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Conspecificity of semaphoronts – the synonymy of *Metadiscocyrtus* with *Propachylus* (Opiliones: Laniatores: Gonyleptidae)

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Abstract. The harvestman genus *Propachylus* Roewer, 1913 is herein revalidated from the synonymy of *Discocyrtus* Holmberg, 1878. Its type species, *Propachylus singularis* Roewer, 1913 has a convoluted taxonomic history, connected to *Discocyrtus fornicatus* Sørensen, 1884 (currently known as *Metadiscocyrtus fornicatus*). The monotypic genus *Metadiscocyrtus* Roewer, 1929 is herein considered a junior subjective synonym of *Propachylus*. *Propachylus singularis* (known only from males) is herein considered a junior subjective synonym of *M. fornicatus* (Sørensen, 1884) (known only from a single female). Accordingly, this species is herein newly combined as *Propachylus fornicatus* (Sørensen, 1884) comb. nov. The males and females of this species are considered congeneric for the first time. As this species does not possess diagnostic characteristics of the concept of Pachylinae *stricto sensu*, it is here removed from Pachylinae but is left unplaced. The geographical distribution of this species is updated to the Brazilian state of Bahia.

Keywords: Arachnida, Grassatores, Neotropics, Pachylinae

The Neotropical harvestman genus *Discocyrtus* Holmberg, 1878 contains ca. 10% of all known diversity in the family Gonyleptidae, and currently has ca. 80 valid species (Kury 2003). It is the largest genus of Pachylinae, which in turn is the largest subfamily of Gonyleptidae. However, previous definitions of Pachylinae have been considered problematic, with the subfamily often regarded as a polyphyletic group (Kury 1994; Pinto-da-Rocha 2002; Hara & Pinto-da-Rocha 2010; Mendes 2011; Caetano & Machado 2013; Pinto-da-Rocha et al. 2014; Carvalho & Kury 2018). It appears that many species of *Discocyrtus* are not especially closely related to the type species (Carvalho & Kury 2018), which is a direct reflection of the artificial generic concepts employed by C. F. Roewer (1913, 1923). This system was followed by Mello-Leitão (1932: 167) and Soares & Soares (1954), who were responsible for the most recent published diagnosis of *Discocyrtus*, where data such as the pattern of armature in the dorsal scutum and the number of tarsomeres ignored a whole range of characteristics that may have phylogenetic value. In recent publications dealing with the genus such inertia was shaken off and this panorama began to change. The revalidation of *Discocyrtanus* Roewer, 1929 by Kury & Carvalho (2016) and the creation of a new Amazonian genus (Carvalho & Kury 2018), led to the removal of seven species from *Discocyrtus* and proposal of a new subfamily based on a morphological phylogenetic analysis.

In this work, we revalidate the genus *Propachylus* Roewer, 1913 and remove it from the synonymy of *Discocyrtus*. *Propachylus* includes a single species that has already been included in three different genera over its history (Sørensen 1884; Roewer 1913; Roewer 1929; Soares & Soares 1954). This species is a large gonyleptid, dark-green colored with red ornamentation, and with unique armature on the dorsal scutum (Fig. 1), which is distributed in coastal regions of the state of Bahia, Brazil.

METHODS

Descriptions of colors use the standard names followed, in parentheses, by the centroid code of the 267 Color Centroids of the NBS/IBCC Color System (Jaffer 2001+) as described by Kury & Orrico (2006). The formula for the tarsomere count, in which the distitarsi of legs I and II are indicated between parentheses, follows Roewer (1935). The formula for the pedipalpal megaspines in which I = large spine and i = small spine is used here following the format established by Kury (1989). The terminology for the scutum outline follows Kury & Medrano (2016). Terminology for chaetotaxy of penis ventral plate follows Kury & Villarreal (2015) for the macrosetae, and Kury (2016) for the microsetae. The term mesotergum (Mello-Leitão 1930) refers to the roughly subrectangular region of the dorsal scutum formed by areas I to IV and circumscribed anteriorly by the carapace, laterally by the lateral margins and posteriorly by the area V (posterior margin of scutum). The diagnoses given here are comparative among four relevant species: the type species of *Amazochroma* Carvalho & Kury, 2018, *A. carvalhoi* (Mello-Leitão, 1941); the type species of *Discocyrtanus* Roewer, 1929, *D. goyazius* Roewer, 1929, both recently removed from *Discocyrtus* (Kury & Carvalho 2016; Carvalho & Kury 2018); the type species of the genus *Discocyrtus, D. testudineus* Holmberg, 1878; and the type species of *Mitobates* Sundevall, 1833, *M. triangulus* Sundevall, 1833. *Mitobates* is the type genus of Mitobatinae Simon, 1879, the subfamily closest to *Discocyrtus* according to recent phylogenetic analyses (Pinto-da-Rocha et al. 2014; Carvalho & Kury 2018).

Biogeographical units used here are from the WWF Terrestrial Eco-regions of the World (names starting with "NT"; Olson et al. 2001). They are indicated by colored background areas on the map (Fig. 2).

Scanning electron microscopy was carried out with a JEOL JSM-6390LV at the Center for Scanning Electron Microscopy of Museu Nacional/UFRJ. All measurements are in millimeters (mm).

Abbreviations of the repositories cited are: MCN (Museu de Ciências Naturais. Fundação Zoobotânica, Rio Grande do Sul), MNRJ (Museu Nacional, Universidade Federal do Rio de Janeiro, Rio de Janeiro), MNRJ-HS (Private Collection Helia Soares, presently in MNRJ), SMF (Naturmuseum Senckenberg Sektion Arachnologie, Frankfurt), UFBA (Uni-

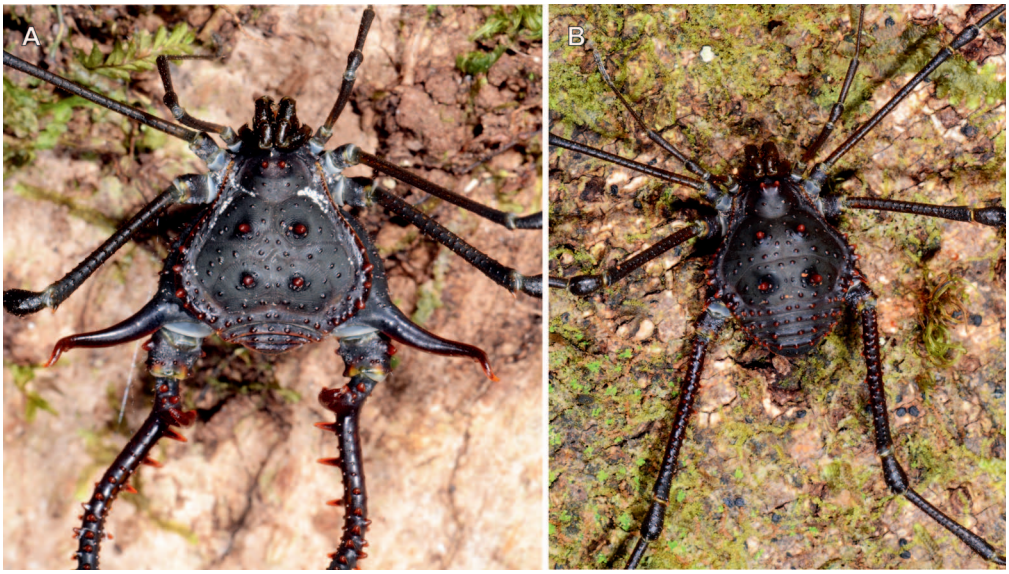

Figure 1.—Specimens *in vivo*. *Propachylus fornicatus* (Sørensen, 1884), comb. nov.: A. Male, from Brazil, Bahia, Uruçuca; B. Female, from Brazil, Bahia, Uruçuca. Images courtesy Arthur Anker and Pedro Martins (A, B).

versidade Federal da Bahia) and ZMUC (Zoologisk Museum Universität København, Copenhagen). Other abbreviations used: CL = carapace length, CW = carapace width, AL = abdominal scutum length, AW = abdominal scutum width; VP = ventral plate, macrosetae A1–A4 = basal macrosetae of VP, B = ventro-basal macrosetae of VP, C1–C4 = distal macrosetae of VP, D = dorso-lateral subdistal small setae of VP, E1–E2 = ventro-distal macrosetae of VP (penis).

RESULTS

Discocyrtus fornicatus Sørensen, 1884 was described from a female holotype from "Brazil", without any illustration of this

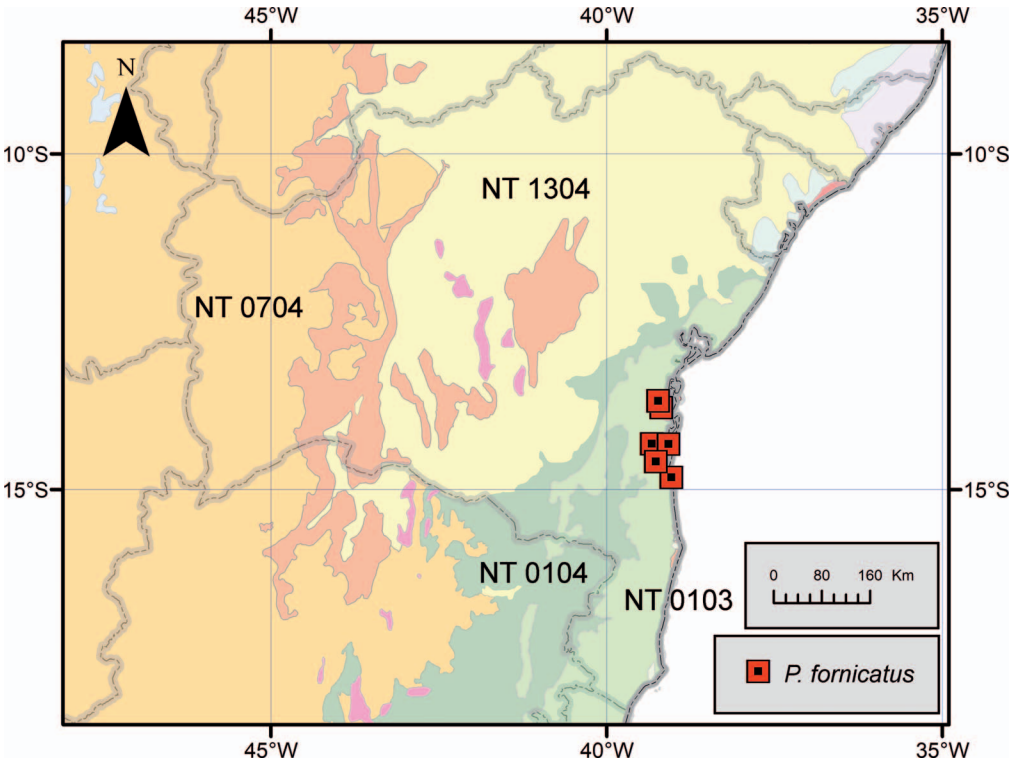

Figure 2.—Bahia state, northeastern Brazil, showing distribution of *Propachylus fornicatus* (Sørensen, 1884), comb. nov. Shaded areas on the background are WWF terrestrial eco-regions: NT 0103 (Bahia coastal forests, in light green), NT 0104 (Bahia interior forests, in dark green), NT 0704 (Cerrado, in orange) and NT 1304 (Caatinga, in yellow).

specimen. The next mention of the name was by Roewer (1913), when he translated the original description from Latin to German without having seen the holotype. He commented that the taxonomic status of *Discocyrtus* was "sehr unsicher" [very uncertain], since only one female specimen was known and it perhaps belonged to another genus (not yet described?), because it differed from the other species in the femur of pedipalps and the pattern of grooves on the abdominal scutum.

In the same publication, Roewer (1913) created the new monotypic genus *Propachylus*, along with the type species *P. singularis* Roewer, 1913, based on a male specimen from "São Paulo", Brazil, although the original holotype label indicates the locality as "Rio de Janeiro", *fide* Acosta (1996). Roewer (1913) provided a drawing of the habitus in dorsal view and a diagnosis which highlighted the pattern formed by the mesotergal grooves and the presence of "thick, erect and large conical spines" in areas I and III.

In his catalogue of Brazilian Laniatores, Mello-Leitão (1923) reported the presence of an unsexed specimen of *D. fornicatus* in his collection collected from "Petrópolis, Rio de Janeiro". There is no evidence that Mello-Leitão had seen the type specimen of this species. Taking into account the original description given by Sørensen, it is possible that this record was based on a misidentification of a female of *D. crenulatus* Roewer, 1913, which is found at Petrópolis (Roewer 1913). This specimen is listed by B. Soares (1945) in his catalog of Opiliones of the MNRJ with no. 1423 (or 776), but it is currently not present in the collection and is probably lost.

Roewer (1929) transferred *D. fornicatus* to a new genus, *Metadiscocyrtus* Roewer, 1929, declaring that after the establishment of further genera such as *Paradiscocyrtus* Mello-Leitão, 1927, *Discocyrtulus* Roewer, 1927, *Discocyrtanus* Roewer 1929, etc., the discrepancies between *D. fornicatus* and the other species of *Discocyrtus* justified a creation of a new genus. He overlooked that the diagnosis of *Metadiscocyrtus* is basically the same as that published sixteen years earlier for *Propachylus*, except for the difference of the shape of the paramedian armature on area III, a common feature of males and females of *Discocyrtus*; e.g., *D. crenulatus* Roewer, 1913 and *D. longicornis* (Mello-Leitão, 1922) (pers. obs.).

Mello-Leitão (1949) described *Propachylus longispinus* Mello-Leitão, 1949 from "Itatiaia", based on male and female syntypes. Based on Roewer's formulae, he placed the species in this genus as he considered the pair of paramedian tubercles of area I to be conspicuous. However, our examination of the drawing published by Mello-Leitão (1949, fig. 6) and the male specimen itself, such a consideration does not make sense. The paramedian tubercles are slightly higher than the adjacent ones, but much smaller than those found in *P. singularis*.

Soares & Soares (1954) published the third fascicle of their monograph of the genera of Neotropical Opiliones, which was dedicated to taxa included at that time in the subfamily Pachylinae. In this work, without any discussion or justification, they transferred both species of *Propachylus* (*P. longispinus* and *P. singularis*) to the genus *Discocyrtus*, where they have since remained. In the identification key of their paper, *Metadiscocyrtus* differs from *Discocyrtus* because it does not have armature on the pedipalpal femur. This is a result of the original description of *D. fornicatus* by Sørensen (1884), whose specimen may have had an intraspecific variation of that character. All the female specimens analyzed here have this part conspicuously armed.

SYSTEMATIC ACCOUNTS

Gonyleptidae Sundevall, 1833
Genus *Propachylus* Roewer, 1913 revalid.

Propachylus Roewer 1913:121; Roewer 1923:440; Mello-Leitão 1923:127; Mello-Leitão 1926:344; Roewer 1929:186; Mello-Leitão 1932:196; Mello-Leitão 1935:100; Muñoz-Cuevas 1973:226 [treated as a junior subjective synonym of *Discocyrtus* Holmberg, 1878, by Soares & Soares (1948)].

Metadiscocyrtus Roewer 1929:258. **Syn. nov.**

Type species.—*Propachylus*: *Propachylus singularis* Roewer, 1913, by monotypy.

Metadiscocyrtus: Discocyrtus fornicatus Sørensen, 1884, by monotypy.

Diagnosis.—Pair of parallel tubercles present on eye mound (pair of divergent spines in *A. carvalhoi*, *D. goyazius*, *D. testudineus* and *M. triangulus*) (Figs. 3A, B, E). Area I higher than others (area III higher than others in *A. carvalhoi*, *D. goyazius*, *D. testudineus* and *M. triangulus*). Paramedian armature of area I formed by a pair of higher and larger tubercles (a pair slightly higher in *A. carvalhoi*, *D. goyazius* and *D. testudineus*, without any highlighted tubercles in *M. triangulus*) (Figs. 3C, E). Anterior outline of area II medially projecting into area I (parallel areas in *A. carvalhoi*, *D. goyazius*, *D. testudineus* and *M. triangulus*) (Figs. 3A, E). Areas I and III with a pair of posterior paramedian extremely higher tubercles (not occurring in other Gonyleptidae). Coxa IV without retrolateral apophysis (same as in *M. triangulus*, present in *A. carvalhoi*, *D. goyazius* and *D. testudineus*) (Fig. 3A). Trochanter IV square-shaped in dorsal view (rectangular-shaped with medial constriction in *A. carvalhoi*, *D. goyazius* and *D. testudineus*, rectangular-shaped in *M. triangulus*) (Fig. 3A). Femur III straight, with approximately the same size of dorsal scutum length (sinuous with approximately the same size of dorsal scutum length in *A. carvalhoi*, *D. goyazius* and *D. testudineus*, straight and extremely longer in *M. triangulus*). Glans sac extended as a dorsal process (without this extension in *A. carvalhoi*, *D. goyazius*, *D. testudineus* and *M. triangulus*) (Fig. 5B). Apex of ventral process of stylus forming an acuminate leaf with smooth flaps (not occurring in another Gonyleptidae – pers. obs.) (Fig. 5D).

Included species.—*Propachylus fornicatus* (Sørensen, 1884) **comb. nov.**

Distribution.—*Propachylus* is only known from the state of Bahia, Brazil.

Propachylus fornicatus (Sørensen, 1884) comb. nov.
(Figs. 1A–B, 3A–I, 4A–E, 5A–D)

Discocyrtus fornicatus Sørensen 1884:633.

Propachylus singularis Roewer 1913:121, fig. 55; Roewer 1923: 441, fig. 554; Mello-Leitão 1923: 127; Mello-Leitão 1932: 196, fig. 111; Acosta 1996: 222. **Syn. nov.**

Metadiscocyrtus fornicatus (Sørensen): Roewer 1929:259; Kury 2003:175.

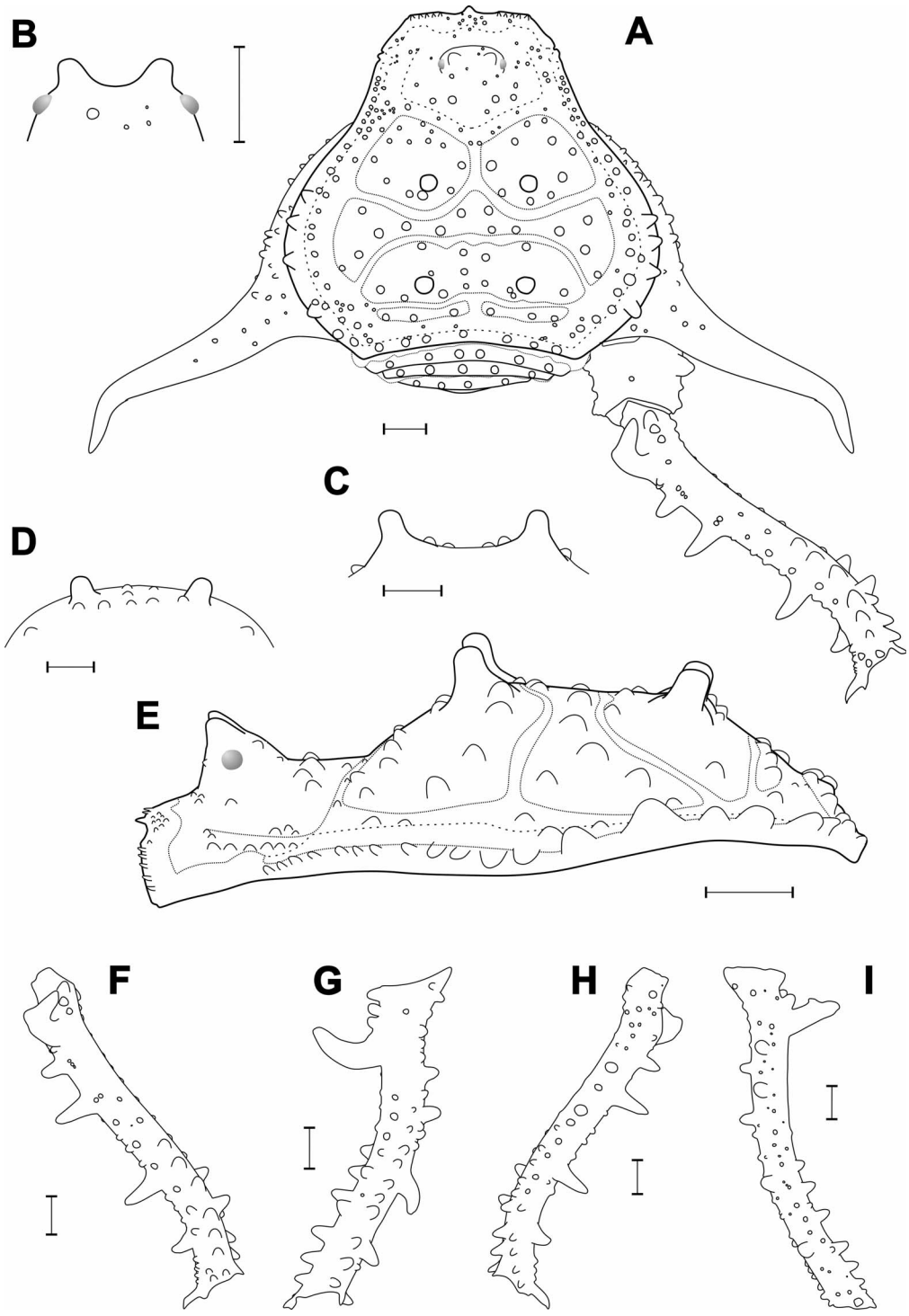

Figure 3.—*Propachylus fornicatus* (Sørensen, 1884), comb. nov., male (MNRJ 8047): A. Habitus, dorsal view; B. Ocularium, frontal view; C. Armature of scutal area I, anterior view; D. Armature of scutal area III, posterior view: E. Habitus, lateral view; F. Left femur IV, dorsal view; G. Same, prolateral view; H. Same, ventral view; I. Same, retrolateral view. Scale bars = 1 mm.

Discocyrtus singularis (Roewer): Soares & Soares 1954:255; Kury 2003:165.

Type material.—*Discocyrtus fornicatus*: *Holotype female:* Brazil, without further locality data (ZMUC, examined).

Propachylus singularis: *Holotype male:* Brazil, originally labeled "Rio de Janeiro", but reported by Roewer (1913) as "São Paulo", without further locality data; locality probably mistaken (see below) (SMF RI 787, photograph examined).

Published records.—BRAZIL: *Bahia:* (Roewer 1923, as *Propachylus singularis*).

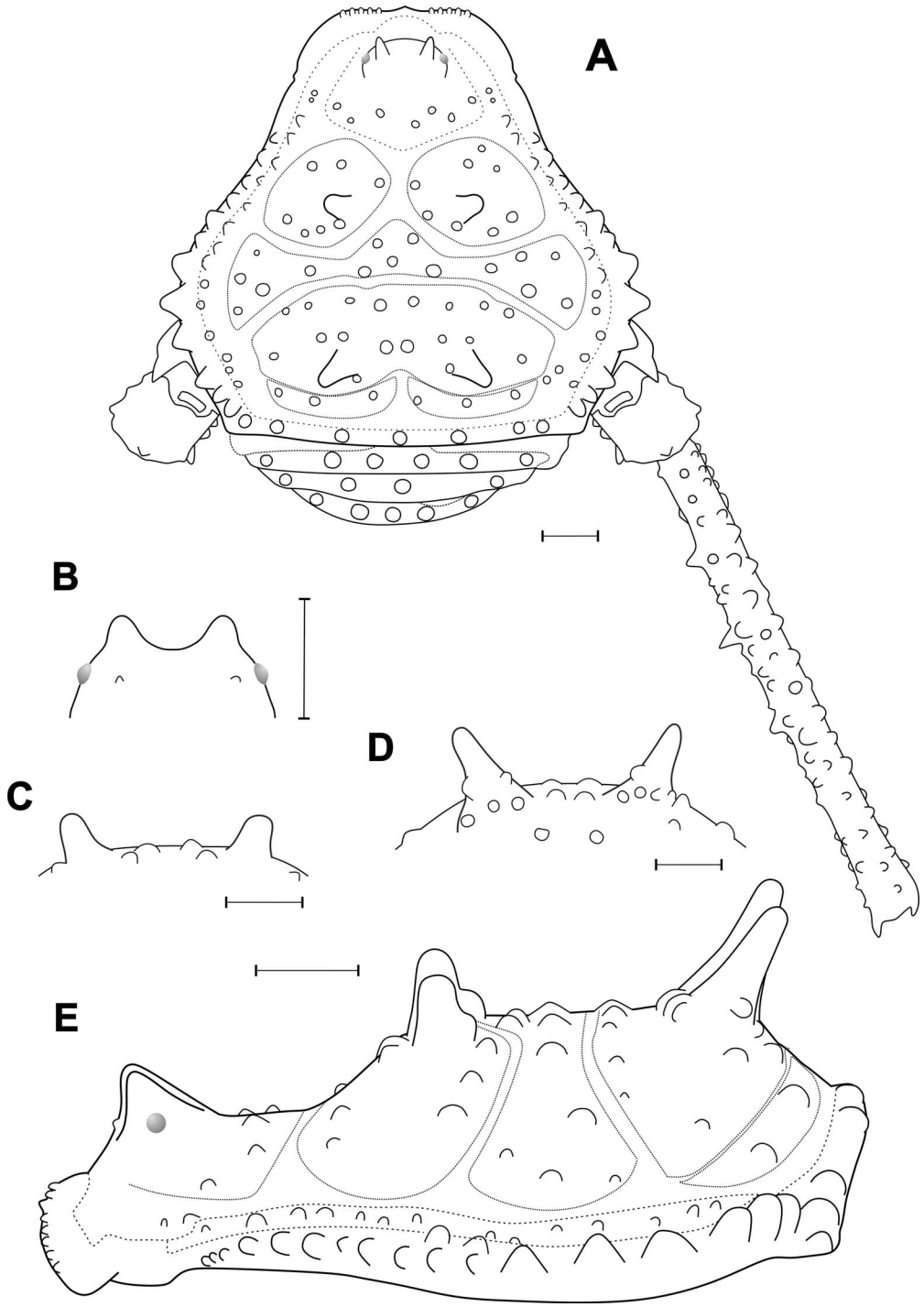

Figure 4.—*Propachylus fornicatus* (Sørensen, 1884), comb. nov., female (MNRJ 8047): A. Habitus, dorsal view; B. Ocularium, frontal view; C. Armature of scutal area I, anterior view; D. Armature of scutal area III, posterior view; E. Habitus, lateral view. Scale bars = 1 mm.

Doubtful records.—BRAZIL: *Petrópolis:* (Mello-Leitão 1923, B. Soares 1945). *Rio de Janeiro:* (Acosta 1996). *São Paulo:* (Roewer 1913). All of these records are *Propachylus singularis*.

Other material examined.—BRAZIL: *Bahia:* Aurelino Leal: 1 ♂ (MNRJ 1942), Fazenda Pedras Pretas, [-14.3166, -39.3272], 21 January 2008, V. Dill; Igrapiúna, Reserva Ecológica da Michelin, [-13.7769, -39.1858]: 1 ♂, 1 ♀ (UFBA 24), 20 January 2009, T. J. Porto; 2 ♂, 1 ♀ (MNRJ 8035), 1 juvenile (MNRJ 8042), 1 ♂, 1 ♀ (MNRJ 8047), 3 ♀ (MNRJ 8052), A.R.S. Andrade; 1 ♀, 1 juvenile (MNRJ 8081), 3 ♂ (MNRJ 8086), 1 ♀ (MNRJ 8142), 1 ♀ (MNRJ 8152), 1 ♂, 1 ♀, 2 juveniles (MNRJ 8262), 2 ♂, 2 ♀ (MNRJ 8273), 24–25 July 2009, A.R.S. Andrade; 1 ♂, 1 juvenile (MNRJ 8057), 1 ♂ (MNRJ 8060), 1 ♂, 2 ♀ (MNRJ 8084), 1 ♂, 1 ♀ (MNRJ 8095), 2 ♂, 2 ♀, 1 juvenile (MNRJ 8098), 3 ♀, 2 juveniles

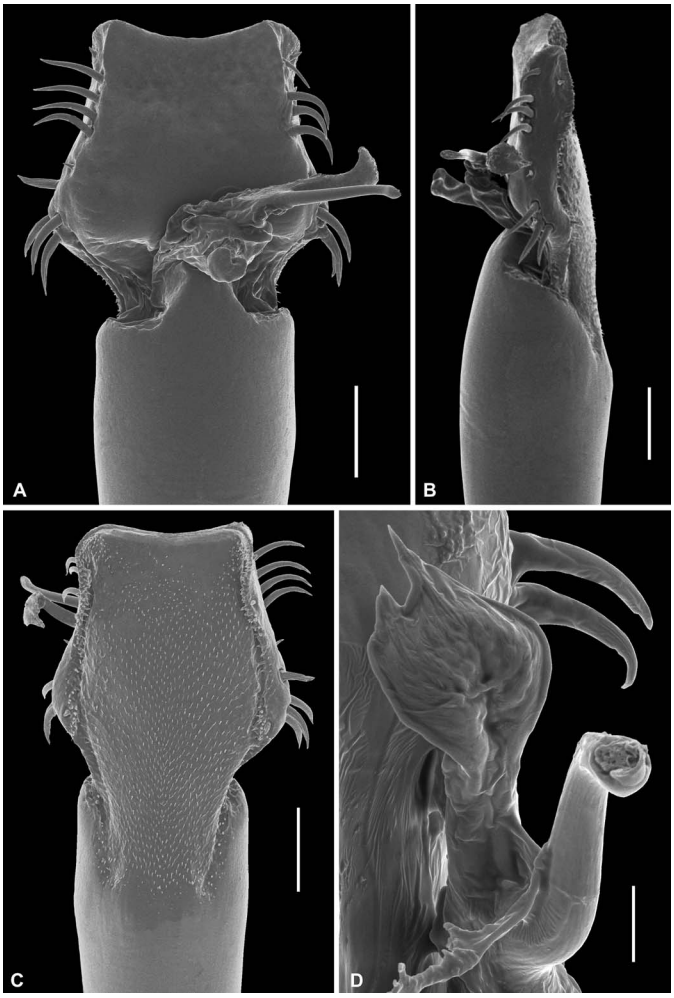

Figure 5.—*Propachylus fornicatus* (Sørensen, 1884), comb. nov., male (MNRJ 8103), genitalia, distal part: A. Dorsal view; B. Lateral view; C. Ventral view. Male (MNRJ 8047): genitalia, distal part: D. Stylus, dorso-lateral view, showing ventral process and flabellum. Scale bars: 100 μm (A–C), 20 μm (D).

(MNRJ 8102), 1 ♀ (MNRJ 8122), 3–6 September 2009, A.R.S. Andrade; 1 ♂, 1 ♀, 4 juveniles (MNRJ 8073), 1 ♀ (MNRJ 8112), 1 ♂, 1 ♀ (MNRJ 8165), 2 ♂, 1 ♀ (MNRJ 8170), 4 ♂, 1 ♀ (MNRJ 8179), 1 ♂, 4 juveniles (MNRJ 8230), 4 ♀, 1 juvenile (MNRJ 8232), 3 ♂, 1 ♀ (MNRJ 8249), 1 ♂ (MNRJ 8256), 29 October –1 November 2009, A.R.S. Andrade; 1 ♂, 1 ♀ (MNRJ 8077), 2 ♂ (MNRJ 8085), 1 ♀ (MNRJ 8131), 1 ♂, 1 ♀ (MNRJ 8149), 1 ♂, 5 ♀ (MNRJ 8157), 2 ♂ (MNRJ 8180), 1 ♀, 1 juvenile (MNRJ 8228), 28–30 January 2010, A.R.S. Andrade; 2 ♂, 3 ♀, 1 juvenile (MNRJ 8033), 5 ♂, 2 ♀ (MNRJ 8048), 1 ♂, 1 ♀, 3 juveniles (MNRJ 8103), 2 ♀ (MNRJ 8134), 1 ♂, 1 juvenile (MNRJ 08168), 4 ♂, 5 juveniles (MNRJ 8171), 2 ♂, 1 ♀ (MNRJ 8176), 4 ♂, 1 ♀, 3 juveniles (MNRJ 8233), 1 ♀ (MNRJ 8237), 3 ♂, 1 juvenile (MNRJ 8252), 27–29 March 2010, A.R.S. Andrade; 5 ♂ (MNRJ 8777), 5–6 October 2011, A. Pérez, B. Huber. Ilhéus, [-14.8167, -39.0333]: 1 ♂ (MNRJ 5431), August 1944; 1 ♂ (MNRJ 9051, Rodovia BR–101, 28 March 2012, V. Dill; 1 ♂, 1 ♀ (MNRJ–HS 0888), Ribeirão do Braço. Itacaré [-14.3224, -39.0793]: 1 ♂ (MCN 1553), 12 January 2003, T.V. Aguzzoli, A. Carvalho; 1 ♂, 1 ♀ (MNRJ 18820), 13–22 April 2006, S.P.S. Alves. Ituberá: 1 ♂ (UFBA 16), Propriedade da Michelin [-13.73, -39.14], 19 May 2007, A. Camacho.

Diagnosis.—As for the genus.

Description, adult male.—*Based on MNRJ 8047*: Measurements: CW 5.4, CL 3.2, AW 9.9, AL 5.5. Leg measurements (Tables 1 and 2), tarsal counts (Table 3).

Dorsum: Dorsal scutum gamma pyriform, widest at area II and highest at area I (Figs. 3A, E). Carapace with few tubercles on posterior region, with two pairs of paramedian contrasting larger tubercles (Fig. 3A). Cheliceral sockets shallow, with a small apophysis in the center (Figs. 3A, E). Ocularium elliptical, medium (ca. 3x the diameter of the eyes), slightly inclined frontwards, placed in the middle of the carapace, armed with a pair of divergent large tubercles inclined frontwards (Figs. 3A, B, E). *Mesotergum* divided into four clearly defined areas. Areas I and IV divided into left and right halves by median groove. Area II anterior lateral border invading space of area I and posterior lateral border invading the space of area III. Area II anterior medial invading space of area I and area IV anterior medial slightly invading space of area III (Fig. 3A). Abdominal scutum lateral borders with two rows of ordinary tubercles from middle of carapace backwards (Fig. 3A). Area I with rounded tubercles forming a frame near the border of this area and a pair of paramedian extremely higher tubercles (same height of the entire eye mound) (Figs. 3A, C, E). Area II anterior with a pair of paramedian rounded tubercles and a pair of lateral rounded tubercles. Area II posterior with a row of 10 rounded tubercles (Figs. 3A, E). Area III with two vertical rows of median rounded tubercles, a pair of rounded tubercles on anterior paramedian border, a pair of posterior paramedian extremely higher tubercles (same height of the entire eye mound) and a row of three rounded tubercles on posterior border (Figs. 3A, D, E). Area IV with a transversal row of three rounded tubercles. Posterior border of dorsal scutum strongly concave. Area V and free tergites with a transversal row of rounded tubercles (Figs. 3A, E).

Venter: Coxa I–III parallel to each other; each with several ventral transverse rows of 9–10 setiferous tubercles (coxa I main row with higher and sharper tubercles). Coxa II retroventral distal with a row of five acuminated tubercles.

Table 1.—Leg measurements of *Propachylus fornicatus* comb. nov., 12 males (major form) examined. Range between larger and smaller values.

	Trochanter	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
Leg I	0.6–0.7	2.8–3.9	1.2–1.5	2.8–3.4	4.3–4.4	2.0–2.3	13.7–16.2
Leg II	1.0–1.2	8.4–10.4	2.0–2.4	7.0–8.8	9.4–11.4	4.1–5.5	31.9–39.7
Leg III	1.2–1.6	7.0–8.4	2.0–2.5	4.0–5.0	7.3–8.7	2.7–3.4	24.2–29.6
Leg IV	1.8–1.9	9.4–11.4	2.3–3.0	6.1–7.6	10.6–13.0	3.2–3.7	33.4–40.6

Table 2.—Leg measurements of *Propachylus fornicatus* comb. nov., 11 females examined. Range between larger and smaller values.

	Trochanter	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
Leg I	0.9–1.0	3.2–3.8	1.4	2.9–3.1	4.3–4.5	1.9–2.0	14.6–15.8
Leg II	1.4	10.0–10.5	1.4–2.3	8.0–8.5	10.7–11.0	5.1–5.2	36.6–38.9
Leg III	1.6–1.7	7.6–8.4	2.2–2.4	4.6–4.9	8.2–8.5	3.2	27.4–29.1
Leg IV	1.5–1.9	8.5–10.9	2.7	6.4–6.7	12.4–13.3	3.2–3.5	34.7–39.0

Coxa III retroventral distal with a row of seven acuminated tubercles. Coxa IV much larger than the others, directed obliquely. Stigmatic area Y–shaped, clearly sunken relative to distal part of coxa IV. Intercoxal bridges well–marked. Stigmata clearly visible. Posterior border of venter with a transversal row of tubercles, increasing in size from the middle to the sides. Free sternites and anal operculum each with one transverse row of setiferous tubercles.

Chelicera: Basichelicerite elongate, bulla well–marked, with marginal setiferous tubercles—one ectal, three posterior, one mesal; hand not swollen.

Pedipalpus: Trochanter with two geminated ventral setiferous tubercles. Femur with a subapical mesal setiferous tubercle and one row of four ventral setiferous tubercles. Patella with dorso-mesal, dorsal and dorso-ectal pair of tubercles. Tibia with two rows of setiferous tubercles: four (IiIi) ventro–mesal and five (IiIii) ventroectal. Tarsus with two rows of setiferous tubercles; three (IIi) ventro–mesal and three (IIi) ventro–ectal.

Legs: Coxa I–III parallel to each other, each with several ventral transverse rows of 9–10 setiferous tubercles (coxa I main row with higher and sharper tubercles). Trochanter I–III each with several dorsal and ventral tubercles. Trochanter I–III ventral with a central highlighted tubercle. Trochanter III proletaral distal with a small apophysis. Femur I–III straight. Femur and tibia I–III with six rows (prodorsal, prolateral, proventral, retroventral, retrolateral and retrodorsal) of small tubercles. Femur II with a little retrodorsal distal spur. Femur III and tibia III with two rows (proventral and retroventral) of acuminated tubercles. Femur III with a developed retrodorsal distal spore. Coxa IV ending distally between area IV and distal border of dorsal scutum (Fig. 3A). Coxa IV with a long prolateral apophysis (forming obtuse angle in relation to coxa) with curvature to posterior on the distal portion (Fig. 3A). Coxa IV covered by tubercles along its entire length. Trochanter IV prodorsal and retrodorsal with apophysis proximal convex prodorsal forming a triangle). Trochanter IV prolateral and retrolateral with a tubercle on medial and distal portion (Fig. 3A). Trochanter IV ventrally covered by tubercles along its entire length. Femur IV sigmoid (Figs. 3A, F–I). Femur IV prodorsal with three large tubercles on proximal, two small tubercles on medial, and six large tubercles on medial–distal portion (Figs. 3A, F–G). Femur IV proventral with a row of 10 large tubercles on medial–distal portion (Figs. 3A, G–H). Femur IV ventral with a row of tubercles along its entire length, where two are larger and higher (on proximal–medial and medial portions, almost forming a cone) (Figs. 3G–I). Femur IV retrolateral with a row of four stout spines (Figs. 3A, F, H–I). Femur IV retrodorsal with a stout hook on proximal portion (curved to prolateral side) followed by a row of small tubercles along its entire length (Figs. 3A, F–G, I). Femur IV retrodorsal ending with a well-developed spur (Figs. 3A, F, H). Patella IV dorsally covered by tubercles. Patella IV proventral and retroventral with row of four and three acuminated tubercles, respectively. Tibia and metatarsus IV with six rows (prodorsal, prolateral, proventral, retroventral, retrolateral and retrodorsal) of acuminated tubercles. Metatarsus IV proventral and retroventral distal with a spur.

Table 3.—Right tarsal (disititarsal) counts of *Propachylus fornicatus* comb. nov., males and females examined.

	♂ ($n = 12$)	♀ ($n = 11$)
Leg I	6(3)	6(3)
Leg II	9−10(3)	5−10(2−3)
Leg III	6−7	4−7
Leg IV	7	7

Penis: VP divided into two regions: distal part inverted trapezoidal with rounded edges, proximal part elliptical (Figs. 5A, C). Ventral surface of VP entirely covered with microsetae of the type 1 (Figs. 5B, C). All macrosetae inserted on lateral of VP: A1–A4, cylindrical, thick, acuminate, with A2–A4 forming inverted triangle on basal third of VP (Figs. 5A–C); B inserted ventrally, proximal to A4 (Figs. 5B, C); C1–C4 slender (circa 70% of size the A), only moderately elongate, forming a tight row on the distal part of VP (Figs. 5A–C); D small, midway between C4 and A1 (Figs. 5A–C); E1–E2 inserted on distal lateral border of VP, E1 between C1 and C2, E2 proximal to C3 (Figs. 5A–C). Glans sac long, arising from middle bulge on podium, extended as a dorsal process (Figs. 5A, B). Stylus cylindrical and slightly S–shaped (Fig. 5D). Apex of stylus without any type of spines or flattening (Figs. 5A–D). Ventral process of stylus cylindrical and distally curved (Figs. 5A, C, D). Apex of ventral process of stylus forming an acuminated leaf with smooth flaps (Figs. 5B–D).

Color (in vivo) (Fig. 1A): Dorsal scutum background Dark Bluish Green (165), with darker shading especially around paramedian tubercles on area I and III. Tubercles of carapace and *mesotergum* Dark Brown (59), main tubercles of eye mound. Paramedian tubercles on area I and III, tubercles on border of dorsal scutum and femur IV main retrodorsal proximal hook Strong Reddish Brown (40). Scutal grooves lighter, Dark Bluish Gray (192). Articular membranes White (263). Chelicerae and pedipalps Dark Yellowish Brown (78) with darker reticle. Legs I to III Dark Brown (59) with darker reticle, and trochanter I–III with distal Light Yellow Green semicircle (119). Leg IV with coxa and trochanter Dark Gray (266) and femur–metatarsus Dark Grayish Purple (229), with tips of apophyses and spines Deep Orange (51).

Color (in alcohol): Dorsal scutum background and tubercles of carapace and *mesotergum* Dark Reddish Brown (44). Main tubercles of eye mound. Paramedian tubercles on area I

and III, tubercles on border of dorsal scutum Moderate Brown (58). Scutal grooves lighter, Strong Brown (55). Articular membranes White (263). Chelicerae and pedipalps Light Olive (106) with darker reticle. Legs I to III Light Grayish Olive (109) with darker reticle and trochanter I–III with semicircle distal Grayish Greenish Yellow (105). Leg IV Grayish Brown (61), with tips of apophyses and spines Light Grayish Brown (60).

Description, adult female.—*Based on MNRJ 8047*: (Figs 1B, 4A–E). CW 4.5, CL 2.5; AW 8.3, AL 5.5. Side of the dorsal scutum edges with lower level of concavity compared to male (Fig. 4A). Ocularium armed with a pair of divergent large tubercles inclined frontwards, a little less divergent when compared to male. Paramedian armature of area I with a posterior callus (Figs. 4A, C, E). Paramedian armature of area III acuminate, turned to posterior (Figs. 4A, D–E). Coxa IV with acuminate prodorsal apophysis (Fig. 4A). Femur IV thinner and less curved when compared to male (Fig. 4A). Fewer and reduced spines on femur IV, only the spore retrodorsal distal (Fig. 4A). No acuminate tubercles on tibia and metatarsus IV.

Minor morphs of males.—*Based on MNRJ 8777:* CW 5.0, CL 3.1; AW 8.9, AL 5.6. Only one minor morph of male was found in all analyzed material; it has: Dorsal scutum sides with lower concavity level between those found in major morphs and without the strongly concave form of posterior border of dorsal scutum; Coxa IV with prolateral apophysis slightly smaller when compared to major morphs; Femur IV thinner, less curved and less armed when compared to major morphs.

Distribution.—*Propachylus fornicatus* has been collected from Bahia at Aurelino Leal, Igrapiúna, Ilhéus, Itacaré, Ituberá and Uruçuca (Fig. 2).

Remarks.—The male holotype of *Propachylus singularis* (SMF RI 787) was reported in the original description from "São Paulo", without further locality data. However, the original label of this specimen has "Rio de Janeiro" as the collecting locality. Both records are highly doubtful. There is a long story of mixed-up or even fictitious records by Roewer (e.g., Helversen & Martens 1972; Pinto-da-Rocha 2002; Kury 2003; Schönhofer 2013). São Paulo and Rio de Janeiro are prominently in terrestrial eco-region NT 0160 (Serra do Mar coastal forests) which has a very different faunal composition than that found in terrestrial eco-region NT 0103 (Bahia coastal forests), where all confirmed records of *P. fornicatus* occur.

DISCUSSION

When Roewer (1913, 1929) proposed the genera *Propachylus* and *Metadiscocyrtus*, he did not have access to the female semaphoront, *Discocyrtus fornicatus*, as he was unable to examine material from ZMUC before 1934, as he later stated (e.g., Roewer 1943, fig. 29; Roewer 1947, fig. 18). He was only able to use the imprecise description provided by Sørensen (1884) to diagnose *D. fornicatus*, who stated: "areae secunda et quarta processibus binis, basi latae impositis, obtusis, instructae" [= areas I and III each with a pair of blunt processes on wide base; translated and adapted to modern terminology by us]. Roewer (1913, fig. 121) in the diagnosis of *Propachylus* stated: "I. und III. Area des Abdominalscutums mit je einem mittleren Paare dicker, aufrechter, großer Kegeldornen bewehrt" [= scutal areas I and III each armed with a paramedian pair of thick, erect, high spines]. Roewer (1929, fig. 258) assumed that the armature of *Metadiscocyrtus* was "1. Area des Scutums mit einem mittleren Tuberkelpaar" [= scutal area I armed with a paramedian pair of tubercles], which contrasted with his (Roewer 1923, fig. 431) diagnosis for *Discocyrtus* "1., 2., 4. u. 5. A, sowie 1.–3. f Tg u. Opa unbewehrt." [= scutal areas I, II, IV and V, as well as free tergites I to III and anal operculum unarmed]. Here we may see the first mistake, as clearly seen in the summary table by Mello-Leitão (1932, fig. 219): the identical armature of area I of males and females of *P. fornicatus* comb. nov. is shown as "$_{00}$" for *Metadiscocyrtus* and "^^^" for *Propachylus*.

Soares & Soares (1954) produced an ambitious synoptic work, full of typographical errors, discrepancies between the key and the diagnoses, and did not evidence new synonymies or combinations. About *Metadiscocyrtus* – on page 231 – they wrote "Área I com dois tubérculos, II com dois espinhos" [= scutal area I with a pair of tubercles, area II with two spines], where they obviously meant area III instead of II (as clearly stated in their diagnosis of *Metadiscocyrtus*). They merged all armature states of area I (unarmed, 2 tubercles, 2 spines) in the diagnosis of *Discocyrtus*, synonymizing *Propachylus*, but not *Metadiscocyrtus*. The single differential character between *Discocyrtus* and *Metadiscocyrtus* is the subapical mesal pedipalpal femur, purportedly present in the former and absent in the latter. However, in another lapse, Soares & Soares (1954) omitted this character in the diagnosis, using it only in couplet 77 of the key. Furthermore, this distinction is fictitious, as shown above.

Now that we have refuted the hypothesis of Roewer (1913) that *Discocyrtus fornicatus* and *Propachylus singularis* represent different species, we can now evaluate (independently of the formal nomenclature) the conflicting hypotheses of Sørensen (1884), which was reaffirmed by Soares & Soares (1954) versus Roewer (1913, 1929) regarding the generic inclusion in *Discocyrtus*.

Propachylus fornicatus evinces a pattern of armature on the dorsal scutum which does not match any of the species of *Discocyrtus sensu* Carvalho & Kury (2018) or even of *Discocyrtus sensu* Soares & Soares (1954), because neither possess well-developed tubercles on area I. In the same way, there are considerable differences in male genitalic features between *P. fornicatus* and core *Discocyrtus*, except for the distribution of macro- and microsetae on ventral plate, e.g., the foliaceus flabellum, the shape of stylus, the outline of ventral plate, and the dorsal process of the glans sac. Therefore, we revalidate the genus *Propachylus* and regard it as distinct from *Discocyrtus*.

The proposal by Sørensen (1884) that *D. fornicatus* should be included in the Pachylinae reflects a very old concept which, after the initial proposal, keeps being repeated by sheer inertia. Modern definitions of Pachylinae (Pinto-da-Rocha et al. 2014; Carvalho & Kury 2018) include a very small core of southern South American species with homogeneous external and genital morphology, which conflicts with that of *P. fornicatus*: absence of microsetae type 1 entirely covering ventral surface of ventral plate; macroseta B very large and inserted laterally; ventral process of stylus as a spiny cone; rectangular ventral

plate; apophyses of coxa IV of male short and directed backwards; and scutal area III without armature.

Among the gonyleptid subfamilies closest to *Discocyrtus* (unranked clade DRMN of Carvalho & Kury 2018), neither the Mitobatinae Simon, 1879 (extreme sexual dimorphism on leg IV; robust pedipalps) nor the Roeweriinae Carvalho & Kury 2018 (T-shaped ventral plate; sigmoid stylus with latero-apical winglets; and macrosetae C elongate and slender) appear as a compelling candidate for the inclusion of *Propachylus*.

Regarding the other nominal subfamilies of Gonyleptidae, none have character states that resemble *Propachylus*, which seems to be very isolated morphologically. In view of the above evidence, *P. fornicatus* is better left unassigned to a subfamily for the time being, while further studies focusing on the phylogenetic relationships of this taxon are conducted.

Furthermore, our study suggests that this genus will remain monotypic, since *D. longispinus* does not have the main characteristics of *Propachylus* and therefore it is provisionally retained in *Discocyrtus* until further phylogenetic work is completed.

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