

Research article

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Two fancy spines and a collar: a taxonomic review of the myrmecomorphic spider genus *Mazax* O. Pickard-Cambridge, 1898 (Araneae: Corinnidae: Castianeirinae) in South America

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Abstract. The South American species of the myrmecomorphic spider genus *Mazax* O. Pickard-Cambridge, 1898 (Castianeirinae, Corinnidae) are revised for the first time, increasing the number of known species from South America from two to six and the number of species in the genus from seven to 11. Here, we reevaluate the identity of *Apochinomma acanthaspis* Simon, 1896, propose its transfer to *Mazax*, and consider *M. akephaloi* Perger & Pett, 2022 as a junior synonym of *M. acanthaspis* comb. nov. Additional documentation of *M. ramirezi* Rubio & Danişman, 2014 is provided. The species *M. pax* Reiskind, 1969 and *M. spinosa* (Simon, 1898) are recorded from South America for the first time. Three new species are proposed, all based on both sexes: *Mazax mokana* sp. nov. and *M. leonidas* sp. nov. from Colombia, and *M. tembe* sp. nov. from Brazil. Emended diagnoses of the genus and of all six known South American species, as well as a key to males and females for all 11 species in the genus, are provided.

Keywords. Ant-mimicry, neotropical region, new combination, new synonym, taxonomy.

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Introduction

The myrmecomorphic spider genus *Mazax* O. Pickard-Cambridge, 1898 is among the 42 genera in the corinnid subfamily Castianeirinae Reiskind, 1969 (Reiskind 1969; World Spider Catalog 2024). This group is notable for its varying degrees of myrmecomorphy, from highly specialized genera, such as *Sphecotypus* O. Pickard-Cambridge, 1895 and *Myrmecium* Latreille, 1824, general myrmecomorphic shapes, as in *Castianeira* Keyserling, 1879 (Reiskind 1969), to non-myrmecomorphic species, such as those of *Battalus* Karsch, 1878 and *Ticopa* Raven, 2015. All of them, however, exhibit the typical genitalic morphology of Castianeirinae, with the male palp having a simple pear-shaped bulbus and apical embolus, devoid of additional apophyses, and with the female having a relatively simple epigynum, with two separated copulatory openings leading to the primary spermathecae, typically through well-developed secondary ones (Reiskind 1969; Raven 2015).

Mazax was proposed by O. Pickard-Cambridge (1898) to include a single, newly described species, *M. spinosa*, based on females from Mexico. The genus was later considered a synonym of *Apochinomma* Pavesi, 1880 by Simon (1903), a controversial decision that was ignored by Chamberlin (1925) and Banks (1929), as well as in the catalog of Bonnet (1957), but followed in the catalogs of Petrunkevitch (1928) and Roewer (1955) (World Spider Catalog 2024).

It was only after the proposition of Castianeirinae and the comprehensive review of its Central and North American taxa by Reiskind (1969) that the status of *Mazax* as a valid genus was fully accepted. Reiskind (1969) transferred *Castianeira spinosa* Simon, 1898 to *Mazax* and proposed a new name for *M. spinosa* O. Pickard-Cambridge, 1898 (= *M. pax* Reiskind, 1969) to avoid a secondary homonym, diagnosing the genus and describing three species from southern USA to Central America: *M. xerxes* Reiskind, 1969, *M. chickeringi* Reiskind, 1969, and *M. ajax* Reiskind, 1969. Later additions to the genus were *M. kaspari*, described from Texas by Cokendolpher (1978), *M. ramirezi* Rubio & Danişman, 2014 from Buenos Aires Province, Argentina, and *M. akephaloi*, described by Perger & Pett (2022) based on males and females from Bolivia and Paraguay.

The characteristic pair of spiniiform dorsal setae on the anterior end of the abdomen often distinguishes these spiders (AS II; Figs 3E, 5A, 18A). However, these modified setae are absent in several instances across the genus, being more common in male forms, where they are generally inserted on large tubercles. The genus is best characterized by the presence of a well-defined and rugose anterior abdominal collar (pedicel collar in Raven 2015; abdominal petiole in Reiskind 1969) in males and females. The collar pedicel is an extension of the genital scutum that covers the pedicel, which is unique among New World castianeirines (Figs 4E, 5A).

Species of *Mazax* are known to occur from southern United States to Northern Argentina, but so far, knowledge of their distribution and diversity has mostly been restricted to North and Central America. While examining castianeirine type specimens, as well as ordinary specimens deposited in different collections containing material from South America, the need for a review of the South American *Mazax* species become clear. Here, *Apochinomma acanthaspis* Simon, 1896 is transferred to *Mazax* and is considered a senior synonym of *M. akephaloi* Perger & Pett, 2022 syn. nov., *M. ramirezi* Rubio & Danişman, 2014 is rediagnosed, and new records of *M. pax* and *M. spinosa* from South America are presented. We also propose three new species: *M. leonidas* sp. nov. and *M. mokana* sp. nov., based on males and females from Colombia, and *M. tembe* sp. nov., based on males and females from oriental

Brazilian Amazonia. Additionally, updated diagnoses of the genus and the South American species are provided, along with a key to all eleven known species of *Mazax*.

Material and methods

The specimens examined here are deposited in the following institutions:

CEUA	= Arachnological Collection of the Colección Entomológica del Instituto de Biología Universidad de Antioquia, Medellín, Colombia (M. Wolff)
IBSP	= Instituto Butantan, São Paulo, Brazil (A.D. Brescovit)
ICN-Ar	= Instituto de Ciencias Naturales of the Universidad Nacional de Colombia, Bogotá, Colombia (E. Flórez)
MACN-Ar	= Museo Argentino de Ciencias Naturales Bernardino Rivadavia, Buenos Aires, Argentina (M.J. Ramírez)
MCZ	= Museum of Comparative Zoology, Harvard, MA, USA (G. Giribet)
MNHN	= Muséum national d'Histoire naturelle, Paris, France (C. Rollard)
MPEG	= Museu Paraense Emilio Goeldi, Belém, Brazil (A.B. Bonaldo)
MUSENUV	= Museo de Entomología de la Universidad del Valle, Cali, Colombia (J. Cabra)
UEMASUL	= Universidade Estadual da Região Tocantina do Maranhão, Imperatriz, Brazil (R. Saturnino)
UFMG	= Centro de Coleções Taxonômicas, Universidade Federal de Minas Gerais, Belo Horizonte, Brazil (A.J. Santos)

The specimens were examined immersed in 80% alcohol. Measurements are expressed in millimeters and multifocal images were taken using Leica M205A and Leica M125 stereo microscopes at MPEG. Leg measurement arrangements follow: I-femur/patella/tibia/metatarsus/tarsus. Images were taken using a Leica MC 170 HD camera and processed with LAS ver. 4.9 software. Type specimens of *M. leonidas* were photographed and measured with a Leica MC-190 HD digital camera attached to a Leica M205 Leica stereo microscope at MACN. Male left palps were drawn in the ventral and retrolateral positions using a camera lucida.

The methodology for the study of internal female genitalia follows Levi (1965). For scanning electron microscopy (SEM), the structures were dissected and cleaned in a SoniClean 2P ultrasonic digital bath for one minute, dehydrated in a series of increasing ethanol concentrations (80%, 90%, 95% and 100%), and then critical-point dried, minimizing the collapse of soft structures. SEM images were obtained at the Electronic Microscopy Laboratory, MPEG. The figures and plates were edited and prepared in Adobe Photoshop® CS ver. 12.0. The maps (Figs 20–21) were prepared in the Geographic Information System QGIS “Las Palmas” (ver. 2.18.0, <http://www.qgis.org/es/site/>). The general format of descriptions is based on Reiskind (1969) and Candiani & Bonaldo (2017), terminology follows Raven (2015) and the abbreviations follow Perger & Pett (2022).

Abbreviations:

AER	= anterior eye row
ALE	= anterior lateral eye
AME	= anterior median eye
AS I	= first abdominal setae
AS II	= second abdominal setae
CD	= copulatory duct
CO	= copulatory opening
DS	= dorsal scutum
E	= embolus
FD	= fertilization duct

PER = posterior eye row
PLE = posterior lateral eye
PME = posterior median eye
RTA = retrolateral tibial apophysis
ST I = primary spermathecae
ST II = secondary spermathecae

Results

Class Arachnida Lamarck, 1801
Order Araneae Clerck, 1757
Family Corinnidae Karsch, 1878
Subfamily Castianeirinae Reiskind, 1969

Genus *Mazax* O. Pickard-Cambridge, 1898

Mazax O. Pickard-Cambridge, 1898: 275, pl. 34 fig. 2 (type species: *Mazax spinosa* Pickard-Cambridge, 1898: 276, by monotypy).

Mazax – Reiskind 1969: 258.

Diagnosis

Mazax differs from all other American genera of Castianeirinae by the presence of a long, rugose abdominal pedicel collar (Figs 4E, 17E–F) and by the dorsal abdominal scutum bulging strongly anteriorly (Figs 3B, E, 8B, E, 16B, E; Reiskind 1969: figs 282–283, 285). The presence of spiniform AS II inserted on tubercles (Figs 8E, 10E) is also informative, but they are absent in both sexes of *M. ajax* and *M. xerxes*, and in females of *M. chickeringi*, *M. mokana* sp. nov., and *M. leonidas* sp. nov. A similarly developed pedicel collar and modified AS II also occur in the Asian genus *Serendib* Deeleman-Reinhold, 2001. *Mazax* can be distinguished from *Serendib* by having the PER straight or slightly recurved (Figs 4B, 7A) (strongly recurved in *Serendib*; Zhang & Zhang 2023: figs 1a, 4a), AS I short or absent (very long in *Serendib*; Zhang & Zhang 2023: fig. 3a–b), and by the presence of a chemosensory patch on the male palpal cymbium (Figs 6C, 19D) (absent in *Serendib*; Zhang & Zhang 2023: fig. 8a, c).

Key to the species of *Mazax* O. Pickard-Cambridge, 1898

1. Males 2
– Females 12
2. Carapace darker posteriorly (Fig. 15D–E; Reiskind 1969: fig. 280) 3
– Carapace otherwise 4
3. Tibia I ventral spination 4-4, RTA present, spiniform AS II present (Fig. 14D–F, I–J) (Colombia) ..
..... *M. leonidas* sp. nov.
– Tibia I ventral spination 5-5, RTA absent, AS II absent (Reiskind 1969: figs 226–229, 280–281)
(Costa Rica) *M. xerxes* Reiskind, 1969
4. Tibia I ventral spination 2-1 or 3-2 5
– Tibia I ventral spination 3-3, 4-4, or 5-4 7
5. Tibia I ventral spination 2-1; embolus long ($\frac{1}{4}$ of bulbus length) and straight (southern Mexico)
..... *M. ajax* Reiskind, 1969
– Tibia I ventral spination 3-2; embolus otherwise 6

6. Embolus long (nearly $\frac{1}{4}$ of bulbus length) but twisted at tip; pedicel collar short ($\frac{1}{8}$ of abdomen length), thoracic groove present (Cokendolpher 1978: figs 1–7) (Southwest USA) *M. kaspari* Cokendolpher, 1978
 - Embolus short (more than $\frac{1}{10}$ of bulb length); pedicel collar long ($\frac{1}{4}$ of abdomen length), thoracic groove absent (Figs 16D–I, 17A, E, 19A–B) (Brazil) *M. tembe* sp. nov.
7. Tibia I ventral spination 3-3 (Fig. 3D–F, I–J) (USA to Colombia) *M. pax* Reiskind, 1969
 - Tibia I ventral spination 4-4 or 5-4 8
8. Tibia I ventral spination 5-4 (Fig. 10 D–F, I–J) (South America) *M. acanthaspis* (Simon, 1896) comb. nov.
 - Tibia I ventral spination 4-4 9
9. AS II inserted on large tubercle (tubercle approximately half the length of the setae) (Fig. 8E) ... 10
 - AS II inserted on small tubercle (tubercle less than $\frac{1}{3}$ the length of the setae) (Figs 14E, 15E) 11
10. Carapace without feathery setae, thoracic groove absent; embolus twisted (Fig. 8D–F, I–J) (Central America to Colombia) *M. spinosa* (Simon, 1898)
 - Carapace with feathery setae, thoracic groove present; embolus not twisted and without keels (Fig. 13D–J) (Argentina) *M. ramirezi* Rubio & Danişman, 2014
11. RTA present (Fig. 14D–F, I–J) (Colombia) *M. mokana* sp. nov.
 - RTA absent (Reiskind 1969: figs 222–225, 282) (Jamaica) *M. chickeringi* Reiskind, 1969
12. Neck between ST II and ST I very long (1.0 times length of ST II) (Reiskind 1969: fig. 239 *M. ajax* Reiskind, 1969
 - Neck between ST II and ST I short (less than half length of ST II) (Figs 3H, 6A, 10H) 13
13. Carapace bicolored 14
 - Carapace otherwise 15
14. CO inconspicuous, under groove of epigynal surface, ST II globular (Reiskind 1969: figs 226–227, 280–281) (Costa Rica) *M. xerxes* Reiskind, 1969
 - CO conspicuous, small and semi-circular, ST II oval (Fig. 15A–C, G–H) (Colombia) *M. leonidas* sp. nov.
15. Spiniiform AS II present (Fig. 4E) 16
 - Spiniiform AS II absent (Figs 7A, 8B) 20
16. AS II inserted on small tubercle (less than $\frac{1}{3}$ of setal length), carapace without feathery hairs (Cokendolpher 1978: figs 1–7) (USA) *M. kaspari* Cokendolpher, 1978
 - AS II inserted on large tubercle (more than $\frac{1}{3}$ of setal length), carapace with feathery hairs (Figs 3A–B, D, 4E, 5) 17
17. ST II lung-shaped; tibia I ventral spination 5-5 or 5-4 18
 - ST II globose; tibia I ventral spination 3-3 19
18. Tibia I ventral spination 5-4; ST II proximal region wider than distal region, CD strongly sinuous (Fig. 12A–D, G–H) (Argentina) *M. ramirezi* Rubio & Danişman, 2014
 - Tibia I ventral spination 5-5; ST II proximal region of same width as distal region, CD nearly straight (Figs 9A–D, 10A–C, G–H) (South America) *M. acanthaspis* (Simon, 1896) comb. nov.

19. CO located below a short transversal groove, ST I narrow (nearly $\frac{1}{3}$ of ST II width); abdomen dark gray ventrally (Fig. 3A–C, G–H) (USA to Colombia) *M. pax* Reiskind, 1969
– Transversal groove above CO absent; ST I wide (nearly $\frac{1}{2}$ of ST II width); abdomen white ventrally (Fig. 12A–C, J–K) (Brazil) *M. tembe* sp. nov.
20. Tibia I ventral spination 5-5 or 6-6, thoracic groove absent (Figs 7A–C, 8A–C, G–H) (Central America to Colombia) *M. spinosa* (Simon, 1898)
– Tibia I ventral spination 4-4, thoracic groove present (Figs 9A, 12A) 21
21. CO positioned nearly superimposed on spermathecae in ventral view, CD straight (Reiskind 1969: figs 222–223) (Jamaica) *M. chickeringi* Reiskind, 1969
– CO positioned laterally to spermathecae in ventral view, CD curved (Fig. 14A–C, G–H) (Colombia) *M. mokana* sp. nov.

Mazax pax Reiskind, 1969

Figs 2A, 3–6

Mazax spinosa O. Pickard-Cambridge, 1898: 276, pl. 34 fig. 2, ♀ (preoccupied by *Mazax spinosa* (Simon, 1898)).

Mazax pax Reiskind, 1969: 264, figs 233–236, 285, ♂♀ (replacement name).

Mazax spinosa – Banks 1929: 60. — Bonnet 1957: 2742. — Chickering 1937: 33, pl. 1 fig. 10, pl. 2 fig. 24, pl. 6 fig. 68, ♂♀.

Apochinomma spinosum – Roewer 1955: 608, ♀.

Mazax pax – Chamé-Vázquez, Jiménez & López Gálvez 2020: 62, fig. 3a–b, ♀.

Diagnosis

Males of *M. pax* resemble those of *M. acanthaspis* comb. nov. and *M. ramirezi* by the presence of white feathery hairs on the carapace (Figs 3A, D, 12A), but differ by the tibia I ventral spination being 3-3 (4-4 in *M. ramirezi* and 5-4 in *M. acanthaspis* comb. nov.) and having the embolus with two keels (Figs 3I–J, 6D) (absent in both *M. ramirezi* and *M. acanthaspis*). Females of *M. pax* resemble those of *M. kaspari* and *M. tembe* sp. nov. by the tibia I ventral spination being 3-3; they differ from those of *M. kaspari* by the presence of white feathery hairs on the carapace (absent in *M. kaspari*), and from those of *M. tembe* by the presence of a short groove above the CO (Fig. 3G) (absent in *M. tembe*) and by the narrow ST I (nearly $\frac{1}{3}$ of ST II width) (Figs 3H, 6A) (wider, nearly $\frac{1}{2}$ of ST II width in *M. tembe*).

Type material

MEXICO • ♀, holotype; Teapa, Tabasco; BMNH (not examined).

Material examined (new records)

COLOMBIA – **Chocó** • 1 ♂; Riosucio, La Gira; [7°22'46.13" N, 77°00'27.93" W]; Jul. 1992; M. Mendoza leg.; ICN-Ar-4573 • 1 ♂, 2 ♀♀; Riosucio, Parque Nacional Natural Los Katíos, Centro Administrativo Sautatá; 7°51' N, 77°08' W; elev. 30 m; 29 Jun. 2003; P. Lopez leg.; MUSENUV-Ar 2822 • 2 ♀♀; same collection data as for preceding; MUSENUV-Ar 2823 • 2 ♀♀; same collection data as for preceding but 29 May–13 Jun. 2003; MUSENUV-Ar 2824 • 1 ♀; same collection data as for preceding but 1–15 Jul. 2003; MUSENUV-Ar 2828 • 1 ♀; Acandí, Capurganá, Jardín Botánico; elev. 50 m; [8°37'30.19" N, 77°21'43.91" W]; 26 Apr. 2007; S. Elrach leg.; IBSP-221914. – **Bolívar** • 1 ♀; Zambrano; [9°45'31.74" N, 74°53'42.60" W]; 29 Dec. 1993; ICN-Ar-5682 • 1 ♂; same collection data as for preceding but 22 Jul. 1993; MUSENUV-Ar 2818 • 1 ♂; same collection data as for preceding

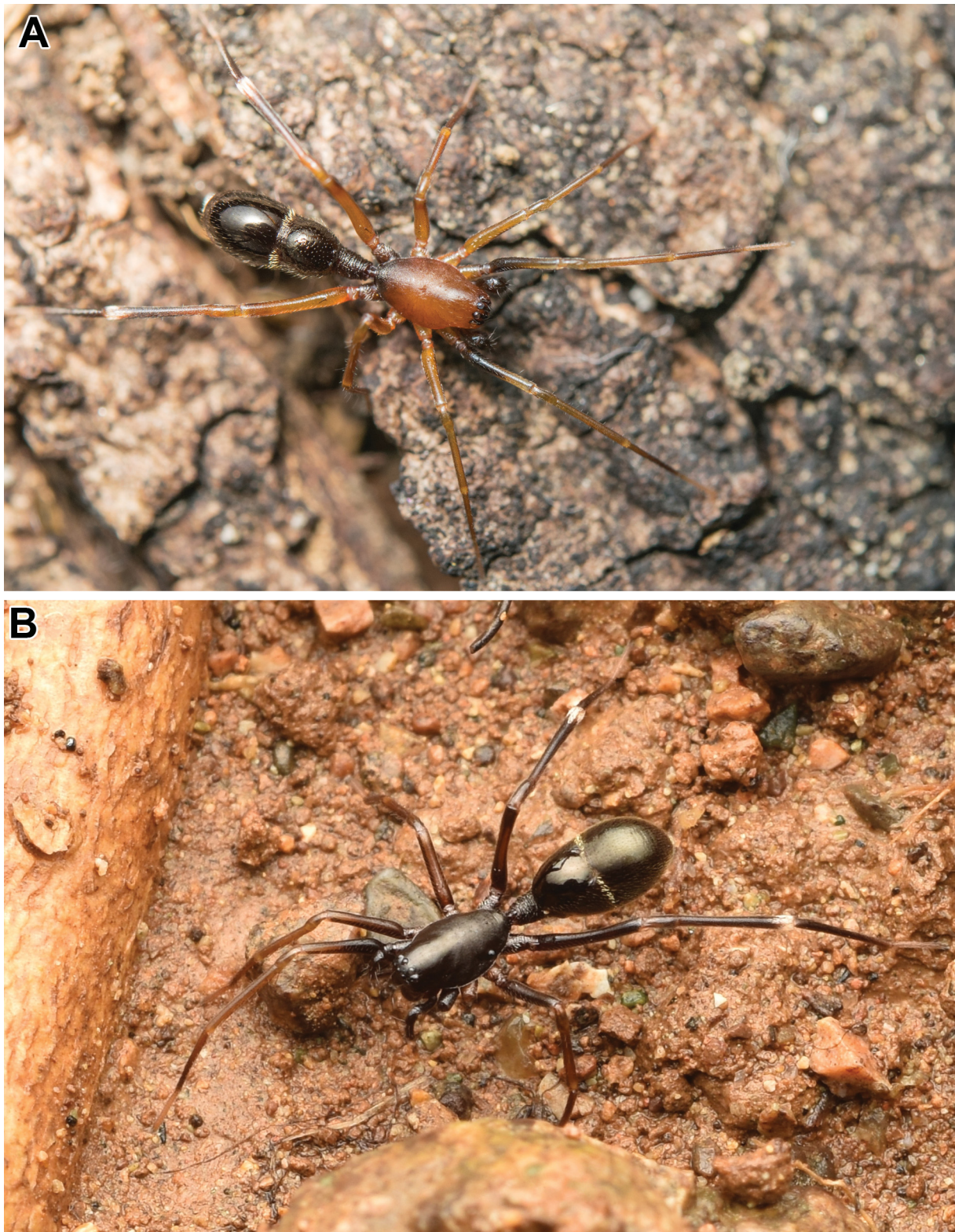


Fig. 1. Live specimens of the *Mazax spinosa* group. **A.** *M. leonidas* sp. nov. **B.** *M. spinosa* (Simon, 1898). Credits: A. Alejandra Alejandra Arroyave Muñoz, B. Luke Padon.

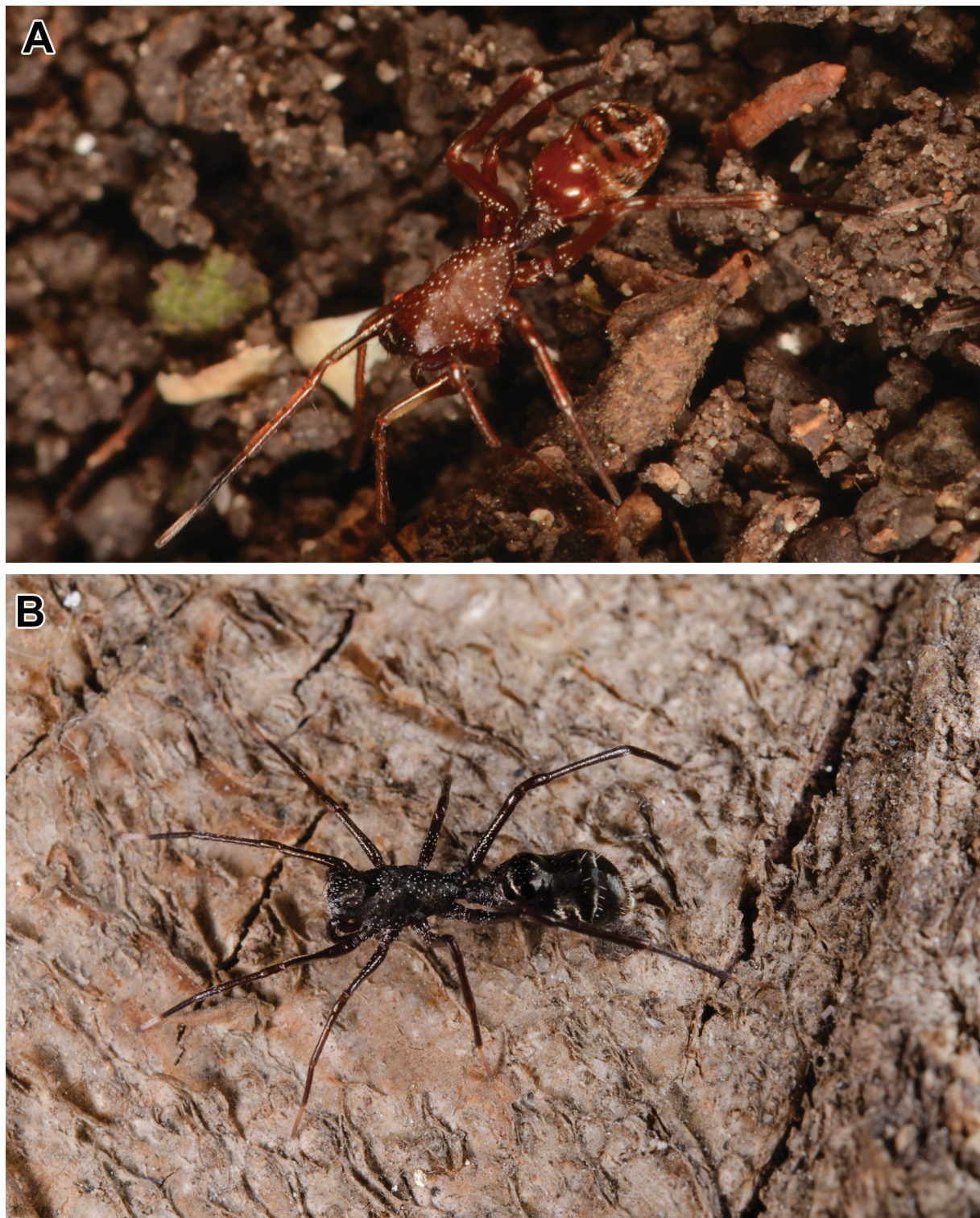


Fig. 2. Live specimens of the *Mazax pax* group. **A.** *M. pax* Reiskind, 1969 (Mexican variation). **B.** *M. acanthaspis* (Simon, 1896). Credits: A. Arthur Anker, B. Leonardo Carvalho.

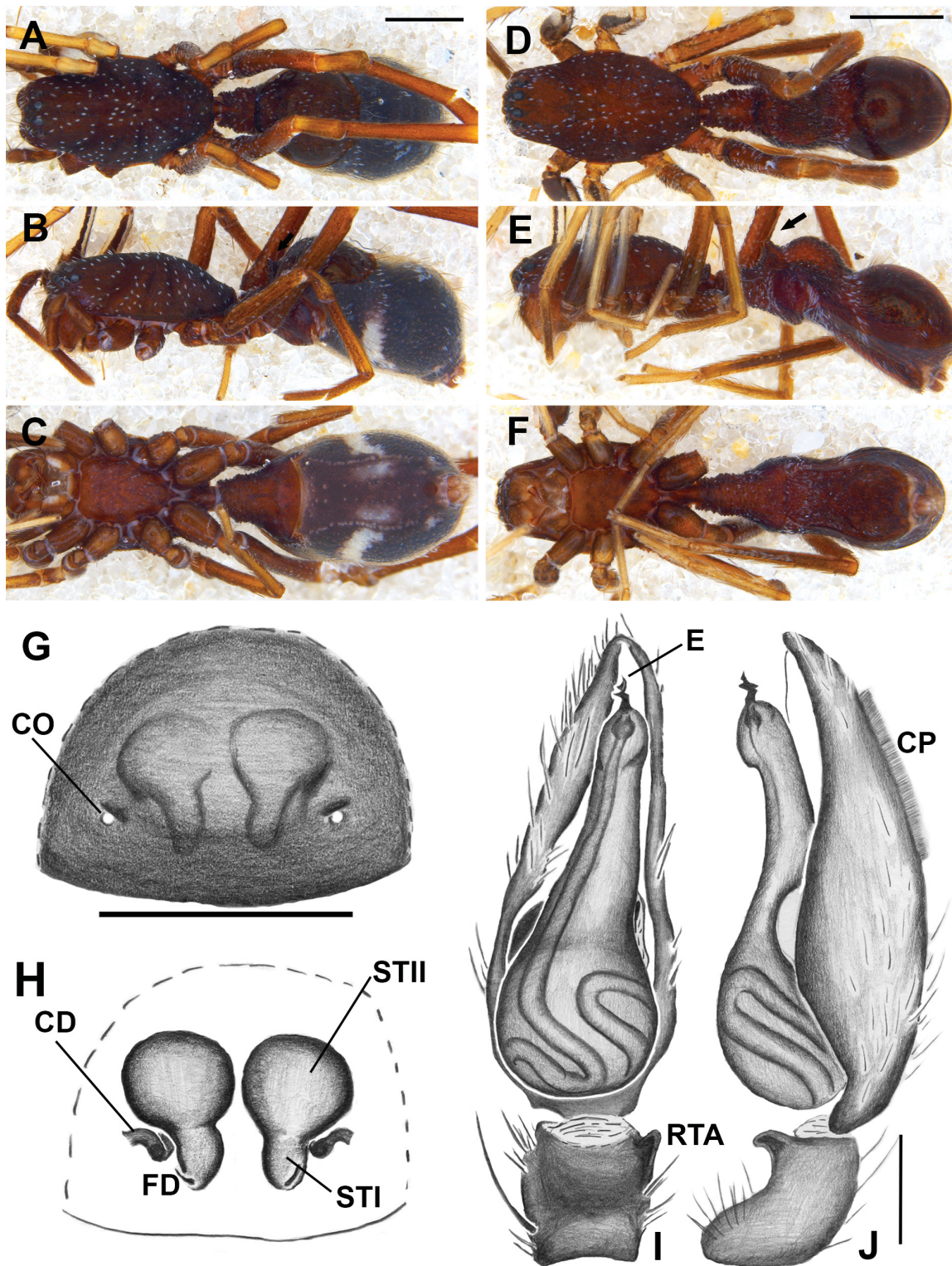


Fig. 3. *Mazax pax* Resikind, 1969. A–C, G–H. ♀ (IBSP-221909). D–F, I–J. ♂ (ICN-Ar-8773). A. Dorsal view. B. Lateral view. C. Ventral view. D. Dorsal view. E. Lateral view (black arrow indicates AS II). F. Ventral view. G. Epigyne, ventral view. H. Same, dorsal view. I. Palp, ventral view. J. Same, retrolateral view. Abbreviations: CD = copulatory duct; CO = copulatory opening; CP = chemocensory patch; E = embolus; FD = fertilization duct; RTA = retrolateral tibial apophysis; ST I = primary spermatheca; ST II = secondary spermatheca. Scales: 0.5 mm.

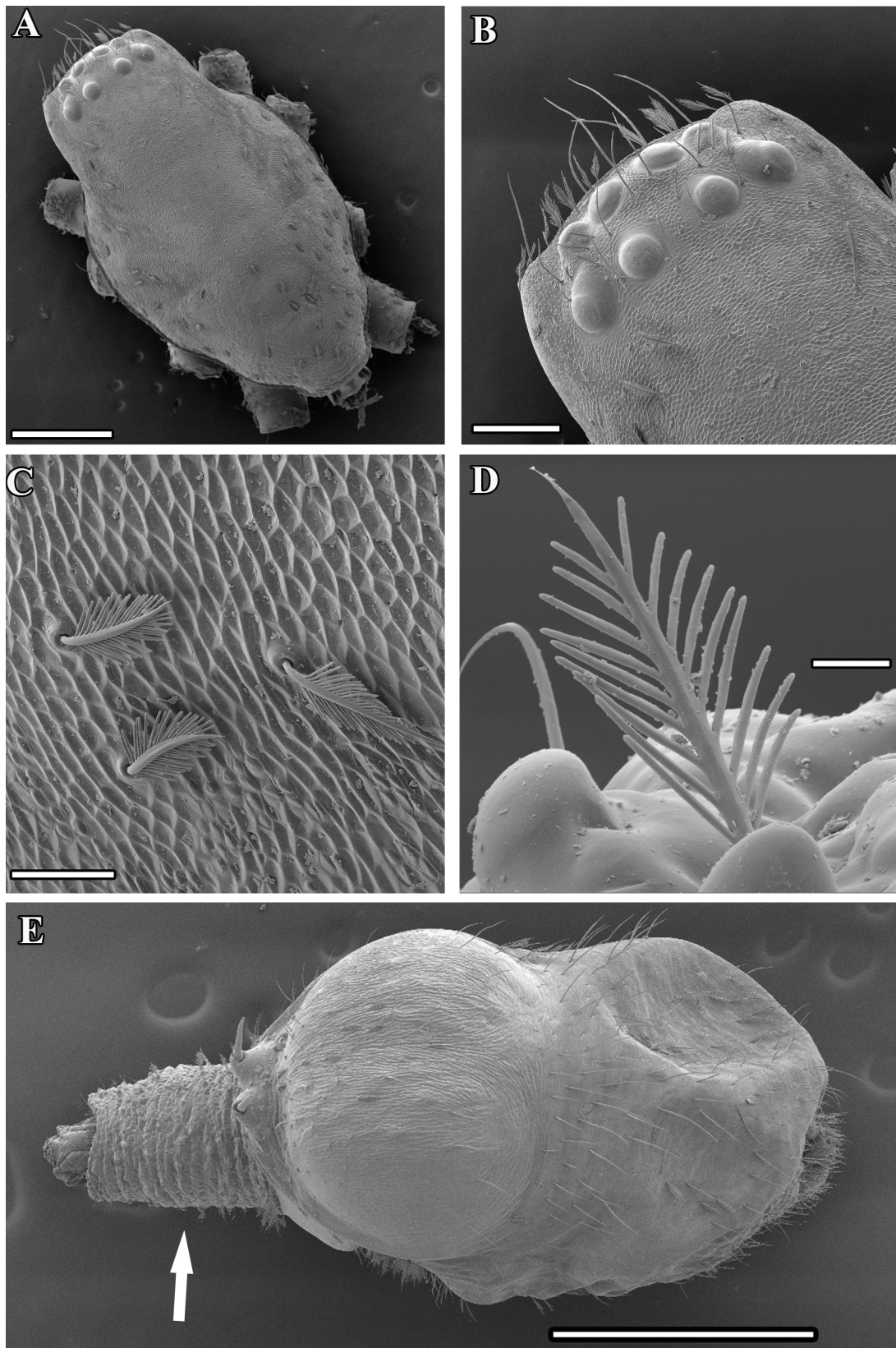


Fig. 4. *Mazax pax* Reiskind, 1969, ♀ (IBSP-221914). **A.** Carapace, dorsal view. **B.** Details of posterior eye row (PER). **C.** Feathery hair on carapace. **D.** Feathery hair on pedicel collar. **E.** Abdomen, dorsal view (white arrow indicates pedicel collar). Scales: A–B = 500µm; C–D = 50 µm; E = 1 mm.

but 12. Aug. 1993; MUSENUV-Ar 2821 • 1 ♀; same collection data as for preceding but 12 Jul. 1993; MUSENUV-Ar 2826 • 1 ♀; Turbaco, Jardín Botánico; 10°21'14.5" N, 75°25'41.5" W; elev. 131 m; 7 Jul. 2015; MUSENUV-Ar 2806. – **Guaviare** • 1 ♂; San José del Guaviare, Playa Guio; elev. 210 m; [2°33'47.00" N, 72°38'22.42" W]; 17 Jun. 2013; F. Galicia and A. Amaris leg.; ICN-Ar-8773. – **Cundinamarca** • 1 ♂; Tibacuy, Reserva Cerro Quinini; elev. 1636 m; 4°19'07" N, 74°29'32.3" W; 17–24 Oct. 2015; Grupo de Artropofauna leg.; IBSP-221936. – **Atlántico** • 2 ♀♀; Usiacurí, Reserva Campesina La Montaña; 10°46'02.6" N, 75°02'34" W; elev. 177–250 m; 9 Sep. 2009; L. Quijano leg.; IBSP-221909 • 1 ♂; same collection data as for preceding; IBSP-221924 • 1 ♀; same collection data as for preceding; IBSP-221921 • 1 ♀; same collection data as for preceding but 2018; IBSP-221919 • 2 ♂♂; same locality as for preceding; 9 Oct. 2016; L. Martínez-García leg.; IBSP-221912. – **Sucre** • 1 ♂, 3 ♀♀; Colosó, Estación Primatológica; 9°32'42.5" N, 75°24'05.98" W; elev. 410 m; E. Villarreal leg.; IBSP-221886 • 1 ♂, 3 ♀♀; same collection data as for preceding; MUSENUV-Ar 2814. – **Magdalena** • 1 ♀; Santa Marta, Parque Nacional Natural Tayrona, Cañaveral; 11°20' N, 74°02' W; elev. 30 m; 17 Jul. 2000; R. Hernández leg.; MUSENUV-Ar 2815. – **Vichada** • 1 ♂; Cumaribo, Corregimiento Santa Rita, Parque Nacional Natural El Tuparro; 5°21'03" N, 67°52'15" W; elev. 135 m; 4–6 Feb. 2004; I. Quintero leg.; MUSENUV-Ar 2827.

Description

See Reiskind (1969: 264).

Remarks

As reported by Reiskind (1969), this species is polymorphic, mainly regarding the extent of feathery hairs on the carapace, coloration, and the length of the DS (Reiskind 1969). The specimens attributed here to *M. pax* present the same characteristics as the Costa Rican forms, such as the brown-black color, the dorsal abdominal sclerite ending at an impression, and the extent of feathery setae on the carapace.

Distribution

Mexico to Colombia (Fig. 20).

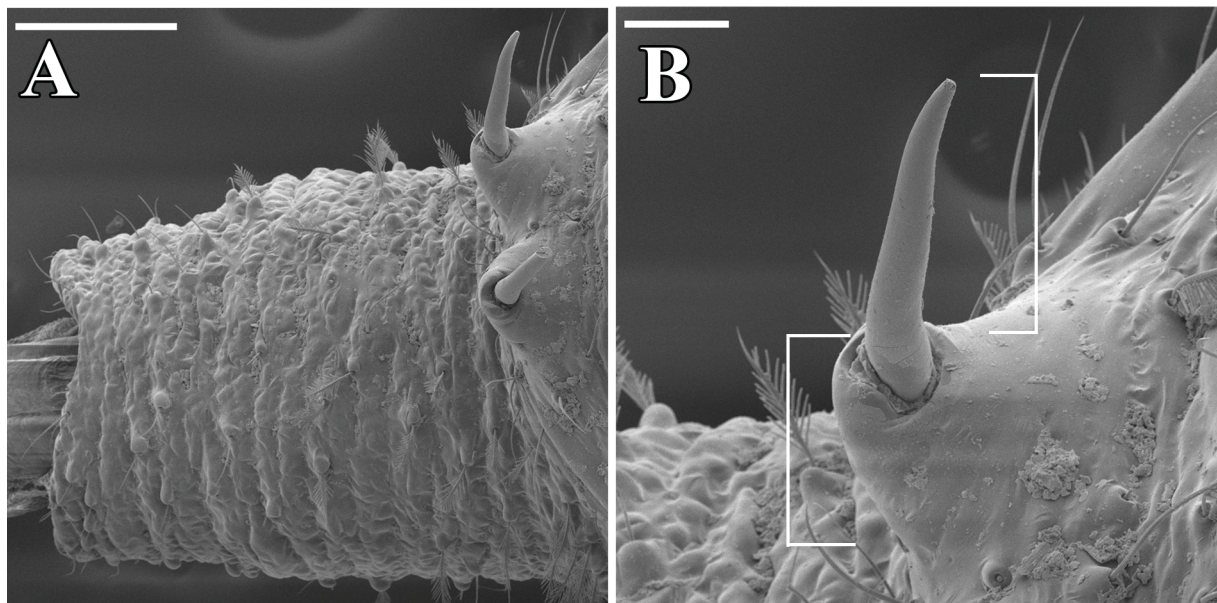


Fig. 5. *Mazax pax* Reiskind, 1969, ♀ (IBSP-221914). **A.** Abdomen, lateral view, with pedicel collar and AS II. **B.** Abdomen, dorsal view, with details of AS II. Scales: 50 μm.

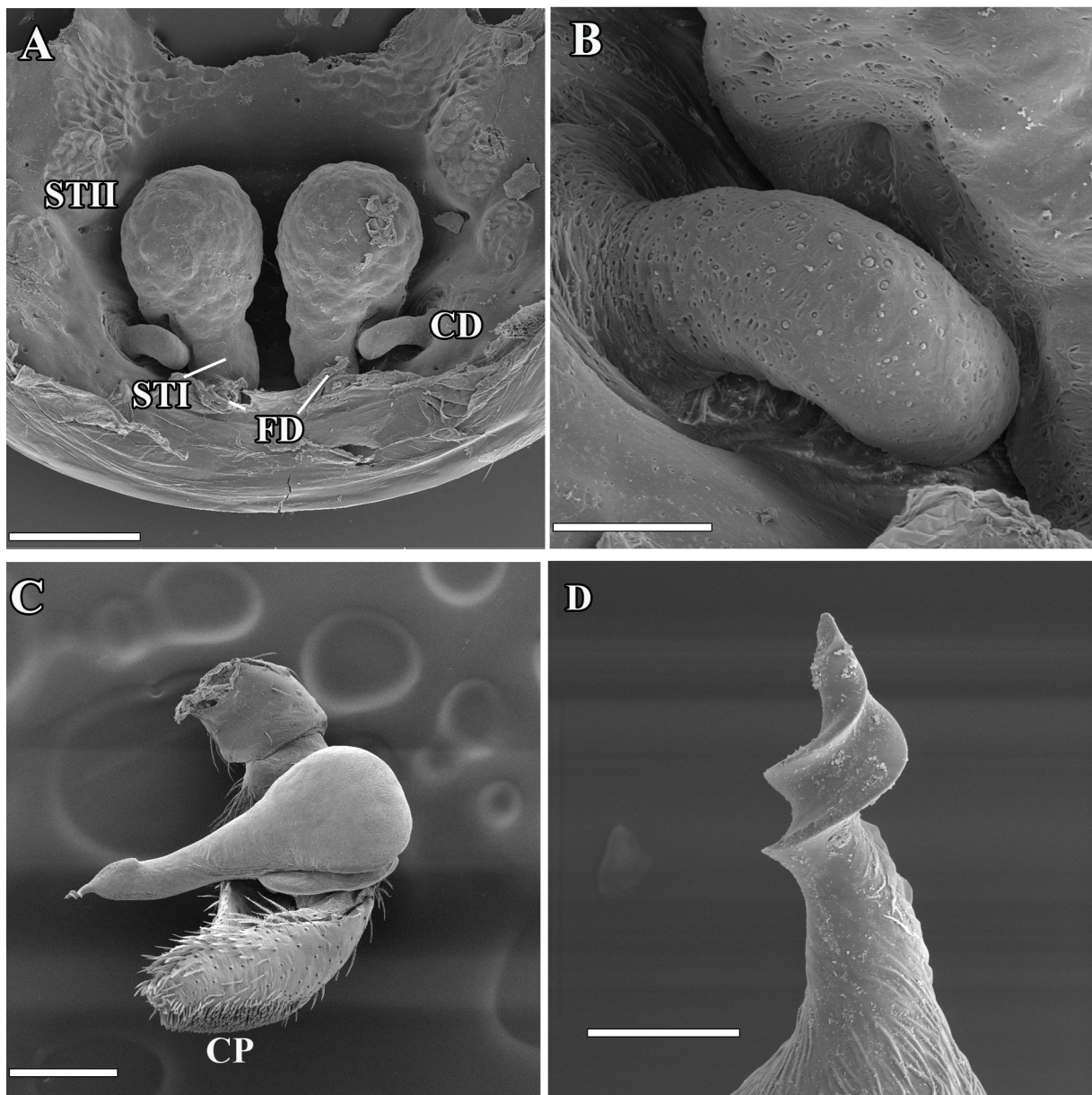


Fig. 6. *Mazax pax* Reiskind, 1969. **A–B.** ♀ (IBSP-221914). **C–D.** ♂ (IBSP-221924). **A.** Epigyne, dorsal view. **B.** Same, with details of copulatory duct (CD). **C.** Right palp, ventral view. **D.** Same, with details of embolus. Abbreviations: CD = copulatory duct; CP = chemocensory patch; FD = fertilization duct; ST I = primary spermatheca; ST II = secondary spermatheca. Scales: A, C = 100 µm; B, D = 50 µm.

Mazax spinosa (Simon, 1898)
Figs 1B, 7–8

Castianeira spinosa Simon, 1898: 882, ♂♀.

Mazax plana O. Pickard-Cambridge, 1899: 83, pl. 6 fig. 11 (synonymized with *M. spinosa* by Reiskind 1969: 259).

Mazax segregata Chamberlin, 1925: 221, ♀ (synonymized with *M. spinosa* by Reiskind 1969: 259).

Mazax plana – Chickering 1937: 33, pl. 1 fig. 2, pl. 2 fig. 27, ♀. — Bonnet 1957: 2741.

Apochinomma planum – Roewer 1955: 608.

Apochinomma segregatum – Roewer 1955: 608.

Mazax segregata – Bonnet 1957: 2741.

Mazax spinosa – Reiskind 1969: 259, figs 230–232, 283–284.

Diagnosis

Males of *M. spinosa* resemble those of *M. mokana* sp. nov. and *M. ramirezi* by sharing the same tibia I ventral spination, 4-4; they differ from those of the former mainly by having the spiniform AS II inserted on a large tubercle (Fig. 8E) (absent in *M. mokana* sp. nov.) and from those of the latter by the

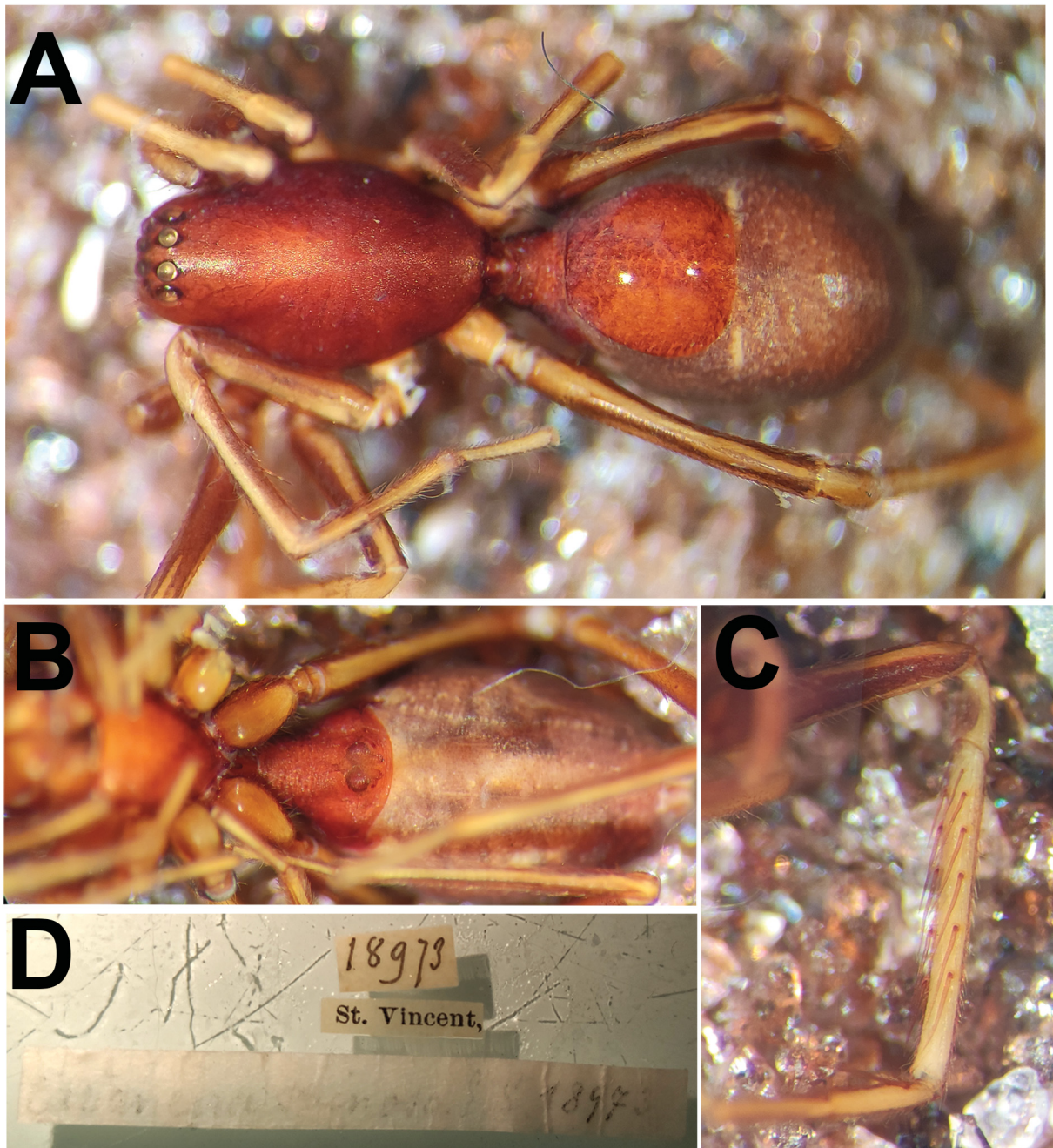


Fig. 7. *Mazax spinosa* (Simon, 1898), paralectotype, ♀ (MNHN 18937). **A.** Dorsal view. **B.** Abdomen, ventral view. **C.** Tibia I, ventral view. **D.** Original labels. No scales.

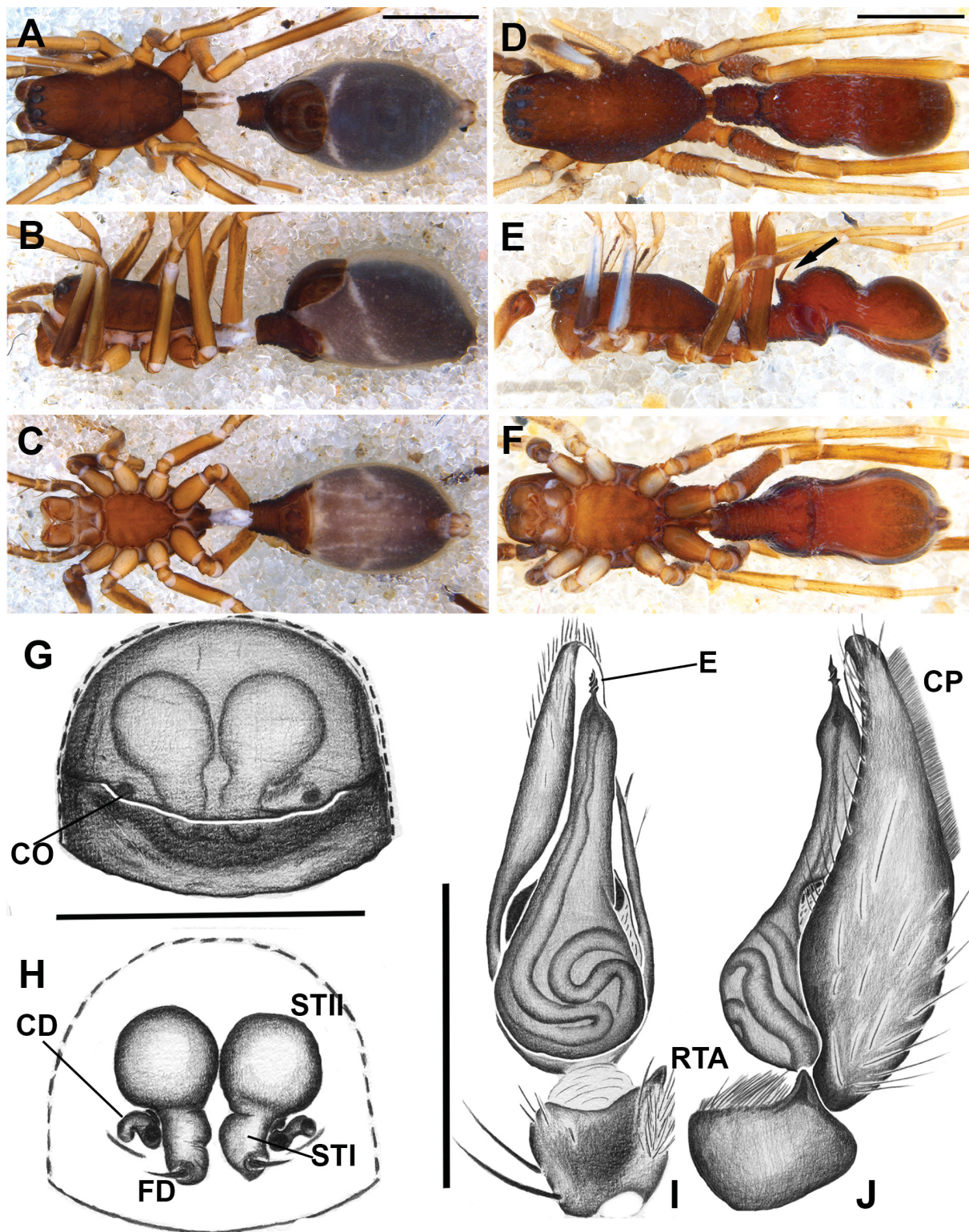


Fig. 8. *Mazax spinosa* (Simon, 1898). A–C, G–H. ♀ (IBSP-221867). D–F, I–J. ♂ (IBSP-221906). A. Dorsal view. B. Lateral view. C. Ventral view. D. Dorsal view. E. Lateral view (black arrow indicates AS II). F. Ventral view. G. Epigyne, ventral view. H. Same, dorsal view. I. Palp, ventral view. J. Same, retrolateral view. Abbreviations: CD = copulatory duct; CO = copulatory opening; CP = chemocensory patch; E = embolus; FD = fertilization duct; RTA = retrolateral tibial apophysis; ST I = primary spermatheca; ST II = secondary spermatheca. Scales: 0.5 mm.

carapace lacking feathery setae (present in *M. ramirezi*). Females resemble those of *M. mokana* and *M. chickeringi* by the absence of a spiniform AS II (Figs 8B, 14B), but differ by the presence of a thoracic groove and by the tibia I ventral spination being 5-5 or 6-6 (Fig. 7D) (thoracic groove absent and tibia I spination 4-4 in both *M. mokana* and *M. chickeringi*).

Type material

GUATEMALA • ♀, holotype of *Mazax plana* O. Pickard-Cambridge, 1899; BMNH (not examined).

PANAMA • ♀, holotype of *Mazax segregata* Chamberlin, 1925; Barro Colorado Island, Panama Canal Zone; MCZ (examined).

SAINT VINCENT AND THE GRENADINES • ♂, lectotype of *Castianeira spinosa* Simon, 1898; St. Vincent; MNHN (designated by Reiskind 1969) (not examined) • 4 ♀♀, paralectotypes of *Castianeira spinosa* Simon, 1898; St. Vincent; MNHN 18937 (examined).

Material examined (new records)

COLOMBIA – **Bolívar** • 1 ♀; San Juan de Nepomuceno, Parque Nacional Natural Los Colorados, Alto El Mirador; [9°56'41.48" N, 75°06'01.29" W]; MUSENUV-Ar 2809 • 1 ♀; San Juan de Nepomuceno, Parque Nacional Natural Los Colorados, Venado; 9°54' N, 75°7' W; 2–4 Sep. 2000; E. Deulufeut leg.; MUSENUV-Ar 2813. – **Tolima** • 1 ♀; Cunday, Camino a Cueva del Edén; elev. 600 m; [4°00'39.46" N, 74°45'14.67" W]; 16 Nov. 2021; W. Galvis leg.; ICN-Ar-5408 • 1 ♀; San Juan, Vereda El Neme; 4°16'56" N, 74°54'26" W; elev. 325 m; 28 Mar. 2011; F. Coelho and S. Lopez leg.; ICN-Ar-4722. – **Cundinamarca** • 1 ♀; La Mesa, Agroparque Mutis; elev. 950 m; [4°39'41.63" N, 74°25'23.02" W]; 21 Sep. 2015; ICN-Ar-8772. – **Meta** • 1 ♂; Remolinos, Puerto Lopez, Inspección de Policía; elev. 270 m; [4°05'27.80" N, 72°57'22.13" W]; Sep. 2004; IBSP-221923 • 1 ♀; Villavicencio, Vereda Apiay, Finca Villa Lore; [4°06'00.31" N, 73°33'24.73" W]; 14 Oct. 2003; O. Combata leg.; ICN-Ar-4734. – **Norte de Santander** • 1 ♀; La Honda, Playa de Belem; 8°15'30" N, 73°11'32" W; elev. 1552 m; 4 Nov. 2003; IBSP-345140. – **Sucre** • 1 ♀; Colosó, Estación Primates; 9°32'42.5" N, 75°24'05.98" W; 5 May. 2016; E. Villareal leg.; IBSP-221916 • 1 ♂; Reserva Florestal de Coraza; 9°31'48" N, 75°21'05" W; 9 Sep. 2010; A. Peñaloza and J. García leg.; IBSP-221906.

Description

See Reiskind (1969: 259).

Distribution

Guatemala, Panama, St. Lucia, St. Vincent, and Colombia (Fig. 21).

Mazax acanthaspis (Simon, 1896) comb. nov.

Figs 2B, 9–11

Apochinomma acanthaspis Simon, 1896: 408, ♀.

Mazax akephaloi Perger & Pett, 2022: 582, figs 2a–b, 3a–b, 4a–d, 5a–b, 7b, d, ♂♀. **Syn. nov.**

Diagnosis

Males of *M. acanthaspis* comb. nov. resemble those of *M. pax* and *M. ramirezi* by having white feathery hairs on the carapace, but differ by having a tibia I ventral spination of 5-4 (3-3 in *M. pax* and 4-4 in *M. ramirezi*) and by having a dorsal projection on the embolus (Figs 10J, 11) (absent in both *M. pax* and

M. ramirezi). Females resemble those of *M. ramirezi* by the lung-shaped ST II and white feathery hairs on the carapace, but differ in having a tibia I ventral spination of 5-5 (Fig. 9D) (5-4 in *M. ramirezi*) and the proximal region of the ST II of the same width as the distal region (Fig. 10H) (proximal region wider than distal region in *M. ramirezi*).

Type material

BOLIVIA • ♂, holotype of *Mazax akephaloi* Perger & Pett, 2022; Santa Cruz, Santa Cruz de la Colina, Urubo; ZMH-A0015362 (not examined).

BRAZIL • ♀, holotype of *Apochinomma acanthaspis* Simon, 1896; Mato Grosso; MNHN 10348 (examined).

Material examined (new records)

BRAZIL – **Pará** • 1 ♂; Igarapé-Açú; 1°08'29" S, 47°30'49" W; 13 Sep. 2011; I. Tomé leg.; MPEG(ARA)-38438. – **Maranhão** • 1 ♂; Carolina, Parque Nacional Chapada das Mesas; 7°07'19.1" S, 47°22'05.6" W; 2019; J. Guajajara and C. Silva-Junior leg.; UEMASUL. – **Rondônia** • 1 ♀; Caiçara, Equipe Girau; Mar. 2010; MPEG(ARA)-38439. – **Acre** • 1 ♀; Rio Branco, Campus Embrapa Acre; 10°01'30.8" S, 67°41'35.9" W; Oct. 2012; L. Costa leg.; UFMG-12416. – **Mato Grosso** • 2 ♀♀; Vale São Domingos/Pontes e Lacerda, Usina Hidrelétrica de Guaporé; [15°12'00.7" S, 59°20'57.3" W]; Oct. 1999; Eq. Resgate leg.; IBSP-41510 • 2 ♂♂, 1 ♀; Chapada dos Guimarães; [15°27'38" S, 55°44'59" W]; 15–26 Jul. 1992; A. Lise and A. Breaul Jr. leg.; MCP-2378. – **Piauí** • 1 ♀; Piracuruca, Parque Nacional das Sete Cidades; 4°06'58.76" S, 41°41'29.69" W; 9 Dec. 2006; L.S. Carvalho leg.; MPEG(ARA)-38440 • 1 ♀; same locality as for preceding but 4°05'43.48" S, 41°41'58.75" W; 24. Jul. 2007; Carvalho, Albuquerque and Oliveira-Neto leg.; MPEG(ARA)-38441 • 1 ♂; same locality as for preceding but 4°00'55.4" S, 41°42'33.2" W; 28 Mar. 2005; L.S. Carvalho leg.; MPEG(ARA)-38442. – **Bahia** • 1 ♀; Salvador, Ponte do Fernandinho; [12°58'32" S, 38°29'27" W]; 13 Sep. 2004; K. Benati leg.; IBSP-58940 • 1 ♀; same collection data as for preceding but 12 Sep. 2004; IBSP-58982. – **Ceará** • 1 ♂; Crato, Parque Estadual Sítio do Fundão; 7°13'03" S, 39°20'21" W; May 2006; R. Azevedo leg.; IBSP-218322. – **Minas Gerais** • 1 ♂; Belo Horizonte, Estação Ecológica da UFMG-Campus Pampulha, área de mata semi-decídua; 19°52' S, 43°58' W; Apr.–Oct. 2000; E.S.S. Alvarez leg.; UFMG • 1 ♂, 1 ♀; área de Cerrado, coleta visual; 19°54' S, 43°58' W; 19 Nov. 2000; E.S.S. Alvarez leg.; UFMG • 1 ♀; Estação Ecológica da UFMG; 19°52'18" S, 43°57'33" W; Mar. 2000; E.S.S. Alvarez leg.; UFMG-5433 • 1 ♀; same locality as for preceding; Jul. 1999–Feb. 2001; E.S.S. Álvarez, E.O. Machado and C.S. Azevedo leg.; IBSP-32355 • 1 ♂, 1 ♀; same collection data as for preceding; IBSP-32258. – **Mato Grosso do Sul** • 2 ♀♀; Anaurilândia, Usina Hidrelétrica Sergio Motta; 22°22'59" S, 52°48'42.4" W; 15 Nov.–23 Dec. 1998; Equipe IBSP leg.; IBSP-23402 • 1 ♂; Três Lagos, Horto Barra do Moeda; 20°57'00" S, 51°47'00" W; Mar. 2008; M. Uehara-Prado leg.; UFMG-5116 • 1 ♀; same collection data as for preceding but Mar. 2009; UFMG-5118 • 1 ♀; same collection data as for preceding; UFMG-5118. – **São Paulo** • 3 ♀♀; Primavera, Usina Hidrelétrica Sergio Motta; [20°11'17" S, 47°18'01" W]; Jan.–Feb. 2000; Equipe IBSP leg.; IBSP-30101 • 1 ♂; Campus IBSP; [23°34'06.9" S, 46°43'12.7" W]; 13 Jan. 2001; A.D. Brescovit leg.; IBSP-27421 • 1 ♂, 1 ♀; Jan.–Feb. 2000; Equipe IBSP leg.; IBSP-30093.

COLOMBIA – **Caquetá** • 1 ♂; Florencia, Macagual CIMAZ; 1°30'05.364" N, 75°39'46.26" W; 4 Apr. 2017; E. Florez leg.; IBSP-221915. – **Meta** • 1 ♂; San Martín, Reserva Natural El Caduceo, via San Francisco; 3°40'17" N, 73°39'34" W; 30 Sep.–4 Oct. 2013; L. Soto leg.; IBSP-221895 • 1 ♂; same locality as for preceding; 2–30 Nov. 2013; J. Florez leg.; IBSP-221911.

Description

See Perger & Pett (2022): 582 (sub *Mazax akephaloi*).

Remarks

This species was described by Simon (1896) based on a female from Brazil, originally included in *Apochinomma* Pavesi. A year later, the first illustration of this species was provided by Simon (1897: 160, fig. 164f), depicting an abdominal collar and a spine-like AS II situated on a well-developed tubercle. This illustration likely influenced Simon's subsequent decision in 1903 to merge *Mazax* into the synonymy of *Apochinomma*, as his understanding of these two genera was closely intertwined. In the description of *Mazax akephaloi*, Perger & Pett (2022) noticed the abdominal collar and spine-like AS II in *Apochinomma acanthaspis*, but the species was not formally transferred to *Mazax*. Nevertheless, they commented on the differences between these two species, noting the four ventral spines on the metatarsus I (2-2) in *M. akephaloi* in contrast to the six (3-3) pattern reported in the original description of *M. acanthaspis* comb. nov. However, Simon's original description was in error in this regard, since

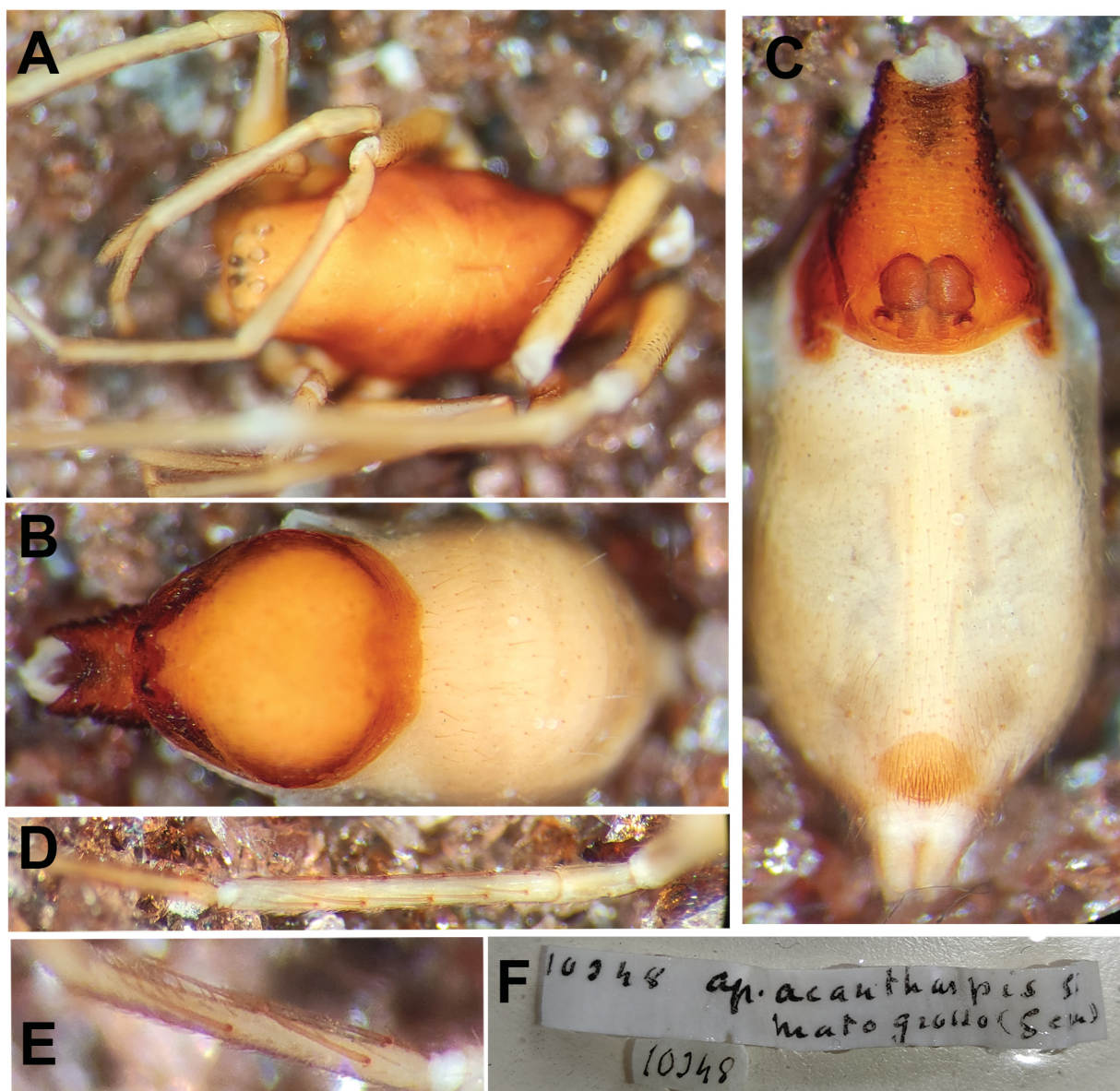


Fig. 9. *Mazax acanthaspis* (Simon, 1896) comb. nov., holotype, ♀ (MNHN 10348). A. Carapace, dorsal view. B. Abdomen, dorsal view. C. Abdomen, ventral view. D. Tibia, ventral view. E. Metatarsus, ventral view. F. Original labels. No scales.

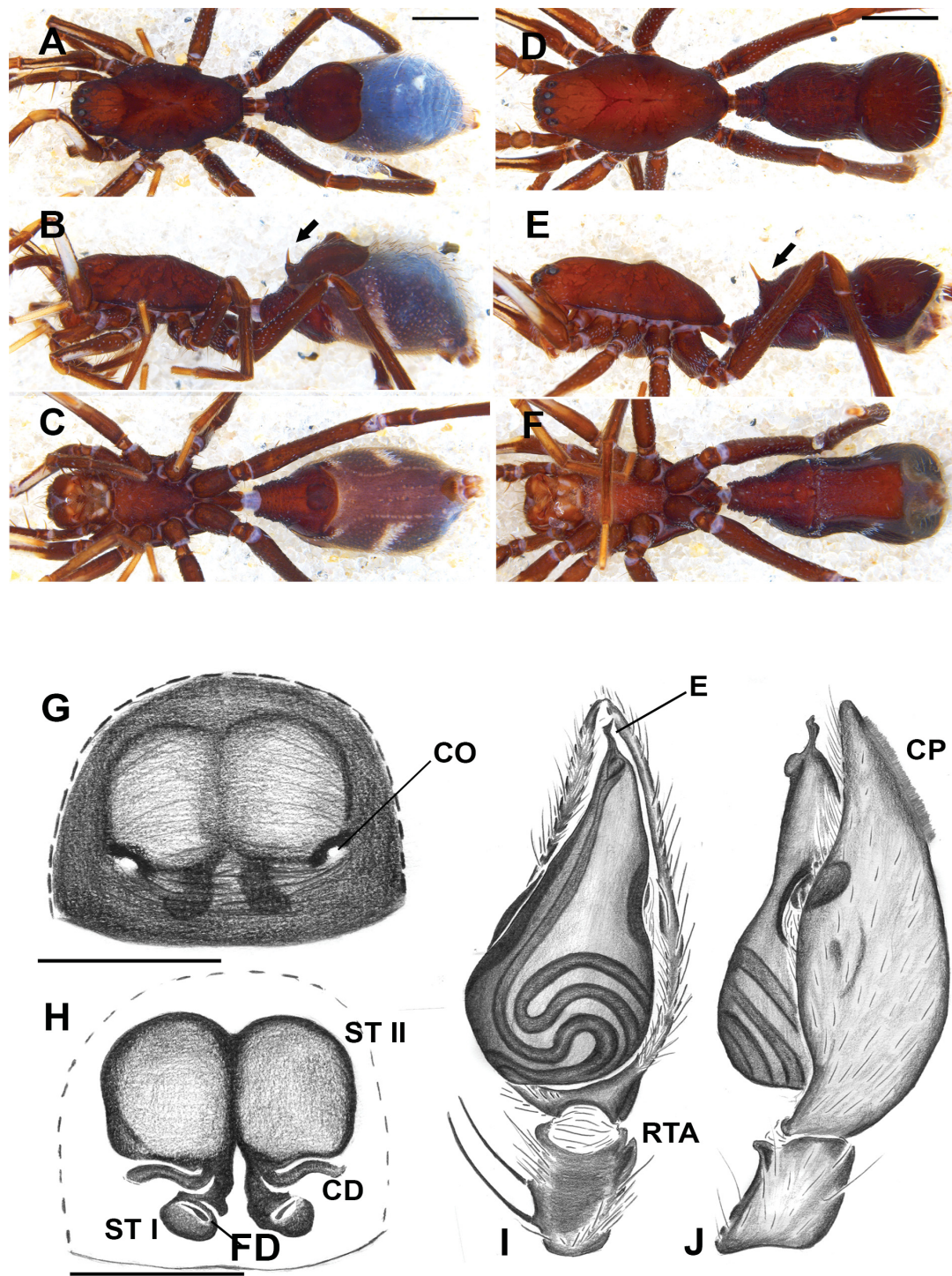


Fig. 10. *Mazax acanthaspis* (Simon, 1896) comb. nov. A–C, G–H. ♀ (MPEG(ARA)-38440). D–F, I–J. ♂ (MPEG(ARA)-38442). A. Dorsal view. B. Lateral view (black arrow indicates AS II). C. Ventral view. D. Dorsal view. E. Lateral view (black arrow indicates AS II). F. Ventral view. G. Epigyne, ventral view. H. Same, dorsal view. I. Palp, ventral view. J. Same, retrolateral view. Abbreviations: CD = copulatory duct; CO = copulatory opening; CP = chemocensory patch; E = embolus; FD = fertilization duct; RTA = retrolateral tibial apophysis; ST I = primary spermatheca; ST II = secondary spermatheca. Scales: 0.5 mm.

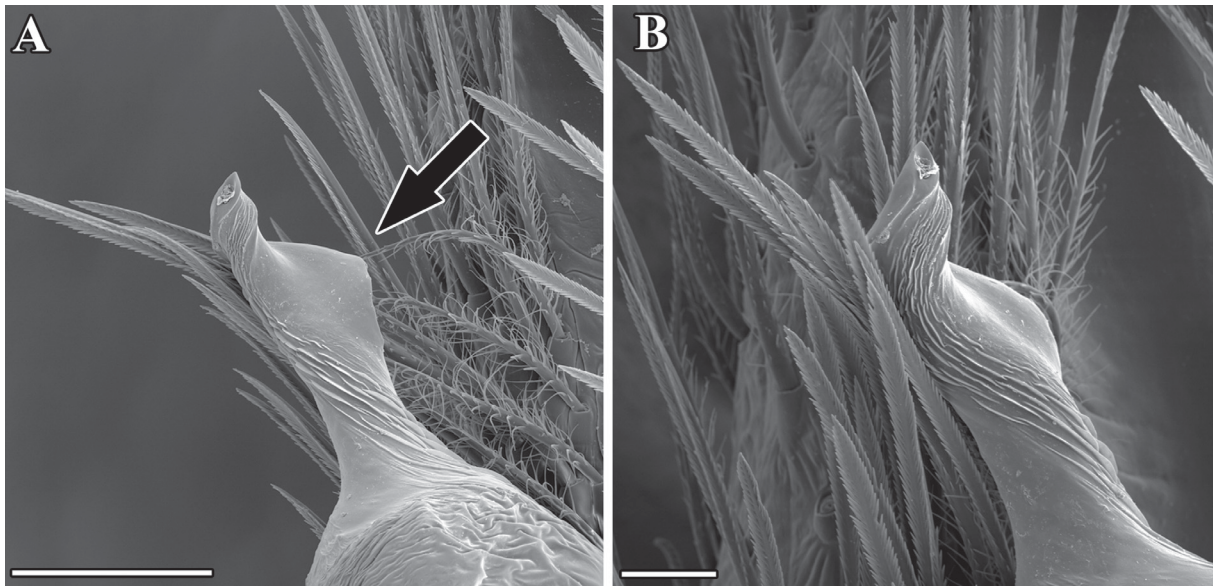


Fig. 11. *Mazax acanthaspis* (Simon, 1896) comb. nov., ♂ (MPEG(ARA)-38442). **A.** Embolus, retrolateral view (black arrow indicates embolar dorsal projection). **B.** Same, ventrolateral view. Scales: 50 μ m.

the holotype has four ventral spines on the metatarsus (Fig. 9E). In addition to this, by examining details of the genitalia, as well as a fair number of additional specimens, we conclude that *M. akephaloi* and *M. acanthaspis* are conspecific.

Distribution

Colombia to Argentina (Fig. 20).

Mazax ramirezi Rubio & Danişman, 2014

Figs 12–13

Mazax ramirezi Rubio & Danişman, 2014: 1185, figs 1a–f, 2a–d, 3a–f, 4a–g, 5a–f.

Diagnosis

Males of *M. ramirezi* resemble those of *M. acanthaspis* comb. nov. by having the carapace with a thoracic groove and feathery hairs, but differ by the tibia I ventral spination being 4-4 (5-4 in *M. acanthaspis*) and by the absence of a dorsal projection on the embolus (Fig. 13G–H) (present in *M. acanthaspis*). Females resemble those of *M. acanthaspis* by the lung-shaped ST II, but differ by having a tibia I ventral spination of 5-4 (Fig. 12D) (5-5 in *M. acanthaspis*), ST II with the proximal region wider than the distal region (Fig. 12H) (distal region of the same width as the proximal in *M. acanthaspis*), and by having a twisted CD (Fig. 12H) (nearly straight in *M. acanthaspis*).

Type material

Holotype

ARGENTINA • ♀; Buenos Aires Province, Campana, Reserva Natural Otamendi; [34°13.649' S, 58°53.916' W]; elev. 22 m; 27 Dec. 1997; B. Fuentes and O. Di Iorio leg.; MACN-Ar 30732 (examined).

Paratypes

ARGENTINA • 1 ♂; same locality as for holotype; 10 Jan. 1998; MACN-Ar 30733 (examined) • 2 ♀♀; same locality as for holotype; 9 Jan. 1998; B. Fuentes leg.; MACN-Ar 30734 • 1 ♀; same locality as

for holotype; 30 Dec. 1997; B. Fuentes and O. Di Iorio leg.; MACN-Ar 30735 (examined) • 1 ♀; same locality as for holotype; 1997; O. Di Iorio leg.; MACN-Ar 16720 • 1 ♀; same locality as for holotype; 21 Feb. 1998; B. Fuentes leg.; MACN-Ar 30736 (examined).

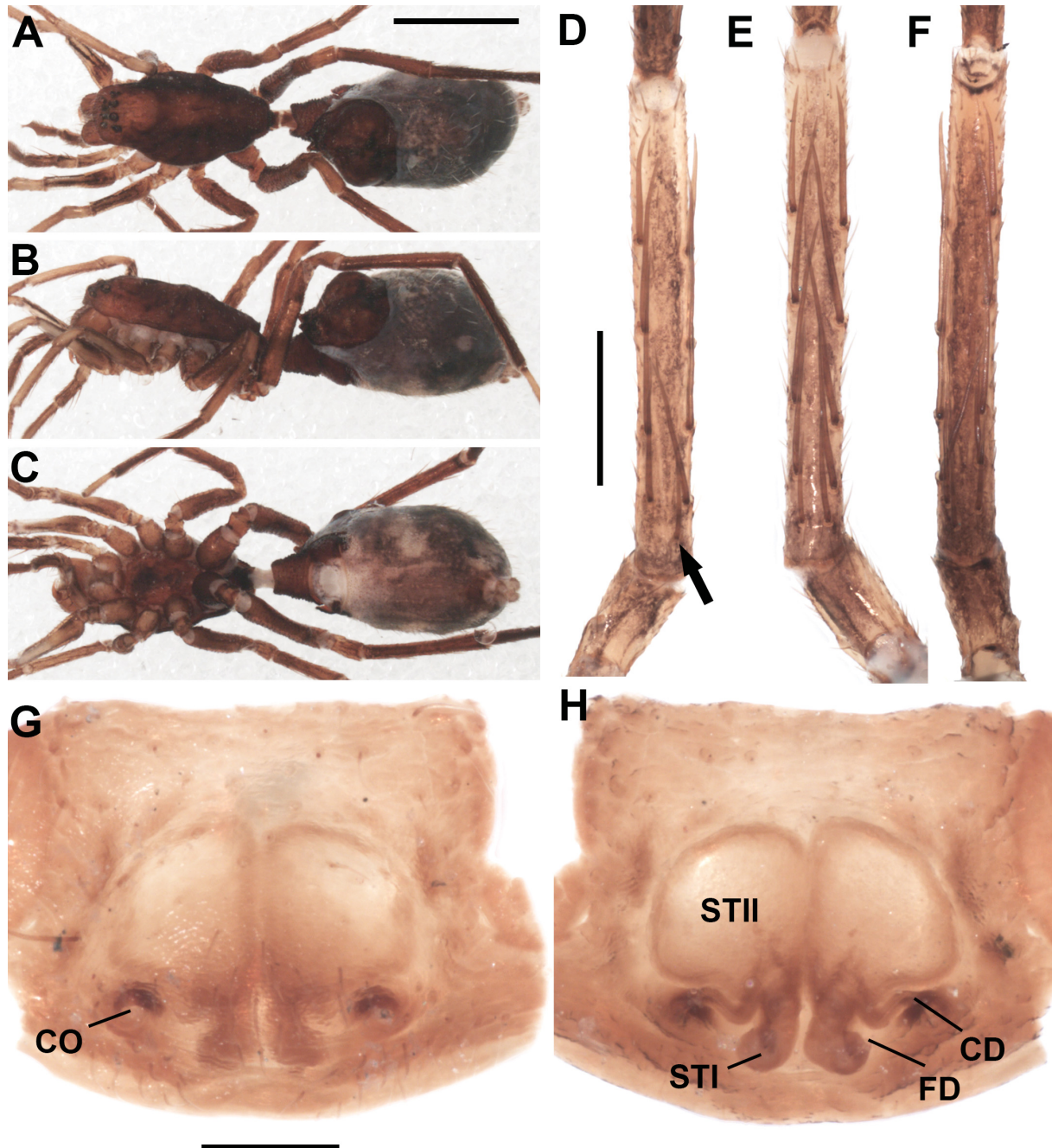


Fig. 12. *Mazax ramirezi* Rubio & Danişman, 2014. **A–D, G–H.** Holotype, ♀ (MACN-Ar 30732). **E.** Paratype, ♀ (MACN-Ar-30735). **F.** Paratype, ♀ (MACN-Ar-30736). **A.** Dorsal view. **B.** Lateral view. **C.** Ventral view. **D.** Tibia I, ventral view (black arrow indicates unpaired macroseta). **E.** Tibia I, ventral view. **F.** Tibia I, ventral view. **G.** Epigyne, ventral view. **H.** Same, dorsal view. Abbreviations: CD = copulatory duct, CO = copulatory opening; FD = fertilization duct; ST I = primary spermatheca; ST II = secondary spermatheca. Scales: 0.2 mm.

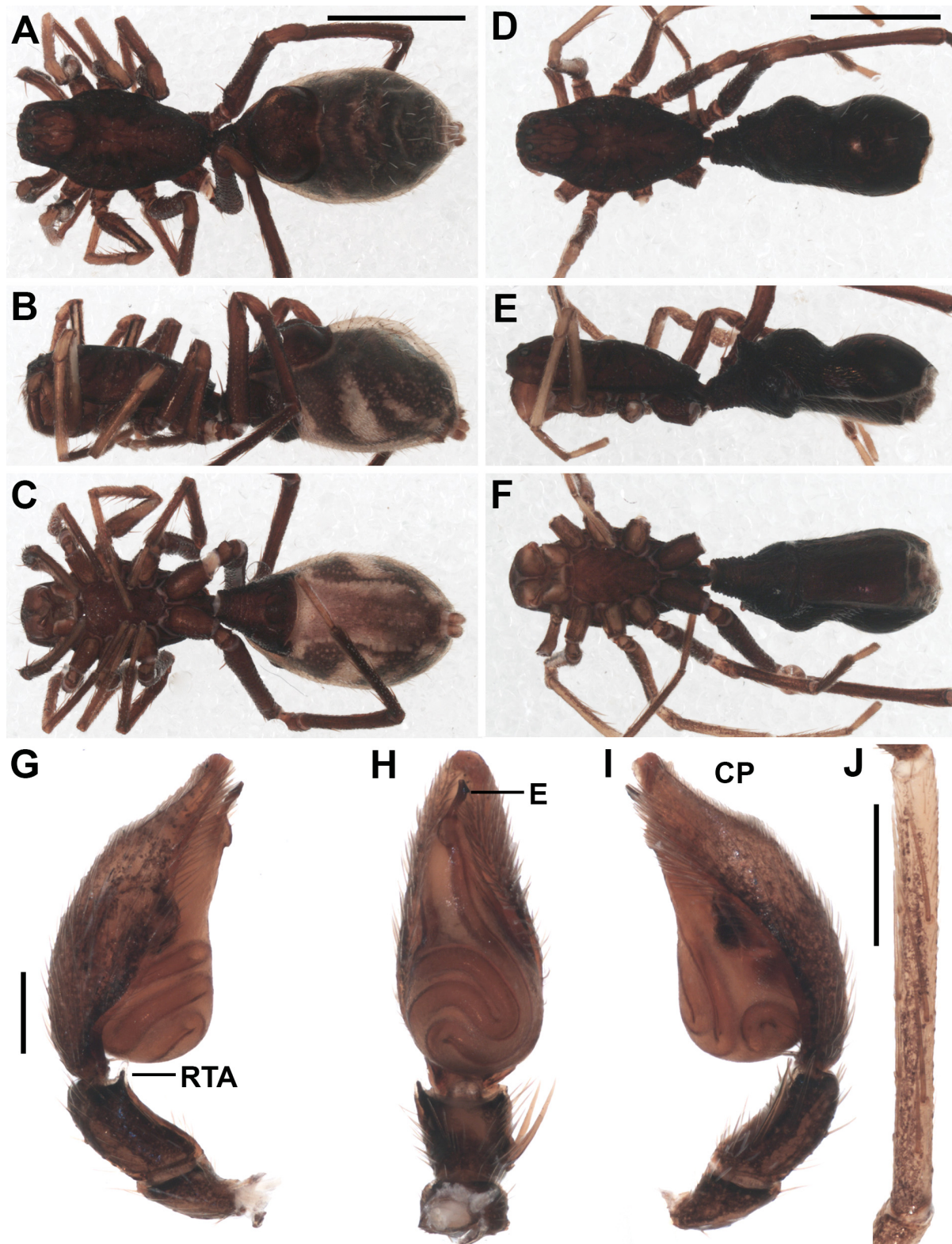


Fig. 13. *Mazax ramirezi* Rubio & Danişman, 2014. A–C. Paratype, ♀ (MACN-Ar-30736). D–J. Paratype, ♂ (MACN-Ar-30733). A. Dorsal view. B. Lateral view. C. Ventral view. D. Dorsal view. E. Lateral view. F. Ventral view. G. Palp, prolateral view. H. Same, ventral view. I. Same, retrolateral view. J. Tibia I, ventral view. Abbreviations: CP = chemocensory patch; E = embolus; RTA = retrolateral tibial apophysis. Scales: 0.2 mm.

Description

See Rubio & Danişman (2014: 1185).

Remarks

Rubio & Danişman (2014) described both males and females as having a 4-4 tibia I ventral spination, reporting no significant variation. However, upon examining the female holotype as well as the paratypes, only the male (MACN-Ar 30733) has 4-4 spines on the ventral surface of tibia I (Fig. 13J); the holotype (MACN-Ar 30732) has 5-4 (Fig. 12D). The other two female paratypes (MACN-Ar-30735 and MACN-Ar-30736) examined have 5-5 ventral spines on tibia I (Fig. 12E–F). Therefore, both *M. ramirezi* and *M. spinosa* display intraspecific variation regarding the tibia I spination. Additionally, it is possible to notice the atypical castianeirine RTA in this species (Fig. 13G).

Distribution

Known only from the type locality (Fig. 20).

Mazax mokana sp. nov.

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Fig. 14

Diagnosis

Males of *M. mokana* sp. nov. resemble those of *M. chickeringi* in having a 4-4 tibia I ventral spination, the absence of a thoracic groove, and having AS II inserted on a small tubercle, but differ by the presence of an RTA (Fig. 14I–J) (absent in *M. chickeringi*) and an embolus with two large keels (Fig. 14I) (one large keel in *M. chickeringi*). Females resemble those of *M. chickeringi* by the tibia I ventral spination of 4-4 and by the absence of the modified AS II (Fig. 14B), but differ by having the CO positioned laterally to the spermathecae (Fig. 14G) (nearly superimposed on the spermathecae in ventral view in *M. chickeringi*; Reiskind 1969: fig. 223) and by the curved CD (straight in *M. chickeringi*; Reiskind 1969: fig. 222).

Etymology

The specific epithet is a noun in apposition referring to the Mokaná, the original occupants of northern Colombia. Mokaná means “without feathers”, which alludes to the absence of feathery hairs on the carapace of this species.

Material examined

Holotype

COLOMBIA • ♂; Norte de Santander, La Honda, Playa de Belén; 8°15'30" N, 73°11'32" W; 4 Nov. 2003; IBSP-221867.

Paratypes

COLOMBIA – **Sucre** • 1 ♀; Colosó, Estación Primates; 9°32'42.5" N, 75°24'05.98" W; elev. 410 m; 6 May 2016; E. Villarreal leg.; IBSP-221918 • 2 ♂♂; same locality as for preceding; 5 May 2016; E. Villarreal leg.; IBSP-345141. – **Atlántico** • 1 ♀; Usiacurí, Reserva Campesina La Montaña; 10.767388° N, 75.042777° W; elev. 177–250 m; 4 Jul. 2016; L. Quijano leg.; IBSP-345142.

VENEZUELA – **Miranda** • 1 ♂; Carrizal; 10°21'05" N, 66°59'36" W; Nov. 1960; G. Rodríguez leg.; ICN-Ar-4725.

Other material

COLOMBIA – **Atlántico** • 1 ♀; Usiacurí, Reserva Campesina La Montaña; 10°46'26" N, 75°02'34" W; elev. 177–250 m; 2016; L. Martínez leg.; IBSP-221896 • 2 ♀♀; same locality as for preceding; 9 Sep. 2009; L. Quijano leg.; IBSP-221922. – **Sucre** • Colosó, Reserva Florestal de Coraza; 9°31'48" N, 75°21'05" W; elev. 410 m; 9 Sep. 2010; A. Peñaloza and J. García leg.; IBSP-221907 • 1 ♀; same collection data as for preceding; IBSP-221886 • 1 ♂; San Marcos, La Sierra; [8°39'49.69" N, 75°07'59.87" W]; elev. 20 m; Jun. 2003; MUSENUV-Ar 2808. – **Valledupar** • 1 ♂; La Macuira, Monte Puma; 10°36'8.6" N, 73°17'02" W; elev. 962 m; 18 Jul. 2015; Carbio team leg.; MUSENUV-Ar 2811 • 3 ♂♂, 2 ♀♀; Ecoparque Los Besotes, La Rosa; 10°34'09.7" N, 73°16'59.0" W; elev. 976 m; Carbio team leg.; MUSENUV-Ar 2812.

Description

Male (holotype)

COLORATION. Carapace red-brown, sternum of same color, chelicerae, sternum, and endites yellowish with spots darker. Legs: coxae I, II, and III white, coxa IV yellowish; I femora with proximal half darker and distal half yellowish-white, other segments yellowish; II and III femora yellowish, with black line on pro- and retrolateral sides, other segments yellowish; IV femora, tibiae, and metatarsi yellowish, with black line on pro- and retrolateral sides, tarsi yellowish. Abdomen gray, with dorsal scute dark brown, with white line along midline and two light spots ventrally, ventral sclerite dark brown.

MEASUREMENTS. Total length: 4.65. Carapace 1.98 long, 1.11 wide. Abdomen 2.26 long, 1.33 wide. Sternum 0.90 long, 0.67 wide. Eye diameters: AME 0.07, ALE 0.08, PME 0.08, PLE 0.08. Eye interdistances: AME–AME 0.06, AME–ALE 0.04, ALE–PLE 0.05, PME–PME 0.10, PME–PLE 0.05, AME–PME 0.09. Legs: I – 1.32/0.40/1.38/1.13/0.80; II – 1.08/0.28/0.95/0.83/0.65; III – 1.10/0.21/0.85/0.99/0.50; IV – 1.65/0.44/1.63/1.66/0.67.

MORPHOLOGY. Carapace without feathery hairs, thoracic groove absent (Fig. 14D), sternum shield-shaped (Fig. 14F). Chelicerae with three promarginal teeth, median tooth largest, proximal tooth smaller than distal teeth, and two retromarginal teeth, subequal and equidistant. Abdomen constricted in middle, AS present, with tubercles reduced, feathery hairs on posterolateral side of dorsal scute (Fig. 14E), ventral scute present, rectangular (Fig. 14F). Palp with retrolateral tibial hair tuft, RTA thin and triangular, embolus short, twisted, directed prolaterally (Fig. 14I–J).

LEG MACROSETAE. Femur: I do 1-0-0; II do 1-0-0; III do 1-0-0; IV do 1-0-0. Tibia: I v 2-2-2-2; II v 2-2-2; III v 1-2-0, p 1-0-1, r 0-1-0; IV v 1-1-0, p 1-0-0, r 1-0-0. Metatarsus: I v 2-0-2; II = I; III v 2-2-2, p 1-0-1, r 1-0-0; IV v 2-2-2, p 1-1-1, r 0-1-0.

VARIATION (n = 2). Total length: 4.65–4.77. Carapace length: 1.98–1.31.

Female (IBSP-345142)

COLORATION. Carapace dark brown, chelicerae, endites, labium, and sternum brown. Legs: coxae II and III yellowish, coxae I and IV dark brown. I femora dark brown, distal portion yellowish, other segments of same color; II and III femora yellowish, pro- and retrolateral sides dark brown, other segments yellowish; IV femora, tibiae and metatarsi brownish, tarsi yellowish. Abdomen dark gray, with wide transverse white stripe; DS dark brown, ventrally gray, with two longitudinal stripes. Spinnerets brown.

MEASUREMENTS. Total length: 5.68. Carapace 2.17 long, 1.28 wide. Abdomen 2.57 long, 1.33 wide. Sternum 1.00 long, 0.82 wide. Abdomen long, wide. Eye diameters: AME 0.11, ALE 0.12, PME 0.12, PLE 0.13. Eye interdistances: AME–AME 0.02, AME–ALE 0.04, ALE–PLE 0.02, PME–PME 0.04, PME–PLE 0.04, AME–PME 0.10. Legs: I – 1.59/0.48/1.68/1.26/0.82; II – 1.40/0.48/1.26/1.09/0.67; III – 1.32/0.42/1.06/1.19/0.48; IV – 2.01/0.50/0.98/2.05/0.61.

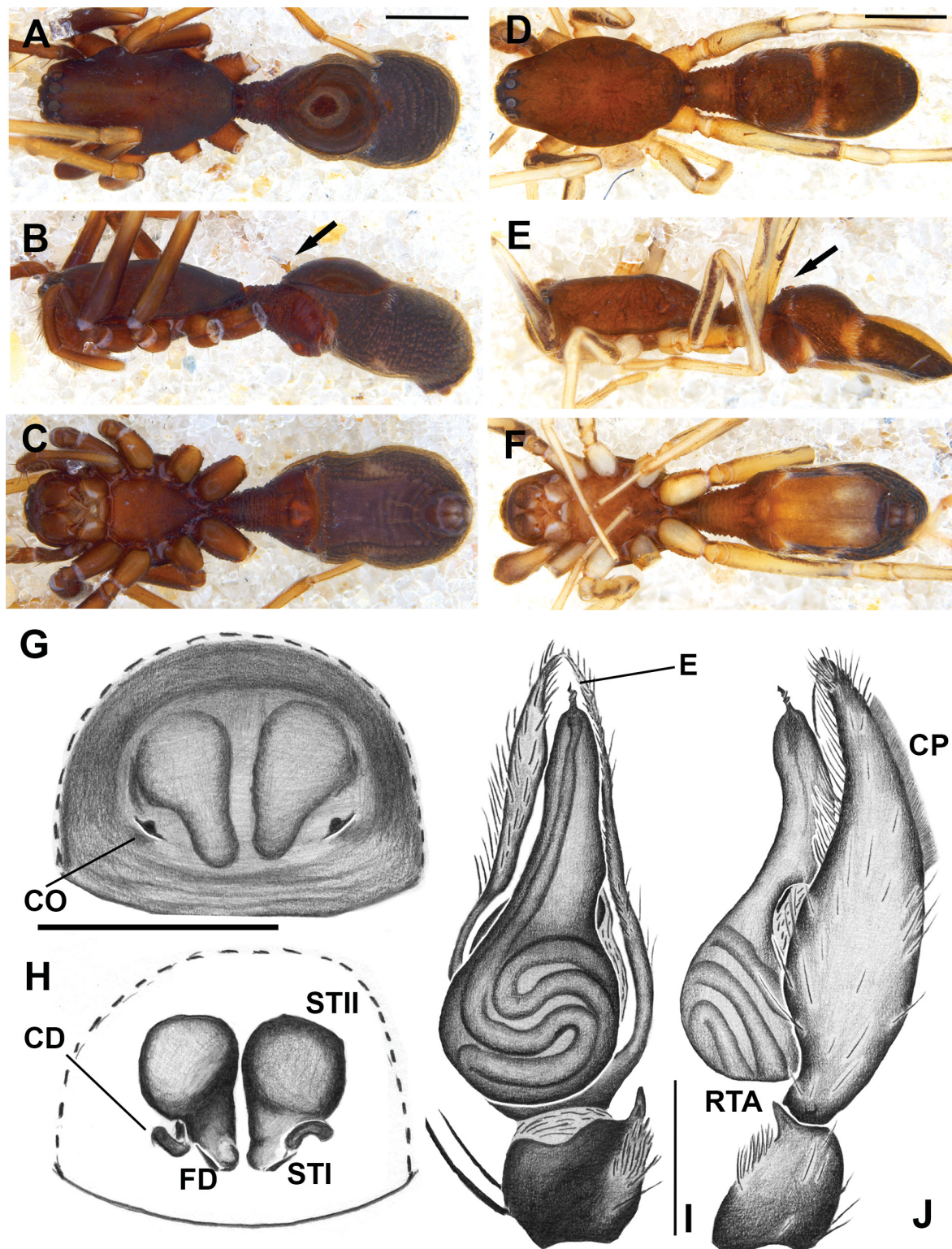


Fig. 14. *Mazax mokana* sp. nov. A–C, G–H. Paratype, ♀ (IBSP-345142). D–F, I–J. Holotype, ♂ (IBSP-221867). A. Dorsal view. B. Lateral view (black arrow indicates AS II). C. Ventral view. D. Dorsal view. E. Lateral view (black arrow indicates AS II). F. Ventral view. G. Epigyne, ventral view. H. Same, dorsal view. I. Palp, ventral view. J. Same, retrolateral view. Abbreviations: CD = copulatory duct; CO = copulatory opening; CP = chemocensory patch; E = embolus; FD = fertilization duct; RTA = retrolateral tibial apophysis; ST I = primary spermatheca; ST II = secondary spermatheca. Scales: 0.5 mm.

MORPHOLOGY. Carapace and sternum as in male (Fig. 14–C); chelicerae brown, with three teeth on promargin, median tooth largest, proximal tooth smaller than distal teeth, distal tooth situated closest to median tooth, two retromarginal teeth slightly separated, subequal. Abdomen slightly constricted in middle, AS II absent (Fig. 14A–B), ventral scute absent, tracheal scute present (Fig. 14C). Epigyne: ST II globose, ST I smaller than ST II, CD thin and short (Fig. 14H).

LEG MACROSETAE. Femur: I do 1-0-0; II do 1-0-0; III do 1-0-0; IV do 1-0-0. Tibia: I v 2-2-2-2; II v 2-2-2; III v 1-2-0, p 1-0-1, r 0-1-0; IV v 1-1-0, p 1-0-0, r 1-0-0. Metatarsus: I v 2-0-2; II = I; III v 2-2-2, p 1-0-1, r 1-0-0; IV v 2-2-2, p 1-1-1, r 0-1-0.

VARIATION (n = 4). Total length: 5.68–5.93. Carapace length: 2.17–2.30.

Natural history

The type material was manually collected in a tropical low and dry environment, in a fragment of secondary forest. The average yearly precipitation is close to 1233 millimeters, with an average temperature of 28°C and an average relative humidity of 83.5%.

Distribution

Known from Norte de Santander, Sucre, and Atlántico departments, Colombia (Fig. 21).

Mazax leonidas sp. nov.

urn:lsid:zoobank.org:act:55DB8F9E-C3BB-461E-8414-D34353D97FDC

Figs 1A, 15

Diagnosis

Males and females of *M. leonidas* sp. nov. resemble those of *M. xerxes* by having a bicolored carapace (Fig. 15A, D), but differ by the tibia I ventral spination being 4-4 in males (5-5 in *M. xerxes*) and by the conspicuous, semi-circular CO in females (Fig. 15G) (inconspicuous, under a groove in *M. xerxes*; Reiskind 1969: fig. 227).

Etymology

This species is named as a noun after Leonidas I, the king of Sparta who led the Greeks in the Battle of Thermopylae against the Persian Empire under Xerxes I, alluding to its resemblances to *M. xerxes*.

Material examined

Holotype

COLOMBIA • ♂; Antioquia, Envigado, separador vial sector bodegas Exito-Pirelli zona industrial; 6°10'12.65" N, 75°36'05.72" W; 15 Aug.–1 Sep. 2017; J. Torres-Toro and A. Montoya leg.; CEUA-157502.

Paratypes

COLOMBIA – Antioquia • 1 ♂; same collection data as for holotype; CEUA-157503 • 1 ♀; same collection data as for holotype; MUSENUV-Ar 2820.

Other material

COLOMBIA – Caldas • 1 ♂; Aranzazú, Vereda La Pradera, Finca Agropecuaria los Árboles; 5°18'54.8" N, 75°29'50.2" W; elev. 2020 m; 1–8 Aug. 2003; L. Franco and J. Beddoya leg., MUSENUV-Ar 2819 • 1 ♂; same collection data as for preceding; MUSENUV-Ar 2820.

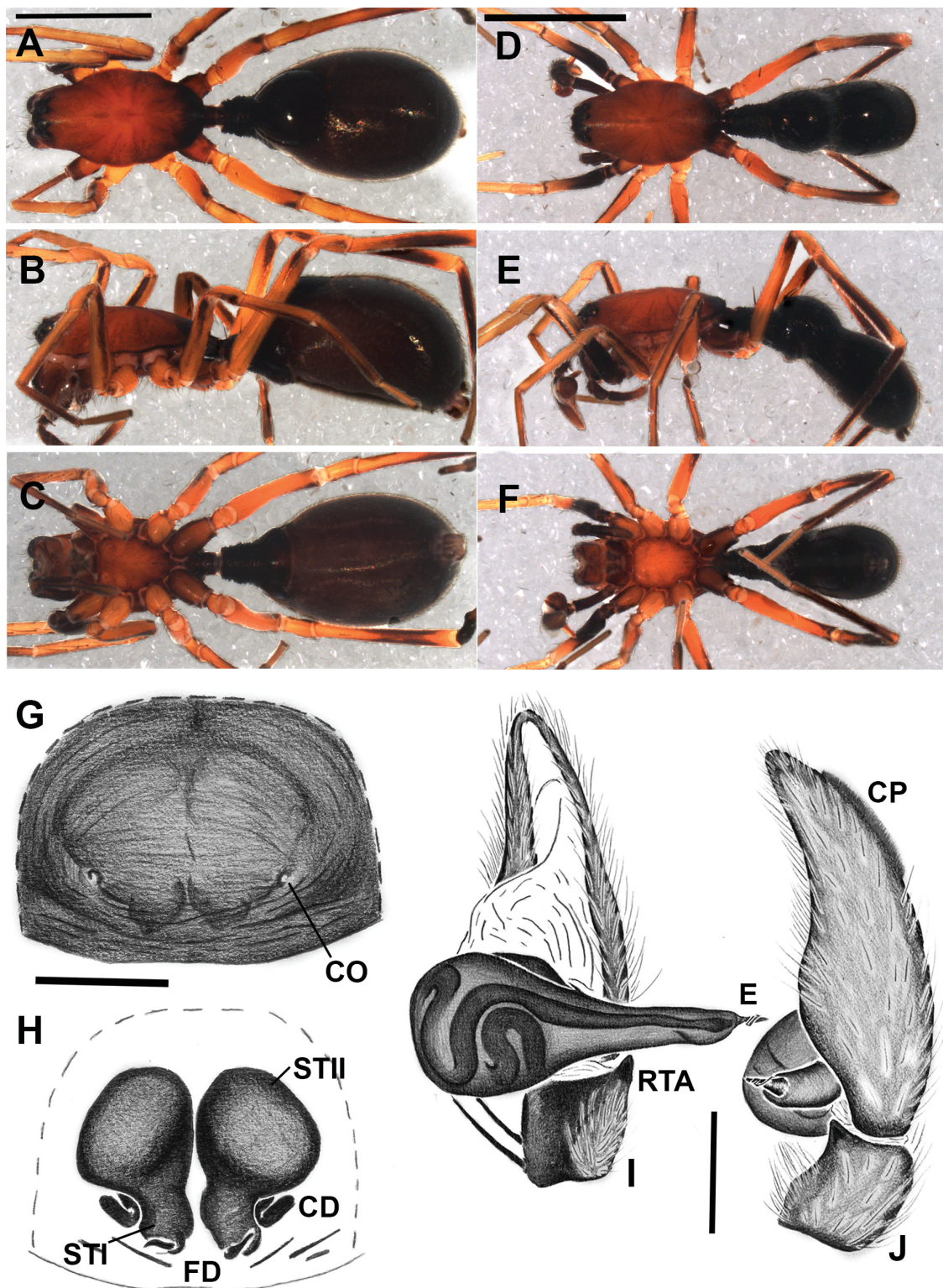


Fig.15. *Mazax leonidas* sp. nov. A–C, G–H. Paratype, ♀ (CEUA-157503). D–F, I–J. Holotype, ♂ (CEUA-157502). A. Dorsal view. B. Lateral view. C. Ventral view. D. Dorsal view. E. Lateral view. F. Ventral view. G. Epigyne, ventral view. H. Same, dorsal view. I. Palp, ventral view. J. Same, retrolateral view. Abbreviations: CD = copulatory duct; CO = copulatory opening; CP = chemocensory patch; E = embolus; FD = fertilization duct; RTA = retrolateral tibial apophysis; ST I = primary spermatheca; ST II = secondary spermatheca. Scales: 2 mm.

Description

Male (holotype)

COLORATION. Carapace, cephalic, and anterior thoracic area orange, posterior thoracic area dark, sternum light orange, chelicerae, sternum, and endites darker. Legs: coxae I, II, and III light orange, coxa IV darker; I femora with proximal half darker and distal half light orange, metatarsi darker, other segments yellowish; II and III femora yellowish, with a black line on pro- and retrolateral sides, other segments yellowish; IV femora yellowish, with distal portion darker, tibiae and metatarsi yellowish, with black line on pro- and retrolateral sides, tarsi yellowish. Abdomen darker, with dorsal scute dark brown, with white line in middle and two light spots, ventral scute dark brown.

MEASUREMENTS. Total length: 5.01. Carapace 2.14 long, 1.24 wide. Abdomen 2.81 long, 1.11 wide. Sternum 0.96 long, 0.71 wide. Eye diameters: AME 0.09, ALE 0.09, PME 0.11, PLE 0.12. Eye interdistances: AME–AME 0.24, AME–ALE 0.21, ALE–PLE 0.21, PME–PME 0.32, PME–PLE 0.29, AME–PME 0.22. Legs: I – 1.59/0.49/1.57/1.33/0.89; II – 1.38/0.46/1.19/1.13/0.79; III – 1.27/0.46/1.13/1.23/0.69; IV – 1.79/0.52/1.81/1.87/0.86.

MORPHOLOGY. Carapace without feathery hairs, thoracic groove absent, sternum shield-shaped (Fig. 15D). Chelicerae with three promarginal and two retromarginal teeth. Abdomen strongly constricted in middle (Fig. 15E), AS II present, with tubercles reduced (Fig. 15E), ventral scute rectangular. Palp with retrolateral tibial hair tuft, RTA triangular, embolus twisted, straight, with two keels (Fig. 15I–J).

LEG MACROSETAE. Femur: I do 1-0-0, p 0-0-1; II do 1-0-0; III do 1-0-0; IV do 1-0-0. Tibia: I v 2-2-2-2; II v r1-2-2; III v 0-p1-2, p 0-0-1; IV v 0-1-2. Metatarsus: I v 2-2-0; II = I; III v 2-2-2, p 1-0-1, r 1-0-0; IV v 2-2-2, p 0-1-1, r 0-1-0.

Female (paratype)

COLORATION. Carapace as in male, chelicerae, endites, labium, and sternum as in male. Legs: coxae II and III yellowish, coxae I and IV dark brown. I femora yellowish, with black lines on pro- and retrolateral sides, other segments of same color; II and III femora yellowish, pro- and retrolateral sides dark brown, other segments yellowish. IV femora yellowish, with distal portion darker, tibiae and metatarsi yellowish, with black line on pro- and retrolateral sides, tarsi yellowish? Abdomen darker. Spinnerets brown.

MEASUREMENTS. Total length: 6.52. Carapace 2.61 long, 1.51 wide. Abdomen 3.63 long, 1.98 wide. Sternum 1.17 long, 0.86 wide. Eye diameters: AME 0.12, ALE 0.13, PME 0.11, PLE 0.15. Eye interdistances: AME–AME 0.26, AME–ALE 0.24, ALE–PLE 0.26, PME–PME 0.31, PME–PLE 0.30, AME–PME 0.27. Legs: I – 1.84/0.53/1.75/1.47/0.93; II – 1.69/0.59/1.46/1.26/0.81; III – 1.52/0.57/1.27/1.38/0.55; IV – 2.31/0.68/2.12/2.28/0.92.

MORPHOLOGY. Carapace and sternum as in male (Fig. 15A–C). Chelicerae brown, with three teeth on promargin, median tooth largest, proximal tooth smaller than distal teeth, distal tooth situated closest to median tooth, two retromarginal teeth, slightly separated, subequal. Abdomen slightly constricted in middle, AS II absent (Fig. 15B), ventral scute absent, tracheal scute present. Epigyne: ST II oval, ST I smaller than ST II, CD folded (Fig. 15H).

LEG MACROSETAE. Femur: I do 1-0-0, p 0-0-1; II do 1-0-0; III do 1-0-0; IV do 1-0-0. Tibia: I v 2-2-2-2-2; II v 2-2-2-2; III v p1-2-2; IV v p1-p1-0, p 0-0-1. Metatarsus: I v 2-2-0; II = I; III v 2-2-2, p 1-0-1, r 1-0-0; IV v 2-2-2, p 0-1-1, r 0-1-0.

Distribution

Colombia (Fig. 21).

Mazax tembe sp. nov.

urn:lsid:zoobank.org:act:238EF6E4-68C4-413B-A48C-BDBA491DB555

Figs 16–19

Diagnosis

Males of *M. tembe* sp. nov. resemble those of *M. kaspari* in having a 3-2 tibia I ventral spination, but differ in having white feathery hairs on the carapace (Fig. 16D) (absent in *M. kaspari*), the spiniform AS II tuberculate (Fig. 16E) (non-tuberculate in *M. kaspari*) and having a short embolus (more than $\frac{1}{10}$ of bulbus length) (Figs 16G, 19A–B) (long, nearly $\frac{1}{4}$ of bulbus length in *M. kaspari*). Females resemble those of *M. pax* by having a 3-3 tibia I ventral spination and by the presence of white feathery hairs on the carapace, but differ by the lack of a transversal groove above CO and in having ST I narrow (nearly $\frac{1}{3}$ of ST II width) (Fig. 16J–K) (transversal groove above CO present, ST I wide, nearly $\frac{1}{2}$ of ST II width in *M. pax*).

Etymology

The specific name is a noun in apposition referring to the Temb , the original occupants of northeast Par , including what is now the municipality of Igarap -A u, where the type specimens were collected.

Material examined

Holotype

BRAZIL • ♂; Par , Igarap -A u; 1 08'29" S, 47 30'49" W; 12 Feb. 2012; J. Barros leg.; MPEG(ARA)-38422.

Paratypes

BRAZIL – Par  • 2 ♂♂; same collection data as for holotype; MPEG(ARA)-38423 • 1 ♀; same locality as for holotype; 14 Sep. 2011; Manoel leg.; MPEG(ARA)-38424 • 1 ♀; same locality as for holotype; 14 Sep. 2012; Tom  leg.; MPEG(ARA)-38425 • 3 ♂♂, 2 ♀♀; same locality as for holotype; 23 Feb. 2011; Tom  leg.; MPEG(ARA)-38426.

Other material

BRAZIL – Par  • 1 ♂; same locality as for holotype; 13 Sep. 2011; Tom  leg.; MPEG(ARA)-38438 • 2 ♂♂; same collection data as for preceding; MPEG(ARA)-38427 • 1 ♀; same collection data as for preceding but 14 Sep. 2011; MPEG(ARA)-38428 • 1 ♂; same collection data as for preceding but 23 Feb. 2011; MPEG(ARA)-38429 • 1 ♂; same collection data as for preceding but 14 Feb. 2012; MPEG(ARA)-38430 • 1 ♀; same collection data as for preceding but 13 Sep. 2011; MPEG(ARA)-38431 • 1 ♂; same collection data as for preceding but 13 Feb. 2012; MPEG(ARA)-38432 • 1 ♀; same collection data as for preceding; MPEG(ARA)-38433 • 1 ♀; Tom -A  ; 2 37'16" S, 48 14'27" W; Jan. 2010; Jailson leg.; MPEG(ARA)-38434 • 1 ♂; same collection data as for preceding but 3 Dec. 2009; MPEG(ARA)-38435 • 1 ♂; same collection data as for preceding but Dinaldo leg.; MPEG(ARA)-38436 • 3 ♂♂, 1 ♀; same locality as for preceding; 9 Oct. 2009; Jailson leg.; MPEG(ARA)-38437.

Description

Male (holotype)

COLORATION. Carapace yellowish-brown, sternum pale orange, chelicerae, sternum and endites yellowish, with spots darker. Legs: coxae I, II and III white, coxa IV pale yellow; I femora with proximal half darker and distal half yellowish-white, other segments yellowish; II femora yellowish-white, with pro- and retrolateral sides darker, other segments yellowish; III femora yellowish, with black lines on pro- and retrolateral sides, other segments yellowish; IV femora yellowish, small proximal and distal

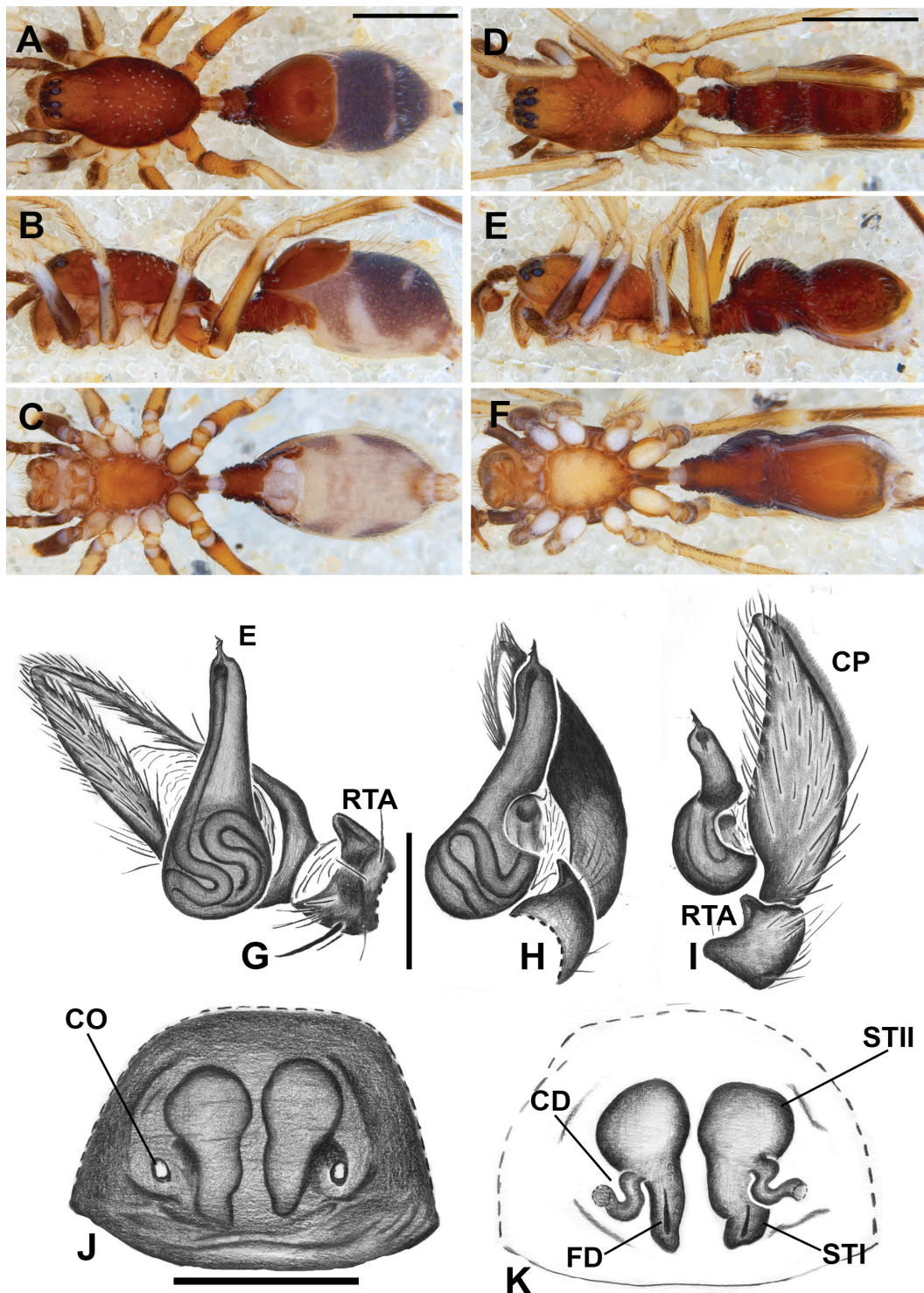


Fig. 16. *Mazax tembe* sp. nov. A–C, J–K. Paratype, ♀ (MPEG(ARA)-38424). D–I. Holotype, ♂ (MPEG(ARA)-38422). A. Dorsal view. B. Lateral view. C. Ventral view. D. Dorsal view. E. Lateral view. F. Ventral view. G. Palp bulb, ventral view. H. Same, retrolateral view. I. Same, with cymbium, retrolateral view. J. Epigyne, ventral view. K. Same, dorsal view. Abbreviations: CD = copulatory duct; CO = copulatory opening; CP = chemocensory patch; E = embolus; FD = fertilization duct; RTA = retrolateral tibial apophysis; ST I = primary spermatheca; ST II = secondary spermatheca. Scales: 0.5 mm.

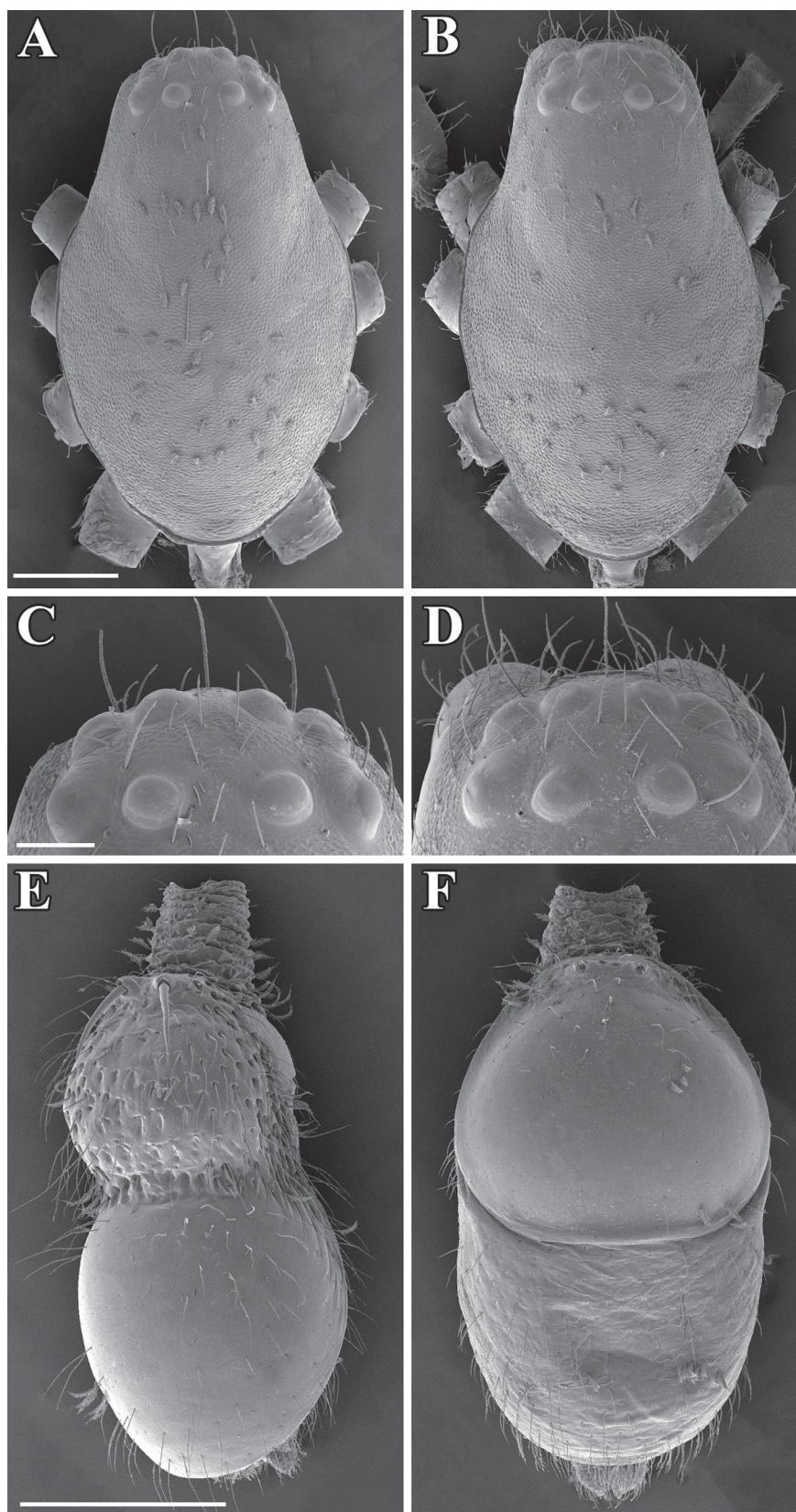


Fig. 17. *Mazax tembe* sp. nov. **A, C, E.** ♂ (MPEG(ARA)-38432). **B, D, F.** ♀ (MPEG(ARA)-38433). **A–B.** Carapace, dorsal view. **C–D.** Posterior eye row (PER). **E–F.** Abdomen, dorsal view. Scales: A–B = 200 µm; C–D = 50 µm; E–F = 500 µm.

portion darker, tibiae and patellae with black lines on pro- and retrolateral sides, metatarsi darker with small distal portion whitish, tarsi yellowish. Abdomen with dorsal scute reddish-brown, ventral scute reddish-orange.

MEASUREMENTS. Total length 2.22. Carapace 0.94 long, 0.55 wide. Sternum 0.43 long, 0.35 wide. Abdomen 1.19 long, 0.41 wide. Eye diameters: AME 0.04, ALE 0.04, PME 0.04, PLE 0.04. Eye interdistances: AME–AME 0.03, AME–ALE 0.01, ALE–PLE 0.02, PME–PME 0.05, PME–PLE 0.02, AME–PME 0.05. Legs: I – 0.46 / 0.15 / 0.45 / 0.39 / 0.31; II – 0.47 / 0.16 / 0.42 / 0.39 / 0.31; III – 0.47 / 0.10 / 0.38 / 0.41 / 0.29; IV – 0.68 / 0.17 / 0.65 / 0.71 / 0.36.

MORPHOLOGY. Carapace with a few spaced feathery hairs, thoracic groove absent (Fig. 16D); sternum shield-shaped (Fig. 16F). Chelicerae: promargin with three teeth, distal tooth very small, medial tooth wide, proximal tooth as retromarginal teeth, retromargin with two subequal teeth. Abdomen constricted in middle, AS II present on tubercles, long hairs and feathery hairs present on pedicel collar and anterior half of scute (Fig. 16D–E), ventral scute rectangular, present (Fig. 16F). Palp with embolus with single keel, triangular RTA present (Fig. 16G–I).

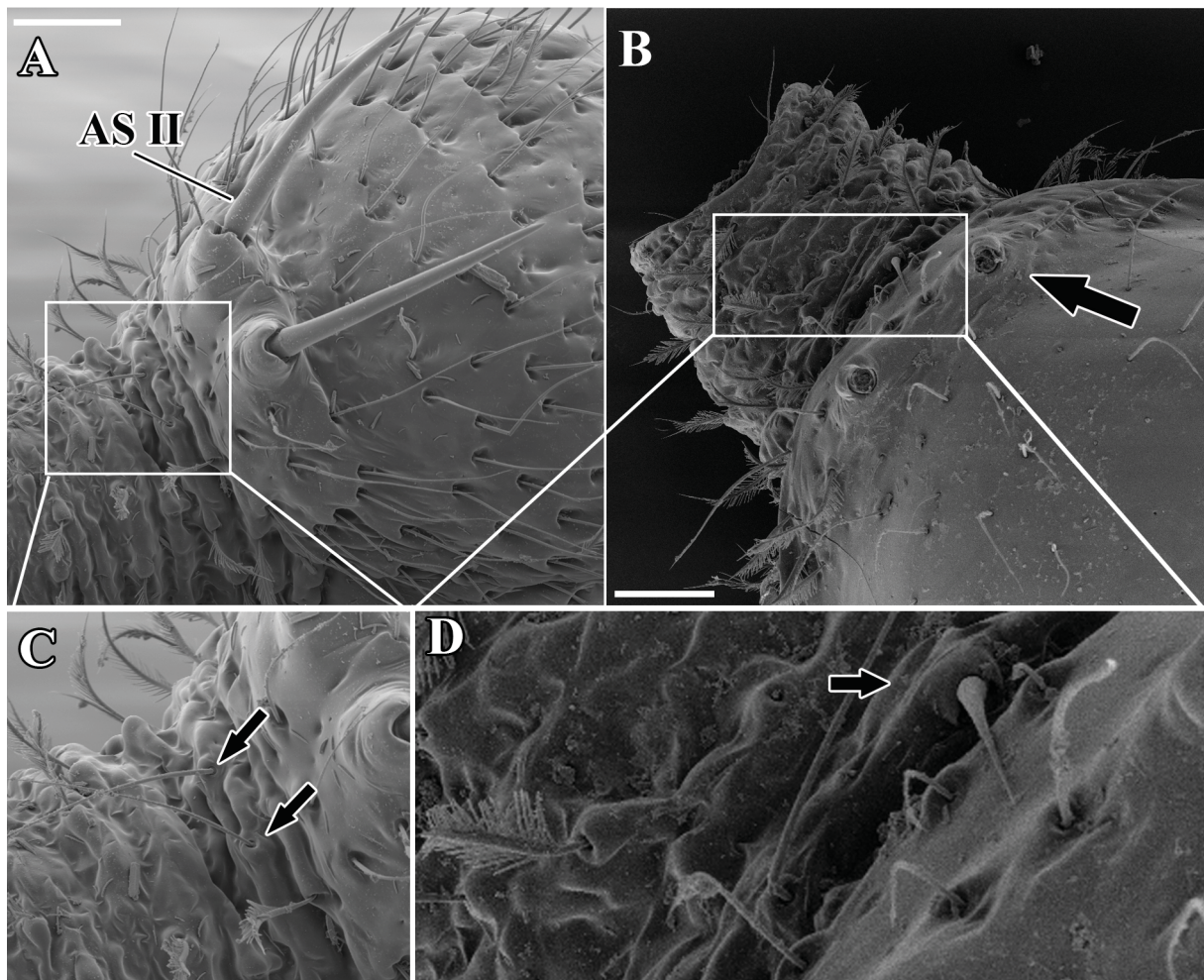


Fig. 18. *Mazax tembe* sp. nov. **A, C.** ♂ (MPEG(ARA)-38432). **B, D.** ♀ (MPEG(ARA)-38433). **A–B.** Abdomen, anterior region with abdominal setae, dorsal view (black arrow indicates AS I). **C–D.** Abdominal setae (black arrows indicate AS I). Scales: A–B 100 μ m.

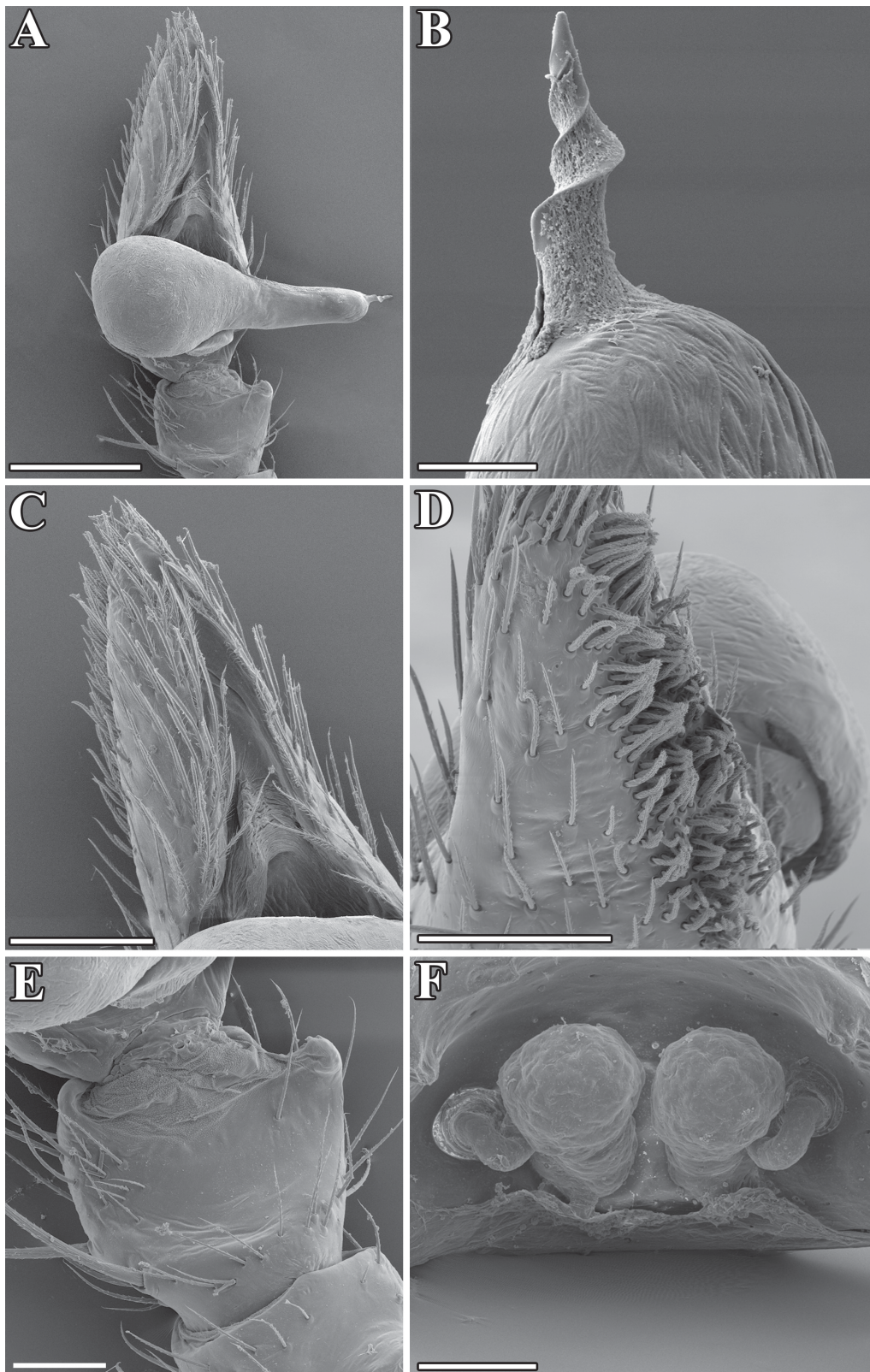


Fig. 19. A–D. *Mazax tembe* sp. nov. A–E. ♂ (MPEG(ARA)-38432). F. ♀ (MPEG(ARA)-38434). A. Palp, ventral view. B. Same, with details of embolus. C. Same, with cymbial tip groove. D. Same, with chemosensory patch, dorsal view. E. Same, tibia, ventral view. F. Epigyne, dorso-anterior view. Scales: A = 200 µm; B = 20 µm; C = 100 µm; D–F = 50 µm.

LEG MACROSETAE. Femur: I do 1-0-1 pl 0-0-1; II do 1-0-1, pl 1-0-0; III do 1-0-1, pl 1-0-1; IV do 1-0-1, pl 1-0-0. Tibia: I ve 1p-2-2 (3-2); II ve 2-2; III do 0-1-1, ve 1-1p; IV pl 0-1-1, rl 0-1-1, ve 1p-0-1p. Metatarsus: I ve 2-2; II ve 2-2; III dp 0-1-1, dr 0-1-1, ve 2-2; IV dp 1-0-1 dr 1-1-0 ve 1r-1p-1r-1p.

VARIATION (n = 1). Total length total 3.82, carapace 2.06, femur I 0.90.

Female (MPEG(ARA)-38424)

COLORATION. Carapace reddish-brown, sternum yellowish-brown, chelicerae, sternum and endites yellowish, with spots darker. Legs: as in male. Abdomen with dorsal scute reddish-brown, ventral scute reddish-orange, abdomen dorsally gray, with white line on posterior half, ventrally white, connected to two lateral white spots on each side.

MEASUREMENTS. Total length 2.49. Carapace 1.00 long, 0.61 wide. Sternum 0.49 long, 0.36 wide. Abdomen 1.33 long, 0.76 wide. Eye diameters: AME 0.04, ALE 0.04, PME 0.04, PLE 0.04. Eye interdistances: AME–AME 0.03, AME–ALE 0.01, ALE–PLE 0.02, PME–PME 0.05, PME–PLE 0.02, AME–PME 0.05. Legs: I – 0.53/0.15/0.56/0.45/0.32; II – 0.53/0.18/0.48/0.41/0.34; III – 0.49/0.10/0.41/0.42/0.28; IV – 0.71/0.20/0.71/0.74/0.39.

MORPHOLOGY. Carapace with a few spaced feathery hairs, thoracic groove absent (Fig. 16A); sternum shield-shaped (Fig. 16C). Chelicerae: promargin with three teeth, distal tooth very small, medial tooth wide, proximal tooth as retromarginal teeth, retromargin with two subequal teeth. Abdomen without constriction, AS II present on tubercles, long hairs and feathery hairs present on pedicel collar and anterior abdominal surface (Fig. 16A–C), ventral scute absent, tracheal scute present (Fig. 16C). Epigyne: CD U-shaped, ST II globose, ST I tube-like (Fig. 16J–K).

LEG MACROSETAE. Femur: I do 1-0-1 pl 0-0-1; II do 1-0-1, pl 1-0-0; III do 1-0-1, pl 1-0-1; IV do 1-0-1, pl 1-0-0. Tibia: I ve 2-2-2 (3-3); II ve 2-2; III do 0-1-1, ve 1-1p; IV pl 0-1-1, rl 0-1-1, ve 1p-0-1p. Metatarsus: I ve 2-2; II ve 2-2; III dp 0-1-1, dr 0-1-1, ve 2-2; IV dp 1-0-1 dr 1-1-0 ve 1r-1p-1r-1p.

VARIATION (n = 2). Total length 3.77–4.02, carapace 2.11–2.24, femur I 0.90–1.04.

Distribution

Known only from the state of Pará, Brazil (Fig. 20).

Discussion

The genus *Mazax* appears to be monophyletic due to at least two characters: the long, rugose abdominal pedicel collar and the bulging dorsal abdominal scutum. The presence of the modified AS II may also be informative at that level, but since there are several instances of absence in species or even sex counterparts of *Mazax*, this character remains untested phylogenetically. Besides, the putative homoplasy of the abdominal pedicel collar and modified AS II in the South Asia genus *Serendib* must be confirmed in a formal analysis.

Reiskind (1969) divided the five species of *Mazax* known at that time into three species groups, but only one, the *spinosa* group, contained more than one species (*M. spinosa*, *M. xerxes* and *M. chickeringi*). Since the *pax* and the *ajax* groups were monotypic, only the *spinosa* group was explicitly characterized in that paper.

Mazax ajax occurs only in Mexico and has uniquely long emboli and spermathecal neck (Reiskind 1969: figs 237–240). According to Reiskind (1969: 269), “the divergence in genitalic characters suggests an early separation (of this species) from the rest of the genus”. Cokendolpher (1978) suggested that

M. kaspari, known only from Texas, USA, would represent an intermediate group between the *ajax* and *pax* groups, since it shares similarities with both *M. pax* (e.g., AS II spiniform, spermatheca with short neck) and *M. ajax* (e.g., non-tuberculate AS II and long embolus). Given that both *M. ajax* and *M. kaspari* exhibit particular morphologies, each of these species may represent lineages of their own, remaining as monotypic groups until the North American and Caribbean faunas are fully revised.

The *spinosa* group was briefly diagnosed by Reiskind (1969) by the tibia I spination ranging from 4-4 to 6-6 and by the carapace being devoid of white hairs. Here, we propose the inclusion of both *M. leonidas* sp. nov. and *M. mokana* sp. nov. in the *spinosa* group, providing additional characters to its definition: the females of this group do not have AS II or, when present, it is hair-like and unmodified (Figs 7A, 14B, 15A). While the males do present spiniform AS II, they are generally not tuberculate or inserted on low tubercles, except for males of *M. spinosa*, in which these spines are inserted on large tubercles (Fig. 8E). *Mazax xerxes* and *M. leonidas* appear to be close to each other, since they share the bicolored carapace; both also share with *M. spinosa* the tibia I ventral spination of 5-5 in females, while both males and females of *M. chickeringi* and *M. mokana* have a 4-4 tibia I ventral spination.



Fig. 20. Distribution of the species of the *Mazax pax* group.

Here, we propose the inclusion of *M. ramirezi*, *M. acanthaspis* comb. nov., and *M. tembe* sp. nov. in the *pax* group, monotypic since Reiskind (1969), because of the presence of feathery hairs on the carapace in both males and females (Figs 2A, 3A, D, 4C, 16A, D), the AS II being spiniform and tuberculate in both males and females (Fig. 10B, E), and the tibia I ventral spination ranging from 3-2 to 5-5.

The dorsal cymbial chemosensory patch (Figs 3J, 6C, 8J, 19D) is shared by all of the species examined here, being formally documented for the first time in Castianeirinae. The absence of this character was considered a synapomorphy for the subfamily (Ramírez 2014: 296). In Corinnidae, it is present in several Corinninae and has also been observed in representatives of the *Pronophaea* group, such as *Austrophaea* Lawrence, 1952 (“cymbium densely setose, particularly in distal half” (Haddad 2007: 50)), *Vendaphaea* Haddad, 2009 (Haddad 2009: fig. 18), *Carteronius* Simon, 1897 (Bonaldo *et al.* 2022: fig. 18b–d) and *Bunyoronius* Bonaldo, Ramírez & Haddad, 2022 (Bonaldo *et al.* 2022: fig. 23e). Spination patterns vary considerably among species of *Mazax*, even being sexually dimorphic in some instances (as in *M. ramirezi* and *M. spinosa*). That variation is useful taxonomically, but homoplasy or even homology issues make this set of characters difficult to interpret in phylogenetic frameworks.

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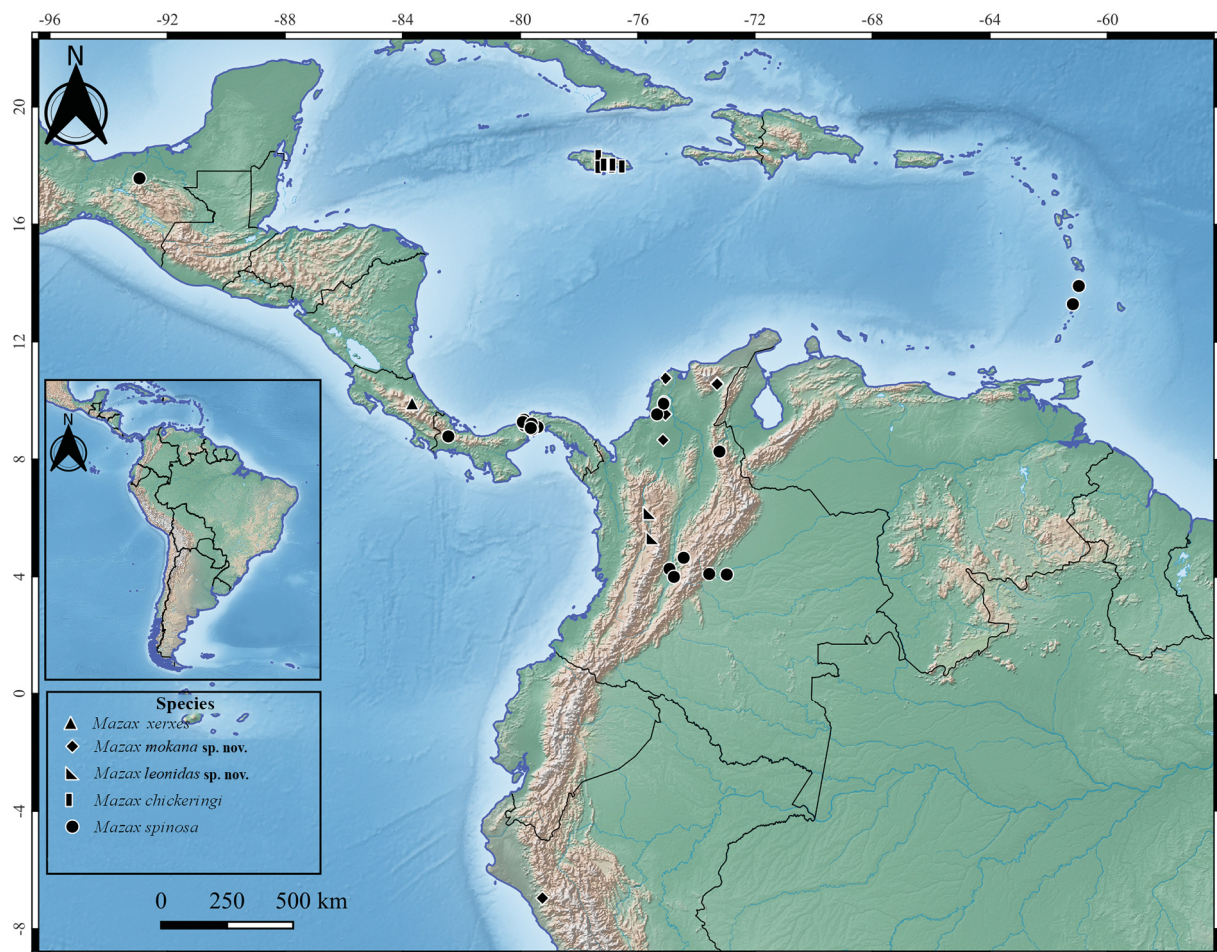


Fig. 21. Distribution of the species of the *Mazax spinosa* group.

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