



A review of *Soaresia* H. Soares, 1945, with the description of a new species from Serra da Mantiqueira, Brazil (Opiliones, Gonyleptidae, Pachylinae)

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Abstract

Soaresia forficula **sp. nov.** is described from the Mantiqueira Mountain Range, Minas Gerais State, southeastern Brazil. The genus *Soaresia* H. Soares, 1945 previously included only *Soaresia uncina* H. Soares, 1945, hitherto recorded only from the type locality, Penedo, Rio de Janeiro State, in the same mountain range. A second record of *S. uncina* is given from a nearby locality, Serrinha do Alambari. The combined distribution of the species of *Soaresia* is restricted to elevations between 700 and 1300 m, in the Tropical & Subtropical Moist Broadleaf Forests biome. An emended diagnosis of the genus is given and complements are given to the description of *S. uncina*, including the first illustrations and description of the male genitalia.

Key words: Harvestmen, male dimorphism, beta males, Atlantic Forest, Neotropics, Minas Gerais, Rio de Janeiro

Introduction

The large subfamily Pachylinae includes many monotypic genera of uncertain affinities, for which the genital morphology and important details of external morphology remain largely unknown or undescribed. The Brazilian genus *Soaresia* H. Soares, 1945 is one such genus. The type species was described from Penedo, Rio de Janeiro State, which is in the Mantiqueira Mountain range. As a result of the expeditions of the National Museum, a new species has been found in the same mountain range at Rio Preto (90 km from Penedo), Minas Gerais State, and is here described.

Color names follow the NBS/ISCC color centroids system (see Kury & Orrico 2006 for details, as well as <http://www.anthus.com/Colors/Cent.html>). Abbreviations of depository institutions are: HSPC (Private Collection Helia Soares, now in MNRJ), MNRJ (Museu Nacional, Universidade Federal do Rio de Janeiro) and MZSP (Museu de Zoologia, São Paulo). All measurements are in millimeters (mm). Tarsal formula (number of tarsomeres) is given as follows: I, II, III, IV. Numbers for legs I–II are followed by the distitarsal count in parentheses.

Soaresia H. Soares, 1945

Soaresia H. Soares 1945: 243; Soares & Soares 1954: 296; Kury 2003: 193 (type species *Soaresia uncina* H. Soares, 1945, by original designation)

Emended diagnosis. Scutum outline with parallel sides at carapace, with median convexity widest at area II, narrowing gradually towards posterior border. Ocularium elliptic, not elevated, armed with a single erect

spine. Mesotergal areas I–IV well defined, area I divided in left and half halves by median groove. All areas and free tergites unarmed. Free tergite III either with a triad of spines (*S. uncinata*) or with a pair of geminate very large hooks resembling earwig pincers (*S. forficula*). Coxa IV of male with lanceolate prodorsal apical apophysis and well developed retroventral apical apophysis. Trochanter IV with strong, blunt prolateral apophysis. Femur IV of male attenuate sigmoid, with 1 or 2 large retroventral distal dagger-like apophyses. Tarsal counts 5(3)/6–8(3)/6/6. Truncus penis with a clear ventro-distal notch or constriction. Ventral plate of penis pyriform, not cleft, with 3 + 3 lateral setae. Ventral process of glans (base of stylus) cylindrical, with only apex flabellate.

Included species. *Soaresia uncinata* H. Soares, 1945 (type species) and *Soaresia forficula* sp. nov.

Distribution. Known from only three localities in the Mantiqueira Mountain Range, which marks the boundary between Rio de Janeiro and Minas Gerais States. The WWF Ecoregion is NT 0150 (Paraná-Paraíba interior forests) (World Wildlife Fund, 2007).

Soaresia forficula sp. nov.

(Figs 1–11)

Type material. ♂ holotype, 5 ♂ 5 ♀ paratypes (MNRJ 08914): BRAZIL, Minas Gerais, Rio Preto: Fazenda do Luluca, entre Rio Preto e Santa Bárbara do Monte Verde, mata fechada 1100–1300 m (-22.0600; -43.7800) 14–20 May 2002, R. Baptista, A. Pérez, C. Rodríguez, A. Giupponi, E. Vasconcelos, A. Chagas, D. Pedroso, L. Silva & A. Mendes col.

Etymology. The species name refers to a well known genus of earwigs (order Dermaptera), whose cerci (pincers) strongly resemble the apophyses of free tergite III in this species.

Diagnosis. Free tergite III with a pair of very large geminate hooks, resembling earwig pincers, clearly separating this species from *S. uncinata*, which instead has a triad of straight spines. Femur IV with only 1 dagger-like ventro-distal apophysis. Patella IV of male short, as in most Pachylinae, contrasting with that of *S. uncinata*, which is unusually elongate. Tarsus II predominantly 6-jointed. Penial notch shallow and truncus apex swollen, almost tricommatine-like. Tarsal counts (range): males (n=6, 2 of which beta morph) and females (n=5) 5(3)/6–8(3)/6/6. Tarsus II (variation): 6 (n=1), 7 (n=14), 8 (n=3). Body size equal, but legs I–IV of alpha males progressively shorter than in *S. uncinata* (95–75%, see measurements in Table 1).

Description of male holotype. Measurements: Carapace 1.05 long, 1.27 wide; abdominal scutum 1.56 long, 2.39 widest.

Ocularium narrow, elliptic, removed from prosomatic portion of dorsal scutum (carapace) anterior border and armed with an erect median short spine. Dorsal scutum much wider in the mid portion, with sides convex. Anterior border with deep cheliceral sockets. Posterior border slightly convex. Lateral border with row of marginal tubercles without conspicuous color contrast with the scutum background (Figs 1, 3). All scutal areas unarmed, only bearing each a transverse row of granules, extending across the whole area in areas III–V. Free tergites each with a transverse row of granules, tergite III bearing strong pair of partially fused spiniform apophyses, curved ventrally (Figs 3, 5). Chelicera neither swollen nor elongate, with well-marked bulla and no armature. Pedipalp slender, as long as dorsal scutum. Pedipalpal femur armed with sub-apical mesal setiferous tubercle. Femora I–II straight, III–IV sigmoid. Coxa IV armed with 1) large lanceolate prodorsal apical apophysis and 2) smaller spiniform retroventral apophysis. Trochanter IV armed with 1) large apical prolateral apophysis and 2) small basal retrolateral apophysis. Femur IV armed with 1) prolateral row of acuminate spines growing higher distally, 2) small dorso-apical spines and 3) huge ventro-apical dagger-like spiniform apophysis. Patella and tibia IV each with prolateral row of acuminate spines growing higher distally (Fig 1). Color (in alcohol) of scutum and tergites Deep Reddish Orange (CC 36), with grooves lighter and appendages Strong Orange (CC 50) mottled with Brownish Orange (CC 54). Truncus penis with a clear ventro-distal

notch or constriction. Ventral plate of penis pyriform, not cleft, with 3 + 3 lateral setae. Ventral process of glans (base of stylus) cylindrical, with only apex flabellate. Stylus with distal mat of scattered spines. Penial notch shallow and truncus apex swollen, almost tricommatine-like (Figs 8–9).

TABLE 1. Body and appendage measurements of *S. forficula* (MNRJ 8914, 4 females, 2 beta males, 4 alpha males), average (\pm standard deviation).

class	Leg #	Tr	Fe	Pa	Ti	Mt	Ta	Total leg
females	I	0.3 (\pm 0.0)	0.8 (\pm 0.0)	0.4 (\pm 0.0)	0.7 (\pm 0.0)	0.8 (\pm 0.1)	0.8 (\pm 0.0)	3.8 (\pm 0.1)
beta males	I	0.2 (\pm 0.0)	0.7 (\pm 0.0)	0.4 (\pm 0.0)	0.6 (\pm 0.0)	0.7 (\pm 0.1)	0.7 (\pm 0.0)	3.2 (\pm 0.1)
alpha males	I	0.3 (\pm 0.0)	0.9 (\pm 0.1)	0.4 (\pm 0.0)	0.7 (\pm 0.0)	0.9 (\pm 0.1)	0.8 (\pm 0.1)	4.0 (\pm 0.2)
females	II	0.3 (\pm 0.0)	1.3 (\pm 0.1)	0.6 (\pm 0.0)	1.1 (\pm 0.1)	1.3 (\pm 0.0)	1.3 (\pm 0.1)	6.0 (\pm 0.2)
beta males	II	0.3 (\pm 0.0)	1.2 (\pm 0.0)	0.6 (\pm 0.0)	1.1 (\pm 0.0)	1.3 (\pm 0.0)	1.0 (\pm 0.0)	5.4 (\pm 0.0)
alpha males	II	0.4 (\pm 0.0)	1.5 (\pm 0.0)	0.5 (\pm 0.0)	1.1 (\pm 0.1)	1.5 (\pm 0.1)	1.4 (\pm 0.1)	6.4 (\pm 0.3)
females	III	0.3 (\pm 0.0)	1.1 (\pm 0.0)	0.5 (\pm 0.0)	0.8 (\pm 0.0)	1.1 (\pm 0.0)	0.8 (\pm 0.0)	4.6 (\pm 0.1)
beta males	III	0.3 (\pm 0.1)	1.1 (\pm 0.1)	0.4 (\pm 0.0)	0.7 (\pm 0.0)	1.1 (\pm 0.0)	0.8 (\pm 0.1)	4.5 (\pm 0.1)
alpha males	III	0.3 (\pm 0.0)	1.2 (\pm 0.1)	0.5 (\pm 0.0)	0.8 (\pm 0.0)	1.2 (\pm 0.1)	0.9 (\pm 0.1)	4.9 (\pm 0.2)
females	IV	0.4 (\pm 0.0)	1.2 (\pm 0.0)	0.7 (\pm 0.0)	1.0 (\pm 0.0)	1.6 (\pm 0.0)	0.9 (\pm 0.1)	5.9 (\pm 0.1)
beta males	IV	0.4 (\pm 0.0)	1.2 (\pm 0.1)	0.6 (\pm 0.0)	0.9 (\pm 0.0)	1.5 (\pm 0.1)	0.9 (\pm 0.1)	5.5 (\pm 0.4)
alpha males	IV	0.6 (\pm 0.0)	1.1 (\pm 0.1)	0.7 (\pm 0.1)	1.0 (\pm 0.1)	1.7 (\pm 0.2)	1.0 (\pm 0.1)	6.2 (\pm 0.4)
females	Pp	0.3 (\pm 0.0)	0.6 (\pm 0.1)	0.4 (\pm 0.0)	0.5 (\pm 0.1)	-	0.4 (\pm 0.0)	2.1 (\pm 0.1)
beta males	Pp	0.3 (\pm 0.0)	0.6 (\pm 0.0)	0.4 (\pm 0.0)	0.5 (\pm 0.1)	-	0.4 (\pm 0.0)	2.1 (\pm 0.2)
alpha males	Pp	0.3 (\pm 0.0)	0.5 (\pm 0.1)	0.4 (\pm 0.0)	0.4 (\pm 0.1)	-	0.4 (\pm 0.1)	2.0 (\pm 0.1)
	scutum	length	max width					
females		2.3 (\pm 0.1)	2.1 (\pm 0.1)					
beta males		2.0 (\pm 0.0)	1.9 (\pm 0.1)					
alpha males		2.4 (\pm 0.2)	2.2 (\pm 0.2)					

TABLE 2. Body and appendage measurements of *S. uncinata* (MNRJ 5465, 3 females, 6 alpha males), average (\pm standard deviation).

class	Leg #	Tr	Fe	Pa	Ti	Mt	Ta	Total leg
females	I	0.3 (\pm 0.0)	1.0 (\pm 0.1)	0.5 (\pm 0.1)	0.7 (\pm 0.1)	0.9 (\pm 0.2)	0.8 (\pm 0.1)	4.2 (\pm 0.6)
males	I	0.3 (\pm 0.0)	1.0 (\pm 0.1)	0.5 (\pm 0.0)	0.7 (\pm 0.0)	1.0 (\pm 0.1)	0.7 (\pm 0.1)	4.2 (\pm 0.2)
females	II	0.4 (\pm 0.0)	1.6 (\pm 0.1)	0.6 (\pm 0.0)	1.3 (\pm 0.1)	1.5 (\pm 0.2)	1.5 (\pm 0.1)	6.9 (\pm 0.3)
males	II	0.4 (\pm 0.0)	1.7 (\pm 0.1)	0.6 (\pm 0.1)	1.4 (\pm 0.0)	1.7 (\pm 0.1)	1.5 (\pm 0.1)	7.3 (\pm 0.3)
females	III	0.3 (\pm 0.0)	1.3 (\pm 0.0)	0.6 (\pm 0.0)	0.9 (\pm 0.1)	1.3 (\pm 0.1)	0.9 (\pm 0.1)	5.2 (\pm 0.3)
males	III	0.3 (\pm 0.0)	1.5 (\pm 0.0)	0.5 (\pm 0.0)	1.0 (\pm 0.0)	1.5 (\pm 0.0)	0.9 (\pm 0.1)	5.7 (\pm 0.2)
females	IV	0.4 (\pm 0.0)	1.6 (\pm 0.1)	0.6 (\pm 0.1)	1.1 (\pm 0.2)	1.9 (\pm 0.1)	1.0 (\pm 0.0)	6.6 (\pm 0.4)
males	IV	0.7 (\pm 0.1)	1.8 (\pm 0.1)	1.0 (\pm 0.1)	1.4 (\pm 0.0)	2.4 (\pm 0.1)	1.1 (\pm 0.0)	8.3 (\pm 0.1)
females	Pp	0.3 (\pm 0.0)	0.6 (\pm 0.0)	0.4 (\pm 0.0)	0.5 (\pm 0.0)	-	0.4 (\pm 0.0)	2.4 (\pm 0.1)
males	Pp	0.3 (\pm 0.0)	0.6 (\pm 0.1)	0.5 (\pm 0.0)	0.5 (\pm 0.1)	-	0.4 (\pm 0.1)	2.4 (\pm 0.1)
	scutum	length	max width					
females		2.2 (\pm 0.1)	2.1 (\pm 0.1)					
males		2.3 (\pm 0.0)	2.3 (\pm 0.1)					

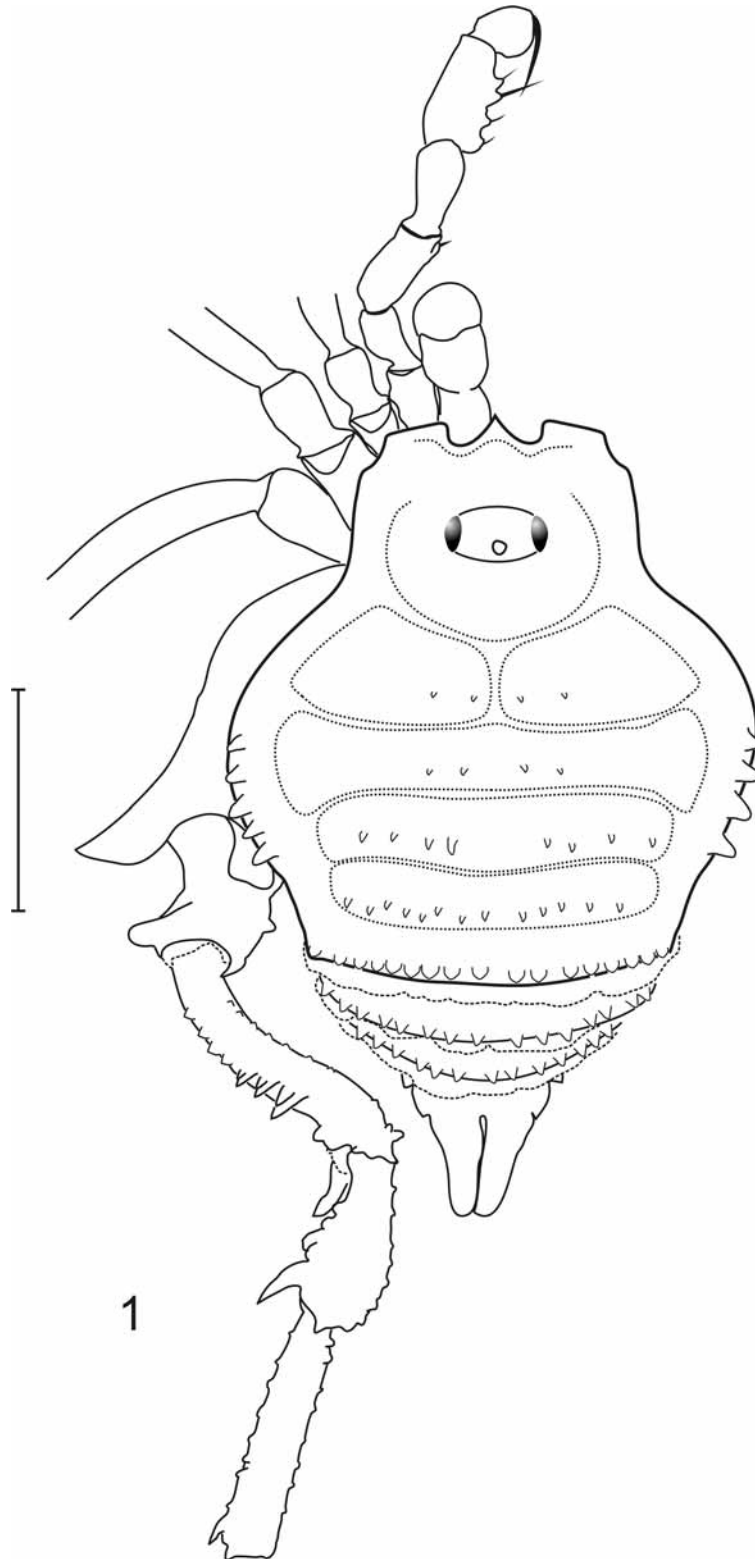


FIGURE 1. *Soaresia forcicula* sp. nov. Male holotype (MNRJ 8914) from Rio Preto. Habitus, dorsal view. Scale bar = 1 mm.

Beta males. Overall size similar to alpha males (body ca. 15% smaller, legs 10–20% shorter, pedipalps equal, see Table 1 for measurements). All apophyses of leg IV similar in shape, but much less developed. Free tergite III with two small acuminate spiniform apophyses instead of the huge hooks present in alpha males (Fig 7).

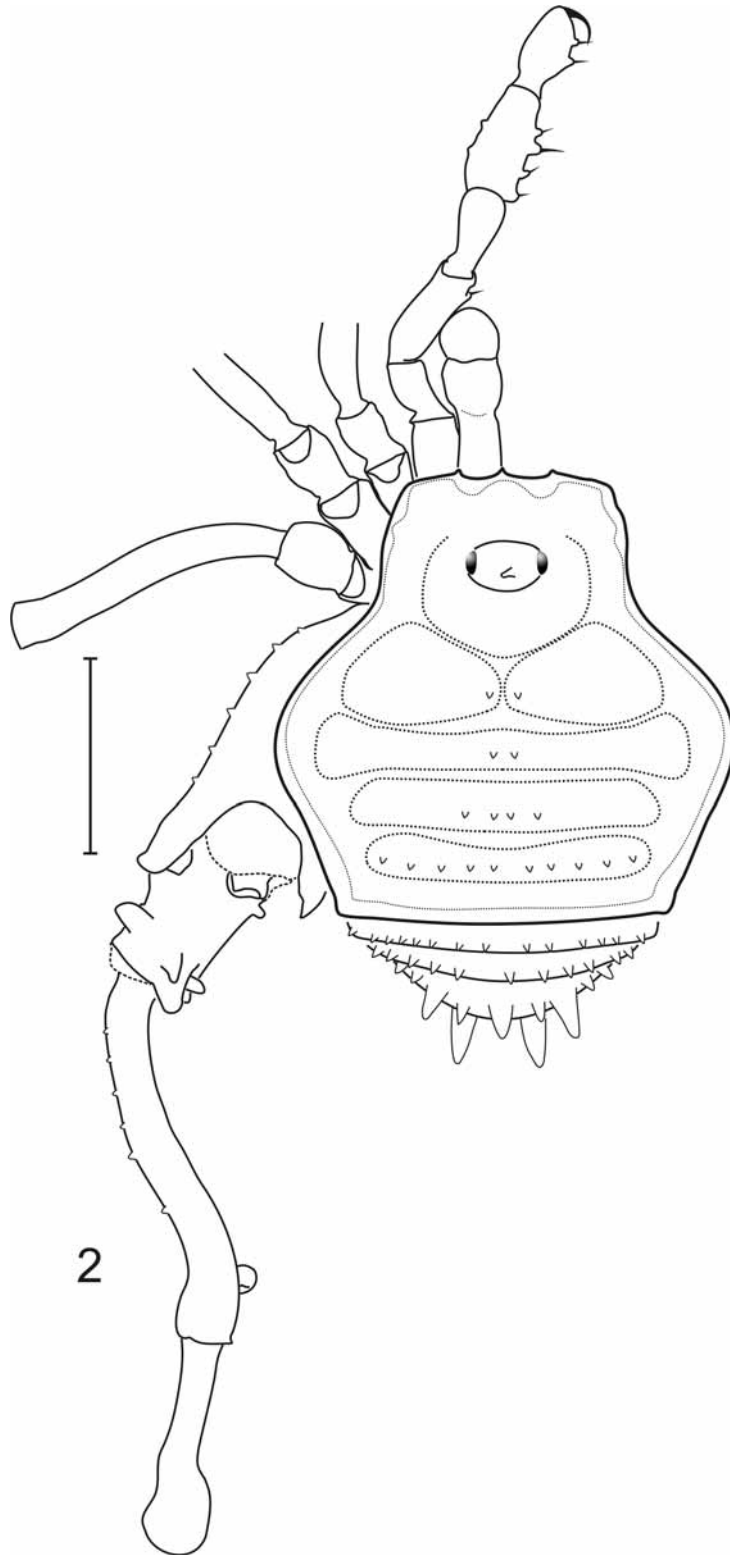
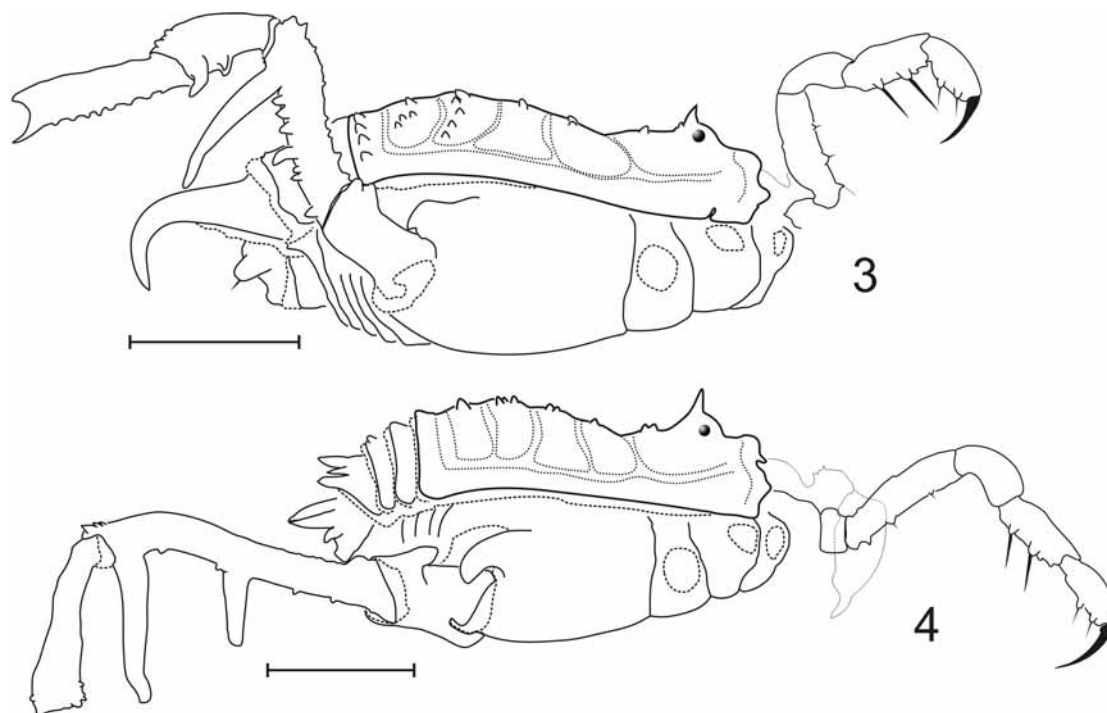


FIGURE 2. *Soaresia uncina* male (MNRJ 5466) from Serrinha do Alambari, Rio de Janeiro State, Brazil. Habitus, dorsal view. Scale bar = 1 mm.

Females. Differences from male are, as usual in Pachylinae, the absence of armature where male presents greatly developed apophyses: free tergite III, coxa to patella IV. Segments of leg IV (length, width) and overall body size of similar too in females (body 5% smaller than alpha males, legs 5–7% shorter, see Table 1 for measurements).



FIGURES 3–4. *Soaresia* spp., habitus, lateral view. 3, *Soaresia forficula* **sp. nov.**, holotype (MNRJ 8914) from Rio Preto, between Rio de Janeiro and Minas Gerais States, Brazil. 4, *Soaresia uncina* male (MNRJ 5466) from Serrinha do Alambari. Scale bars = 1 mm.

Soaresia uncina H. Soares, 1945

Soaresia uncina H. Soares 1945: 244, figs 1–2 (♂, ♀); Soares & Soares 1954: 296; Kury 2003: 193.

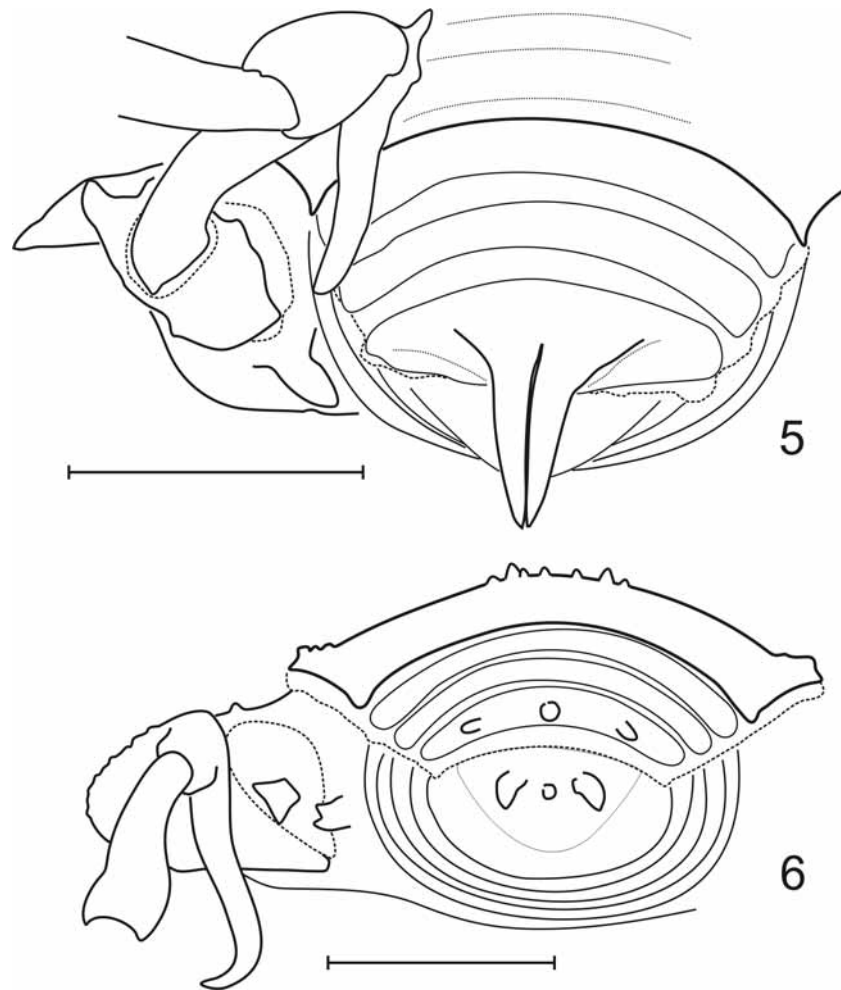
Type material. HSPC 39, ♂ holotype and ♀ allotype; MZSP 813, paratype, examined: BRAZIL, Rio de Janeiro, Penedo: “Fazenda Penedo”, 700 m (-22.4200; -44.5500).

Other material examined. 6 ♂ 3 ♀ (MNRJ 05465): BRAZIL, Rio de Janeiro, Rezende: Serrinha do Alambari, 850 m (-22.3732; -44.5387) ca. 5 km from type locality, 29–31 Dec. 1992, A. B. Kury col., leaf litter.

Etymology. From Latin *uncin*us (= a hook, barb). Probably due to the distal hooked apophysis on male femur IV. The name formation is defective, as it should be properly *uncinata* (“the one bearing a hook” or “hooked *Soaresia*”) or *uncinus* (“hook *Soaresia*”), but Article 32 of ICZN (1999) prevents an emendation in this case.

Diagnosis. Free tergite III with a triad of straight spines (Fig 2) clearly separating this species from *S. forficula*, which has a pair of geminate very large hooks resembling earwig pincers. Femur IV with 2 dagger-like ventro-distal apophyses (Fig 4). Patella IV of male elongate, contrasting with that of *S. forficula*, which is normal in size (Fig 2, Table 2). Tarsus II predominantly 7-jointed. Penial notch deep and truncus apex not swollen (Figs 10–11). Tarsal counts (range): males (n=6) and females (n=3) 5(3)/6–8(3)/6/6. Tarsus II (variation): 6(n=1), 7(n=14), 8 (n=3). Beta males are unknown. See measurements of body and appendages in Table 2.

Female. Differences from male are, as usual in Pachylinae, the absence of armature where male presents greatly developed apophyses: free tergite III, coxa to patella IV. Color (in alcohol): Body and appendages moderate orange yellow (CC 71), mottled with deep orange yellow (CC 69). Legs II–IV shorter than in male, especially leg IV (only 80% of length, see measurements in Table 2).



FIGURES 5–6. *Soaresia* spp. Free tergites, anal operculum and left leg IV, posterior view. 5, *Soaresia forficula* **sp. nov.** Male holotype (MNRJ 8914) from Rio Preto, highlighting the dagger-shaped distal apophysis of femur IV and the “earwig pincers” on free tergite III. 6, *Soaresia uncina* male (MNRJ 5466) from Serrinha do Alambari, showing armature of free tergites and anal opercle. Scale bars = 1 mm.

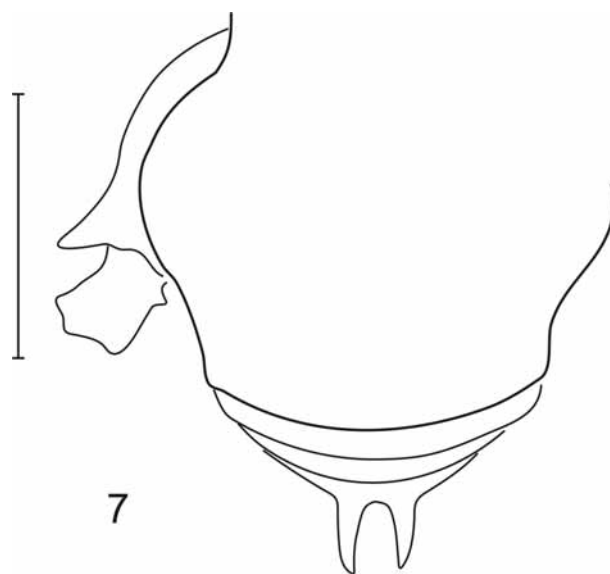
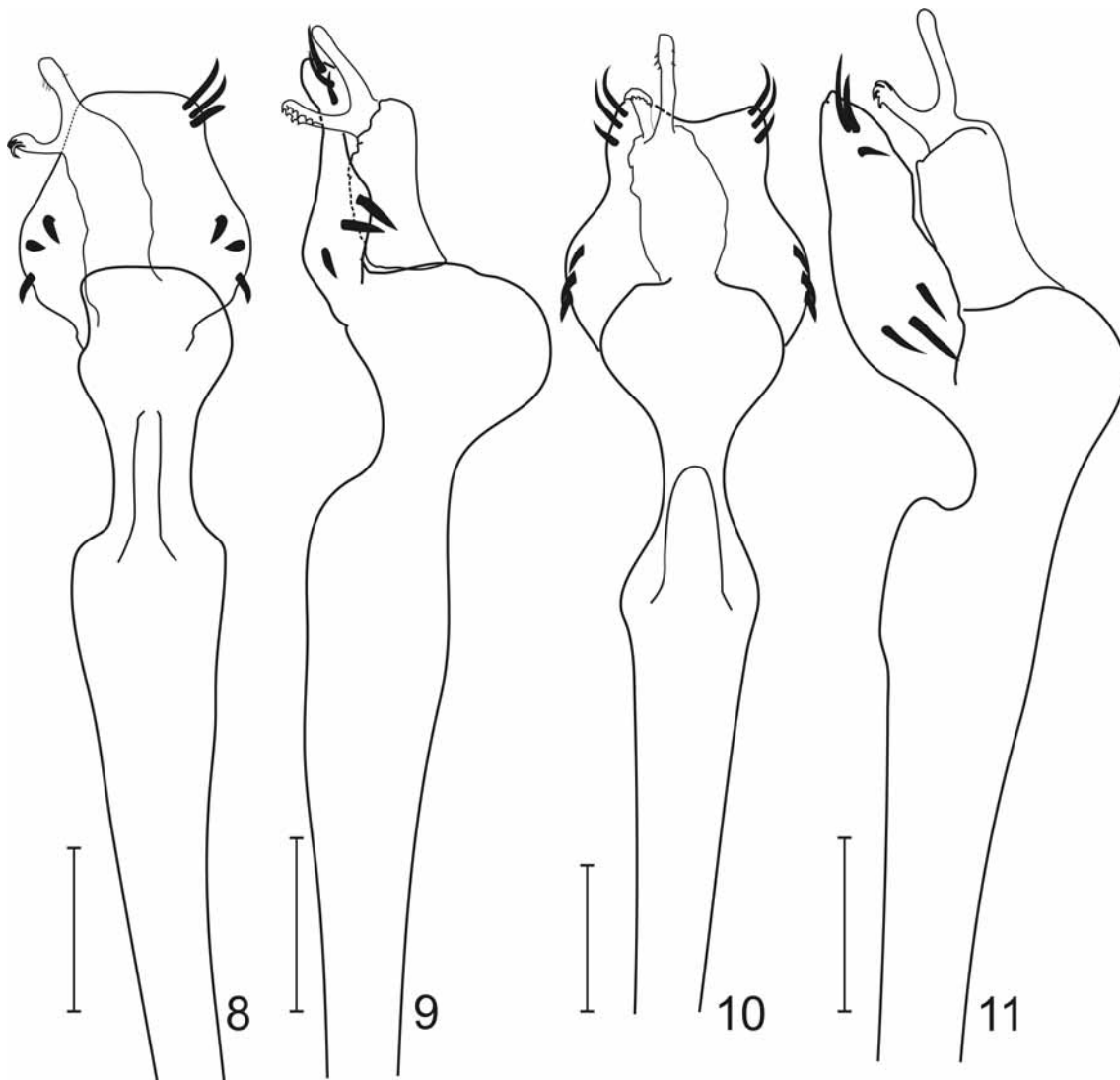


FIGURE 7. *Soaresia forficula* **sp. nov.** Beta male paratype (MNRJ 8914) from Rio Preto. Schematic outline of abdominal scutum, free tergites, coxa IV and trochanter IV, showing the reduced apophyses, dorsal view. Scale bar = 1 mm.



FIGURES 8–11. *Soaresia* spp., penis, distal half. *Soaresia forficula* **sp. nov.**, paratype (MNRJ 8914) from Rio Preto. 8, Dorsal view. 9, Lateral view. *Soaresia uncinata* male (MNRJ 5466) from Serrinha do Alambari. 10, Dorsal view. 11, Lateral view. Scale bars = 0.1 mm.

Discussion—relationships of the genus *Soaresia*

The external morphology of *Soaresia*—including mesotergal areas unarmed or at most with low tubercle pairs in areas III and or IV, ocularium located away from the frontal border of carapace with erect single spine, coxa + trochanter IV with well developed prolateral apophyses, femur IV of male sigmoid with short spines—resembles some Pachylinae of the Atlantic Forest, such as *Bristoweia* Mello-Leitão, 1924 and *Camposicola* Mello-Leitão, 1924. Both, however, differ from *Soaresia* in the genital morphology. *Camposicola* has a filiiform ventral process of the glans (Kury & Rodrigues 1999: figs 7–8) and *Bristoweia* has a strongly bent stylar apex (A.B. Kury, unpublished data). The strong, hooked apophysis of *S. forficula* superficially resembles that of *Ceropachylinus peruvianus* Roewer, 1956, from Peru, although there is no evidence that they are related.

As for the genital morphology, the distal notch in the truncus penis is exclusive to *Soaresia*. The pyriform, uncleft ventral plate with 3 + 3 lateral setae is rather commonplace among Pachylinae. The combination of a slender stylus, with distal mat of spines and forming an acute angle with the ventral process, which is cylindrical and ends in a very short flabellum, is typical of a group of genera, of which *Discocyrtus* Holmberg, 1878,

Gyndesoides Mello-Leitão, 1933, *Lacronia* Strand, 1942, *Pachyloides* Holmberg 1878 and *Pachylusius* Mello-Leitão, 1949 (Acosta 1995, 1996; Kury & Orrico 2006; Soares & Soares 1987; A.B. Kury, unpubl. data) may be cited. None of them, however, matches the external features of *Soaresia*, having, for example, paired armature on the ocularium and/or femur IV straight.

Biogeography is not of much use in choosing between these hypotheses, because all the candidates for close relatives of *Soaresia* are from the Atlantic Forest.

Acknowledgments

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