



Nine new species of *Soesilarishius* from Brazil (Araneae: Salticidae: Euophryinae)

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Abstract

Nine new species of *Soesilarishius* Makhan, 2007 are described from Brazil, raising the genus member list up to 20 species. *Soesilarishius chaplini* **sp. nov.**, *S. paxiuba* **sp. nov.** and *S. muiratinga* **sp. nov.** are described from the state of Pará. *Soesilarishius bicrescens* **sp. nov.**, *S. excentricus* **sp. nov.** and *S. flagellator* **sp. nov.** are described from the state of Piauí. *Soesilarishius macrochelis* **sp. nov.** and *S. cearensis* **sp. nov.** are described from the state of Ceará. *Soesilarishius tabernarius* **sp. nov.** is described from the state of Bahia. Both sexes are described for the new species, except for *S. muiratinga*, *S. bicrescens*, *S. excentricus* and *S. tabernarius*, whose females remain unknown.

Key words: Neotropical Region, taxonomy, new species

Introduction

The salticid genus *Soesilarishius* Makhan, 2007, proposed to include solely the type species from Suriname, has been the focus of a recent revision that attempted to build a more comprehensive understanding of the lineage (Ruiz, 2011). That study presented seven additional species from Northeastern Brazil and transferred one species from *Euophrys* C.L. Koch to *Soesilarishius*. More recently, another two species were described, one from Ecuador and the other from the Brazilian Amazon (Zhang & Maddison, 2012), increasing the genus list up to 11 species. These geographical records reveal that this jumping spider lineage has a rather wide distribution across tropical South America.

Spiders of *Soesilarishius* are small ground dwellers. As a shared character for the group, the typical euophryine “spiraed embolus—epigynal window” complex (Maddison & Hedin 2003) is altered. The embolus seems to have become shorter and less spiraled and the epigynal window is reduced. Although similar in body form and color pattern, external reproductive organs (male palp and female epigynum) are quite diverse in morphology within *Soesilarishius* (see Ruiz, 2011; Zhang & Maddison, 2012; the present work). *Soesilarishius* species usually live on the ground in areas covered with some kind of vegetation in South American biomes, where green areas often form mosaics of several vegetation types and are separated by the very large rivers. Hence, we will not be surprised if many more undescribed species of this group are discovered in the near future, which may further add morphological diversity to this lineage.

Recent expeditions of both the Semiarid and the East-Amazonian cores of the Research Program in Biodiversity (PPBio), supported by the Brazilian Ministry of Science and Technology (MCT) and the National Council for Scientific and Technological development (CNPq), have brought to knowledge the new forms that are herein presented. In this paper, nine new species are described from Brazil, three of them from Eastern Amazon (state of Pará) and six from Northeastern areas, in the states of Piauí, Ceará and Bahia.

Material and methods

The material examined is deposited in the Museu Paraense Emílio Goeldi, Belém-PA (MPEG, curator Alexandre Bonaldo) and Coleção de História Natural da Universidade Federal do Piauí, Floriano-PI (CHNUFPI, curator Leonardo Carvalho). Illustrations of copulatory structures were prepared with camera lucida. Color images were taken with a Leica DFC420 digital camera attached to a M205A stereomicroscope. Extended focal range images were composed with Leica application suite version 3.4.1. The measurements are given in millimeters.

Soesilarishius Makhan, 2007

Diagnosis. Species included in this genus are small, ground dwelling euophryines easily distinguishable from other euophryine lineages from South America by having reduced spiraled emboli. For a more complete comparative discussion, see Ruiz (2011).

Soesilarishius chaplini sp. nov.

Figs 1–3, 8–12

Type material: Holotype: male from Parque Nacional da Serra do Pardo, São Félix do Xingu, Pará, Brazil, 5.767°S, 52.617°W, 26.IV.2012, G.R.S. Ruiz *et al.* (MPEG 20276). **Paratype:** 1 female, same data as holotype, MPEG 20277.

Etymology. The specific epithet is in honor of Sir Charles Spencer Chaplin for the resemblance between his characteristic moustache and the modified scales on the male clypeus (Fig. 3).

Diagnosis. Males of this species can be distinguished from those of all the remaining known species by having the typical black scales on the light clypeus (Fig. 3). Females can be distinguished from those of the remaining species by having a “young-duck-face” on the epigynal plate, formed by the copulatory openings and the advanced median pocket (Fig. 11).

Description. Male holotype: Total length: 2.47. Carapace yellow, 1.52 long, 1.04 wide, 0.68 high, with cephalic region dark brown and oblique lines of white scale behind the posterior eyes; a transverse dark brown band behind the fovea and another along the posterior border of the carapace (Fig. 1). Ocular quadrangle 0.78 long. Anterior eye row 1.09 wide and posterior 0.99 wide. Clypeus with modified dark scales (Fig. 3). Chelicera yellow, small. Endite, labium and sternum light brown. Palp dark brown, with a strongly, ventrally curved RTA (retrolateral tibial apophysis), elongate cymbium, kidney-shaped tegulum and short, dorsally curved embolus at the distal end of tegulum (Figs 8–10). Legs 1=342; I-II dark brown with tarsi and distal half of metatarsi yellow; III-IV yellow with patellae and distal half of femora dark brown. Length of femur: I 0.85, II 0.71, III 0.85, IV 0.83; patella + tibia: I 1.09, II 0.78, III 0.95, IV 0.85; metatarsus + tarsus: I 0.76, II 0.68, III 0.85, IV 0.95. Spinination similar to that described for *S. lunatus* (Ruiz, 2011, fig. 60). Abdomen dark brown, dorsally with two light chevrons that fuse each with a pair of lateral, clear spots (Fig. 1). Spinnerets light colored.

Female (paratype): Total length: 2.75. Carapace dark brown, 1.54 long, 1.09 wide, 0.71 high (Fig. 2). Ocular quadrangle 0.83 long. Anterior eye row 1.09 wide and posterior 0.99 wide. Chelicera, endite, palp, labium and sternum light brown. Legs 4312; I-II dark brown, III-IV with dark brown femora, other articles yellow. Length of femur: I 0.80, II 0.66, III 0.87, IV 0.80; patella + tibia: I 0.99, II 0.80, III 0.95, IV 0.90; metatarsus + tarsus: I 0.71, II 0.66, III 0.85, IV 0.99. Spinination as in male. Abdomen dorsally dark brown, variegated (Fig. 2); ventrally cream-colored. External epigynal structures resemble a young duck face, the eyes being the semicircular copulatory openings wide apart and the beak being the median pocket, apart from the posterior border (Fig. 11). Internally, copulatory ducts flow straight to the center, with glands on their anterior walls, curve backwards, reaching posterior, round spermathecae; these have nutritive glands near the fertilization ducts, which arise on their anterior surface (Figs 11–12). Spinnerets yellow.

Distribution. Known only from the State of Pará, Brazil.

Biological note. The specimens mentioned above were actively collected from the humid forest ground. They are abundant at the type locality, but easily found only by trained eyes. Small, dark, with the general color and scale

pattern that camouflages them among the dark fallen leaves covered with shiny drops of water, these spiders are only spotted on the rarely illuminated ground of rainforests after their short jumps. Despite abundant, these animals were not commonly collected with pitfall traps.



FIGURES 1–7. *Soesilarishius chaplini* **sp. nov.** 1 male habitus; 2 female habitus; 3 male face. *Soesilarishius macrochelis* **sp. nov.** 4 male habitus; 5 female habitus; 6 male face. *Soesilarishius tabernarius* **sp. nov.** 7 male habitus.

***Soesilarishius macrochelis* sp. nov.**

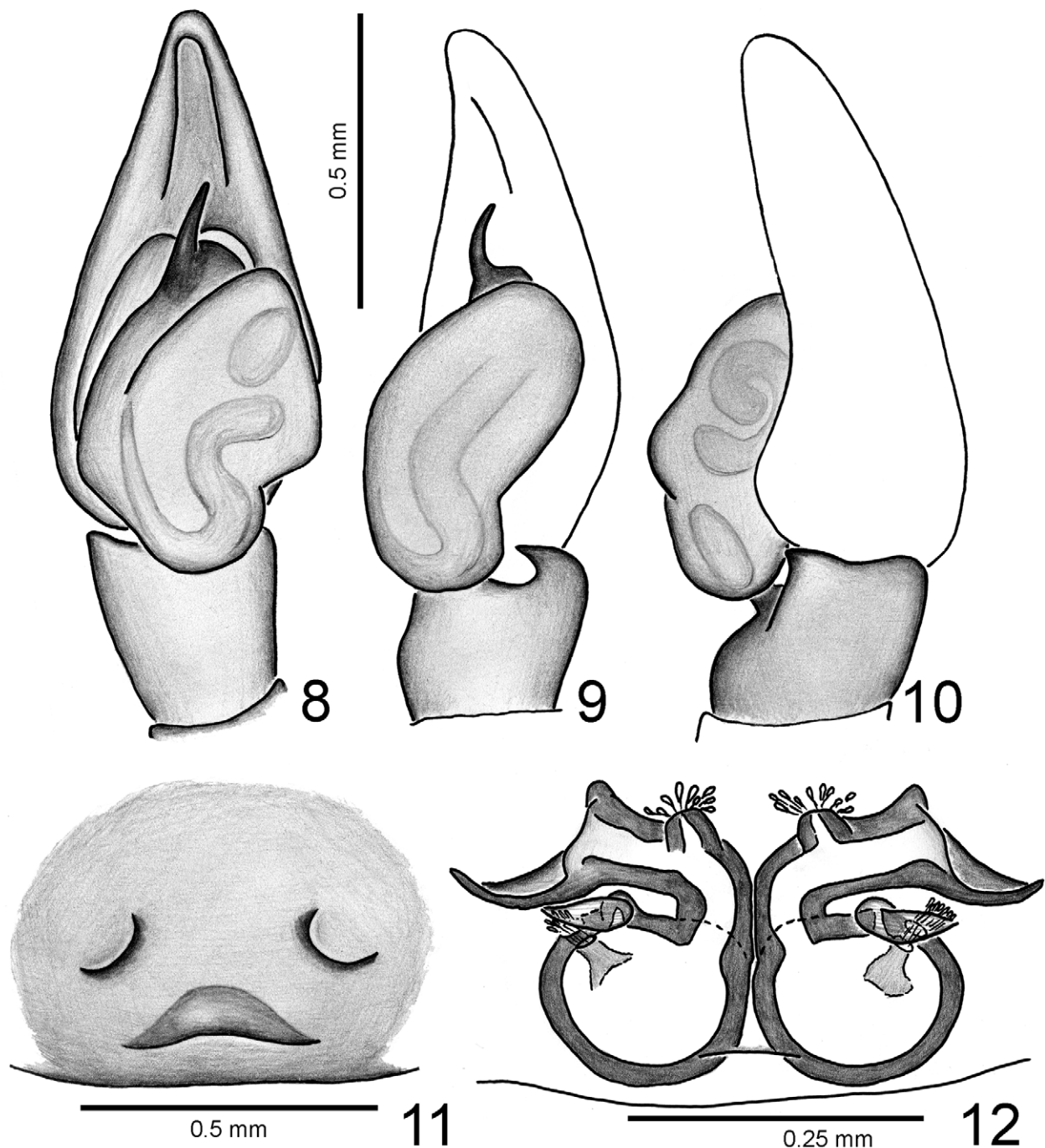
Figs 4–6, 13–16

Type material: **Holotype:** male from Floresta Nacional do Araripe, Crato/Barbalha, Ceará, Brazil, II.2010, L.S. Carvalho (MPEG 20278). **Paratype:** 1 female, same data as holotype, MPEG 20279.

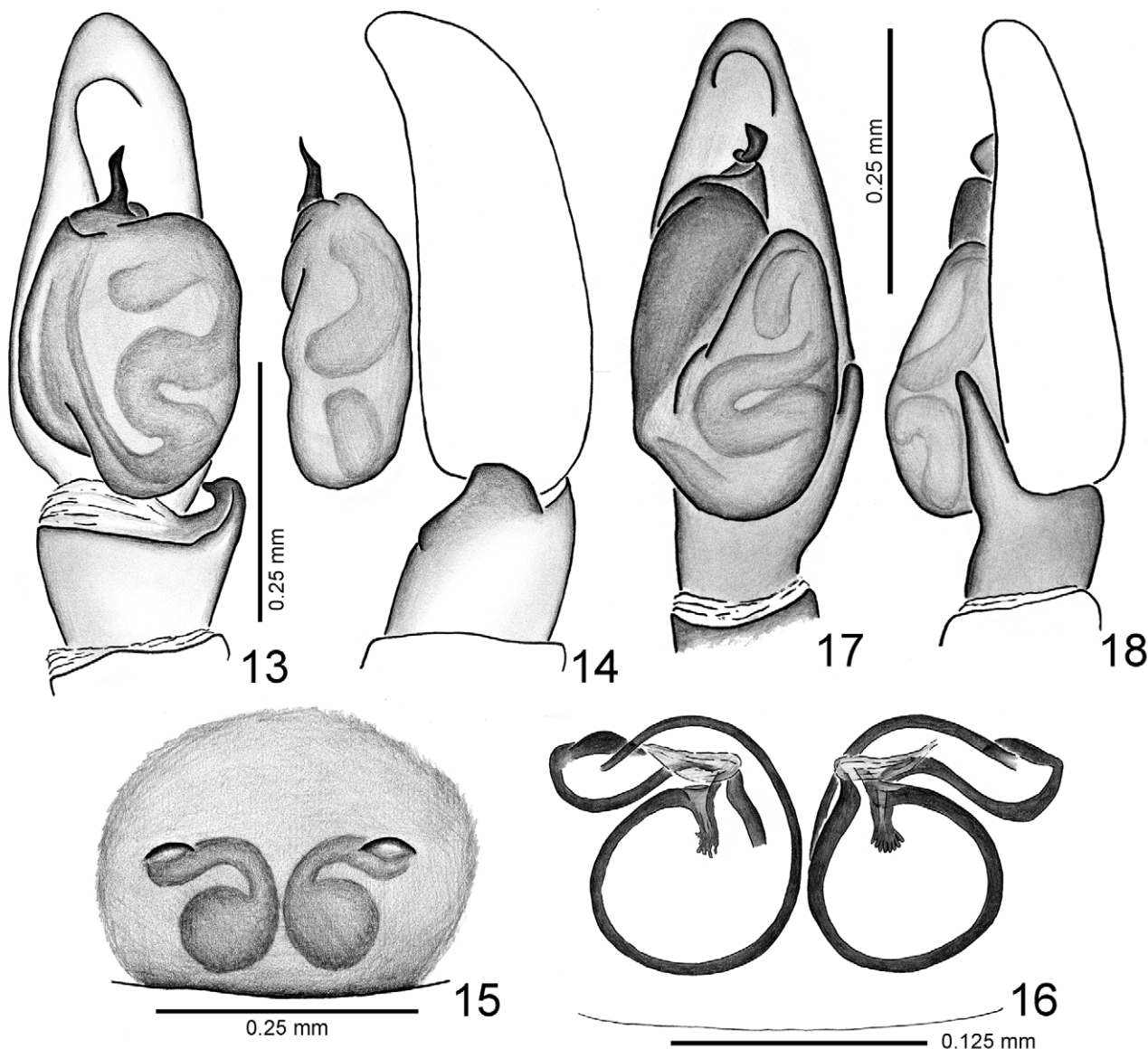
Etymology. The specific epithet is a noun (Latin) in apposition and refers to the enlarged chelicerae of males (Fig. 6), uncommon in the genus.

Diagnosis. Males can be distinguished from any other known species by the enlarged chelicerae (Fig. 6), while females can be recognized by the flaps arising at the posterior borders of the copulatory openings of the epigyne (Fig. 15).

Description. Male holotype: Total length: 3.80. Carapace dark brown, 2.01 long, 1.37 wide, 0.97 high, with sparse white and golden scales (Figs 4, 6). Ocular quadrangle 0.90 long. Anterior eye row 1.28 wide and posterior 1.18 wide. Chelicera brown, enlarged (Fig. 6). Labium, sternum and endite yellow. Palp yellow, with strongly curved RTA and short embolus (Figs 13-14). Legs 1432; coxae and trochanters light brown; femur I dark brown, patella I and tibia I yellow; metatarsus I and tarsus I yellow, proximally dark brown; II-IV yellow, distal femora, distal tibiae, distal and proximal metatarsi and proximal tarsi dark brown. Length of femur: I 1.42, II 0.99, III 1.14, IV 1.09; patella + tibia: I 1.80, II 1.23, III 1.23, IV 1.28; metatarsus + tarsus: I 1.18, II 1.04, III 1.18, IV 1.42. Spination not elongate on forth legs, as in *S. albipes* (Ruiz, 2011, fig. 62). Abdomen cream-colored, variegated, with a dorsal light brown scutum; ventrally dark brown (Fig. 4). Anterior spinnerets yellow, posterior dark brown.



FIGURES 8–12. *Soesilarishius chaplini* sp. nov. 8–10 left male palp (8 ventral, 9 retroventral, 10 retrolateral); 11 epigyne, ventral view; 12 vulva, dorsal view, cleared.



FIGURES 13–18. *Soesilarishius macrochelis* **sp. nov.** 13–14 left male palp, slightly expanded (13 ventral, 14 retrolateral); 15 epigyne, ventral view; 16 vulva, dorsal view, cleared. *Soesilarishius tabernarius* **sp. nov.** 17–18 left male palp (17 ventral, 18 retrolateral).

Female (paratype): Total length: 3.80. Carapace as in male, 2.01 long, 1.47 wide, 1.04 high (Fig. 5). Ocular quadrangle 1.06 long. Anterior eye row 1.37 wide and posterior 1.28 wide. Chelicera, endite, labium, sternum and palp light brown. Legs 4312, light brown; femora, tibiae and metatarsi proximally and distally dark brown, tarsi proximally dark brown, all articles fading from leg I to IV. Length of femur: I 1.09, II 1.04, III 1.18, IV 1.23; patella + tibia: I 1.42, II 1.18, III 1.23, IV 1.42; metatarsus + tarsus: I 0.95, II 0.95, III 1.28, IV 1.59. Spination: as in male. Abdomen dorsally variegated with dark brown (Fig. 5); ventrally cream-colored. Epigyne with no conspicuous median pocket, copulatory openings wide apart, with flaps on the posterior borders; copulatory ducts flow to the center, curve backwards and enter round spermathecae; nutritive glands near the fertilization ducts, which arise anteriorly (Figs 15–16). Spinnerets light brown.

Distribution. Known only from the State of Ceará, Brazil.

Soesilarishius tabernarius sp. nov.

Figs 7, 17–18

Type material: Holotype: male from Serra da Jiboia (Estrada Pioneira, near the antenna, 12.871°S, 39.481°W), Santa Teresinha, Bahia, Brazil, 8.XI.2010, L.S. Carvalho *et al.* (MPEG 20780).

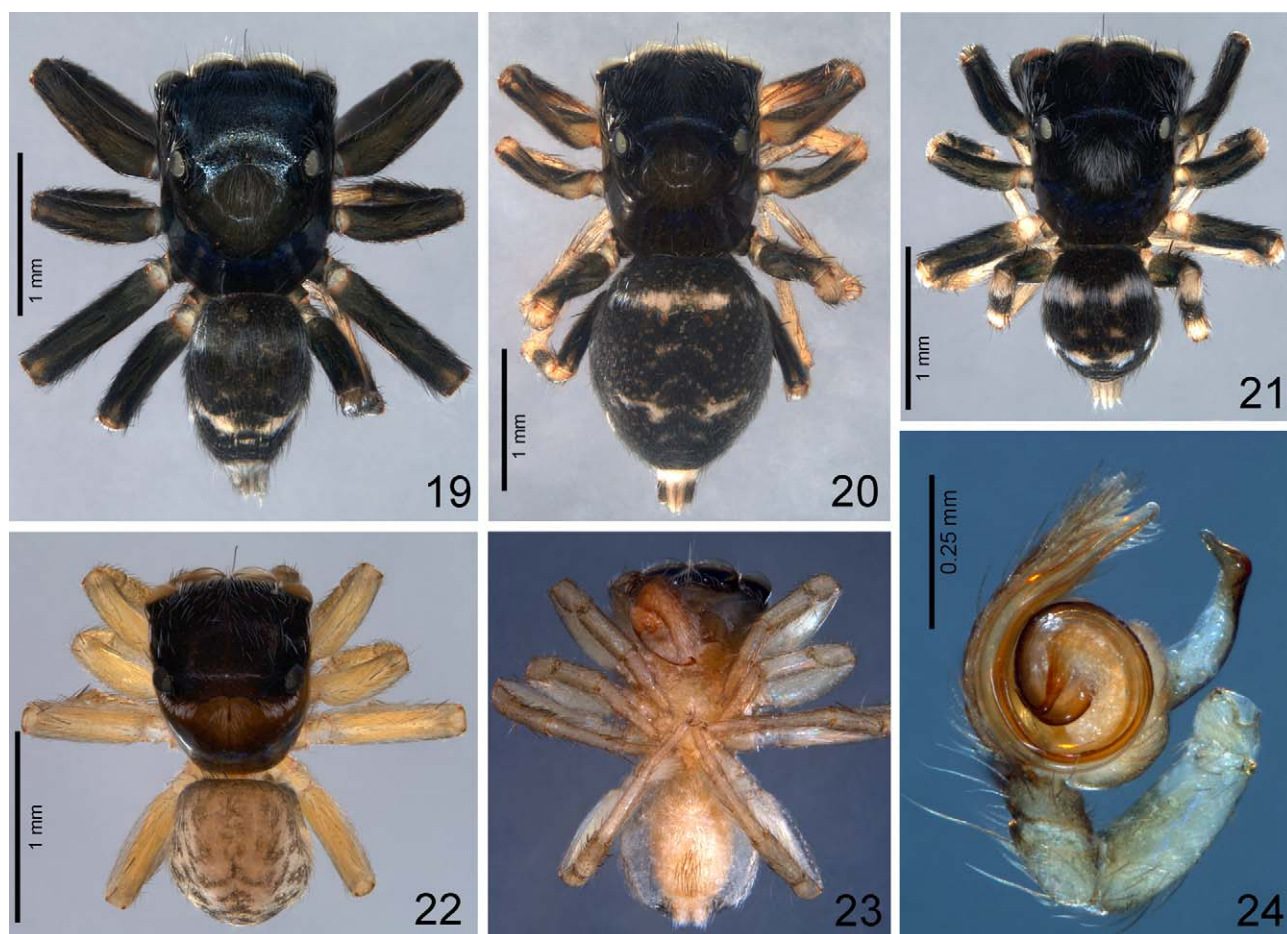
Etymology. The epithet is a Latin noun, meaning the Roman citizen who worked in a taberna, the closest to a modern bar, due to the corkscrew shape of the embolus.

Diagnosis. Males slightly resemble the ones of *S. minimus* Ruiz, 2011 by the corkscrew shape of the embolus (Fig. 17), but can be recognized by having longer RTA (Fig. 18). Females are unknown.

Description. Male holotype: Total length: 3.08. Carapace dark brown, 1.71 long, 1.18 wide, 0.87 high (Fig. 7). Ocular quadrangle 0.99 long, with a large chevron-shaped cluster of white scales (Fig. 7). Anterior eye row 1.28 wide and posterior 1.14 wide. A pair of tufts of white scales behind the posterior eyes (Fig. 7). Clypeus with a pair of strong setae. Chelicera, labium and sternum dark brown. Endite dark brown, slightly projected laterally. Palp dark brown, with a simple, medium-sized RTA, ovoid tegulum, large and sclerotized embolar base, spiral embolus tip, curling counter-clockwise in the left palp (Figs 17–18). Legs 1342, dark brown, except for tarsi, yellow. Tufts of white scales on dorsal patellae and median third of tibiae. Length of femur: I 1.28, II 0.78, III 1.47, IV 0.90; patella + tibia: I 1.52, II 0.86, III 1.02, IV 1.42; metatarsus + tarsus: I 1.14, II 0.80, III 0.95, IV 1.11. Forth leg spination not elongated. Abdomen dorsally dark brown, the anterior border covered with white scales and with a pair of transverse white bars behind the middle of the abdomen; these extend to the sides and backwards, forming a pair of curved, clear stains (as the ones described for *S. cearensis* sp. nov. and *S. flagellator* sp. nov., Figs 39–40). Spinnerets dark brown.

Female. Unknown.

Distribution. Known only from the State of Bahia, Brazil.



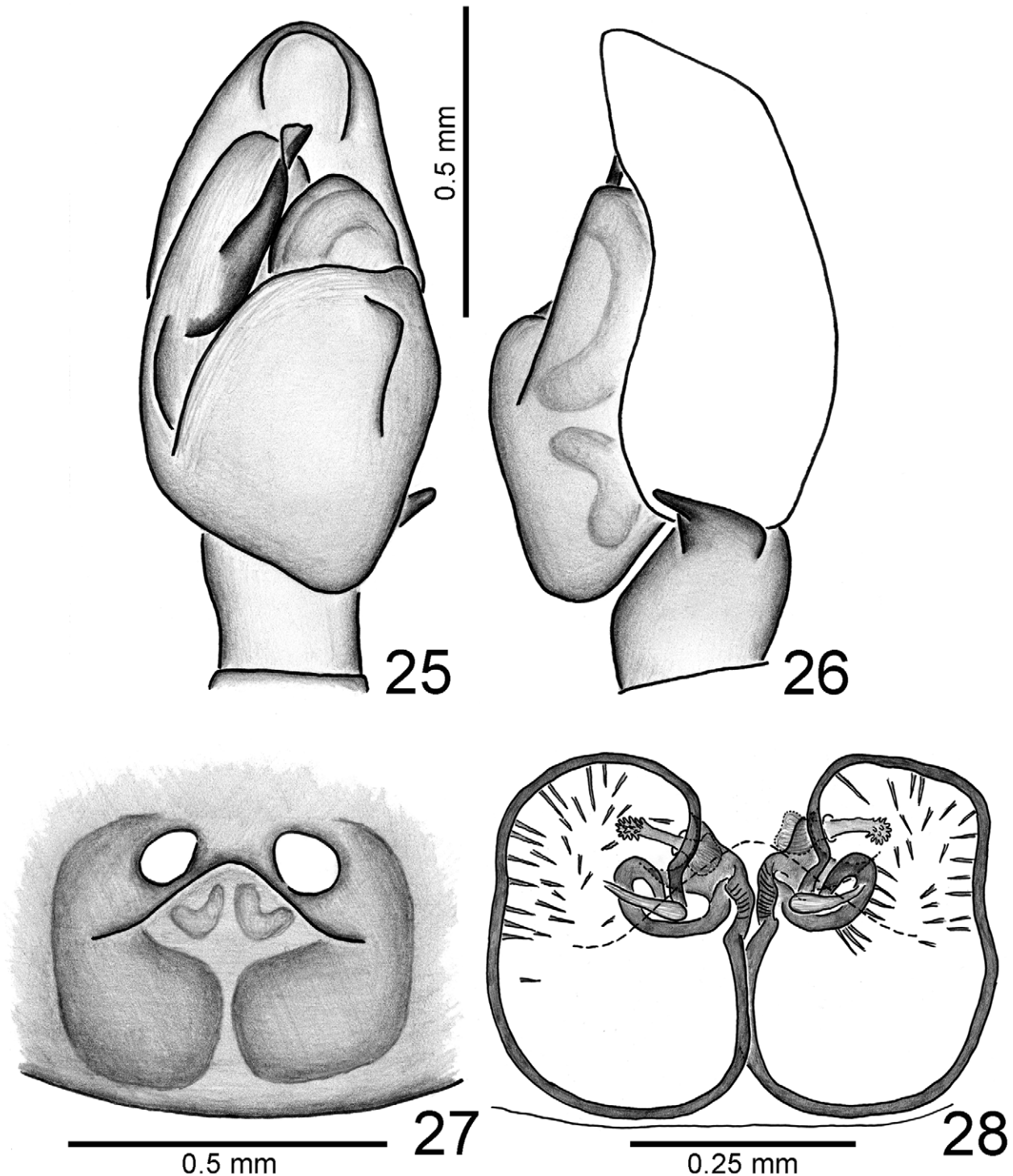
FIGURES 19–24. *Soesilarishius paxiuba* sp. nov. 19 male habitus; 20 female habitus. *Soesilarishius muiratinga* sp. nov. 21 male habitus. *Soesilarishius excentricus* sp. nov. 22 male habitus; 23 same, ventral view; 24 same, detail of left male palp, prolateral view.

Soesilarishius paxiuba sp. nov.

Figs 19–20, 25–28

Type material: **Holotype:** male from Parque Nacional da Serra do Pardo, São Félix do Xingu, Pará, Brazil, 5.767°S, 52.617°W, 26.IV.2012, G.R.S. Ruiz *et al.* (MPEG 20282). **Paratype:** 1 female, same data as holotype, MPEG 20283.

Etymology. The specific epithet, a noun in native language in apposition, is the popular name of *Socratea exorrhiza* (Mart.) H. Wendl., the walking palm tree, very abundant in the type locality. The embolus resembles its aerial root, used by natives as weapon.



FIGURES 25–28. *Soesilarishius paxiuba* sp. nov. 25–26 left male palp (25 ventral, 26 retrolateral); 27 epigyne, ventral view; 28 vulva, dorsal view, cleared.

Diagnosis. This species is similar to *S. aurifrons* (Taczanowski) by the shape and insertion of the embolus, which arise on the middle of a soft area on the prolateral side of the bulb (embolic hematodocha), but can be distinguished from that species by the conical proximal tegulum and the embolus, straighter distally (Fig. 25). Females are similar to those of *S. micaceus* Zhang & Maddison and *S. ruizi* Zhang & Maddison by the advanced pocket in the epigyne, but differ from those by the enlarged spermathecae (Figs 27–28).

Description. Male holotype: Total length: 2.61. Carapace dark brown, 1.52 long, 1.09 wide, 0.83 high (Fig. 19). Ocular quadrangle 0.83 long. Anterior eye row 1.16 wide and posterior 0.99 wide. Chelicera, endite, labium and sternum light brown. Palp dark brown, with a short and ventrally curved RTA, ovoid tegulum and slightly elongate, straight embolus, arising at the middle of a prolateral, soft area of the bulb (Figs 25–26). Legs 3142, dark brown, except for tarsi I–IV and metatarsi II–IV yellow. Length of femur: I 0.99, II 0.76, III 0.99, IV 0.85; patella + tibia: I 1.09, II 0.83, III 0.99, IV 0.90; metatarsus + tarsus: I 0.76, II 0.68, III 0.99, IV 0.87. Spination as that described for *S. lunatus* Ruiz. Abdomen dark brown, with anterior border covered with white scales and a pair of light spots on the posterior dorsal half bearing white scales; area over the anal tubercle clear (Fig. 19). Spinnerets yellow.

Female (paratype): Total length: 3.08. Carapace dark brown, 1.52 long, 1.33 wide, 0.78 high (Fig. 20). Ocular quadrangle 0.85 long. Anterior eye row 1.40 wide and posterior 1.23 wide. Chelicera, endite, labium and sternum light brown. Palp light brown. Legs 1432, yellow, except for femora I–IV, patella I and proximal patella IV dark brown. Length of femur: I 1.02, II 0.76, III 0.95, IV 0.90; patella + tibia: I 1.14, II 0.85, III 0.97, IV 0.90; metatarsus + tarsus: I 0.85, II 0.73, III 0.99, IV 1.14. Spination as in male. Abdomen as in male, except for the venter, cream-colored (Fig. 20). Epigyne with advanced, wide pocket, near the round copulatory openings; these are connected by short ducts to very large, kidney-shaped spermathecae; fertilization ducts emerge from their central, anterior portions, near pores of nutritive glands (Figs 27–28). Spinnerets yellow.

Distribution. Known only from the State of Pará, Brazil.

Biological note. Same biology as that described for *S. chaplini* sp. nov.

Soesilarishius muiratinga sp. nov.

Figs 21, 29–31

Type material: Holotype: male from Parque Nacional da Serra do Pardo, São Félix do Xingu, Pará, Brazil, 5.767°S, 52.617°W, 27.IV.2012, G.R.S. Ruiz *et al.* (MPEG 20284).

Etymology. The specific epithet, a noun in native language in apposition, is the popular name of *Maquira sclerophylla* (Ducke) C.C. Berg, a common tree present in the type locality whose branches fall off easily. The embolus resembles the fallen branches of this species.

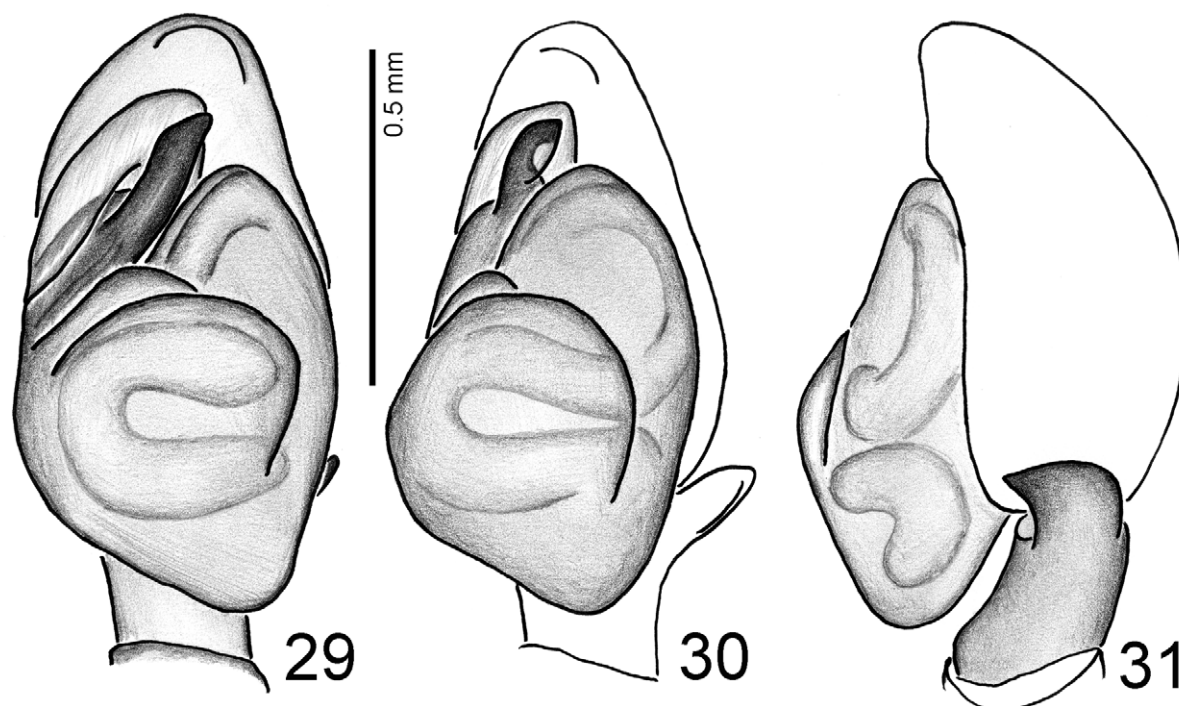
Diagnosis. Males of this species are similar to those of *S. ruizi* Zhang & Maddison by the shape and insertion of the embolus, but differ by the more stout and round embolus (Fig. 29). Females are unknown.

Description. Male holotype: Total length: 2.13. Carapace dark brown, 1.25 long, 0.90 wide, 0.66 high, with a median tuft of white scales behind the fovea (Fig. 21). Ocular quadrangle 0.73 long. Anterior eye row 0.99 wide and posterior 0.87 wide. Chelicera, endite, labium and sternum light brown. Palp dark brown, with an almost square RTA curving ventrally, ovoid tegulum and slightly elongate, stout embolus arising at the middle of a less sclerotized area on prolateral bulb (Figs 29–31). Legs 3412, I dark brown with metatarsus and tarsus yellow; II light with femur and proximal tibia dark brown; IV light with femur and proximal tibia dark brown. Length of femur: I 0.76, II 0.59, III 0.85, IV 0.66; patella + tibia: I 0.80, II 0.61, III 0.78, IV 0.76; metatarsus + tarsus: I 0.66, II 0.61, III 0.80, IV 0.85. Spination as in *S. lunatus* Ruiz. Abdomen dark brown, dorsally with a light anterior border covered with white scales and four round light spots on the posterior half (Fig. 21); the lateral light spots almost are fused with ventral, cream-colored round areas. Spinnerets light brown.

Female. Unknown.

Distribution. Known only from the State of Pará, Brazil.

Biological note. Same biology as that described for *S. chaplini* sp. nov.



FIGURES 29–31. *Soesilarishius muiratinga* sp. nov., left male palp (29 ventral, 30 retroventral, 31 retrolateral).

***Soesilarishius excentricus* sp. nov.**

Figs 22–24, 32–33

Type material: Holotype: male from Parque Nacional da Serra das Confusões (Boi), Piauí, Brazil, 9.220°S, 43.491°W, 9–15.XII.2010, L.S. Carvalho *et al.* (MPEG 20285). **Paratype:** 1 male, same data as holotype, CHNUFPI.

Additional material examined. BRAZIL: Piauí: Parque Nacional da Serra das Confusões (Boi, 9.220083°S, 43.49075°W), 9–15.XII.2010, L.S. Carvalho *et al.*: 19 males (MPEG 20286–20291).

Etymology. The specific epithet is a Latin adjective referring at the same time to the atypical palp for the genus and to the curling embolus, relocated on the prolateral side (Figs 24, 32).

Inclusion in *Soesilarishius*. This is a small, ground dwelling jumping spider recognized as an euophryine by the retrolateral sperm duct loop (Fig. 33). However, its generic placement is not obvious because of the atypical male palp. The species is thought to belong in *Soesilarishius* by the similarities with the other species, especially with *S. crispiventer* Ruiz, 2011, with whom it may share the modified abdominal ventral scales (see Fig. 23; compare to Ruiz, 2011, fig. 59). The elongate, clockwise curling embolus and the round tegulum could also be characters shared by these two species, although *S. crispiventer* has no developed tegular projection. The developed tegular projection of *S. excentricus* is thought to be homologous to the “distal bump” of *S. minimus* Ruiz, 2011, *S. lunatus* Ruiz, 2011, *S. spinipes* Ruiz, 2011 and the tegular “distal retrolateral projection” of *S. cymbialis* Ruiz, 2011 (see Ruiz, 2011, figs 2–3, 16–17, 24–25, 28–29).

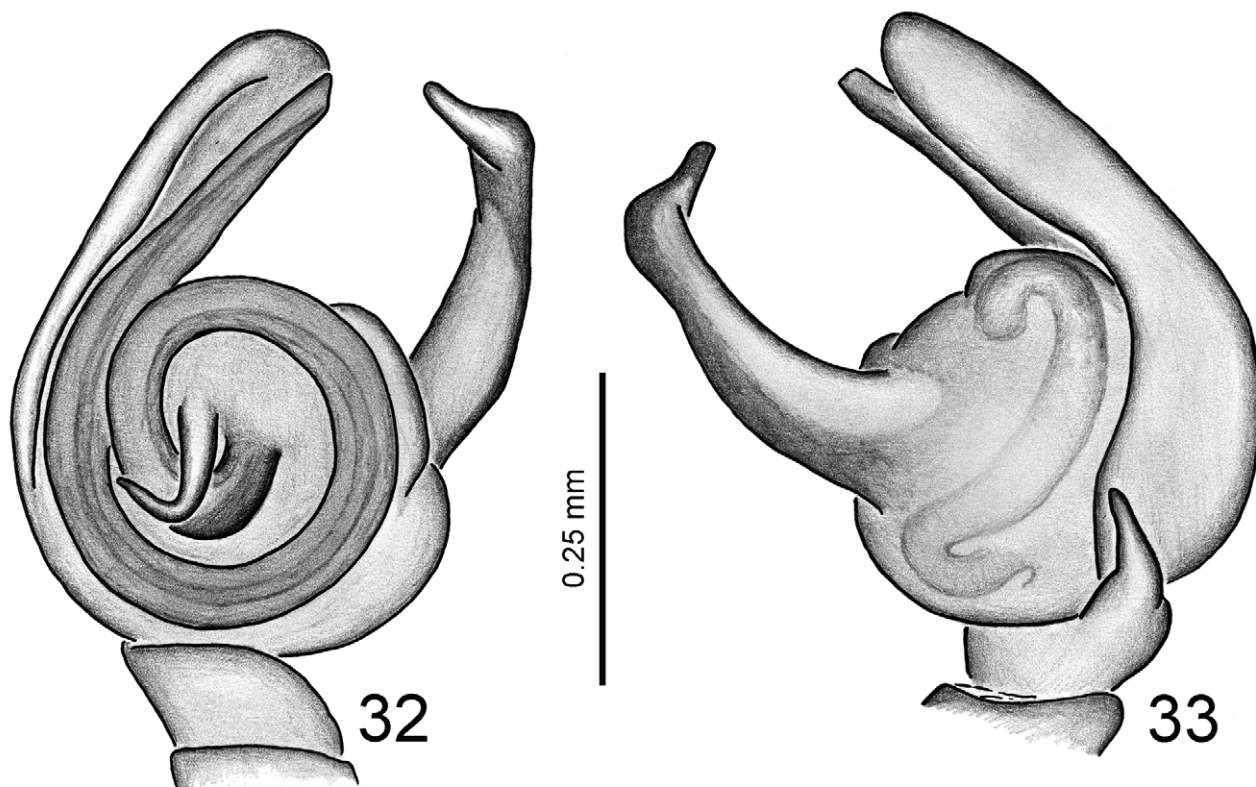
Diagnosis. This species can easily be distinguished from any other known species by the male palp with a long embolus coiling on the prolateral side, and by the elongate, hook-like projection on the retrolateral tegulum (Figs 24, 32–33).

Description. Male holotype: Total length: 1.90. Carapace light brown, 1.09 long, 0.80 wide, 0.57 high, with cephalic region dark brown and a pair of tufts of white scales behind the posterior eyes (Fig. 22). Ocular quadrangle 0.66 long. Anterior eye row 0.87 wide and posterior 0.78 wide. Chelicera, endite, labium and sternum yellow. Palp yellow, with a simple RTA, an elongate cymbium, a globose tegulum with a retrolateral, hook-shaped projection and an elongate embolus arising at the middle of the prolateral face, curling clockwise, accompanied by

a paraembolic, short, hook-shaped apophysis (Figs 24, 32–33). Legs 4312, yellow. Length of femur: I 0.57, II 0.52, III 0.68, IV 0.66; patella + tibia: I 0.64, II 0.52, III 0.68, IV 0.71; metatarsus + tarsus: I 0.57, II 0.52, III 0.71, IV 0.80. Spinination as that described for *S. crispiventer* (Ruiz, 2011, fig. 64). Abdomen variegated with dark brown (Fig. 22), ventrally covered by small, rigid setae, similar to those described for *S. crispiventer* (Ruiz, 2011, fig. 59) (Fig. 23). Spinnerets yellow.

Female. Unknown.

Distribution. Known only from the State of Piauí, Brazil.



FIGURES 32–33. *Soesilarishius excentricus* sp. nov., left male palp (32 prolateral, 33 retrolateral).

***Soesilarishius cearensis* sp. nov.**

Figs 34–35, 39, 41–45, 49

Type material: Holotype: male from Floresta Nacional do Araripe, Crato/Barbalha, Ceará, Brazil, II.2010, L.S. Carvalho (MPEG 20292). **Paratype:** 1 female, same data as holotype, MPEG 20293.

Etymology. The specific epithet is a toponym and refers to the state from which the type specimens were collected.

Diagnosis. Males of this species are very similar to those of *S. bicrescens* sp. nov. by having the same embolus shape, but can be distinguished from that species by the more slender embolus (see Figs 49–50). Females slightly resemble those of *S. flagellator* sp. nov. by the position of the copulatory openings and the slightly advanced pocket, but can be recognized by the shorter ducts and smaller openings (Figs 44–45).

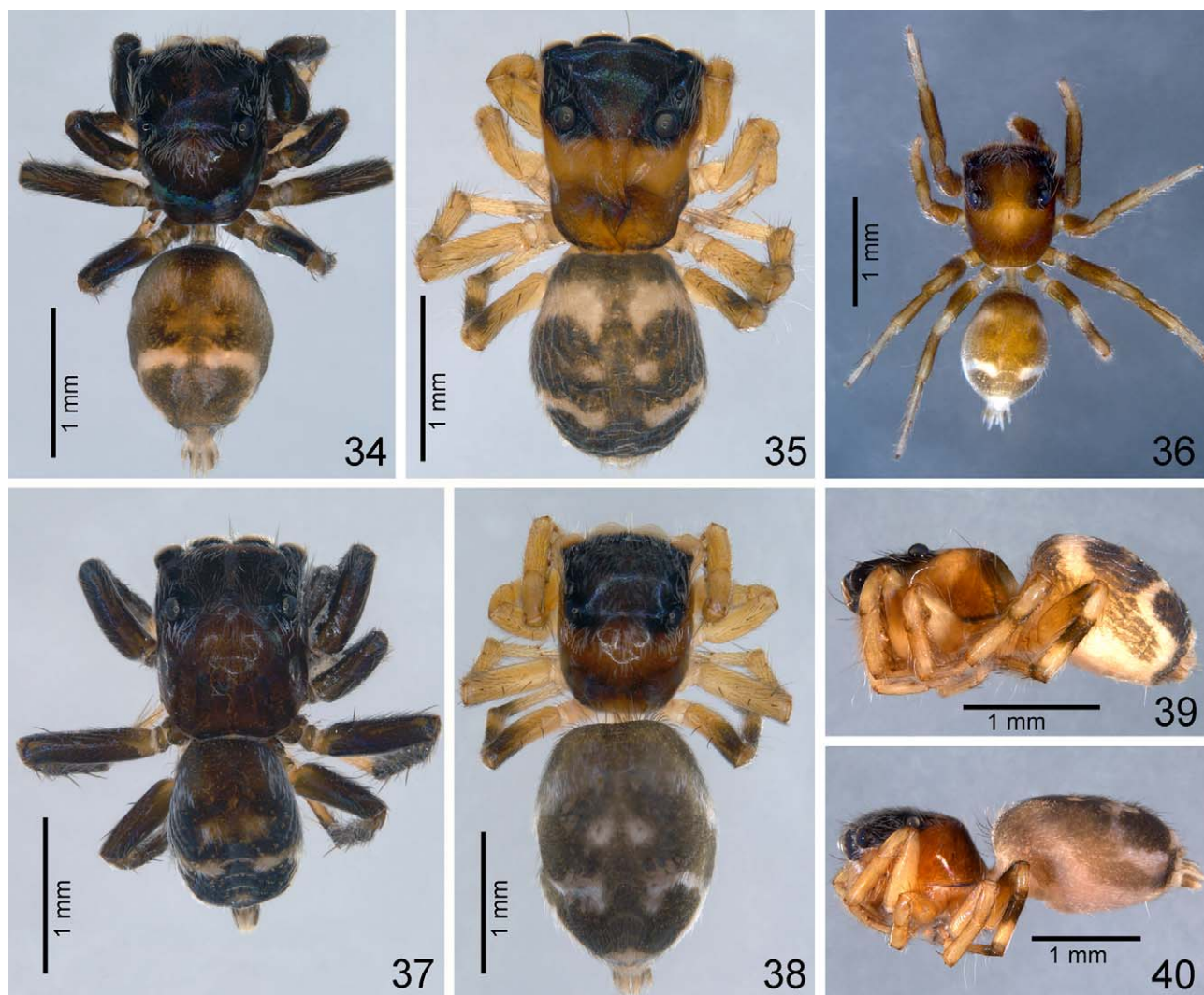
Description. Male holotype: Total length: 2.70. Carapace dark brown, 1.25 long, 0.85 wide, 0.66 high, with sparse white scales (Fig. 34). Ocular quadrangle 0.68 long. Anterior eye row 0.95 wide and posterior 0.80 wide. Chelicera, endite, labium and sternum dark brown. Palp with small and ventrally curved RTA, kidney-shaped tegulum and strongly curved, elongate embolus, apparently arising freely at embolic hematodocha (Figs 41–43). Legs 1342, dark brown, except for metatarsi and tarsi yellow; articles with prolateral and retrolateral faces darker. Length of femur: I 0.80, II 0.57, III 0.76, IV 0.64; patella + tibia: I 0.85, II 0.64, III 0.76, IV 0.66; metatarsus + tarsus: I 0.66, II 0.57, III 0.71, IV 0.52. Spines on forth legs not strongly elongate. Abdomen dark brown, with

anterior border covered with white scales (but interrupted in the middle), and a pair of curved, light marks on the posterior half, light stain over the anal tubercle (Fig. 34). Spinnerets dark brown.

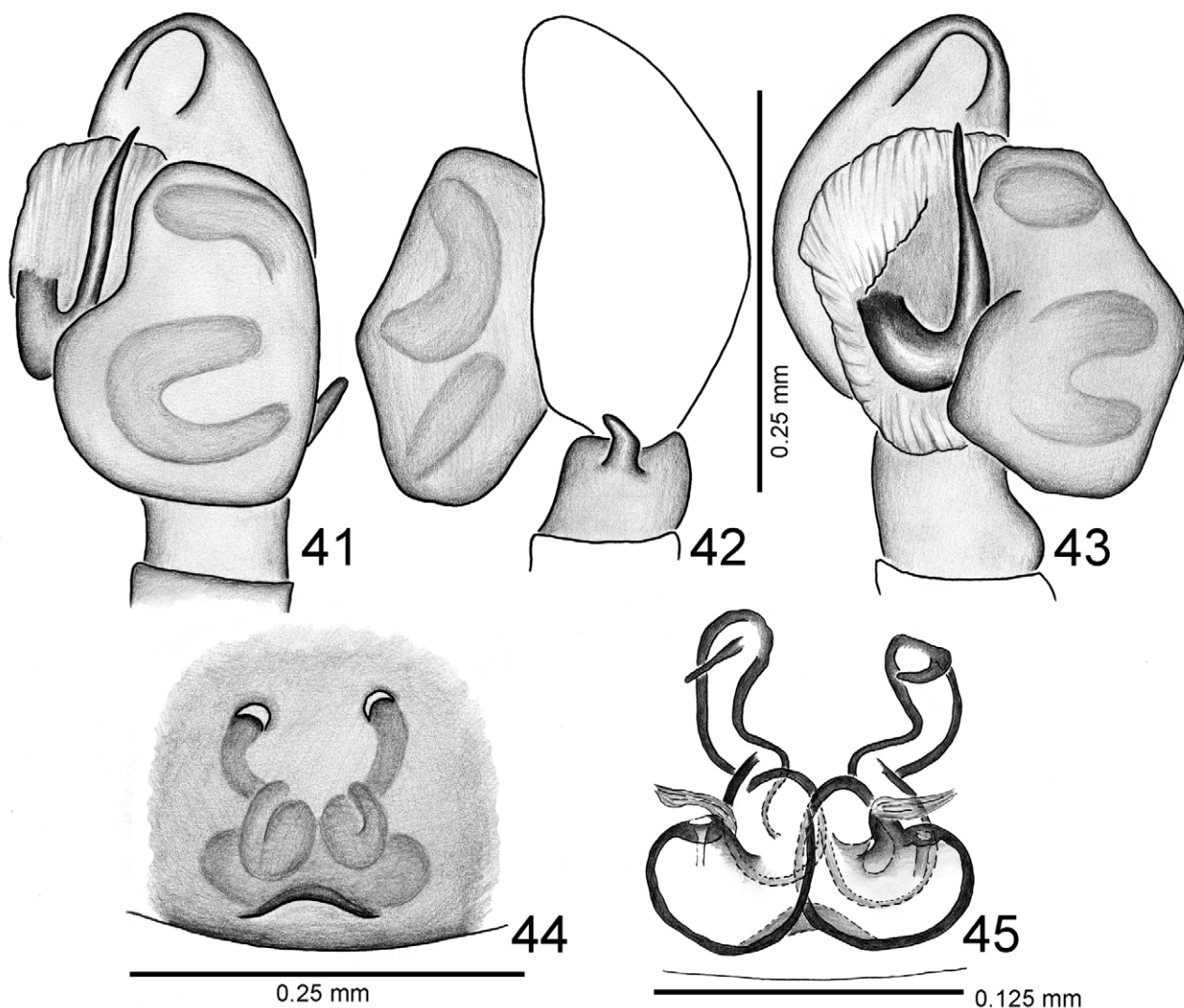
Female (paratype): Total length: 2.61*. Carapace yellow, 1.33* long, 0.90* wide, with cephalic region black and posterior portion light brown (Fig. 35). Ocular quadrangle 0.64* long. Anterior eye row 0.99 wide and posterior 0.76* wide. Chelicera, endite, palp, labium, sternum yellow. Legs 3412, yellow; distal femur IV, proximal tibia IV and proximal metatarsus IV dark brown (Fig. 39). Length of femur: I 0.76, II 0.64, III 0.80, IV 0.76; patella + tibia: I 0.90, II 0.68, III 0.85, IV 0.78; metatarsus + tarsus: I 0.64, II 0.57, III 0.78, IV 0.85. Spination as in male. Abdomen as in male, except for the additional pair of clear round spots in the middle (Fig. 35) and the venter, cream-colored (Fig. 39). Epigyne with slightly advanced pocket and small, anterior copulatory openings leading to sinuous ducts that flow backwards and enter small spermathecae; fertilization ducts arise beside pores of nutritive glands (Figs 44–45). Spinnerets yellow.

Note. Although the epigyne was intact, carapace was slightly shrunk in the only female available (Fig. 35). The asterisk (*) after measures above mean they are not precise, however informative.

Distribution. Known only from the State of Ceará, Brazil.



FIGURES 34–40. *Soesilarishius cearensis* sp. nov. 34 male habitus; 35 female habitus; 39 female, lateral view. *Soesilarishius bicrescens* sp. nov. 36 male habitus. *Soesilarishius flagellator* sp. nov. 37 male habitus; 38 female habitus; 40 female, lateral view.



FIGURES 41–45. *Soesilarishius cearensis* sp. nov. 41–43 left male palp, slightly expanded (41 ventral, 42 retrolateral, 43 proventral); 44 epigyne, ventral view; 45 vulva, dorsal view, cleared.

***Soesilarishius bicrescens* sp. nov.**

Figs 36, 46–48, 50

Type material: Holotype: male from Parque Nacional da Serra das Confusões, Caracol/Guaribas, Piauí, Brazil, 2–28.IV.2007, L.S. Carvalho *et al.* (MPEG 20294).

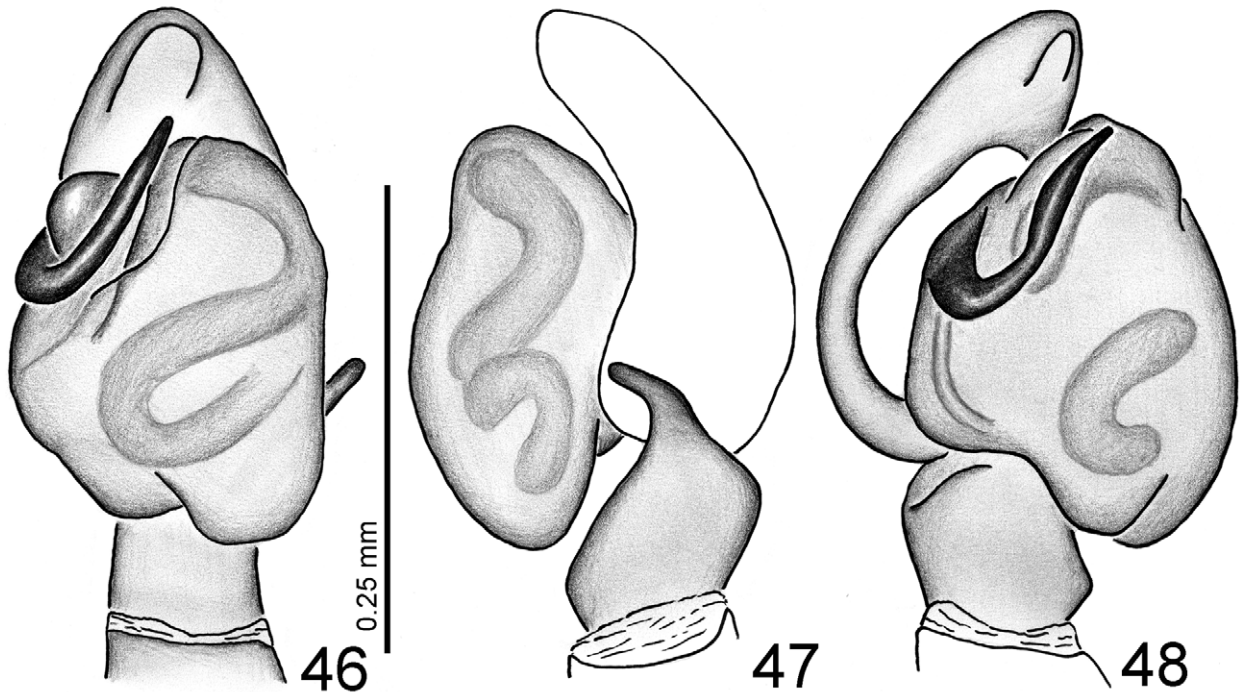
Etymology. The specific epithet is a noun in apposition and refers to the pair of semi lunar light marks on the posterior abdomen (Fig. 36).

Diagnosis. Males of this species are very similar to those of *S. cearensis* sp. nov. by having the same embolus shape, but can be distinguished from those by the stouter, wider embolus (see Figs 49–50). Females are unknown.

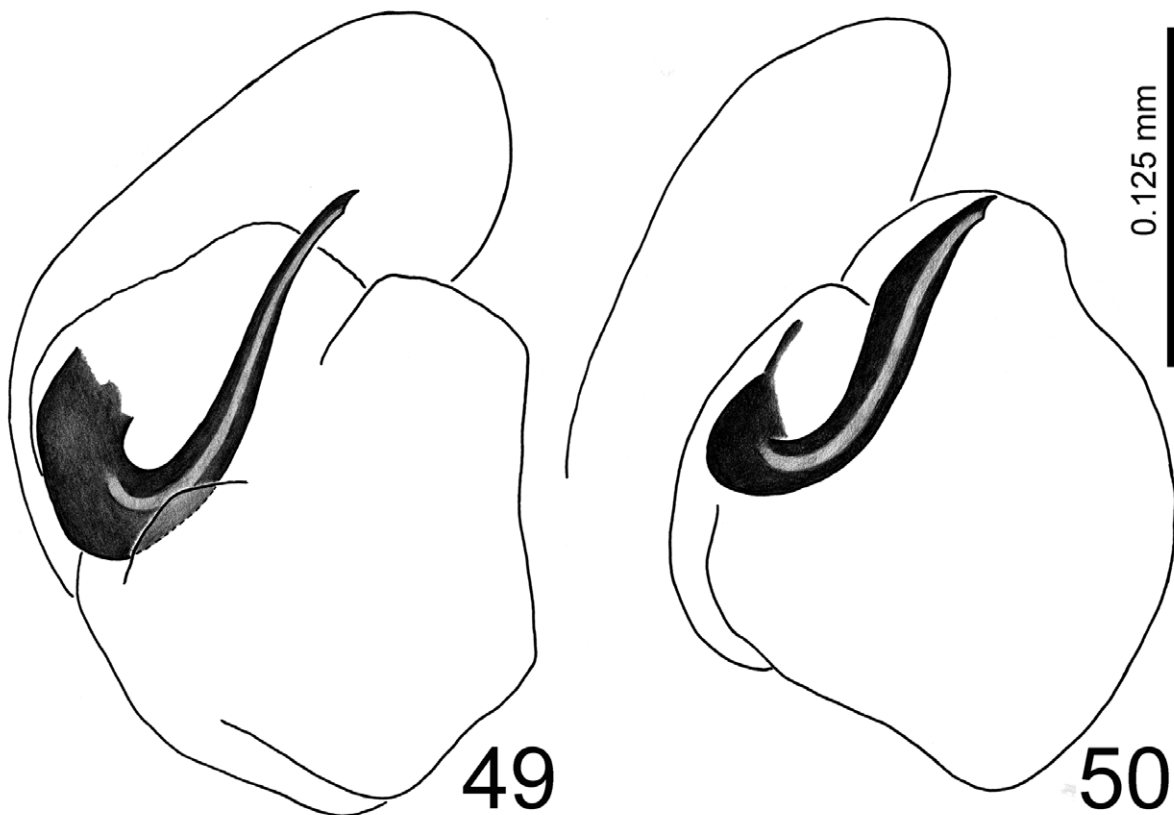
Description. Male holotype: Total length: 2.47. Carapace dark brown, 1.14 long, 0.83 wide, 0.59 high (Fig. 36). Ocular quadrangle 0.64 long. Anterior eye row 0.87 wide and posterior 0.73 wide. Chelicera, endite, labium and sternum dark brown. Palp with ventrally curved RTA, globose tegulum and strongly curved, elongate embolus, apparently arising freely at the embolic hematodocha (Figs 46–48). Legs 3142, dark brown, except for metatarsi and tarsi yellow; articles with prolateral and retrolateral faces darker. Length of femur: I 0.66, II 0.52, III 0.71, IV 0.61; patella + tibia: I 0.80, II 0.57, III 0.90, IV 0.71; metatarsus + tarsus: I 0.59, II 0.54, III 0.95, IV 0.71. Spination as in *S. cearensis* sp. nov. Abdomen dorsally with a pair of light marks on the anterior half and a pair of curved, light marks on the posterior half; light mark over the anal tubercle (Fig. 36). Spinnerets dark brown.

Female. Unknown.

Distribution. Known only from the State of Piauí, Brazil.



FIGURES 46–48. *Soesilarishius bicrescens* sp. nov., left male palp, slightly expanded (46 ventral, 47 retrolateral, 48 proventral).



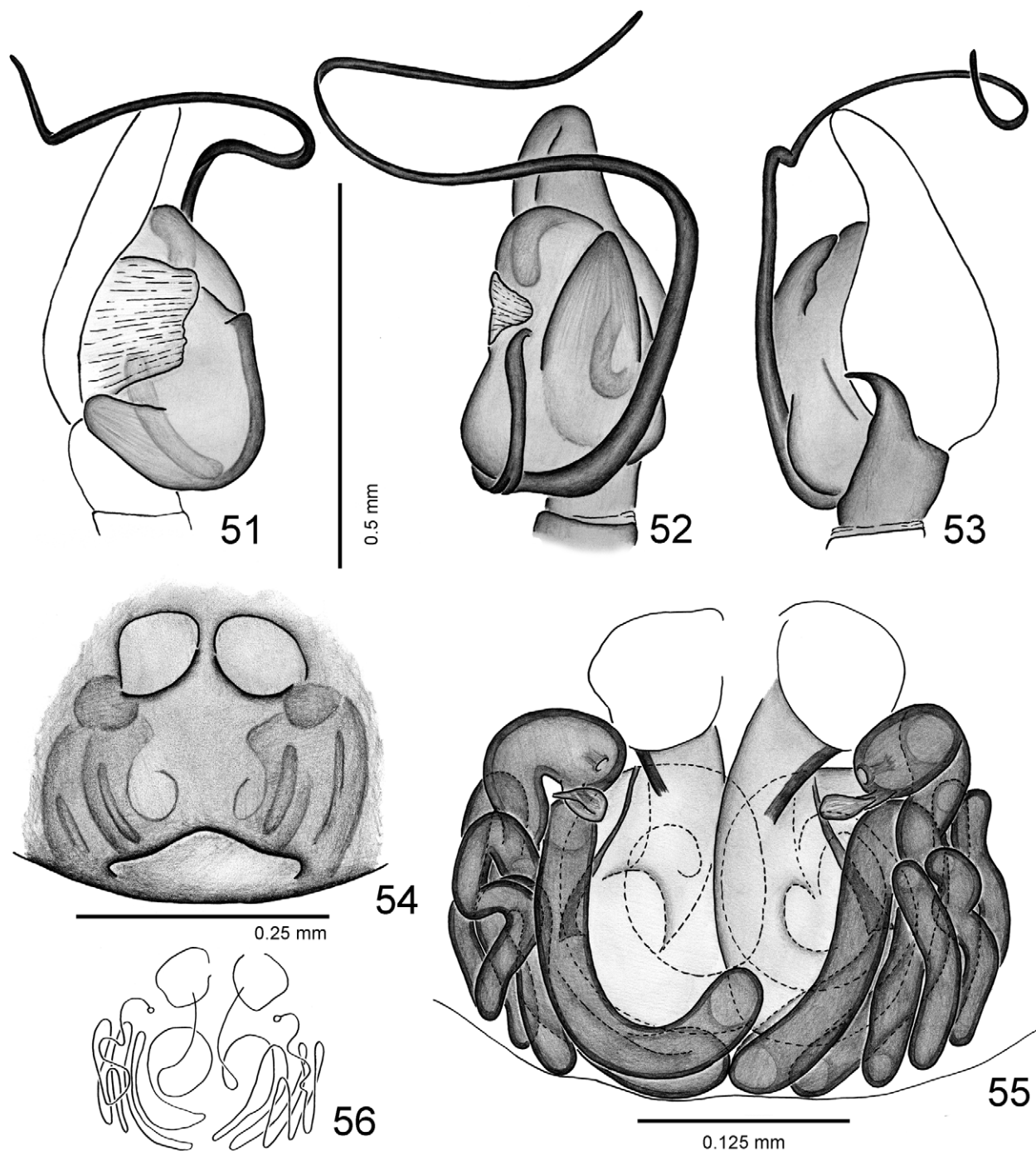
FIGURES 49–50. *Soesilarishius cearensis* sp. nov. 49 left male palp, slightly expanded, proventral view, showing detail of embolus. *Soesilarishius bicrescens* sp. nov. 50 left male palp, slightly expanded, proventral view, showing detail of embolus.

Soesilarishius flagellator sp. nov.

Figs 37–38, 40, 51–56

Type material: Holotype: male from Parque Nacional da Serra das Confusões (Laje), Piauí, Brazil, 9.221°S, 43.482°W, 9–15.XII.2010, L.S. Carvalho *et al.* (MPEG 20295). **Paratype:** 1 female and 1 male, same data as holotype, MPEG 20296 and CHNUFPI, respectively.

Etymology. The specific epithet is a Latin noun and refers to the person who punishes others with a whip, in allusion to the long, not-coiled embolus (Figs 51–53).



FIGURES 51–56. *Soesilarishius flagellator* sp. nov. 51–53 left male palp (51 prolateral, 52 ventral, 53 retrolateral); 54 epigyne, ventral view; 55 vulva, dorsal view, cleared; 56 sperm path in the epigynal ducts, dorsal view.

Diagnosis. Males of this species can easily be distinguished from any other by the elongate embolus, not being compacted around the male palp (Figs 51–53). Females are distinguished from others by the very long, spaghetti-like copulation ducts (Fig. 55).

Description. Male holotype: Total length: 2.42. Carapace dark brown, 1.33 long, 0.99 wide, 0.66 high, with sparse white scales (Fig. 37). Ocular quadrangle 0.68 long. Anterior eye row 0.99 wide and posterior 0.90 wide. Chelicera, labium and sternum dark brown. Endite dark brown, not projected laterally. Palp with strongly, ventrally curved and acute RTA, slightly elongate tegulum, very long embolus arising at proximal end of tegulum, directing distally by the retrolateral side and curving to the prolateral side, then backwards to the retrolateral side of palp, being uncommonly loose at this area (i.e., not typically resting in the cymbial distal groove) (Figs 51–53). Legs 3412, dark brown; tarsi, metatarsi and trochanter-femur joints yellow. Length of femur: I 0.80, II 0.66, III 0.92, IV 0.76; patella + tibia: I 0.95, II 0.71, III 0.90, IV 0.83; metatarsus + tarsus: I 0.66, II 0.59, III 0.80, IV 0.95. Spination: as in *S. cearensis* **sp. nov.** Abdomen dark brown, anterior border covered with sparse white scales; dorsally with a median pair of round, light areas and with a pair of transverse posterior bars that extend posteriorly on the sides, similar to that of the female (Fig. 37). Anterior spinnerets dark brown, others yellow.

Female (paratype): Total length: 3.23. Carapace light brown, 1.35 long, 0.99 wide, 0.68 high, with cephalic region dark brown and sparse white scales (Fig. 39). Ocular quadrangle 0.71 long. Anterior eye row 0.99 wide and posterior 0.90 wide. Chelicera, endite, labium, sternum and palp yellow. Legs 4312, yellow; distal femur IV, proximal tibia IV and proximal metatarsus IV dark brown. Length of femur: I 0.76, II 0.61, III 0.83, IV 0.78; patella + tibia: I 0.90, II 0.71, III 0.90, IV 0.90; metatarsus + tarsus: I 0.85, II 0.61, III 0.80, IV 0.95. Spination as in male. Abdomen as in male (Figs 38, 40), except for the venter, cream-colored. Epigyne with slightly advanced, wide pocket, a pair of anterior large copulatory openings connecting to very long copulation ducts, whose initial portion curls superficially beneath the ventral, median surface of the epigyne and the inner portions are thinner and more compactly arranged on the sides, leading to almost unmodified spermathecae, from which fertilization ducts emerge beside nutritive pores (Figs 54–56). Spinnerets light brown.

Distribution. Known only from the State of Piauí, Brazil.

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