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On the Generic Identity of *Siagonodon brasiliensis*, with the Description of a New Leptotyphlopid from Central Brazil (Serpentes: Leptotyphlopidae)

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The geographic variation and hemipenial morphology of *Siagonodon brasiliensis* are described based on a comprehensive sample, allowing the reappraisal of its generic identity, and the proposal of a new nomenclatural combination. We suggest that the presence of two supralabials, as mentioned in the original description of *S. brasiliensis*, is not a common feature for this species, occurring at low frequencies throughout its geographic distribution. Based on a diagnosis presented in a recently published paper, as well as on additional external traits and on hemipenial characters, we recognize *Siagonodon brasiliensis* as a species of the genus *Tricheilostoma*. In addition, a new species of worm snake of the genus *Siagonodon* is described from the savannas of the state of Tocantins, Brazil. The new species differs from other congeners by having a slightly acuminate snout in lateral and ventral views, subcircular rostral in dorsal view, and 12 scale rows around middle of tail. The diagnosis of the genus *Siagonodon* is revised and expanded based on direct observation of morphological characters.

AS traditionally understood, the genus *Leptotyphlops* comprises 114 species distributed on several continents, occurring mainly in Africa and the Neotropics (Hahn, 1980; McDiarmid et al., 1999; Adalsteinsson et al., 2009). In South America, according to this orthodox concept, the genus is represented by about 40 species, occurring from Colombia to Argentina (McDiarmid et al., 1999). The general morphology of leptotyphlopids is remarkably adapted to their strictly fossorial habits, denoted by a strongly built skull, smooth scales, and reduced eyes covered by an ocular plate (Kley, 2003). A highly specialized diet on small invertebrates is reflected by their short mandibles presenting a highly kinetic mandibular joint (Kley and Brainerd, 1999).

Based on external features, Peters and Orejas-Miranda (1970a) recognized five phenetic clusters of Neotropical leptotyphlopids: the *L. albifrons*, *L. dulcis*, *L. melanotermus*, *L. septemstriatus*, and *L. tesselatus* species groups. In this system, the *L. septemstriatus* species group was diagnosed by absence of supraocular scales (*sensu* Peters and Orejas-Miranda, 1970a), comprising *L. borrichianus*, *L. brasiliensis*, *L. cupinensis*, *L. nasalis,* and *L. septemstriatus*.

Laurent (1949) described *L. brasiliensis* with a brief characterization of the holotype from ''Brésil'' (=Brazil). Forty-five years later, Rodrigues and Puorto (1994) described a second specimen from ''Barrieras'' (=Barreiras), state of Bahia. One of the most important features supporting the identification of this second individual was the absence of supraoculars, a characteristic emphasized by Laurent (1949) in the original description. However, the specimen of Rodrigues and Puorto (1994) did not agree with the holotype regarding supralabial number, because Laurent (1949) clearly mentioned only two scales (1+1), whereas the specimen from Barreiras had three (2+1) distinct supralabials forming its upper lip border.

Wallach (1996) reported a third specimen from the same locality as that of Rodrigues and Puorto (1994), restricting the type locality of the species to Barreiras, state of Bahia, Brazil. Curcio et al. (2002) recorded four specimens of *L. brasiliensis* from the Brazilian Cerrado (hereafter central Brazilian savannas; Eiten, 1978; Ab'Saber, 2003) of southwestern Piauí State, all with three supralabials. In view of the differences in supralabial counts between the holotype and the other known specimens of *L. brasiliensis*, these authors claimed that larger samples would allow more precise conclusions regarding the variation of this character.

Especially in the last decade, several field inventories have been undertaken in Brazilian savannas, allowing the discovery of new taxa (Pavan and Dixo, 2003; Nogueira and Rodrigues, 2006; Rodrigues et al., 2007, 2008) and considerably improving our knowledge of the herpetofauna from this domain (Colli et al., 2002; Costa et al., 2007; Nogueira et al., 2009). Such efforts resulted in the collecting of new specimens of *L. brasiliensis* (Pinto et al., 2005), comprising a comprehensive sample for the clarification of the puzzling variation regarding supralabial counts (Laurent, 1949; Rodrigues and Puorto, 1994; Curcio et al., 2002).

Recently, a molecular-based phylogenetic study of the family Leptotyphlopidae has introduced considerable changes with respect to the classification within this clade (Adalsteinsson et al., 2009). In this study, the generic concept of *Leptotyphlops* was restricted to an African clade, whereas the South American species were reallocated to other genera: *Epictia* (most species of the *L. albifrons* species group, one species of the *L. septemstriatus* species group, *L. melanotermus,* and *L. tesselatus* species groups); *Tricheilostoma* (most species of *L. dulcis* species group); *Rena* (part of the *L. dulcis* species group, *L. humilis*, *L. humilis boettgeri* [recognized as a full species], and one species of the *L. albifrons* species group), and *Siagonodon* (all taxa of the *L. septemstriatus* species group, except for *L. nasalis*). A thorough analysis of this classification transcends the scope of this study; our discussion on this topic will be concise in order to provide support to our proposals regarding the generic allocation of some species considered herein.

In this paper, we discuss the generic identity of *L. brasiliensis* Laurent, 1949 (presently in the genus *Siagonodon*, according to Adalsteinsson et al. [2009]) based on the analysis of morphological characters from a sample of 42 specimens. Moreover, we describe a new species of the genus *Siagonodon* from the Brazilian savannas, providing original morphological data in order to expand and improve the

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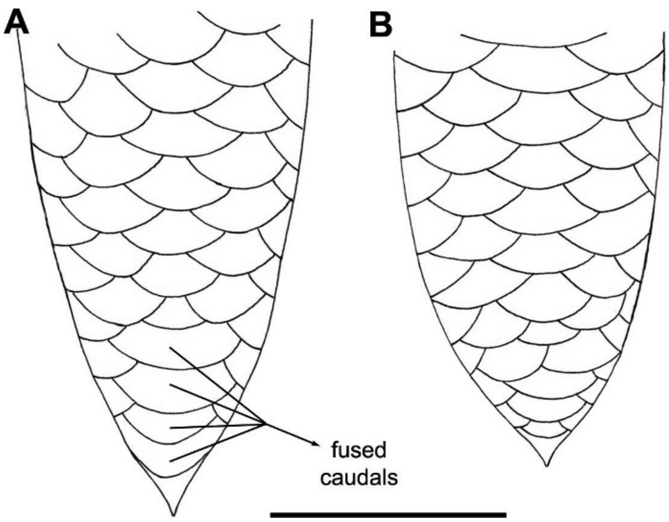

Fig. 1. Schematic views of the dorsal surface of the tail of leptotyphlopid snakes: (A) fused caudals on tail tip (*T. brasiliensis*), and (B) non-fused caudals on tail tip (*S. acutirostris*). Scale = 5 mm.

diagnosis proposed by Adalsteinsson et al. (2009) for this genus.

MATERIALS AND METHODS

Descriptions and comparisons were mostly based on shape, meristic, and morphometric characters of external morphology; literature data were also considered. Terminology for cephalic plates, scale features, and measurements followed Passos et al. (2006) and Broadley and Wallach (2007). The collection of meristic and morphometric data followed Wallach and Boundy (2005), Passos et al. (2006), and Broadley and Wallach (2007), with the addition of three new characters: midventral scales counts (mental scale, cloacal shield, and subcaudals excluded); relative eye diameter (ocular length at eye level/eye diameter); and presence or absence of fused scales on the dorsal surface of the tail until terminal spine (=fused caudals; Fig. 1).

Measurements were taken with a dial caliper to the nearest 0.1 mm, except for total length (TL) and tail length (TAL), both measured with a graduated ruler to the nearest 1.0 mm. Variation was expressed by the range, providing the mean and the standard deviation in parentheses. Sex was determined through a ventral incision on the base of the tail. Hemipenes were everted manually and prepared according to Pesantes (1994); hemipenis nomenclature followed Branch (1986).

Sexual dimorphism was tested for some variables (i.e., middorsal, midventral, and subcaudal scales) using analysis of variance (ANOVA). Assumptions of univariate normality and homoscedasticity were evaluated using the Kolmogorov-Smirnov and the Levene tests, respectively (Zar, 1999). All statistical tests were performed with STATISTICA 6.0 for Windows (Statsoft Inc., 2001. Statistica for Windows version 6.0. Statsoft, Tulsa, OK. www.statsoft.com).

***Tricheilostoma brasiliensis* (Laurent, 1949)**

Figures 1–4

Leptotyphlops brasiliensis Laurent, 1949:4, figs. 7–9 [type locality: ''Brésil''].

Siagonodon brasiliensis.—Adalsteinsson et al., 2009:10 [resurrected genus].

Holotype.—IRSNB 2049 (IG 12594; Fig. 2), undetermined sex, ''Brésil'', 1939, Don Abbaye de St-André-Bruges (=Saint Andrew's Abbey located in Bruges, Belgium) [photographs examined].

Diagnosis.—Distinguishable from all congeners by the following combination of characters: snout slightly rounded in dorsal and ventral views, obtuse-rounded in lateral view; supraoculars absent; supralabials generally 2+1, rarely 1+1; occipital scale usually extending ventrally beyond the level of last supralabial (posterior to the ocular shield); ocular shield subhexagonal with anterior border rounded at eye level; rostral subtriangular in dorsal view; middorsal scales 194–224 in females and 193–209 in males; midventral scales 178–212 in females and 171–196 in males; subcaudal scales 13–19 in females and 17–20 in males; fused caudals present (Fig. 1A); temporal scales distinct; ten scales around the middle of the tail; dorsum uniformly light to dark brown, covering five or seven dorsal scales, contrasting with whitish-cream color covering seven or nine scale rows on the belly.

Hemipenis.—(Everted organs, $n = 4$). Organ single, trumpet-shaped, narrow at base and robust at apex; hemipenial body ornamented with flounces; basal portion covered by small flounces, sharply demarcated from terminal region by distinctively large flounce on midportion of asulcate face; two less developed flounces distally to large body flounce; sulcate face with five small flounces distributed from middle to distal portion of hemipenial body; sulcus spermaticus single, entering organ on basal surface and extending towards tip; sulcal folds slightly raised and unadorned; apex of distal portion of organ slightly concave, covered by well developed papillae (Fig. 3).

Variation.—Middorsal scales 194–224 (208.6 ± 7.4, $n = 23$) in females and 193–209 (199.3 ± 4.4, $n = 17$) in males; midventral scales 178–212 (194.3 ± 7.9, $n = 20$) in females and 171–196 (180.8 ± 6.5, $n = 15$) in males; subcaudals 13–19 (15.6 ± 1.3, $n = 22$) in females and 17–20 (18.6 ± 0.9, $n = 18$) in males; TL 104–322 mm (226.7 ± 65.8, $n = 23$) in females and 172–321 mm (219.6 ± 33.1, $n = 17$) in males; TL/TAL ratio 11.3–15.7 (14.0 ± 1.2, $n = 23$) in females and 9.2–14.6 (11.1 ± 1.2, $n = 17$) in males; TAL 6.4–8.9% of the TL (7.2% ± 0.0, $n = 17$) in females and 6.9–10.9% (9.1% ± 0.0, $n = 17$) in males; TL/midbody diameter 31.3–59.2 (45.9 ± 6.8, $n = 23$) in females and 34.5–63.6 (41.6 ± 6.7, $n = 17$) in males; TAL/midtail diameter 3.2–4.6 (4.0 ± 0.4, $n = 20$) in females and 3.7–5.6 (4.7 ± 0.4, $n = 16$) in males; relative eye diameter 1.6–2.1 (1.8 ± 0.1, $n = 19$) in females and 1.4–2.1 (1.6 ± 0.2, $n = 15$) in males; relative rostral width 0.3–0.5 (0.4 ± 0.0, $n = 20$) in females and 0.3–0.4 (0.4 ± 0.0, $n = 15$) in males; supralabial scales 1+1 (4.8%, $n = 2$), 2+1 (90.4%, $n = 38$), asymmetric specimens 1+1 on one side of head and 2+1 on the other (4.8%, $n = 2$).

Pale to dark brown color covers five or seven dorsal rows, whereas seven or nine ventral rows are uniformly cream. Head color follows body pattern.

Sexual dimorphism.—Females have significantly more middorsal scales ($F_{1,38} = 21.5$, $P < 0.0001$) and midventral scales ($F_{1,33} = 29.1$, $P < 0.0001$) than males; in contrast, males have significantly more subcaudals ($F_{1,38} = 69.2$, $P < 0.0001$) than females. Males also have a significantly longer

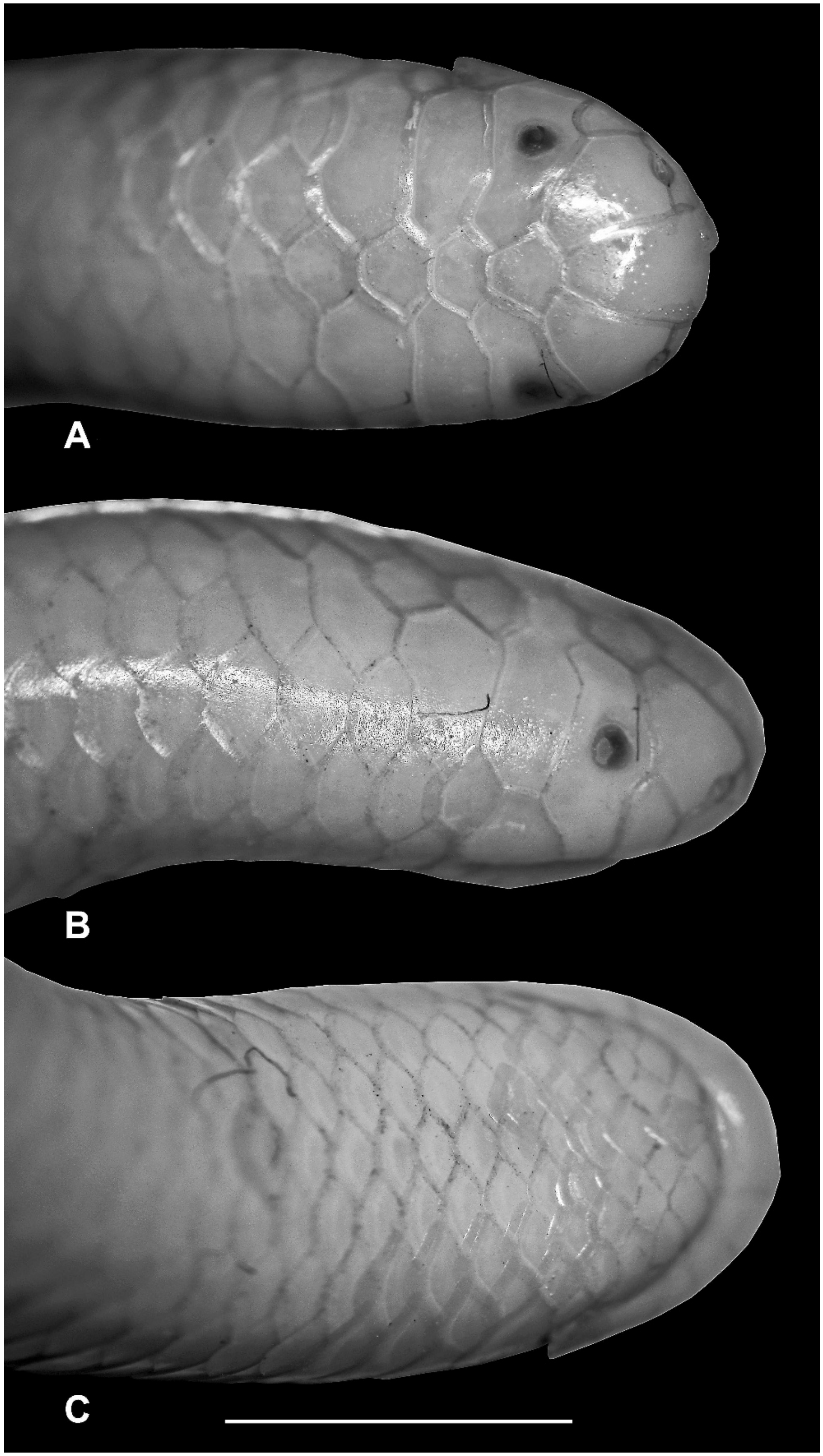

Fig. 2. Dorsal (A), lateral (B), and ventral (C) views of the head of the holotype of *Tricheilostoma brasiliensis*. Scale = 5 mm.

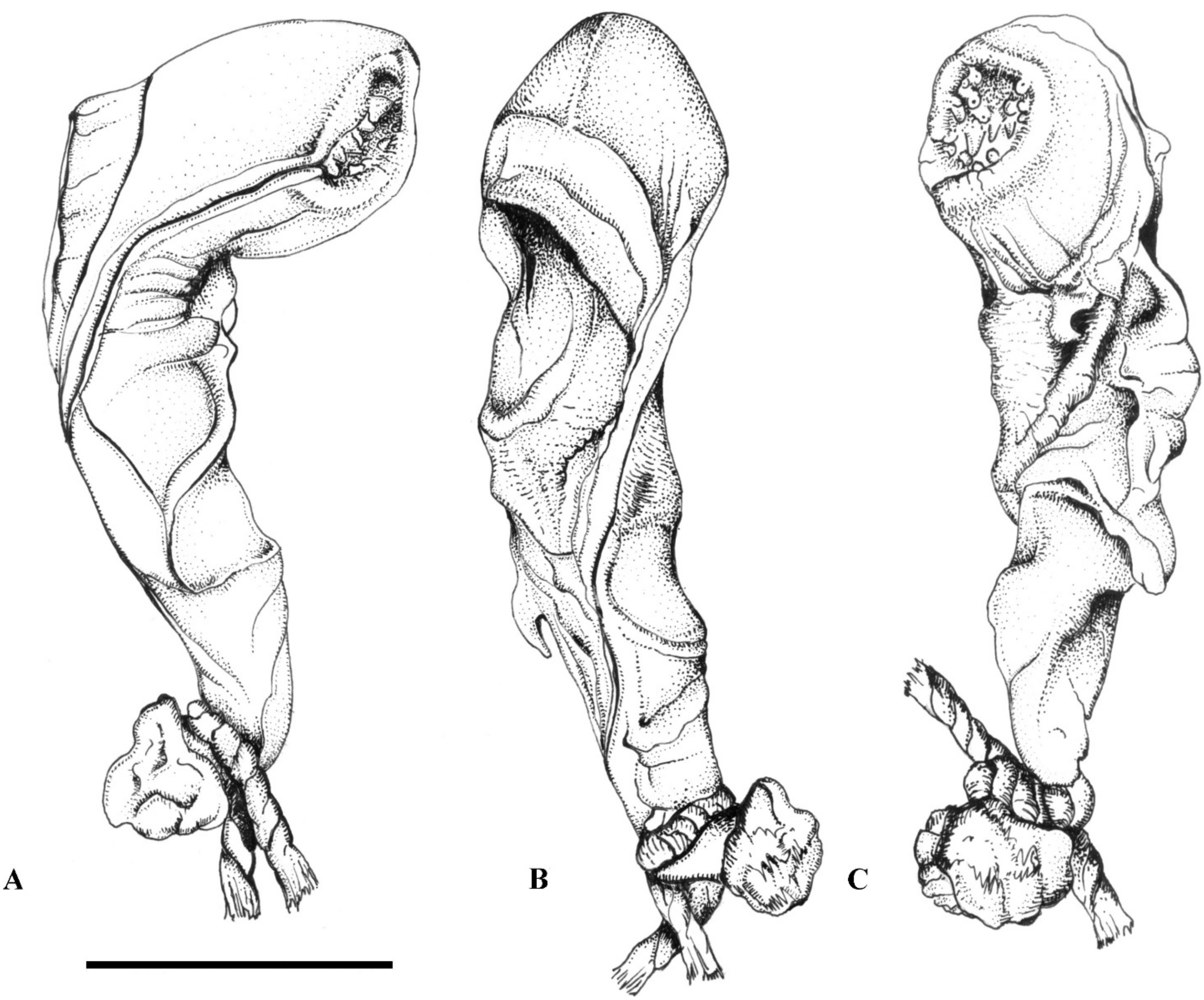

Fig. 3. Sulcate (A), asulcate (B), and lateral (C) views of the hemipenis of *T. brasiliensis* (UFMT 1162). Scale = 5 mm.

tail (TAL/TL, $F_{1,38} = 56.8$, $P < 0.0001$; TAL/midtail diameter, $F_{1,34} = 33.9$, $P < 0.0001$) than females, but females have a significantly longer body (TL/TAL, $F_{1,38} = 55.7$, $P < 0.0001$) than males. No dimorphism was found in TL/midbody diameter ($F_{1,38} = 0.2$, $P = 0.89$).

Distribution and habitat.—Brazilian Cerrado, mostly in its eastern portion, in the states of Minas Gerais, Goiás, Bahia, Piauí, Tocantins (northernmost occurrence in the municipality of Palmeiras do Tocantins, 06°37′S, 47°33′W), and Maranhão. Also recorded from western states of Mato Grosso do Sul (including the westernmost and southernmost occurrence in the municipality of Corumbá, 19°01′S, 57°39′W) and Mato Grosso (Fig. 4). Specimens obtained in the states of Piauí, Maranhão, and Tocantins were found in open cerrado areas, usually associated with spots of sandy soil.

Remarks.—Laurent (1949) described *Leptotyphlops brasiliensis* based on a single specimen from ''Brésil'', characterized by lack of supraoculars and presence of only two supralabial scales. Later studies have applied the name *L. brasiliensis* to populations from eastern Brazilian savannas only differing from the original description by exhibiting three supralabials scales instead of two (Rodrigues and Puorto, 1994; Wallach, 1996; Curcio et al., 2002; Pinto et al., 2005). Wallach (1996) and Curcio et al. (2002) considered the presence of two (1+1) supralabials as a possible anomaly, since no specimens with such a pattern were known besides the holotype. In our expanded sample, asymmetry of supralabials (two scales on one side and three scales on the other side of the head) was recorded in two specimens from the localities of Carolina (07°20′S, 47°28′W), state of Maranhão and PCH Santa Edwiges I (region of Mambaí), state of Goiás (14°19′S, 46°10′W). Additionally, one specimen from the region of Januária (15°29′S, 44°22′W), state of Minas Gerais has the same pattern of the holotype, with two supralabials on both sides of the head. We consider these records as convincing evidence of intraspecific variation in supralabial counts, confirming that the incongruence revealed in previous studies is not compelling to the recognition of more than one taxon. However, our data suggest that fusions of the two supralabials prior to the ocular plate occur at a low frequency (4.8% on both sides of

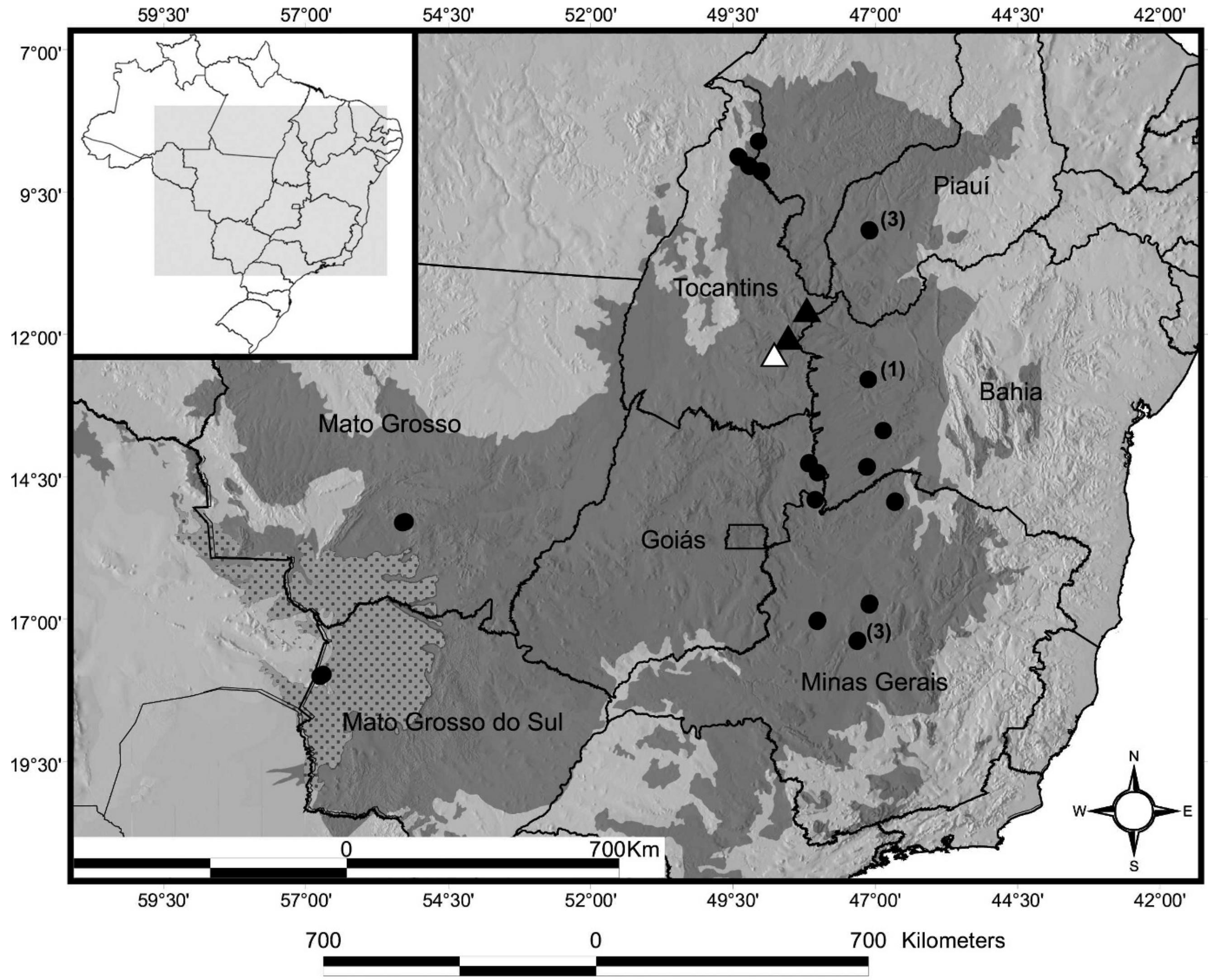

Fig. 4. Geographic distribution of *Siagonodon acutirostris* and *T. brasiliensis*. Triangles = *S. acutirostris* (white triangle represents the type locality); circles = *T. brasiliensis* (1 = type locality *sensu* Wallach, 1996; 2 and 3 = range extensions reported by Pinto et al., 2005 and Curcio et al., 2001, respectively). Darkened area represents the borders of the Brazilian Savannas domain.

head, and 4.8% on one side in asymmetric specimens) throughout its distributional range.

Wallach (1996) restricted the type locality of *Leptotyphlops brasiliensis* to the municipality of Barreiras, Bahia state, because there were no other specimens previously known from other localities. Later studies (Curcio et al., 2002; Pinto et al., 2005) reported specimens of *L. brasiliensis* from two additional localities in the Cerrado, but none of them recorded specimens with supralabial counts equal to the holotype. However, even regarding the present sample, the latitudinal displacement of the only three records of specimens with two supralabials besides the holotype does not allow further consideration of a possible geographic restriction for this morphological condition. In such a scenario, the restriction of the type locality to Barreiras by Wallach (1996) carries no information regarding the condition exhibited by the holotype (1+1 supralabials) and, as a consequence, cannot be considered an approximation to the original type locality. Nonetheless, the restriction proposed by Wallach (1996) followed the recommendation 72H.a.4 of the International Code of Zoological Nomenclature (ICZN, 1985:art. 72, p. 147–148), and the present sample brings no compelling evidence for proposing objective corrections.

Adalsteinsson et al. (2009) allocated most taxa of the *Leptotyphlops septemstriatus* species group (*sensu* Peters and Orejas-Miranda, 1970a) to the genus *Siagonodon*, but since their sample contained only one taxon of this species group (i.e., *L. septemstriatus*), the monophyly of *Siagonodon* was not directly tested. However, the authors presented morphological traits as supportive of such an assumption, claiming that *Siagonodon* species have "14 midbody scale rows, 10–14 midtail scale rows, 206–289 middorsal scales, 8–20 subcaudals, two supralabials, small or moderate or large anterior supralabials, 202–300 mm maximum adult total length, a body shape of 39–130 (total length/width at midbody), a relative tail length of 2.1–6.6%, a tail shape of 1.3–2.6, striped pattern, multiple dorsal colors, and white venter" (Adalsteinsson et al., 2009:17).

Direct examination of specimens and literature data led us to disagree with some of the morphological traits suggested by the authors as diagnostic of *Siagonodon*; for example, the striped pattern is actually restricted to *S. septemstriatus*, whereas all other species have uniform dorsal pattern. We were also compelled to question the character related to the size of anterior supralabials, which in our view is uninformative at least as described by the authors. Furthermore, based on our observations, apparently all species of *Siagonodon* (*sensu* Adalsteinsson et al., 2009) have anterior supralabials comparable in size, which we would qualify as small. The universality of 1+1 supralabials is also disputable at least to *S. brasiliensis*, since this feature is evidently subjected to individual variations as discussed above. Thus, the lack of supraoculars would be the most reliable character for the allocation of *L. brasiliensis* to *Siagonodon*; on the other hand, this character is also homoplastic within the family because the same condition is present in *Rena humilis* and *Rena boettgeri* (*sensu* Adalsteinsson et al., 2009).

In our view, the presence of three supralabials (rarely two), narrow basal and robust terminal portions of the hemipenial body (Passos et al., 2005, 2006), as well as a rather similar shape of the ocular plate are some similarities that may be interpreted as indications of a close relationship of *Siagonodon brasiliensis* to the taxa allocated by Adalsteinsson et al. (2009) to *Tricheilostoma*. Thus, since there is no direct evidence that *S. brasiliensis* would actually cluster with the only species of *Siagonodon* sampled by Adalsteinsson et al. (2009), and in view of the similarities it shares with some species of *Tricheilostoma*, we propose the reallocation of *S. brasiliensis* to the latter genus (*Tricheilostoma brasiliensis* Laurent [1949] new combination).

***Siagonodon acutirostris*, new species**
Figures 1B, 4–6

Holotype.—CHUNB 35648 (Fig. 5–6), adult female, Brazil, state of Tocantins, municipality of Almas, 11°31′00″S, 47°09′00″W, ca. 397 m elevation, 22 February 2004, unknown collector.

Paratypes.—(*n* = 2) CHUNB 41097, adult female, Brazil, state of Tocantins, municipality of Mateiros, 10°32′51″S, 46°25′16″W, ca. 493 m elevation, no date information, Laurie J. Vitt; MZUSP 17712, juvenile female, Brazil, state of Tocantins, municipality of Almas, Estação Ecológica Serra Geral do Tocantins, 11°11′04″S, 46°50′38″W, ca. 590 m elevation, 29 January 2009, Miguel T. Rodrigues and collaborators, field number MRT 14522.

Diagnosis.—*Siagonodon acutirostris* is distinguished from all Neotropical leptotyphlopids by the following unique combination of characters: snout slightly acuminate in lateral and ventral views; absence of supraocular scale; middorsal cephalic plates distinctively enlarged; ocular scale subheptagonal, dorsal apex acuminate and anterior border straight, roughly vertical at eye level; first and second supralabial scales not reaching eye level; two supralabials (1+1); fused caudals absent (Fig. 1B); temporal scale not distinct; rostral subcircular in dorsal view; middorsal scales 169–183; midventral scales 161–173; subcaudal scales 9–11; 12 scales around the middle of the tail; dorsum uniformly pale copper on five dorsal scale rows, contrasting with the whitish cream tonality covering nine scale rows of venter, and thereby reaching the paraventral region of trunk.

Comparisons with other Neotropical leptotyphlopids.—Due to several similarities among the leptotyphlopid taxa recently allocated to distinct genera by Adalsteinsson et al. (2009), we provide a comparative diagnosis of *Siagonodon acutirostris* at the family level, allowing its distinction not only from its congeners but also from other morphologically similar species of Neotropical leptotyphlopids. This comparative approach was especially focused on the genera *Siagonodon*, *Epictia*, and *Tricheilostoma*. The absence of supraocular scales distinguishes *S. acutirostris* from all Neotropical leptotyphlopids, with the exception of *E. nasalis*, *S. borrichianus*, *S. cupinensis*, *S. septemstriatus*, and *T. brasiliensis*. *Siagonodon acutirostris* can be distinguished from *E. nasalis*, *S. cupinensis*, and *T. brasiliensis* by having 12 dorsal scales around the

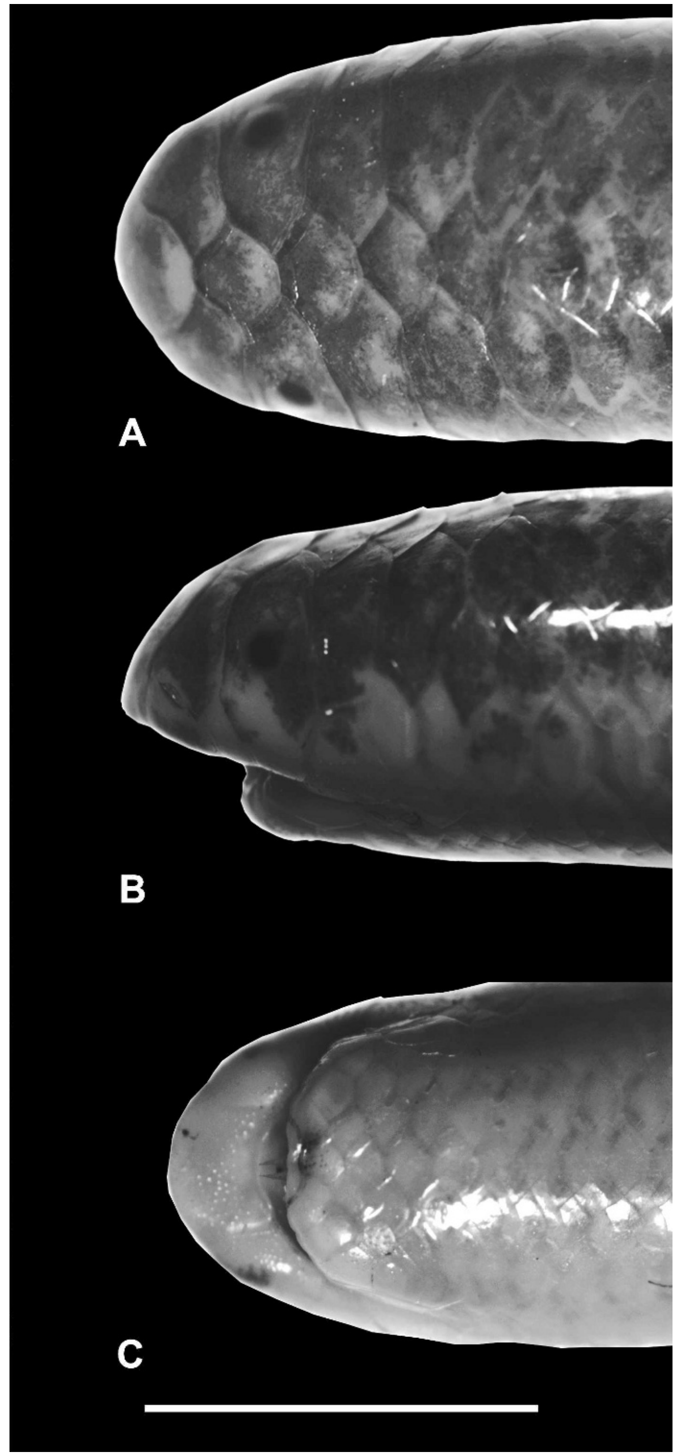

Fig. 5. Photographs of the holotype of *Siagonodon acutirostris* in dorsal (A), lateral (B), and ventral (C) views of the head. Scale = 5 mm.

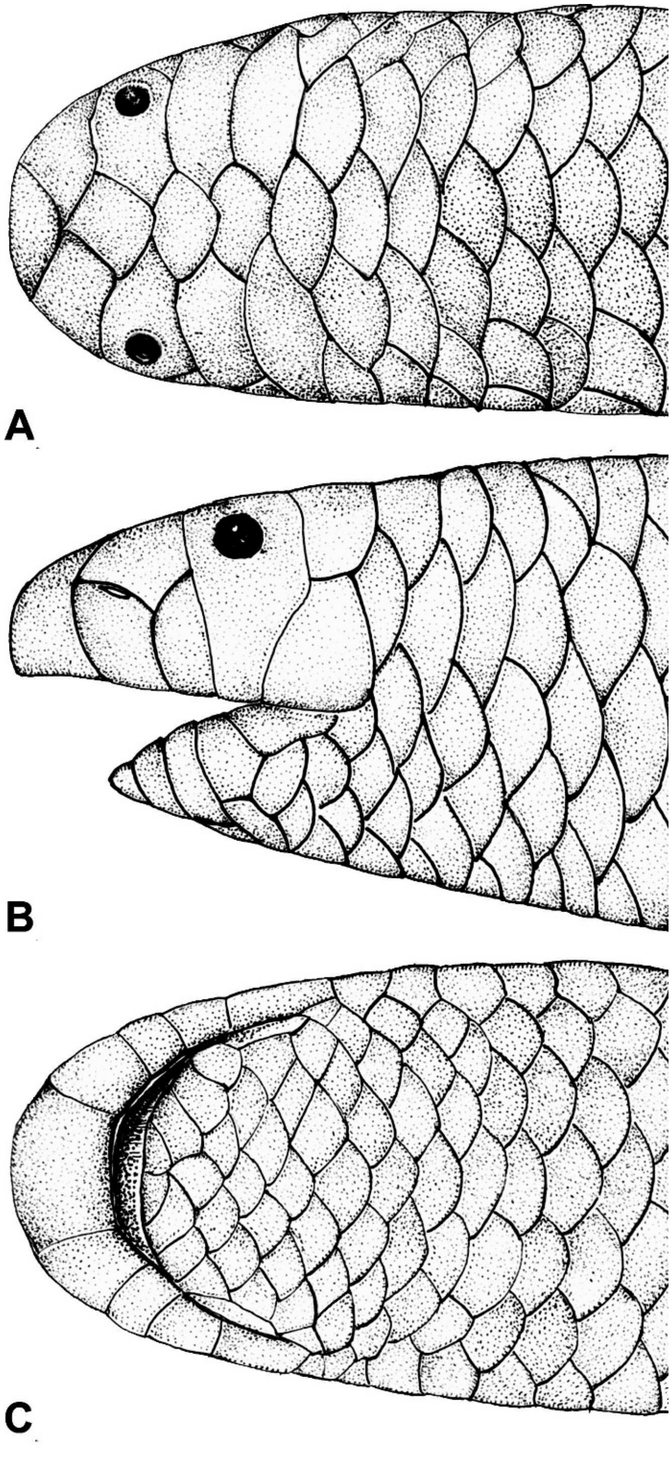

Fig. 6. Dorsal (A), lateral (B), and ventral (C) views of the head of the holotype of *Siagonodon acutirostris*. Scale = 5 mm.

middle of the tail (vs. 10 in *E. nasalis, S. borrichianus,* and *T. brasiliensis*, and 14 in *S. cupinensis*). Orejas-Miranda (1967) mistakenly reported ten scale rows around the middle of the tail in *S. septemstriatus*, but the correct counts for this species are actually 12 scale rows. *Siagonodon acutirostris*, *S. borrichianus*, *S. cupinensis*, *S. septemstriatus,* and *E. nasalis* have two (1+1) supralabials in contrast with three (2+1) occurring in most specimens of *T. brasiliensis*. The absence of a distinct frontal scale is exclusive of *E. nasalis*. The presence of a snout slightly acuminate in lateral and ventral views distinguishes *S. acutirostris* from *S. borrichianus* (flattened, pointed in lateral and truncate in ventral view), *E. nasalis* and *T. brasiliensis* (slightly rounded), *S. cupinensis* and *S. septemstriatus* (deeply truncate). A subheptagonal ocular scale with straight, roughly vertical anterior border at eye level distinguishes *S. acutirostris*, *S. cupinenis,* and *S. septemstriatus* from *T. brasiliensis* and *E. nasalis*. The middorsal cephalic plates (frontal, postfrontal, interparietal, and interoccipital) in *E. nasalis*, *T. brasiliensis*, and *S. acutirostris* are weakly enlarged laterally, contrasting with moderate cephalic plates in *S. borrichianus* and strongly enlarged cephalic plates in *S. cupinensis* and *S. septemstriatus*. *Siagonodon acutirostris*, *S. borrichianus*, *S. cupinensis,* and *S. septemstriatus* are distinct from *T. brasiliensis* by presenting a subcircular and enlarged frontal, instead of a subrectangular and not enlarged frontal. The rostral scale is enlarged at nostril level in *S. borrichianus*, *S. cupinensis,* and *S. septemstriatus*, moderate in *S. acutirostris*, and small in *E. nasalis* and *T. brasiliensis*. *Siagonodon acutirostris* exhibits a rostral scale subcircular in dorsal view in contrast with a rectangular one in *S. cupinensis* and *S. septemstriatus*, subrectangular in *S. borrichianus* and subtriangular in *E. nasalis* and *T. brasiliensis*. The lower vertex of the occipital scale of *E. nasalis*, *S. acustirostris*, and *S. borrichianus* attains the upper level of the respective supralabial, contrasting with the patterns of *S. cupinensis* and *S. septemstriatus*, in which the occipitals fail to reach the same landmark; in *T. brasiliensis* the lower vertex of each occipital crosses the upper level of supralabials. The nostril position in the midpoint of the nasal suture distinguishes *E. nasalis* and *S. acutirostris* from *S. borrichianus*, *S. cupinensis,* and *S. septemstriatus*, in which nostrils are displaced in a more anterior position. The presence of distinct temporal scales distinguishes *E. nasalis* and *T. brasiliensis* from *S. acutirostris*, *S. borrichianus*, *S. cupinensis*, and *S. septemstriatus* which have temporals indistinct from adjacent dorsal scales. Among species that lack supraocular scales, the absence of a terminal spine is exclusive of *S. borrichianus*. The terminal spine is enlarged at the base, very short, and almost covered by dorsal scales in *S. acutirostris*, *S. cupinensis*, *E. nasalis,* and *S. septemstriatus*, in contrast with *T. brasiliensis* that presents an exposed, longer than wide terminal spine. *Tricheilostoma brasiliensis* and *E. nasalis* present a distinct neck (slightly more slender than head and trunk), in contrast with *S. acustirostris*, *S. borrichianus*, *S. cupinensis,* and *S. septemstriatus*, which have heads that are indistinguishable from the neck. The striped dorsum of *S. septemstriatus* is distinct from the uniform dorsal pattern of all species lacking supraoculars. Meristic differences between *S. acutirostris* and other Neotropical leptotyphlopids lacking supraoculars are summarized in Table 1.

Description of the holotype.—Adult female, TL 216 mm, TAL of 11 mm; midbody diameter 6.9 mm; midtail diameter 5.2 mm; TL/TAL 19.6; TL/MB 31.3; relative rostral width 0.5; relative eye diameter 2.2; head length 9.7 mm, head width 4.4 mm; head subcylindrical, slightly depressed in ventral view; body subcylindrical, slightly tapered caudally near the tail; head not enlarged, indistinguishable from neck.

Snout slightly acuminate in lateral and ventral views; rostral triangular in frontal and ventral views, dorsal apex semicircular, not reaching a transverse imaginary line between anterior margins of oculars; rostral contacting supranasal and infranasal laterally, and frontal dorsally;

Table 1. Meristic and Morphometric Characters in Neotropical Species of *Siagonodon* and *Tricheilostoma brasiliensis*. The question mark means undetermined sex.

Species	Sex (*n*)	Middorsal scales	Midventral scales	Subcaudal scales	TL/Midbody diameter ratio	TL/Tail length ratio	Supralabial scales	Infralabial scales	Midtail scales	Source of data
S. acutirostris	♀ (3)	169–183	161–173	9	31.3–36.1	17.4–19.6	1+1	4	12	Our data
S. borrichianus	♂ (1)	281	—	12	64.5	26.9	1+1	4	10	Wallach, pers. comm.
	? (1)	278	—	12	46.7	28.0	1+1	4	10	Freiberg, 1951; Cei, 1993
S. cupinensis	♀ (5)	265–290	262–271	15–16	36.1–57.0	21.2–38.0	1+1	4	14	Our data; Wallach, pers. comm.
	? (4)	280–282	262–268	14–19	53.3–80.0	24.8–29.0	1+1	4	14	Bailey and Carvalho, 1946; Hoogmoed, 1977
S. septemstriatus	♀ (11)	217–247	200–237	8–12	30.0–54.4	19.8–43.5	1+1	4	12	Our data; Wallach, pers. comm.
	? (2)	213–227	206–222	8–10	42.4–43.0	30.3–47.3	1+1	4	12	Hoogmoed, 1977
T. brasiliensis	♀ (23)	194–224	178–212	13–19	31.3–59.2	11.3–16.8	1+1/2+1	4	10	Our data; Wallach, 1996
	♂ (18)	193–209	171–196	17–20	34.5–63.6	9.2–15.8				
	? (1)	207	—	16	45.4	14.6	1+1	4	10	Laurent, 1949

nasal completely divided horizontally by oblique suture crossing nostril; nostril roughly elliptic, obliquely oriented, positioned on middle of nasal suture; supranasal as high as long, bordering rostral anteriorly, infranasal ventrally, first supralabial and ocular posteriorly, and frontal dorsally; supranasal base longer than upper border of infranasal scale; infranasal as high as long; upper lip border formed by rostral, infranasal, anterior supralabial, ocular, and posterior supralabial scales; temporal scale not distinct in size from dorsal scales of lateral rows; two supralabials (1+1) entirely separated from each other by ocular; first supralabial about twice as high as long, slightly exceeding nostril level, not reaching eye level; second supralabial slightly longer than high, as high as first supralabial, its posterior margin in broad contact with temporal; ocular enlarged, subheptagonal, dorsal apex acuminate, anterior border straight, roughly vertical at eye level, twice as high as long, contacting posterior margins of supranasal and first supralabial anteriorly, parietal posteriorly, and frontal and postfrontal dorsally; eye distinct (0.6 mm), positioned in central area of expanded upper part of ocular, displaced far above nostril level; middorsal head plates (frontal, postfrontal, interparietal, and interoccipital) subequal in size, subcircular in dorsal view, weakly imbricate; frontal enlarged, as wide as long, contacting rostral, supranasals, oculars, and postfrontal; postfrontal slightly wider than long, contacting frontal, oculars, parietals, and interparietal; interparietal wider than long, its larger length approximately two-thirds of its largest width, contacting postfrontal, parietals, occipitals, and interoccipital; interoccipital almost twice as wide as long, contacting interparietal, occipitals, and first dorsal scale of vertebral row; parietal and occipital subequal in shape, irregularly pentagonal; parietal almost three times wider than long, lower margin contacting upper border of second supralabial, posterior margin contacting temporal, occipital, and interparietal, anterior margin in broad contact with ocular and postfrontal; occipital almost twice as wide as long, its lower limit attaining level of upper margin of second supralabial, although separated from the latter by temporal; symphysial trapezoidal, anterior and posterior borders respectively straight and slightly convex, almost twice as wide as long; four infralabials; first three infralabials subequal, somewhat higher than long, not pigmented; third infralabial slightly shorter than first and second infralabials; fourth infralabial twice as long as high, distinctively longer than others, as high as second supralabial, not pigmented; head subcylindrical, not distinguishable from neck, twice as long as wide.

Middorsal scales 169; midventral scales 161; 14 scales rows around midbody, reducing to 12 rows in the middle of the tail; cloacal shield short and semicircular, almost twice as wide as long; nine subcaudals; fused caudals absent; terminal spine short, conical, with stout base slightly wider than long. Dorsal scales homogeneous, cycloid, smooth, imbricate, and almost twice as wide as long.

Coloration in preservative.—The color of the holotype has considerably faded after preservation; five dorsalmost scale rows uniformly pale copper, whereas nine remaining scale rows (paraventral and ventral rows) whitish cream; at least lower margins of scales forming upper lip border cream colored, following belly pattern; cloacal shield cream, slightly darker than general ventral tonality; terminal spine not pigmented.

Variation.—Middorsal scales 169–183, midventral scales 161–173, subcaudals 9–11, TL 122–235 mm, TL/TAL 17.4–19.6, TAL 5.1–5.7% of TL, TL/MB 31.3–36.1, TL/MT 2.1–2.9, relative eye diameter 1.6–2.2.

Distribution.—Known from the localities of Almas and Mateiros in the state of Tocantins, Brazil (Fig. 4).

Etymology.—The specific epithet *acutirostris* derives from the union of the Latin adjective *acutus* (=pointed) with the substantive *rostrum* (=beak, snout). This name is given in allusion to the slightly acuminate shape of the snout exhibited by the new species.

DISCUSSION

Because external morphology is somewhat conservative in the family Leptotyphlopidae, hemipenial morphology may provide informative characters to clarifying the relationships among its genera (Peters and Orejas-Miranda, 1970b; Passos et al., 2005, 2006). Descriptions of hemipenes are available for some species of *Epictia* (*E. albipuncta*, *E. munoai*, *E. australis*, *E. goudotti* [=*L. g. phenops*], *E. magnamaculata,* and *E. tenella*) and *Tricheilostoma* (*T. salgueiroi* and *T. fuliginosum)* (Bailey and Carvalho, 1946; Orejas-Miranda, 1962; Peters and Orejas-Miranda, 1970b; Fabrezi et al., 1985; Scrocchi, 1990; Cei, 1993; Passos et al., 2005, 2006), attesting that hemipenial morphology shows close similarities among congeneric species. Based on comparisons with species of the genus *Epictia* (e.g., Peters and Orejas-Miranda, 1970b) that present robust or globular basal and narrow terminal portions of the hemipenial body, Passos et al. (2006) suggested that a hemipenial body with narrow basal and robust terminal portions could represent a synapomorphy of the genus *Tricheilostoma* (former *L. dulcis* species group). The hemipenis of *T. brasiliensis* possesses the characters pointed out by Passos et al. (2006), providing additional support to our generic allocation.

Regarding external morphology, our ongoing study on the taxonomic revision of *Tricheilostoma* revealed the following similarities shared between *T. brasiliensis* and the other species of this genus: middorsal cephalic scales of moderate size; rostral scale triangular or subtriangular in dorsal view; presence of fused caudals; subhexagonal ocular scale with anterior margin rounded at eye level; eyes just slightly above nostril level; and an enlarged longer than wide terminal spine. None of these features are addressed in the generic diagnosis proposed by Adalsteinsson et al. (2009); if these characters are confirmed as synapomorphies of *Tricheilostoma*, the absence of supraocular shields in *T. brasiliensis* should be interpreted as homoplastic with the condition exhibited by other leptotyphlopids (for instance, species of the genus *Siagonodon*). An explicit phylogenetic study incorporating more species may provide new insights on the evolution of these features within the family.

Besides the absence of supraoculars and the presence of only two supralabials, the diagnosis of *Siagonodon* proposed by Adalsteinsson et al. (2009) was mostly based on continuous features of scalation, proportions, and color pattern. Our study shows that this diagnosis could be expanded by including the following distinctive characters: enlarged middorsal cephalic plates; rostral scale in rectangular or subcircular shape in dorsal view; eyes displaced far above nostril level; subheptagonal ocular scale, straight bordered at eye level; a very short terminal spine, distinctively wider than long; and fused caudals virtually absent. Morphologically, *S. acutirostris* fits this expanded diagnosis, justifying its generic allocation. However, the taxonomic complexity of Leptotyphlopidae denoted by its considerable but poorly known diversity emphasizes the need of additional revisionary studies in order to provide a more solid background for discussing phylogenetic relationships and species boundaries.

Siagonodon borrichianus shows some morphological traits that are contrasting with the generic characterization provided herein. Nonetheless, such traits are shared by *Rena unguirostris*, to which it may be closely related. For instance, both species lack a terminal spine (a unique characteristic among Neotropical leptotyphlopids), possess fused caudals, frontal wider than other middorsal cephalic scales, rostral and supranasal scales with sharp horizontal cutting edges anteriorly and laterally, and rostral with subrectangular shape in dorsal view. Since there are no data on morphological variation of *S. borrichianus*, we have not considered this species in our generic comparisons to avoid misleading inferences; however, we must emphasize that its allocation to *Siagonodon* should be assessed in detail by further studies based on larger samples. Such investigations may shed more light on the precise allocation of *S. borrichianus* and its possible relationship with *R. unguirostris*.

MATERIAL EXAMINED

Institutional abbreviations follows the list available at http://www.asih.org/node/204. Acronyms that were absent or recently changed from the list are as follows: Coleção Herpetológica da Universidade de Brasília (CHUNB), Brasília, Brazil; Museu de História Natural Professor Doutor Adão José Cardoso (ZUEC), Campinas, Brazil; Universidade Federal do Mato Grosso (UFMT), Cuiabá, Brazil; Instituto Butantan (IBSP), São Paulo, Brazil. Individuals marked with (*) had at least one hemipenis prepared in the fully everted condition. Literature data are marked with a circle.

Epictia nasalis: Nicaragua: Managua, USNM 16134 (holotype).

Rena unguirostris: Argentina: Córdoba: Cruz Del Eje, BMNH 1946.1.11.52 (holotype); Catamarca: Capital, Águas Coloradas, FML 0689; Póman, Puesto Río Blanco, FML 1399; Tinogasta, Tinogasta, Palo Blanco, FML 1773; 35 km de Tinogasta, Villa Luján (=Rio Colorado), FML 1910; Río Negro: Conesa, General Conesa, FML 1829; Salta: Anta, Finca Pozo Largo, FML 2075, FML 2308; La Rioja: Castro Barros, Chuquis, FML 9620; Paraguay: Chaco: Fortin Guachalla, Rio Pilcomayo, FMNH 44174.

Siagonodon borrichianus: Argentina: Patquia, Estancia de Breyer, La Rioja, USNM 73500; Mendonza, MCZ 15900.

Siagonodon cupinensis: Brazil: Mato Grosso: Araguaya, near Tapirapé river, MNRJ 387 (holotype); Porto Velho, Tapirapé River, AMNH 131790, MCZ 142652–3, MZUSP 3754–55• (Hoogmoed, 1977); Barra do Tapirapé, MZUSP 4405• (Hoogmoed, 1977); Pará: Óbidos, MCZ 3728; Surinam: Lely Mts., MCZ 149551.

Siagonodon septemstriatus: British Guiana: Essequibo: Oko Mountains, FMNH 26660; Mazaruni-Potaro, near Kartabo, AMNH 98187; Surinam, no specific locality, ZSM 127/1947; Surinam: Brokopondo, Brown's Moutain, RMNH 17837• (Hoogmoed, 1977); Nickerie, Sipaliwini, RMNH 17838• (Hoogmoed, 1977); New River, 750 feet, BMNH 1939.1.183• (Hoogmoed, 1977); French Guiana: Cayenne, MNHN 03230• (Hoogmoed, 1977); Brazil: Rondônia: Costa Maeques, IBSP

55513; Amazonas: Presidente Figueiredo, IBSP 51897; Uapés river, IBSP 22153, Reserva INPA-WWE 5, MZUSP 7613, 10535; Manaus, ZUEC 391; Pará: Nova Olinda, IBSP 25496; Roraima: Ilha de Maracá, MZUSP 9709; Tepequém, MZUSP 10651.

Tricheilostoma brasiliensis: Brazil: Maranhão: Carolina, CHUNB 52064; Bahia: Barreiras, IBSP 50436, UMMZ 108817• (Wallach, 1996); Cocos, CHUNB 51368; Correntina, MNRJ 18392, 18393*; Piauí: Estação Ecológica Uruçuí-Una, MZUSP 12189–92; Tocantins: Babaçulândia, MZUSP 12668; Palmeiras do Tocantins, MZUSP 17713–15; Goiás: PCH Santa Edwiges I (region of Mambaí), MZUSP 17761–62; Posse, CHUNB 50870; Minas Gerais: Buritizeiro, CHUNB 44545; Formoso, MZUSP 12881–85; João Pinheiro, MNRJ 17802*; PARNA Cavernas do Peruaçu, Januária, MZUSP17716–25; Três Marias, MNRJ 4616; Mato Grosso: APM-Manso, Chapada dos Guimarães, UFMT 0683; Mato Grosso do Sul: Corumbá, UFMT 1159–60*, 1162*, 1163.

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