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**Research article**

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# Genus *Schismatothele* Karsch, 1879 (Araneae, Theraphosidae): taxonomic notes and seven new species description

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**Abstract.** Seven new species of *Schismatothele* Karsch, 1879 (Araneae, Theraphosidae) are described, almost doubling the diversity of the genus: *S. caeri* sp. nov.; *S. caiquetia* sp. nov.; *S. merida* sp. nov.; *S. moonenorum* sp. nov.; *S. quimbaya* sp. nov.; *S. timotocuica* sp. nov. and *S. wayana* sp. nov. An identification key for all species of *Schismatothele* (except *S. kastoni*) is presented, as well as a complementary diagnosis for the genus. Also, a standardized nomenclature is proposed to describe the prolateral keels of male palpal bulbs of species of *Schismatothele*.

**Keywords.** Mygalomorphae, taxonomy, tarantula, new world, spider.

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## Introduction

Theraphosidae Thorell, 1870 is the most diverse family of the Mygalomorphae Pocock, 1892 spiders, with 12 subfamilies mainly found in tropical and subtropical regions (Luddecke *et al.* 2018; Foley *et al.* 2019). Five of these subfamilies have representatives in South America: Avicullariinae Simon, 1874, 'Ischnocolinae' Simon, 1892, Psalmopoeinae Samm & Schmidt, 2010, Schismatothelinae Guadanucci 2014, and Theraphosinae Thorell, 1870 (Guadanucci 2014; Lüddecke *et al.* 2018).

Based on all morphological characters, Guadanucci (2014) proposed the subfamily Schismatothelinae, which comprise the genera *Euthycaelus* Simon, 1889; *Neoholothele* Guadanucci & Weinmann, 2015; *Schismatothele* Karsch, 1879; *Sickius* Soares & Camargo, 1947 and *Guyruita* Guadanucci *et al.*,

2007. He also discussed the non-monophyly of Ischnocolinae and determined as Ischnocolinae strictu sensu the group composed by the following genera: *Ischnocolus* Ausserer, 1871; *Trichopelma* Simon, 1888; *Acanthopelma* Reichling, 1997; *Reichlingia* Rudloff, 2001; as well *Holothele longipes* Koch, 1875 and *Holothele culebrae* Petrunkevitch, 1929. According to him, other Neotropical genera, such as *Dolichothele* Mello-Leitão, 1923 and *Catumiri* Guadanucci, 2004, may not belong to these two subfamilies.

Using six molecular markers, Lüddecke *et al.* (2018) found no support for a monophyly of Schismatothelinae. However, their analysis was limited because it did not include representatives of all genera of the subfamily. Hüsser (2018), and Foley *et al.* (2019), found similar results to those of Lüddecke *et al.* (2018), but with the same sampling limitation. Both papers suggest that Schismatothelinae may be closely related to Psalmopoeinae. Later, Mori & Bertani (2020) based on morphological cladistics analyses, found no support for the monophyly of Schismatothelinae either. Their results shows that the genera *Guyruita* and *Sickius* are related, but in a different clade of the related genera *Euthycaelus*, *Neoholothele* and *Schismatothele* (Mori & Bertani 2020: fig. 17). In addition, Bertani & Almeida (2021) described the genus *Yanonamius* and proposed it as closely related to *Schismatothele* and *Euthycaelus.* Recently, Cifuentes & Bertani (2022) discuss that according to previously published data, Schismatothelinae should be synonymized with Psalmopoeinae to be monophyletic. However, considering the dubious relationship with Avicullariinae, they propose that Psalmopoeinae be treated as a separate subfamily to preserve nomenclatural stability.

Karsch (1879) established *Schismatothele* as a monotypic genus, describing *Schismatothele lineata* Karsch, 1879 based on a single female from Caracas, Venezuela. Later, based on the presence of a cracked tarsi IV (pseudo-segmentation), Raven (1985) considered it a junior synonym of *Holothele*, along with *Hemiercus* Simon, 1903 and *Euthycaelus*. After that, Rudloff (1997) proposed the revalidation of these three genera based on genitalia morphology. Later, Panzera *et al.* (2011) described the first male representative of the genus, *Schismatothele benedettii* Panzera, Perdomo & Pérez-Miles, 2011 from the Brazilian Amazon.

Guadanucci & Weinmann (2014) revised *Schismatothele*, redescribing *S. lineata* and considering as senior synonym of *Hemiercus*, transferring *Schismatothele inflata* (Simon, 1889) and *Schismatothele modesta* (Simon, 1889). They also propose *Schismatothele kastoni* (Caporiacco, 1955) as species inquirenda, since they did not analyze the type material and the original description did not provide enough information to decide whether *S. kastoni* should be placed in *Schismatothele* or *Euthycaelus*. After that, Valencia-Cuéllar *et al.* (2019) described new species of *Schismatothele* for Colombia: *Schismatothele olsoni* Guadanucci, Perafán & Valencia-Cuéllar, 2019; *Schismatothele weinmmani* Guadanucci, Perafán & Valencia-Cuéllar, 2019 and *Schismatothele hacaritama* Perafán, Valencia-Cuéllar & Guadanucci, 2019. They also updated the diagnosis for the genus and subfamily. Finally, Mori & Bertani (2020), transferred *Schismatothele opifex* (Simon, 1889) from *Psalistops* Simon, 1889 and synonymized *Epipedesis solitarius* Simon, 1889 with *S. lineata*.

Today, the genus counts 9 species with occurrences in Colombia, Brazil and Venezuela. A review of material deposited in museum collections revealed seven new species of *Schismatothele* here described, expanding its distribution records to two other countries: French Guiana and Trinidad and Tobago. We propose an identification key for all species of *Schismatothele*, except *S. kastoni* which we keep as species inquirenda following Guadanucci & Weinmann (2014). Finally, we propose a standardization of the nomenclature used to describe the keels present in the copulatory bulbs of some species of *Schismatothele*.

## Material and methods

### Abbreviations and acronyms

#### Institutions

Material deposited in the following collections examined. Abbreviation, institution, city, country and curator are as follows:

IBSP = Instituto Butantan, São Paulo, Brazil (A.D. Brescovit)
ICN-Ar = Arachnological Collection, Instituto de Ciencias Naturales, Universidad Nacional de Colombia, Bogotá, Colombia (E. Flórez)
MPEG = Museu Paraense Emílio Goeldi, Belém, Pará, Brazil (A.B. Bonaldo)
MZSP = Museu de Zoologia da Universidade de São Paulo, São Paulo, Brazil (R. Pinto-da-Rocha)

#### General structures abbreviations

#### Eyes

ALE = anterior lateral eyes
AME = anterior median eyes
PLE = posterior lateral eyes
PME = posterior median eyes

#### Palpal bulb

A = apical keel
ASt = apical striae
E = embolus
PA = paraembolic apophysis
PI = prolateral inferior keel
PPA = prolateral paraembolic keel
PS = prolateral superior keel
PT = prolateral tegular apophysis
RPA = prolateral paraembolic keel
RSt = retrolateral striae
RT = retrolateral tegular apophysis
VGP = ventral granular process
Vr = ventro-retrolateral keel

#### Spermathecae

DS = dorsal receptacle
VS = ventral receptacle

#### Spines and other setae

ap = apical
d = dorsal
p = prolateral
r = retrolateral
v = ventral

### Analysis and procedures for preparation of material

Photographs and measurements (given in millimeters) were taken using a Leica MC170 digital camera mounted on a Leica M205C stereo microscope with LAS Core software ver. 4.12.0. The length and width of eye tubercle, eyes and interdistances are the maximum values obtained. Terminology of carapace,

labium, sternum, palp and legs segments follows Hamilton *et al.* (2016). Number and disposition of legs and palp spines enumerated from the anterior third to the posterior third, modified from Petrunkevitch (1925). The nomenclatures for keels are from Bertani (2000) with modifications. Morphological characters from Raven (1985).

All spermathecae were dissected and cleaned by the use of a solution of Ultrazyme® (one tablet per 1 ml of distilled water). The structures were immersed in this solution for 24 h at ca 25°C room temperature, resulting in the digestion of the soft tissue. Palpal bulbs were removed from the cymbium and photographed in prolateral, retrolateral, dorsal, ventral and frontal views.

Geographical coordinates are in DMS (Degrees, Minutes, and Seconds). For the distribution data, we consider the information present in previous papers and specimens labels. Maps were made with the SimpleMappr online tool (Shorthouse 2010).

## Results

### *Systematics and taxonomy*

Class Arachnida Cuvier, 1812
Order Araneae Clerck, 1757
Suborder Mygalomorphae Pocock, 1892
Family Theraphosidae Thorell, 1870

Subfamily **Schismatothelinae** Guadanucci, 2014

#### Diagnosis

See Guadanucci (2014: 7), Valencia-Cuéllar *et al*. (2019: 551) and Guadanucci (2020: 77).

#### Genera included

*Euthycaelus* Simon, 1889
*Guyruita* Guadanucci *et al.*, 2007
*Neoholothele* Guadanucci & Weinmann, 2015
*Schismatothele* Karsch, 1879
*Sickius* Soares & Camargo, 1948
*Yanomamius* Bertani & Almeida, 2021

Genus ***Schismatothele*** Karsch, 1879

*Schismatothele* Karsch, 1879: 544.
*Hemiercus* Simon, 1903: 929.

*Hemiercus* – Petrunkevitch 1928: 78. — Roewer 1942: 231. — Bonnet 1957: 2155. — Raven 1985: 153 (synonymy with *Holothele*, rejected by Rudloff 1997: 12). — Guadanucci & Weinmann 2014: 287 (in part, suggests that *Hemiercus kastoni* Caporiacco, 1955 may belong to *Euthycaelus*).

*Schismatothele* – Roewer 1942: 207. — Bonnet 1958: 3944. — Raven 1985: 158 (synonymized to *Holothele*). — Rudloff 1997: 12 (removed from the synonymy with *Holothele*, contra Raven 1985: 158). — Panzera *et al.* 2011: 130. — Guadanucci & Weinmann 2014: 282. — Valencia-Cuéllar *et al*. 2019: 548. — Mori & Bertani 2020: 112, 118 (transferred *S. opifex* from *Psalistops* and synonymized *E. solitarius* to *S. lineata*).

#### Type species

*Schismatothele lineata* Karsch, 1879.

**Diagnosis**

Males of *Schismatothele* can be recognized by the combination of the following characters: palpal tibia swollen (except *S. quimbaya* sp. nov.; Figs 65–66), with several thick spines on the apical third in one row, arranged in one or two groups (Figs 30–31, 38–39, 46–47, 57–57, 72–73) (Guadanucci & Weinmann 2014; Valencia-Cuéllar *et al*. 2019) or in a single linear group (Figs 65–66, 80–81); palpal bulb with subtegulum large and totally fused with tegulum; tegulum rounded at the base (Guadanucci 2020); embolus short with an paraembolic apophysis below, except in *S. caeri* sp. nov., *S. hacaritama* and *S. quimbaya*, which has an apical keel instead (Figs 23–26, 59–62) (Valencia-Cuéllar 2019). Females can be recognized by the spermathecae bulky and heavily sclerotized, except in *S. weinmanni*, which has the ventral receptacle weakly sclerotized with four receptacles divided in dorsal and ventral portions clearly distinguishable (Guadanucci & Weinmann 2014; Valencia-Cuéllar *et al.* 2019).

**Distribution**

Northern Brazil, Colombia, French Guiana, Trinidad and Tobago and Venezuela.

**Species included**

*Schismatothele benedettii* Panzera, Perdomo & Pérez-Miles, 2011; *S. caeri* sp. nov.; *S. caiquetia* sp. nov.; *S. hacaritama* Valencia-Cuéllar, Perafán & Guadanucci, 2019; *S. inflata* (Simon, 1889); *S. kastoni* (Caporiacco, 1955); *S. lineata* Karsch, 1879; *S. merida* sp. nov.; *S. modesta* (Simon, 1889); *S. moonenorum* sp. nov.; *S. olsoni* Guadanucci, Perafán & Valencia-Cuéllar, 2019; *S. opifex* (Simon, 1889); *S. quimbaya* sp. nov.; *S. timotocuica* sp. nov.; *S. wayana* sp. nov.; *S. weinmanni* Guadanucci, Perafán & Valencia-Cuéllar, 2019.

**Identification key for species of *Schismatothele*** (except *S. kastoni*)

**Males** (males of *S. lineata* and *S. opifex* are unknown)

1. Palpal bulb with prolateral keels (Figs 23, 51, 59, 75) ..... 2
– Palpal bulb without prolateral keels (Figs 33, 41, 67) ..... 10

2. Palpal bulb with paraembolic apophysis (Figs 51, 75) ..... 3
– Palpal bulb without paraembolic apophysis, retrolateral branch of tibial apophysis twice longer than prolateral branch (Figs 23, 28, 59, 64) ..... 8

3. Embolus pointing forward. Palpal tibia without ventral middle concavity (Figs 51, 57, 75, 82) .... 4
– Embolus pointing upward. Paraembolic apophysis discrete with apical serrated keel (see Guadanucci & Weinmann 2014: 284, fig. 5a) ..... ***S. inflata*** (Simon, 1889)

4. Paraembolic apophysis with same length or longer than embolus, laterally flattened with rounded end (Figs 75, 83)..... 5
– Paraembolic apophysis shorter than embolus, thin or slightly dorso-ventrally flattened (Fig. 57) .. 7

5. Palpal tibia without medial concavity and one group of spines (Figs 80–81) ..... 6
– Palpal tibia with medial concavity and two groups of spines (see Valencia-Cuéllar *et al*. 2019: 559, fig. 30) .....***S. weinmanni*** Guadanucci, Perafán & Valencia-Cuéllar, 2019

6. Presence of prolateral and retrolateral paraembolic keels. Absence of apical striae. Palpal tibia with two rows of spines (Figs 75–76, 80–81) ..... ***S. wayana*** sp. nov.
– Absence of prolateral and retrolateral paraembolic keels. Presence of apical striae. Palpal tibia with single row of spines (see Panzera *et al.* 2011: 131, figs 2, 4–5) .....
.....***S. benedettii*** Panzera, Perdomo & Pérez-Miles, 2011

7. Short and conical paraembolic apophysis. Presence of ventral retrolateral keel. Presence of retrolateral tegular apophysis (Figs 51–54) .....***S. moonenorum*** sp. nov.
– Paraembolic apophysis dorso-ventrally flattened. Absence of ventral retrolateral keel. Absence of retrolateral tegular apophysis (see Guadanucci & Weinmann 2014: 285, fig. 6a–c) ..... .....***S. modesta*** (Simon, 1889)

8. Palpal bulb without prolateral tegular apophysis, tegulum with ventral processes near embolus. Palpal tibia not swollen (Figs 59–60) ..... 9
– Palpal bulb with prolateral tegular apophysis, absence of ventral granular process. Palpal tibia swollen (Figs 23–26, 30–31) .....***S. caeri*** sp. nov.

9. Tegulum with ventral granular process near to embolus, retrolateral branch of tibial apophysis digitiform (Figs 59–64) ..... ***S. quimbaya*** sp. nov.
– Tegulum with ventral spiniform process near to embolus, retrolateral branch of tibial apophysis very widened and flattened distally (see Valencia-Cuéllar *et al*. 2019: 555, figs 9–16) ..... ..... ***S. hacaritama*** Valencia-Cuéllar, Perafán & Guadanucci, 2019

10. Tegulum piriformis or subrectangular with slightly pronounced prolateral lobe (Figs 41–44, 67–70) .....11
– Tegulum globose with prolateral lobe very pronounced near the embolus (Figs 33–36) ..... .....***S. caiquetia*** sp. nov.

11. Tegulum without ventral granular process. Retrolateral branch of tibial apophysis digitiform at the apex (Figs 67–71) ..... 12
– Tegulum with ventral granular process on a bulge. Retrolateral branch of tibial apophysis flat at the apex (Figs 41–45) .....***S. merida*** sp. nov.

12. Tegulum piriformis. Paraembolic apophysis with rounded tip (see Valencia-Cuéllar *et al*. 2019: 557, figs 17–20) .....***S. olsoni*** Guadanucci, Perafán & Valencia-Cuéllar, 2019
– Tegulum subrectangular. Paraembolic apophysis with straight tip, slightly retrolaterally twisted (Figs 67–70) .....***S. timotocuica*** sp. nov.

**Females** (females of *S. hacaritama*, *S. inflata*, *S. modesta*, *S. moonenorum*, *S. olsoni*, *S. opifex*, *S. quimbaya* and *S. wayana* are unknown)

1. Abdomen with striped pattern (Figs 5, 9, 17) ..... 2
– Abdomen without striped pattern (Figs 1, 13, 15, 21) ..... 5

2. Ventral receptacle of spermathecae not fused or fused only at the base. Dorsal receptacle not fused, with short lobes (Figs 32, 40, 48, 74) ..... 3
– Dorsal and ventral receptacles of spermathecae fused. Dorsal receptacle with long lobes (see Guadanucci & Weinmann 2014: 283, fig. 4a–b) .....***S. lineata*** Karsch, 1879

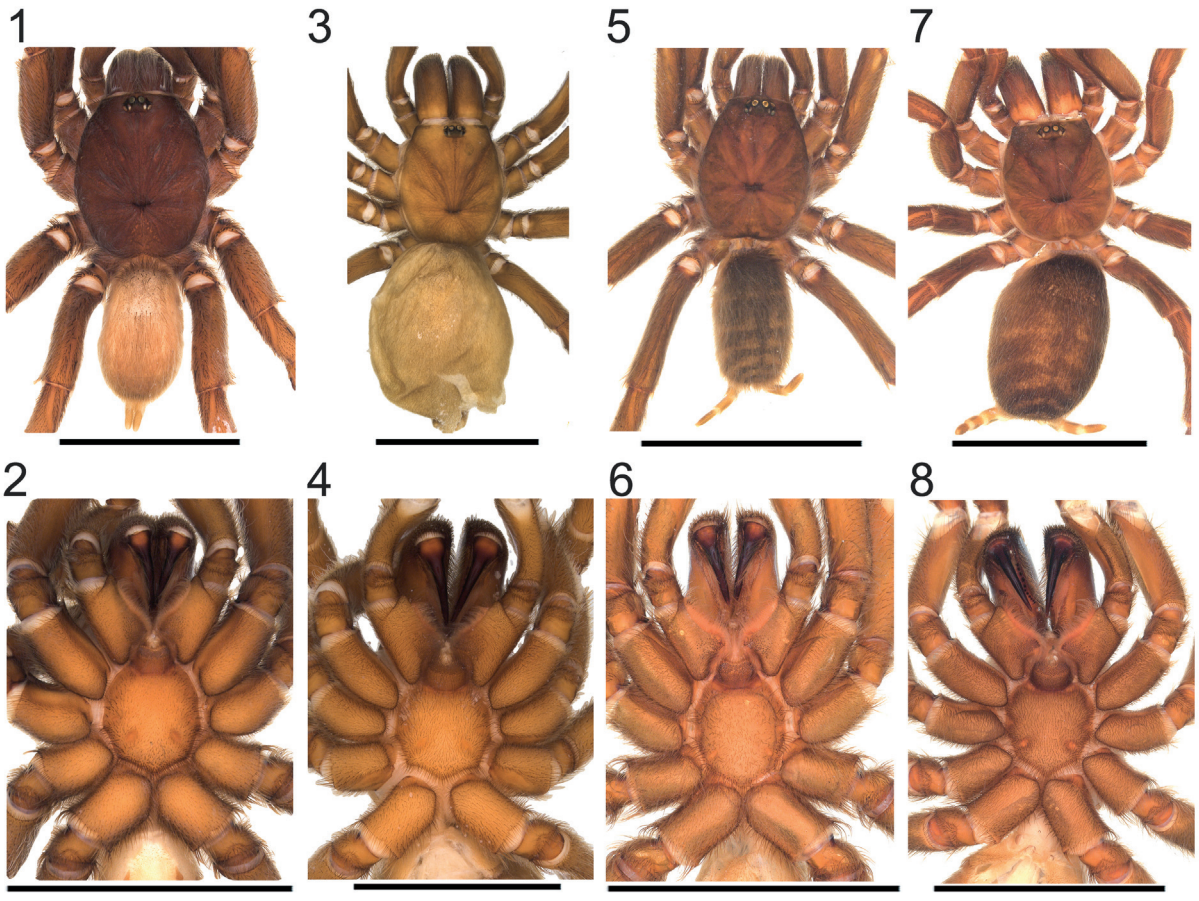
3. Ventral receptacle fused at the base (Figs 40, 50) ..... 4
– Ventral receptacle not fused, with digitiform aspect. Dorsal receptacle globose and slightly pointing inwards (Fig. 74) .....***S timotocuica*** sp. nov.

4. Ventral receptacle elongated, large, flattened at apex. Dorsal receptacle digitiform (Fig. 40) ..... .....***S. caiquetia*** sp. nov.
– Ventral receptacle digitiform. Dorsal receptacle globose or subrectangular (Fig. 48) ..... ..... ***S. merida*** sp. nov.

5. Dorsal receptacles hard, heavily sclerotized (Fig. 32) ..... 6
– Dorsal receptacle soft, without sclerotization (see Valencia-Cuéllar *et al*. 2019: 560, figs 32–34) ... .....***S. weinmanni*** Guadanucci, Perafán & Valencia-Cuéllar, 2019

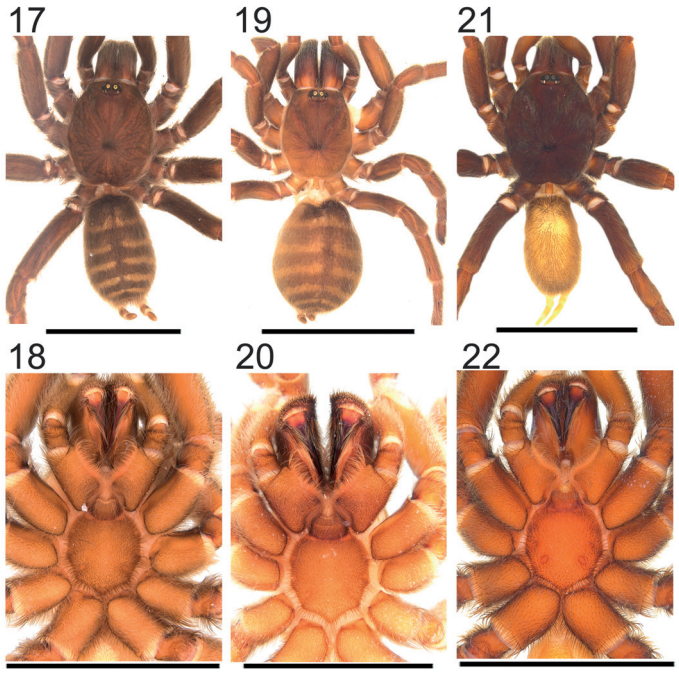
6. Ventral receptacle of spermathecae digitiform and pointing out (Fig. 32) ..... 7
– Ventral receptacle of spermathecae ronded (see Mori & Bertani 2020: 119, fig. 321) ..... .....***S. opifex*** (Simon, 1889)

7. Ventral and dorsal receptacle partially fused, dorsal receptacle flat (see Panzera *et al.* 2011: 131, fig. 7) .....***S. benedettii*** Panzera, Perdomo & Pérez-Miles, 2011
– Ventral and dorsal receptacle not fused, dorsal receptacle slightly oval and pointing outward (Fig. 32) .....***S. caeri*** sp. nov.




**Figs 1–8.** *Schismatothele* spp. **1–4**. *Schismatothele caeri* sp. nov. **1–2**. Holotype, ♂ (MZSP 47440). **1**. Dorsal view. **2**. Prosoma, ventral view. **3–4**. Paratype, ♀ (MZSP 47427). **3**. Dorsal view. **4**. Prosoma, ventral view. – **5–8**. *Schismatothele caiquetia* sp. nov. **5–6**. Holotype, ♂ (MZSP 28423). **5**. Dorsal view. **6**. Prosoma, ventral view. **7–8**. Paratype, ♀ (MZSP 28424). **7**. Dorsal view. **8**. Prosoma, ventral view. Scale bars = 10 mm.


**Figs 9–16.** *Schismatothele* spp. **9–12**. *Schismatothele merida* sp. nov. **9–10**. Holotype, ♂ (MZSP 28411). **9**. Dorsal view. **10**. Prosoma, ventral view. **11–12**. Paratype, ♀ (MZSP 28412). **11**. Dorsal view. **12**. Prosoma, ventral view. – **13–14**. *Schismatothele moonenorum* sp. nov., holotype, ♂ (IBSP 168510). **13**. Dorsal view. **14**. Prosoma, ventral view. – **15–16**. *Schismatothele quimbaya* sp. nov., holotype, ♂ (MZSP 47524). **15**. Dorsal view. **16**. Prosoma, ventral view. Scale bars = 10 mm.




**Figs 17–22.** *Schismatothele* spp. **17–20**. *Schismatothele timotocuica* sp. nov. **17–18**. Holotype, ♂ (MZSP 28420). **17**. Dorsal view. **18**. Prosoma, ventral view. **19–20**. Paratype, ♀ (MZSP 26081). **19**. Dorsal view. **20**. Prosoma, ventral view. – **21–22**. *Schismatothele wayana* sp. nov., holotype, ♂ (MPEG 7363). **21**. Dorsal view. **22**. Prosoma, ventral view. Scale bars = 10 mm.

***Schismatothele caeri*** sp. nov.
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Figs 1–4, 23–32, 87; Table 1

**Diagnosis**

Males resemble those of *S. hacaritama* and *S. quimbaya* sp. nov. by the palpal bulb without paraembolic apophysis (Figs 23–26) but differ from the absence of a tegulum with ventral processes near the embolus (Figs 59–62) and by the palpal tibia swollen (Figs 30–31). Females resemble those of *S. timotocuica* sp. nov., by the ventral receptacles of the spermathecae not fused at base (Fig. 32) but differ from the dorsal portion of spermathecae pointing outward, slightly oval (Figs 32, 74) and absence of abdominal stripes (Figs 3, 19).

**Etymology**

The name is in honor of the Arawak indigenous group, natives of northern South America. They called the island of Trinidad 'Caeri', which in Arawak language means 'Island'.

**Type material**

**Holotype**
TRINIDAD AND TOBAGO • ♂; Trinidad Island, Northern Range; 11 Mar. 2003; D. Weinmann leg.; MZSP 47440.

**Paratype**
TRINIDAD AND TOBAGO • 1 ♀; same collection data as for holotype; MZSP 47427.

Only type material known.

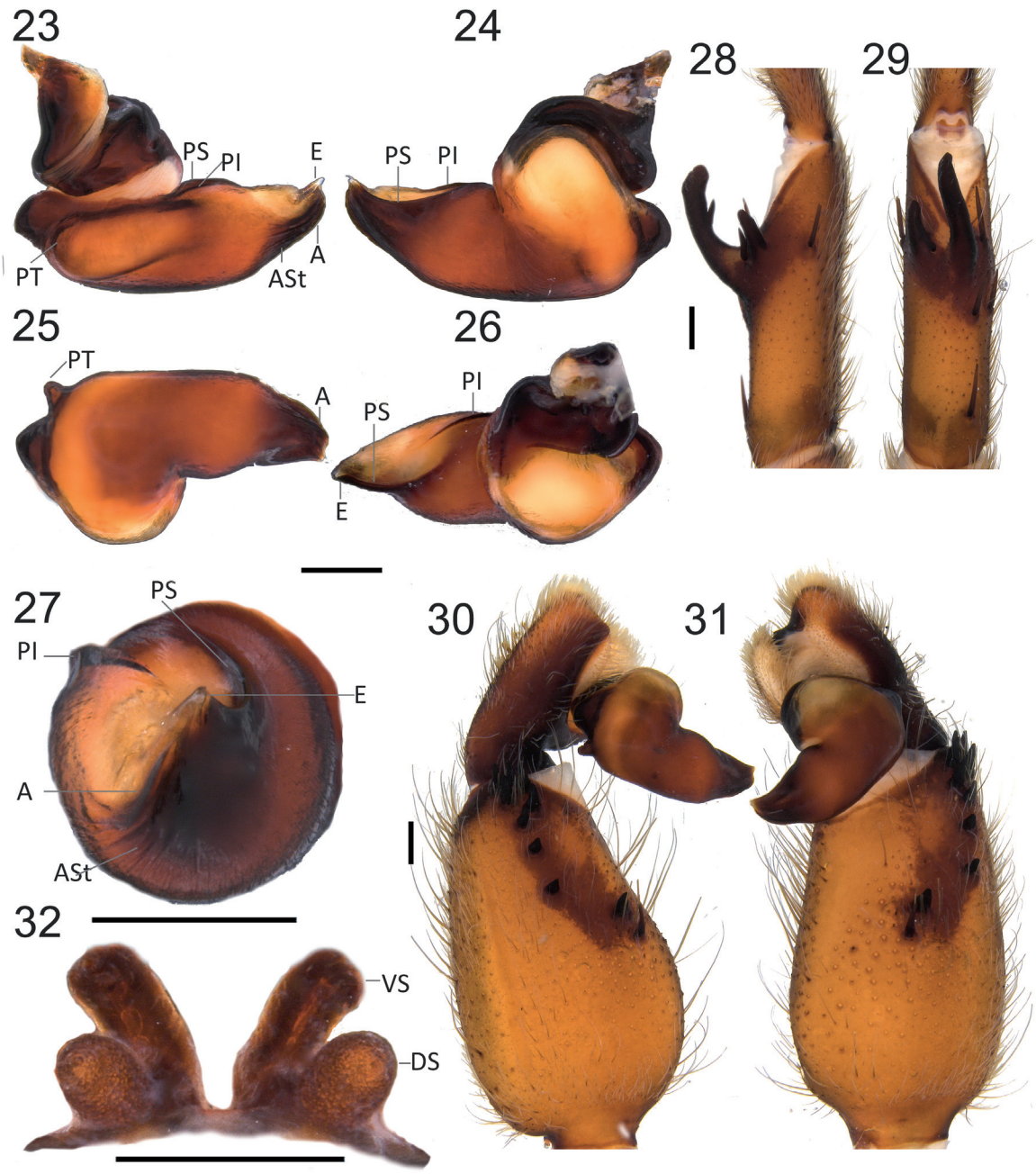
**Description**

**Male** (holotype MZSP 47440)
Color (in alcohol). Carapace, legs and chelicerae dark brown, sternum, labium reddish brown, abdomen light brown (Figs 1–2).

Measurements. Total length: 16.39. Chelicerae basal segment: length 2.31. Carapace elongated: length 8.59, width 7.11. Abdomen: length 7.43. Clypeus absent. Eye tubercle slightly elevated, subrectangular: length 0.76, width 1.55. Anterior eye row straight, posterior slightly recurved. Eyes and interdistances: AME 0.34, ALE 0.27, PME 0.28, PLE 0.35, AME–AME 0.06, AME–ALE 0.09, ALE–ALE 0.97, PME–PME 0.67, PME–PLE 0.07, PLE–PLE: 1.05, AME–PME 0.11, ALE–PLE 0.11. Thoracic fovea slightly procurved, narrow, and deep: width 0.98. Chelicerae basal segment with nine well-developed teeth on furrow promargin and a group of ca 20 small teeth on proximal area of furrow. Intercheliceral tumescence absent. Maxillae ca 100 cuspules, located on anterior inner corner. Labium trapezoidal: length 0.91, width 1.55, with ca 180 cuspules. Sternum rounded: length 3.88, width 3.72, with three pairs of sigilla, the last one longer than the others with the same distance from the edge.

Palpal bulb. With piriformis tegulum. Prolateral superior keel displaced to the dorsal area and prolateral inferior keel upwards on the prolateral view. Short and thin embolus pointing upward. Paraembolic apophysis absent, apical keel near the embolus, with small apical striae below (Figs 23–27). Cymbium with two asymmetric lobes, retrolateral larger and wider; prolateral lobe elongated and laterally flattened; retrolateral lobe with a distal retrolateral protrusion. Palpal tibia swollen without concavity, with short spines in a row over a darkened area, separated in two groups, one apical group with 4–5 spines and the other at midline with five spines (Figs 30–31).

Legs and palps. Tibial spur I: prolatero-ventral spur with two separated branches; retrolateral branch of tibial apophysis curved, much larger and more developed than prolateral branch, similar to *Euthycaelus*, with a small spine inserted subapicaly. Prolateral branch shorter, recurved with contiguous spine (Figs 28–29). Metatarsus I bent retrolaterally to tibial spur. Superior tarsal claws without teeth. Tarsal scopulae: I and II entire, III and IV divided by longitudinal band of conical setae. Metatarsal scopulae divided by




**Figs 23–32.** *Schismatothele caeri* sp. nov. **23–31**. Holotype, ♂ (MZSP 47440). **23–27**. Palpal bulb, prolateral (23), retrolateral (24), ventral (25), dorsal (26), and frontal (27) views. **28–29**. Tibial spur, prolateral (28), and ventral (29) views. **30–31**. Palpal tibiae, right (30), and left (31). **32**. Paratype, ♀ (MZSP 47427). Spermathecae, ventral view. Abbreviations: A = apical keel; ASt = apical striae; DS = dorsal receptacle; E = embolus; PI = prolateral inferior keel; PS = prolateral superior keel; PT = prolateral tegular apophysis; VS = ventral receptacle. Scale bars = 0.5 mm.

**Table 1.** Length of legs and palpal segments of holotype, ♂ (MZSP 47440) / paratype, ♀ (MZSP 47427) of *Schismatothele caeri* sp. nov.

| | I | II | III | IV | Palp |
|---|---|---|---|---|---|
| Femur | 6.9/6.08 | 6.16/5.17 | 5.42/4.77 | 7.10/6.42 | 3.96/4.66 |
| Patella | 4.21/4.31 | 3.64/3.79 | 3.12/3.18 | 3.53/3.77 | 2.63/3.08 |
| Tibia | 5.53/4.72 | 4.50/3.59 | 3.33/2.88 | 5.34/4.78 | 4.14/2.84 |
| Metatarsus | 5.02/3.65 | 4.81/3.32 | 4.47/3.66 | 6.64/5.64 | – |
| Tarsus | 3.32/2.91 | 3.07/2.92 | 2.96/2.67 | 3.34/3.25 | 2.07/2.73 |
| **Total** | **24.98/21.67** | **22.63/18.79** | **19.30/17.16** | **25.95/23.91** | **12.80/13.31** |

longitudinal band of thick setae. I–II denser than III–IV, extension: I entire, II on ⅔, III on distal half, IV on less than half. Clavate tarsal trichobothria in two rows, each with ca 10 trichae, interspersed with filiform trichobothria of different lenght. Tarsus IV not cracked. Leg formula 4123 (Table 1).

Spination (proximal to distal). Cymbium and tarsi without spines. Palp: femur 0; patella 0; tibia (v)1, (r) 9–10 megaspines. Leg I: femur (p) 0-0-1; patella 0; tibia (v) 1-2-ap1, (p) 1; metatarsus (v) 1-0-ap1, (p) 0-1-0. Leg II: femur 0; patella 0; tibia, (v) 2-3-ap3, (p) 0-0-1; metatarsus (v) 1-1-ap3. Leg III: femur (p) 0-1-2; patela (r) 2; tibia (v) 1-1-ap3, (p) 0-1-1, (r) 1-1-1; metatarsus (v) 1-3-ap3, (p) 0-1-1, (r) 1-1-1. Leg IV: femur (p) 1; patela 0; tibia (v) 2-2-ap3, (p) 1-1-2; metatarsus (v) 1-3-ap2, (p) 0-1-1, (r) 1-1-1.

**Female** (paratype MZSP 47427)

Color (in alcohol). As in male (Figs 3–4).

Measurements. Total length: 27.20. Chelicerae basal segment: length 4.89. Carapace elongated: length 8.86, width 7.47. Abdomen: length 12.76. Clypeus absent. Eye tubercle slightly elevated, sub-rectangular: length 0.82, width 1.63. Anterior eye row straight, posterior slightly recurved. Eyes and interdistances: AME 0.42, ALE 0.36, PME 0.30, PLE 0.32, AME–AME 0.22, AME–ALE 0.16, ALE–ALE 1.05, PME–PME 0.72, PME–PLE 0.05, PLE–PLE 1.21, AME–PME 0.11, ALE–PLE 0.14. Thoracic fovea slightly procurved, narrow, deep: width 1.03. Chelicerae basal segment with 8–10 well-developed teeth on furrow promargin, and group of ca 30 small teeth on proximal area of furrow. Intercheliceral tumescence absent. Maxillae whit ca 100 cuspules, located at anterior inner corner. Labium trapezoidal: length 1.19, width 1.81, whit ca 180 cuspules. Sternum rounded: length 4.02, width 4.28, with three pairs of sigilla, the last one longer than the others with the same distance from the edge.

Spermathecae. Heavily sclerotized, composed of two portions, dorsal and ventral unfused. Ventral portion with two digitiform sclerotized receptacles, unfused, slightly recurved. Dorsal portion with two receptacles pointing out, slightly oval with granular aspect (Fig. 32).

Legs and palps. Superior tarsal claws without teeth. Tarsal scopulae: I entire with longitudinal band of conical setae; II–IV divided by longitudinal band of conical setae. Metatarsal scopulae dense, with longitudinal band of conical setae in I–II and not dense in III–IV, extension: I–II on distal ¾, III on more than distal half, IV on less than half. Clavate tarsal trichobothria in two rows, each with ca 10 trichae, interspersed with filiform trichobothria of different lenght. Tarsus IV not cracked. Leg formula 4123 (Table 1).

Spination (proximal to distal). Tarsi without spines. Palp: femur 0; patella 0; tibia (v) ap1. Leg I: femur 0; patella 0; tibia 0; metatarsus (d) 0-1-ap2. Leg II: femur 0; patella 0; tibia 0; metatarsus (d) 0-1-

ap3. Leg III: femur 0; patella 0; tibia (d) ap3, (v)0, (p) 1, (r) 0-2-0; metatarsus (d) ap3, (v) 0, (p) 0-1-1, (r) 1-2-1. Leg IV: femur 0; patella 0; tibia (d)0-1-ap2, (p)0-1-1, (r) 0-1-ap1; metatarsus (d) 0-1-ap3, (p) 0-1-1, (r) 0-2-1.

***Schismatothele caiquetia*** sp. nov.
urn:lsid:zoobank.org:act:7D76A7AA-96CE-4F5D-B33A-B5CF76D29B8A
Figs 5–8, 33–40, 87; Table 2

**Diagnosis**

Males resemble those of *S. timotocuica* sp. nov., *S. olsoni* and *S. merida* sp. nov. by the absence of keels on palpal bulb. Differ from those of *S. timotocuica* and *S. olsoni* by the globose aspect of tegulum with a pronounced prolateral lobe, near the embolus. Differ from those of *S. merida* by absence of a tegulum with ventral processes near the embolus (Figs 33–36, 41–44, 67–70). Females resemble those of *S. timotocuica*, *S. olsoni* and *S. merida* by the digitiform shape of spermathecae ventral receptacles but differ from the spermathecae shape, which has the ventral portion fused at the base, with two large and elongated receptacles, and dorsal portion with two small digitiform receptacles (Figs 40, 48, 74).

**Etymology**

The name is in honor of the Caiquetio indigenous group, natives of northwestern Venezuela before Spanish colonization.

**Type material**

**Holotype**
VENEZUELA • ♂; Falcón, Curimagua; 11°13′21.72″ N, 69°36′55.26″ W; 19 Sep. 2002; D. Weinmann and F. Pribik leg.; MZSP 28423.

**Paratype**
VENEZUELA • 1 ♀; same collection data as for holotype; MZSP 28424.

Only type material known.

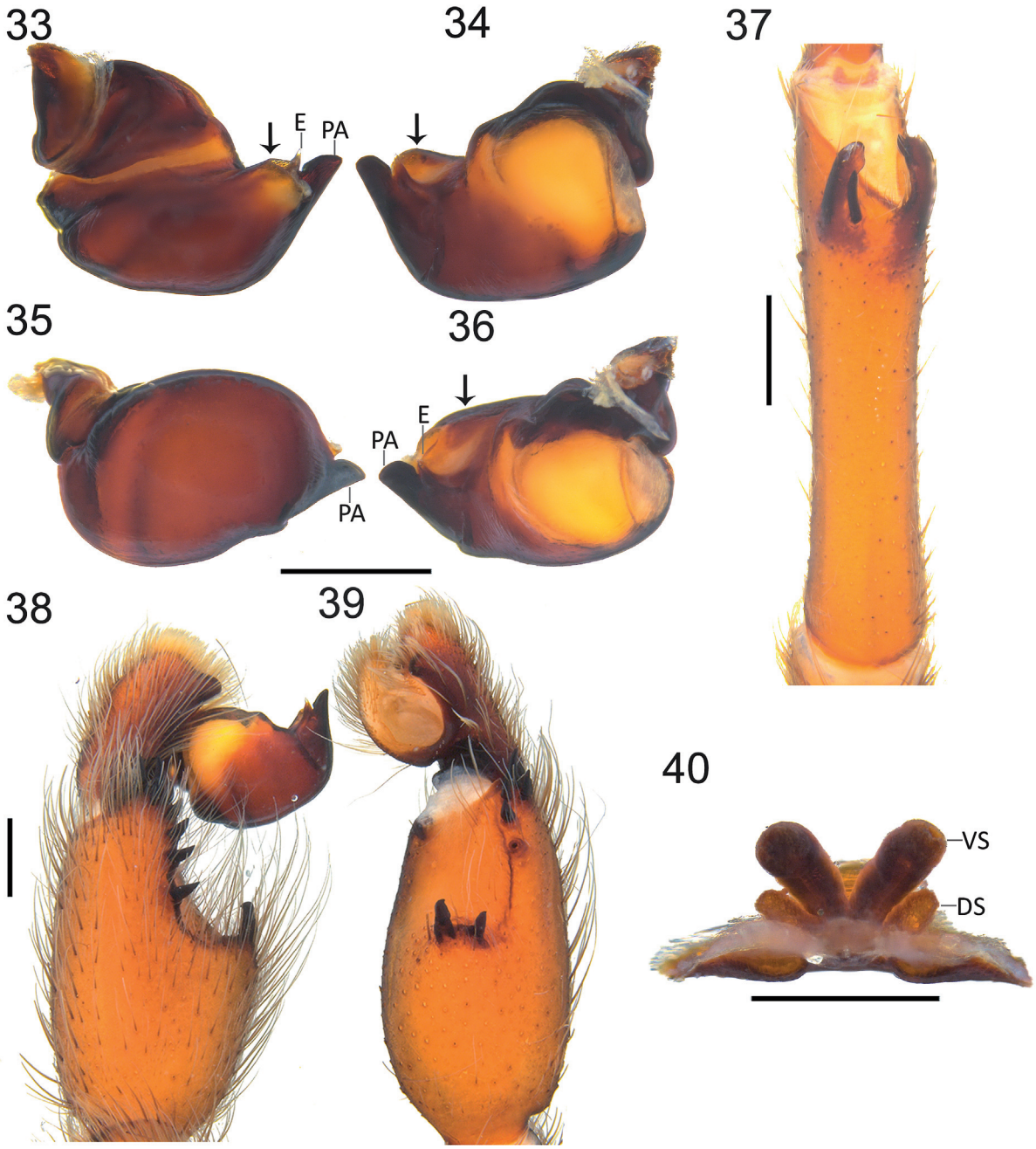
**Description**

**Male** (holotype MZSP 28423)
Color (in alcohol). Carapace, chelicerae and legs reddish brown, labium and sternum brown, abdomen dark brown with five subtle light brown stripes (Figs 5–6).

Measurements. Total length: 12.91. Chelicerae basal segment: length 1.92. Carapace elongated: length 6.34, width 4.93. Abdomen: length 6.24. Clypeus absent. Eye tubercle slightly elevated, subrectangular: length 0.62, width 1.37. Anterior eye row slightly procurved, posterior slightly recurved. Eyes and interdistances: AME 0.35, ALE 0.32, PME 0.26, PLE 0.28, AME–AME 0.07, AME–ALE 0.05, ALE–ALE 0.84, PME–PME 0.69, PME–PLE 0.04, PLE–PLE 1.02, AME–PME 0.05, ALE–PLE 0.07. Thoracic fovea straight, narrow, deep: width 0.75. Chelicerae basal segment with 12 well-developed teeth on furrow promargin and a group of ca 30 small teeth on proximal area of furrow. Intercheliceral tumescence absent. Maxillae ca 100 cuspules, located on anterior inner corner. Labium trapezoidal: length 0.81, width 1.07, with ca 180 cuspules. Sternum slightly oval: length 2.8, width 2.04; with three pairs of sigilla, the posterior ones longer than the others with the same distance from the edge.

Palpal bulb. Without keels. Tegulum globose with a pronounced prolateral lobe near to embolus. Short embolus pointing upward. Paraembolic apophysis short, below embolus, pointing upward (Figs 33–36). Cymbium with two asymmetric lobes, retrolateral larger and wider; prolateral lobe elongated and

laterally flattened; retrolateral lobe with a distal retrolateral protrusion. Palpal tibia swollen, with short spines in a row separated in two groups, one retrolateral line with 8–9 spines and one at tibia ventral medial concavity, with one or two strong spines (Figs 38–39).




**Figs 33–40.** *Schismatothele caiquetia* sp. nov. **33–39**. Holotype, ♂ (MZSP 28423). **33–36**. Palpal bulb, prolateral (33), retrolateral (34), ventral (35), and dorsal (36) views. **37**. Tibial spur, ventral view. **38–39**. Palpal tibiae, right (38), and left (39). **40**. Paratype, ♀ (MZSP 28424), spermathecae, ventral view. Abbreviations: E = embolus; DS = dorsal receptacle; PA = paraembolic apophysis; VS = ventral receptacle. Black arrows show the tegulum prolateral lobe. Scale bars = 0.5 mm.

**Table 2.** Length of legs and palpal segments of holotype, ♂ (MZSP 28423) / paratype, ♀ (MZSP 28424) of *Schismatothele caiquetia* sp. nov.

| | I | II | III | IV | Palp |
|---|---|---|---|---|---|
| Femur | 5.35/5.32 | 5.03/4.6 | 4.33/4.11 | 6.05/5.66 | 2.92/3.79 |
| Patella | 3.2/3.53 | 2.81/2.98 | 2.38/2.89 | 2.59/3.19 | 1.93/2.42 |
| Tibia | 4.85/4.06 | 3.73/3.27 | 2.8/2.8 | 4.93/4.46 | 2.77/2.39 |
| Metatarsus | 4.1/3.48 | 3.65/3.08 | 3.88/3.19 | 6.2/5.1 | – |
| Tarsus | 2.81/2.6 | 2.8/2.36 | 2.42/2.17 | 3.09/2.75 | 1.56/2.87 |
| **Total** | **20.31/18.99** | **18.02/16.29** | **15.81/15.16** | **22.86/21.16** | **9.19/11.47** |

Legs and palps. Tibial spur I: prolatero-ventral spur with two separated branches of similar sizes; retrolateral branch slightly procurved, digitiform, with a small spine inserted subapically, prolateral branch little shorter, slightly recurved and digitiform, with contiguous spine (Fig. 37). Metatarsus I bent retrolaterally to tibial spur. Superior tarsal claws without teeth. Tarsal scopulae: I and II entire with longitudinal band of conical setae, III and IV divided by longitudinal band of conical setae. Metatarsal scopulae not dense, extension: I on distal ¾, II on more than distal half, III on distal half, IV on less than half. Clavate tarsal trichobothria in two rows, each with ca 9 trichae, interspersed with filiform trichobothria of different lenght. Tarsus IV cracked. Leg formula 4123 (Table 2).

Spination (proximal to distal). Cymbium and tarsi without spines. Palp: femur 0; patella 0; tibia (r) ca 9 megaspines. Leg I: femur (p) 1; patella 0; tibia (p) 1; metatarsus (v)0-1-ap1, (p) 0-1-0. Leg II: femur (p)1; patella 0; tibia (v) 0-0-ap3, (p) 0-1-1; metatarsus (v)1-1-ap2, (p) 0-1-0. Leg III: femur (r) 1; patela (r) 2; tibia (v)1-1-ap2, (p) 1-10, (r) 2-2-0; metatarsus (v) 0-2-ap3, (p) 0-1-1, (r) 0-1-1. Leg IV: femur (p) , (r)0-0-1; patela 0; tibia (v)1-1-ap3, (p) 0-1-1, (r) 1-1-0; metatarsus (v) 0-2-ap3, (p) 0-1-1, (r) 1-1-1.

**Female** (paratype MZSP 28424)

Color (in alcohol). As in male (Figs 7–8).

Measurements. Total length: 18.76. Chelicerae basal segment: length 4.04. Carapace elongated: length 7.42, width 6.01. Abdomen: length 8.27. Clypeus absent. Eye tubercle slightly elevated, subrectangular: length 0.78, width 1.57. Anterior eye row slightly procurved, posterior slightly recurved. Eyes and interdistances: AME 0.42, ALE 0.42, PME 0.29, PLE 0.36, AME–AME 0.08, AME–ALE 0.07, ALE–ALE 0.95, PME–PME 0.81, PME–PLE 0.03, PLE–PLE 1.18, AME–PME 0.12, ALE–PLE 0.09. Thoracic fovea slightly procurved, narrow, deep: width 1.15. Chelicerae basal segment with 10 well-developed teeth on furrow promargin, and group of ca 30 small teeth on proximal area of furrow. Intercheliceral tumescence absent. Maxillae with ca 100 cuspules, located at anterior inner corner. Labium trapezoidal: length 1.13, width 1.74, with ca 180 cuspules. Sternum rounded: length 3.4, width 3.4; with three pairs of sigilla, posterior ones longer than the others with the same distance from the edge.

Spermathecae. Heavily sclerotized composed of two portions, dorsal and ventral. Ventral portion with two large elongated digitiform receptacles, fused in the base, slightly recurved and flattened at the apex. Dorsal portion with two small digitiform receptacles with granular aspect (Fig. 40).

Legs and palps. Superior tarsal claws without teeth. Tarsal scopulae: I–IV divided by longitudinal band of conical setae. Metatarsal scopulae dense in I–II and not dense in III–IV, extension: I–II on distal ¾, III on more than distal half, IV on less than half. Clavate tarsal trichobothria in two rows, each with ca 10 trichae, interspersed with filiform trichobothria of different length. Tarsus IV not cracked. Leg formula 4123 (Table 2).

Spination (proximal to distal). Tarsi without spines. Palp: femur 0; patella 0; tibia (p) ap1. Leg I: femur 0; patella 0; tibia 0; metatarsus (v) ap1. Leg II: femur 0; patella 0; tibia 0; metatarsus (v) 1-0-ap1. Leg III: femur 0; patela 0; tibia (p) 0-0-1, (r) 0-1-0; metatarsus (v) ap1, (p) 0-0-1, (r) 1-2ap1. Leg IV: femur 0; patella 0; tibia 0; metatarsus (v) ap3, (p) 0-0-1, (r) 0-1-1.

***Schismatothele merida*** sp. nov.
urn:lsid:zoobank.org:act:C9DAE81B-B294-44A1-BA38-AD993EB991C7
Figs 9–12, 41–50, 87; Table 3

**Diagnosis**

Males resemble those of *S. quimbaya* sp. nov. by the tegulum with ventral granular process near the base of the embolus on palpal bulb but differ from the palpal bulb with ventral granular process located in a bulge, presence of paraembolic apophysis, absence of palpal keels and by the palpal tibia with medium concavity (Figs 41–44, 46–47, 59–62, 65–66). Females differ from those of all other species, except *S. caiquetia* sp. nov., by the ventral receptacles of spermathecae fused at the base. Differ from those of *S. caiquetia* by the globose or subrectangular shape of dorsal receptacles (Figs 48–50).

**Etymology**

The name is after the Merida Mountain range, present along the distribution area of this species.

**Type material**

**Holotype**

VENEZUELA • ♂; Tachira, San Félix; 8°6′44.12″ N, 72°13′49.17″ W; 23 Sep. 2002; D. Weinmann and F. Pribik leg.; MZSP 28411.

**Paratypes**

VENEZUELA – **Tachira** • 1 ♂, 2 ♀♀; same collection data as for holotype; MZSP 28414, 28412, 28413.

**Other material examined**

VENEZUELA – **Mérida** • 2 ♂♂, 2 ♀♀; La Azulita; 10 Oct. 2000; D. Weinmann leg.; MZSP 8415 to 28418. – **Trujillo** • 1 ♂; Escuque; 26 Mar. 2000; F. Pribik leg.; MZSP 77128 • 1 ♀; same collection data as for preceding; 5 Oct. 2000; MZSP 28422 • 1 ♀; Sabaneta; 7 Oct. 2000; D. Weinmann leg.; MZSP 28421.

**Description**

**Male** (holotype MZSP 28411)

Color (in alcohol). Carapace, chelicerae and legs reddish brown, labium and sternum brown, abdomen dark brown with five subtle light brown stripes (Figs 9–10).

Measurements. Total length: 20.74. Chelicerae basal segment: length 2.96. Carapace elongated: length 9.31, width 7.6. Abdomen: length 9.73. Clypeus absent. Eye tubercle slightly elevated, subrectangular: length 0.98, width 1.82. Anterior eye row slightly procurved, posterior slightly recurved. Eyes and interdistances: AME 0.39, ALE 0.42, PME 0.26, PLE 0.35, AME–AME 0.19, AME–ALE 0.13, ALE–ALE 1.37, PME–PME 0.84, PME–PLE 0.06, PLE–PLE 1.26, AME–PME 0.07, ALE–PLE 0.15. Thoracic fovea straight, narrow, deep: width 1.24. Chelicerae basal segment with 9 well-developed teeth on furrow promargin, and a group of ca 25 small teeth on proximal area of furrow. Intercheliceral tumescence absent. Maxillae with ca 100 cuspules, located on anterior inner corner. Labium trapezoidal: length 0.9, width 1.7, with ca 180 cuspules. Sternum slightly oval: length 4.1, width 3.82; with three pairs of sigilla, posterior ones longer than the others with the same distance from the edge.

**Table 3.** Length of legs and palpal segments of holotype, ♂ (MZSP 28411) / paratype, ♀ (MZSP 28412) of *Schismatothele merida* sp. nov.

| | I | II | III | IV | Palp |
|---|---|---|---|---|---|
| Femur | 7.85/5.8 | 7.1/4.26 | 6.34/4.56 | 8.78/5.69 | 4.41/3.5 |
| Patella | 4.31/3.52 | 3.83/2.8 | 3.07/2.91 | 3.85/3.27 | 2.8/1.94 |
| Tibia | 7.07/4.34 | 5.67/3.22 | 4.29/2.69 | 7.12/4.7 | 4.64/2.83 |
| Metatarsus | 6.53/3.57 | 5.35/3.24 | 5.83/3.17 | 9/5.12 | – |
| Tarsus | 4.4/2,85 | 4.04/2.49 | 3.75/2.25 | 4.28/2.69 | 1.69/2.82 |
| **Total** | **30.16/20.08** | **25.99/16.01** | **23.28/15.58** | **33.03/21.47** | **13.54/11.09** |

Palpal bulb. Without keels with subrectangular tegulum. Ventral granular process on a bulge, near to the base of the embolus. Short embolus pointing upward. Paraembolic apophysis flat, pointing upward below embolus (Figs 41–44). Cymbium with two asymmetric lobes, retrolateral longer and wider; prolateral lobe elongated and laterally flattened; retrolateral lobe with a distal retrolateral protrusion. Palpal tibia swollen, with short spines in a row separated in two groups, one apical group with 8–10 spines spines and one at tibia mid-length concavity with one strong spine (Figs 46–47).

Legs and palps. Tibial spur I: prolatero-ventral spur composed of two separated branches; retrolateral branch slightly procurved, flattened on apex, with a small spine inserted subapically; prolateral branch shorter, slightly recurved with a contiguous spine (Fig. 45). Metatarsus I bent retrolaterally to tibial spur. Superior tarsal claws without teeth. Tarsal scopulae: I and II entire with longitudinal band of conical setae, III and IV divided by longitudinal band of conical setae. Metatarsal scopulae not dense, extension: I on distal ¾, II on more than distal half, III on distal half, IV on less than half. Clavate tarsal trichobothria in two rows, each with ca 10 trichae, interspersed with filiform trichobothria of different lengths. Tarsus IV cracked. Leg formula 4123 (Table 3).

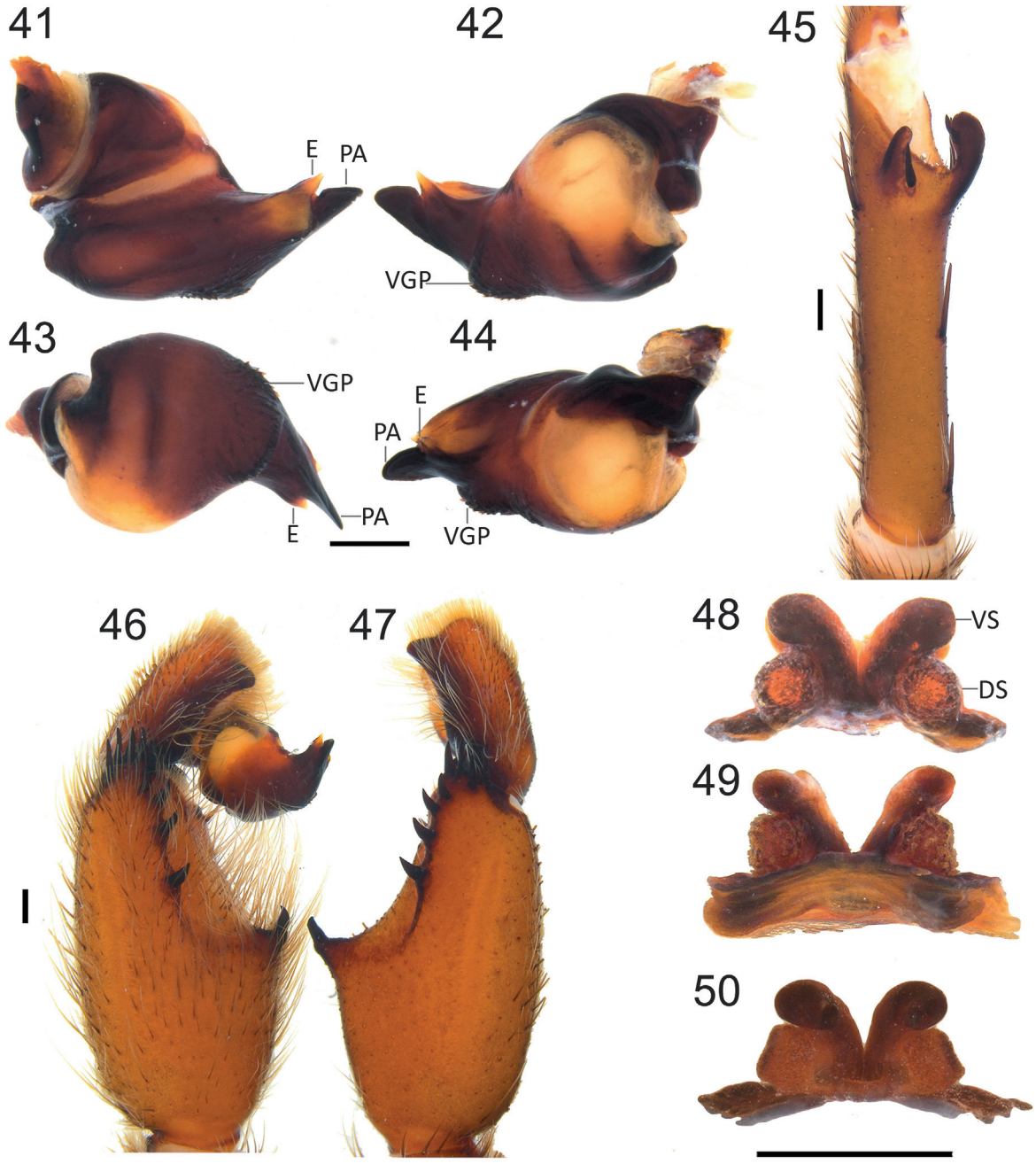
Spination. Cymbium and tarsi without spines. Palp: femur 0; patella 0; tibia (r) 9 megaspines. Leg I: femur (p)0-0-1; patella 0; tibia (v) 1-2-ap2, (p) 0-0-1; metatarsus (v) 0-0-ap1, (p) 0-1-0, (r) 1-0-0. Leg II: femur (p)0-0-1; patella 0; tibia (v) 1-2-ap2, (p) 1-1-0; metatarsus (v) 0-0-ap1, (p) 0-1-0. Leg III: femur (p)0-0-1, (r)0-0-1; patella (r) 1; tibia (v) 0-1-ap2, (p) 1-1-ap1, (r) 2-2-ap1; metatarsus (d) 0-0-2, (v) 0-1-1, (p) 0-1-1, (r) 1-2-1. Leg IV: femur (p)0-0-1, (r)0-0-1; patella 0; tibia (v) 1-1-ap2, (p) 1-0-1, (r) 2-2-ap1; metatarsus (d) 0-0-1, (v) 0-1-0, (p)1-0-ap1, (r) 1-4-ap2.

**Female** (paratype MZSP 28412)

Color (in alcohol). As in male (Figs 11–12).

Measurements. Total length: 20.21. Chelicerae basal segment: length 3.56. Carapace elongated: length 8.26, width 6.7. Abdomen: length 11.78. Clypeus absent. Eye tubercle slightly elevated, sub-rectangular: length 0.77, width 1.56. Anterior eye row slightly procurved, posterior slightly recurved. Eyes and interdistances: AME 0.38, ALE 0.39, PME 0.28, PLE 0.27, AME–AME 0.09, AME–ALE 0.10, ALE–ALE 0.85, PME–PME 0.7, PME–PLE 0.08, PLE–PLE 1.07, AME–PME 0.09, ALE–PLE 0.09. Thoracic fovea slightly procurved, narrow, deep: width 0.80. Chelicerae basal segment with 10–11 well-developed teeth on furrow promargin, and group of ca 30 small teeth on proximal area of furrow. Intercheliceral tumescence absent. Maxillae with ca 100 cuspules, located at anterior inner corner. Labium trapezoidal: length 1.01, width 1.69, with ca 180 cuspules. Sternum rounded: length 3.7, width 3.68; with three pairs of sigilla, posterior ones longer than the others with the same distance from the edge.

Spermathecae. Heavily sclerotized, composed of two portions, dorsal and ventral. Ventral portion with two digitiform receptacles fused in the base, slightly recurved. Dorsal portion with two globose or subrectangular receptacles with granular aspect (Fig. 48).




**Figs 41–50.** *Schismatothele merida* sp. nov. **41–47**. Holotype, ♂ (MZSP 28411). **41–44**. Palpal bulb, prolateral (41), retrolateral (42), ventral (43), and dorsal (44) views. **45**. Tibial spur, ventral view. **46–47**. Palpal tibiae, right (46), and left (47). **48–50**. Paratypes, ♀, spermathecae, ventral view. **48**. MZSP 28412. **49**. MZSP 28422. **50**. MZSP 28421. Abbreviations: DS = dorsal receptacle; E = embolus; PA = paraembolic apophysis; VGP = ventral granular process; VS = ventral receptacle. Scale bars = 0.5 mm.

Superior tarsal claws without teeth. Tarsal scopulae: I–II entire with longitudinal band of conical setae, III-IV divided by longitudinal band of conical setae. Metatarsal scopulae dense in I–II and not dense in III–IV, extension: I–II on distal ¾, III on more than distal half, IV on less than half. Clavate tarsal trichobothria in two rows, each with ca 10 trichae, interspersed with filiform trichobothria of different lengths. Tarsus IV not cracked. Leg formula 4123 (Table 3).

Spination (proximal to distal). Tarsi without spines. Palp: femur 0; patella 0; tibia (v) ap3. Leg I: femur 0; patella 0; tibia 0; metatarsus (d) 1-0-ap1. Leg II: femur 0; patella 0; tibia 0; metatarsus (d) 1-0-ap1. Leg III: femur 0; patella (r) 1; tibia (d) 0-0-ap2, (p) 0-1-1, (r) 0-1-0; metatarsus (d) 0-0-ap2, (p) 0-1-1, (r) 0-2-1. Leg IV: femur 0; patella 0; tibia (d)0-2-ap3, (p)0-1-1, (r) 0-0-ap1; metatarsus (d) 0-1-ap2, (p) 1-1-1, (r) 0-1-2.

Variation. Spermathecae may have malformation with hypersclerotization and absence of one of the ventral receptacles. Dorsal receptacles may vary between rounded to square overall shape (Figs 49–50).

***Schismatothele moonenorum*** sp. nov
urn:lsid:zoobank.org:act:E8E91490-8904-4990-B155-9136849E6CFF
Figs 13–14, 51–58, 87; Table 4

**Diagnosis**

Male differ from those of all other species by the short and thin paraembolic apophysis, the presence of a ventral retrolateral keel with small retrolateral striae below and the presence of retrolateral tegular apophysis. Share with those of *S. benedettii*, *S. modesta* and *S. wayana* sp. nov. the embolus and paraembolic apophysis pointing forward (Figs 51–55). Females unknown.

**Etymology**

The name is in honor of Joep and Marijke Moonen, owners of the Emerald Jungle Village in French Guiana.

**Type material**

**Holotype**

FRENCH GUIANA • ♂; Montsinery-Tonnegrande, Emerald Jungle Village; 4°47′5.0″ N, 52°25′21.0″ W; 7 Apr. 1999; R.C. West leg.; IBSP 168510.

Only type material known.

**Description**

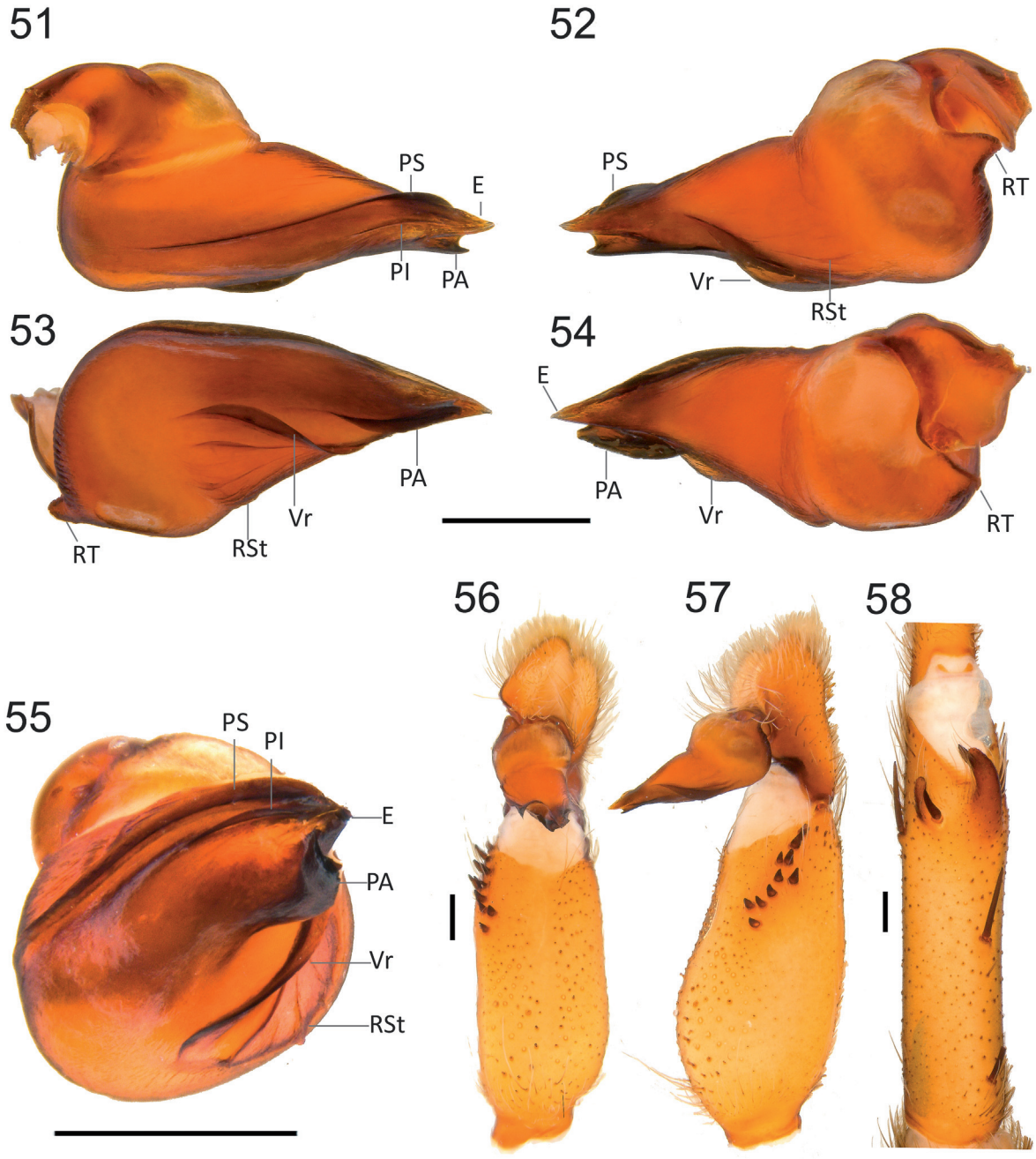
**Male** (holoype IBSP 168510)

Color (in alcohol). Carapace, legs and chelicerae dark brown, sternum, labium brown, abdomen light brown (Figs 13–14).

Measurements. Total length: 20.31. Chelicerae basal segment: length 3.95. Carapace slightly elongated, covered with long and fine bristles: length 8.68, width 7.36. Abdomen: length 11.32. Clypeus absent. Eye tubercle slightly elevated, sub-rectangular: length 0.73, width 1.71. Anterior eye row slightly procurved, posterior slightly recurved. Eyes and interdistances: AME 0.41, ALE 0.33, PME 0.28, PLE 0.29, AME–AME 0.15, AME–ALE 0.10, ALE–ALE 1.15, PME–PME 0.88, PME–PLE 0.16, PLE–PLE 1.37, AME–PME 0.05 ALE–PLE 0.09. Thoracic fovea short narrow, deep: width 0.97. Chelicerae basal segment with 11 well-developed teeth on furrow promargin and a group of ca 25 small teeth on proximal area of furrow. Intercheliceral tumescence absent. Maxillae with ca 100 cuspules, located on anterior inner corner. Labium trapezoidal: length 0.96, width 1.41, with ca 200 cuspules. Sternum slightly oval:

length 4.01, width 3.88; with three pairs of sigilla, posterior ones longer than the others with the same distance from the edge.

Palpal bulb. With piriformis tegulum. Presence of retrolateral tegular apophysis, long prolateral superior keel, short prolateral inferior keel below and presence of a ventral retrolateral keel with small




**Figs 51–58.** *Schismatothele moonenorum* sp. nov., holotype, ♂ (IBSP 168510). **51–55**. Palpal bulb, prolateral (51), retrolateral (52), ventral (53), dorsal (54), and frontal (55) views. **56–57**. Palpal tibiae, right (56), and left (57). **58**. Tibial spur, ventral view. Abbreviations: E = embolus; PA = paraembolic apophysis; PI = prolateral inferior keel; PS = prolateral superior keel; RSt = retrolateral striae; RT = retrolateral tegular apophysis; Vr = ventro-retrolateral keel. Scale bars = 0.5 mm.

**Table 4.** Length of legs and palpal segments of holotype, ♂ (IBSP 168510) of *Schismatothele moonenorum* sp. nov.

| | I | II | III | IV | Palp |
|---|---|---|---|---|---|
| Femur | 7.28 | 6.43 | 5.85 | 8.46 | 4.85 |
| Patella | 4.21 | 3.84 | 3.22 | 3.61 | 2.53 |
| Tibia | 5.75 | 4.58 | 3.73 | 6.48 | 3.61 |
| Metatarsus | 5.38 | 4.8 | 5.69 | 8.88 | – |
| Tarsus | 3.59 | 3.51 | 3.38 | 3.89 | 2.29 |
| **Total** | **26.21** | **23.16** | **21.87** | **31.32** | **13.29** |

retrolateral striae below. Paraembolic apophysis below embolus, pointing forward, short and thin with conic shape (Figs 51–55). Cymbium with two asymmetric lobes, retrolateral larger and wider; prolateral lobe elongated and laterally flattened; retrolateral lobe without a distal retrolateral protrusion. Palpal tibia swollen, without mid-length concavity, with one prolateral row of 10 short spines, not aligned, disposed on apical third (Figs 56–57).

Legs and palps. Tibial spur I: prolatero-ventral spur with two separated branches of different length; retrolateral branch larger, flat at base, slightly procurved, with a small spine inserted subapically. Prolateral branch shorter slightly recurved, with contiguous spine with almost the same size (Fig. 58). Metatarsus I bent retrolaterally to tibial spur. Superior tarsal claws without teeth. Tarsal scopulae: I and II entire without longitudinal band of conical setae, III and IV divided by longitudinal band of conical setae. Metatarsal scopulae not dense, extension: I on distal third, II on more than distal half, III on distal half, IV on less than half. Clavate tarsal trichobothria in two rows, each with ca 12 trichae, interspersed with filiform trichobothria of different lengths. Tarsus IV cracked. Leg formula 4123 (Table 4).

Spination (proximal to distal). Cymbium and tarsi without spines. Palp: femur 0; patella 0; tibia p (1), (r) 10 megaspines. Leg I: femur (p) 2; patella (v) 1; tibia p (2), (r) 1-1-1; metatarsus (v) 0-1-1. Leg II: femur (p) 1; patela (v)1; tibia (v) 2-1-ap3, (p) 1; metatarsus (v) 1-2-ap2. Leg III: femur (p) 0-1-2, (r) 1; patela (r) 1; tibia (v)3-2-ap3, (p) 2, (r) 1; metatarsus (v)2-2-ap3, (p) 0-1-1, (r) 1-1-1. Leg IV: femur (p)1; patela (p)1; tibia (v) 3-2-ap2, (p)1-0-1, (r) 1-0-1; metatarsus: (v)2-3-ap3, (p) 0-1-1, (r) 1-1-1.

***Schismatothele quimbaya*** sp. nov.
urn:lsid:zoobank.org:act:B92F67A7-DE68-4FA9-9A54-DEA6410EC977
Figs 15–16, 59–66, 87; Table 5

**Diagnosis**

Male resemble those of *S. caeri* sp. nov. and *S. hacaritama* by the palpal bulb without paraembolic apophysis. Differ from those of *S. caeri* by the tegulum with ventral processes near to embolus and the palpal tibia not swollen (Figs 23–26, 59–63). Differ from those of *S. hacaritama* by the granular aspect of tegulum ventral process (spiniform in *S. hacaritama*) and by the retrolateral branch of tibial apophysis digitiform (Figs 59, 64). Share with those of *S. inflata* the shape of palpal bulb, laterally flattened (Figs 61–62) and *S. merida* sp. nov. by the presence of ventral granular process in tegulum (Figs 41–42, 59–60). Female unknown.

**Table 5.** Length of legs and palpal segments of holotype, ♂ (MZSP 47524) of *Schismatothele quimbaya* sp. nov.

| | I | II | III | IV | Palp |
|---|---|---|---|---|---|
| Femur | 8.58 | 7.52 | 6.63 | 9.01 | 5.09 |
| Patella | 5.06 | 4.23 | 3.88 | 4.29 | 3.19 |
| Tibia | 6.81 | 5.84 | 4.51 | 7.01 | 4.27 |
| Metatarsus | 7.11 | 6.02 | 6.28 | 9.72 | – |
| Tarsus | 5.06 | 4.56 | 4.01 | 4.09 | 2.43 |
| **Total** | **32.62** | **28.17** | **25.31** | **34.15** | **14.98** |

**Etymology**

The name is in honor of the Quimbaya indigenous group, natives of west Colombian Andes in the pre-colombian era.

**Type material**

**Holotype**

COLOMBIA • ♂; Antioquia, Rio Habana; 26 Aug. 1998; D. Weinmann leg.; MZSP 47524.

Only type material known.

**Description**

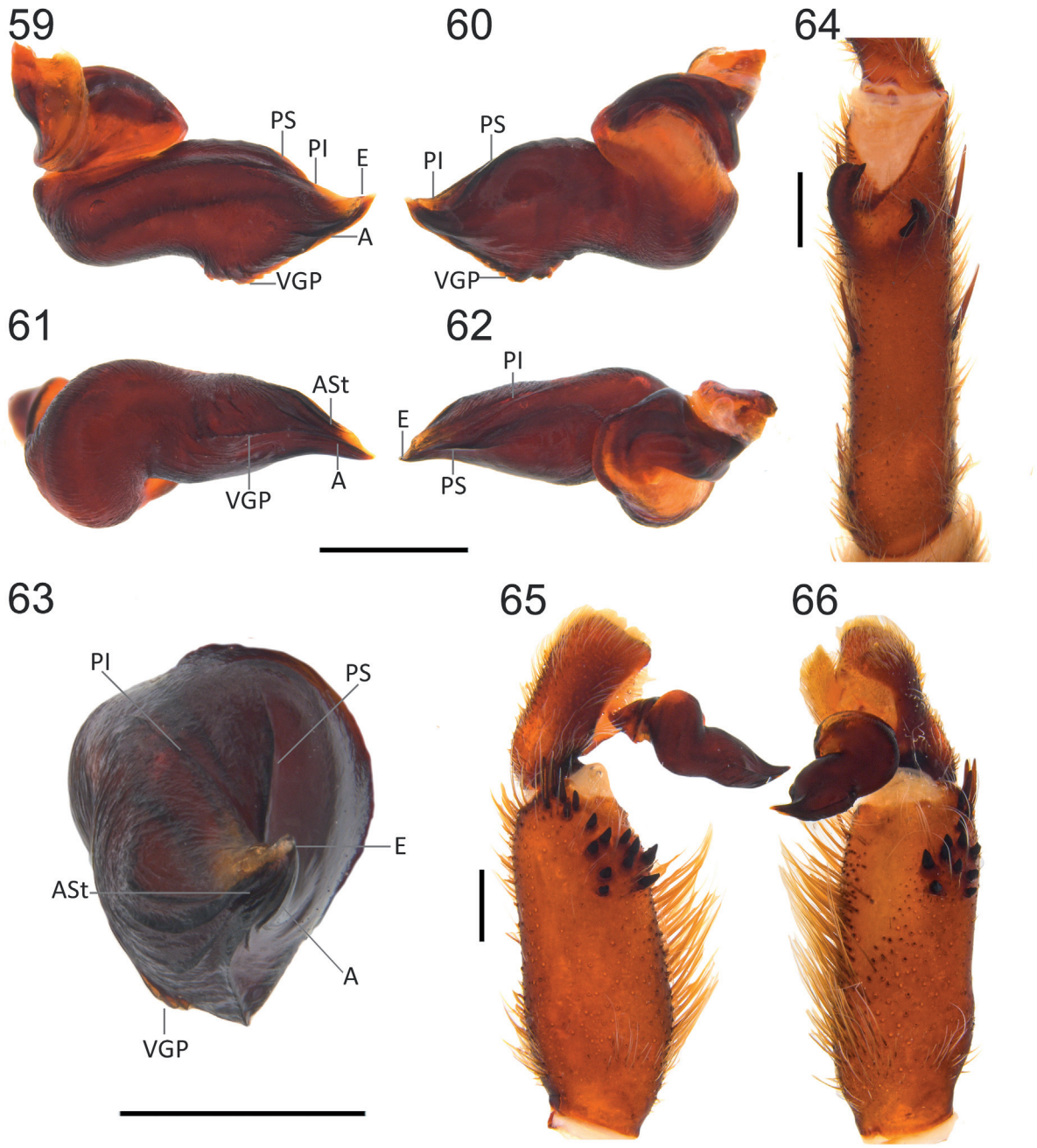
**Male** (holotype MZSP 47524)

Color (in alcohol). Carapace, legs and chelicerae dark brown, sternum, labium reddish brown, abdomen light brown (Figs 15–16).

Measurements. Total length: 20.15. Chelicerae basal segment: length 3.45. Carapace slightly elongated, covered with long and fine bristles: length 10.16, width 8.82. Abdomen: length 9.91. Clypeus absent. Eye tubercle slightly elevated, sub-rectangular: length 0.99, width 1.96. Anterior eye row straight, posterior straight. Eyes and interdistances: AME 0.48, ALE 0.41, PME 0.31, PLE 0.37, AME–AME 0.15, AME–ALE 0.18, ALE–ALE 1.25, PME–PME 0.99, PME–PLE 0.06, PLE–PLE 1.47, AME–PME 0.15 ALE–PLE 0.22. Thoracic fovea straight, narrow, deep: width 1.57. Chelicerae basal segment with 10 well-developed teeth on furrow promargin and a group of ca 20 small teeth on proximal area of furrow. Intercheliceral tumescence absent. Maxillae with ca 100 cuspules, located on anterior inner corner. Labium trapezoidal: length 1.26, width 2.09, with ca 180 cuspules. Sternum slightly oval: length 4.41, width 4.63; with three pairs of sigilla, posterior ones longer than the others with the same distance from the edge.

Palpal bulb. Flat shape, with subrectangular tegulum. Prolateral superior keel displaced to the dorsal area and inferior prolateal keel, upwards on the prolateral view. Presence of a ventral granular process in tegulum, near to embolus. Short embolus pointing upward. Paraembolic apophysis absent, instead, it has an apical keel with small apical striae (Figs 59–63). Cymbium with two asymmetric lobes, retrolateral longer and wider; prolateral lobe elongated and laterally flattened; retrolateral lobe with a distal retrolateral protrusion. Palpal tibia slightly swollen, without mid-length concavity, with 14–15 short spines accumulated in a linear group, disposed on apical third in prolateral side (Figs 65–66).

Legs and palps. Tibial spur I: prolatero-ventral spur with two separate branches of different length; retrolateral branch larger, slightly procurved, with a small spine inserted subapically, prolateral branch much shorter, slightly recurved, with contiguous spine with almost the same size (Fig. 64). Metatarsus




**Figs 59–66.** *Schismatothele quimbaya* sp. nov., holotype, ♂ (MZSP 47524). **59–63**. Palpal bulb, prolateral (59), retrolateral (60), ventral (61), dorsal (62), and frontal (63) views. **64**. Tibial spur ventral view. **65–66**. Palpal tibiae, right (65), and left (66). Abbreviations: A = apical keel; ASt = apical striae; E = embolus; PI = prolateral inferior keel; PS = prolateral superior keel; VGP = ventral granular process. Scale bars = 0.5 mm.

I bent retrolaterally to tibial spur. Superior tarsal claws without teeth. Tarsal scopulae: I and II entire without longitudinal band of conical setae, III and IV divided by longitudinal band of conical setae. Metatarsal scopulae not dense, extension: I on distal ¾, II on more than distal half, III on distal half, IV on less than half. Clavate tarsal trichobothria in two rows, each with ca 12 trichae, interspersed with filiform trichobothria of different lengths. Tarsus IV not cracked. Leg formula 4123 (Table 5).

Spination (proximal to distal). Cymbium and tarsi without spines. Palp: femur 0; patella 0; tibia p (2), (r) ca 15 megaspines. Leg I: femur (p) 2; patella (v) 1; tibia p (2), (r) 1-2-1; metatarsus (v) 1-1-1. Leg II: femur (p) 1; patella (v)1; tibia (v) 2-2-ap3, (p) 1; metatarsus (v) 1-2-ap2. Leg III: femur (p) 0-1-1, (r) 1; patela (r) 1; tibia (v)3-2-ap3, (p) 2, (r) 1; metatarsus (v)2-2-ap3, (p) 0-2-1, (r) 1-1-1. Leg IV: femur (p)1; patela (p)1; tibia (v) 2-3-ap2, (p)1-0-1, (r) 1-0-1; metatarsus: (v)2-3-ap3, (p) 0-1-1, (r) 1-2-1.

***Schismatothele timotocuica*** sp. nov.
urn:lsid:zoobank.org:act:231E08A0-0D32-40A6-A7BB-9E232EBAEC82
Figs 17–20, 67–74, 87; Table 6

**Diagnosis**

Males differs from those of all other species by the subrectangular tegulum, paraembolic apophysis slightly twisted retrolaterally with straight tip. Shares with those of *S. caiquetia* sp. nov., *S. olsoni* and *S. merida* sp. nov. the absence of keels on palpal bulb (Figs 67–70). Females resemble those of *S. caeri* sp. nov. by the ventral portion of the spermathecae not fused at base (Fig. 74) but differ from the dorsal portion of spermathecae globose, pointing inward (Fig. 32) and by the presence of abdominal stripes (Fig. 20).

**Etymology**

The name is in honor of the indigenous nation of Timoto-Cuica, natives of the Venezuelan Andes region, near the type locality.

**Type material**

**Holotype**
VENEZUELA • ♂; Mérida, Timotes; 7 Oct. 2000; D. Weinmann leg.; MZSP 28420.

**Paratypes**
VENEZUELA – **Mérida** • 1 ♂, 2 ♀♀; same collection data as for holotype; MZSP 26080, 26081, 77129. – **Trujillo** • 1 ♂; Trujillo; 30 Mar. 2000; F. Pribik leg.; MZSP 67502.

**Description**

**Male** (holotype MZSP 28420)
Color (in alcohol). Carapace, chelicerae and legs reddish brown, labium and sternum brown, abdomen dark brown with five conspicuous light brown stripes (Figs 17–18).

Measurements. Total length: 15.77. Chelicerae basal segment: length 2.62. Carapace elongated: length 7.17, width 5.93. Abdomen: length 7.43. Clypeus absent. Eye tubercle slightly elevated, sub-rectangular: length 0.69, width 1.43. Anterior eye row slightly procurved, posterior slightly recurved. Eyes and interdistances: AME 0.29, ALE 0.43, PME 0.24, PLE 0.29, AME–AME 0.1, AME–ALE 0.1, ALE–ALE 0.82, PME–PME 0.69, PME–PLE 0.06, PLE–PLE: absence of the left PLE, AME–PME 0.11, ALE–PLE 0.09. Thoracic fovea straight, narrow, deep: width 0.79. Chelicerae basal segment with nine well-developed teeth on furrow promargin and a group of ca 20 small teeth on proximal area of furrow. Intercheliceral tumescence absent. Maxillae with ca 100 cuspules, located on anterior inner corner. Labium trapezoidal: length 0.91, width 1.39, with ca 180 cuspules. Sternum slightly oval: length 3.06,

**Table 6.** Length of legs and palpal segments of holotype, ♂ (MZSP 28420) / paratype, ♀ (MZSP 26081) of *Schismatothele timotocuica* sp. nov.

| | I | II | III | IV | Palp |
|---|---|---|---|---|---|
| Femur | 5.68/5.51 | 4.91/4.23 | 4.38/3.48 | 5.87/5.08 | 3.78/3.41 |
| Patella | 3.79/3.26 | 2.76/2.74 | 2.4/2.52 | 2.91/3.11 | 1.91/2.32 |
| Tibia | 4.78/3.58 | 3.62/2.83 | 2.77/2.34 | 4.55/3.86 | 2.87/2.65 |
| Metatarsus | 4.04/2.85 | 3.6/2.59 | 3.67/2.71 | 5.91/4.54 | – |
| Tarsus | 2.88/2.39 | 2.78/2.3 | 2.37/1.95 | 2.98/2.45 | 1.55/2.04 |
| **Total** | **21.17/17.58** | **17.67/14.69** | **15.59/13** | **21.92/19.07** | **10.11/10.42** |

width 2.99, with three pairs of sigilla, posterior ones longer than the others with the same distance from the edge.

Palpal bulb. Without keels, with subrectangular tegulum. Short and thin embolus pointing upward. Paraembolic apophysis, pointing upward below embolus, slightly twisted retrolaterally with straight tip (Figs 67–70). Cymbium with two asymmetric lobes, retrolateral larger and wider; prolateral lobe elongated and laterally flattened; retrolateral lobe with a distal retrolateral protrusion. Palpal tibia swollen, with short spines in a row separated in two groups, one apical group with 4–5 spines and other at retrolateral midline with 4–5 spines near the ventral medial concavity (Figs 72–73).

Legs and palps. Tibial spur I: prolatero-ventral spur with two separated branches; retrolateral branch slightly procurved, digitiform, with a small spine inserted subapically, prolateral slightly shorter, recurved and with contiguous spine (Fig. 71). Metatarsus I bent retrolaterally to tibial spur. Superior tarsal claws without teeth. Tarsal scopulae: I and II entire with longitudinal band of conical setae, III and IV divided by longitudinal band of conical setae. Metatarsal scopulae not dense, extension: I on distal ¾, II on distal half, III on distal half, IV on less than half. Clavate tarsal trichobothria in two rows, each with ca 10 trichae, interspersed with filiform trichobothria of different lenght. Tarsus IV cracked. Leg formula 4123 (Table 6).

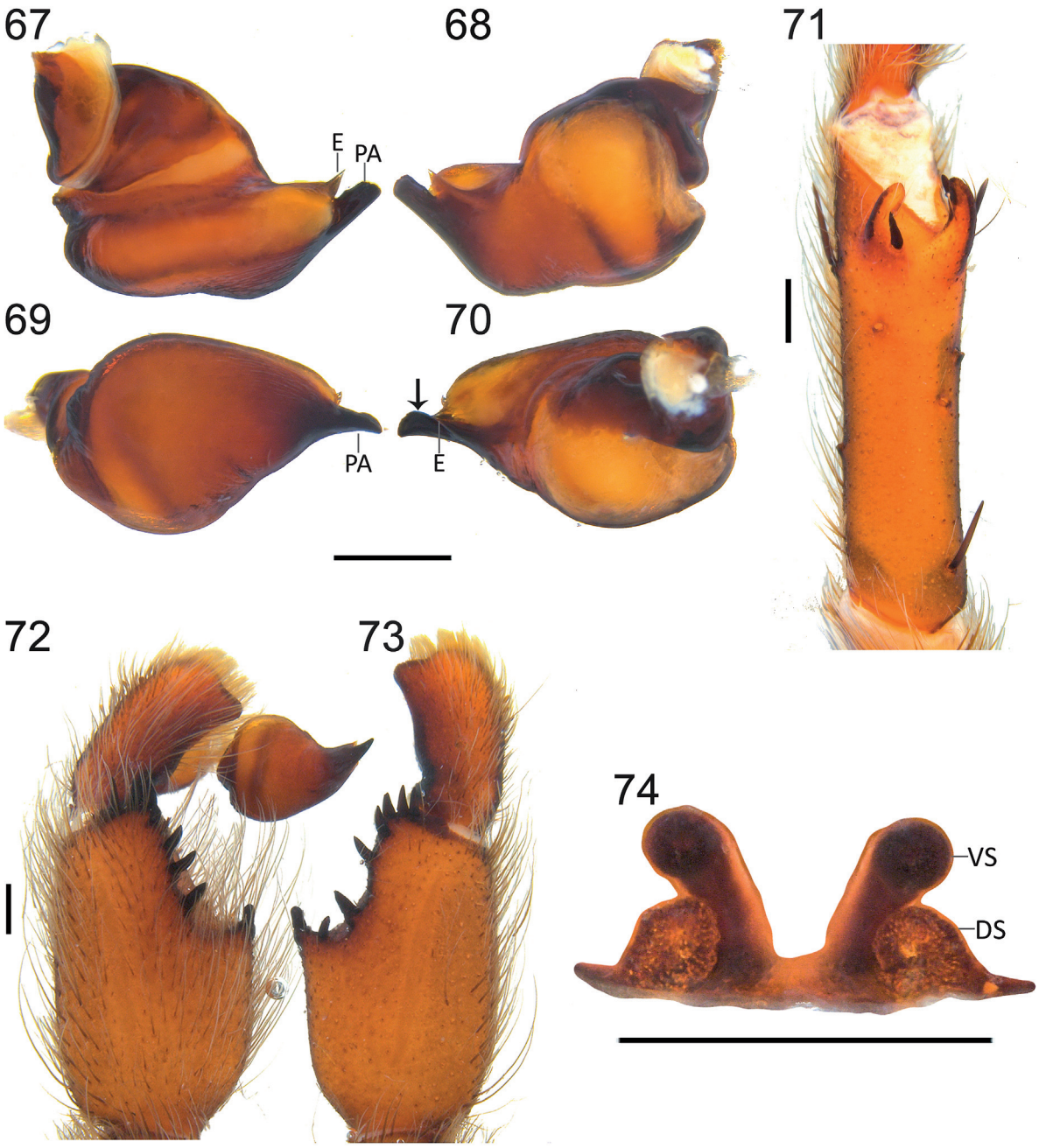
Spination (proximal to distal). Cymbium and tarsi without spines. Palp: femur 0; patella 0; tibia (r) 8 megaspines. Leg I: femur (p) 0-0-1; patella 0; tibia (v) 1-3-ap2, (p) 0-1-1; metatarsus (v) 1, (p) 0-1-0. Leg II: femur (p) 1; patella (p) 1; tibia, (v) 2-3-ap3, (p) 1-1-0; metatarsus (v) 1-1-ap3, (p) 1-1-0. Leg III: femur (d) 0-1-3; patela 0; tibia (v) 1-1-ap3, (p) 1-1-0, (r) 2-2-0; metatarsus (v) 1-0-ap3, (p) 0-1-1, (r) 1-2-1. Leg IV: femur (p) 2; patela 0; tibia (v) 1-2-ap3, (p) 1-0-1, (r) 3-2-0; metatarsus (v) 0-2-ap3, (p) 0-1-1, (r) 1-1-0.

**Female** (paratype MZSP 26081)

Color (in alcohol). As in male (Figs 19–20).

Measurements. Total length: 18.84. Chelicerae basal segment: length 3.8. Carapace elongated: length 7.07, width 5.71. Abdomen: length 9.31. Clypeus absent. Eye tubercle slightly elevated, subrectangular: length 0.76, width 1.58. Anterior eye row slightly procurved, posterior slightly recurved. Eyes and interdistances: AME 0.34, ALE 0.45, PME 0.21, PLE 0.31, AME–AME 0.08, AME–ALE 0.12, ALE–ALE 0.92, PME–PME 0.74, PME–PLE 0.04, PLE–PLE 1.09, AME–PME 0.08, ALE–PLE 0.08. Thoracic fovea slightly procurved, narrow, deep: width 1.11. Chelicerae basal segment with 10–11 well-developed teeth on furrow promargin, and group of ca 30 small teeth on proximal area of furrow. Intercheliceral tumescence absent. Maxillae with about 100 cuspules, located at anterior inner

corner. Labium trapezoidal: length 0.91, width 1.55, with more than 100 cuspules. Sternum rounded: length 3.52, width 3.39; with three pairs of sigilla, posterior ones longer than the others with the same distance from the edge.




**Figs 67–74.** *Schismatothele timotocuica* sp. nov. **67–73**. Holotype, ♂ (MZSP 28420). **67–70**. Palpal bulb, prolateral (67), retrolateral (68), ventral (69), and dorsal (70) views. **71**. Tibial spur, ventral view. **72–73**. Palpal tibiae, right (72), and left (73). **74**. Paratype, ♀ (MZSP 26081), permathecae, ventral view. Abbreviations: E = embolus; DS = dorsal receptacle; PA = paraembolic apophysis; VS = ventral receptacle. Black arrow show the retrolateral torsion of paraembolic apophysis. Scale bars = 0.5 mm.

Spermathecae. Heavily sclerotized, composed of two portions, dorsal and ventral unfused. Ventral portion with two digitiform unfused receptacles, slightly recurved. Dorsal portion with two globose receptacles, pointing inward, with granular aspect (Fig. 74).

Legs and palps. Superior tarsal claws without teeth. Tarsal scopulae: I entire with longitudinal band of conical setae; II–IV divided by longitudinal band of conical setae. Metatarsal scopulae I–II denser than III–IV, extension: I–II on distal ¾, III on more than distal half, IV on less than half. Clavate tarsal trichobothria in two rows, each with ca 10 trichae, interspersed with filiform trichobothria of different lenghts. Tarsus IV not cracked. Leg formula 4123 (Table 6).

Spination (proximal to distal). Tarsi without spines. Palp: femur 0; patella 0; tibia (v) ap3. Leg I: femur 0; patella 0; tibia 0; metatarsus (d) 1-0-ap1. Leg II: femur 0; patella 0; tibia 0; metatarsus (d) 1-1-ap1. Leg III: femur 0; patella (r) 1; tibia (d) 1-0-ap2, (v)0, (p) 0-1-1, (r) 1-1-0; metatarsus (d) 0-1-ap1, (p) 0-1-1, (r) 1-1-1. Leg IV: femur 0; patella 0; tibia (d)0-2-ap3, (p)0-1-1, (r) 0-1-ap1; metatarsus (d) 0-1-ap2, (p) 0-1-1, (r) 1-1-1.

***Schismatothele wayana*** sp. nov.
urn:lsid:zoobank.org:act:FE18E19C-E426-45E7-8A02-F05550D74544
Figs 21–22, 75–82, 87; Table 7

**Diagnosis**

Males differ from those of all other species by the presence of prolateral and retrolateral paraembolic keels (Figs 75–79). Resemble those of *S. benedettii*, *S. modesta* and *S. moonenorum* sp. nov. by the embolus and paraembolic apophysis pointing forward (Figs 51–52) and *S. benedettii* by the flat shape of paraembolic apophysis (Figs 75–77). Females unknown.

**Etymology**

The name is in honor of the Wayana indigenous group, natives of the eastern region of the Pará State in Brazil.

**Type material**

**Holotype**
BRAZIL • ♂; Pará, Jari-Almeirin; 11 Feb. 2005; T. Gardner leg.; MPEG 7363.

**Paratypes**
BRAZIL • 2 ♂♂; same collection data as for holotype; MZSP 77130 • 2 ♂♂; same collection data as for holotype; IBSP 311777.

**Other material examined**

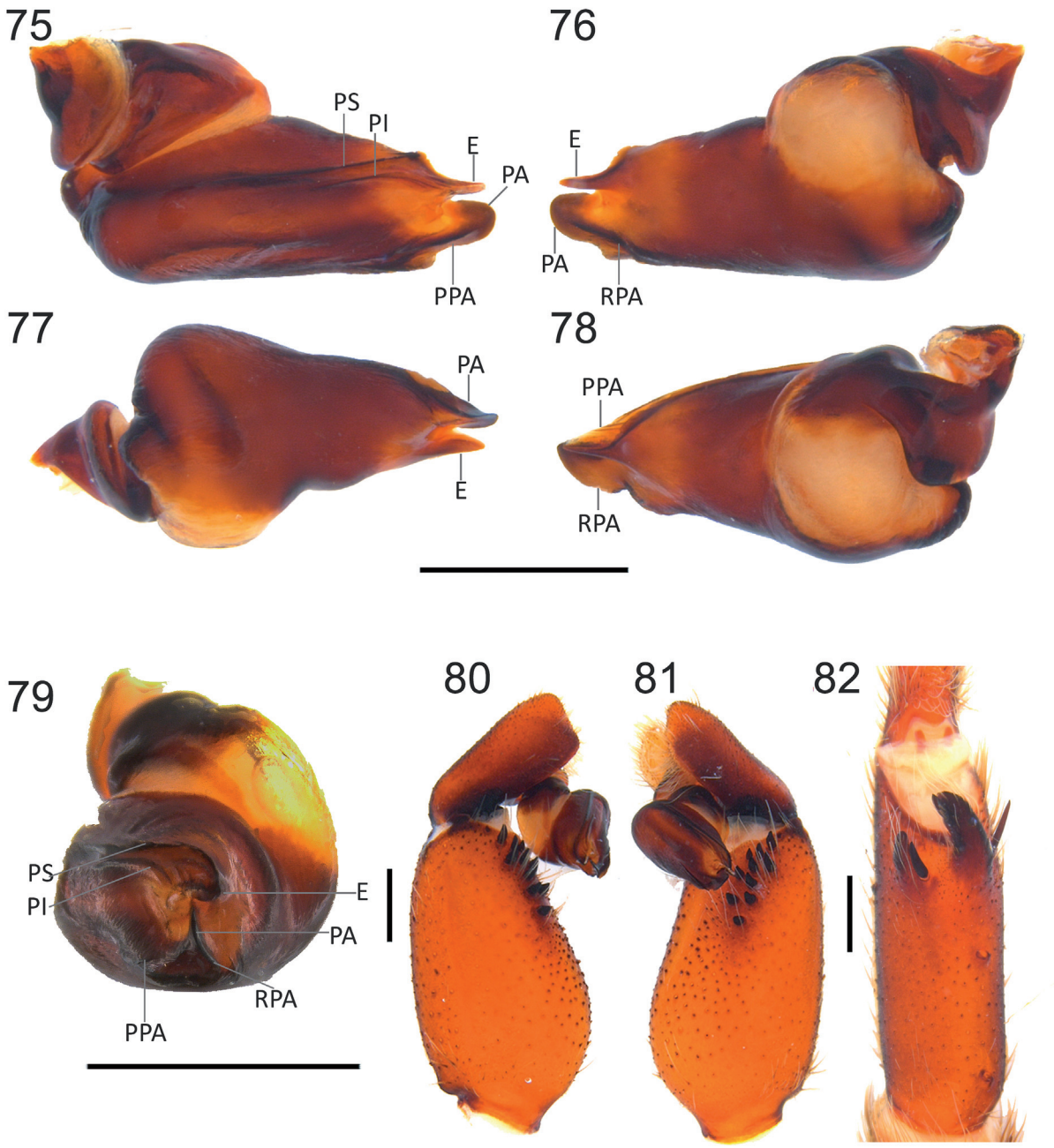
BRAZIL • 11 ♂♂; same collection data as for holotype; MPEG 7351, 7354, 7355, 7360, 7362 (2 specs), 7364 (2 specs), 7367 to 7369.

**Description**

**Male** (holotype MPEG 7363)
Color (in alcohol). Carapace, legs and chelicerae dark brown, sternum, labium reddish brown, abdomen light brown (Figs 21–22).

Measurements. Total length: 14.94. Chelicerae basal segment: length 2.46. Carapace elongated: length 7.27, width 6.02. Abdomen: length 6.45. Clypeus absent. Eye tubercle slightly elevated, subrectangular: length 0.58, width 1.34. Anterior eye row slightly procurved, posterior slightly recurved.

Eyes and interdistances: AME 0.37, ALE 0.32, PME 0.19, PLE 0.25, AME–AME 0.11, AME–ALE 0.03, ALE–ALE 0.79, PME–PME 0.65, PME–PLE 0.04, PLE–PLE 0.93, AME–PME 0.07 ALE–PLE 0.08. Thoracic fovea slightly procurved, deep with a longitudinal Y-shaped depression on carapace: width 0.76. Chelicerae basal segment with eight well-developed teeth on furrow promargin and a group of ca 20 small teeth on proximal area of furrow. Intercheliceral tumescence absent. Maxillae ca 100 cuspules,




**Figs 75–82.** *Schismatothele wayana* sp. nov., holotype, ♂ (MPEG 7363). **75–79**. Palpal bulb, prolateral (75), retrolateral (76), ventral (77), dorsal (78), and frontal (79) views. **80–81**. Palpal tibiae, right (80), and left (81). **82**. Tibial spur, ventral view. Abbreviations: E = embolus; PA = paraembolic apophysis; PI = prolateral inferior keel; PPA = prolateral paraembolic keel; PS = prolateral superior keel; RPA = retrolateral paraembolic keel. Scale bars = 0.5 mm.

**Table 7.** Length of legs and palpal segments of holotype, ♂ (MPEG 7363) of *Schismatothele wayana* sp. nov.

| | I | II | III | IV | Palp |
|---|---|---|---|---|---|
| Femur | 5.34 | 4.69 | 4.2 | 5.64 | 3.56 |
| Patella | 3.35 | 2.85 | 2.4 | 2.73 | 2.07 |
| Tibia | 3.79 | 2.92 | 2.41 | 4.25 | 2.56 |
| Metatarsus | 2.95 | 3.03 | 3.24 | 5.35 | – |
| Tarsus | 2.41 | 2.36 | 2.26 | 2.65 | 1.49 |
| **Total** | **17.84** | **15.85** | **14.51** | **20.62** | **9.68** |

located on anterior inner corner. Labium trapezoidal: length 0.76, width 1.09, with ca 180 cuspules. Sternum slightly oval: length 3.23, width 3.12; with three pairs of sigilla, posterior ones longer than the others with the same distance from the edge.

Palpal bulb. Tegulum piriformis, with a long prolateral superior keel (PS) and a short inferior prolateral keel below (PI). Paraembolic apophysis flat, with rounded tip, below embolus, pointing forward. Presence of prolateral and retrolateral paraembolic keels (Figs 75–79). Cymbium with two asymmetric lobes, retrolateral longer and wider; prolateral lobe elongated and laterally flattened; retrolateral lobe without a distal retrolateral protrusion. Palpal tibia swollen, without mid-length concavity, prolateral side with two parallel rows with 9–10 short spines disposed on apical third (Figs 80–81).

Legs and palps. Tibial spur I: prolatero-ventral spur with two separate branches of different lenght; retrolateral branch larger, slightly procurved, with a small spine inserted subapically, prolateral branch shorter, slightly recurved, with contiguous spine with almost the same size (Fig. 82). Metatarsus I bent retrolaterally to tibial spur. Superior tarsal claws without teeth. Tarsal scopulae: I and II entire with longitudinal band of conical setae, III and IV divided by longitudinal band of conical setae. Metatarsal scopulae not dense, extension: I on distal ¾, II on more than distal half, III on distal half, IV on less than half. Clavate tarsal trichobothria in two rows, each with ca 9 trichae, interspersed with filiform trichobothria of different lengths. Tarsus IV cracked. Leg formula 4123 (Table 7).

Spination (proximal to distal). Cymbium and tarsi without spines. Palp: femur 0; patella 0; tibia (r) ca 10 megaspines. Leg I: femur (p) 1; patella (v) 1; tibia (r) 1-1-1; metatarsus (v) 1-1-1. Leg II: femur (p) 1; patella (v)1; tibia (v) 1-1-ap2, (p) 0-1-ap1; metatarsus (v) 0-2-ap2. Leg III: femur (p) 0-0-2, (r) 1; patela (r) 1; tibia (v)2-2-ap3, (p) 1, (r) 1; metatarsus (v)2-2-ap3, (p) 0-1-1, (r) 0-1-1. Leg IV: femur (p)1, (r) 1; patela (p) 1; tibia (v) 3-3-ap2, (p)1-0-2, (r) 1; metatarsus (v)2-3-ap3, (p) 1-1-1, (r) 1-1-1.

***Schismatothele weinmanni*** Valencia-Cuéllar *et al*., 2019
Figs 83–87

**Emended diagnosis** (see Valencia-Cuéllar *et al*. 2019: 558)

Males resemble those of *S. caeri* sp. nov. by the presence of prolateral tegular apophysis (Figs 83, 85) but differ from the presence of a paraembolic apophysis (Figs 83–86).

**Type material** (examined)

**Holotype**

COLOMBIA • ♂; Cundinamarca, Cachipay; 1600 m a.s.l.; 13 Nov. 2001; D. Weinmann leg.; ICN-Ar 8360.

**Paratypes**

COLOMBIA • 1 ♀; same collection data as for holotype; ICN-Ar 8361 • 1 ♀; same collection data as for holotype; MZSP 28410 • 1 ♀; same collection data as for holotype; 9 Nov. 1999; D. Weinmann leg.; ICN-Ar 8363 • 1 ♀; Cundinamarca, Quebrada El Zancudo; 1200 m a.s.l.; 12 Aug. 2004; D. Weinmann leg.; ICN-Ar 8362 • 1 ♂; Cundinamarca, La Mesa; 1200 m a.s.l.; 15 Apr. 2009; D. Weinmann leg.; ICN-Ar 8364.

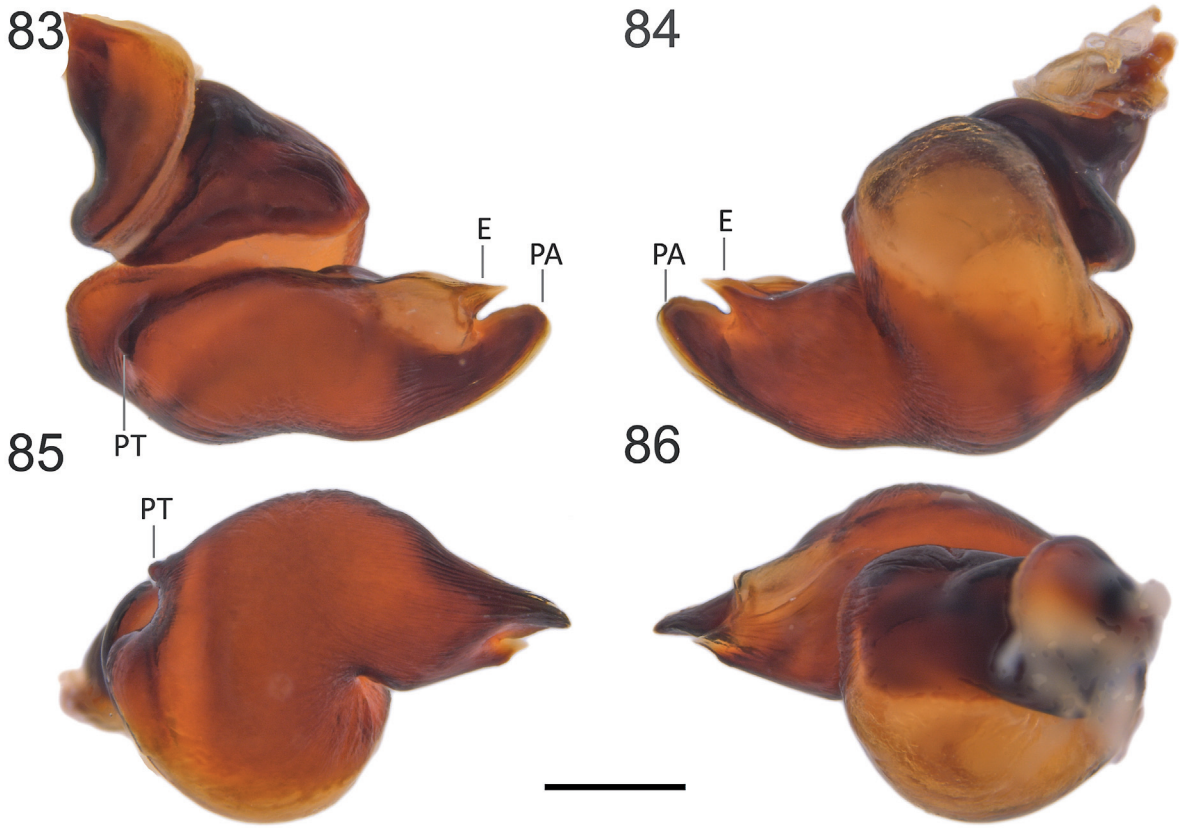
Only type material known.

**Description**

See Valencia-Cuéllar *et al*. (2019: 558).

## Discussion

The description of new species herein doubles the diversity of *Schismatothele* and extends its distribution from the extreme north of the Andes to the Amazon rainforest, occurring in five countries: Brazil, Colombia, French Guiana, Trinidad and Tobago and Venezuela (Fig. 87). The highest diversity of the genus is present especially along the Andes Mountain Range. In addition, the group shows some morphological plasticity, such as differences in the patterns of spination on the male palpal tibia, with mid concavity not present in all species, cymbium bulge not present in the Amazonian species: *S. benedettii*, *S. moonenorum* sp. nov. and *S. wayana* sp. nov., and spermathecae receptacles not fused in all species.




**Figs 83–86.** *Schismatothele weinmanni* Guadanucci, Perafán & Valencia-Cuéllar, 2019, holotype, ♂ (ICN-Ar 8360), palpal bulb, prolateral (83), retrolateral (84), ventral (85), and dorsal (86) views. Abbreviations: E = embolus; PA = paraembolic apophysis; PT = prolateral tegular apophysis. Scale bar = 0.5 mm.

Blandin & Purser (2013) propose a great revision of South America geodynamics, in which the Northern Andes system are composed of two parallel main cordilleras (occidental and oriental), ramified into Colombia, with the succession of three cordilleras (Cordilleras Occidental, Central and Eastern). In Venezuela, the Cordillera de Mérida is connected to the Colombian Cordillera Oriental, and the Cordillera de la Costa is isolated (Blandin & Purser 2013: fig. 01). They also suggest that, despite the Andes cordillera emerged around 60 Ma, the three major Colombian cordilleras differ in age and may have emerged in the last 8 Ma (Gregory-Wodzicki 2000; Sempere *et al.* 2008; Mamani *et al.* 2010). Given the morphology and high diversity in the Andean region, it is possible that the recent developments in the

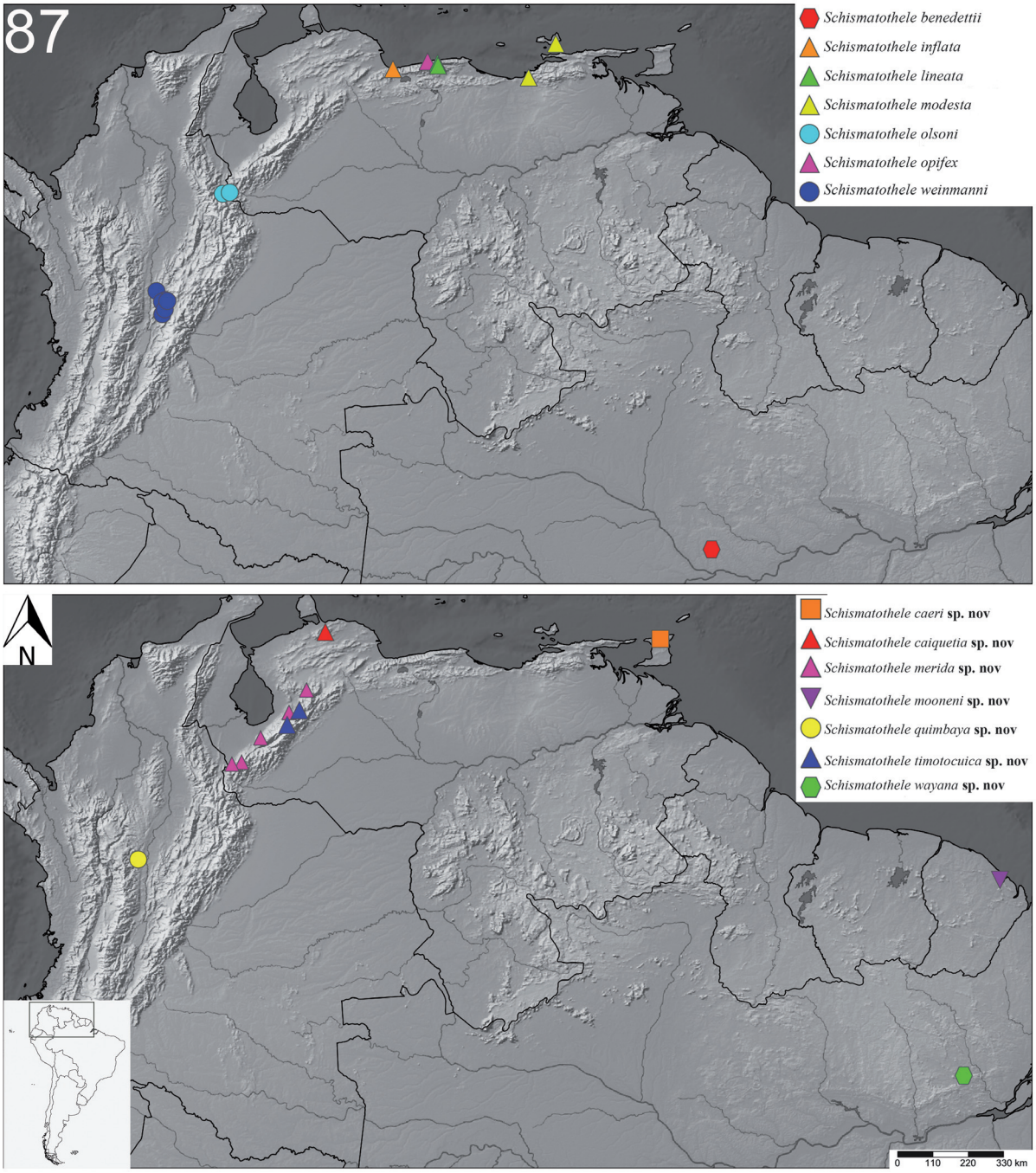



**Fig. 87.** Distribution map for species of *Schismatothele* Karsch, 1879.

Andes formation may have had a vicariant effect on the ancestral populations of *Schismatothele*. Only a phylogeographic analysis can bring light on the matter.

We noticed the presence of prolateral keels in some species of *Schismatothele*. The prolateral superior and inferior keels are present in all species, except in *S. caiquetia* sp. nov., *S. timotocuica* sp. nov., *S. olsoni* and *S. merida* sp. nov. that have the shortest tegulum. Furthermore, paraembolic apophysis is present in all species, except *S. caeri* sp. nov., *S. hacaritama* and *S. quimbaya* sp. nov., which have only an apical keel in the same position. The presence of keels in male palpal bulbs is mentioned in the literature of *Schismatothele* and *Euthycaelus* several times, but without standardized nomenclature. Panzera *et al*. 2011 cite that the keels of *S. benedettii* do not appear to be clearly homologous to those present in Theraphosinae. Bertani & Almeida (2021) mention the presence of prolateral keels in *Yanomamius* and Cifuentes & Bertani (2022) assign these keels as PS and PI in their data matrix based in *Yanomamius raonii*. Guadanucci (2014) included only *S. timotocuica* (male MZSP 26080 and female MZSP 26081, misidentified as *S. lineata*) in his phylogenetic analysis, which do not have keels in the palpal bulb. In addition, Guadanucci & Weinmman (2014) reported the presence of a dorsal and ventral keel for *S. inflata* and *S. modesta*, but they do not infer any parallel with the keels in Theraphosinae and agree with Panzera *et al.* (2011). The same occurs in Valencia-Cuéllar *et al*. (2019) to *S. weinmanni*.

The presence of prolateral keels is considered one of the three synapomorphies of Theraphosinae (Raven 1985; Pérez-Miles *et al.* 1996; Bertani 2000). However, these characters have never been tested with representatives of both subfamilies. Besides the keels, other structures found in genera of Theraphosinae are similar to those present in *Schismatothele*, such as: paraembolic apophysis present in all species of *Cyriocosmus* Simon, 1903 and some species of *Hapalopus* Ausserer, 1875 (Fukushima *et al.* 2005; Gabriel 2011); tegular apophyses, present in *Brachypelma* Simon, 1891, *Cyriocosmus*, *Homoeomma* Ausserer, 1871 and *Magnacarina* Mendoza, Locht, Kaderka, Medina & Pérez-Miles, 2016 (Bertani 2000; Kaderka 2010; Mendoza *et al.* 2016; Mendoza & Francke 2020) and the VGP, similar to granular areas of *Acanthoscurria* Ausserer, 1871 and *Neischnocolus* Petrunkevitch, 1925 (Bertani 2000; Pérez-Miles *et al.* 2008; Paula *et al.* 2014). In our perspective, it is not clear if the palpal keels and other structures present in some species of *Schismatothele* and other S*chismatothelinae* genera are homologous to those of Theraphosinae. We describe these keels of *Schismatothele* based on similarities with those present in Theraphosinae, without performing any homology test. This type of analysis demands an extensive review of material and characters that are not easily accessible for us. Despite scarcity of fresh tissue in collections, and ultraconserved element methods being expensive, we agree that molecular methods should be associated with homology tests to better understand their evolution. However, we believe that discriminating characters using a standardized nomenclature may be useful for future homology tests. The monophyly of Schismatothelinae and its relationship with other Theraphosidae subfamilies is still uncertain and must be reviewed in an integrative study, combining morphological and molecular data. Given the current scenario of genus *Schismatothele*, disagreement between morphological and molecular phylogenies is to be expected.

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