

## Revision of the spider genus *Pycnothele* (Araneae, Nemesiidae)

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**ABSTRACT.** The genus *Pycnothele* Chamberlin, 1917 is revised. The Brazilian species *Pycnothele perdita* Chamberlin, 1917, *P. singularis* (Mello-Leitão, 1934) and *P. auronitens* (Keyserling, 1891) are redescribed, diagnosed and illustrated. The females of *P. auronitens* and *P. singularis* are described for the first time and *P. auripila* (Mello-Leitão, 1946) from Uruguay, currently a junior synonym of *P. auronitens*, is revalidated. *Pycnothele piracicabensis* (Piza, 1938) is transferred to *Rachias* Simon, 1892, with which it shares the morphology of the sexual structures, restoring the original combination. Five new species are proposed for Brazil: *Pycnothele rubra* sp. nov., *P. jatai* sp. nov. and *P. araraquara* sp. nov., from state of São Paulo, *P. arapongas* sp. nov., from state of Paraná, and *P. gauderio* sp. nov., from state of Rio Grande do Sul. After this revision the genus includes ten Neotropical species. Maps with distribution of all species is presented for the first time and the occurrence of species of the genus is enhanced for the Brazilian state of Paraná.

**KEYWORDS.** Mygalomorphae, new species, Pycnothelinae, taxonomy.

**RESUMO.** Revisão do gênero de aranhas *Pycnothele* (Araneae, Nemesiidae). O gênero *Pycnothele* Chamberlin, 1917 é revisado. As espécies brasileiras *Pycnothele perdita* Chamberlin, 1917, *P. singularis* (Mello-Leitão, 1934) e *P. auronitens* (Keyserling, 1891) são redescritas, diagnosticadas e ilustradas. As fêmeas de *P. auronitens* e *P. singularis* são descritas pela primeira vez e *P. auripila* (Mello-Leitão, 1946) do Uruguai, atualmente um sinônimo júnior de *P. auronitens*, é revalidada. *Pycnothele piracicabensis* (Piza, 1938) é transferida para *Rachias* Simon, 1892, do qual compartilha a morfologia das estruturas sexuais, restaurando a combinação original. Cinco espécies novas são propostas para o Brasil: *Pycnothele rubra* sp. nov., *P. jatai* sp. nov. e *P. araraquara* sp. nov., do estado de São Paulo, *P. arapongas* sp. nov., do estado do Paraná, and *P. gauderio* sp. nov., do estado de Rio Grande do Sul. Após esta revisão, o gênero passa a constar com dez espécies neotropicais. Mapas com a distribuição de todas as espécies é apresentado pela primeira vez e a ocorrência de espécies do gênero é ampliada para o estado do Paraná.

**PALAVRAS-CHAVE.** Mygalomorphae, espécies novas, Pycnothelinae, taxonomia.

Nemesiidae Simon, 1889 was elevated to the level of family by RAVEN (1985) from the tribe Nemesiae Simon, 1889, described in Ctenizinae Thorell, 1887 and considered a senior synonym of Pycnothelidae Chamberlin, 1917. To date the family comprises 366 species and 43 genera distributed in six subfamilies (RAVEN, 1985; PLATNICK, 2014). Three subfamilies includes genera with Brazilian species: Anaminae: *Acanthogonatus* Karsch, 1880, *Longistylus* Indicatti & Lucas, 2005 and *Hermacha* Simon, 1889; Diplothelopsinae: *Chaco* Tullgren, 1905 and *Lycinus* Thorell, 1894; and Pycnothelinae: *Hermachura* Mello-Leitão, 1923, *Neostothis* Vellard, 1925, *Prorachias* Mello-Leitão, 1924, *Psalistopoides* Mello-Leitão, 1934, *Pselligmus* Simon, 1892, *Pycnothele* Chamberlin, 1917, *Rachias* Simon, 1892 and *Stenoterommata* Holmberg, 1881 (RAVEN, 1985; INDICATTI & LUCAS, 2005; LUCAS *et al.*, 2005, 2008; LUCAS & INDICATTI, 2006, 2010; INDICATTI *et al.*, 2008a).

The genus *Pycnothele* Chamberlin, 1917 with type species *P. perdita* that was described from Mendes, state of Rio de Janeiro, Brazil (CHAMBERLIN, 1917). The genus currently comprises four additional species: *P. singularis* (Mello-Leitão, 1934) and *P. piracicabensis* (Piza, 1938) from São Paulo, all from Brazil; *P. auronitens* (Keyserling, 1891) from Brazil and Uruguay; and *P. modesta* (Schiapelli & Gerschman, 1942) from Argentina and Uruguay. PÉREZ-MILES & CAPOCASALE (1988) revised the genus considering only three valid species (*Pycnothele perdita*, *P. singularis*

and *P. auronitens*). GOLOBOFF (1995) redescribed the genus, revised the species from Argentina and Uruguay and mentioned that “the genus concept is likely to change when species from Brazil are revised”.

After the examination of type-material and specimens from several Brazilian and foreign collections, the diagnosis of *Pycnothele* is enlarged. *Pycnothele perdita*, *P. singularis* and *P. auronitens* are redescribed; the females of *P. auronitens* and *P. singularis* are described for the first time; *P. auripila* from Uruguay, considered a junior synonym of *P. auronitens*, is revalidated; *Pycnothele piracicabensis* is transferred back to *Rachias* and five new species are proposed for Brazil.

### MATERIAL AND METHODS

Specimens from the following institutions were examined (abbreviations and curators in parenthesis): Facultad de Ciencias, Montevideo (FCE-MY, M. Simó); Instituto Butantan, São Paulo (IBSP, A. D. Brescovit); Museu de Zoologia da Universidade de São Paulo, São Paulo (MZSP, R. Pinto da Rocha); Museu de Ciências e Tecnologia, Pontifícia Universidade Católica do Rio Grande do Sul, Porto Alegre (MCTP, A. A. Lise); Museu de Ciências Naturais, Fundação Zoobotânica do Rio Grande do Sul, Porto Alegre (MCN, R. Ott); Museo Argentino de Ciencias Naturales Bernardino Rivadavia, Buenos Aires (MACN, C. Scioscia); Museu Nacional do Rio de

Janeiro, Rio de Janeiro (MNRJ, A. B. Kury); Museum of Comparative Zoology at Harvard University, Cambridge (MCZ, G. Giribet, L. Leibensperger); The Natural History Museum, London (BMNH, J. Beccaloni).

All measurements are in millimeters and were taken with a millimetric ocular lens. The length of leg segments were measured between joints in dorsal view. Length and width of carapace, eye tubercle, labium and sternum are maximum values obtained. Total body length without chelicerae and spinnerets. Terminology for general structures follows GOLOBOFF (1995). Terminology for number and disposition of spines follows PETRUNKEVITCH (1925). All drawings were made with a drawing tube (Leica MZ 12.5). Spermathecae were dissected and cleared with lactic acid or clove oil and illustrated in ventral view. Photos of sexual structure of males and females were taken with a Leica DFC500 digital attached to a Leica MZ16A stereoscopic microscope. The figures of the scopulae were taken with a NIKON SMZ-745T attached with a camera NIKON Digital Sight DS-Fi1. Scanning electron micrographs (SEM) images were taken under high vacuum in a LEO 1450VP Scanning Electron Microscope in the Laboratório de Microscopia Eletrônica of Museu Paraense Emílio Goeldi, Belém, Pará. All drawings were made with a drawing tube (Leica MZ 12.5). Abbreviations: AME, anterior median eyes; ALE, anterior lateral eyes; PLE, posterior lateral eyes; PME, posterior median eyes; PLS, posterior lateral spinnerets; STC, superior tarsal claw; d, dorsal; v, ventral; p, prolateral; r, retrolateral; ap, apical; b, basal; LK, lateral keel.

## RESULTS AND DISCUSSION

### *Pycnothele* Chamberlin, 1917

*Pycnothele* CHAMBERLIN, 1917:27, pl. 1, figs 1-4 (Type species by original designation, *Pycnothele perditus* Chamberlin, 1917); SCHIAPELLI & GERSCHMAN, 1967:53; RAVEN, 1985:100; PÉREZ-MILES & CAPOCASALE, 1988; PLATNICK, 2014.

*Heteromma* MELLO-LEITÃO, 1935:356, figs 2, 3 (Type species by original designation, *Heteromma anomala* Mello-Leitão, 1935). Pre-occupied name by *Heteromma* Karsch, 1888.

*Agersborgia* STRAND, 1936:167 (*nom. nov.* for *Heteromma*). First synonymized by LUCAS & BÜCHERL, 1973:241.

*Androthelopsis* MELLO-LEITÃO, 1934:402 (Type species by original designation, *Androthelopsis singularis* Mello-Leitão, 1934); LUCAS & BÜCHERL, 1973:239; PÉREZ-MILES & CAPOCASALE, 1988:287.

*Pycnothelopsis* SCHIAPELLI & GERSCHMAN, 1942:319 (Type species by monotypy, *Pycnothelopsis modesta* Schiapelli & Gerschmann, 1942); BÜCHERL, 1957:408; SCHIAPELLI & GERSCHMANN, 1967:59; RAVEN, 1985:101 (Syn. with *Androthelopsis*); PÉREZ-MILES & CAPOCASALE, 1988:288.

**Diagnosis.** Males of *Pycnothele* differ from those of *Hermachura*, *Neostothis*, *Prorachias*, *Psalistopoides*, *Pselligmus*, *Rachias* and *Stenoterommata* by the palpal bulb, with several high keels near the embolus base, and resting in a large and deep tibial excavation (Figs 3, 8). Females resemble those of *Neostothis* by the dense scopulae on tarsi and metatarsi I-II, and presence of a sclerotized

supraspermathecal chamber (see LUCAS *et al.*, 2008:474, fig. 2 E, F), but differ from this genus by the supraspermathecal chamber sclerotized in all extension (Figs 7, 12); receptacle bases three to four times narrower than in *Neostothis* (Figs 7, 12); presence of scopulae on anterior prolateral side of tibia I-II and scopulae on tarsi III and IV, divided by strong or thin setae (Figs 56-63, 64-71).

**Description.** Medium sized mygalomorph spiders, usually from 11.60 (male of *P. auripila*) to 35.50 (female of *P. perditus*) of body length. General color of carapace brown or reddish brown and lighter legs. Abdomen dark brown, transversal (e.g., *P. perditus*) or longitudinal stripes (e.g., *P. auronitens*) are sometimes visible in specimens in ethanol. Rastellum formed by stiff, long, thick attenuate setae. Cheliceral tumescence large. Clypeus wide. Ocular tubercle with two eyes rows, anterior procurved, posterior recurved. Labium wider than long with few to no cuspules (0-8), endites with numerous cuspules (13-85) on the inner angle (Fig. 19). Sternum oval, longer than wide, with three pairs of sigillae. PLS three segmented, the apical short, domed, with articulate spigots (Fig. 22) and some pumpkniform spigots, large and apex with short thick shafts. Legs with scopulae on tarsi I and II entire, III and IV divided by setae, with different aspects, sometimes with dense short setae, in other species longer and sparse (Figs 56-63, 64-71). Scopulae absent in metatarsus III-IV. STC with two rows of teeth (2-13), third claw absent on all legs. Megaspine absent in all male legs. Tarsal trichobothria in a single, zig-zag row, elevated with rounded opening (Fig. 20). Tarsal organ globose and slightly elevated (Fig. 21). Male palpal bulb pyriform globose as in *P. perditus* (Figs 4-6; Fig. 13) or more slender like *P. singularis* (Figs 34-36) with several keels near embolus, on dorsal side. The keels sometimes very high (e.g., *P. perditus*, Figs 15, 16) others not so (e.g., *P. auronitens*, Fig. 50), sometimes straight (e.g., *P. jatai* sp. nov., Fig. 41) in other species sinuous (e.g., *P. perditus*, Figs 15, 16) and of different quantity (8-21). Embolus short in all species, much shorter than the length of the bulb (Fig. 13). Genitalia formed by one slender spermatheca on each side, with one receptacle dilated on apex, spiraled or sinuous duct (*P. perditus*, *P. gauderio* sp. nov., *P. rubra* sp. nov., *P. auronitens*, *P. auripila*, *P. singularis*, *P. jatai* sp. nov. and *P. modesta*) or without sinuosity (*P. arapongas* sp. nov.), apex globose (*P. rubra* sp. nov., *P. arapongas* sp. nov., *P. singularis*, *P. jatai* sp. nov., *P. auronitens*, and *P. modesta*) or elongated (*P. perditus*, *P. gauderio* sp. nov. and *P. auripila*), with a strongly sclerotized chamber situated above the spermathecae, surrounded by glandular tissue (most evident in *P. perditus*, *P. gauderio* sp. nov., *P. rubra* sp. nov. and *P. arapongas* sp. nov.), or with minimal glandular tissue (*P. singularis*, *P. jatai* sp. nov., *P. auronitens*, *P. auripila* and *P. modesta*).

Species included (n=10): *Pycnothele perditus* Chamberlin, 1917, *P. rubra* sp. nov., *P. gauderio* sp. nov., *P. arapongas* sp. nov., *P. auronitens* (Keyserling, 1891), *P. auripila* (Mello-Leitão, 1946) sp. reval., *P. singularis*

(Mello-Leitão, 1934), *P. araraquara* sp. nov., *P. jatai* sp. nov. and *P. modesta* (Schiapelli & Gerschman, 1942).

Distribution. The genus occurs in the south areas of South America: Brazil, Uruguay and Argentina (Figs 79, 80).

### Identification key of species of *Pycnothele*

#### Males

1. Short and compact bulb (Figs 4-6; 9-11) ..... 2  
Long and narrow bulb (Figs 34-36; 39-41) ..... 8
2. Keels weakly projected (Figs 25, 26; 30, 31) ..... 3  
Keels strongly projected (Figs 5-6; 10-11) ..... 7
3. Embolus short in prolateral view (Fig. 24) ..... 4  
Embolus long in prolateral view (Figs 29; 48) ..... 5
4. Palpal bulb with 14-16 keels: (Figs 25, 26) .....  
..... *P. rubra* sp. nov.  
Palpal bulb with 10-12 keels: (Fig. 75) .....  
..... *P. modesta*
5. Spermatic duct with slight curvature (Figs 29, 30) .....  
..... *P. arapongas* sp. nov.  
Spermatic duct with strong curvature (Figs 48, 49; 53, 54) ..... 6
6. Curvature of spermatic duct forming a turn as in (Fig. 49) and palpal bulb with 10-13 keels ..... *P. auronitens*  
Curvature of spermatic duct forming a turn as in (Fig. 54) and palpal bulb with 25-30 keels ..... *P. auripila*
7. Keel short and sinuous (Fig. 6) ..... *P. perdita*  
Keel long and less sinuous (Fig. 11) .. *P. gauderio* sp. nov.
8. Embolus short (Figs 34-36; 39-41) ..... 9  
Embolus long (Figs 44-46) ..... *P. araraquara* sp. nov.
9. Lateral keel straight in retrolateral view (Fig. 34) .....  
..... *P. singularis*  
Lateral keel rounded in retrolateral view (Fig. 39) .....  
..... *P. jatai* sp. nov.

#### Females (female of *P. araraquara* sp. nov., unknown)

1. Supraspermathecal chamber elevated and strongly sclerotized (Figs 7, 12, 27, 32) ..... 2  
Supraspermathecal chamber not so high and weakly sclerotized (Figs 37, 42) ..... 5
2. Receptacle with globose apex (Figs 27, 32) ..... 3  
Receptacle with elongate apex (Figs 7, 12, 41) ..... 4
3. Duct high and sinuous (Fig. 27) ..... *P. rubra* sp. nov.  
Duct short and not sinuous (Fig. 32) .....  
..... *P. arapongas* sp. nov.
4. Duct with median sinuosity (Fig. 7) ..... *P. perdita*  
Duct with basal sinuosity (Fig. 12) .....  
..... *P. gauderio* sp. nov.
5. Duct spiralled and inserted medially (Figs 51; 76) ..... 6  
Duct spiralled and inserted laterally (Fig. 37; 42) ..... 8
6. Receptacle with elongate apex; duct strongly spiraled in all extension ..... *P. auripila*  
Receptacle short with globose apex (Fig. 76); or long with elongated apex (Fig. 51) ..... 7
7. Duct short and slightly sinuous (Fig. 76) ..... *P. modesta*  
Duct long and spiralled apically (Fig. 51) ..... *P. auronitens*
8. Receptacle long (Fig. 37) ..... *P. singularis*

Receptacle short with torsion duct (Fig. 42) .....  
..... *P. jatai* sp. nov.

### *Pycnothele perdita* Chamberlin, 1917

(Figs 1; 3-7; 13-22; 56-57; 79)

*Pycnothele perditus* CHAMBERLIN, 1917:27, pl. 1, figs 1-4 (male holotype and female paratype from Rio Paraíba, Mendes (23°31'34"S; 43°43'29"W), Rio de Janeiro, Brazil, (MCZ), N. Thayer *leg.*, examined by photos); SCHIAPPELLI & GERSCHMAN, 1967:54.

*Heteromma anomala* MELLO-LEITÃO, 1935:356, figs 2-4 (male holotype from Rio Claro (22°07'S; 44°02'W), Rio de Janeiro, Brazil, deposited in IBSP 3467, examined); PÉREZ-MILES & CAPOCASALE, 1988:292.

*Agersborgia anomala*: STRAND, 1936: 167; BÜCHERL, 1957:388.

*Pycnothele perditum*: LUCAS & BÜCHERL, 1973:241.

*Pycnothele perdita*: BÜCHERL, 1957:405; RAVEN, 1985:100; PÉREZ-MILES & CAPOCASALE, 1988:290; PLATNICK, 2014.

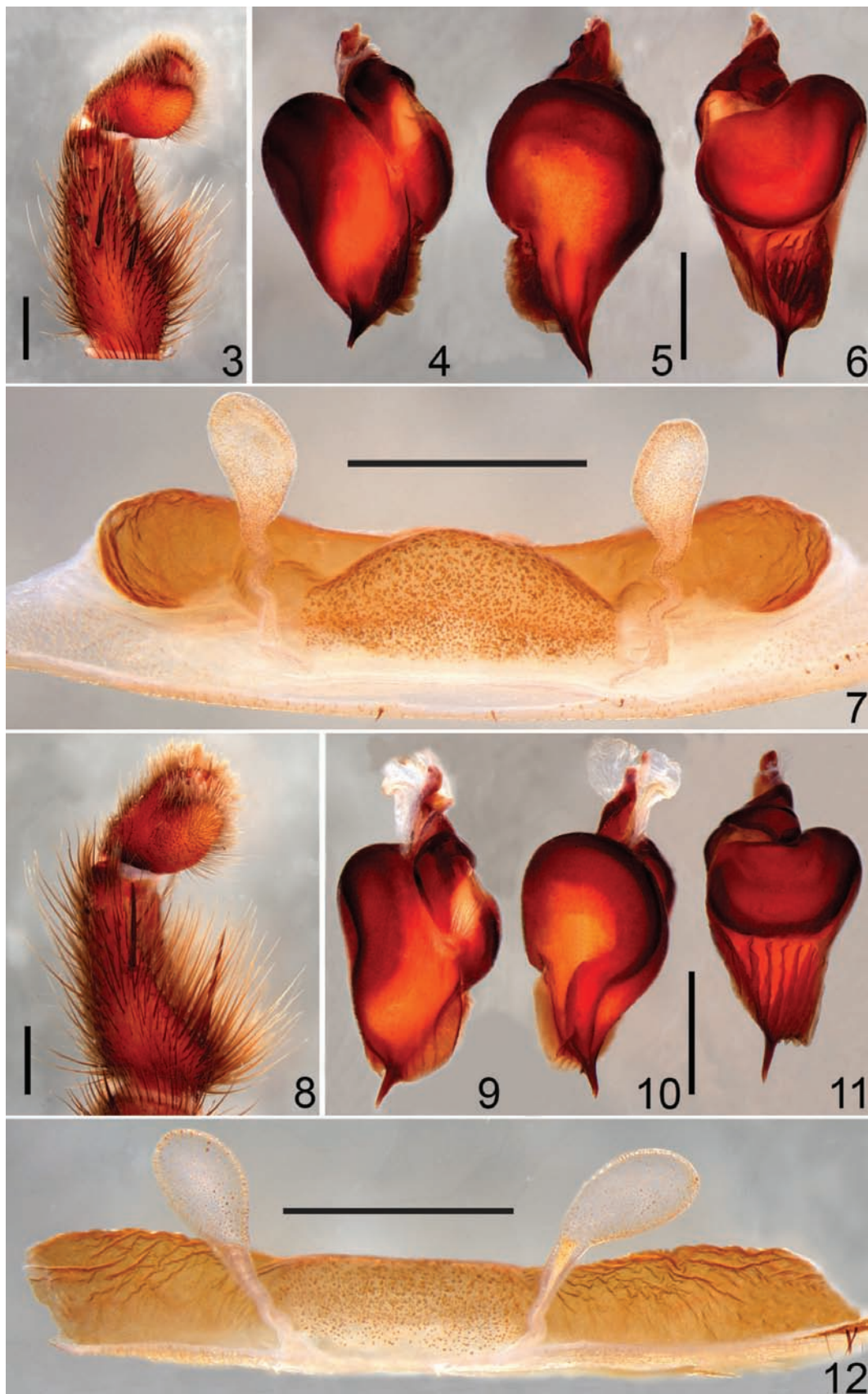
Additional material examined. BRAZIL, **Rio de Janeiro**: Volta Redonda, (22°51'S; 44°12'W, Floresta da Cicuta), ♂, ♀, III. 2004, E. F. Ramos *et al. leg.* (IBSP); Rio Claro (22°07'S; 44°02'W, Morro Azul), ♂, 20.VIII.1984, S. Silva *leg.* (IBSP 113424); Rio de Janeiro (23°03'39"S; 43°47'20"W, Restinga da Marambaia), 30.X.1986, R. L. C. Baptista *leg.*, 1♀, (MNRJ); Mangaratiba (23°01'S; 43°09'W, Trilha da Gruta, Ilha da Marambaia), 2♂, VII.2007, E. Izecksohn *leg.* (IBSP 115375, 115376); 3♂, VII.2007, C. Esbérard *et al. leg.* (IBSP 114677-114679); 3♂, VIII.2007 (IBSP 114673-114675); ♂, IX.2007 (IBSP 114476); ♀, 21.XI.2007, C. Huffenbaecher, C. A. R. Souza & M. C. Silveira *leg.* (IBSP 150052).

Diagnosis. Males of *P. perdita* resemble *P. gauderio* sp. nov., *P. rubra* sp. nov., *P. arapongas* sp. nov. *P. auronitens*, and *P. auripila* by the globose palpal bulb but differ from *P. rubra* sp. nov., *P. arapongas* sp. nov., *P. auronitens* and *P. auripila* by the more elevated keels (Fig. 6); from *P. gauderio* sp. nov. by shorter and more sinuous keels (Figs 5, 6). Females resemble *P. rubra* sp. nov. by the major concentration of setae on tarsal scopula of leg IV (Figs 57, 61), and the long receptacle, but differ by the less elevated supraspermathecal chamber and a triangular central region, by the elongated apex of receptacle and sinuous ducts (Fig. 7).

Redescription. Male (IBSP 114673). Coloration in live specimen: dark reddish brown. In ethanol: abdomen dorsal dark brown with two transversal light yellow stripes: ventral dark brown. Total length, 23.90. Carapace 12.20 long, 10.90 wide. Fovea: 1.00. Clypeus: 0.80. Eyes: anterior row slightly procurved and posterior recurved. AME 0.47, ALE 0.52, PME 0.29, PLE 0.50. Basal segment of chelicerae with 11 teeth, with 25-27 basal smaller teeth. Labium 1.10 long, 1.70 wide, with six cuspules. Endites with 40 cuspules pointed and elongated. Sternum 5.20 long, 5.10 wide, slightly domed. Six sternal sigillae, four anterior marginal and two posterior submarginal, four times the size of anterior pair, distant from margin 0.25. Palp: femur 5.60/ patella 3.00/ tibia 3.60/ tarsus/ 1.60/ total 13.80; Leg I: femur 11.50/ patella 6.40/ tibia 9.40/ metatarsus 10.60/ tarsus 4.90/ total 42.70; II: 10.50/ 6.00/ 9.10/ 10.00/ 6.10/ 41.70; III: 10.00/ 5.20/ 7.70/ 11.50/ 5.70/ 40.20; IV: 12.90/ 5.70/ 10.90/ 18.10/ 6.50/ 54.10; Spination: Palp: femur p0-0-1r, patella p1-1-1, tibia p1-1-1-1, r0-0-1; Legs: I: femur d1-1-1-1-2-2, patella v0-1r-0, p0-0-1, tibia v1p-2r-0-2-1-



Figs 1, 2. Live animals, females: 1, *Pycnothele perdita* Chamberlin, 1917; 2, *Pycnothele rubra* sp. nov. Photos by R. P. Indicatti.



Figs 3-12. 3-7. *Pycnothele perdita* Chamberlin, 1917 (male IBSP 114673; female IBSP 150052): 3, left palpal tibia, prolateral view; male palpal bulb: 4, prolateral view; 5, dorsal view; 6, retrolateral view; 7, spermathecae, ventral view. 8-12. *Pycnothele gauderio* sp. nov. (male holotype; female paratype MCN 17730): 8, left palpal tibia, prolateral view; male palpal bulb: 9, prolateral view; 10, dorsal view; 11, retrolateral view; 12, spermathecae, ventral view. Scale bars = 1 mm.

1r-1p ap, p2-1-1-1, metatarsus d1p-1p, v1r-0-0, p1-0-1, r0-0-1; II: femur d1-1-2-1-1r-2p-3, patella p0-0-1, tibia v1p-2-0-2-1r-3ap, p1-1-0-1-0, metatarsus d0-1p-0-1p-0, v1p-1r-1r-0-1p ap, p1-0-1-0-1, r0-0-1; III: femur d1-1-2-1-2-2, patella p1-1-1, r1-0-0, tibia d2-0-0-1p, v2-2-3ap, p0-1-0-1-0, r0-1-0-1-0, metatarsus d2r-0-1p-0-1r1p-0-2, v1p-1r-1p-1r-1p-3ap, p1-1-1-0-1, r1-0-1-0-1; IV: femur d1-1-2-1-2-1-1p-1r-1, patella p1-1-1, r1-0-0, tibia d2-2-1-1, v2-0-1p-2-0-1p-3ap, p1-1-1-2, r1-1-1-1-2, metatarsus d2r-2-1p-1r-1r-1p-1r-2, v2-2-1-2-2ap, p1-1-0-1-1, r1-1-1-1-1-1-1. Metatarsus I slightly retrolaterally curved. Scopulae on tarsi I-III integral, symmetric, dense anterior and laterally projected; IV divided by one narrow and dense row of thick setae (Fig. 56). Scopulae on metatarsi I-II integral and symmetric. STC with 5-6 teeth on tarsus I, six on tarsus II e IV, 6-7 on tarsus III. PLS: basal, median and apical segments 1.20, 0.60, 0.40 long, respectively. Palpal bulb pyriform with eight strong and high keels, spermathecal duct with a median curvature, short embolus with a slight curvature to ventral side (Figs 4-6). Palpal tibia with four strong spines in prolateral view (Fig. 3).

Female (IBSP 150052). Coloration as in male (Fig. 1). In ethanol: as in male, except in abdomen that shows four light brown stripes, two small anterior circular lateral markings. Total length, 35.50. Carapace 14.10 long, 11.20 wide. Abdomen 15.40 long, 12.40 wide. Fovea: 2.00. Clypeus: 1.00. Eyes: AME 0.58, ALE 0.64, PME 0.58, PLE 0.36. Basal segment of chelicerae with 10 teeth, with 45-42 basal smaller teeth. Labium 1.30 long, 2.60 wide, with three cuspules. Endites around 51 and 54 cuspules. Sternum 6.00 long, 5.50 wide. Six sternal sigillae, four anterior marginal and two posterior submarginal, four times the size of the two anterior, distant from margin 0.25. Palp: femur 5.70/ patella 4.40/ tibia 4.20/ tarsus 3.30/ total 19.00; Leg I: femur 9.00/ patella 6.50/ tibia 5.50/ metatarsus 6.30/ tarsus 3.30/ total 30.60; II: 8.00/ 5.90/ 5.20/ 6.30/ 3.90/ 29.30; III: 8.40/ 5.80/ 5.20/ 7.60/ 4.10/ 31.10; IV: 11.00/ 6.50/ 8.00/ 12.40/ 4.70/ 42.60. Spination: palp: femur d0-0-1p, patella p1-0-0, tibia v0-1r-3ap, p0-2-0; Legs: I: femur d0-0-1p, patella p1-0-1, tibia v1r-0-1r-0-1r ap, metatarsus v2-0-1r-0-; II: femur d0-0-1p, tibia v1-0-1-0-1p ap, p0-1-0, metatarsus v2-1r-0-1p ap, p0-1-0-0; III: femur d0-0-1p, patella p1-1-1, r0-1-0, tibia d2-1r-0-1p, v2-0-1r-2-0-3ap, p0-1-0-1-0, metatarsus d2r-2-2r-1p-1r-2, v1r-1p-1r-1p-1-2-3ap, p1-0-1, r0-1-1; IV: femur d1-0-0-1r, patella p1-1-1, r0-1-0, tibia d2-2-1-2-1r-2-1r-1r-1r, v2-0-1r-1p-3ap, p1-1-1-1-1-1, metatarsus d2r-1r-1p-3-2-1p-1r-2, v2-1p-1r-1p-2-1-2-2-3ap, p1-1-1-1, r1-1-1-1. Palpal tarsal claw with six strong teeth. Scopula on tarsi I-IV integral. III-IV divided by a row of many thick setae (Fig. 57). Scopulae on metatarsi I-II integral and symmetric. STC with 3-5 teeth on tarsi I-II and 4-5 on tarsi III-IV. PLS: basal, median and apical segments 1.02, 1.20, 0.66 long. Spermathecae with elevated receptacle with strongly sinuous ducts on median dilated area and elongated on apical region, supraspermathecal chamber strongly sclerotized, less elevated in central region than on lateral (Fig. 7).

Variation. Males (n=6): total length, 20.20-24.60; endites with 26-40, labium with 1-6 cuspules. Females (n=2): total length, 27.63-35.50; endites with 40-51 cuspules, labium with 3 cuspules.

Distribution. Known only from the Atlantic Forest of southern state of Rio de Janeiro, Brazil (Fig. 79).

### *Pycnothele gauderio* sp. nov.

(Figs 8-12; 58-59; 79)

Type material. Male holotype from Caçapava do Sul (30°30'44"S; 53°29'29"W), Rio Grande do Sul, Brazil, 15.IX.2001. N. Nascimento *leg.*, deposited in MCCTP 12927. Paratypes: One female, Guaíba (30°07'06"S; 51°19'17"W), Rio Grande do Sul, Brazil, 29.X.1994, A. A. Lise *et al. leg.*, deposited in MCCTP 5758; one female, Morro da Grota, Parque Estadual de Itapuã (30°16'15"S; 51°02'54"W), Viamão, Rio Grande do Sul, Brazil, 31.I.1975, A. A. Lise *et al. leg.*, deposited in MCN 17730.

Etymology. The species epithet is a noun in apposition referring to the population born in the state of Rio Grande do Sul, which is also known as gaúcho.

Diagnosis. Males from *P. gauderio* sp. nov. resemble *P. perdita* and *P. rubra* sp. nov. by the aspect of palpal bulb, but differ from *P. rubra* sp. nov. by the elevated keels, *P. perdita* by the lateral keel in prolateral view more projected and rounded (Fig. 9), and by the longer and less sinuous keels (Figs 10, 11). Females resemble *P. arapongas* sp. nov., *P. singularis* and *P. jatai* sp. nov. by the supraspermathecal chamber slightly elevated and the short receptacle, but differ from *P. singularis* by the median insertion of receptacle, *P. arapongas* sp. nov. by the less sinuous ducts, and *P. jatai* sp. nov. by the presence of a sinuosbasal receptacule basis with median insertion (Fig. 12).

Description. Male (holotype). Coloration in ethanol: carapace reddish dark brown, covered by many thin and short setae on dorsal region, legs reddish brown and abdomen dark brown. Total length, 19.00. Carapace 10.00 long, 8.10 wide. Abdomen 9.00 long, 5.40 wide. Fovea: 0.76. Clypeus: 0.60. Eyes: AME 0.38, ALE 0.18, PME 0.40 and PLE 0.36. Basal segment of chelicerae with 8-10 teeth, with ca. 17 smaller teeth. Labium 1.10 long, 1.60 wide, with five cuspules. Endites with 51-44 cuspules. Sternum ovate 4.70 long, 3.90 wide, slightly domed. Six sternal sigillae, anterior rounded and marginal, posterior ovate and marginal, two times the size of anterior. Palp: femur 4.70/ patella 2.30/ tibia 3.40/ tarsus 1.60/ total 12.00; Leg I: femur 4.30/ patella 5.60/ tibia 6.70/ metatarsus 7.10/ tarsus 4.60/ total 28.30; II: 8.40/ 4.30/ 5.90/ 6.50/ 4.60/ 29.70; III: 7.70/ 3.80/ 5.30/ 8.10/ 5.60/ 30.50; IV: 10.10/ 4.90/ 7.20/ 12.50/ 5.30/ 40.00. Spination: femur d0-0-1-2, patella p0-0-1, tibia p1-0-1-1, r0-0-1; Legs: I: femur d1-1-1r-1-3-2, patella v1r-0-0, p0-1-1, tibia v1p-1r-1r-0-1p-2r-0-2ap, p1-0-1, metatarsus v0-1p-1r-0, p1-0-1, r0-1-0; II: femur d1-1-2-2p-1r-1-2, patella p1-1-1, tibia v1p-1r-1r-1-0-1p-2r-0-2ap, p1-1-1, metatarsus v2-1p-0-1p-0-2, p1-1-1, r0-1-0;

III: femur d1-1-1p-1r-1-2-2, patella p1-1-1, r0-1-0-0, tibia d2-0-1, v2-2-3ap, p1-0-1, r1-0-1, metatarsus d1-0-1p-1r-1p, v1r-1p-0-1p-1r-3ap, p1-0-1-0-1, r1-0-1; IV: femur d1r-1p-1p-1-1r-1p-2, v1p-1r-1p-2-3ap, p1-1-1-1-1, r1-0-1-1. Metatarsus I with a slight basal curvature. Scopulae on tarsi I-II integral and metatarsi I-II symmetric and more dense on anterior two thirds. Scopula on tarsi III divided by 1-2 rows of thin setae, scopula on tarsi IV divided by 2-4 rows of thick setae (Fig. 58). STC with 4-7 teeth on tarsi I, 6-8 on tarsi II, 5-9 on tarsi III and 4-7 on tarsi IV. PLS: basal, median and apical segments 1.45, 0.75, 0.35 long, respectively. Palpal bulb pyriform with eight high keels, spermatheca with slight median curvature and without sinuosity until embolus tip, soft curvature on embolus: slightly curved on apex (Figs 9-11). Palpal tibia with three strong spines in prolateral view (Fig. 8).

Female (paratype MCTP 5758). Coloration in ethanol: carapace and legs reddish brown, sternum, coxae and endites reddish dark brown, abdomen dark brown with square stain on anterior dorsal region. Total length, 37.80. Carapace 15.80 long, 15.30 wide. Abdomen 15.20 long, 10.70 wide. Fovea: 2.00. Clypeus: 1.20. Eyes: Anterior row strongly procurved and posterior strongly recurved. AME 0.31, ALE 0.46, PME 0.34 and PLE 0.53. Basal segment of chelicerae with nine teeth, with 13-20 smaller teeth. Labium 1.50 long, 2.30 wide, with four cuspules. Endites with 60-65 cuspules. Sternum rounded 7.00 long, 5.70 wide, slightly domed. Six sternal sigillae, anterior marginal and posterior (oval) submarginal, with the third pair half size of anterior pair. Palp: femur 6.90/ patella 4.00/ tibia 4.50/ tarsus 4.80/ total 20.20; Leg I: femur 10.50/ patella 7.70/ tibia 7.70/ metatarsus 7.10/ tarsus 5.00/ total 38.00; II: 10.20/ 6.70/ 6.20/ 6.80/ 4.50/ 34.40; III: 9.20/ 6.40/ 5.10/ 7.80/ 5.00/ 32.00; IV: 11.80/ 6.40/ 8.30/ 12.40/ 5.30/ 44.20. Spination: palp: patella p1-0-0, tibia v1r-0-2ap, p0-1-0, tarsus v1r-0-0; Legs: I: femur d0-0-1p, metatarsus v2-1r-0; II: femur d0-0-1p, patella p0-0-1, tibia v0-1-0-1pap, metatarsus v1r-1r-1p-1ap; III: femur d2-0-2, patella p0-1-1, r0-1-0, tibia d2-0-1, v1p-1p-4ap, p1-1-0, r1-0-0, metatarsus d2-1p-1r-1p-2, v1p-1r-1p-2-1r-1p-1p-6ap, p1-1-1-1, r0-0-1-0; IV: femur d1-0-1r-1r, patella p1-1-1, r0-1-0-0, tibia d2-0-0, v2-2-2p-2ap, p1-0-1, r1-0-2, metatarsus d1r-0-2-1p-1r-1p-1r-2, v1p-1r-2-2-1rap, p1-2-1-2-1, r1-1-1-1. Metatarsus I with a light basal curvature. Palpal tarsal claw with five strong teeth. Scopulae on tarsi I-II and metatarsi I symmetric and metatarsi II asymmetric. Slightly divided by long, thin and sparse setae on tarsi III and strongly divided by 2-4 rows thick and long setae on tarsi IV (Fig. 59). STC with 4-5 teeth on tarsi I, 4-7 on tarsi II, seven on tarsi III and 5-7 on tarsi IV. PLS: basal, median and apical segments 1.70, 1.00, 0.50 long, respectively. Spermathecae formed by short receptacle with slight basal sinuosity, median insertion of ducts, enlarged on apex, supraspermathecal chamber slightly robust with strongly degree of sclerotization, apex of receptacle elongated (Fig. 12).

Distribution. State of Rio Grande do Sul, occurring in remnant of a seasonal semideciduous forest that belongs

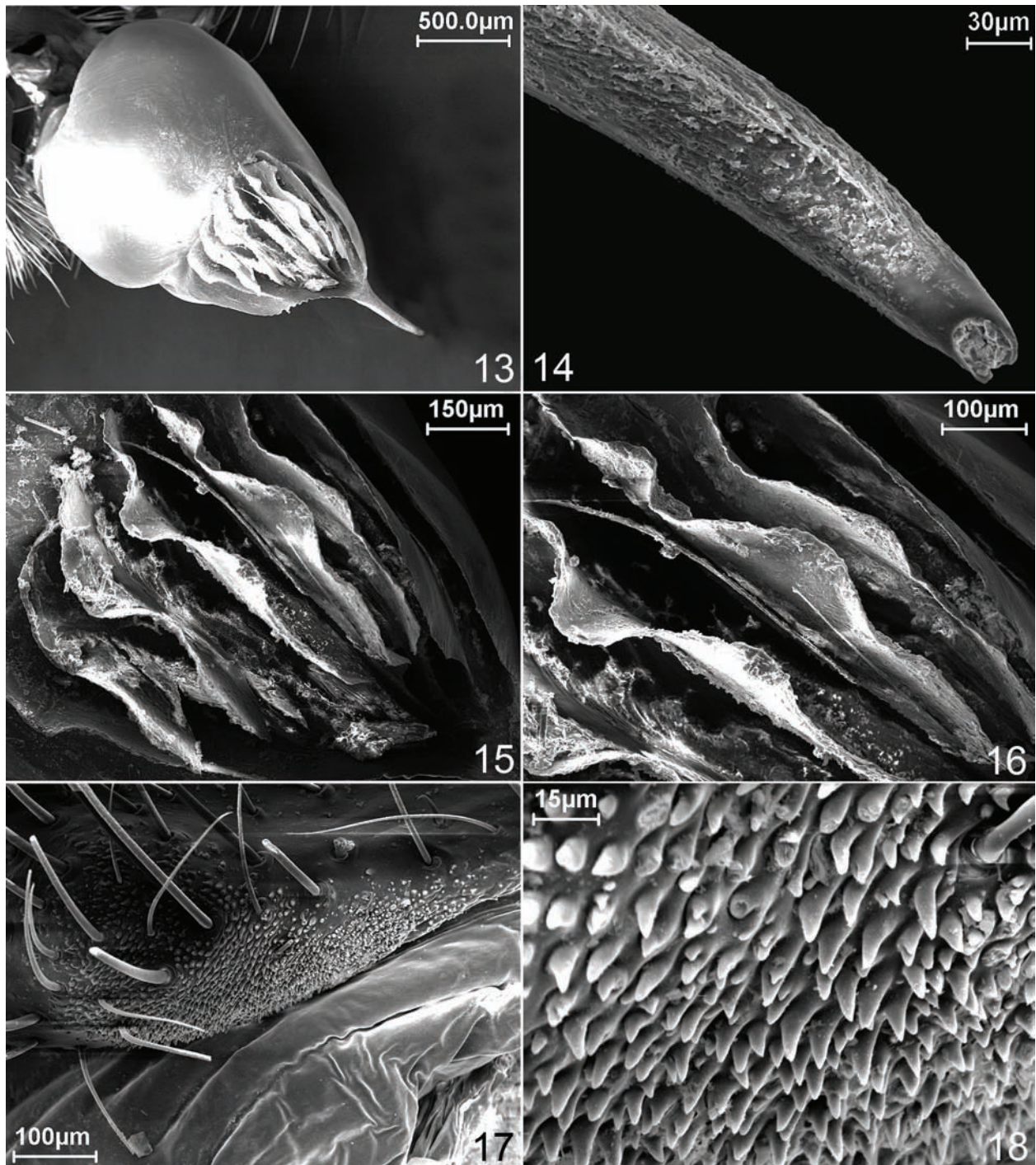
to the Atlantic Forest Domain and in the Brazilian Pampa (Fig. 79).

### *Pycnothele rubra* sp. nov.

(Figs 2; 23-27; 60, 61; 79)

Type material. Male holotype from Ibiúna (23°08'S; 47°01'W), São Paulo, Brazil, 12.IX.2006, A. P. Liaw *leg.*, deposited in IBSP 112933. Paratype. One female, same locality of holotype, 12.III.1991, T. P. Santos *leg.*, deposited in IBSP 113181; one male, São Paulo (23°07'S; 46°07'W, Bairro Caxingui), São Paulo, Brazil, IX.1977, T. Murray *leg.* deposited in IBSP 113043; one female, São Paulo (23°07'S; 46°07'W, Itaquera), São Paulo, Brazil, 18.VI.1950, S. Gabriel *leg.*, deposited in IBSP 102280A; two females and one male, from Cotia (Caucaia do Alto, 23°73'S; 47°05'W), São Paulo, Brazil, XII.2002, without *leg.*, deposited in MZSP 22008 and 22011; one male, Cotia (Reserva Florestal do Morro Grande, 23°36'09'S; 46°55'53'W), São Paulo, Brazil, VII.2006, C. Bragagnolo *leg.*, deposited in MZSP 28839; one male, Embu (23°07'S; 46°09'W), X.1971, S. Eul *leg.*, deposited in MCTP 36777; one female, Tapiraí (23°09'S; 47°01'W), 27.I.1992, R. Andi *leg.* deposited in MCTP 36778; one male, Itapeçerica da Serra (23°07'S; 46°09'W, Sítio Oropá), IX.1975, L. Canova *leg.*, deposited in MCN 49391.

Additional material examined. BRAZIL, **São Paulo**: Piracaia (23°01'S; 46°03'W), ♂, 19.IX.1996, Prefeitura Municipal de Piracaia *leg.* (IBSP 118215); ♂, São Paulo (23°07'S; 46°07'W), IX.1977; no data, Demetrie *leg.* (IBSP 113568); ♂, 20.II.1960, J. Goldenberg *leg.* (IBSP 113523); (Parque Estadual do Jaraguá), ♂, VII.2013, R. P. Indicatti *leg.* (IBSP 113042); Cotia (23°06'S; 46°09'W), ♀, 26.XI.2004, M. P. M. Povoni *leg.* (IBSP 111586); ♂, IX.1982, S. Graniero *leg.* (IBSP 114491-B); ♂, 04.XI.1996, Prefeitura Municipal de Cotia *leg.* (IBSP 118220); (Caucaia do Alto, 23°73'S; 47°05'W), ♂, X.1982, R. Seckler *leg.* (IBSP 113039); ♂, 20.X.1978, R. Seckler *leg.* (IBSP 113023); 3♂, 2♀, XII.2002, without *leg.* (MZSP 22013, 22012); (Reserva Florestal do Morro Grande, 23°36'09'S; 46°55'53'W), 7♂, VII.2006, C. Bragagnolo *leg.* (MZSP 28838, 28840, 28841); 3♂ (IBSP 128462); Itapeçerica da Serra (23°07'S; 46°09'W), ♀, 15.VI.1992, A. A. Massetti *leg.* (IBSP 113180); 2♂, IX.1975, L. Canova *leg.* (IBSP 113040, 113041); 4♂, ♀, IV.1970, L. Canova *leg.* (IBSP 11114); Embu (23°07'S; 46°09'W), ♂, X.1983, S. Graniero *leg.* (IBSP 113055); ♂, IX.2005, F. M. Paulino *leg.* (IBSP 112265); Ibiúna (23°08'S; 47°01'W), ♂, XI.2006, J. Yamada *leg.* (IBSP 113062); ♂, VIII.1983, N. R. de Barros *leg.* (IBSP 114577); 1♀, 26.VI.1997, Y. A. Afonso *leg.* (IBSP 118199); ♂, 24.VIII.2004, D. Puccinini *leg.* (IBSP 115367); São Lourenço da Serra (23°09'S; 43°09'W), 2♂, 30.IX.2004, R. P. de Camargo *leg.* (IBSP 111042); 3♂, 02.X.1979, E. Tribukait *leg.* (IBSP 114491-A); ♂, X.1989, S. Fernandes *leg.* (IBSP 113020); ♀, 20.IV.1990, S. de Sá Fernandes *leg.* (IBSP 113182); Piedade (23°07'S; 47°04'W), ♀, 10.VI.2002, W. J. Brazil *leg.* (IBSP 110646); Tapiraí (23°09'S; 47°01'W), ♂, VII.1999, D. F. Candiani *leg.* (IBSP 18524); ♂, VI.1980, V. A. Santinho *leg.* (IBSP 114491-C); ♀, 27.I.1992, R. Andi *leg.* (IBSP 113179); ♀, 11.V.1987, Prefeitura Municipal de Tapiraí *leg.* (IBSP 113178); Between Piedade and Tapiraí (24°00'S; 47°05'W), 2♂, 12-22.XII.2006, R. Recoder & M. Teixeira Jr. *leg.* 4♀, 1j (IBSP 113254, 113255); Embu-Guaçu (23°09'S; 46°09'W), ♀, 07.XI.1991, O. A. de Oliveira *leg.* (IBSP 113183); ♂, 05.X.2001, O. J. Gumiero *leg.* (IBSP 119445); ♂, 26.X.1970, J. Casoy *leg.* (IBSP 114083); ♂, XI.1980, P. P. Sales *leg.* (IBSP 113054); Juquitiba (24°00'S; 47°01'W), ♀, 09.I.2001, M. Rossini *leg.* (IBSP 118706); ♂, VII.1997, V. Ribeiro *leg.* (IBSP 113024); ♂, 29.X.1979, A. Scheider *leg.* (IBSP 114496); ♂, 08.IX.1998, C. Ruelli *leg.* (IBSP 118278); ♀, 1j, no date or *leg.* (IBSP



Figs 13-18. *Pycnothele perdita* Chamberlin, 1917 (male IBSP 114674): 13, palpal bulb, retrolateral view; 14, detail of embolus, retrolateral view; 15, 16, detail of keels, retrolateral view; 17, 18, detail of serrula on endite, dorsal view.

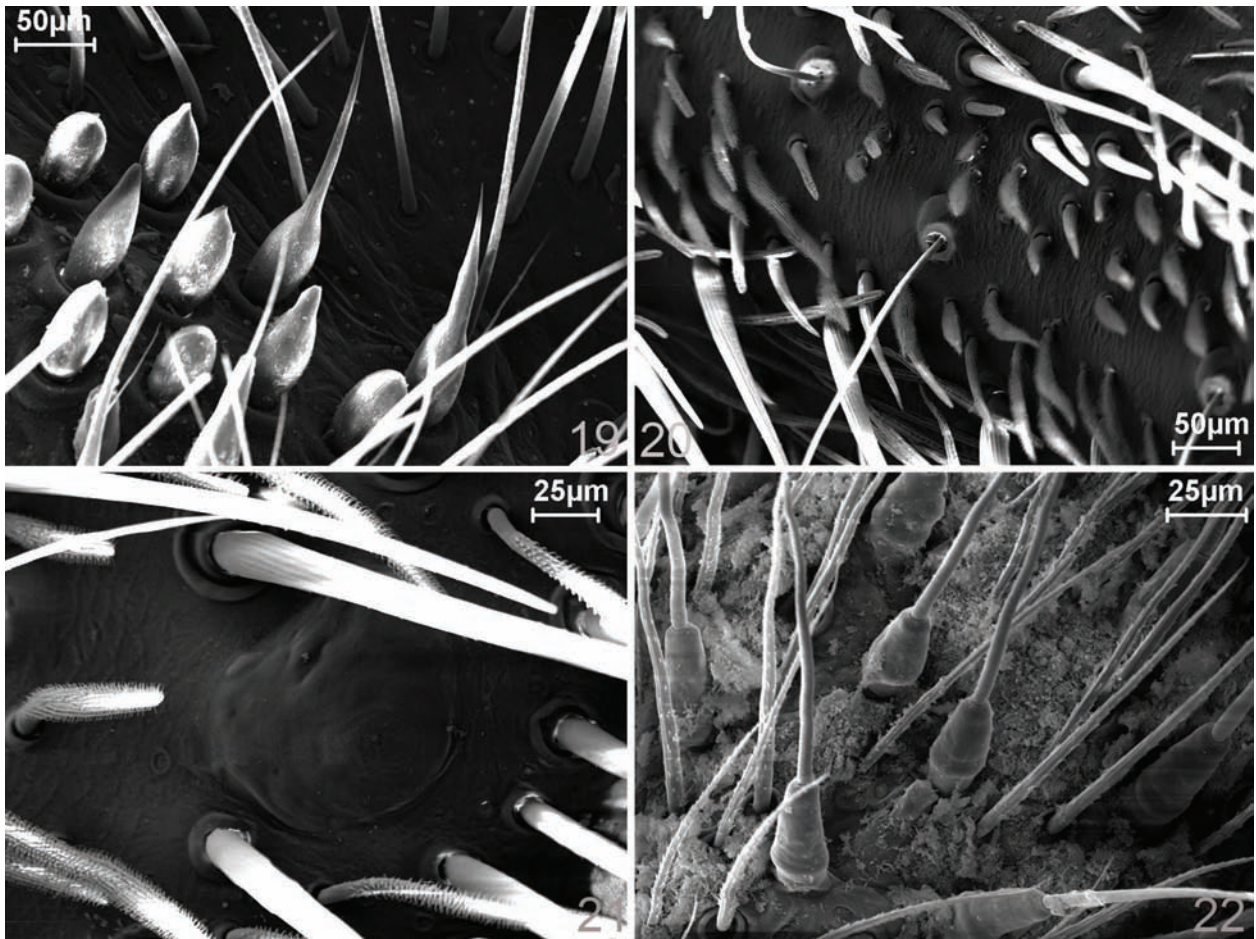
14176-B); Juquiá (24°19'S; 47°37'W), ♂, XII.1980, Paisagismo Lux leg. (IBSP 104598); Guapiara (24°02'S; 48°06'W), Fazenda Intervalles, Mirante, ♂, XI.1997, P. Gerhard leg. (IBSP 118287).

**Etymology.** The species epithet is an apposition referring to the red coloration of the carapace in the living specimen (Fig. 2).

**Diagnosis.** Males of *P. rubra* sp. nov. resemble *P. perdita*, *P. gauderio* sp. nov. and *P. arapongas* sp. nov. by the aspect of the palpal bulb very large, but differ from *P. perdita* and *P. gauderio* sp. nov. by the keels being more

numerous and less elevated, and from *P. arapongas* sp. nov. by the lateral keel projected laterally in prolateral view (Figs 24-26). Females resemble *P. perdita* by the similar division on tarsal scopula of leg IV, but in *P. rubra* sp. nov. the division is thicker with sparser setae (Fig. 61), while in *P. perdita* are thick and grouped (Fig. 57), but differ by the less elevated supraspermathecal chamber, with the central region oval and the apex of the high receptacle globose, and from *P. arapongas* sp. nov. by the high supraspermathecal chamber, but differ by the lightly sinuous duct (Fig. 27).





Figs 19-22. *Pycnothele perditus* Chamberlin, 1917 (male IBSP 114674): 19, detail of cuspules on endite; 20, dorsal trichobothria on tarsus I; 21, tarsal organ; 22, spigots pumpkniform.

**Description.** Male (holotype). Coloration in ethanol: Carapace reddish. Abdomen dorsal and ventral sides and legs brown. Total length, 19.00. Carapace 10.50 long, 8.75 wide. Abdomen 8.50 long, 5.80 wide. Fovea 0.75. Clypeus 0.70. Eyes: Anterior row slightly procurved and posterior recurved. AME 0.46, ALE 0.42, PME 0.30 and PLE 0.30. Basal segment of chelicerae with 12 teeth, with 31-35 smaller teeth. Labium 0.87 long, 1.75 wide, with eight cuspules. Endites with 46-50 cuspules. Sternum rounded 4.62 long, 4.37 wide, slightly domed. Six sternal sigillae, four anterior marginal and two posterior submarginal, three times the size of the two anterior, distant from margin half the size of posterior sigillae. Palp: femur 5.00/ patella 2.37/ tibia 2.87/ tarsus 1.62/ total 11.86; Leg I: femur 8.62/ patella 5.25/ tibia 6.75/ metatarsus 7.87/ tarsus 4.37/ total 32.86; II: 8.25/ 4.62/ 6.25/ 7.37/ 4.50/ 30.99; III: 8.00/ 4.12/ 6.12/ 8.87/ 4.50/ 31.73; IV: 10.12/ 4.50/ 8.25/ 12.62/ 4.75/ 40.23. Spination: palp: femur d0-0-2-1, patella p1-1-1, tibia p0-2-1-1-1, r0-0-1; Legs: I: femur d1-1-1r-1-3-2, patella v0-1r-0, p0-1-1, tibia v1p-1p-2r-1-1r-1r-1p ap, p1-1-1-1, metatarsus v2-1r-1p ap, p1-0-1, r0-0-1-0; II: femur d0-1-1r-2p-2r-1p-1-2, patella v0-1r-1ap, p0-1-1, tibia v1p-2r-0-1r-1r-3ap, p1-0-1, metatarsus d0-0-1p-0, v2-0-1r-0-2ap, p1-0-1-0-1, r0-0-1-0; III: femur d1-1-2-1-3-2, patella d0-0-

1, p1-1-1-1, r0-1-0, tibia d1-0-1, v2-0-2-1p-0-3ap, p1-0-0, r1-0-1, metatarsus d1r-1p-1r-1p-2, v2-1p-2-3ap, p1-1-1, r0-1-0-1-0-0; IV: femur d1-1-1p-2r-3-3, patella d0-0-1, p1-1-1, r1-0-0, tibia d1-1p-1-1-0, v2-2-0-3ap, p1-1-1, r1-1-1-1-1, metatarsus d2r-1r-1r-1p-1p-1r-2ap, v1r-2p-1r-2-1r-1p-3ap, p1-0-1-0-1-1-1-1, r1-1-1-1-1-1-1. Metatarsus I slightly curved at the base. Scopulae on tarsi I-II integral, symmetrically dense and laterally projected; III divided by a sparse zig-zag row of very thin setae, IV divided by 2-4 rows of thin setae (Fig. 60). Scopulae on metatarsi I-II integral and symmetric. Metatarsus I with a slight retrolateral basal curvature. STC with 6-7 teeth on tarsi I, seven on tarsi II, 7-8 on tarsi III-IV. PLS: basal, median and apical segments 1.25, 0.62, 0.25 long, respectively. Palpal bulb pyriform with strong keels slightly elevated (14-16), spermatic duct with a median curvature, without sinuosity until the embolus tip, which is short with a mild ventral curvature (Figs 24-26). Palpal tibia with six strong spines in prolateral view (Fig. 23).

**Female** (paratype, IBSP 113181). Coloration in live specimen: Carapace reddish. abdomen dark brown, with an anterior light brown marking and seven transverse stripes, formed by small round markings; ventral side of abdomen and legs brown (Fig. 2). Total length, 28.70.

Carapace 11.30 long, 10.00 wide. Abdomen 13.00 long, 8.80 wide. Fovea 1.75. Clypeus 0.80. Eyes: AME 0.62, ALE 0.54, PME 0.28 and PLE 0.42. Basal segment of chelicerae with 11-10 teeth, with 28-30 smaller teeth. Labium 2.30 long, 1.10 wide, with four cuspules. Endites with 66 cuspules. Sternum ovate 5.12 long, 5.13 wide, slightly domed. Six oval sternal sigillae, four anterior marginal and two posterior submarginal, four times the size of the two anterior, distant from margin 1/5 the size of posterior sigillae. Palp: femur 5.37/ patella 1.87/ tibia 3.62/ tarsus 3.25/ total 14.11; Leg I: femur 7.50/ patella 5.11/ tibia 5.36/ metatarsus 4.36/ tarsus 3.00/ total 25.33; II: 6.61/ 4.36/ 4.61/ 4.86/ 3.11/ 23.55; III: 6.50/ 4.11/ 4.11/ 6.75/ 3.61/ 20.97; IV: 9.11/ 4.86/ 7.00/ 10.86/ 3.86/ 35.69; Spination: palp: femur d0-0-1r, tibia v0-1p-0-3ap, p0-2-0, tarsus v1r-0-0; Legs: I: femur d0-0-1p, metatarsus v1r-0-1r-0; II: femur d0-0-1p, tibia v0-0-1-0, metatarsus v0-1r-0-0-1ap; III: femur d0-0-1p-1p-1r, patella d0-1-0-0-1-1ap, p0-1-0, r0-1-1-1-1, tibia d2-0-1, v1r-0-2-0-2ap, p1-1-1, r0-1-0-1-0, metatarsus d1-1p-2-1p-1r-0-2, v1r-1p-1-3ap, p1-1-1-1-1, r1-1-1-1; IV: femur d0-0-1p-1p, patella d0-0-1p-1, p0-1-0, r1-1-1, tibia d2-1-1r-1p-1r-1p-1r, v2-1r-1p-3ap, p1-1-0-1-1-1, r1-1-1-1-1, metatarsus d2p-2p-1-1p-3-1p-1p-2-2-2-3ap, v1-1r-1p-1r-1p-1r-1p-1r-1p-3ap, p1-1-1-1-1-1, r1-1-1-1. Palpal tarsal claw with four strong teeth. Scopulae on tarsi I-II and metatarsi I symmetric and metatarsi II asymmetric; tarsal scopula III slightly divided by a long row of few thick setae, IV strongly divided by thick setae (Fig. 61). STC with 4-5 teeth on tarsi I, five on tarsi II-III, 5-6 on tarsi IV. PLS: basal, median and apical segments 1.36, 0.75, 0.36 long, respectively. Spermathecae formed by elevated receptacle with a soft sinuosity on median region and enlarged on apex, supraspermathecal chamber elevated with strong degree of sclerotization, apex of receptacle globose (Fig. 27).

Variation. Males (n=12): total length, 12.10-22.10; endites with 68-85 cuspules, labium with 3-8 cuspules. Females (n=5): total length, 19.10-24.40; endites with 78-90 cuspules, labium with 1-5 cuspules.

Distribution. Known only from Atlantic Forest of the state of São Paulo (Fig. 79) (see INDICATTI *et al.*, 2008b, fig. 6A, B).

### *Pycnothele arapongas* sp. nov.

(Figs 28-32; 62, 63; 79)

*Pycnothele* sp.: MIGLIORINI *et al.*, 2011:130 (examined).

Type material. Male holotype from Arapongas (23°22'S; 51°27'W), 18.XI.1961, Paraná, Brazil, deposited in IBSP 103571. Paratypes: one female, same data of holotype deposited in IBSP 103571; two males from Parque Estadual de Vila Velha (22°15'S; 50°00'W), Ponta Grossa, Paraná, Brazil, 08.X.2008, G. Migliorini *leg.* deposited in IBSP 149219; 149221; one female from Parque Estadual de Guartelá, Tibagi (24°30'06'S; 50°24'57'W), 20-27.I.2008, I. Cizauskas *leg.* deposited in IBSP 115435; 1 male, Parque Estadual de Vila Velha (22°15'S; 50°00'W), 08.X.2008, G.

Migliorini *leg.*, Ponta Grossa, Paraná deposited in MZSP 42545.

Additional material examined. BRAZIL, Paraná: Ponta Grossa (25°04'60"S; 50°08'60"W), 5♀, no date or *leg.* (IBSP 113570; 113572; 113599); Jaguariáiva (24°10'S; 49°39'W), Parque Estadual do Cerrado, ♀, 23.I.2000, Braga & Becker *leg.* (IBSP 113143).

Etymology. The species epithet is a noun in apposition taken from type locality.

Diagnosis. Males from *P. arapongas* sp. nov. resemble *P. perdita*, *P. gauderio* sp. nov. and *P. rubra* sp. nov. by the aspect of the palpal bulb and by the basal curvature of the spermatic duct, but differ from *P. perdita* and *P. rubra* sp. nov. by the spermatic duct, on the apical part without sinuosity; *P. gauderio* sp. nov. also resemble *P. arapongas* sp. nov. by the soft curvature on embolus and a light curvature on apex, but differ by the shorter keels (Figs 29-31). Females resemble *P. gauderio* sp. nov. and *P. jatai* sp. nov. by the shorter duct; though differ by the absence of sinuosity from *P. jatai* sp. nov., and from *P. gauderio* sp. nov. by the absence of curvature on receptacle and more globose on apical region (Fig. 32).

Description. Male (holotype). Coloration in ethanol: carapace reddish brown, legs orange brown and abdomen light brown. Total length, 20.49. Carapace 10.12 long, 7.70 wide. Abdomen 10.37 long, 6.37 wide. Fovea 0.62. Clypeus 0.75. Eyes: AME 0.26, ALE 0.10, PME 0.24 and PLE 0.24. Basal segment of chelicerae with eight teeth, with 18 smaller teeth. Labium 0.62 long, 1.25 wide, with four cuspules. Endites with 38/44 cuspules. Sternum ovate 4.62 long, 3.75 wide, slightly domed. Six sternal sigillae, anterior and posterior rounded and marginal, with the third pair been half size of anterior pair. Palp: femur 4.12/ patella 2.25/ tibia 2.50/ tarsus 1.25/ total 10.12; Leg I: femur 7.50/ patella 4.62/ tibia 5.37/ metatarsus 6.12/ tarsus 3.75/ total 27.36; II: 7.25/ 3.87/ 4.75/ 5.62/ 3.87/ 25.36; III: 6.62/ 3.50/ 4.50/ 6.37/ 4.50/ 25.49; IV absent. Spination: palp: femur d1-1-1-1r-1p, p0-0-1, patella p1-1-1, tibia v1-0-0, p1-1-1, r0-0-1; Legs: I: femur d1-1-1-1-1-1r-1p-1r, patella v0-1-0-2ap, p1-1-1, tibia v2-1p-1r-1r-2ap, p2-1-1-1-1-1, r1-1-1, metatarsus v2-0-1r-0, p1-1-1, r0-0-1-0; II: femur d1-1p-1-1r-1-1-1p-1r-1p-1r, patella v0-0-1ap, p1-1-1, tibia v3-3-2ap, p1-0-1, metatarsus d0-1-0-1-0, v1-1-0-0, p0-1-0-0, r0-0-1-0; III: femur d1-1-1r-1-1-1p-1r-1-1p-1r-1-1p, patella p1-0-1, r1-0-1-0-1, tibia d2-0-1, v2-0-1p-0-2ap, p0-1-0-1, r10-0-1-0, metatarsus d1-0-1-0-1r, v2-0-2-0-3ap, p0-1-0-1-0-0, r1-0-1-0-1-0. Scopulae on tarsi I-II and metatarsi I symmetric and metatarsi II asymmetric. Scopula of IV leg divided by two or three rows of long thin setae (Fig. 62). STC with seven teeth on tarsi I, 8-9 on tarsi II, 9-11 on tarsi III. PLS: basal, median and apical segments 1.62, 1.12, 0.50 long. Palpal bulb pyriform with strong but slightly elevated keels (12-14), spermatic duct with a soft medial curvature without sinuosity until embolus, soft curvature on embolus slightly curved on apex (Figs 29-31). Palpal tibia with six strong spines in prolateral view (Fig. 28).

Female (paratype IBSP 103571). Coloration in ethanol: carapace and legs orange, abdomen brown. Total length, 16.62. Carapace 8.37 long, 6.25 wide. Abdomen 8.25 long, 7.87 wide. Fovea 0.70. Clypeus 0.75. AME 0.25, ALE 0.30, PME 0.34 and PLE 0.20. Basal segment of chelicerae with nine teeth, with 15-18 smaller teeth. Labium 0.62 long, 1.25 wide, with four cuspules. Endites with 50-53 cuspules. Sternum rounded 3.75 long, 3.62 wide, slightly domed. Six sternal sigillae, anterior and posterior rounded and marginal, two times the size of anterior. Palp: femur 4.25/patella 2.37/tibia 2.75/tarsus 2.25/total 11.62; Leg I: femur 5.75/patella 3.87/tibia 3.50/metatarsus 3.37/tarsus 2.62/total 19.11; II: 5.37/ 3.50/ 3.50/ 3.50/ 2.75/ 18.62; III: 4.75/ 3.00/ 3.12/ 4.50/ 3.12/ 18.49; IV: 7.50/ 3.37/ 4.62/ 7.25/ 3.50/ 26.24. Spination: palp: patella p0-1-0, tibia v1-1r-1p-0-3ap, p0-0-1-0, tarsus v1r-0-0; Legs: I: femur d0-0-1p-0, tibia v0-0-1ap, metatarsus v1-0-0; II: femur d0-0-1p-0, patella p0-1-0, tibia v0-0-1ap, p0-0-1-0, metatarsus v2-1-0; III: femur d0-0-1p, patella p0-0-1, r1-1-1, tibia d1-0-1-0, v1-0-2-0-2ap, p1-0-1, r1-0-0-1, metatarsus d0-1-0-2-0-1, v2-0-2-0-1-3ap, p1-1-1, r1-1-1; IV: femur d0-0-1p, patella p0-1-1-0, r1-1-1, tibia d2-0-0, v0-1-0-3ap, p1-1-0, r1-0-0-1-0, metatarsus d1-1p-1-1r-1p-1r-1p-1, v1p-1r-1-1-1r-1p-3ap, p1-1-1, r1-1-1-0-1-0. Metatarsus I slightly curved basally. Palpal tarsal claw with four strong teeth. Scopulae on tarsi I-II and metatarsi I symmetric and metatarsi II asymmetric. Slightly divided by thin setae on tarsi III and strongly divided by thick setae on tarsi IV (Fig. 63). STC with six teeth on tarsi I, 6/8 on tarsi II, 5/8 on tarsi III and 7/8 on tarsi IV. PLS: basal, median and apical segments 0.87, 0.62, 0.25 long, respectively. Spermathecae with short and straight receptacle, enlarged on apex, supraspermathecal chamber elevated and strongly sclerotized, apex of receptacle globose (Fig. 32).

Variation. Males (n=5): total length, 11.70-19.40; endites with 37-42 cuspules, labium with 2-6 cuspules. Female (n=6): total length, 14.60-22.10; endites with 45-58 cuspules, labium with 3-6 cuspules.

Distribution. Known from the Atlantic Forest of the state of Paraná (Fig. 79).

### *Pycnothele singularis* (Mello-Leitão, 1934)

(Figs 33-37; 64-65; 80)

*Androthelopsis singularis* MELLO-LEITÃO, 1934:402, figs 1-2 [male holotype from Serrana (21°02'S; 47°06'W), Vila Bonfim, São Paulo, Brazil, deposited in IBSP 103442, examined]; LUCAS & BÜCHERL, 1973:238; RAVEN, 1985:101.

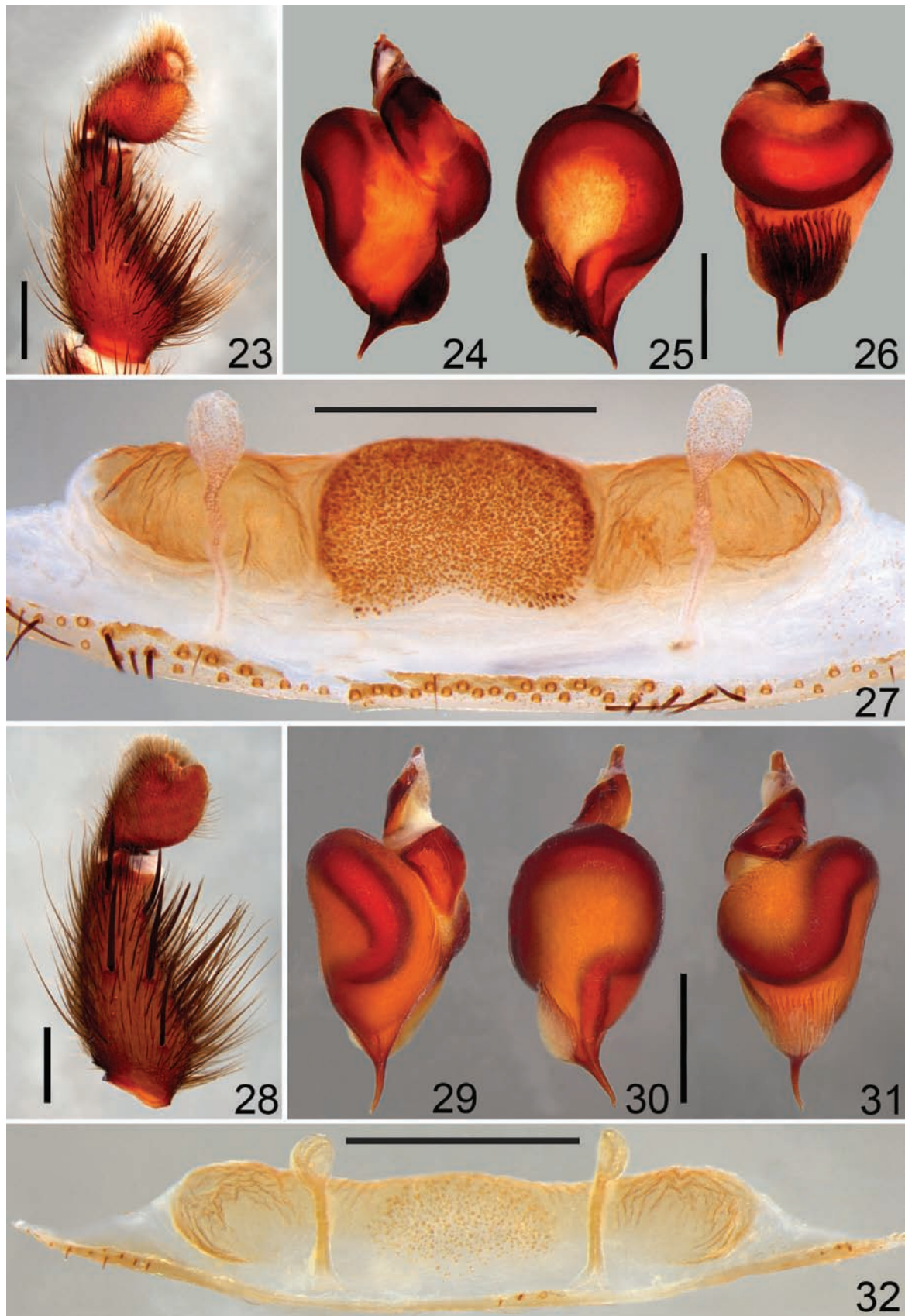
*Pycnothele singularis*: PÉREZ-MILES & CAPOCASALE, 1988:291; PLATNICK, 2014.

Additional material examined. BRAZIL, São Paulo: Itirapina (Estação Ecológica de Itirapina, 22°15'S; 47°49'W), 4♂, 2001-2002, G. Machado & C. Bertim *leg.* (IBSP 113141, 113142, 113144, 112803); ♂, 12.X.1999, M. E. Oliveira *leg.* (IBSP 118799); 2♂, XI.1985, E. Moraes *leg.* (IBSP 113028); ♂, 12.X.2000, M. E. Oliveira *leg.* (IBSP 118795); Serrana (21°02'S; 47°06'W), ♂, 05.X.1981, I. A. Souza *leg.* (IBSP 117928); Brotas (22°03'S; 48°01'W), ♂, XII.1975, C. Madresan *leg.* (IBSP 114173); Vargem Grande do Sul (22°03'S; 48°01'W), ♀, X.1980, T. S. Viola *leg.* (IBSP 104569).

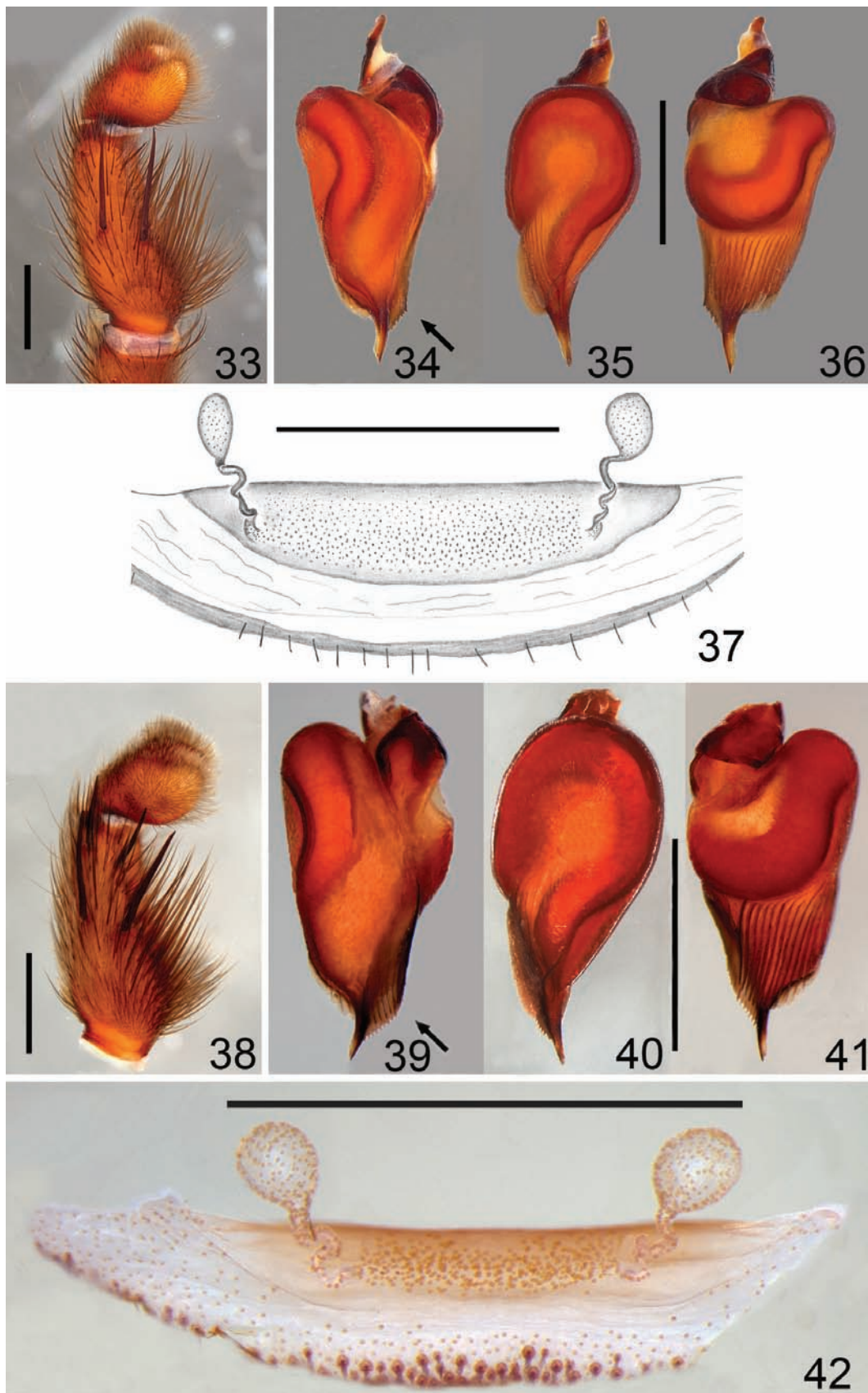
Diagnosis. Males of *P. singularis* resemble *P. jatai* sp. nov. and *P. araraquara* sp. nov. by the long and narrow palpal bulb, by the retrolateral spines of metatarsi I with elevated base; but differ from *P. araraquara* sp. nov. by the slightly shorter embolus and division of the scopula on tarsi IV with more distant thicker and longer setae (Fig. 64); differ from *P. jatai* sp. nov. by the lateral keel on bulb in prolateral view being straight (Fig. 34), while in *P. jatai* sp. nov. it is rounded and the duct more sinuous (Fig. 39). Females of *P. singularis* resemble *P. jatai* sp. nov. by the lower supraspermathecal chamber and by the globose receptacle but differ by the ducts being less spiralled and more elevated receptacle (Fig. 37).

Redescription. Male (IBSP 113028). Coloration in ethanol: Carapace orange brown, leg and abdomen light brown, abdomen with dense hair. Total length, 17.36. Carapace 8.75 long, 7.36 wide. Fovea 0.75. Clypeus 0.50. AME 0.21, ALE 0.32, PME 0.20, PLE 0.25. Basal segment of chelicerae with 9 teeth, with 10-12 basal smaller teeth. Labium 0.75 long, 1.25 wide, with two cuspules. Endites with 15-18 cuspules. Sternum 4.25 long, 3.25 wide, slightly domed. Six sternal sigillae, four anterior marginal and two posterior submarginal, twice the size of anterior pair, distant from margin 0.31. Palp: femur 4.00/patella 3.50/tibia 2.50/tarsus 1.63/total 11.63; Leg I: femur 7.36/patella 3.61/tibia 5.50/metatarsus 6.60/tarsus 4.11/total 27.18; II: 6.86/ 3.62/ 4.75/ 6.60/ 4.11/ 25.93; III: 6.60/ 2.86/ 4.61/ 7.50/ 4.61/ 26.18; IV: 8.50/ 4.00/ 6.00/ 4.60/ 5.36/ 28.46. Spination: palp: femur d0-1-0, p0-0-1-0, r0-0-1-0, patella p1-0-1, tibia p0-2-0-1, r0-0-1; Legs: I: femur d1-1-1-1-1, p0-0-1-1, patella v0-1r-0, p1-1-1, tibia v1-1-1r-1-1-1r-1ap, p1-1-1-1, r1-1-0-0, metatarsus d0-1-1-0, v0-1r-1-1r-0, p1-1-0-1; II: femur d1-1-1-1-0, p0-1-1-1-1, r1-1-1-1, patella v0-1r-0, p1-1-1, tibia v1-1-1r-1-1-1r-4ap, metatarsus d0-0-1p-1r-2ap, v2-1r-1p-1ap, p0-0-1-0-1ap, r1-1-1; III: femur d1-1-1-1, p0-1-1-1, r1-1-1, patella r1-1-1, tibia d1-1-0-1-0, v3-1r-1p-3ap, p0-1-0-1-0, r0-1-0-2-0, metatarsus d1-1r-1p-1r-1-1p-1r-1ap, v1r-1p-0-1r-1p-2ap, p0, r2-1-1-1-1; IV: femur d1-1-1-1, p0-1-1-1, r0-1-1-1, patella p0-1-0, r1-1-1, tibia d1p-1-1, v1-1r-0-1r-1p-0-3ap, p0-1-0-1-0, r1-1-1, metatarsus d1-1-1-1r-1, v1r-1p-1r-1p-1r-3ap, p1-1-1, r1-1-1. Metatarsus I with a light basal curvature. Scopulae on tarsi I-II and metatarsi I symmetric and metatarsi II asymmetric, tarsi III-IV divided by long and dark setae (Fig. 64). STC with 8-9 teeth on tarsi I, 9-10 on tarsi II, 9-12 on tarsi III and 11-12 on tarsi IV. PLS: basal, median and apical segments 1.61, 0.75, 0.25 long, respectively. Palpal bulb with strong keels (15-17), spermathecal duct slightly sinuous, embolus short slightly curved ventrally (Figs 34-36). Palpal tibia with three strong spines in prolateral view (Fig. 33).

Female (IBSP 104569). Coloration in ethanol: Carapace reddish brown with radial symmetric dark stripes, the two stripes closest to the ocular region are wide, covered with short thin golden setae, abdomen light brown, with one longitudinal dark brown stripe, with many similarly coloured spotted markings. Ventral side of coxae, sternum



Figs 23-32. 23-27. *Pycnothele rubra* sp. nov. (male holotype; female paratype IBSP 104897): 23, left palpal tibia, prolateral view; male palpal bulb: 24, prolateral view; 25, dorsal view; 26, retrolateral view; 27, spermathecae, ventral view. 28-32. *Pycnothele arapongas* sp. nov. (male holotype, female paratype IBSP 103571): 28, left palpal tibia, prolateral view; male palpal bulb: 29, prolateral view; 30, dorsal view; 31, retrolateral view; 32, spermathecae, ventral view. Scale bars = 1 mm.



Figs 33-42. 33-37. *Pycnothele singularis* (Mello-Leitão, 1934) (male IBSP 113028; female IBSP 04569): 33, left palpal tibia, prolateral view; male palpal bulb (arrow points the lateral keel): 34, prolateral view; 35, dorsal view; 36, retrolateral view; 37, spermathecae, ventral view. 38-42. *Pycnothele jatai* sp. nov. (male holotype, female paratype IBSP 161760): 38, left palpal tibia, prolateral view; male palpal bulb (arrow points the lateral keel): 39, prolateral view; 40, dorsal view; 41, retrolateral view; 42, spermathecae, ventral view. Scale bars = 1 mm.

and endites dark brown, legs brown with longitudinal dark brown stripes. Spinnerets dark brown. Total length, 26.00. Carapace 9.60 long, 8.00 wide. Abdomen 11.80 long, 8.80 wide. Fovea 0.50. Clypeus 0.60. Eyes: Anterior row strongly procurved and posterior slightly recurved. AME 0.25, ALE 0.45, PME 0.23, PLE 0.38. Basal segment of chelicerae with 10-11 teeth, with ca. 10 basal smaller teeth. Labium 0.80 long, 1.40 wide, with four cuspules. Endites with 35 cuspules. Sternum ovate 4.40 long, 4.00 wide, slightly domed. Six sternal sigillae, four anterior marginal and two posterior sub marginal, twice the size of anterior pair. Palp: femur 4.20/ patella 2.80/ tibia 2.90/ tarsus 2.70/ total 12.60. Leg I: femur 6.90/ patella 4.20/ tibia 4.50/ metatarsus 4.30/ tarsus 2.60/ total 22.50; II: 6.20/ 3.20/ 4.10/ 4.40/ 2.80/ 20.70; III: 5.90/ 3.20/ 3.60/ 5.40/ 3.30/ 21.40; IV: 6.80/ 3.90/ 5.30/ 7.90/ 3.80/ 27.70. Spination: palp: femur d1p-0-0, patella p1-0-1, tibia v1r-2-4ap, p0-1-0. Legs: I: femur d0-0-1p, tibia v1-1-1pap, p0-1-0, metatarsus v1r-0-0; II: femur d1-0-1p, patella p0-0-1, tibia v1-1-1pap, p1-0-0, metatarsus v1r-1r-1pap; III: femur d1-0-2, patella p1-1-1, r0-1-0-0, tibia d1-0-1, v1p-1r-3ap, p1-1-0, r0-1-0-1-0, metatarsus d0-1p-0-2, v2-0-2-0-3ap, p1-1-1, r0-1-0; IV: femur d1-0-1r, patella p1-1-1, r0-1-0, tibia v3ap, p0-1-0-1-0, r0-1-0-1-0, metatarsus d0-1p-0-2, v2-1p-2-3ap, p1-1-1, r1-0-1-0. Palpal tarsal claw with five strong teeth. Scopulae on tarsi I-II and metatarsi I symmetric and metatarsi II asymmetric. Tarsal scopula III slightly divided by one or two rows of thin setae, tarsal scopula IV divided by two or four thick setae (Fig. 65). STC with 6-7 teeth on tarsi I, 7-8 on tarsi II-III and 4-8 on tarsi IV. PLS: basal, median and apical segments 1.32, 0.84, 0.54 long, respectively. Spermathecae with short receptacle strongly sinuous and dilated on apex, supraspermathecal chamber short and slightly sclerotized, apex of receptacle globose (Fig. 37).

Variation. Males (n=5): total length, 16.50-17.36; endites with 15-19 cuspules, labium with 1-2 cuspules.

Distribution. Known from Cerrado (Brazilian savanna), northern state of São Paulo, Brazil (Fig. 80).

### *Pycnothele jatai* sp. nov.

(Figs 38-42; 66,67; 80)

Type material. Male holotype from Estação Ecológica do Jataí, Luís Antônio (21°30'S; 47°50'W), São Paulo, Brazil, 03.X-07.X.2009, A. G. Cristovão *leg.*, deposited in IBSP 161759. Paratypes: one female and five males, same data of holotype deposited in IBSP 161760-161764.

Additional material examined. BRAZIL, São Paulo: Luís Antônio, 16♂, same data of type material (IBSP 161765-161776).

Etymology. The species epithet is a noun in apposition taken from type locality.

Diagnosis. Males of *P. jatai* sp. nov. resemble *P. singularis* and *P. araraquara* sp. nov. by the long narrow

palpal bulb, by the retrolateral spines of metatarsi I elevated at the base and by the curvature of spermatic duct in ventral view; but differ from *P. araraquara* sp. nov. by the shorter embolus (Figs 39-41). *Pycnothele jatai* sp. nov. is similar to *P. singularis* by the short embolus, but differ by the rounded lateral keel of the bulb in prolateral view (Fig. 39). Females of *P. jatai* sp. nov. resemble *P. singularis* by the less developed supraspermathecal chamber, but differ by the torsions of the ducts and by the shorter receptacle (Fig. 42).

Description. Male (holotype). Coloration in ethanol: carapace orange covered by short setae, brown legs, abdomen light brown with a narrow dark dorsal stripe, with few lateral stripes on posterior region, ventral side brown. Total length, 15.63. Carapace 7.88 long, 6.25 wide. Abdomen 7.75 long, 4.13 wide. Fovea 0.48. Clypeus 0.50. Eyes: Anterior row procurved and posterior slightly recurved. AME 0.25, ALE 0.32, PME 0.19 and PLE 0.22. Basal segment of chelicerae with 9-8 teeth, with 9-15 smaller teeth. Labium 0.50 long, 2.38 wide, with two cuspules. Endites with 22-24 cuspules. Sternum ovate 3.00 long, 3.25 wide, slightly domed. Six sternal sigillae, four rounded anterior marginal and two ovate posterior submarginal, twice the size of the anterior pair. Palp: femur 2.88/ patella 1.75/ tibia 2.50/ tarsus 0.38/ total 7.51; Leg I: femur 5.25/ patella 2.75/ tibia 5.00/ metatarsus 4.25/ tarsus 2.63/ total 19.88; II: 5.75/ 3.00/ 4.00/ 4.63/ 2.88/ 20.26; III: 5.75/ 2.38/ 4.13/ 6.38/ 3.75/ 22.39; IV: 6.50/ 2.38/ 5.13/ 7.50/ 4.25/ 25.76; Spination: palp: femur d0-1-0, p0-1-0, r0-0-1, patella p1-1-1, tibia p1-1-1-1-1ap, r0-1-1; Legs: I: femur d1-1-1-1-1-1, p0-0-1-1, r0-1-0-1-0, patella v0-1r-0, p1-1-1, tibia v1-1-1r-1-1-1-1ap, p1-1-1, r2-0-1, metatarsus d0-1p1r-0, v1p-0-2-0, p1-1-0-1, r1-1-1; II: femur d1-1-1-1-1, p1-1-1-1, r1-1-1-1, patella v0-1r-0, p1-1-1, tibia v1-1-1-1-3ap, p0-1-0-1-0, metatarsus d0-1p-1r-0, v1p-1r-1r-1p1ap, p1-1-1-1, r0-1-0; III: femur d1-1-1, p1-1-1-1, r1-1-1, patella p0-1-0, r1-1-1, tibia d1-1-1, v2-1r-1p-3ap, p1-1-1-1, r1-0-2, metatarsus d1-1r-1-1-2, v1r-1p-1r-1p-3ap, p1-1-1-1, r1-1-1-1-1; IV: femur d1-1-1-0, p0-1-1-1, r1-1-1, patella p0-1-0, r1-1-1, tibia d1-1-1, v2-1-1-3ap, p1-1, r1-1-1-1-1, metatarsus d1-1p-1r-1r-1p-1r-1p-1r, v1-1-1-2-3ap, p1-1-1-1, r1-1-1. Scopulae on tarsi I-II and metatarsi I symmetric and metatarsi II asymmetric. Scopulae divided by thin and sparse setae on tarsi III and strongly divided by 2-4 rows of thin setae on tarsi IV (Fig. 66). STC with 7-9 teeth on tarsi I, 8-10 on tarsi II, 11-12 on tarsi III and 11-13 on tarsi IV. PLS: basal, median and apical segments 1.15, 0.75, 0.35 long, respectively. Palpal bulb narrow with few elevated keels (11-16), spermatic duct slightly sinuous, short embolus with a slight ventral curvature, lateral keel in prolateral view rounded (Figs 39-41). Palpal tibia with four strong spines in prolateral view (Fig. 38).

Female (paratype IBSP 161760). Coloration in ethanol: carapace light brown with many short setae, legs light brown, sternum, coxae and endites dark brown, abdomen yellowish with dorsal longitudinal stripe and a faint chevron stripe, with many markings, venter dark

brown. Total length, 19.88. Carapace 8.50 long, 6.50 wide. Abdomen 11.38 long, 7.50 wide. Fovea 0.66. Clypeus 0.55. Eyes: anterior row strongly procurved and posterior strongly recurved. AME 0.25, ALE 1.62, PME 0.22 and PLE 0.32. Basal segment of chelicerae with 8-9 teeth, with 8-14 smaller teeth. Labium 0.63 long, 1.25 wide, with two cuspules. Endites with 26-30 cuspules. Sternum rounded 3.88 long, 3.13 wide, slightly domed. Six sternal sigillae, four anterior marginal and two ovate posterior submarginal, twice the size of the anterior pair. Palp: femur 3.50/ patella 2.00/ tibia 2.38/ tarsus 2.25/ total 10.13; Leg I: femur 5.38/ patella 3.38/ tibia 3.75/ metatarsus 3.25/ tarsus 2.38/ total 18.14; II: 5.00/ 3.13/ 3.25/ 3.38/ 2.50/ 17.26; III: 4.88/ 2.75/ 3.00/ 4.75/ 2.88/ 18.26; IV: 6.00/ 3.25/ 4.50/ 6.63/ 3.38/ 23.76. Spination: palp: femur d0-0-1-0-1p-0, patella p1-0-1, tibia v1-1-1r-3ap, p1-1ap; legs: I: femur d1-1-1-1-1-1p, tibia v0-1-0-1ap, p0-0-1-0, metatarsus v1r-0-0; II: femur d1-1-1r, patella p1-0-1-0, tibia v0-1-0-1ap, p0-1-1-0, metatarsus v1p-1r-1-1ap; III: femur d1, p0-1-1, r0-1-1-1, patella p0-1-0, r1-1-1, tibia d1-1p-0-1-1, v0-1-0-3ap, p0-1-0-0, r1-0-0, metatarsus d1p-1p-1r-2, v1-1r-1r-3ap, p1-1-1, r1-1-1; IV: femur d1-0-1p, p0-0-1, patella p1-0-0, r1-1-1, tibia v0-1-0-3ap, p0-1-0-1-0, r0-1-0-1-0, metatarsus d1p-1p-1r-1p, v1r-1p-1r-2-3ap, p1-1-1, r1-1-1. Metatarsus I with a light basal curvature. Palpal tarsal claw with four strong teeth. Scopulae on tarsi I-II and metatarsi I symmetric and metatarsi II asymmetric. Scopula on tibia I 6/7, dense. Scopulae slightly divided by thick and short setae on tarsi III, basally by sparse rows with 1-2 setae, apical region more concentrated with 1-2 setae. Tarsi IV divided by thick and long setae, rows with 3-4 setae, concentrated on apex (Fig. 67). STC with 6-8 teeth on tarsi I, 7-9 on tarsi II-IV. PLS: basal, median and apical segments 1.50, 0.90, 0.50 long, respectively. Spermathecae with the receptacle short and spiralled, enlarged on apex, supraspermathecal chamber short with reduced sclerotization with light degree of quinization, apex of receptacle globose (Fig. 42).

Variation. Males (n=19): total length, 14.62-19.25; endites with 19-31 cuspules, labium with 1-5 cuspules.

Distribution. Known from Cerrado (Brazilian savanna), north of the state of São Paulo (Fig. 80).

### *Pycnothele araraquara* sp. nov.

(Figs 43-46; 68; 80)

Type material. Male holotype from Araraquara (21°08'S; 48°01'W), São Paulo, Brazil, XI.2005, C. S. Pinto *leg.*, deposited in IBSP 112323. Paratypes: two males, same locality as holotype, 24.XI.1987, Prefeitura Municipal de Araraquara *leg.*, deposited in IBSP 113021, 161779.

Additional material examined. BRAZIL, São Paulo: Araraquara (21°08'S; 48°01'W), ♂, 27.IX.2013, Gerência de controle de vetores *leg.* (IBSP 165023).

**Etymology.** The species epithet is a noun in apposition taken from type locality.

**Diagnosis.** Males of *P. araraquara* sp. nov. resemble *P. singularis* and *P. jatai* sp. nov. by the long and narrow palpal bulb, with short keels and by the retrolateral spines of metatarsi I with elevated base, but differ from *P. singularis* and *P. jatai* sp. nov. by the longer embolus (Figs 44-46) and the aspect of the scopula division on tarsi IV having longer and thinner sparsely spaced setae (Fig. 68).

**Description.** Male (holotype). Coloration in ethanol: Carapace reddish brown, orange legs and brown abdomen. Total length, 16.38. Carapace 8.00 long, 6.70 wide. Abdomen 8.38 long, 4.50 wide. Fovea 1.00. Clypeus 0.50. Eyes: AME 0.26, ALE 0.31, PME 0.23 and PLE 0.28. Basal segment of chelicerae with 8/11 teeth, with ca. 18 smaller teeth. Labium 0.50 long, 1.25 wide, with three cuspules. Endites with 22/24 cuspules. Sternum ovate 4.00 long, 3.50 wide, slightly domed. Six sternal sigillae, four anterior marginal and two posterior submarginal, two times the size of anterior, distant from margin half size of posterior sigillae. Palp: femur 4.87/ patella 2.00/ tibia 2.62/ tarsus 1.12/ total 10.61; Leg I: femur 6.62/ patella 4.12/ tibia 4.87/ metatarsus 5.62/ tarsus 3.37/ total 24.60; II: 6.37/ 3.62/ 4.62/ 5.50/ 3.62/ 23.73; III: 6.25/ 3.12/ 4.50/ 7.12/ 4.37/ 25.36; IV: 7.37/ 3.62/ 6.25/ 8.25/ 4.50/ 29.99. Spination: palp: femur d0-1p-1-0, patella p1-0-1, tibia p1-1-1; Legs: I: femur d1-1r-1-1r-1r-1p, patella d1p-0-1ap, p1-1-1, tibia v1-1r-1-1p-1-1r-1ap, p0-1-0-1-0, r0-1-0, metatarsus d0-0-1p-1r-0, v1p-1p-1r-1r-1p, p1-1-1-1ap, r0-0-2; II: femur d1-1r-1-1r-1-1r-1r-1p, p0-0-1ap, patella p1-1-1, tibia v1p-1-1r-2-1r-3ap, p0-1-0-1-0, metatarsus d0-1p-0-1r-0, v1p-1r-1-1ap, p1-1-0-1, r0-1-0-1; III: femur d1-1-1r-1p-1-1r-1p-1r-1p-1ap, r0-0-1; patella p1-1-1, r1-1-1, tibia d1-1-1p-1p-1, v2-2-3ap, p1-0-0, r1-0-1-0, metatarsus d1-1p-1r-1r-1p-1r-1p, v1-1p-2-3ap, r1-1-1; IV: femur d1-1-1p-1-1-1p-1r-1p-1r; patella p1-0-0, r1-1-1, tibia d1-1-1, v2-1-1p-3ap, p1-0-1, r1-0-1, metatarsus d1-1p-1r-2-1, v1-1p-1-1p-1-3ap, p1, r1-1-1. Metatarsus I with light basal curvature. Scopulae on tarsi I-IV and metatarsi I symmetric and metatarsi II asymmetric. Tarsi IV slightly divided by thick and short setae (Fig. 68). STC with 8-10 on tarsi I, 9-11 on tarsi II, 9-12 on tarsi III-IV. PLS: basal, median and apical segments 1.25, 0.62, 0.25 long, respectively. Palpal bulb narrow with strong keels slightly elevated (12-14), spermathecal duct slightly sinuous, long embolus with soft ventral curvature (Figs 44-46). Palpal tibia with four strong spines in prolateral view (Fig. 43).

Female. Unknown.

Variation. Males (n=3): total length, 15.1-18.5; endites with 19-28 cuspules, labium with 2-3 cuspules.

Distribution. Known from Cerrado (Brazilian savanna), in the state of São Paulo, Brazil (Fig. 80).

### *Pycnothele auronitens* (Keyserling, 1891)

(Figs 47-51; 69-70; 80)

*Trechona auronitens* KEYSERLING, 1891:18, pl. 1, fig. 3 (male holotype from Taquara (29°38'60"S-50°46'60"W), Rio Grande do Sul, Brazil, 07.I.1890, deposited in BMNH, Ihering *leg.*, examined by photos).



Figs 43-46. *Pycnothele araraquara* sp. nov. (male holotype): 43, left palpal tibia, prolateral view; male palpal bulb: 44, prolateral view; 45, dorsal view; 46, retrolateral view. Scale bars = 1 mm.

*Metriopelma auronitens*: POCKOCK, 1903:114; MELLO-LEITÃO, 1923:173.

*Crypsidromus auronitens*: SIMON, 1903:931.

*Pycnothelopsis auronitens*: PÉREZ-MILES & CAPOCASALE, 1983.

*Pycnothele auronitens*: GERSCHMAN & SCHIAPELLI, 1970:61; RAVEN, 1985:100; PLATNICK, 2014.

Additional material examined. BRAZIL, **Rio Grande do Sul**: Porto Alegre (29°10'30"S; 51°05'00"W), ♂, II.1962, F. Siberbauer leg. (IBSP 13022); Cidreira (30°11'00"S; 50°13'00"W), 20♂, 17.IV.2003 (MCTP 22185-22188; 22190-22193), 8♂, 10.VIII.2003 (MCTP 22221-22224; 22227), 1j, 20.II.2004 (MCTP 22258), 14♂, 29.XI.2003 (MCTP 22249-22252; 22255; 22256), 2♂ (IBSP 113179; 144806), 8♂, 06.IX.2003 (MCTP 22228-22234), 5♂, 1♀, 1j, 04.X.2003 (MCTP 22237-22239), ♂ (MZSP 42544), 18♂, 01.XI.2003 (MCTP 22240-22245; 22247; 22248), 2♂, 17.V.2003 (MCTP 22196, 22201), ♂ (MCN 49392), 3♂, 14.VI.2003 (MCTP 22210; 22211), all collected by J. A. M. Pinto; Capão do Leão (31°46'00"S-52°30'00"W), 5♂, 21.XI.2002 (MCTP 14752-14755), 2♂, 30.X.2002 (MCTP 14759; 14760) all collected by E.N.L. Rodrigues.

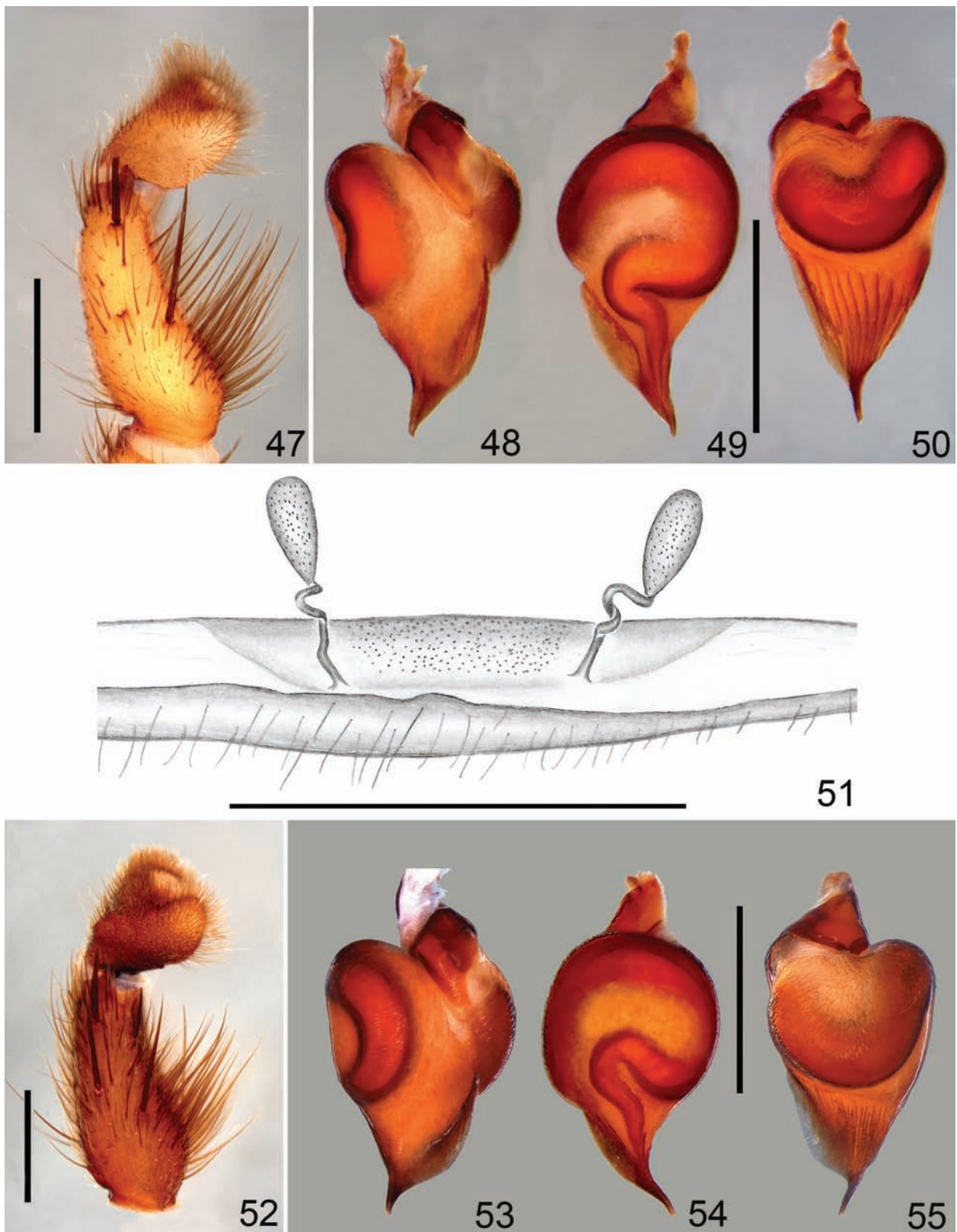
**Diagnosis.** Males of *P. auronitens* resemble *P. auripila* by the smaller body (11.60-14.10), and by the curvature of the spermatic duct which is strongly sinuous, but differ by the shorter and thicker embolus, in ventral view (Figs 48-50) and palpal bulb with 10-13 keels. Females resemble *P. singularis*, *P. jatai* sp. nov. and *P. auripila* and by the less elevated supraspermathecal chamber, but differ from *P. auripila* by the globose apex of the receptacle, from *P. singularis* by the shorter duct and from *P. jatai* sp. nov. by the less spiralled duct (Fig. 51).

**Redescription.** Male (MCTP 22238). Coloration in ethanol: carapace and legs yellowish light-brown with golden dense pubescence. Abdomen light brown with brown chevron in dorsal view and covered with few setae. Total length, 13.50. Carapace, 7.38 long, 5.12 wide. Abdomen 6.20 long, 3.75 wide. Fovea 0.63. Clypeus 0.45. Eyes: AME 0.25, ALE 0.27, PME 0.15 and PLE 0.24. Basal segment of chelicerae with eight teeth, with 12-13 basal

smaller teeth. Labium 0.36 long, 0.75 wide, with five cuspules. Endites with 27-28 cuspules. Sternum ovate 3.13 long, 2.50 wide, slightly domed. Six sternal sigillae, four anterior marginal and two posterior submarginal, two times the size of anterior. Palp: femur 2.86/ patella 1.50/ tibia 1.75/ tarsus 0.75/ total 6.86; Leg I: femur 4.75/ patella 3.00/ tibia 3.50/ metatarsus 3.36/ tarsus 2.50/ total 17.11; II: 4.63/ 2.63/ 3.13/ 3.00/ 2.50/ 15.86; III: 4.75/ 2.13/ 2.86/ 4.75/ 2.86/ 17.35; IV: 5.63/ 2.25/ 4.63/ 6.50/ 3.36/ 22.37. Spination: palp: femur d1-1-2p-1, patella p1-0-1, tibia p1-1-1, r0-0-1; Legs: I: femur d1-1-1-1r-1-1r-1p, patella p0-0-1, tibia v2-3-1p-1ap, p0-1-0-1-0, metatarsus v2-0-2-0, p1-1-1, r0-1-0; II: femur d1-1-1-1-1r-1p-1p-1r, patella p0-0-1, tibia v1-2-2ap, p0-1-0-1-0, metatarsus v2-1r-1ap, p1-1-1, r0-1-0; III: femur d1-1r-1p-1-1r-1p-1-1p-1r; patella p1-0-0, r1-1-1, tibia d2-0-0-1, v2-2-2ap, p0-1-0-1, r1-0-1-0, metatarsus d2-1r-2, v2-2-3ap, p1-1-1ap, r1-1-1; IV: femur d1-1-1-1-1p-1p-1r; patella p1-0-0, r1-1-1, tibia d2-0-0, v1-1-2-3ap, p0-1-0-1-0, r1-1-1, metatarsus d1p-1r-1p-1r-2, v1r-1p-1r-1p-1r-3ap, p1-1-1, r1-1-1. Metatarsus I with a light basal curvature. Scopulae on tarsi I-II and metatarsi I symmetric and metatarsi II asymmetric. Scopulae slightly divided by thin setae on tarsi III and IV (Fig. 69). STC with 6-8 teeth on tarsi I-II, 8-10 on tarsi III and 9-11 on tarsi IV. PLS: basal, median and apical segments 0.86, 0.36, 0.13 long, respectively. Palpal bulb pyriform with 11 strong keels, spermatic duct strongly sinuous, embolus short (Figs 48-50). Palpal tibia with three strong spines in prolateral view (Fig. 47).

Female (MCTP 22238). Coloration as in male, less pubescence. Total length, 17.63. Carapace 7.75 long, 5.62 wide. Abdomen 9.88 long, 5.75 wide. Fovea 0.88. Clypeus 0.55. Eyes: AME 0.24, ALE 0.32, PME 0.15 and





Figs 47-55. 47-51. *Pycnothele auronitens* (Keyserling, 1891) (male and female MCTP 22238): 47, left palpal tibia, prolateral view; male palpal bulb: 48, prolateral view; 49, dorsal view; 50, retrolateral view; 51, spermathecae, ventral view. 52-55. *Pycnothele auripila* (Mello-Leitão, 1946) (male MACN 6343): 52, left palpal tibia, prolateral view; male palpal bulb: 53, prolateral view; 54, dorsal view; 55, retrolateral view. Scale bars = 1 mm.

PLE 0.25. Basal segment of chelicerae with eight teeth, with 12-13 basal smaller teeth. Labium 0.50 long, 1.20 wide, with four cuspules. Endites with 22-24 cuspules. Sternum ovate 3.40 long, 3.00 wide, slightly domed. Six sternal sigillae, four anterior marginal and two posterior submarginal, two times the size of anterior. Palp: femur 3.50/ patella 1.90/ tibia 2.10/ tarsus 2.10/ total 9.60; Leg I: femur 4.30/ patella 3.40/ tibia 3.00/ metatarsus 2.70/ tarsus 1.80/ total 15.20; II: 4.10/ 2.80/ 3.00/ 2.80/ 2.10/ 14.80; III: 4.20/ 2.50/ 2.80/ 3.90/ 2.60/ 16.00; IV: 5.50/ 3.00/ 4.30/ 5.50/ 2.70/ 21.00. Spination: palp: femur p1, patella p1-0-0, tibia v2-1r-1p-3ap, p0-1-0, tarsus v1-0-0; Legs: I: femur d1-0-0-1p, tibia v1-1-1ap, metatarsus v1r-0-1r-0; II: femur d1-0-1p, patella p0-0-1, tibia d0-0-1p-0, v1-1-1-1ap, metatarsus v2-1r-2ap; III: femur d1-0-1p, patella p1-0-0, r1-1-1, tibia d2-0-10, v0-2-0-2ap, p0-1-0-1, r1-0-1, metatarsus d1p-1r-1p-1r-1-2, v2-1r-2-3ap, r1-1-1; IV: femur d1-0-0-1p, patella p1-0-0, r1-1-1, tibia v1r-2-2ap, p1-1-1, r1-0-1-0, metatarsus d1p-1r-1p-1r-2, v2-1r-2-3ap, p1-1-1-1, r1-1-1. Metatarsus I with a light basal curvature. Palpal tarsal claw with five strong teeth. Scopulae on tarsi I-II and metatarsi I symmetric and metatarsi II asymmetric. Scopulae slightly divided by thin setae on tarsi III and strongly divided by thick setae on tarsi IV (Fig. 70). STC with five teeth on tarsi I, 6-7 on tarsi II-III and 7-8 on tarsi IV. PLS three segmented: basal, median and apical segments 0.70, 0.50, 0.20 long. Spermathecae formed by receptacles, a short lightly sclerotized supraspermathecal chamber, with elevated and spiralled ducts, elongated apex (Fig. 51).

Variation. Males (n=27): total length, 11.60-14.10; endites with 21-32 cuspules, labium with 3-6 cuspules.

Distribution. Known from the state of Rio Grande do Sul, Brazil (Fig. 80), occurring in Atlantic Forest, in mixed ombrophilous forest (known as Brazilian Pine Forests or "Floresta de Araucária") with savannas at higher altitudes, and dense ombrophilous forests (Atlantic Rainforest) at lower altitude slopes, more informations see INDICATTI *et al.* (2008a:531; 2008b:31).

### *Pycnothele auripila* (Mello-Leitão, 1946) sp. reval.

(Figs 52-55; 71; 80)

*Psalistops auripilus* MELLO-LEITÃO, 1946:8, fig. 12; BÜCHERL, 1957:388 (male holotype from Florida, Uruguay, deposited in FCE-MY 559, examined).

*Pycnothelopsis modesta* SCHIAPELLI & GERSCHMAN, 1971:61 (transf. from *Psalistops*, syn. with *P. modesta*, rejected by CAPOCASALE & PÉREZ-MILES, 1979).

*Pycnothelopsis auripilus*: CAPOCASALE & PÉREZ-MILES, 1979:3 (male removed from synonymy; described female = *Acanthogonatus tacuarensis*); PÉREZ-MILES & CAPOCASALE, 1982:6.

*Pycnothelopsis auronitens*: PÉREZ-MILES & CAPOCASALE, 1983:2.

*Androthelopsis auripilus*: RAVEN, 1985:102 (removed from syn. of *Pycnothele auronitens*).

*Pycnothele auronitens*: PÉREZ-MILES & CAPOCASALE, 1988:284, 289 (Syn.); GOLOBOFF, 1995:133, PLATNICK, 2014.

Additional material examined. URUGUAY, Maldonado: Lavallela, Sierra de las Animas (34°36'S, 55°17'W), ♂, 09.VII.1967,

L. Zolezzi *leg.* (MACN 6343); Camiño Penitente (34°20'S, 55°07'W), ♂, 09.VIII.1997, C. Toscano *leg.* (FCE-MY 0389).

Note. The revalidation of *Pycnothele auripila* is here proposed after examination of the type material, and more two males from Uruguay and several males and one female from the state of Rio Grande do Sul, Brazil. The female of *P. auronitens* described by GOLOBOFF (1995) is in fact a female of *P. auripila* therefore providing here the first description of the female of *P. auronitens*. The diagnostic features corroborate to the revalidation of *P. auripila* (see diagnosis below).

Diagnosis. Males of *P. auripila* resemble *P. auronitens* by the smaller body size (14.00-15.70), and by the strongly sinuous curvature of the spermatic duct, but differ by the apical region of the embolus long and narrower (Figs 53 vs 48); embolus curvate to opposite side (Figs 55 vs 50); greater number of keels (25-30 vs 10-13); smaller spacing between the keels (Figs 55 vs 50); keels lower (Figs 55 vs 50); apical part of the duct more strongly curved (Figs 54 vs 49), basal part of the duct distant from subtegulum, hence the keels are shorter (Figs 55 vs 50); LK longer (Figs 48, 50 vs 53, 55); general colour brown. Females resemble *P. singularis* and *P. auronitens* by the smaller body size and the less developed supraspermathecal chamber, but differ by the less spiraled ducts (see GOLOBOFF, 1995:134, fig. 116A).

Description. See GOLOBOFF (1995:133).

Variation. Males (n=3): total length, 14.00-15.70; endites with 20-37 cuspules, labium with 4-5 cuspules.

Distribution. Known only from Uruguay (Fig. 80).

### *Pycnothele modesta* (Schiapelli & Gerschman, 1942)

(Figs 72-79)

*Pycnothelopsis modestus* SCHIAPELLI & GERSCHMAN, 1942:320, figs 4-6 (male holotype from Argentina, Colonia Dora, Santiago del Estero, deposited in MACN 756, examined); SCHIAPELLI & GERSCHMAN, 1967:59.

*Pycnothelopsis modesta*: BÜCHERL, 1957:405.

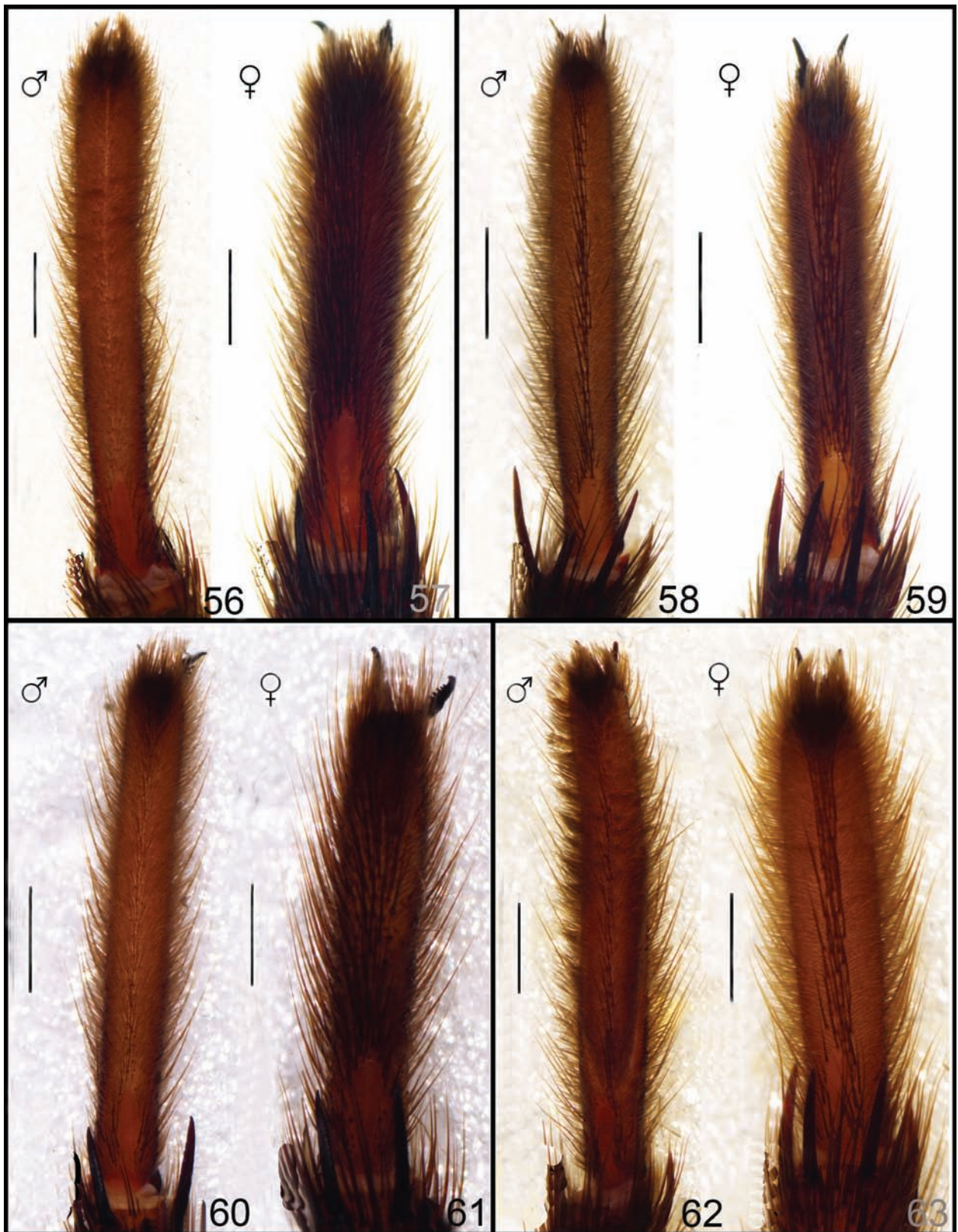
*Androthelopsis modestus*: RAVEN, 1985:101.

*Pycnothele singularis*: PÉREZ-MILES & CAPOCASALE, 1988:284, 291.

*Pycnothele modesta*: GOLOBOFF, 1995:130; PLATNICK, 2014.

Additional material examined. ARGENTINA: Salta: Orán (23°08'S, 64°20'W), ♀, 17.XII.1945, Preratti *leg.* (MACN); Entre Ríos: Paraná (31°45'S, 60°30'W), ♂, IV. 1962, L. Japón *leg.* (MACN 5835).

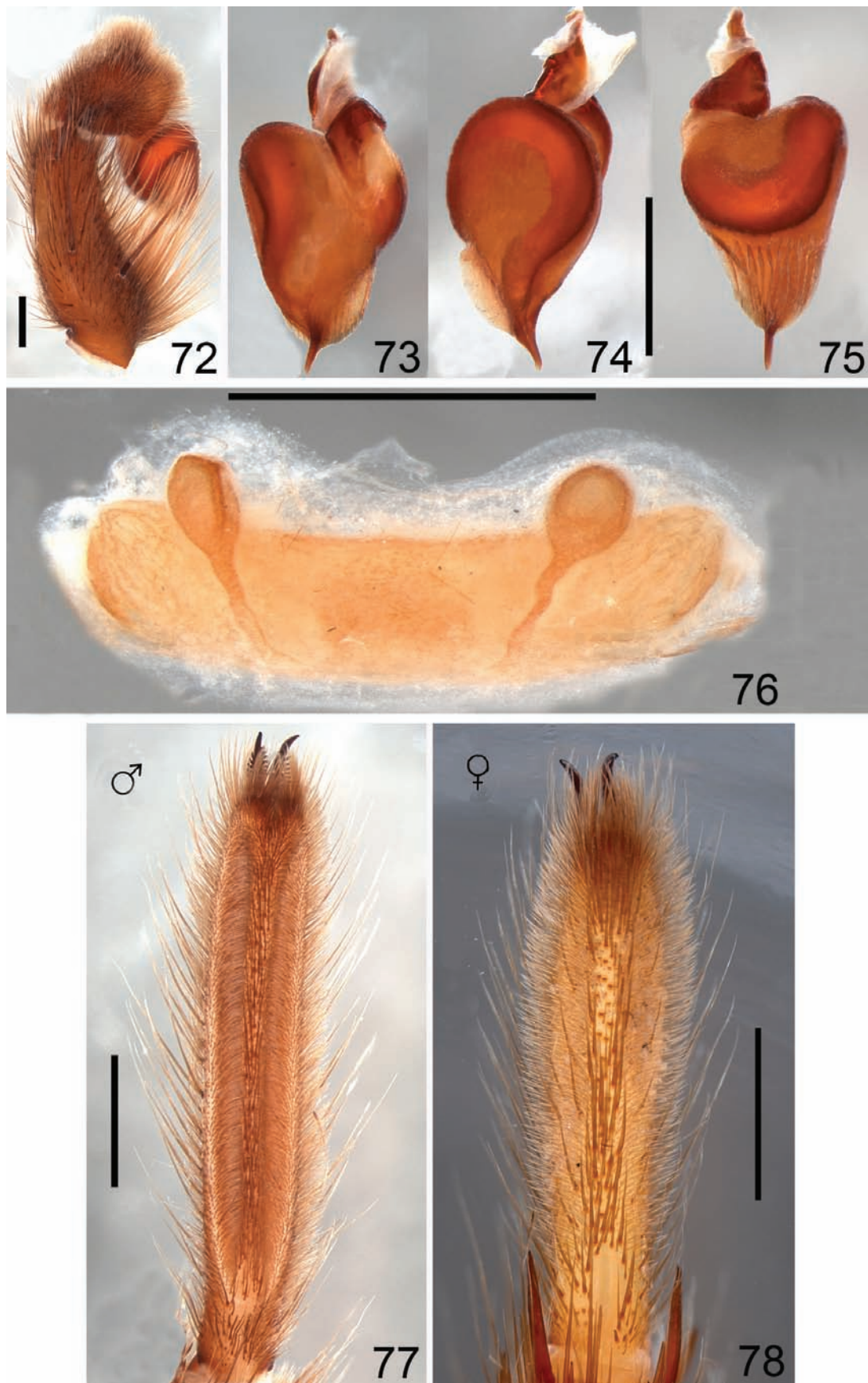
Diagnosis. Males of *P. modesta* resemble *P. perdita*, *P. gauderio* sp. nov. and *P. rubra* sp. nov. by the large palpal bulb, differing from *P. rubra* by the projected keels, but similar to *P. perdita* and *P. gauderio* sp. nov. by the projected keels, differing from both these species by having more keels (10-12) (Figs 73-75). Females resemble *P. singularis*, *P. auronitens*, *P. auripila* and *P. jatai* sp. nov. by the less developed supraspermathecal chamber, but differing from this species by the ducts without spirals. Females are similar to *P. gauderio* sp. nov. by having a short and non spiraled ducts, but differ in a less developed supraspermathecal chamber and the globose apex of receptacle (Fig. 76).



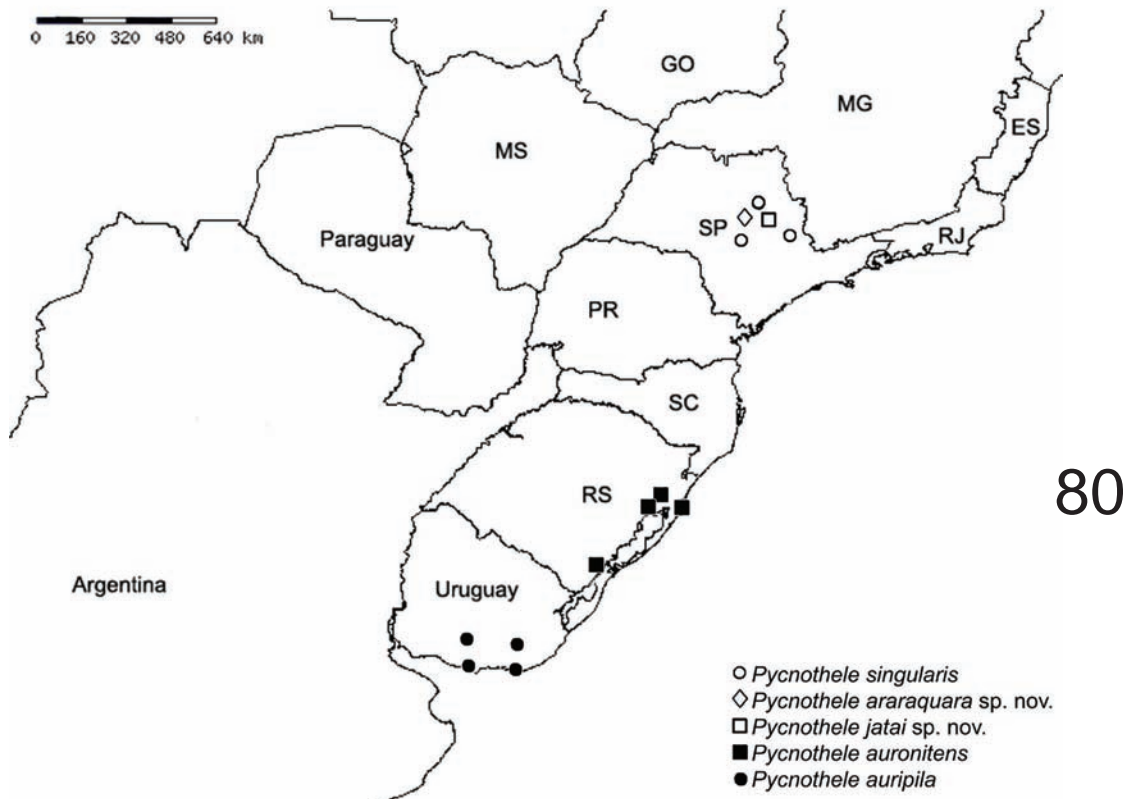
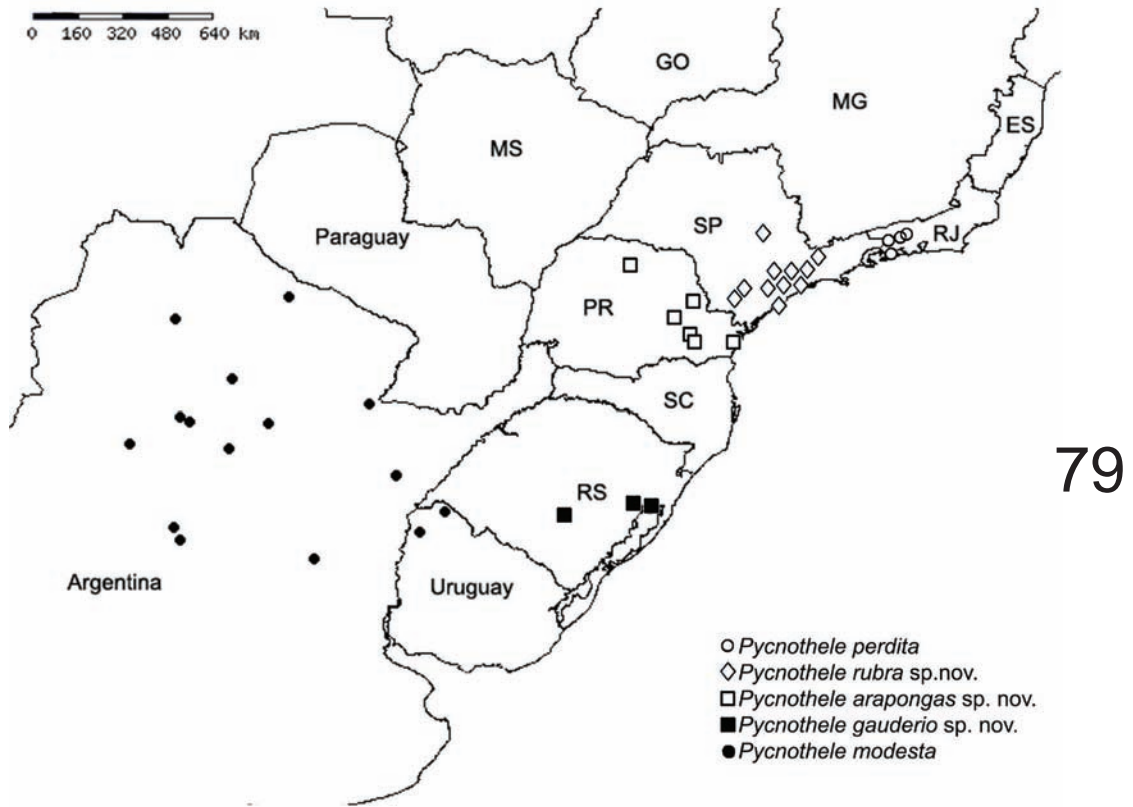
Figs 56-63. Scopulae of leg IV: 56, 57, male and female of *Pycnothele perdita* Chamberlin, 1917; 58, 59, *P. gauderio* sp. nov.; 60, 61, *P. rubra* sp. nov.; 62, 63, *P. arapongas* sp. nov. Scale bars = 1 mm.



Figs 64-71. Scopulae of leg IV: male and female of *Pycnothele singularis* (Mello-Leitão, 1934) (64, 65) and *P. jatai* sp. nov. (66, 67); 68, male of *P. araraquara* sp. nov.; 69, 70, male and female of *P. auronitens* (Keyserling, 1891); 71, male of *P. auripila* (Mello-Leitão, 1946). Scale bars = 1 mm.



Figs 72-78. *Pycnothele modesta* (male MACN 5835 and female MACN): 72, left palpal tibia, prolateral view; male palpal bulb: 73, prolateral view; 74, dorsal view; 75, retrolateral view; 76, spermathecae, ventral view. Scopulae of leg IV: 77, 78, male and female. Scale bars = 1 mm.



Figs 79, 80. Distribution map of species of the genus *Pycnothele*.

Description. See GOLOBOFF (1995, 114A-D, 115A-I).

Distribution. Known from Argentina and Uruguay (Fig. 79).

#### Misplaced species

#### *Rachias piracicabensis* Piza, 1938 comb. restored

*Rachias piracicabensis* PIZA, 1938:21 (female holotype from Piracicaba, São Paulo, deposited in IBSP 138189, examined); LUCAS *et al.*, 1986:6, figs 4-6.

*Rachias intermedia* SOARES, 1944:160, figs 5-6 (male holotype from Monte Alegre, Amparo, São Paulo, Brazil, deposited in MZSP, not examined); LUCAS *et al.*, 1986:6 (Syn.).

*Androthelopsis intermedia*: RAVEN, 1985:106.

*Androthelopsis piracicabensis*: PLATNICK, 1989:84.

*Pycnothele piracicabensis*: PLATNICK, 2014.

Remarks. After the examination of the female holotype and several specimens from IBSP, *Pycnothele piracicabensis* is transferred to *Rachias*, restoring the original combination. This transfer is confirmed by the cladistic analysis performed by GOLOBOFF (1995, fig. 63, node 141), and by the presence of the following synapomorphies of *Rachias*: males with scopula on tarsi IV narrow, confined to the ventral surface, and laterally delimited by spines; females have the labium almost square, with short endites, posteriorly produced, and with 20 cuspules; presence of two spines on the ventral female palpal tarsus, in the apical third (GOLOBOFF, 1995). Additional features also confirmed the position of the species in *Rachias*: absence of deep ventral excavation on male palpal tibia; LK absent on male palpal bulb; carapace with light pubescence in males and females; absence of supraspermathecal chamber and by the presence of basal dome below receptacle in females (see LUCAS *et al.*, 1986, figs 4-6).

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