***Epictia australis*:** ARGENTINA: Río Negro: Valcheta, Valcheta (MACN 12526-Paratype); La Pampa: Lihuel Calel (MACN 25025); Buenos Aires: Tornquist, Sierra de La Ventana (MACN 32564).

***Epictia borapeliotes*:** BRAZIL: Paraíba: Campina Grande (MNRJ 17054).

***Epictia clinorostris*:** BRAZIL: Goiás: Araganças (MNRJ 19025); Mato Grosso do Sul: Ribas do Rio Pardo (MNRJ 16503); Mato Grosso: Chavantina, Rio dos Mortos (MNRJ 4620, MNRJ 3336), Rondonópolis (MNRJ 4617-19).

Epictia goudotti: COLOMBIA: Magdalena: Valley of Río Magdalena (MNHN 1068Holotype), Cienaga (USNM 144173), Parque Nacional Isla de Salamanca (ICN 7127), PNN Tayrona, Santa Marta (ICN 6196); Cundinamarca: Apulo (MLS 18); Tolima: Ambalema (MLS 19), Honda (MLS 20); without specific locality (MLS 21).

Epictia magnamaculata: COLOMBIA: no specific locality (ICN 2730-34); Arquipielago de San Andrés, Providencia y Santa Catalina: Isla de Providencia (ICN 2629-31, ICN 11172, MLS 1972); Isla de San Andrés (MLS 2038-40).

***Epictia munoai*:** URUGUAY: Tacuarembó : Tambores, Pozo Hondo (MNRJ 3306-Paratype); Rivera: Mina de Corrales (MNRJ 20368-70); BRAZIL: Rio Grande do Sul: Porto Alegre (MCP 2164, MCP 4833, MCP 2073, MCP 1234, MCP 2136, MCP 5289-91, MCP 3074, MCP 3107-11, MCP 1169, MCP 5582, MCP 2784, MCP 2627-28, MCP 1156, MCP 4313, MCP 4832, MCP 5747, MCP 1414),Garruchos, Barreiro (MCP 3075, MCP 3103-06, MCP 3113), Bage (MCP 1233, MCP 1185, MCP 1235), São Francisco de Pádua (MCP 2668); Santa Catarina: Painel (MNRJ 16992-3); ARGENTINA: Buenos Aires: Tandil, Sierras de Tandil (MACN 28025-6).

Epictia signata: COLOMBIA: without specific locality (IBSP 7204). ECUADOR: Gualaquiza: Morono-Santiago (USNM 232404).

Epictia striatula: BRAZIL: Amazonas: Borba (MNRJ 1561-2); BOLIVIA: Ribeiralta (IBSP 33303-04). BOLIVIA: Beni: Vaca Diéz, Tumi Chucua (USNM 280427).

***Epictia tenella*:** BRAZIL: Rondônia: Costa Marques (MCP 6263-4); Mato Grosso: Aripuanã (UFMT 4270, UFMT 4195), Vale do São Domingos (UFMT 2064, UFMT 2041, UFMT 2035, UFMT 2040), Chapada dos Guimarães (UFMT 0690, UFMT 0702); Pará: Saracá Monte Branco (MNRJ 15052), Flona Saracá, Taquera (MNRJ 15053-5).\

***Epictia vellardi*:** BRAZIL: Mato Grosso: Corumbá (UFMT 1294, UFMT 1297, UFMT 1298, UFMT 1301, UFMT 1307, UFMT 1343, UFMT 1348, UFMT 1350, UFMT 1351, UFMT 1355, UFMT 1357, UFMT 1362, UFMT 1365, UFMT 1367, UFMT 1370, UFMT 1376, UFMT 1383, UFMT 1498, UFMT 1502); ARGENTINA, Formosa: (MACN 39935).

APPENDIX 2. Literature data.

Epictia borapeliotes: BRAZIL: Bahia: Santo Inácio (MZUSP 9595-Holotype, MZUSP 8958-67, 8970-73, 9593-94, 9624-34, 10021-23, 10544-45 - Paratypes), Catinga do Moura (MZUSP 7520); Paraíba: Junco do Seridó (MZUSP 5958), Conde (MZUSP 7973), Ponta do Seixas (MZUSP 7974), João Pessoa (MZUSP 8161, 8979); Alagoas: Olho D'agua do Casado (MZUSP 10947), Usina Elétrica de Xingó (MZUSP 10948-55); Sergipe: Usina Elétrica de Xingó (MZUSP 10956-59). (Vanzolini 1996).

Epictia clinorostris: BRAZIL: Mato Grosso: Barra do Garças (MZUSP 17480-Holotype, MZUSP 17479-Paratype); Goiás: Aruanã (MZUSP 2192-Paratype). (Arredondo and Zaher 2010).

Epictia collaris: SURINAME, Marowijine: Base Camp Nassau Mountains (RMNH 13468-Holotype, RMNH 13468); Brokopondo: Brown's Mountain (RMNH 17833-4, MCZ 149550). FRENCH GUIANA: Between Cayenne and Dégrad des Cannes (RMNH 17748); Montagne du Mahury (RMNH - unnumbered). (Hoogmed 1977).

Epictia columbi: BAHAMAS: San Salvador Island (CM 1364-Holotype, CM 1360-3-Paratypes). (Klauber 1939).

Epictia diaplocia: PERU: Requena, Montecarmelo (AMNH 55654-Holotype, AMNH 55651), Río Huallaga, Valle Del alto Biabo (AMNH 52372-Paratype), Chasuta, Cerro Copal (AMNH 53587-88-Paratypes), Tocache (AMNH 53595-Paratype), Río Ucayali, Roaboya (AMNH 53468-Paratype), Contamana (AMNH 52693-Paratype), Pampa Hermosa (AMNH 55886-Paratype), Iquitos (AMNH 56105-Paratype). (Orejas-Miranda 1969).

Epictia nasalis: NICARAGUA: Holdridge (USNM 16134-Holotype). (Villa 1990).

Epictia signata: Unknown locality (MNHN 3235-Holotype). VENEZUELA: Amazonas Federal: Esmeralda (AMNH 36663, AMNH 36665), Bolívar: Auyantepui (AMNH 61033). (Hahn 1979).

Epictia striatula: BOLIVIA: Souther Yungas, Yamachi (USNM 98889). (Smith and Laufe 1945).

Epictia subcrotilla: PERU: Northern Peru, Grau Tombes (CAS-SU 14554); Chiclin, Libertad (SDSNH 34267, SDSNH 34304). (Klauber 1939; Schmidt and Walker 1943).

Epictia vellardi: ARGENTINA: Formosa: Ciudad de Formosa (FML 00110-Holotype, FML 00295-Paratype). (Laurent 1984).