

Two New Species of Lizards of the Genus *Bachia* (Squamata, Gymnophthalmidae) from Central Brazil

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ABSTRACT.—Two new species of *Bachia* of the *bresslaui* group are described from the central Brazilian Cerrados, state of Tocantins. The two species are most similar to *Bachia bresslaui* and *Bachia cacerensis* from which they differ in limb morphology and head scalation. In both, the snout is more prominent than that of previously known species, suggesting more pronounced adaptations to fossoriality. One of the new species has stiliform forelimbs and four clawed short toes in the hind limb, an opposite pattern to the condition observed in the genus where limb reduction is more pronounced in hind limbs. The two new species were obtained in relictual sandy soil areas covered by semideciduous or open dry forest vegetation. Considering the relictual condition of these sandy areas, the possible endemism to those areas, and the high level of disturbance of the Cerrados, we strongly suggest that these areas should be the target of special conservation efforts.

The genus *Bachia* includes about 20 species of fossorial earless microteiid lizards with an elongate body and tail and reduced limbs living in or below leaf litter of tropical habitats (Dixon, 1973; Colli et al., 1998). It occurs from Costa Rica to Paraguay throughout cis-Andean South America (Dixon, 1973; Pellegrino et al., 2001; Castrillon and Strussman, 1998). The systematics of *Bachia* is complex and still demands extensive study. Reevaluation of local and geographic variation, of the subspecies described, and a phylogenetic framework to understand their evolution and the possible homoplastic characters related to fossorial adaptations are needed. Unfortunately these tasks are difficult to accomplish given the scarcity of specimens in collections and their apparent rarity in nature (but see Colli et al., 1998).

The last major revision of the genus was that of Dixon (1973) who recognized 15 species and 12 subspecies. Since then, Hoogmoed and Dixon (1977), McDiarmid and DeWeese (1977), Ávila-Pires (1995), Kizirian and McDiarmid (1998), and Castrillon and Strussman (1998) have reevaluated the taxonomic status of several forms or described new species. Pellegrino et al. (2001) in a study dedicated to investigate the relationships among Gymnophthalmidae based on nuclear and mitochondrial gene sequences recovered *Bachia* as the basal genus of the tribe Cercosaurini. Castoe et al. (2004), exploring

a slightly different data set of the same assembly of data but under a Bayesian analysis, recovered *Bachia* as the sister group of Cercosaurini but assigned tribal ranking to the genus (tribe Bachiini). Because species sampling of both studies was unfortunately limited to only three species, there was no basis to comment upon intrageneric relationships, and, for that reason, Dixon's (1973) species groups are still in use: the *bresslaui* group, and the *dorbignyi*, *heteropa*, and *flavescens* groups, the first including the species occurring to the southern and easternmost areas of Brazil. Species of the *bresslaui* group are characterized by having lanceolate, keeled, and imbricate dorsal and lateral body scales, quadrangular, juxtaposed ventrals, 2-2 femoral and 1-1 preanal pores, presence of interparietal, supraoculars, and superciliaries scales, and usually four digits on each limb. Presently, only five species of *Bachia* fit this description: *Bachia bresslaui*, *Bachia panoplia*, *Bachia scolecoides*, *Bachia cacerensis*, and *Bachia pyburni*.

During recent fieldwork in the Cerrados of the state of Tocantins, Brazil, we obtained several specimens of *Bachia* assigned to the *bresslaui* group but which upon closer examination, were found to be two undescribed species.

MATERIALS AND METHODS

Length measurements were taken after fixation to the nearest millimeter with a ruler; scale counts and observations of other morphological characters were performed with a stereomicroscope (Zeiss STEMI SV6). Scale nomenclature follows Dixon (1973). All specimens of *Bachia*

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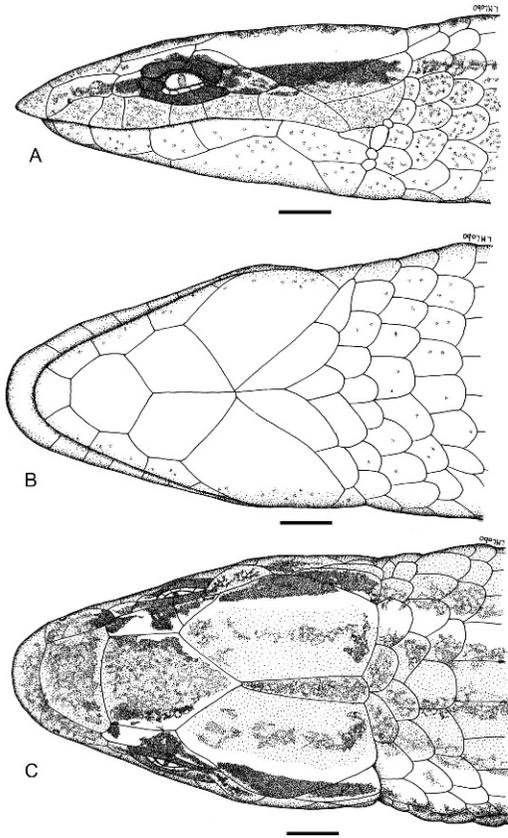


FIG. 1. Lateral (A), ventral (B), and dorsal (C) views of the head of the holotype of *Bachia psamophila* (MZUSP 95080; scale bars = 1 mm).

used for comparisons are presently housed in MZUSP (Museu de Zoologia, Universidade de São Paulo) and CHUNB (Universidade de Brasília).

Bachia psamophila sp. nov.
Figures 1–2

Holotype.—MZUSP 95080, an adult male from “Tombador de areia” (10°02’S, 48°23’W), municipality of Porto Nacional, state of Tocantins, Brazil, collected by D. Pavan on 13 December 2002. The specimen was not labeled in field.

Paratypes.—MZUSP 95079 (female), field number MRT 08539, collected by D. Pavan and R. Moretti on April of 2002; CHUNB 24209 (male), not labeled in field, collected by A. Peres on 12 December 1999. All other data are the same as for the holotype.

Etymology.—The specific name derives from the Greek “psamos” (sand) and is a reference to the sandy habitat preferences of this species.

Diagnosis.—A species of the *bresslaui* group having lanceolate dorsal and lateral body scales, quadrangular and juxtaposed smooth ventrals,

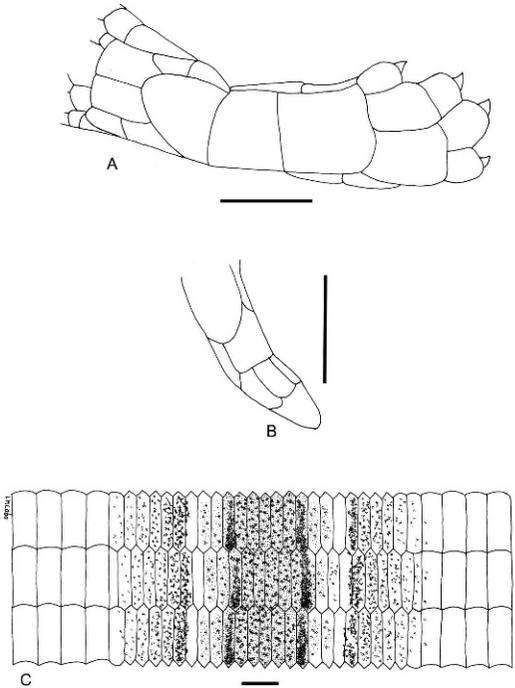


FIG. 2. Hind limb (A), forelimb (B), and a schematic view of the midbody scalation (C) of the holotype of *Bachia psamophila* (MZUSP 95080; scale bars = 1 mm).

tail scales lanceolate, imbricate, keeled, 2-2 femoral pores and 1-1 preanal pores in the male (absent in the female), interparietal, supraoculars, and superciliaries present, 45–49 dorsals, 35–39 ventrals, and 35–38 scales around midbody. Snout highly prominent and wedge-shaped, distinctively projecting over lower jaw. Four clawed short toes in the hind limb; forelimb ending by one apical scale. Six supralabials; sixth the largest and the highest, contacting parietal. Fifth supralabial separated from parietal by an enlarged postocular. Two enlarged temporal scales. Two supraoculars; second small, restricted to the lateral face of head, allowing extensive contact between parietal and first supraocular. Width of first supraocular less than one-third of the anterior margin of frontal.

Bachia psamophila can be immediately distinguished from *B. panoplia* and *B. pyburni* by the absence of prefrontals, present and in contact at midline in both latter species. In *B. scolecoides*, prefrontals are also present but widely separated and reduced in size. Like in *B. psamophila* prefrontals are also absent in *B. bresslaui* and *B. cacerensis*. The fifth supralabial of *B. psamophila* is separated from parietal by an elongate and enlarged postocular, almost as large as the fifth supralabial; the sixth supralabial is the largest and highest and contacts

the parietal. In *B. bresslaui*, *B. scolecoides*, *B. panoplia*, and *B. pyburni*, there is no contact between supralabials and parietal, and in only one of the three known specimens of *B. cacerensis* there is slight contact between parietal and sixth supralabial. *Bachia psamophila* also differs from *B. cacerensis* by having one distinctive unclawed apical scale in the forelimb (four in *B. cacerensis*) and four clawed toes in the hind limb (only one in *B. cacerensis*).

Description of the Holotype.—Body elongate, a cervical constriction on head, collar fold absent, snout highly prominent and wedge-shaped, tail longer than body. Rostral broad, prominent, contacting first supralabial, nasal and frontonasal (Fig. 1). Viewed from above, the rostral is nearly twice as wide as high; on lateral view, it projects broadly anteriorly toward, forming a horizontal surface ventrally, at the level of the upper lips. Frontonasal trapezoidal, wider than long, wider posteriorly, contacting rostral, nasal, first supraocular and frontal. Prefrontals absent. Frontal pentagonal, longer than wide, with anterior margin straight, as wide as and in broad contact with frontonasal; lateral margins parallel, in contact on each side with first supraocular; posteriorly angulate, broadly contacting parietals and in slight contact with interparietal. Frontal more than four times wider than anterior supraocular. Frontoparietals absent. Interparietal narrow, longer than wide, subtriangular, wider posteriorly, shorter than frontal and parietals. Parietals very large, longer than wide, slightly longer and wider than frontal, roughly pentagonal, their anterior margin deeply indented and in broad contact with frontal, externally contacting first and second supraoculars, the postocular, the sixth supralabial, and a large and long temporal and the dorsals; internally it contacts frontal and interparietal. Posterior borders of interparietal and parietals and dorsals coincide with a transverse cervical constriction in the occipital region. Two supraoculars, first largest, more than three times longer than wide, contacting frontal, frontonasal, nasal, loreal, first and second superciliary, second supraocular and parietal. Second supraocular smaller, above second superciliary, longer than wide, separated from frontal by the broad contact between parietal and first supraocular. Two superciliaries, the first longer, their suture coincides with that between supraoculars. Nasal large, longer than high, clearly viewed from above; above first and second supralabials, its largest suture with the first. Nostril in the first third of lower margin of nasal, deeply indenting the suture with the first supralabial. Loreal roughly squared, in contact with nasal, first supraocular, first superciliary, preocular, sub-

ocular, and second and third supralabials. Frenocular absent. Six supralabials, third, fourth, and fifth under the orbital region, sixth the largest, contacting parietal. One long subocular. Eyelid present with an undivided semitransparent disc. A large and elongate postocular between fifth and sixth supralabials and parietal. Only two temporal scales between parietal and sixth labial, the upper one larger, longer than wide and in broad contact with parietal. Ear opening absent. All head scales smooth and juxtaposed with scattered sensorial organs.

Mental roughly trapezoidal, wider than long, slightly longer than the ventral surface of rostral. Postmental heptagonal, as wide as long. Two pairs of chin shields, both contacting infralabials; the anterior pair smaller, in broad contact at midline; second pair separated by an enlarged pair of symmetric flat and diagonally disposed pregulars. Five infralabials, fifth the largest. Gulars smooth, imbricate, rounded posteriorly, in eight transversal rows; scales of gular rows increasing gradually in size toward interbrachial region. Interbrachial region with four scales, the central ones largest, longer than wide. Lateral scales of neck subrectangular, smooth, imbricate, slightly rounded and longer than wide, disposed in regular transverse rows and becoming gradually similar to adjacent dorsal or ventral scales. Collar fold absent.

Dorsal scales imbricate and disposed in regular transversal rows; smooth, subrectangular and wider in occipital region, becoming progressively narrower, more elongate and rounded toward the level of the forelimbs and then on longer, hexagonal, lanceolate, strongly keeled, with lateral sides almost juxtaposed (Fig. 2C). Forty-five transverse rows between interparietal and the level of hind limbs. Lateral scales about the same size as dorsals but smooth and less acuminate; those closer to ventrals slightly wider. A distinctive area with granular scales surrounds the area of arm insertion and the posterior part of leg insertion. Thirty-nine scales around midbody. Ventral scales smooth, longitudinally imbricate, laterally juxtaposed, almost squared before the interbrachial row, becoming gradually longer than wide, rounded posteriorly; 34 transverse rows from interbrachials (excluded) to preanals. Five scales in the posterior part of preanal plate, central one largest. One preanal and two femoral pores on each side.

Scales of tail similar to midbody dorsals but keeled, lanceolate, strongly imbricate; those of base of tail slightly larger and wider ventrally, becoming gradually identical around tail toward the extremity.

Fore limbs stiliform, covered by smooth and imbricate scales, ending in a single apical scale

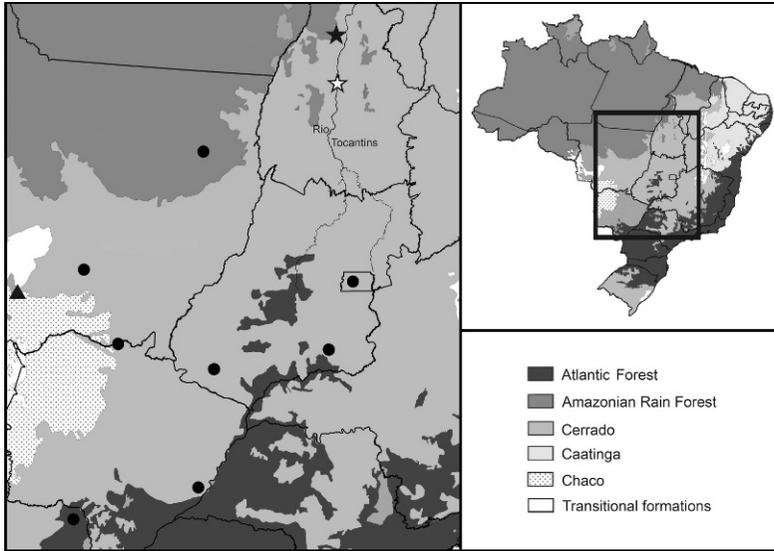


FIG. 3. Distributional records of *Bachia bresslaui* (black circles), *Bachia cacerensis* (black triangles), *Bachia psamophila* n. sp. (white star); *Bachia micromela* n. sp. (black star).

(Fig. 2B). Its length corresponds to one and a half rows of lateral scales. Hind limb robust, compressed, covered by smooth, large and imbricate scales with distinctive four clawed toes at its extremity (Fig. 2A). Two femoral pores present at each side.

Background dorsal and lateral surfaces of body and tail light brown. Two symmetrical dorsolateral light stripes two to two and a half scales in size extend from the second supraocular to the end of body. Between them a wider brown dorsal stripe also extends from the posterior border of the frontal to the tip of the tail. Longitudinal dark and light stripes are more conspicuous anteriorly where the light stripes are limited below and above by a darker border. Lateral parts of body yellowish with a scattered light brown reticulum. Ventral parts of body and tail cream immaculate. The hemipenis was everted at preservation and is smooth without flounces or villi. Measurements of the holotype: snout-vent length (SVL) = 65 mm; tail length = 125 mm.

Variation.—One of the paratypes (MZUSP 95079) is a female without pores with an SVL of 71 mm and a broken tail, 49 dorsals, 39 ventrals, 38 scales around body, and 9 gular scale rows; in all other characters, it is identical to the holotype. The other paratype (CHUNB 24209) has 74 mm SVL; it has the tail also broken, 45 dorsals, 36 ventrals, 38 scales around body, 8 gular scale rows, and in all other characters is identical to the holotype except for slight contact between the sixth supralabial and the parietal.

Distribution and Natural History.—All specimens of *B. psamophila* were obtained during a series of herpetological surveys carried out in areas of the Rio Tocantins affected by the hydroelectric dam “Luis Eduardo de Magalhães” prior to the filling of the reservoir. The region is situated in the depression of Rio Tocantins (Fig. 3) and is covered by typical Cerrado vegetation with gallery forests (Pavan and Dixo, 2004). The reservoir (630 km²) covers part of the former depression of the Rio Tocantins around the municipalities of Lajeado, Porto Nacional, and Palmas and is bordered in the eastern side by the Serra do Lajeado. Annual precipitation is approximately 1700 mm and is concentrated in the rainy season, which extends from October to May. Annual mean temperatures vary between 26 and 27°C. In the western side of the reservoir, between rivers Capivara and Santa Luzia, there are several patches of highly relieved sandy soil areas, irregular in size and forming dunes of very fine eolic sand. These dunes are covered by a vegetation, which varies between a closed canopy low forest and a widely open landscape consisting of scattered bush thickets and isolated trees, lying between spaces of bare sand. The specimens of *B. psamophila* were collected along the northern bank of Rio Santa Luzia, in the largest and highest of these sand dune areas, locally referred to as “Tombador de areia.” This white and fine-grained sand dune, approximately 50 m high, was formerly situated just after the wide gallery forest present along the alluvial plain of the Rio

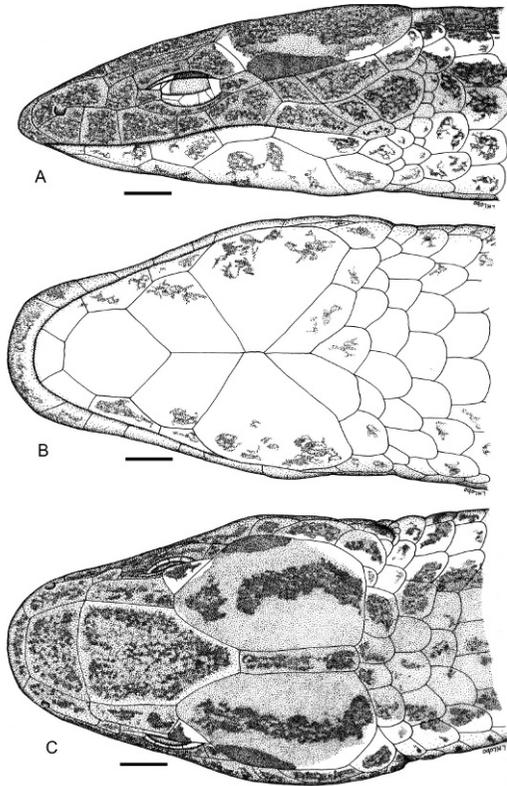


FIG. 4. Lateral (A), ventral (B), and dorsal (C) views of the head of the holotype of *Bachia micromela* n. sp. (MZUSP 91317; scale bars = 1 mm).

Santa Luzia; it is presently situated in the margin of the reservoir, which drowned the lower part of the valley of the Rio Santa Luzia and its gallery forests. The dune is covered by open vegetation consisting of scattered bushes predominantly formed by Leguminosaea, such as *Bauhinia* and *Hymenea*. Grasses are very scarce, which is in striking contrast with the adjacent Cerrados, characterized by a high abundance of grasses. Throughout the dune, tracks of *B. psamophila* were frequently found but were more abundant in August. A series of eight Y-shaped sets of pitfalls with drift fences (four 20-liter buckets each; sensu Jones, 1981) separated by 20 m, totaling 32 buckets was placed in the area and opened monthly for approximately five days during August and October 2001, and April, June, August, October, and December 2002. Despite the abundance of tracks and the huge collecting effort (equivalent to 1,120 buckets per day) only two specimens of *B. psamophila* were collected. The semifossorial snakes *Phimophis iglesiasi* and *Parapostolepis polylepis*, and cryptically colored populations of the lizards *Tropidurus* cf. *oreadicus* and *Cnemidophorus* cf. *ocellifer*, were also obtained in the same area.

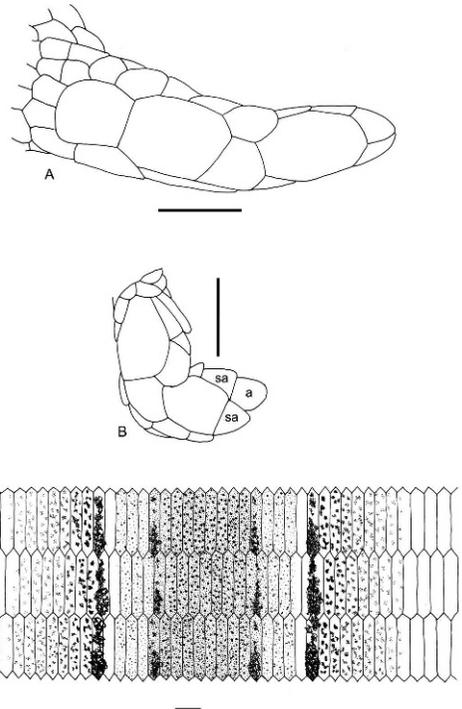


FIG. 5. Hind limb (A), forelimb (B), and a schematic view of the midbody scalation (C) of the holotype of *Bachia micromela* n. sp. (MZUSP 91317; scale bars = 1 mm). sa = subapical scale; a = apical scale.

Bachia micromela sp. nov.

Figures 4–5

Holotype.—MZUSP 91317, an adult male from “Fazenda Marupiara” (08°38'28"S, 48°25'24"W), municipality of Guaraí, state of Tocantins, Brazil, collected by D. Pavan and F. Curcio between 19 to 29 October 2001, field number MRT 07123.

Paratypes.—MZUSP 91030, 91031, 91315, 91316, 91318 (all males), field numbers MRT 07420, 07608, 07121, 07122, 07124. All other data are the same as the holotype.

Etymology.—The specific name derives from the Greek “melos” (limb) and micro (small) and refers to the small limbs of this species.

Diagnosis.—A species of the *bresslaui* group having imbricate and lanceolate dorsal and lateral body scales, quadrangular and juxtaposed smooth ventrals except those near the vent, which are keeled; scales on tail lanceolate, imbricate, keeled; 2-2 femoral pores and 1-1 preanal pores in the male, interparietal, supraoculars and superciliaries present, 47–49 dorsals, 35–37 ventrals, and 38–40 scales around midbody. Snout slightly prominent, projecting over lower jaw. Forelimbs ending with one apical

scale, hind limb with two. Fifth supralabial contacting parietal, sixth separated from it. More than four temporal scales. Three or four elongate scales in the central part of interbrachial region. Second supraocular small, restricted to the lateral face of head, allowing extensive contact between parietal and first supraocular. First supraocular narrow, its greatest width less than one-third the size of anterior margin of frontal.

Bachia micromela can be immediately distinguished from *B. panoplia* and *B. pyburni* by the absence of prefrontals, which are present and in broad contact at midline in both latter species. Prefrontals are also present in *B. scolecooides* but widely separated and reduced in size. Prefrontals are absent in *B. bresslaui*, *B. cacerensis*, and *B. psamophila*. The postocular of *B. micromela* is very small, and the fifth supralabial contacts parietal; there is no contact between the parietal and the sixth supralabial. In *B. psamophila*, the fifth supralabial is separated from parietal by an elongate and enlarged postocular, almost as large as the fifth supralabial; the sixth supralabial is the largest one and contacts the parietal. In *B. bresslaui*, *B. scolecooides*, *B. panoplia*, and *B. pyburni*, there is no contact between the supralabials and the parietal, and in only one of the three known specimens of *B. cacerensis* is there slight contact between the parietal and the sixth supralabial. *Bachia micromela* differs from *B. cacerensis* by having one distinctive unclawed apical scale on the forelimb (four in *B. cacerensis*) and two apical scales on the hind limb (only one in *B. cacerensis*).

Description of the Holotype.—Body elongate, a cervical constriction at ear level, collar fold absent, snout slightly prominent, tail longer than body (Fig. 4). Rostral broad, slightly prominent, slightly projecting over symphial, contacting first supralabial, nasal and frontonasal. Viewed from above the rostral is more than twice as wide as high; rounded on lateral and ventral views. Frontonasal trapezoidal, wider than long, wider posteriorly, contacting rostral, nasal, first supraocular, and frontal. Prefrontals absent. Frontal hexagonal, with the anterior margin straight and parallel lateral margins, longer than wide; anteriorly as wide as internasal and in broad contact with it, laterally contacting first supraocular, posteriorly angulose, contacting broadly parietals and converging to a small, slight, and straight suture with interparietal. Frontal width more than four times larger than the largest width of the first supraocular. Frontoparietals absent. Interparietal extremely elongate, rectangular, shorter than frontal and parietals. Parietals very large, longer than wide, slightly longer and wider than frontal, pentagonal, their anterior margin deep-

ly indented by, and in broad contact with frontal, externally contacting first and second supraoculars, the postocular, the fifth supralabial, three enlarged temporals, and the dorsals. Posterior borders of interparietal and parietals with dorsals roughly straight and coincide with a transverse cervical constriction in the occipital region. Two supraoculars, first the largest, longer than wide, slightly wider posteriorly, contacting frontal, frontonasal, nasal, loreal, first superciliary, second supraocular, and parietal. Second supraocular smaller, fused to second superciliary, subtriangular, separated from frontal by the broad contact between parietal and first supraocular. One elongate superciliary between loreal and second supraocular. Nasal large, longer than high, clearly viewed from above, expanding on dorsal surface of head; above first and second supralabials, its largest suture with the first. Nostril in the anterior and lower part of nasal scale, deeply indenting labial suture. Loreal roughly square, posterior to nasal, contacting first supraocular, first superciliary, second and third supralabials, preocular and subocular. Frenocular absent. Six supralabials, third, fourth, and fifth under the orbit, fifth the highest, contacting parietal, sixth the largest, widely separated from parietal. Subocular long, above third, fourth, and fifth supralabials. Eyelid present with an undivided semitransparent disc. A slightly elongate postocular between second supraocular and fifth supralabial; it also contacts subocular and parietal but does not prevent the broad contact between fifth supralabial and parietal. Five temporal scales between parietal and sixth supralabial in two diagonally oriented and irregular in size and shape. Ear opening absent. All head scales smooth and juxtaposed with scattered sensorial organs.

Mental roughly trapezoidal, wider than long, as long as the ventral surface of rostral. Postmental heptagonal, slightly longer than wide. Two pairs of chin shields, both contacting infralabials; the first smaller, in broad contact at midline; second pair in contact anteriorly, posteriorly separated by an enlarged pair of symmetric flat and chevron-like pregulars. Five infralabials, fifth the largest. Gulars smooth, imbricate, rounded posteriorly, in eight transverse rows; scales of gular rows increasing gradually in size and becoming longer than wide toward interbrachial region. Interbrachial region with six scales, the four central ones larger, longer than wide. Lateral scales of neck smooth, imbricate, longer than wide, rounded posteriorly, disposed in regular transverse rows, and becoming gradually similar to adjacent dorsal and ventral scales toward interbrachial region. Collar fold absent.

Dorsal scales imbricate and disposed in regular transversal rows; smooth, subrectangular and isodiametric in occipital region, becoming progressively narrower, more elongate and rounded toward the level of arm and then on longer, hexagonal, lanceolate, strongly keeled, with lateral sides almost juxtaposed (Fig. 5C). Forty-eight transverse rows between interparietal and the level of hind limbs. Lateral scales about the same size as dorsals but smooth and less acuminate. A distinctive area with granular scales surrounds the area of arm insertion and the posterior part of leg insertion. Thirty-nine scales around midbody. Ventral scales smooth, longitudinally imbricate, laterally juxtaposed, slightly longer than wide after the interbrachial row, becoming gradually longer, lanceolate and with a wide keel posteriorly; 36 transverse rows from interbrachials (excluded) to preanals. Five scales in the posterior part of vent, central one largest. One preanal and two femoral pores on each side.

Scales of tail, similar to midbody dorsals but keeled, lanceolate, strongly imbricate longitudinally; those from base of tail slightly larger and wider ventrally, becoming gradually identical around tail toward the extremity.

Forelimbs stiliform with one apical scale, covered by smooth and imbricate scales and extending for two and a half rows of lateral scales (Fig. 5B). Hind limbs robust, compressed, with two femoral pores and covered by smooth, large and imbricate scales and ending by two distinctive apical scales with no apparent claw (Fig. 5A).

Dorsal and lateral surfaces of body and tail light brown. Two symmetrical dorsolateral light stripes three to three and half scales width extends from the second supraocular to the tip of tail. Between them a wider brown dorsal line, eight to 10 scales wide and mottled with a darker reticulum, extends to the tip of tail. Longitudinal dark and light stripes are more conspicuous anteriorly where they are limited below and above by a darker punctation. Lateral parts of body yellowish with a scattered light brown reticulum. Ventral parts of body immaculate, ventral surface of tail yellowish-white strongly mottled with a light brown reticulum. Measurements of the holotype: SVL = 83 mm; tail length = 52 mm, broken.

Variation.—Snout-vent length varies from 75–85 mm, tail is broken in all specimens. Scale row variations are the following: dorsals (47–49), ventrals (35–37), scales around midbody (38–40). In only one specimen (MZUSP 91316), the second superciliary and second supraocular from the right side are separated, in all other specimens they are fused. In all other characters, the paratypes agree with the holotype.

Distribution and Natural History.—Specimens of *B. micromela* were collected about 150 km north from the type locality of *B. psamophila* in a patch of quartzitic sandy soils along the western bank of the Rio Tocantins (Fig. 3). Annual precipitation is of about 1,800 mm, slightly higher than in the Tombador de areia, whereas the mean annual temperature is approximately the same as in the later locality. The area was formerly covered by a continuous semideciduous forest enclave surrounded by the Cerrados. Presently most of the forest was cut down except for a few remnants where large trees and dense leaf litter covering sandy soils still exists. Four specimens of *B. micromela* were obtained with a total effort of 880 buckets days installed with a sample design similar to the above described for *B. psamophila*.

DISCUSSION

Bachia psamophila and *B. micromela* are members of the *bresslaui* group and are most similar to each other and to *B. bresslaui* and *B. cacerensis*. There are important differences in fore and hind limbs among these species. *Bachia cacerensis* is unique in having four unclawed finger-resembling apical scales on the forelimb. *Bachia bresslaui*, *B. psamophila*, and *B. micromela* have just one apical scale, in the last species ending with an ungueal sheath. In contrast, *B. psamophila* is unique among these species in having four clawed toes on the hind limb; in *B. bresslaui* and *B. cacerensis*, the hind limb ends with one apical scale and by two in *B. micromela*. The pattern of limb reduction of *B. psamophila*, characterized by a more pronounced reduction in forelimbs than in hind limbs is opposite to the condition observed in all other species of *Bachia*, where reduction is more pronounced in the hind limbs.

Bachia psamophila is also unique in having only two temporal scales; there are four or more scales in all other species of the *bresslaui* group. *Bachia psamophila*, *B. bresslaui*, and *B. cacerensis* present only two elongate scales in the central area of the interbrachial region; in *B. micromela*, there are 3–4 scales in the same area. The posterior ventral scales are keeled in *B. micromela* and smooth in *B. bresslaui*, *B. psamophila*, and *B. cacerensis*. In the latter three species, the second supraocular and the second superciliary are separated; except for one specimen, the second supraocular is always fused to second superciliary in *B. micromela*.

Bachia bresslaui is also characterized by having an enlarged and subtriangular second supraocular expanding on the dorsal surface of head, preventing or minimizing contact between first supraocular and parietal. In *B. psamophila*, *B.*

micromela, and *B. cacerensis*, the second supraocular is much smaller and restricted to the lateral face of head allowing extensive contact between parietal and first supraocular. Finally, the first supraocular of *B. bresslaui* is very wide, its largest width corresponding to half size of the anterior margin of frontal scale; in *B. psamophila*, *B. cacerensis*, and *B. micromela*, its largest width is less than one-third the size of the anterior margin of frontal.

These two new species of *Bachia* are known only from their type localities. Nevertheless, considering the relictual condition of the sandy regions from which the new species were described, their possible endemism to those areas, and the high level of disturbance of the Cerrados (Myers et al., 2000; Conti and Furlan, 2003), we suggest that these areas should be the target of special conservation concern. Several species of endemic squamates showing striking adaptations to live on sand are known from the sand dunes of the middle Rio São Francisco in the state of Bahia (Rodrigues, 1984, 1996; Rodrigues and Juncá, 2002). The highly prominent and projecting snout of *B. psamophila* also indicates striking adaptations to fossoriality previously unknown in the genus. Similar adaptations are found in the psamophilic genera *Calyptommatus* and *Nothobachia*, endemics to the sand dune region of the Rio São Francisco (Rodrigues, 1991, 1996). Although a high degree of squamate endemism has been demonstrated in this environment in the semiarid Caatingas (Rodrigues, 2002), this possibility has not been considered for the Cerrados. We suggest that this is the case of the two new species of *Bachia* here described. Field observations conducted in these sandy areas indicate that they can harbor additional undetected new species of lizards. The sand dune populations of *Tropidurus* cf. *oreadicus* and *Cnemidophorus* cf. *ocellifer* from "Tombador de Areia," which exhibit striking color variation and a smaller size when compared with their parapatric congeners, are good examples to test this possibility.

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