

ARTÍCULO:

A new troglomorphic *Charinus* from Brazil (Arachnida: Amblypygi: Charinidae)

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**A NEW TROGLOMORPHIC *CHARINUS* FROM BRAZIL
(ARACHNIDA: AMBLYPYGI: CHARINIDAE)**

Renner Luiz Cerqueira Baptista &
Alessandro Ponce de Leão Giupponi

Abstract

A new species of *Charinus* is described from 2 caves in Serra do Ramalho, Carinhanha, Bahia, Brazil. Hitherto six other species were known from this country. The new species is the first troglombiont *Charinus* from Brazil and the largest of all known species. It has no median eyes, a small whitish spot at each side of the carapace in place of the lateral eyes, a reduced tritosternum, not projecting in a long apophysis, the ventral corner of the prolateral face of femora II-IV prolonged in a spiniform apophysis, elongated spines and legs, thin cuticle and pale coloration.

Key words: Whip-spiders cave fauna, troglombiont, South America, Neotropics, Brazilian arachnids.

Taxonomy:

Charinus troglobius sp. n.

Un nuevo *Charinus* troglobio de Brasil (Arachnida: Amblypygi: Charinidae)

Resumen

Se describe una nueva especie de *Charinus* que habita en dos cuevas de la Serra do Ramalho, Carinhanha, Bahia, Brasil. Hasta el presente otras seis especies son conocidas de este país. La nueva especie constituye el primer *Charinus* troglobio de Brasil, así como, la especie de mayor talla dentro del género. Entre sus características morfológicas sobresalen: la ausencia de ojos medios y la presencia de una pequeña mancha blanquecina en lugar de los ojos laterales, *tritosternum* muy reducido que pierde su forma alargada característica, esquina ventral de la cara prolateral de los femures II-IV prolongada formando una apófisis espiniforme, espinas y patas alargadas, cutícula delgada y despigmentación.

Palabras clave: Ambliptígio, fauna cavernícola, troglombionte, Neotrópico, Suramérica, Brasil.

Taxonomía:

Charinus troglobius sp. n.

Introduction

The genus *Charinus* Simon, 1892 “*sensu lato*” (including *Charinides* Gravely, 1911 and *Tricharinus* Quintero, 1986) currently includes 22 described Neotropical species, of which six are known from Brazil (Weygoldt, 1972a, 1972b, 2000; Quintero, 1983; Giupponi & Kury, 2002). They are typically hard to find, cryptic arachnids, known only from a few specimens, although recently larger series have been reported (Pinto-da-Rocha, Machado & Weygoldt, 2002; Baptista & Giupponi, unpub. data). Most species live under stones and logs in Atlantic Forest, being active at night. A survey in caves at Serra do Ramalho, a dry hill group at the southwest of the Bahia state, yielded a large series of troglomorphic specimens belonging to a new species herein described. In Brazil, there is only one other species described from outside the Atlantic Forest range, *Charinus mysticus* Giupponi & Kury, 2002, also collected in a cave placed in an epigeal xeric habitat (caatinga) in Bahia state. Our species is the first troglomorphic species of *Charinus* “*sensu stricto*” to be described (we are working on the description of another troglomorphic species, from caves in Minas Gerais state). In Venezuela, there are two additional troglomorphic species of *Charinus* “*sensu lato*”, described originally in *Speleophrynus* Ravelo, 1975 and transferred to *Charinides* by Quintero, 1983.

In all Amblypygi the tibia IV is divided by adesmatic joints in at least two pseudo-articles. There is an “article” between tibia and tarsus, called by most authors “metatarsus” or “basitarsus” (e. G. Hammen, 1986). It was demonstrated by Shultz (1989) that this pseudo-article belongs to the tibia proper. Herein it is called distitibia and the one or more remaining pseudo-articles are denominated basitibia, following Shultz (1989) and Weygoldt (2000). The tibia of leg IV in the genus *Charinus* is divided in distitibia and a basitibia composed by four of those pieces.

The basitibial subdivision is the only character used to separate *Charinus* from *Tricharinus* (2 pieces) and *Charinides* (3 pieces).

We are not sure about the synonymy of *Charinides* and *Tricharinus* with *Charinus* proposed by Delle Cave (1986) and Weygoldt *et al.* (2002). Besides the tibial subdivision, there are other characters that may be used to separate the genera. Both *Charinides* and *Tricharinus* are smaller (body length equal or less than 7 mm) than *Charinus* and have no or reduced median eyes (only the troglomorphic *Charinus* have no median eyes). *Charinides acosta* Quintero, 1986, however, has normal median eyes, but placed in a reduced eye mound. Also, they have usually less pseudo-articles in the first leg than *Charinus*. As most characters seem to intergrade between the three genera, *Charinides* and *Tricharinus* may represent specialized offshots of *Charinus*, presenting adaptive characters to live under rocks or forest litter and in caves (*Charinides*) or inside ant nests and caves (*Tricharinus*). However, a phylogenetic analysis of the Charinidae is needed to clarify the identities of these genera and to establish the monophyly of the *Charinus* group.

Material and methods

For measurements and nomenclature, we follow the proposals of Quintero (1981) in general. The measurements of pedipalp articles were taken between the external condyles of each segment, in order to establish fixed points and proper length measurements (fig. 6). The article called tarsus by Quintero is here divided in distitarsus and tarsal claw (pretarsus) as the two articles are not fused in Charinidae. The measurements were taken from several specimens (number indicated as “n=”) and the median value is given first followed by the range in parentheses. The measurement accuracy is 0,1 mm

The following abbreviations are used: **BT 1-4**- Subdivisions of basitarsus. **DT**- Distitarsus. **IES**- Instituto de Ecología y Sistemática. La Habana, Cuba. **MNRJ**- Museu Nacional, Universidade Federal do Rio de Janeiro. Rio de Janeiro, Brazil. **MZSP**- Museu de Zoologia, Universidade de São Paulo. São Paulo, Brazil.

Genus *Charinus* Simon, 1892

Brazilian species: 1: *Charinus schirchii* (Mello-Leitão, 1931), 2: *Charinus brasilianus* Weygoldt, 1972, 3: *Charinus montanus* Weygoldt, 1972, 4: *Charinus asturius* Pinto da Rocha, Machado & Weygoldt, 2002, 5: *Charinus acaraje* Pinto da Rocha, Machado & Weygoldt, 2002, 6: *Charinus mysticus* Giupponi & Kury, 2002 and 7: *Charinus troglobius* **new species**.

Charinus troglobius new species (Figs 1-14)

ETYMOLOGY: Species name is a Latin word meaning

“troglobiont”, an animal that lives only in caves, referring to the habitat of the species.

TYPE MATERIAL: Holotype: BRAZIL: Bahia: Carinhanha, Serra do Ramalho, Grana do Zé Bastos, 28-VI-2001, Baptista, R. L. C. & Giupponi, A. P. L. (Male, MNRJ 9067). **Paratypes:** BRAZIL: Bahia: Carinhanha, Serra do Ramalho, Grana do Zé Bastos, 28-VI-2001, Baptista, R. L. C. & Giupponi, A. P. L. (9 Males, 2 Females, MNRJ 9068); Grana do Zé Bastos, 28-VI-2001, Baptista, R. L. C. & Giupponi, A. P. L. (Male, MNRJ 9069); Grana do Zé Bastos, 28-VI-2001, Baptista, R. L. C. & Giupponi, A. P. L. (Female, MNRJ 9078); Grana do Zé Bastos, 28-VI-2001, Baptista, R. L. C. & Giupponi, A. P. L. (Male, Female, IES, ex MNRJ 9079); Grana do Zé Bastos, 28-VI-2001, Baptista, R. L. C. & Giupponi, A. P. L. (Male, MZUSP, ex MNRJ 9080); Grana do Zé Bastos, 28-VI-2001, Baptista, R. L. C. & Giupponi, A. P. L. (Male, MNRJ 9081); Grana do Zé Bastos, 28-VI-2001, Baptista, R. L. C. & Giupponi, A. P. L. (Female, MNRJ 9082).

DIAGNOSIS: Body length: males 9.6 (8.4-10.1 mm), females 8.8 (7.9-10.6 mm). Carapace length over 4/5 of its width (ratio in *C. mysticus* is a little under 4/5, but most other species have wider carapaces). Corners of anterior margin of carapace produced to a truncated process. Median eyes and tubercle absent. Lateral eyes reduced to small whitish spot in each side of carapace, without clearly defined lens. Sternal plates narrow, convex and rounded, tritosternum small, a bit larger than the tetrasternum. Pedipalps articulating transversally with cephalothorax, in a fashion remembering *Paracharon* Hansen, 1921, but not horizontally as in other *Charinus*. Pedipalpal spines much longer than in other species. Pedipalpal femur with 2 dorsal and 2 ventral spines and distitarsus with 2 long spines, the second one larger. Ventral prolateral corner of walking legs spiniform. Basitibia + distitibia of leg IV with 17 trichobothria (1 + 16). Basitarsus IV much longer than distitarsus IV.

DESCRIPTION: Carapace (Fig. 1): flattened, wider than long (ratio a little over 4/5). with an anterior depression (in place of the absent median eye tubercle), from which starts a thin median furrow that reaches around the posterior area of the pair of lateral hump situated behind the lateral eye spots. Anterior margin with 6 (rarely 7) small setae. Corners of anterior margin extending downwards in a wide, roundish boss. Carena beginning at the anterior margin corner, widening backwards from coxa I on, widest over coxa III-IV and reaching the posterior margin. Many tiny punctuations, more abundant in the frontal area. Punctuations arranged in lines and spots, irradiating from the fovea and interspersed with glabrous areas. 3 pairs of deep furrows and a very deep, rectangular fovea (its corners forming the starting point of the 2nd and 3rd furrows). 1st pair of furrows placed just behind the lateral boss and not reaching the middle line. 4 lateral pairs of depressions (first one placed over the 1st pair of furrows). Lateral eyes redu-

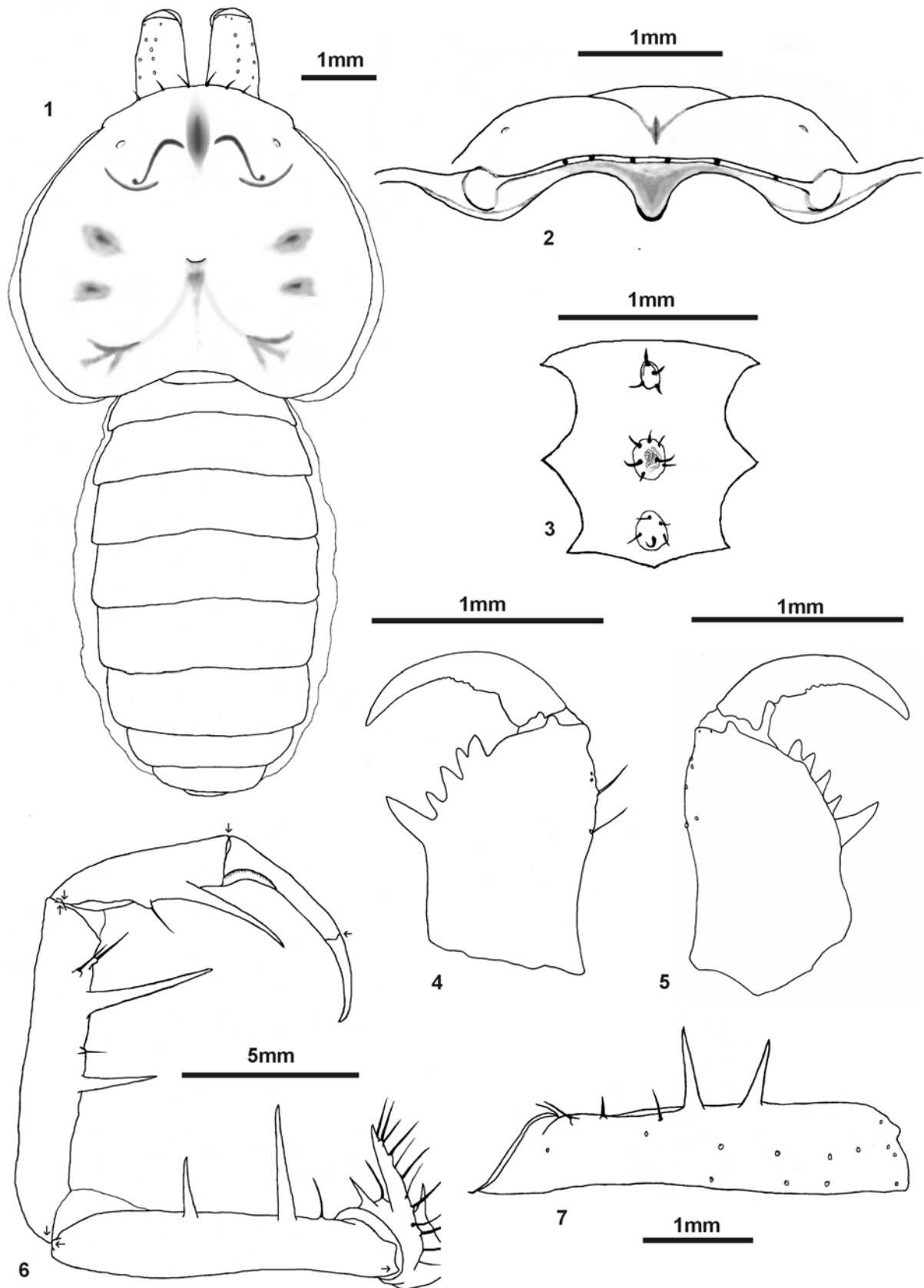


Fig. 1-7. *Charinus troglobius* n. sp. **1.** male holotype. Habitus, dorsal view. **2.** male holotype. Anterior margin of carapace, frontal view, showing long, rebordered, frontal process and anterior boss. **3.** male paratype (MNRJ 9068). Sternum, ventral view. **4.** male paratype. Right chelicera, outer view. **5.** female paratype. Right chelicera, inner view. **6.** male holotype. Right pedipalp, ventral view. Arrows and lines indicate the measurements taken. **7.** male paratype. Right pedipalp, femur, retrolateral view, showing dorsal spines.

ced to a small, whitish spot, without cornea and clearly defined lens (only a small roundish knob). Frontal process well developed, much longer than larger, with blunt, rebordered apex.

Sternum (Fig. 3): tri-segmented, all pieces weakly sclerotized. Tritosternum with a round basis and projected anteriorly in a small blunt tubercle, with 2 apical and 2 basal setae. Middle piece rounded, convex, with 2 setae and a few setulae. Third piece also rounded and convex, but smaller and with smaller setae than the second piece. Sternites separated from each other by double the diameter of the middle piece.

Abdomen (Fig. 1): oblong, with almost indistinguishable punctuations, finer than in the carapace.

Chelicera: Cheliceral furrow (Figs. 4-5) with 4 internal teeth, the distal one bifid, the first cusp bigger than the second one. Fourth twice as long than the others and much stouter. Teeth length (from tip to basis) IV > Ia > Ib = II > III. Claw with 9 denticles, the 3 basal ones larger.

Pedipalp: Trochanter: large distal, spiniform, ventral apophysis, bearing many strong setae and with a blunt tip pointed forwards, and 2 subequal spines, one at the median third and the other at the distal tip of the prolateral face. **Femur** (Fig. 7): 2 dorsal spines at the distal half, the second smaller and placed lower than the first one; 2 ventral spines larger than the dorsal ones, the first placed at the end of the basal third and the second at the middle third. First ventral spine much larger than the second one. **Tibia** (Fig. 8): 4 dorsal spines (III > II > I > IV). Spine IV with one setae of about 1/2 its length. Spines II-III with 2 setae at the end of the basal third. One small setal tubercle near the spine I and one larger between the II and III spines. 2 ventral spines, the distal larger, the basal placed at the middle third and the distal at the beginning of the distal third. One setal tubercle between the spines, 1 larger one just after the distal spine and a smaller distal one (sometimes just a seta). The larger setal tubercle may vary in size and in 1 large male is almost a spinelet. 2 additional setal tubercles placed after and higher than the distal spine. **Basitarsus** (Fig. 9): 2 dorsal spines arising from a same bulging area at the end of the basal half, the basal spine about the same article length and around 1/2 the length of the distal one (a little more than 1/3 the length in large males), and 1 small setal tubercle after the distal spine. 1 ventral spine at the distal half, around 2/3 the article length, and 2 setal tubercle just after the spine (2 > 1). **Distitarsus** (Fig. 10): long, with 2 curved spines at the basal half, the second larger, reaching almost 1/3 the article length. Cleaning organ about 1/2 the article length. **Claw** (Fig. 10): long, with an acute, curved tip.

Legs: All very setose. Ventral corner of the prolateral face of femora II-IV projecting in a distinct spiniform process. **Femur length** I > III > IV > II. Tibia I with 23 articles (up to 47 in regenerated legs). Tarsus (basitarsus+distitarsus) I with 40-42 articles (up to 62 in

regenerated legs). **Leg IV: Basitibia:** 4 pseudo-articles (5 pseudo-articles in the right leg of 2 males), one trichobothrium at the last pseudo-article. **Distitibia:** 1 basal, 2 median and 13 distal trichobothria (Fig. 11). **Basitibia-distitibia length** BT1 > DT > BT3 = BT4 > BT2. **Basitarsus/distitarsus ratio** 7/4, distitarsus tetramereous.

MEASUREMENTS: Males (n=5): Cephalothorax: Length: 3.8 mm (3.3-4.0), Width: 4.7 mm (4.0-4.9). Abdomen: 5.5 mm (5.1-6.1). Pedipalp: Femur 4.1 mm (3.3-4.5), Tibia 4.1 mm (3.3-4.3), Basitarsus 2.2 mm (1.8-2.3), Distitarsus 1.8 mm (1.5-1.9), Tarsal claw 1.0 mm (0.9-1.1). **Females** (n=5): Cephalothorax: Length: 3.3 mm (2.8-3.4), Width: 3.9 mm (3.4-4.2). Abdomen: 6.0 mm (4.6-7.3). Pedipalp: Femur 3.2 mm (2.3-3.4), Tibia 3.1 mm (2.4-3.4), Basitarsus 1.8 mm (1.3-1.9), Distitarsus 1.3 mm (1.1-1.5), Tarsal claw 0.9 mm (0.7-0.9). The cephalothorax of the females and the smaller (and presumably younger) males have similar sizes, but males may get larger and have longer appendices. Female abdomen is usually larger as it is inflated when full of eggs.

COLOR PATTERN (in alcohol): Chelicerae, pedipalps and carapace yellowish. Legs lighter colored. Abdomen pale yellow. Live animals have color pattern similar to the preserved ones.

GENITALIA: Male gonopods (Fig. 12-13) a little wider than long, soft, the only sclerotized areas are the latero-posterior margin of the dorsal lobes and the basal sclerite of lateral lobes; median lobes long and thin, lamellar, with wide, rounded tip, almost reaching the tip of the lateral lobes; latero-dorsal lobes with triangular tip, a little smaller than the tip of the lateral lobe; latero-ventral lobes lamellar, very thin, elongated and curved; lateral lobes with two projections, the second longer and more pointed than the basal one, the basal sclerite small, triangular, with internal and posterior angles projecting. Female gonopods (Fig. 14) very small, a bit longer than wide, barrel shaped, with rounded opening, distant less than half its length from the margin of genital operculum and about its length from each other. The margin of the gonopods openings is membranous, very pliable, being easily distorted during preparation for microscope observation.

NATURAL HISTORY: All specimens have been collected in the dark zone of caves, near water bodies. The specimens were usually found over the muddy cave walls, around 20-40 cm over the water level. Other animals found at the same habitats are spiders (Ctenidae: *Ctenus* sp.), millipedes (Chelodesmidae), crickets (Phalangopsidae: *Endecous*? sp.), cockroaches (Epilampridae) and beetles (Cholevidae). In the same microhabitat, we found also specimens of *Giupponia chagasi* Pérez & Kury, 2002, a troglomorphic harvestman (Pérez & Kury, 2002). The whip-spiders observed have not shown avoidance reaction to light, but moved quickly when we tried to capture them.

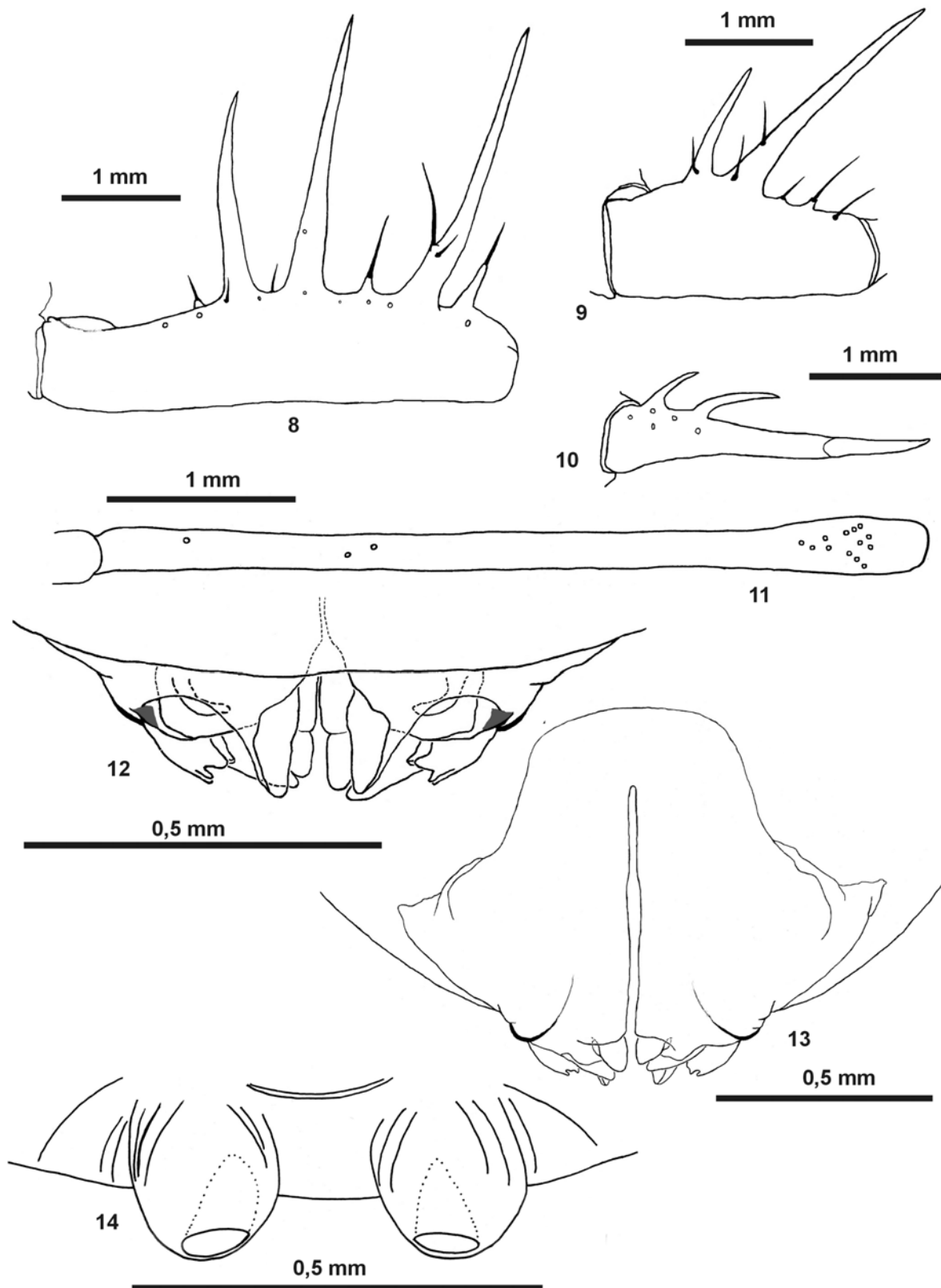


Fig. 8-14. *Charinus troglobius* n. sp. **8.** male paratype. Right pedipalp, tibia, retrolateral view, showing dorsal spines. **9.** male paratype. Right pedipalp, basitarsus, retrolateral view, showing dorsal spines. **10.** male paratype. Right pedipalp, distitarsus and claw, lateral view. **11.** female paratype (MNRJ 9082). Leg IV, last pseudo-article of tibia and distitibia, dorsal view showing trichobothria. **12.** male paratype (MNRJ 9081). Gonopods, ventral view. Basal sclerite in gray. **13.** male paratype (MNRJ 9081). Gonopods, dorsal view. **14.** female paratype (MNRJ 9082). Gonopods, dorsal view.

ADDITIONAL SPECIMENS: BRAZIL: *Bahia*: Carinhanha, Serra do Ramalho, Lapa do Boqueirão, 29-VI-2001, Baptista, R. L. C. & Giupponi, A. P. L. (1 juvenile, MNRJ 9034).

KEY TO IDENTIFICATION OF THE BRAZILIAN SPECIES OF *CHARINUS*:

1. Median eye tubercle present 2
 - Median eye tubercle absent (BA: Carinhanha, Serra do Ramalho caves) *C. troglobius* n. sp.
2. Second and third sternal sclerites flattened and double wide as long (ES: Serra) *C. montanus*
 - Second and third sternal sclerites convex and more or less rounded 3
3. Distitibia of leg IV with 16 trichobothria (ES: São Domingos) *C. brasilianus*
 - Distitibia of leg IV with 18 trichobothria 4
4. Frontal process of carapace weak (BA: Santa Luzia, Pedra do Sino Cave) *C. acaraje*
 - Frontal process of carapace strong, large and triangular 5
5. Median eye tubercle high (SP: Ilhabela) *C. asturius*
 - Median eye tubercle low (BA: Gentil do Ouro, Encantados Cave) *C. mysticus*

REMARKS:

Charinus schirchii (Mello-Leitão, 1931) from Rio de Janeiro state is very poorly known and has not been included in the key. The original description (Mello-Leitão, 1931) is vague and any charinid fits in it. The female holotype and all other paratypes were once deposited in the MNRJ, but were borrowed some twenty years ago and never returned, despite many recovering attempts. For the moment they are unavailable for study and probably lost. *C. schirchii* can be distinguished from the new species by its much smaller size and different pedipalpal spination. Quintero (1983) synonymized *Enantiosarax* Mello-Leitão, 1931 with *Charinus* and promised a detailed redescription of *E. schirchii*, which has not been published yet.

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