

A NEW SPECIES OF *MESOBAENA* MERTENS, 1925 (SQUAMATA: AMPHISBAENIDAE) FROM BRAZILIAN GUIANA, WITH A KEY TO THE AMPHISBAENIDAE OF THE GUIANAN REGION

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ABSTRACT: We describe a new species of the formerly monotypic genus *Mesobaena* from the northern part of the State of Pará, Brazilian Guiana. This species is characterized by having a very pointed snout, two supralabials and two infralabials, of which second ones are elongate and enormous, small eye visible under ocular, ocular very elongate, autotomy annulus poorly marked or absent, absence of dorsal, lateral and ventral sulci, and presence of vertical flat, unsegmented band-like structure with concave lateral edges on tip of tail. Hemipenis without spines or distinct ridges on proximal third, sulcus spermaticus only on proximal third. We make comparisons with other South American amphisbaenids, and provide a key to the amphisbaenids of the Guianan Region. The species is fossorial and inhabits Amazonian tropical rainforest near creeks. This is the second species known of the genus, which seems to be restricted to the Guiana Shield and immediate surroundings.

Key words: Amphisbaenians; Brazil; Distribution; Hemipenis; Taxonomy

THE FAMILY Amphisbaenidae is the most diverse of the suborder Amphisbaenia, with almost 180 valid species (Gans, 2005) distributed in Africa, Central and South America and the Caribbean (Kearney, 2003). The number of amphisbaenians known from the Guianan Region (sensu Hoogmoed, 1979) for a long time remained at a stable two, viz. *Amphisbaena alba* Linnaeus and *A. fuliginosa* Linnaeus, known from many localities throughout the Guianan Region. Mertens (1925) described *Mesobaena huebneri* from “Inirida, Süd-Venezuela” (= Inirida River, actually in Colombia), and after that a steadily increasing number of small species of *Amphisbaena* was described from the area, generally only known from the type specimen(s). Only *Amphisbaena gracilis* Strauch, *A. slevini* Schmidt, and *A. vanzolinii* Gans, are known from more than one locality. Gans (1971) redescribed the three then monotypic genera of amphisbaenids from South America: *Aulura* (*A. anomala* Barbour), *Bronia* (*B. brasiliensis* Gray) and *Mesobaena* (*M. huebneri* Mertens). He also reported new specimens and localities for *M. huebneri* in Venezuela (Maroa) and Colombia

(La Macarena and Timbó), added additional diagnostic features and pointed out character variation in the species (Gans, 1971, 1974). Hoogmoed and Avila-Pires (1991) provided an overview of the small species of *Amphisbaena* known from the Amazon basin and adjacent areas, including the Guiana Shield. Since their paper, only *Amphisbaena hugoi* Vanzolini was described as new (Vanzolini, 1990), but actually it is a synonym of *A. vanzolinii* (Hoogmoed and Mott, 2003). The only interesting change from the 1991 situation is that Starace (1998) reported *A. slevini* Schmidt (until then only known from the area of Manaus) from the interior of French Guiana, thus extending its distribution 1125 km to the northeast.

Here, we describe a new small amphisbaenian from the Guiana Shield of the genus *Mesobaena*, that was only known from the westernmost edge of the Guiana Shield in Venezuela and from adjacent Colombia (Gans, 1971, 1974), its distribution just touching the margin of the Guianan Region as defined by Hoogmoed (1979). We provide data about variation, comparisons with other species, habitat, hemipenis, and a key to the Amphisbaenidae of the Guianan Region.

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MATERIALS AND METHODS

We examined specimens in the following institutions: Museu Nacional, Universidade Federal do Rio de Janeiro (MNRJ), Museu Paraense Emilio Goeldi (MPEG), Smithsonian Institution, National Museum of Natural History (USNM) and Field Museum of Natural History (FMNH). We measured snout-vent length (SVL) and tail length (TL) with a flexible ruler to the nearest 1 mm. We measured body diameter and head plates with a digital caliper to the nearest 0.1 mm. Nomenclature and measures of cephalic scales follow Gans and Alexander (1962) and Gans (1971). We measured head length (HL) from tip of rostral to anterior tip of vertically polygonal scale behind commissure of mouth; head width and head depth at posteriormost part of head where it joins the body; body diameter at the mid point of snout-vent length; tail diameter at its widest and narrowest points. We counted body annuli between the frontals and the anal plate, including the annulus bearing the precloacal pores (cf. Gans and Alexander, 1962; Vanzolini, 1951); caudal annuli from first complete one behind the cloaca to last complete annulus, not including the area with the unsegmented, flat, elevated vertical keel on tip of tail (Gans and Alexander, 1962). Lateral annuli are situated between the body and the tail annuli in the cloacal region. We did not count dorsal and ventral segments separately because of the absence of lateral sulci. During fixation of specimens we determined sex by hemipenis eversion.

SYSTEMATICS

Mesobaena rhachicephala sp. nov.
(Figs. 1–5)

Holotype.—MNRJ 15324, adult male, from Floresta Nacional Saracá-Taquera (01° 50' S, 56° 31' W, 83 m), Porto Trombetas, Municipality of Oriximiná, State of Pará, Brazil. November, 2006. Collected by E. G. Pereira.

Paratypes.—MNRJ 15325, adult female, same data as holotype. MPEG 24854 (field number CN0007), subadult male (specimen cut into two pieces preserved and a middle part missing), from left (= north) bank of Rio Nhamundá (01° 42' 19.8" S, 57° 11' 47.7" W,

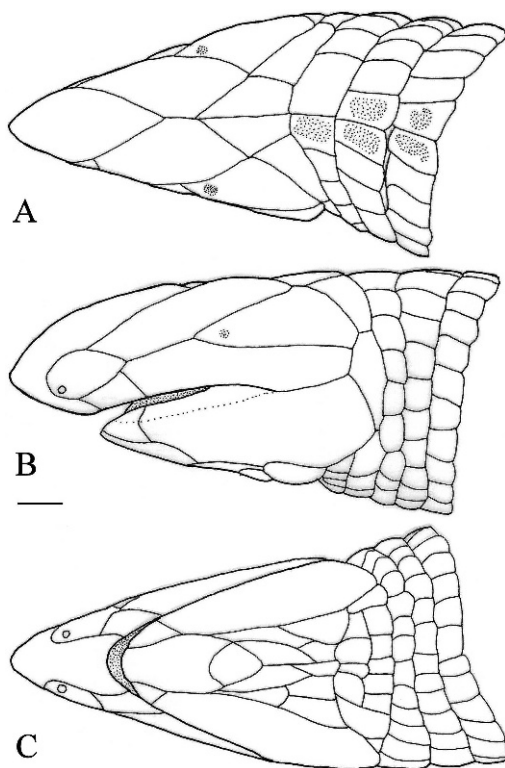


FIG. 1.—Head of *Mesobaena rhachicephala* sp. nov. (holotype, MNRJ 15324): (A) lateral, (B) dorsal, and (C) ventral views. (Scale bar = 1 mm). Illustration by M. S. Hoogmoed.

20 m), Municipality of Faro, State of Pará, Brazil. January, 2008. Collected by W.A. Rocha and P.C.R. Almeida.

Additional specimens examined.—*Mesobaena huebneri*. Venezuela: Amazonas, Maroa: FMNH 265436 (CG 4787); Colombia: Vaupés, Timbó: USNM 248281.

Literature data.—*Mesobaena huebneri*. SMF 11829 (Holotype from Mertens, 1925); AMNH 104641; FMNH 130987, 265435 (CG 4786) from Gans (1971); UTA-R 3478, 3537, 3745 from Gans (1974); AMNH 115936–7 from Cole and Gans (1987); UTA 6880 [CS] from Kearney (2003).

Diagnosis.—A new species allocated to *Mesobaena* based on description provided by Gans (1971), having following combination of characters: (1) head and snout more pointed than keel-shaped; (2) snout prognathous; (3) nostrils in small nasals on underside snout; (4) large, elongate and coniform rostral; (5)

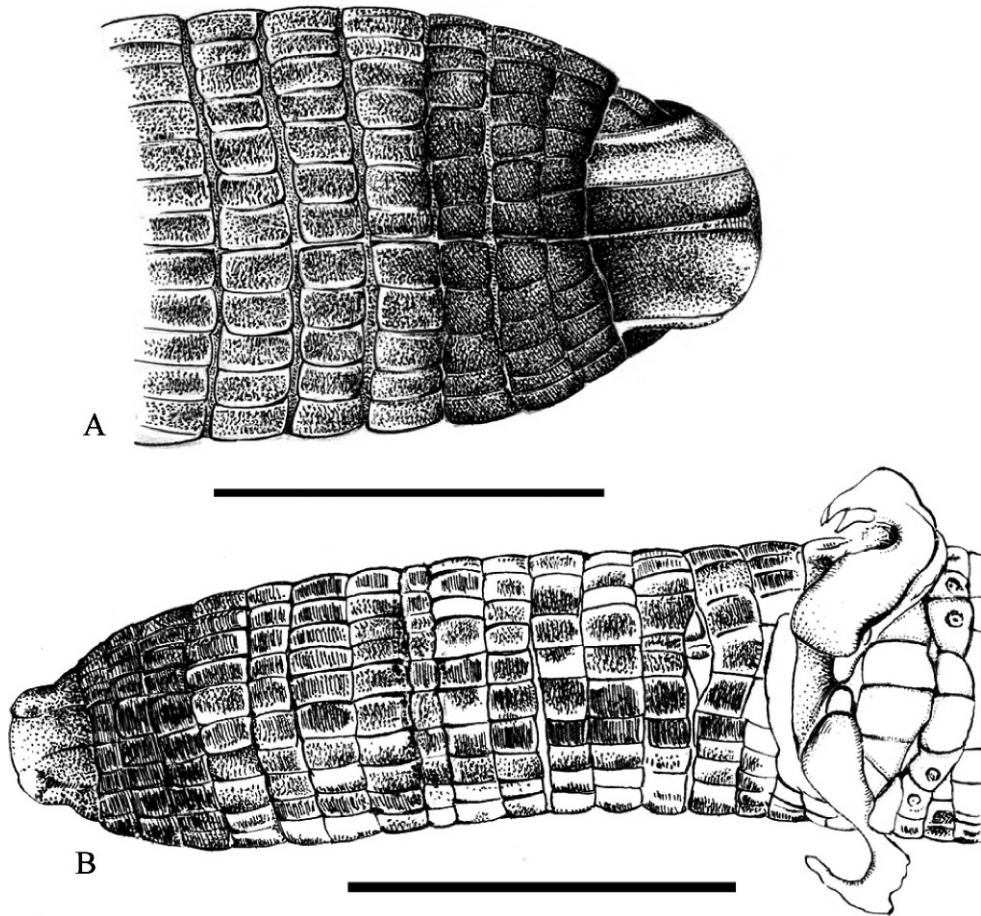


FIG. 2.—Tail of *Mesobaena rhachicephala* sp. nov. (holotype, MNRJ 15324): (A) dorsal, and (B) ventral views. (Scale bar A = 5 mm, scale bar B = 10 mm). Illustration by P. R. Nascimento.

posterior tip rostral reaching level anterior tips oculars; (6) large prefrontals in contact behind rostral; (7) medium-sized frontals in broad medial contact; (8) two supralabials, first small, second very large; (9) elongate triangular ocular; (10) very small eye visible in anterior tip ocular; (11) one postocular; (12) mental in contact with first and second infralabials, ending in two sharp points; (13) oval postmental; (14) two infralabials, first small, second very large; (15) second infralabial twice as high as second supralabial; (16) three or four irregular rows of postgenials; (17) regular segments in gular region; (18) dorsal body scales quadrangular with central depression; (19) ventral body scales rectangular without central depression; (20) body scales arranged in transverse row (annuli); (21) no dorsal, lateral

or ventral sulci; (22) two pairs of precloacal pores separated by two median scales without pores; (23) poorly marked autotomy annulus present in holotype (seventh tail annulus), but absent in two paratypes; (24) tail tip with an elevated, flat, wide, vertical, unsegmented band-like double edged structure with concave sides; (25) hemipenis without spines or distinct ridges, sulcus spermaticus only on proximal one third; (26) color in life pink on head and anterior body, more posteriorly dorsal parts brown, ventral parts cream, tip of tail very dark brown; (27) eye bright blue; (28) in preservative anterior part body and ventral region cream, dorsal parts brown, darkest on tail tip; (29) SVL in male 245 mm, in female 253 mm.

Description of holotype.—Adult male, 245 mm SVL, 20 mm TL; 291 body annuli,

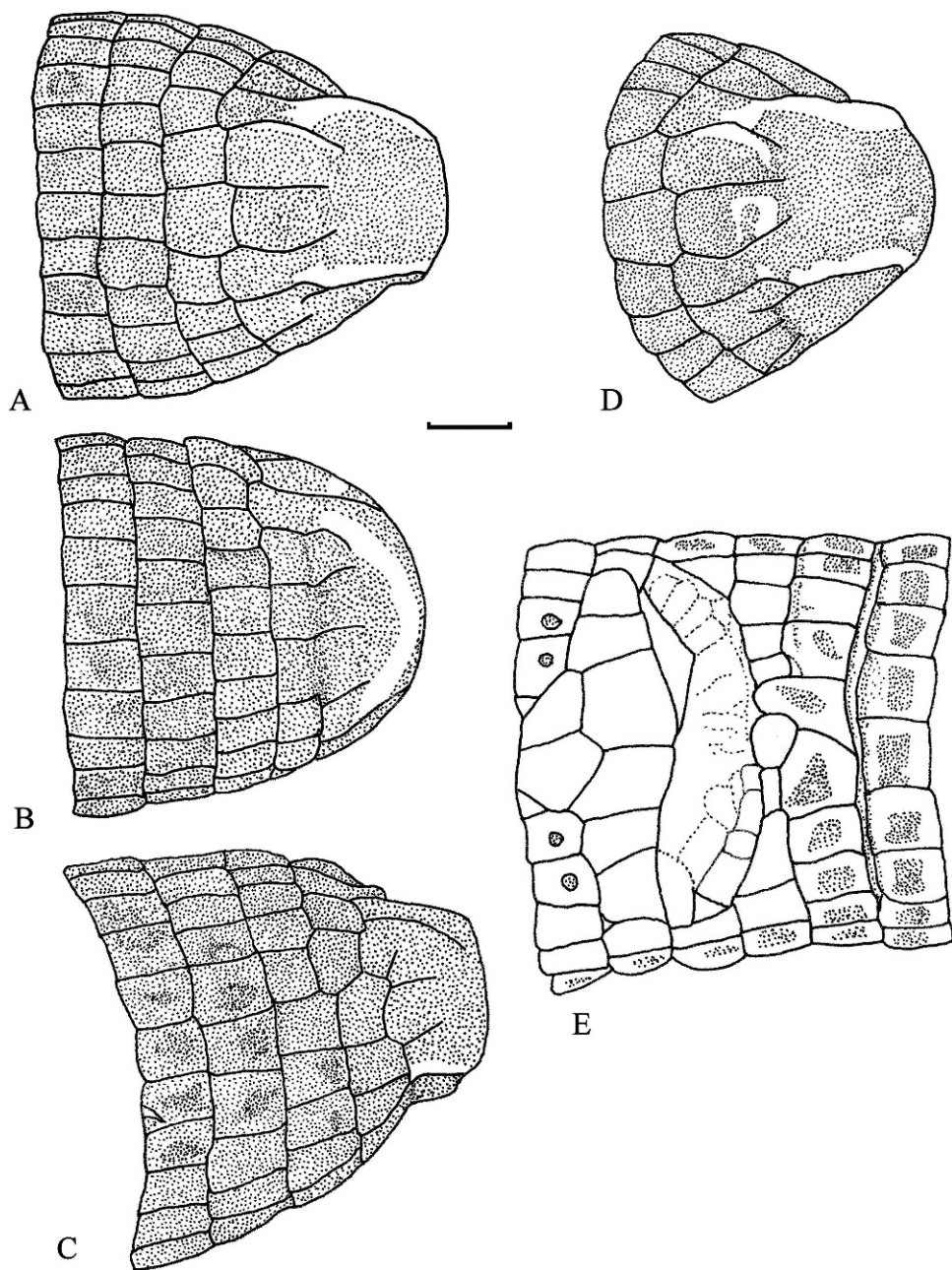


FIG. 3.—Tail tip and anal plate of *Mesobaena rhachicephala* sp. nov. (paratype, MPEG 24854): (A) and (B) dorsal views, (C) lateral view, (D) ventral view, (E) anal plate and preanal pores. (Scale bar = 1 mm). Illustration by M. S. Hoogmoed.

14 caudal annuli, three lateral annuli, 26 segments at midbody; midbody diameter 5.3 mm, diameter of tail towards tip becoming slightly wider (5.1 mm vs. 5.3 mm; Figs. 2, 3,

5); head length 8.7 mm, width 4.3 mm, depth 3.7 mm. Head coniform, with very prognathous snout formed by the enormous rostral; body cylindrical, lacking ventral, dorsal and

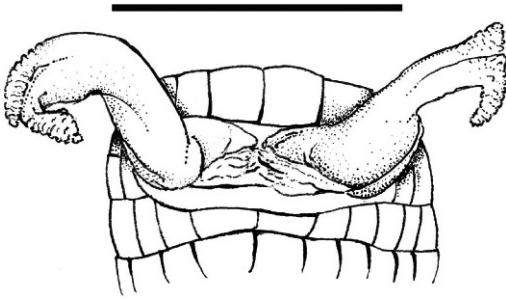


FIG. 4.—Hemipenes of *Mesobaena rhachicephala* sp. nov. (holotype, MNRJ 15324; Scale bar = 5 mm). Illustration by P. R. Nascimento.

lateral sulci; tail slightly compressed, with poorly marked autotomy level at seventh caudal annulus, with peculiar, elevated, wide, flat, vertical, unsegmented band-like structure with concave sides on tip. Rostral very large, coniform, slightly constricted between nostrils, with a slightly keratinized dorsal keel, contacting broadly first labial, nasal, and prefrontal, dorsally reaching level of anterior tip of oculars; nasals widely separated by rostral, small, lozenge-shaped, twice as long as high and in contact with second supralabial, preventing prefrontal-first supralabial contact; nostrils small, round, in anterior corner of nasal, facing ventro-laterally, visible from below, located well in front of tip of lower jaw; prefrontals pentagonal, four times as long as high, about twice as long as frontal, in contact with its opposite number behind the rostral, preventing rostral-frontal contact, laterally in contact with rostral, nasal, ocular and second supralabial, in broad contact with frontal posteriorly; frontals irregularly quadrangular, about three times as long as wide, along midline of head in broad contact, in contact with prefrontal, ocular, postocular and first body annulus; two supralabials; first supralabial small, rhomboid, almost twice as long as high, in contact with rostral, nasal and second supralabial only; second supralabial very large, more or less rectangular, elongate and rather narrow, about five times as long as high, almost six times as long as the first supralabial, in contact with first supralabial, nasal, prefrontal, ocular and vertically polygonal scale (tip pointing anteriorly) behind commissure of mouth; ocular triangular, very elongate, almost twice as long as high, in contact with prefrontal, postocular, second

supralabial and just touching frontal; eyes very small (0.2 mm), covered by ocular, but clearly visible, in extreme anterior portion of ocular; postocular trapezoidal, almost twice as high as wide, bordered by ocular, frontal, vertically polygonal scale behind the commissure of mouth, and first body annulus; vertically polygonal scale (tip pointing anteriorly) behind commissure of mouth in contact with second supralabial, temporal, first body annulus, outer postgenial and second infralabial (Figs. 1A, B).

Two infralabials; first infralabial small, quadrangular, slightly longer than high, in contact with mental and second infralabial; second infralabial very large, almost four times as long as high, about twice as high as second supralabial and almost six times as long as first infralabial; mental elongate, linguiform, in contact with first and second infralabials, reaching well beyond first infralabials, ending in two sharply pointed tips, separated by oval postmental; four irregular postgenial rows with four, five, six and eight segments respectively; malars absent. Mouth only opens between the labials to point below middle of ocular. Beyond that point a fine line continues the commissure of the mouth to vertically polygonal scale, but this line is not part of functional mouth opening (Figs. 1B, C); not clear whether premaxillary teeth are present; four maxillary teeth and five mandibular teeth.

Dorsals about quadrangular, with central round depression and slightly convex around edges. Ventrals rectangular, slightly wider than long, flat, without central depression; in anterior and posterior part body only arranged in transverse rows (annuli), no longitudinal rows discernable. Dorsals and ventrals forming uninterrupted annuli because of absence of sulci. Scales on middle part of body with longitudinal scale borders nearly continuous. Ventrals in in anterior part body only forming transverse annuli, in posterior part body also in longitudinal rows.

Four small, round precloacal pores in two pairs, separated by two scales without pores (Fig. 3E); cloacal shield with seven scales; three lateral annuli; autotomy annulus poorly marked at seventh caudal annulus, which is only slightly narrower than the adjacent annuli (Fig. 2B).

TABLE 1.—Variation of measurements and counts in *Mesobaena rhachicephala* and *M. huebneri*. Body diameter, snout-vent, caudal and head lengths in millimeters. Ranges for *M. huebneri* are followed by means and standard deviation (data from Mertens, 1925; Gans, 1971; 1974; Cole and Gans, 1987; and Kearney, 2003; *data from mandibular and maxillary teeth from Kearney, 2003).

	<i>Mesobaena rhachicephala</i>			<i>Mesobaena huebneri</i>
	MNRJ 15324	MNRJ 15325	MPEG 24854	
Body annuli	291	286	—	258–281 (271 ± 10)
Caudal annuli	14	15	14	16–21 (18 ± 1)
Laterals	3	3	3	2–6 (4 ± 1)
Autotomy annulus	7	absent	absent	6–8 (7 ± 1)
Dorsal segments	26	26	26	12–14 (14 ± 1)
Ventral segments				12–15 (14 ± 1)
Supralabials	2	2	2	3
Infralabials	2	2	2	3
Snout-vent length	245	253	—	108–252 (201 ± 49)
Tail length	20	18	15	15–23 (17 ± 4)
Head length	8.7	9.0	7.5	6.6–9.0 (7.8 ± 1.7)
Head width	4.3	4.4	3.8	—
Head depth	3.7	4.0	3.2	—
Maxillary teeth	4	—	4	3–5*
Mandibular teeth	5	—	5	5–9*
Body diameter	5.3	5.7	4.8	4.5–8.0 (5.6 ± 1.6)
Tail diameter	5.5	5.7	4.6	—
Postgenials	4	4	3	3
Dorsal sulci	absent	absent	absent	present
Lateral sulcus	absent	absent	absent	present

Hemipenis.—Hemipenis (Fig. 4) narrow, elongate, proximal one-third wider than rest, at two thirds of total length bifurcating into two pointed horns, one distinctly longer than other. Sulcus spermaticus on posterior surface of proximal one-third only, not continued till tip of organ. No spines or pattern of distinct ridges, most of surface irregularly wrinkled, except inner surface of two terminal horns and a narrow area along sulcus spermaticus which are poorly marked with ridges.

Color in preservative.—Head cream; body in dorsal view cream to midbody, posteriorly gradually becoming brownish, darker at the end of tail; body ventrally uniformly cream, tail dark brown dorsally and ventrally, except broad vertical keel on end of tail, which is a mixture of grey and white. Posterior three tail annuli nearly black.

Variation.—For variation in meristic characters see Table 1. The three types are very similar in most aspects. The color of MPEG 24854 (a subadult specimen) at capture was identical to the color in preservative after three weeks (Fig. 5). Head dorsally to first body annulus, and laterally to just behind small blue eye, cream. On ventral part head mental and infralabials cream. Body pink from

cream part of head to about body annulus 50 dorsally and to about body annulus 28 ventrally; after these annuli turning into light brown dorsally and cream ventrally. Anterior dorsals with indistinct brown spots in center, posteriorly gradually becoming more distinct, and with large, square brown spots in second half of body. Ventrals immaculately pink (anterior part of body) to cream (posteriorly). In posterior part of body border between dorsal and ventral color very irregular, and scattered ventral scales brown (Fig. 5B), sometimes only seven white ventrals between colored dorsals of an annulus. Scales of cloacal plate immaculately cream. Dorsal caudal scales same colour as dorsals of posterior body, except last four annuli, which are nearly uniform dark grey-brown, annulus before this group dark grey with darker spots still visible. Ventral caudal scales cream with square, brown spots in center, lighter than dorsal part of tail, except in posterior five annuli, which are distinctly darker and do not show any cream. Wide vertical unsegmented band on tip tail dark grey with white edges. In preservative after five months pink part of body has become cream, other areas have same color as after three weeks in preserva-

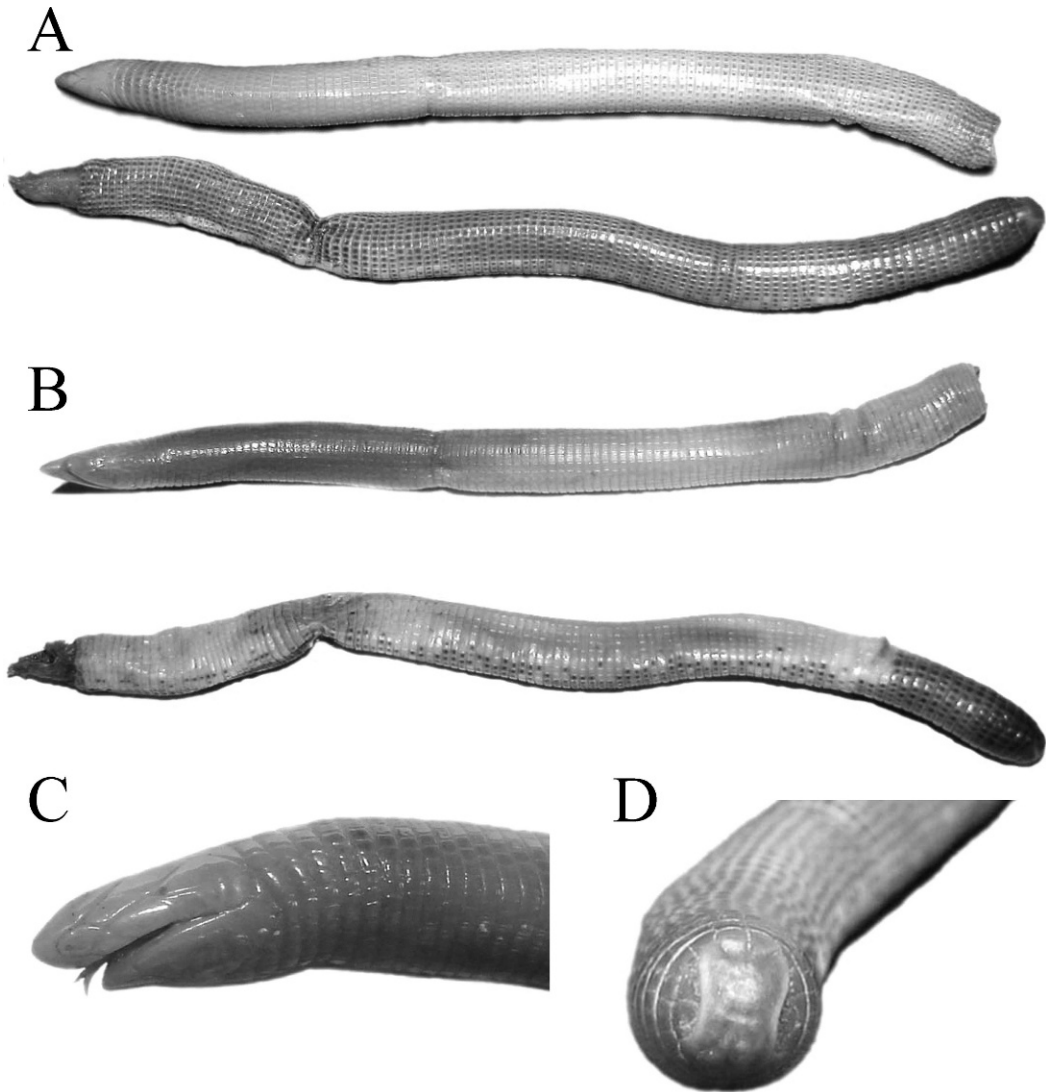


FIG. 5.—*Mesobaena rhachicephala* sp. nov. (paratype, MPEG 24854), subadult male (specimen cut into at least two pieces) from Rio Nhamundá ($01^{\circ} 42' 19.8''$ S, $57^{\circ} 11' 47.7''$ W, 20 m), Municipality of Faro, State of Pará, Brazil, three weeks after preservation: (A) dorsal, and (B) ventral body, (C) lateral view head, (D) posterior view of tail tip. Photos M. S. Hoogmoed.

tive. In MNRJ 15325, edge of vertical unsegmented band on tail on right-hand side not marked, entire tail tip white.

Distribution and habitat.—The species is known from Brazilian Amazonian lowlands of the Guianan Region (Fig. 6). Specimens MNRJ 15324–25 were found in mature lowland Amazon rainforest (“terra firme”) on sandy soil with a depth of about 30 cm, near streams (“igarapés”). They were collected

while digging a shallow trench for placing plastic of a drift fence. The paratype MPEG 24854 was found in terra firme forest on a low plateau, 20 m above sea level, about 14 m above the level of the river (the level of which was rising), about one kilometer from the Rio Nhamundá, also while digging a shallow trench for placing plastic of a drift fence (pitfall trap 3 in trail 3). The specimen was at a depth of about 30 cm in sandy soil with little

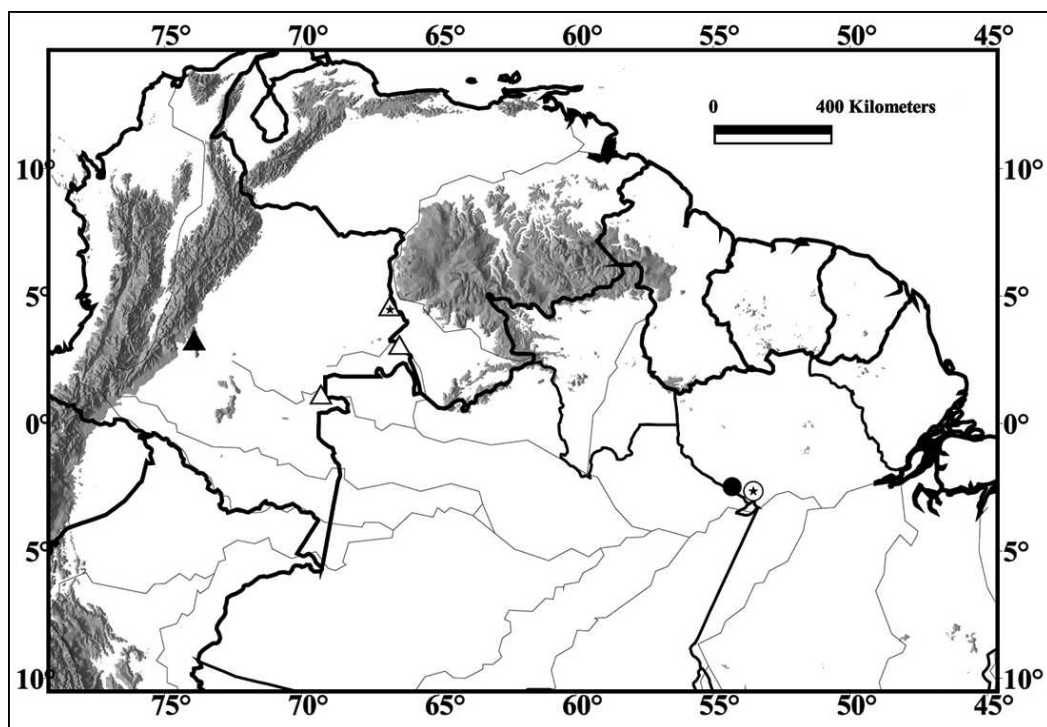


FIG. 6.—Geographical distribution of *Mesobaena rhachicephala* sp. nov. (type locality circle with asterisk, MPEG paratype black dot) and *M. huebneri* (literature data open triangles, material studied black triangle, type locality triangle with asterisk inside).

leaf litter on top, but with a mat of fine roots. The weather at the time was cloudy with light rain. The habitat of *Mesobaena huebneri* is unknown.

Etymology.—The specific epithet *rhachicephala* is formed from the Greek words *rhachis* (= ridge) and *kephale* (= head) in reference to the slightly keeled rostrum of the new species.

Comparison with other South American amphisbaenids.—The new species is distinctly different from most South American amphisbaenids by having a pointed conical head (differing from *Anops* with compressed head and sharply keeled snout; from *Amphisbaena*, *Bronia* and *Cercolophia* with rounded snout; from *Leposternon* with shovel-shaped snout); elongate and coniform rostral (differing from *Amphisbaena*, *Anops*, *Aulura*, *Bronia*, and *Leposternon* with different shapes of rostral); regular segments in gular region (differing from *Aulura*, and *Leposternon* with irregular segments); two pairs of precloacal pores

separated by two median scales without pores (differing from *Amphisbaena*, *Anops*, *Aulura*, *Cercolophia* and *Leposternon* which have uninterrupted rows of precloacal pores); poorly marked autotomy constriction present in one specimen, but absent in two (differing from most *Amphisbaena*, and *Aulura* with distinct autotomy constrictions); tail tip with an elevated wide, flat, vertical, unsegmented band-like double-edged structure with concave sides (differing from *Amphisbaena*, *Aulura*, *Bronia*, and *Leposternon* with rounded tail tips and from *Cercolophia* with narrow, segmented vertical ridge). The peculiar elevated band-like unsegmented structure on tip of tail was only known from *Mesobaena huebneri*. This structure is completely different from the narrow segmented vertical ridge at tip of tail that occurs in the genus *Cercolophia* Vanzolini (Gans, 1964; Vanzolini, 1992) from southern Brazil and surroundings. Possibly *Anops bilabialis* Stimson has a similar tail tip, but from the literature this is not clear.

Mesobaena rhachicephala is similar to *M. huebneri* in having a very large prognathous rostral, small nasals, frontals forming a long suture in the midline, a vertical unsegmented band-like structure on tip of tail, and depressions in most body and caudal scales, although Gans (1971) mentions these depressions only for the dorsal tail scales in *M. huebneri*. It differs from *M. huebneri* (characters between parenthesis) in having a conical snout with a low dorsal keel (highly domed head with rounded tip in lateral view); ocular triangular, very elongate, almost two times as long as high, with the visible eye situated in the extreme anterior portion of the ocular scale (small quadrangular, eye indistinct); two supra- and two infralabials (instead of three each), the second ones of which are elongated and enormous (large, but not enormous); in lacking malars (malars present); 3–4 postgenial rows (three); in having a higher number of dorsal annuli (286–291 versus 258–281), in lacking ventral, dorsal and lateral sulci (dorsal and lateral sulci present); 14–15 caudal annuli (16–21); in having a poorly indicated autotomy annulus (seventh) on the tail (holotype), which may even be absent (paratypes MNRJ 15325 and MPEG 24854; Fig. 5). *Mesobaena rhachicephala* shows more scale fusions on the head than *M. huebneri*, e.g., in the posterior dorsal and lateral head region, in the supralabials and on the underside of the head, where the second infralabials apparently have fused with the third infralabials and the malars. We have interpreted the trapezoidal scale behind the ocular as a postocular, whereas the polygonal vertical scale behind the commissure of the mouth probably represents the remainder of a row of scales at the back of the head. *Mesobaena rhachicephala* therefore might be considered the more derived of the two species of *Mesobaena*.

Key to the Amphisbaenidae of the Guianan Region.—We want to take this opportunity to present a key to the 11 species of Amphisbaenidae presently known from the Guianan Region. Gans (1963) already presented a key to the species of *Amphisbaena* in the Guianas (four species), and Hoogmoed (1973; 1989) presented keys to the amphisbaenids of Suriname, but this was all well before the description of several new small

species; hence all these keys are outdated. Gans and Mathers (1977) presented a key to all South American amphisbaenians, Hoogmoed and Avila-Pires (1991) presented a key to the small species of *Amphisbaena* in the Amazon basin and adjacent regions, and Vanzolini (2002) published “an aid to the identification of” South American amphisbaenids. We have based our key on those keys and on our new data concerning *Mesobaena*.

KEY TO THE AMPHISBAENIDAE OF THE GUIANAN REGION

1. Snout prognathous, pointed, with a large rostral and tail tip with an elevated unsegmented vertical band-like structure, preloacal pores four, arranged in two pairs separated by a median hiatus (*Mesobaena*) 2
 Snout rounded, hardly projecting over the mouth, tail tip rounded, preloacal pores 4–12, in a continuous series (*Amphisbaena*) 3
2. Snout with a dorsal keel, three supra- and three infralabials, malars present, lateral sulci *Mesobaena huebneri*
 Snout pointed, coniform, with a low dorsal keel, two supra- and two infralabials, malars absent, no lateral sulci *Mesobaena rhachicephala* sp. nov.
3. No caudal autotomy annulus, more than 65 scales around midbody, *Amphisbaena alba*
 Caudal autotomy annulus present, fewer than 65 scales around midbody 4
4. Number of scales around midbody 42–55, 7–10 preloacal pores, species with checkered pattern of white (or pink) and black *Amphisbaena fuliginosa*
 Fewer than 42 scales around midbody, four or six preloacal pores, species without checkered pattern 5
5. Mental and postmental fused, six preloacal pores *Amphisbaena stejnegeri*
 Mental and postmental not fused, four preloacal pores 6
6. Infralabials two or one and a half, supralabials two 7
 Infralabials three, supralabials three or four 8
7. One and a half infralabials, body annuli 200–231, caudal annuli 28–31, autotomy at seventh to fourteenth caudal annulus *Amphisbaena vanzolinii*
 Two infralabials, body annuli 204–211, caudal annuli 23–31, autotomy at fourth to sixth caudal annulus *Amphisbaena slevini*
8. Supralabials four 9
 Supralabials three 10
9. Scales tubercular, first supralabial not enlarged, body annuli 205–209, caudal annuli 20–23 *Amphisbaena rozei*

- Scales flat, first infralabial enormous, body annuli 196, caudal annuli 31, *Amphisbaena tragorhectes*
10. Malars absent, infralabials three, second one very large, body annuli 224–248, caudal annuli 21–22, autotomy at sixth or seventh annulus *Amphisbaena gracilis*
- Malars present, separated from the postmental, infralabials three, second one normal, body annuli 222, caudal annuli 27, autotomy at eighth annulus *Amphisbaena myersi*

DISCUSSION

The genus *Mesobaena* was described by Mertens (1925) on the basis of one specimen from “Inirida, Süd-Venezuela,” using external characters only. He provided drawings of the head in lateral and dorsal views. Mertens (1926) provided some additional information after comparing his type specimen with some specimens of the Cuban genus *Cadea*. After Mertens (1926) the species was mentioned by Burt and Burt (1933) in their checklist of South American lizards. Dunn (1944a) mentioned the species and gave drawings of the head copied from Mertens (1925). Dunn (1944b) again published the drawings from his earlier publication and stated as geographical distribution “región del río Inirida, en el oriente de Colombia” and “Sólo se conoce la especie típica.” Thus, he corrected the type locality from Venezuela to Colombia. Vanzolini (1951) gave a short diagnosis of *Mesobaena* based on literature alone and included it in his key to the genera of Amphisbaenidae. Apparently unaware of Dunn’s earlier action, Medem (1965) also changed the type-locality from SW Venezuela to SE Colombia (“*Terra typica emendata*: Río Inirida, afluente del río Guaviare [Vaupés], Colombia”), without explanation. He repeated this again later (Medem, 1968), and provided some information on the type specimen, which in alcohol was reported to be pink like an earthworm (according to Mertens, 1925, it was yellow-white, with a brown spot on each dorsal scale, belly white). Gans (1967) listed *M. huebneri* and mentioned that he had information on four new specimens (apparently FMNH 130987 and CG 4786 from La Macarena, Colombia, and AMNH 104641 and CG 4786 [now FMNH 265436] from Maroa, Venezuela). Gans (1971) gave an extensive descrip-

tion of those four specimens and the holotype, and a few years later (Gans, 1974) reported another three recently collected specimens (UTA R 3478, 3537, 3745) from Timbó, Vaupés, Colombia (1° 06' N 70° 01' W). Cole and Gans (1987) provided information on the chromosomes of two more specimens of *M. huebneri* recently collected at Timbó (AMNH 115936–7). All specimens reported up to that time came from a restricted area on both sides of the Orinoco River, from the Serranía de la Macarena (Colombia) and along the Inirida River to Maroa (Venezuela). Kearney (2003) presented an X-ray picture of the head and anterior trunk of *M. huebneri* and mentioned two specimens (UTA R 6880 and USNM 248281 [formerly UTA R 6879] from Timbó as well) not reported by earlier authors, bringing the total of known specimens to 12. Most of these are from Timbó, Colombia. After Gans’ publications (1971; 1974), *M. huebneri* was further mentioned in several lists concerning the Guianan Region without further addition of data (Hoogmoed, 1979; Péfauer, 1992; Avila-Pires, 2005) and in a key to the lizards of Venezuela (Gorzula, 1978). Vanzolini (1978) also mentioned that the type locality was in Colombia and not in Venezuela. Gorzula and Señaris (1998) only fleetingly mentioned that *M. huebneri* had been recorded from Amazonian Venezuela. As mentioned above, 12 specimens of *M. huebneri* seem to be known, but Gans (2005) mentioned two apparently new specimens in the collections of the Museo de Biología, Universidad Central de Venezuela, that would bring this total to 14. We attempted to verify Gans’s report, but museum personnel in Venezuela did not answer our queries. Kearney (2003), based on a database of 162 morphological characters from external features, soft tissues, scalation and osteology, reached the conclusion that *Mesobaena* belongs to the family Amphisbaenidae and that it was most closely related to *Anops* Bell. *Anops* has a laterally strongly compressed head with a sharp, high, vertically curved keel on the snout, and its head shape in lateral view is distinctly rounded. *Mesobaena rhachicephala* does not fall very well in the head-shape categories (round-headed, shovel-headed, keel-headed) distinguished by Gans (1978) and Kearney (2003), because it

has a sharply pointed conical head with a low rostral keel. Gans (1971) probably alluded to the elevated, wide, flat, unsegmented, vertical band-like structure on tip of tail as "distal tip is formed of a vertical, unsegmented double keel adjoined immediately by the last caudal annulus," and more or less showed it in his illustrations of the tail, but not in any detail. The function of this terminal shield remains open to speculation, although it might play a role in digging, possibly by anchoring the end of the tail in the sides of tunnels. In the description of *A. bilabialatus*, Stimson (1972) made comparisons with *Mesobaena* and remarked "The tip of the tail forms a blunt vertical ridge with a median dorsoventral suture similar to the 'doubled vertical ridge' (Gans, 1971:4) of *Mesobaena huebneri* Mertens (1925:170)." Neither Gans and Rhodes (1964) nor Vanzolini (1999) observed an agreement in the shape of the tail tip of *Anops* with that of *Mesobaena*. Gans and Rhodes (1964) described the tip of the tail of *Anops kingi* Bell as "hemiellipsoid to spheroid, without any lateral compression" and showed a picture of the tip of the tail, which clearly differs from the tail tip of *Mesobaena*. In his key to the American genera of amphisbaenians Gans (1971) paraphrases Stimson (Stimson, 1972, which was still in preparation at that time) concerning the shape of the tail tip of *A. bilabialatus* as: "with doubled vertical ridge." Vanzolini (1999) described the tip of the tail of *A. kingi* as rounded, that of *A. bilabialatus* as "a blunt process, vertically elongate". Thus there seems to be differentiation within the genus *Anops* in the shape of the tip of the tail, and the structure in *A. bilabialatus* possibly is similar to the tail tip structure in *Mesobaena*, but without study of actual material this differentiation remains open to debate. We suggest that this character should be given due attention in further studies, as it could be indicative of either relationship, or convergence. It should be noted here that Stimson (1972) and Gans and Mathers (1977) erred when stating that *Mesobaena* has two precloacal pores separated by a median hiatus, as most specimens of *Mesobaena* have four precloacal pores arranged in two groups of two, separated by a median hiatus of two

scales (Figs. 2B, 3E). Only the holotype of *M. huebneri* has three (1 + 2) precloacal pores. Thus, this character does not distinguish *Mesobaena* and *Anops* as Stimson (1972) and Gans and Mathers (1977) thought.

Probing specimens with needles seemed to indicate there are premaxillary teeth hidden in the gum. According to Mertens (1925) *Mesobaena huebneri* had no premaxillary teeth, but according to Kearney (2003) who had available a cleared and stained specimen, the species falls in the group with 5–12 premaxillary teeth.

Although *Mesobaena rhachicephala* agrees with *M. huebneri* in many aspects (see above), there also are notable differences (see above), of which the most important seem to be the absence of lateral sulci (according to Kearney, 2003, in amphisbaenids only absent in *Cadea* and *Rhineura*), and having cephalic scales that are not heavily keratinized. Despite the differences noted between *M. huebneri* and *M. rhachicephala*, we think there is enough agreement between the two (especially the structure of the tip of the tail and the head-scalation) to consider them members of the same genus. Both species share several anatomical and osteological characters, such as a pointed snout, cylindrical body shape, and fusion of cephalic plates. On the basis of most aforementioned features in *Mesobaena rhachicephala*, we agree with Kearney (2003) who considered *Mesobaena* to be the sister taxon of *Anops*. Only new material of this peculiar species of *Mesobaena* would produce better insight into its variation and in its relationships.

As far as is known now, *Mesobaena* is the only genus of Amphisbaenidae north of the Amazon that has both a differentiated head and tail tip. All other species in the Guianan Region belong to the genus *Amphisbaena* and have rounded heads and tail tips, without specialized features. In that respect *Mesobaena* can be considered the topographical counterpart of *Anops*, only distributed south of the Amazon (Ribeiro et al., 2009), and the sister genus of *Mesobaena* (Kearney, 2003).

The fact that this new species of *Mesobaena* surfaced only now vividly illustrates how fragmented our knowledge is of the small amphisbaenians in South America. This lim-

itation is also illustrated by the recent discovery of a third species of *Anops* in central Brazil (Ribeiro et al., 2009), and by the fact that at least two more new species of amphisbaenians (genus *Bronia*) from the Brazilian Amazon (south of the Amazon river) area are being described at the moment (M. S. Hoogmoed, personal observation).

RESUMEN

Descrevemos do norte do Estado do Pará, Guiana brasileira, uma nova espécie do gênero até então monotípico *Mesobaena*, caracterizada por ter um focinho muito acuminado, duas supralabiais e duas infralabiais, sendo as segundas infralabiais alongadas e enormes, um olho pequeno mas bem visível sob a ocular, ocular muito alongada, annulus autotômica pouco visível ou ausente, pela ausência de sulci dorsais, ventrais e laterais, e a presença de uma quilha vertical, larga, achatada, não segmentada com margens côncavas na extremidade da cauda. O hemipênis é descrito e desenhado. São feitas comparações com outras espécies de Amphisbaenidae sul-americanas e uma chave para as espécies de Amphisbaenidae do Escudo Guianense é fornecida. A espécie tem hábitos fossoriais, vivendo em floresta de terra firme perto de igarapés. Essa é a segunda espécie conhecida do gênero, que parece restrita ao Escudo Guianense e arredores.

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