

Salticidae (Arachnida: Araneae) from the Department of Córdoba in the Caribbean Region of Colombia

Edwin Bedoya-Roque^{1,2} and Samia Lopez-Villada^{2,3}

¹ Universidade Estadual de Goiás. Centro de Ensino e Aprendizagem em Rede. Laboratório de Ecologia Comportamental de Aracnídeos. Programa de Pós-Graduação em Recursos Naturais do Cerrado. Anápolis, GO. Brasil, *email* roquemedj@gmail.com

² Universidad de Córdoba, Facultad de Ciencias Básicas, Departamento de Biología, Semillero Marinos, Grupo de Estudio en Aracnología, PALPATORES. Montería, Colombia

³ *email* lopezvilladasamy@gmail.com

Abstract. A total of 16 species of the family Salticidae are identified from the Córdoba Department of the Colombian Caribbean Region. The genera *Acragas* Simon 1900, *Gastromicans* Mello-Leitão 1917 and *Tittanatus* Peckham & Peckham 1885, and the species *Corythalia brevispina* (F. O. Pickard-Cambridge 1901), *Frigga crocuta* (Taczanowski 1878) and *Jollas pompatus* (Peckham & Peckham 1894) are reported for the first time from Colombia.

Keywords. jumping spiders, Neotropical, taxonomy, zoogeography

Introduction

The Salticidae, commonly known as jumping spiders, is one of the most diverse families of spiders, including 646 genera and 6230 species (WSC 2020). As daytime hunters salticids are characterized by an acute visual system and very agile jumps, occupying many ecological niches in a variety of microhabitats (Cumming & Wesolowska 2004). Except for the Antarctic, they can be abundant in most terrestrial ecosystems and coastal marine environments. They are most diverse in tropical and subtropical regions, where they are found in a wide range of microhabitats ranging from soil and leaf litter to the canopy of jungles and forests (Ubick et al. 2009; Foelix 2011).

Most jumping spiders may be poor at dispersal, but some are not and they can be dispersed through rafting, ballooning and human intervention (Richardson et al. 2006; Foelix 2011). Microhabitat can be associated with dispersal. For example the inhabitants of leaf litter or bark may disperse less than the salticids of open areas or the tree canopy (Richardson et al. 2006). In tropical rainforests, wind currents are weak and limited to the highest canopy level, and most species are narrow niche specialists (Richardson et al. 2006; Argañaraz et al. 2017).

The Colombian jumping spider fauna has received much study and is now represented by 119 species (AracnidsCo 2020; Metzner 2020; WSC 2020). However, considering the number of microhabitats present in the Córdoba Department of the Colombian Caribbean Region, and the diversity of Neotropical Salticidae in general, the 5 species that have been reported from this Department represent only a small fraction of its actual salticid fauna. Here we report 16 additional species from several locations in the lower elevations of the northern part of the Córdoba Department.

Study area. The Department of Córdoba is located in the north of Colombia, in the Caribbean region (Figure 1; N7.3681-9.4378°, W74.7953-76.5003°), with an area of 23,980 km², representing 2.1% of the national territory, with an average annual rainfall of 1300 mm per year, a temperature of 28°C and an average elevation of 100 meters above sea level. The characteristic vegetation of the Caribbean region is tropical dry forest (Bs-T) in the lower zone and tropical humid forest (Bh-T) in the upper zone (Bedoya-Roque et al. 2014; Racero-Casarrubia et al. 2015). Taking into account the two surface hydrographic depressions and the isolated basins located to the northwest of Córdoba, this Department is subdivided into six subregions (Alto Sinú, Medio Sinú, Bajo Sinú, San Jorge, Savannas, and Coastal), based on administrative concerns and common environmental interests (Ballesteros & Linares 2015).



Figure 1. Location of collection sites in the Department of Córdoba, Colombian Caribbean. **A**, Inset shows location of Department of Córdoba in northern Colombia. **B**, Detail from A (inset), showing Department of Córdoba (red outline) and the four collection areas (1, near Punta Mestizos; 2, Momil-Purísima, 3, Cereté; 4, Montería). Map credits: A, NASA/USGS Landsat (background only); B, © [OpenStreetMap contributors](#), base map and data from OpenStreetMap and the OpenStreetMap Foundation.

Methods. Both older specimens in collections, and recently collected specimens from the Department of Córdoba were examined to verify their identity. Classification of salticids to tribe or subtribe was based on this order of priority: 1, Maddison et al. 2020; 2, Maddison & Szűts 2019; 3, Maddison 2015. For measurements of the genus *Lyssomanes*, the proposal of Galiano (1962) was followed. Morphological terms follow Galiano (1963). Abbreviations used in the text are: AERW= anterior eye row width; AL= abdomen length; B= bulb; C= cymbium; CA= carena; CH= caparace height (~maximum); CL= caparace length; CW= caparace width; E= embolus; eAb= embolar apophysis base; F= femur; LOQ= length of ocular quadrangle (ALE-PLE inclusive); M= metatarsus; MA= median apophysis; P= patella; PERW= posterior eye row width; PMEP= posterior median eye position (as ratio of ALE-PME distance to ALE-PLE distance); RTA= retrolateral tibial apophysis; SD= sperm duct; T= tibia; TL= total length. Unless otherwise noted, measurements and scales are in mm.

Lyssomaninae: *Lyssomanes* Hentz 1845
Type species *L. viridis* (Walckenaer 1837)

1. *Lyssomanes unicolor* (Taczanowski 1871)

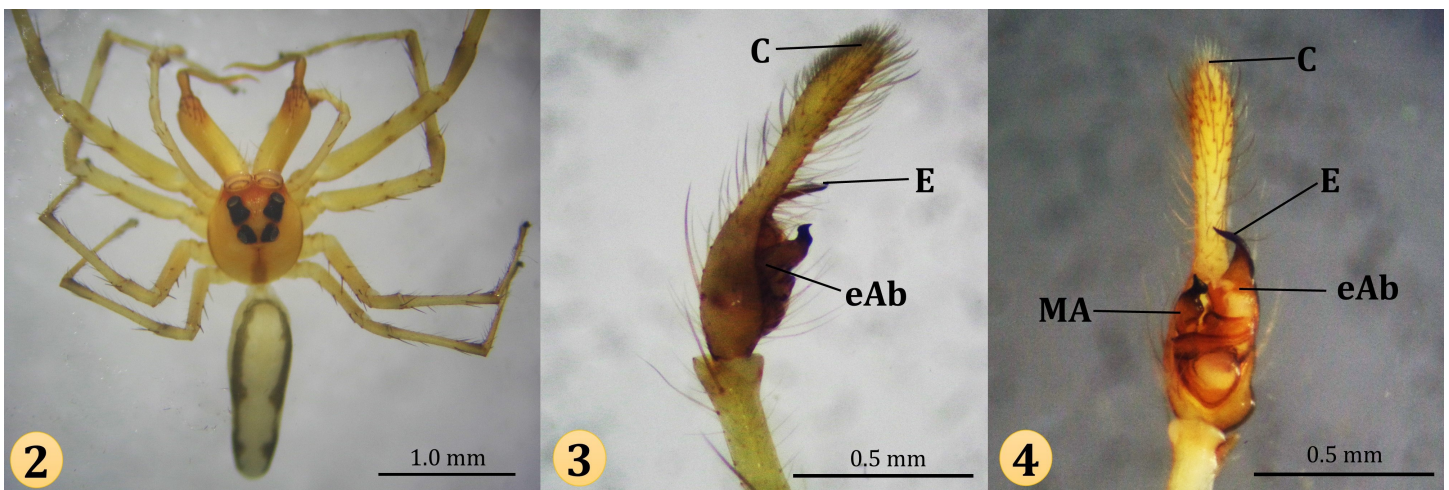
Jelskia unicolor Taczanowski 1871, 1878; *Lyssomanes unicolor* Peckham, Peckham & Wheeler 1889; Galiano 1962, 1980; Logunov 2002.

Material examined. 2♂ [Figures 2-4], Colombia, Córdoba, San Antero: Caño Mocho [N9.4143°, W75.8017°], [2m] 22 Apr 2018, estuary, mangrove forest, *Rhizophora mangle* L. tree, shaking foliage, E. Bedoya-Roquecolla coll. (LEUC; OARA-120). Type material deposited in the MCZ, AMNH not examined.

Diagnosis. According to Galiano (1962, 1980) the male of *L. unicolor* is easily distinguished by two dark bands on the opisthosoma (Figure 2), by the shape of the RTA, with a truncated apex and the quadrangular shape of the retrolateral upper border (Figures 3-4; see Galiano 1962, figs. 1-3). The tarsus bears a tubercle in a lower, retrolateral position. The embolus is short, thick and black in color, located in the prolateral part of the bulb; it appears somewhat flattened and rolled (Figure 3), twisted on its axis in a helical shape, which is more evident at the apex on the retrolateral part of the bulb, with a highly developed median process (Figure 4). The embolus is long, conical, with a sharp apex and black in color. The fan-shaped conductor protects the apex of the embolus (Figures 3-4). The specimens from the Department of Córdoba, Colombia, agree with the descriptions of Chickering (1946) and Galiano (1962), and show no marked differences in the dentition of the chelicerae.

Measurements (mm; specimens from Colombia). *Two males*: TL= 4.97-5.11; CL= 1.84-1.86; CW= 1.63-1.65; AL= 3.18-3.21. Width of eye rows, first: 1.03-1.05; second: 0.98-1.02; third: 0.57-0.59; fourth: 0.65-0.69; eyes of the second row separated by 0.11-0.13, eyes in the third row separated from the eyes in the fourth row by 0.28-0.31. Diameter AME: 0.48-0.51; ALE: 0.25-0.27; PME: 0.09-0.10; PLE: 0.24-0.26.

Distribution. *Lyssomanes unicolor* is known from Brazil, Colombia, Ecuador, French Guiana, Guyana, Mexico, Panama, Peru, Suriname, Tobago, Trinidad, and Venezuela.



Figures 2-4. Male *Lyssomanes unicolor*. 2, Habitus, dorsal view. 3, Left pedipalp, prolateral view. 4, Left pedipalp, ventral view. Nomenclature of pedipalp based on Galvis (2020).

Salticinae: Amycoida: Scopocirini: *Scopocira* Simon 1900a
Type species *S. dentichelis* Simon 1900a

2. *Scopocira dentichelis* Simon, 1900a

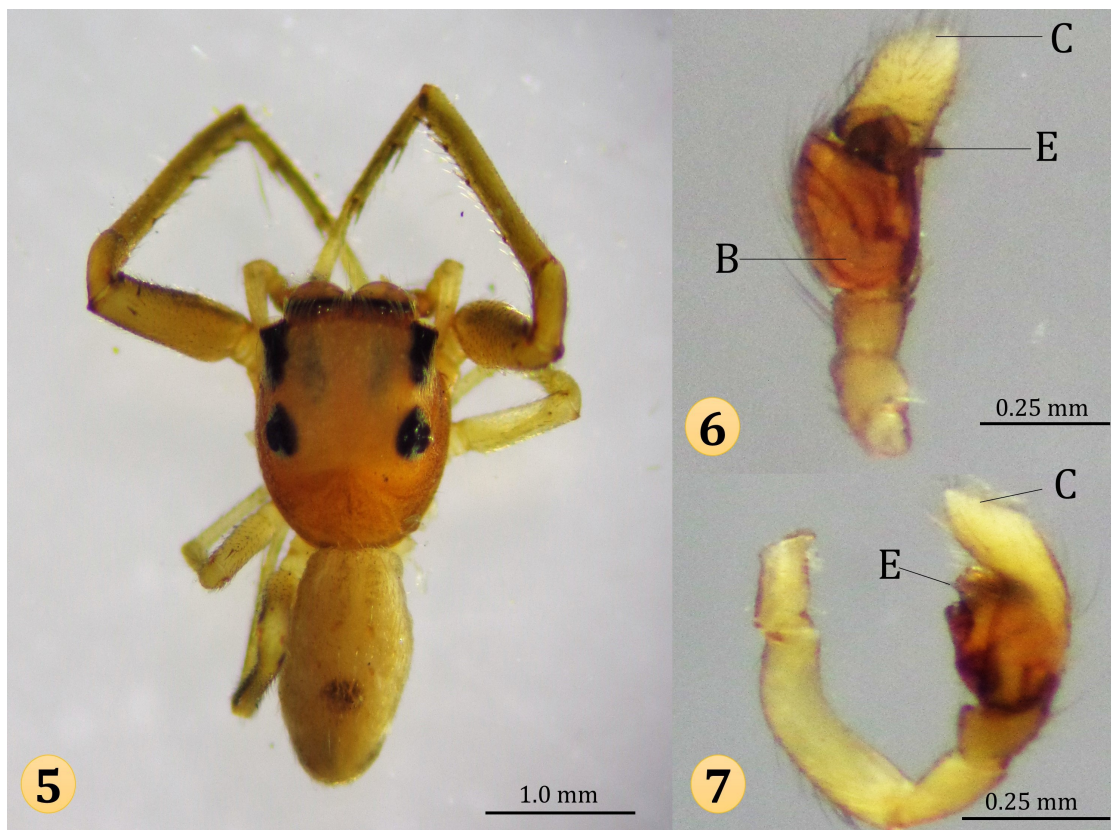
Scopocira dentichelis Simon 1900a, 1901; Chamberlin & Ivie 1936; Chickering 1946; Galiano 1963; Costa & Ruiz 2014.

Material examined. 2♂ [Figures 5-7], Colombia, Córdoba, Montería [N8.7229°, W75.8830°], [12m] 17 Aug 2018, on *Averrhoa carambola* L., collected by hand, E. Bedoya-Roque coll. (LEUC; ARE-URB-011). Type material deposited in the MCZ not examined.

Diagnosis. According to Galiano (1963) and Costa & Ruiz (2014) the male of *S. dentichelis* (Figure 5) can be identified by the robust, slightly divergent chelicerae, oblique fang groove (see Galiano 1963, figs. 3-4), promargin of the fang groove with a large lobed process at the base, retromargin with a large truncated apex tooth, two smaller teeth on its inner edge, three more small retromarginal teeth very close together (see Galiano 1963, figs. 3-4), and their lack of an acute paraembolic projection on the pedipalp (Figures 6-7; see Costa & Ruiz 2014, figs. 92-93).

Measurements (mm; specimens from Colombia). *Two males*: TL= 2.91-2.93; CL= 1.47-1.51; CW= 1.27-1.30; AL= 1.41-1.43; AERW= 1.16-1.18; PERW= 1.03-1.1; LOQ= 0.88-1.0; PMEP=0.31-0.33; eyes of the second row separated from the ALE by 0.25-0.27 mm and from the PLE by 0.27-0.29 mm.

Distribution. *Scopocira dentichelis* is known from Belize, Colombia, Honduras, and Panama.



Figures 5-7. Male *Scopocira dentichelis*. 5, Habitus, dorsal view. 6-7, Ventral and retrolateral views of left pedipalp.

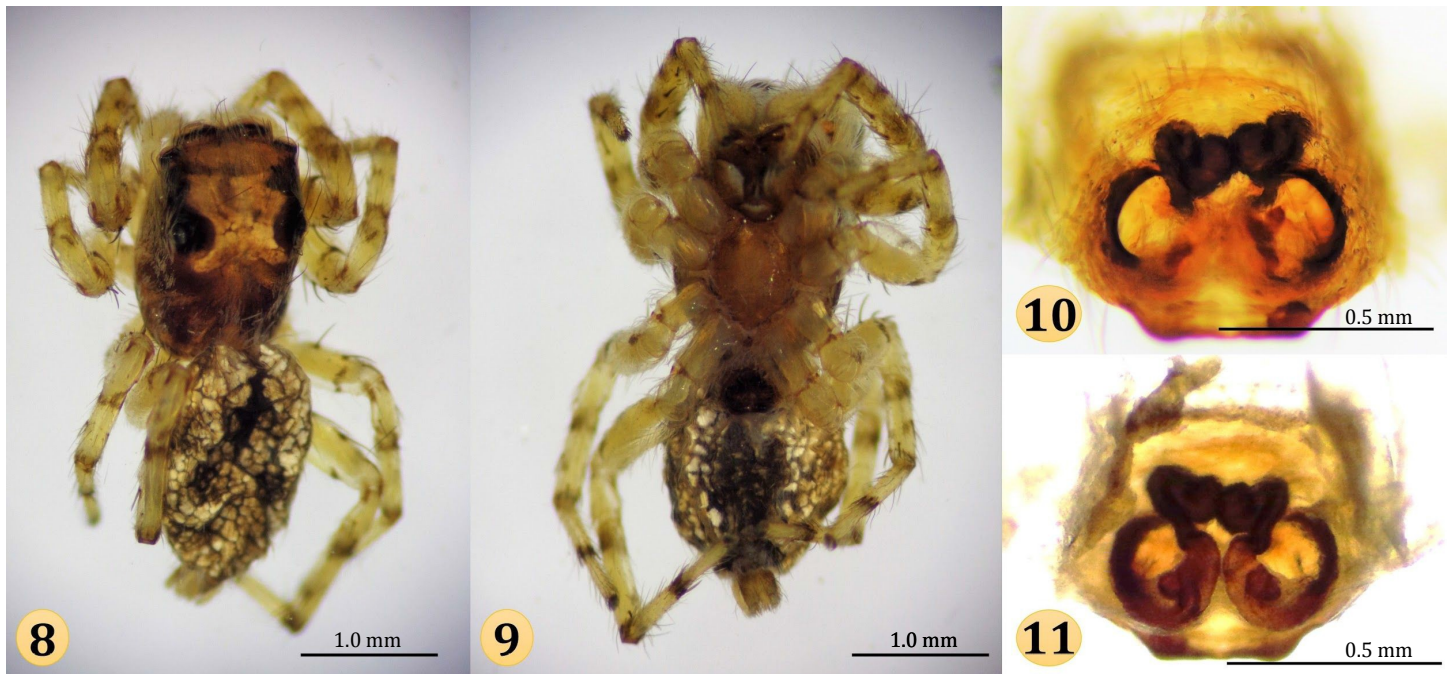
Salticinae: Amycoidea: Thiodinini: *Titanattus* Peckham & Peckham 1885
Type species *T. saevus* Peckham & Peckham 1885

3. *Titanattus cretatus* Chickering 1946; Figures 8-11

Titanattus cretatus Chickering 1946.

Material examined. 2♀ [Figures 8-11], Colombia, Córdoba, San Antero: Caño Mocho [N9.4107°, W75.7920], [2m] 23 Aug 2018, mangrove forest, *Rhizophora mangle* L. tree, shaking foliage, E. Bedoya-Roque coll. (LEUC; OARA-167). Type material deposited in the MCZ not examined.

Diagnosis. According to Chickering (1946) *Titanattus cretatus* can be easily distinguished from other species by the vertical, parallel chelicerae without special features, the moderately robust, evenly curved fang, the distinctive fang-groove with four promarginal teeth fairly well spaced, occupying the greater part of the margin, and with four retromarginal teeth so closely crowded that their bases appear to be joined (see Chickering 1946, fig. 338). Posterior margin with a distinct lip but no definite notch. Two large loops are apparent on either side of the epigynal plate (Figures 10-11).



Figures 8-11. Female *Titanattus cretatus*. **8**, Habitus, dorsal view. **9**, Habitus, ventral view. **10**, Epigyne, ventral view. **11**, Epigyne, dorsal view.

Comparative description of specimens. Prosoma is wide just behind PLE which project slightly beyond the dorsal margin of the carapace which is as tall as wide. The ascent from AME to the PLE is quite steep. A steep posterior declivity descends almost immediately behind the PLE to the posterior margin (Figure 8). The carapace is considerably depressed between the PLE which stand on low tubercles, bearing considerable hair and numerous bristles. The carapace is long and slender in the ocular region, with the ventral margin considerably wider than the dorsal margin, widest a short distance behind the PLE (Figure 8), with much sub-chitinous guanin, especially in the interocular area, and with a short median longitudinal thoracic groove a short distance behind the PLE (Figure 8). The chelicerae are vertical, parallel, without special features, the fang moderately robust, evenly curved, the fang-groove distinct with four promarginal teeth fairly well spaced and occupying the greater part of the margin, and four

retromarginal teeth so closely crowded that their bases appear to be joined (see Chickering 1946; fig 338). Posterior margin of the epigyne with a distinct lip but no definite notch, two J-shaped loops show clearly near the middle at sides of the plate (Figures 10-11).

Measurements (mm; specimens from Colombia). *Two females*: TL= 3.78-3.83; CL= 1.65-1.67; CW= 1.22-1.25; AL= 1.75-1.79; AERW= 1.16-1.18; PERW= 1.03-1.1; LOQ= 1.03-1.05; PMEP=0.35-0.37; eyes of the second row separated from the ALE by 0.17-0.19 mm and from the PLE by 0.26-0.28 mm.

Distribution. *Titanattus cretatus* is known from Colombia (Department of Córdoba), Panama (female holotype from Canal Zone Biological Area).

Salticinae: Amycoida: Amycini: *Acragas* Simon 1900b

Type species *A. longimanus* Simon 1900b

4. *Acragas peckhami* (Chickering 1946)

Amycus peckhami Chickering 1946; *Acragas peckhami* Galiano 1968; Prószyński 2017.

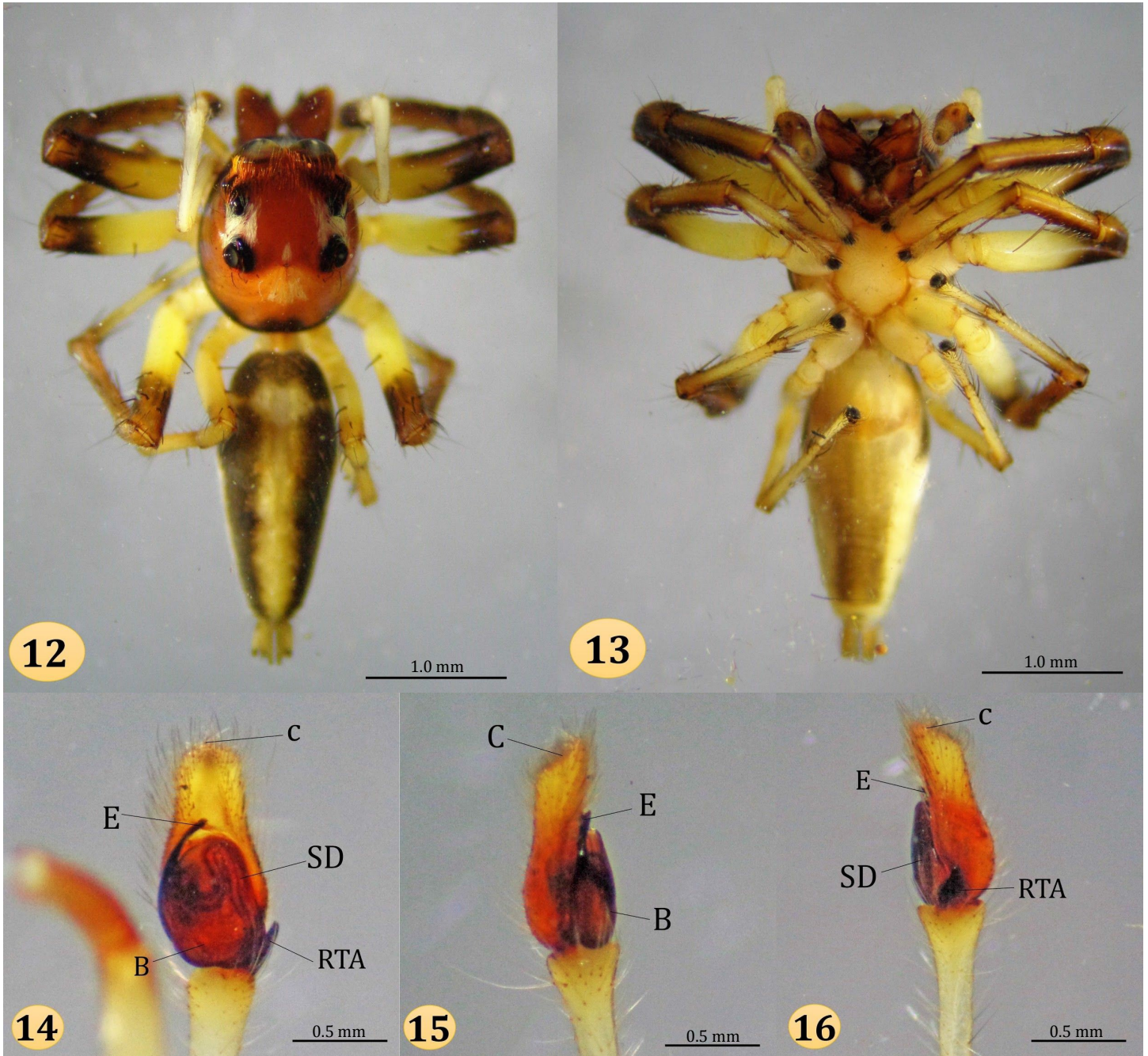
Material examined. 1♂ [Figures 12-16], Colombia, Córdoba, Montería [N8.7229°, W75.8830°], [12m] 16 Mar 2018, urban area, *Mangifera indica* L. tree, shaking foliage, E. Bedoya-Roqueme coll. (LEUC; ARE-URB-008). Type material deposited in the MCZ not examined.

Diagnosis. According to Chickering (1946) and Galiano (1968) the male of *Acragas peckhami* is easily distinguished from other *Acragas* species by its long and slender pedipalp (Figures 14-16), RTA spout spur (Figure 16 and as described by Chickering 1946; see Galiano 1968, figs. 25-26), its somewhat thicker bulb, and the wider curves of the spermatic ducts, reaching the middle of the bulb (see Chickering 1946, figs. 306-308). A dorsolateral black band is present on either side of the opisthosoma (Figure 12) is characteristic of this species, and this is present in both males and females.

Comparative description of specimens. The posterior eye row occupies almost 3/4 of the width of the carapace, and the carapace is wide at this position (Chickering 1946), and well rounded laterally. A median thoracic groove is present between the PLE. A prominent crest of dark reddish hairs extends to the front over the anterior eye row (Figure 12). A patch of white hairs is present in front of the thoracic streak and a larger one, behind. Yellow-white hairs are present between the eyes of the second row and the PLE (Galiano 1968). A line at some distance from ventral margin extends from the posterior border to the sides of the clypeus (Chickering 1946; Galiano 1968). The chelicerae are straight and parallel, with a flat anterior surface, and sometimes with a lateral cavity containing a tooth (Chickering 1946; Galiano 1968). The promargin of the fang groove has two teeth, of which the closest to the base of the fang is a large lamelliform process. The retromargin of the fang groove has six teeth, increasing in size towards the base of the chelicerae. However in our specimen from Colombia the retromarginal tooth closest to the base of the fang is larger, differing from the earlier descriptions. Chickering (1946) did suggest that these teeth varied in size but not in number. The opisthosoma is elongated with a black dorsolateral band on either side (Figures 12-13), as described by Chickering (1946) and Galiano (1968). The pedipalp is long and slender (Figures 14-16), the bulb somewhat thicker (Figure 15). An RTA spout spur is present (Figure 16) and the curves of the spermatic ducts are relatively wide, reaching the middle of the bulb (see Chickering 1946, figs. 306-308). The color of the legs agrees with the description by Galiano (1968), except for legs IV. Our specimen from Colombia has light-yellow rather than brown legs IV as described by Galiano (1968). Spines are as described by Chickering (1946).

Measurements (mm; specimens from Colombia). *One male*: TL= 6.57; CL= 2.46; CW= 2.27; AL= 3.65; AERW= 1.71; PERW= 1.56; LOQ= 1.55; PMEP=0.36; eyes of the second row separated from the ALE by 0.18 mm and from the PLE by 0.39 mm.

Distribution. *Acragas peckhami* is known from Panamá (Zona tlel Canal, Isla de Barro Colorado, Summit, Balboa, Porto Bello) and Colombia (department of Córdoba).



Figures 12-16. Male *Acragas peckhami*. 12, Habitus, dorsal view. 13, Habitus, ventral view. 14-16, Left pedipalp, ventral (14), prolateral (15) and retrolateral (16) views.

Salticinae: Amycoidea: Sitticini: Sitticina: *Jollas* Simon 1901b
Type species *J. geniculatus* Simon 1901b

5. *Jollas geniculatus* Simon 1901b

Jollas geniculatus Simon 1901b; Banks 1929; Caporiacco 1947, 1948; Galiano 1963, 1991; Prószyński 1987, 2017.

Material examined. 3♀ [Figure 17], Colombia, Córdoba, Momil-Purisima [N9.222435°, W75.716766°], [5m] 18 Apt 2008, Swamp, *Eichhornia crassipes* (Mart.) Solms 1883, collected by hand, G. Salleg-Perez; I. Wild coll. (LEUC; OARA-180). Type material deposited in the Instituto di Zoologia della Universita Firenze (Italy), MCZ, MNHN not examined.

Diagnosis. The female *Jollas geniculatus* (Figure 17) can be identified by the appearance of the epigyne. The edge of the funnels in the middle area is horizontal and slightly curved (Galiano 1991, figs. 40-41).

Measurements (mm; specimens from Colombia). *Three females*: TL= 2.05-2.1; CL= 0.92-0.93; CW= 0.72-0.75; AL=0.99-1.0; AERW= 0.63-0.65; PERW= 0.61-0.63; LOQ= 0.63-0.65; PMEP=0.31-0.33; eyes of the second row separated from the ALE by 0.14-0.15 mm and from the PLE by 0.16 mm.

Distribution. *Jollas geniculatus* is known from Colombia, Guyana, Panama, Trinidad, and Venezuela.

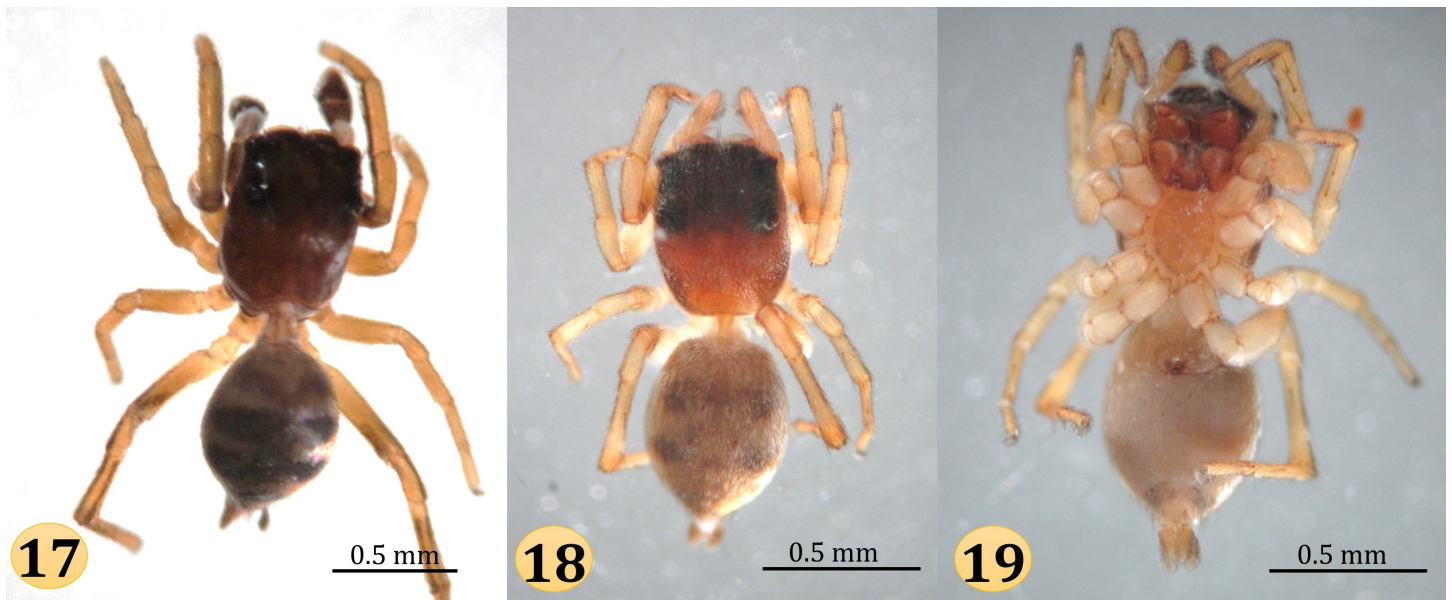


Figure 17. Dorsal view, habitus, female *Jollas geniculatus*. **Figures 18-19.** Dorsal (18) and ventral (19) views of habitus, female *Jollas pompatus*.

6. *Jollas pompatus* (Peckham & Peckham, 1894b)

Neon pompatus Peckham & Peckham 1894b, 1895; *Oningis pompatus* Simon 1901; *Jollas minutus* Chickering 1946; *Jollas pompatus* Galiano 1991.

Material examined. 3♀ [Figures 18-19], Colombia, Córdoba, Momil-Purisima [N9.222060°, W75.715113°], [5m] 18 Apt 2008, Swamp, *Eichhornia crassipes* (Mart.) Solms 1883, collected by hand, G. Salleg-Perez; I. Wild coll. (LEUC; OARA-173). Type material deposited in the BMNH, FDACS, MCZ, MNHN not examined.

Diagnosis. According to Chickering (1946) and Galiano (1991) the female of *Jollas pompatus* (Figures 18-19) is easy to identify by the epigyne, with an anterior median septum and vertical funnels at the margins (Figure 19; see Galiano 1991, figs. 44-45). The specimens from Colombia were not markedly different from the original descriptions made by Peckham & Peckham (1895) and Chickering (1946), and the subsequent redescription by Galiano (1991).

Measurements (mm; specimens from Colombia). *Three females*: TL= 2.14-2.16; CL= 0.95-0.97; CW= 0.80-0.83; AL= 1.06-1.08; AERW= 0.71-0.73; PERW= 0.66-0.69; LOQ= 0.51-0.53; PMEP=0.35-0.37; eyes of the second row separated from the ALE by 0.18 mm and from the PLE by 0.15-0.16 mm.

Distribution. *Jollas pompatus* is known from Colombia, Panama, Saint Vincent.

Salticinae: Salticoida: Marpissoida: Dendryphantini: Dendryphantina: *Bryantella* Chickering 1946
Type species *B. speciosa* Chickering 1946

7. *Bryantella smaragda* (Crane 1945)

Parnaenus smaragdus Crane 1945; *Parnaenus convexus* Chickering 1946; Prószyński 1971; *Bryantella smaragdus* Scioscia 1988, 1995; *Bryantella smaragda* Prószyński 2017a.

Material examined. 4♀ Colombia, Córdoba, Momil-Purisima [N9.222435°, W75.716766°], [8m] 18 Apr 2008, Swamp, *Eichhornia crassipes* (Mart.) Solms 1883, collected by hand, G. Salleg-Perez; I. Wild coll. (LEUC; OARA-112). Type material deposited in the AMNH, MCZ not examined.

Diagnosis. According to Scioscia (1988, 1995), female *Bryantella smaragda* are easily distinguished from other species by the appearance of the epigyne and the chelicerae (see Scioscia 1988, figs. 21-23; Scioscia 1995, figs. 7.12).

Measurements (mm; specimens from Colombia). *Four females*: TL= 8.9-9.16; CL= 3.9-4.2; CW= 3.35-3.4; AL= 6.79-6.8; AERW= 2.26-2.31; PERW= 2.41-2.43; LOQ= 1.69-1.7; PMEP=0.28-0.31; eyes of the second row separated from the ALE by 0.49 mm and from the PLE by 0.74-0.76 mm.

Distribution. *Bryantella smaragda* is known from Argentina, Brazil, Colombia, Ecuador, Panama, Paraguay, and Venezuela.

Salticinae: Salticoida: Marpissoida: Dendryphantini: Dendryphantina: *Gastromicans* Mello-Leitão 1917
Type species *G. albopilosa* (Simon, 1903)

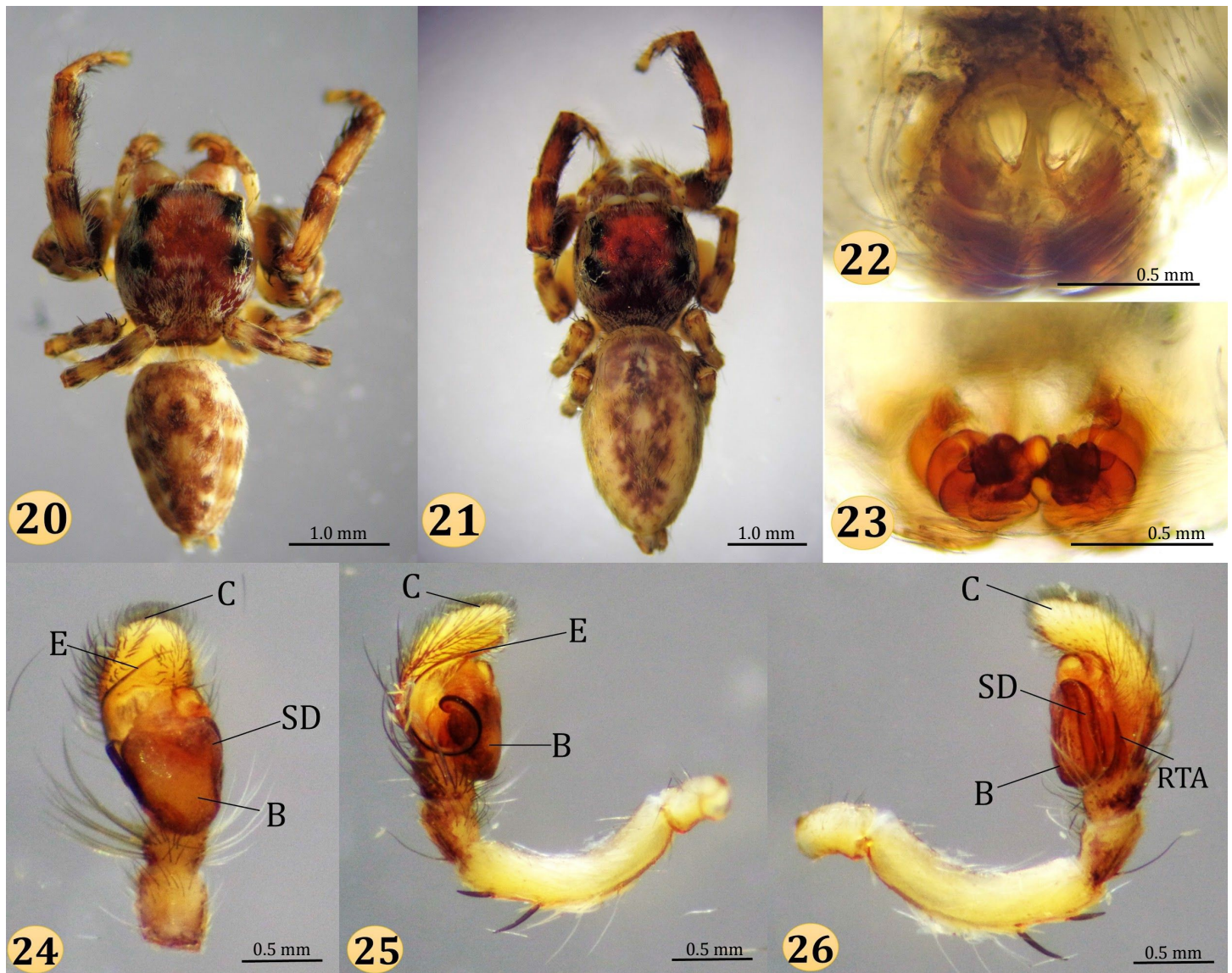
8. *Gastromicans levispina* (F. O. Pickard-Cambridge 1901)

Metaphidippus levispinus F. O. Pickard-Cambridge 1901; *Dendryphantes levispinus* Petrunkevitch 1911; *Beata levispina* Chickering 1946; *Gastromicans levispina* Maddison 1996.

Material examined. 1♂, 2♀ [Figures 20-26], Colombia, Córdoba, San Antero: Caño Mocho [9°24'38.6"N 75°47'31.3"W], [2m] 23 Apr 2017, mangrove forest, *Rhizophora mangle* L. tree, shaking foliage, E. Bedoya-Roqueme coll. (LEUC; OARA-144). Type material deposited in the AMNH, BMNH, MCZ not examined.

Diagnosis. According to F. O. Pickard-Cambridge (1901), Chickering (1946) and Maddison (1996), the females of *Gastromicans levispina* can be identified by their small epigynal plate, about as long wide, with

a fairly deep posterior notch (Figure 22). The anterior half of the epigyne is occupied by two elongated depressions separated by a low septum about as wide as each depression (Figures 22-23; see Chickering 1946, fig. 224; Maddison 1996, figs. 93-95). The males can be identified by an embolus that originates on the prolateral side of bulb (Figure 24), completes more than 3/4 of a circle and terminates in a slender filament which lies transversely across the cymbium (Figures 25-26; see Chickering 1946, figs. 222-223).



Figures 20-26. *Gastromicans levispina*. **20**, Male, habitus, dorsal view. **21**, Female, habitus, dorsal view. **22**, Epigyne, ventral view. **23**, Epigyne, dorsal view, cleared. **24-26**, Left pedipalp of male, ventral (24), prolateral (25) and retrolateral (26) views.

Comparative description of specimens. Carapace long, wide at level of PLE, the dorsal surface, especially the interocular area, finely granulate, rather robust in general with lateral sides well rounded from ALE to prolateral corners, and a very short, broad, median longitudinal, thoracic groove in a shallow depression extending half way from the posterior eye row to the beginning of steep posterior declivity, which in turn extends about half way to the posterior margin of the carapace (Chickering 1946; Maddison 1996). The male and female specimens from Colombia described here have cheliceral teeth as described by F. O. Pickard-Cambridge (1901), Chickering (1946) and Maddison (1996). Abdomen ovoid, longer than wide. Femur of male pedipalp strongly curved ventrally (Figure 25), covered dorsally with white lanceolate hair. Patella and tibia of male pedipalp both short, RTA a simple, robust spur directed forward (Figure 26),

tarsal bulb constricted posteriorly, embolus originating on prolateral side of bulb (Figure 24), completing more than three fourths of a circle and terminating in a slender filament which lies transversely across cymbium (Figure 24; see Maddison 1996, fig. 93). The epigyne of the female is small, about as long as wide (Figure 22; see Maddison 1996, figs. 94-95), with a fairly deep posterior notch (Figure 22; see Maddison 1996, figs. 94-95), an anterior half occupied by two elongated depressions separated by a low septum about as wide as each depression (Figures 22-23; see Maddison 1996, figs. 94-95).

Spines (specimen from Colombia): *Male*: Leg I: F= d 0-0-1-1-1, p 2; P= p 0-2-0, r 0-1-0; T= p 0-0-1-0, r 0-1-0, v 2-2-2; M= v 0-2-2 (same as in Chickering 1946, Leg right: v 1-2-2). Leg II: F= d 0-0-1-1-1, p 2, r 0-0-1; P= p 0-1-0, r 0-1-0; T= p 0-1-1-0, r 0-1-1-0, v 1r-1-2; M= p 1-1, r 1-1, v2-2. Leg III: F= d 0-0-1-1-1, p 2, r 0-0-1; P= p 0-1-0, r 0-1-0; T= p 0-1-1-0, r 0-1-1-0, v 0-0-2; M= p1-2, r 1-2, v0-2. Leg IV: F= d0-1-1-1, p 1, r 1; P= 0; P= p 0-1-0, r 0-1-0; T= p 1-0-1, r 0-1-1-0, v 0-2; M= p1-2, v0-2. *Two females*: Leg I: F= d 0-0-1-1-1, p 2; P= p 0-1-0; T= v 2-2-2; M= v 2-2. Leg II: F= d 0-0-1-1-1, p 2, r 0-0-1; P= p 0-1-0, r 0-1-0; T= p 0-1, v 1r-1r-2; M= p 1-0-1, v2-2. Leg III: F= d 0-0-1-1-1, p 2, r 0-0-1; P= p 0-1-0, r 0-1-0; T= p 0-1, r 1-1, v 0-0-2; M= p1-2, r 1-2, v0-2. Leg IV: F= d0-1-1-1, p 1d, r 1d; P= r0-1-0; T= r 0-1, v 0-0-2; M= p1-1, r0-1, v0-2.

Measurements (mm; specimens from Colombia). *Male*: TL= 5.14-5.2; CL= 2.28-2.31; CW= 2.06-2.1; AL= 2.67-2.7; AERW= 1.56-1.61; PERW= 1.69-1.72; LOQ= 1.57 9-1.59; PMEP= 0.29-0.3; eyes of the second row separated from the ALE by 0.31 mm and from the PLE by 0.46-0.48 mm. *Two females*: TL= 5.39-5.41; CL= 2.15-2.17; CW= 2.08-2.1; AL= 3.4-3.6; AERW= 1.5-1.7; PERW= 1.74-1.75; LOQ= 1.4-1.5; PMEP=0.30-0.31; eyes of the second row separated from the ALE by 0.27 mm and from the PLE by 0.52-0.55mm.

Distribution. *Gastromicans levispina* is known from Colombia (Department of Córdoba) and Panamá.

Salticinae: Salticoida: Saltafresia: Simonida: Euophryini: *Anasaitis* Bryant 1950
Type species *A. morgani* (Peckham & Peckham 1901)

9. *Anasaitis canalis* (Chamberlin 1925)

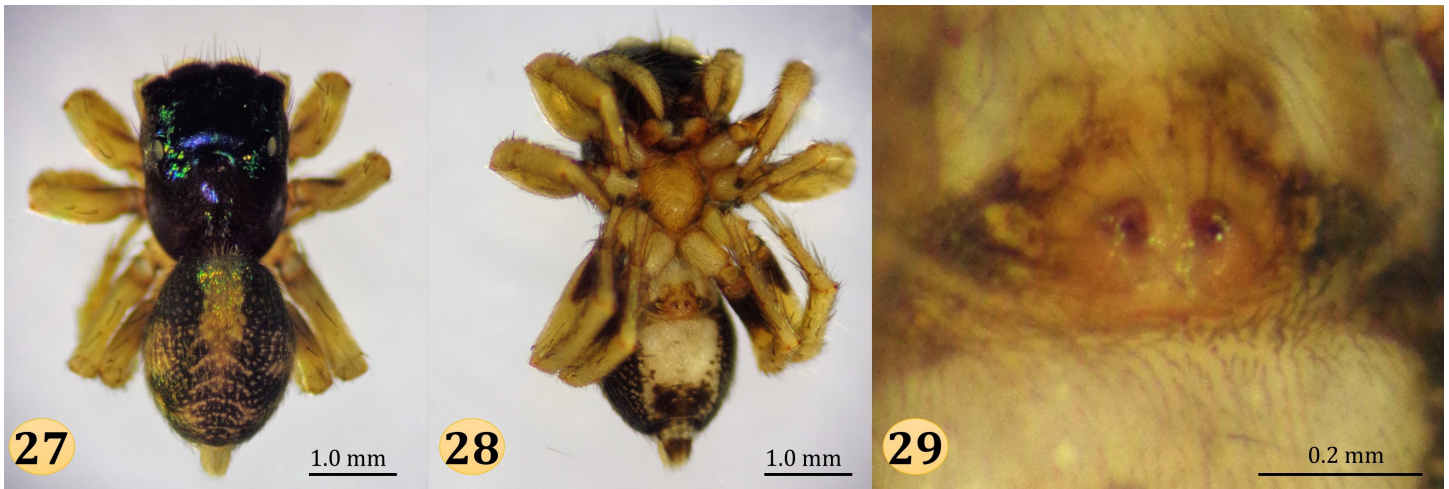
Saitis canalis Chamberlin 1925; *Corythalia canalis* Banks 1929; Chickering 1946; *Anasaitis canalis* Zhang & Maddison 2015.

Material examined. 2♀ [Figures 27-29], Colombia, Córdoba, San Antero: Punta Nisperal [N9.4143°, W75.8017°], [2m] 22 Aug 2018, mangrove forest, *Rhizophora mangle* L. tree, shaking foliage, E. Bedoya-Roque coll. (LEUC; OARA-139). Type material deposited in the MCZ not examined.

Diagnosis. According to Chickering (1946) and Zhang & Maddison (2015), the females of *Anasaitis canalis* (Figures 27-28), are distinguished from other species by the two large reniform spermathecae at outer posterior corners of the epigyne (Figure 29). Two small depressions, possibly openings, near the center are associated with obscure tubules within (see Chickering 1946, fig. 124; Zhang & Maddison 2015, figs. 18-19).

Measurements (mm; specimens from Colombia). *Two females*: TL= 4.16-4.20; CL= 2.03; CW= 1.66-1.68; AL= 2.13-2.15; AERW= 1.61-1.63; PERW= 1.43-1.47; LOQ= 1.53-1.55; PMEP=0.35-0.37; eyes of the second row separated from the ALE by 0.17 mm and from the PLE by 0.23-0.25mm.

Distribution. *Anasaitis canalis* is known from Panama and Colombia.



Figures 27-29. Female *Anasaitis canalis*. 5, Habitus, dorsal view. 6, Habitus, ventral view. 7, Epigyne, ventral view.

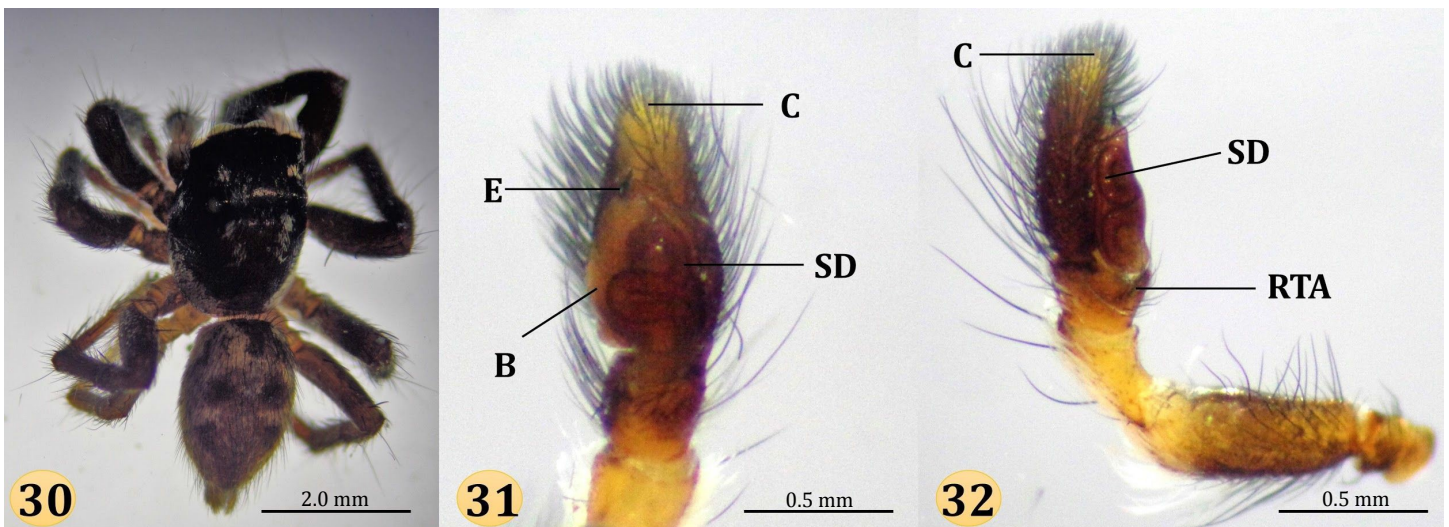
Salticinae: Salticoida: Saltafresia: Simonida: Euophryini: *Corythalia* C. L. Koch 1850
Type species *C. latipes* (C. L. Koch 1846)

10. *Corythalia brevispina* (F. O. Pickard-Cambridge 1901)

Sidusa brevispina F. O. Pickard-Cambridge 1901; *Corythalia brevispina* Simon 1903.

Material examined. 3♂ [Figures 30-32], Colombia, Córdoba, San Antero: Punta Nisperal [N9.4143°, W75.8017°], [6m] 23 Aug 2017, mangrove forest, *Rhizophora mangle* L. tree, shaking foliage, E. Bedoya-Roque coll. (LEUC; OARA-165). Type material deposited in the BMNH, MCZ, not examined.

Diagnosis. According to Pickard-Cambridge (1901) and Simon (1903) the males of *Corythalia brevispina* (Figure 30) can be identified by their long and slender RTA (Figure 32). The embolus is quite short, and slightly curved (Figure 31). Strongly sinuous spermatic ducts occupy almost the entire area of the bulbus (Figure 32).



Figures 30-32. Male *Corythalia brevispina*. 30, Habitus, dorsal view. 31-32, Right pedipalp, ventral (31) and retrolateral (32) views.

Measurements (mm; specimens from Colombia). *Three males*: TL= 4.98-5.13; CL= 2.42-2.45; CW= 2.01-2.03; AL= 2.48-2.51; AERW= 1.53-1.55; PERW= 1.37-1.41; LOQ= 1.23-1.25; PMEP=0.30-0.31; eyes of the second row separated from the ALE by 0.27 mm and from the PLE by 0.33-0.35mm.

Distribution. *Corythalia brevispina* is known from Colombia and Guatemala.

11. *Corythalia dakryoides* Bayer 2020

Corythalia dakryoides Bayer, in Bayer, Höfer & Metzner, 2020.

Material examined. 2♀ [Figures 33, 35], Colombia, San Antero: Caño Mocho [N9.4107°, W75.7920°], [2m] 22 Aug 2018, mangrove forest, *Rhizophora mangle* L. tree, shaking foliage, E. Bedoya-Roqueme coll. (LEUC; OARA-188). Type material deposited in the SMF not examined.

Diagnosis. According to Bayer et al. (2020), the females of *Corythalia dakryoides* (Figure 33) can be distinguished from those of all other *Corythalia* species by their epigynal windows elongated, oval epigynal windows (Figure 35). There is a very small anterolateral gap between the lateral margin and the anterior margin of these epigynal windows, the latter diverging widely anteriorly and then running in parallel posterolaterally (see Bayer et al. 2020, figs. 28A, 73A-B). The primary spermathecae are as long as broad and do not extend beyond the posterior margins of the epigynal windows (Figure 35).

Measurements (mm; specimens from Colombia). *Two females*: TL= 8.3-8.5; CL= 3.8-3.9-; CW= 2.9-3.1; AL= 3.5-3.7; AERW= 2.4-2.5; PERW= 2.3-2.5; LOQ= 2.3-2.4; PMEP=0.27-0.30; eyes of the second row separated from the ALE by 0.30 mm and from the PLE by 0.25-0.27mm.

Distribution. *Corythalia dakryoides* is known only from Colombia.



Figures 33-36. Female *Corythalia dakryoides* and *C. spiralis*. **33**, *C. dakryoides*, dorsal view. **34**, *C. spiralis*, dorsal view. **35**, *C. dakryoides* epigyne, ventral view. **36**, *C. spiralis*, epigyne, ventral view.

12. *Corythalia spiralis* (F. O. Pickard-Cambridge 1901)

Sidusa spiralis (F. O. Pickard-Cambridge, 1901); *Corythalia spiralis* Simon 1903; Chickering 1946; Bayer et al. 2020.

Material examined. 3♀ [Figures 34, 36], Colombia, Córdoba, San Antero: Caño Mocho [N9.4107°, W75.7920°], [2m] 23 Apr 2017, mangrove forest, *Rhizophora mangle* L. tree, shaking foliage, E. Bedoya-Roque coll. (LEUC; OARA-130). Type material deposited in the BMNH, FDACS, MCZ, SMF not examined.

Diagnosis. According to Bayer et al. (2020), the females of *Corythalia spiralis* (Figures 34, 36), can be distinguished from females of all other *Corythalia* species by their lack of epigynal windows, and the rather spiral or helical structure of epigynal ducts (Figure 36; see Bayer et al. 2020, figs. 54C, 55A 74H). In dorsal view the epigyne has slightly widened secondary spermathecae, distinctly rounded at the front with a straight margin at the rear; primary spermathecae slightly widened and clearly elongated, vulva with an elongated blind sac lateral to the primary spermathecae (see Bayer et al. 2020, figs. 54D–E, 55B–C, 78G–H). This blind sac is wider and longer than the primary spermathecae (see Bayer et al. 2020, figs. 54D, 55B, 78G–H).

Measurements (mm; specimens from Colombia). *Three females:* TL= 5.9-6.1; CL= 3.02-3.1; CW= 2.27-3.1; AL= 3.1-3.3; AERW= 1.98-2.1; PERW= 1.7-1.9; LOQ= 1.9-2.0; PMEP=0.25-0.27; eyes of the second row separated from the ALE by 0.35 mm and from the PLE by 0.28-0.31mm.

Distribution: *Corythalia spiralis* is known from Colombia, Venezuela, French Guiana, and Brazil.

Salticinae: Salticoida: Saltafresia: Chrysillini: *Menemerus* Simon 1868
Type species *M. semilimbatus* (Hahn 1829)

13. *Menemerus bivittatus* (Dufour 1831)

Salticus bivittatus (Dufour, 1831); other taxonomic references available at Prószyński (2016), Metzner (2020) and WSC (2020).

Material examined. 1♀, Colombia, Córdoba, Momil-Purisima [N9.222435°, W75.716766°], [8m] 18 Apr 2008, Swamp, *Eichhornia crassipes* (Mart.) Solms 1883, collected by hand, G. Salleg-Perez; I. Wild coll. (LEUC; OARA-176). 2♂, Colombia, Córdoba, San Antero: Punta Nisperal [N9.4143°, W75.8017°], [8m] 23 Aug 2017, mangrove forest, *Rhizophora mangle* L. tree, shaking foliage, E. Bedoya-Roque coll. (LEUC; OARA-144). 2♀, Colombia, Córdoba, San Antero: Caño Mocho [N9.4152°, W75.8031°], [6m] 23 Aug 2018, mangrove forest, *Rhizophora mangle* L. tree, shaking foliage, E. Bedoya-Roque coll. (LEUC; OARA-178). 3♀, Colombia, Córdoba, Montería [N8.7229°, W75.8830°], [12m] 17 Jul 2018, *Licania tomentosa* (Benth.) collected by hand, E. Bedoya-Roque coll. (LEUC; OARA-150). 1♀, Colombia, Córdoba, Cerete [N8.8901°, W75.7825°], [12m] 17 May 2018, collected by hand, E. Bedoya-Roque coll. (LEUC; OARA-055). Type material deposited in the NMB, MNHU, IRSNB, Bud, SIU, FMNH, Istituto di Zoologia della Università Firenze (Italy), SMF, MNHG, ZMH, MCZ, ZMK, RMNH, BMNH, MPM, AMNH, MNHN, NRS, AMS, RMCA, was not examined.

Distribution: Cosmopolitan.

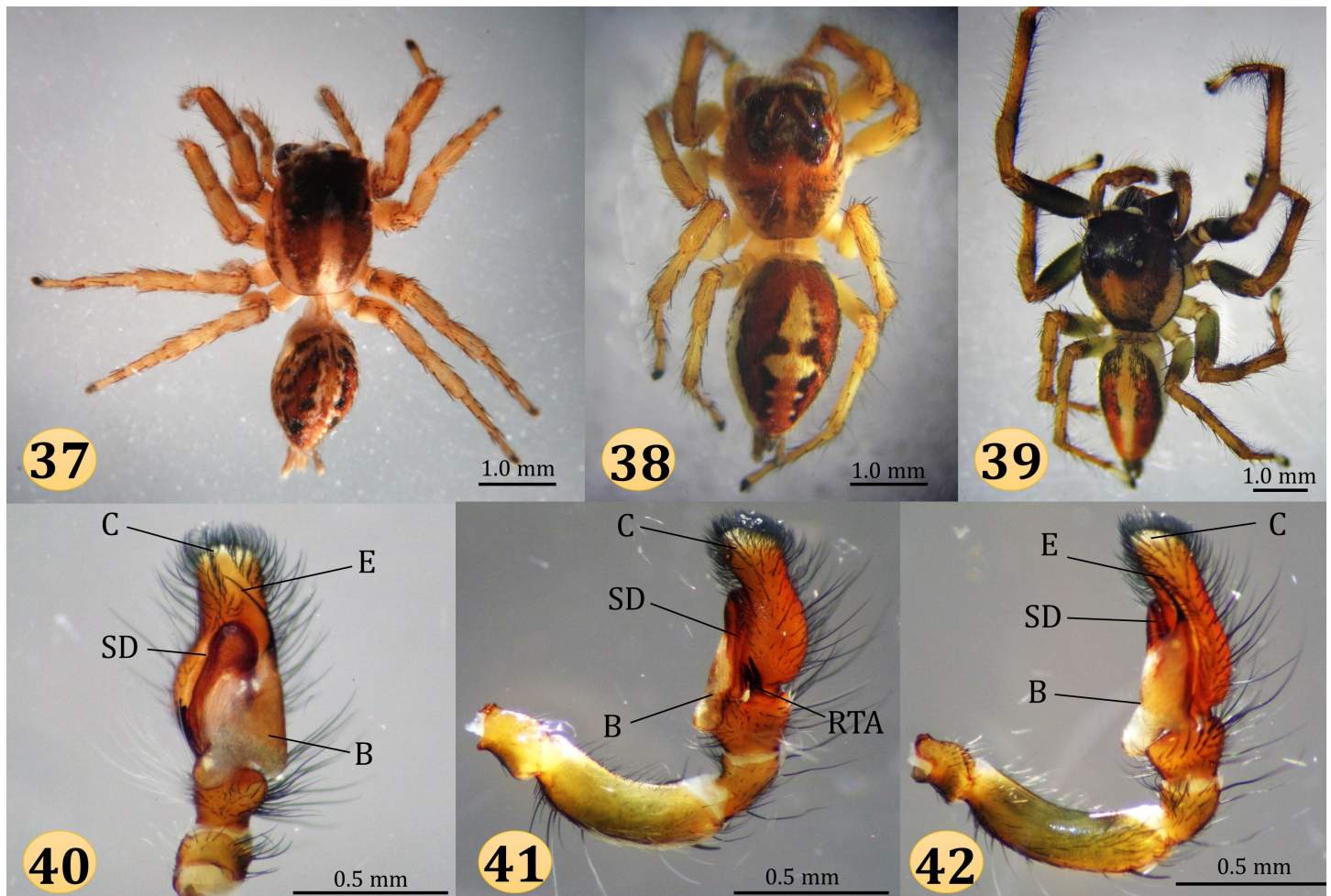
Salticinae: Salticoida: Saltafresia: Simonida: Aelurillini: Freyina: *Frigga* C. L. Koch 1850
Type species *F. coronigera* (C. L. Koch 1846)

14. *Frigga crocuta* (Taczanowski 1878)

Amycus crocutus Taczanowski 1878; *Sandalodes calvus* Simon 1902; Berland 1933; *Phiale orvillei* Chickering 1946; *Phiale crocuta* Galiano 1968; *Phiale coronigera* Roth & Craig 1970; *Frigga crocuta* Galiano 1979a, 1981; Davies & Žabka 1989.

Material examined. 3♀ [Figure 37] Colombia, Córdoba, Momíl-Purísima [N9.222435°, W75.716766°], [8m] 18 Apr 2008, Swamp, *Eichhornia crassipes* (Mart.) Solms 1883, collected by hand, G. Salleg-Perez; I. Wild coll. (LEUC; OARA-173). Type material deposited in the FDACS, MCZ, MPM, PAN not examined.

Diagnosis. According to Galiano (1979a, 1979b) the females of *Frigga crocuta* can be distinguished from the other species of *Frigga* by the very shall anterior fossa of their epigyne, so situated that the entrance small, circular orifices to the canals are on the surface (see Galiano 1979b, fig. 6). The ducts are cylindrical, almost parallel at first (see Galiano 1979a, fig. 30; Galiano 1979b, fig. 7). Then they are bent at a right angle and the second section is horizontal, very short, entering the spermatheca through its posterolateral part (see Galiano 1979a, fig. 30; Galiano 1979b, fig. 7).



Figures 37-42. *Frigga crocuta* and *F. pratensis*. 37, Female *F. crocuta*, dorsal view. 38, Female *F. pratensis*, dorsal view. 39-42, Male *F. pratensis*. 40, Right pedipalp, ventral view. 41, Left pedipalp, retrolateral view. 42, right palp, prolateral view.

Measurements (mm; specimens from Colombia). *Three females*: TL= 6.1-6.4; CL= 3.05-3.1; CW= 2.3-2.5; AL= 2.88-3.1; AERW= 1.95-2.0; PERW= 1.82-1.96; LOQ= 1.33-1.35; PMEP=0.29-0.30; eyes of the second row separated from the ALE by 0.40 mm and from the PLE by 0.36-0.38mm.

Distribution: *Frigga crocuta* is known from Australia, Chile, Colombia, Cook Islands, Ecuador, French Polynesia, Galapagos Islands, Marquesas Islands, New Caledonia, Norway, Panama, Peru, Society Islands, Tahiti, and the Tuamotu Islands (Metzner, 2020; WSC, 2020)

15. *Frigga pratensis* (Peckham & Peckham 1885)

Hyllus pratensis (Peckham & Peckham 1885); *Cyrene pratensis* F. O. Pickard-Cambridge 1901; *Phiale pratensis* Simon 1903; *Cyrene dolosa* Banks 1909; *Phiale olomegae* Kraus 1955; *Frigga pratensis* Galiano 1979a; Edwards, 2015.

Material examined. 1♂, 3♀ [Figures 38-42] Colombia, Córdoba, San Antero: Caño Mocho [N9.4107°, W75.7920°], [2m] 23 Aug 2018, mangrove forest, *Rhizophora mangle* L. tree, shaking foliage, E. Bedoya-Roqueme coll. (LEUC; OARA-169, OARA-171). Type material deposited in the FDACS not examined.

Diagnosis. According to Galiano (1979a) the females of *Frigga pratensis* are distinguished from the other species of *Frigga* by the epigyne with triangular anterior fossae, and small, well separated duct entry holes (see Galiano 1979a, figs. 27-29). Slender, cylindrical ducts, directed obliquely outwards in their first section, and then bent at an obtuse angle, with the internal branch long and directed forward, enter the spermathecae through their ventral aspect (see Galiano 1979a, figs. 27-29). According to F. O. Pickard-Cambridge (1901) and Galiano (1979a) the males of *Frigga pratensis* are distinguished from the other species of *Frigga* by a palpal bulb that is deeply bilobate at its base (Figure 40), the outer lobe narrowed and prolonged (Figures 41-42). The embolus is slender, elongate, and slightly curving, its point directed outward (Figures 40, 42). The RTA is slender (often stouter), elongate, and deeply bifid at its apex (Figure 41), forming a little fork, sometimes deeply cleft (Figure 41).

Measurements (mm; specimens from Colombia). *One male*: TL= 7.1; CL= 3.36; CW= 2.9; AL= 3.7; AERW= 1.89; PERW= 1.83; LOQ= 1.46; PMEP=0.24-0.26; eyes of the second row separated from the ALE by 0.26 mm and from the PLE by 0.63mm. *Three females*: TL= 8.8-9.1; CL= 3.7-3.9; CW= 3.30-3.35; AL= 4.7-5.1; AERW= 1.95-1.97; PERW= 1.93-1.94; LOQ= 1.41-1.43; PMEP=0.26-0.29; eyes of the second row separated from the ALE by 0.35-0.36 mm and from the PLE by 0.46-0.48mm.

Distribution: *Frigga pratensis* is known from Argentina, Brazil, Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Mexico, Netherlands Antilles, Nicaragua, Panama, and Trinidad.

Salticinae: Salticoida: Saltafresia: Simonida: Aelurillini: Freyina: *Leptofreya* Edwards 2015
Type species *L. ambigua* (C. L. Koch 1846)

16. *Leptofreya ambigua* (C. L. Koch 1846)

Euophrys ambigua C. L. Koch 1846; *Freya ambigua* Koch 1850; *Menemerus fannae* Peckham & Peckham 1896; *Thotmes fannae* F. O. Pickard-Cambridge 1901; *Freya perelegans* Simon 1902; *Plexippus fannae* Petrunkevitch 1911; *Phiale albovittata* Schenkel 1953; *Euophrys ambigua* Roewer 1955; *Freya perelegans* Galiano 1963; Ruiz & Brescovit 2007; *Freya ambigua* Edwards & Ruiz 2013; *Leptofreya ambigua* Edwards 2015.

Material examined [Figures 43-46]. 2♀, Colombia, Córdoba, Momíl-Purisima [N9.2222°, W75.6639°], [8m] 18 Apr 2008, Swamp, *Eichhornia crassipes* (Mart.) Solms 1883, collected by hand, G. Salleg-Perez; I. Wild coll. (LEUC; OARA-174). 1♀, Colombia, Córdoba, San Antero: Caño Mocho [N9.4152°, W75.8031°], [6m] 23 Aug 2018, mangrove forest, *Rhizophora mangle* L. tree, shaking foliage, E. Bedoya-Roque me coll. (LEUC; OARA-175). 2♀, Colombia, Córdoba, Montería [N8.7229°, W75.88830°], [12m] 17 Jul 2018, *Licania tomentosa* (Benth.) Fritsch tree, shaking foliage, *Averrhoa carambola* L., collected by hand, E. Bedoya-Roque me coll. (LEUC; OARA-162). Type material deposited in the AMNH, MNHU not examined.

Distribution: *Leptofreya ambigua* is known from Brazil, Colombia, Guatemala, Guyana, Suriname, Tobago, Trinidad, USA (Introduced), and Venezuela.



Figures 43-46. Living *Leptofreya ambigua*. 43-44, Male. 45-46, Female.

Earlier records of Salticidae from Córdoba, Colombian Caribbean

Salticinae: Salticoida: Marpissoida: Dendryphantini: Marpissini: *Metacyrba* F. O. Pickard-Cambridge 1901
Type species *M. taeniola* (Hentz 1846)

1. *Metacyrba venusta* (Chickering 1946)

Parkella venusta Chickering 1946; *Parkella fusca* Chickering 1946; *Dendryphantes franganilloi* Caporiacco 1955; *Metacyrba franganilloi* Ruiz & Brescovit 2005; *Metacyrba venusta* Edwards 2006; Bedoya-Roque me & Nadal 2019.

Type material deposited in the FDACS, MZC not examined.

Distribution. *Metacyrba venusta* is known from Colombia, Costa Rica, México, Panamá, Venezuela.

2. *Metacyrba punctata* (Peckham & Peckham 1894a)

Balmaceda punctata Peckham & Peckham 1894a; F. O. Pickard-Cambridge 1901; *Fuentes punctatus* Banks 1929; *Breda punctata* Chickering 1946; *Metacyrba punctata* Barnes 1958; Edwards 2006; Bedoya-Roque me & Nadal 2019.

Male and female syntypes from Central America deposited in MCZ with no other data. Lectotype male and paralectotype female designated, not examined.

Distribution. *Metacyrba punctata* is known from Colombia, Panamá, México, and Texas.

Salticinae: Salticoida: Saltafresia: Chrysillini: *Helvetia* Peckham & Peckham 1894a
Type species *H. santarema* Peckham & Peckham 1894a

3. *Helvetia albovittata* Simon 1901b

Helvetia albovittata Simon 1901b; Galiano 1963; Ruiz & Brescovit 2008; Bedoya-Róqueme, Nadal & Rubio 2018; *Admestina insularis* Banks 1902; *Helvetia otiosa* Galiano 1976; *Helvetia insularis* Galiano 1989.

Type material deposited in the MACN, MNHNP not examined.

Distribution. *Helvetia albovittata* is known from Argentina, Brazil, Colombia, the Galapagos Islands and Paraguay

Salticinae: Amycoida: Gophonini: *Colonus* F. O. Pickard-Cambridge 1901
Type species *C. sylvanus* (Hentz 1846)

4. *Colonus pseustes* (Chamberlin & Ivie 1936)

Thiodina pseustes Chamberlin & Ivie 1936; *Colonus pseustes* Bustamante, Maddison & Ruiz 2015; Carvalho & Gasnier 2019; Bedoya-Róqueme & Lopez-Villada, 2020.

Type material deposited in the MCZ not examined.

Distribution. *Colonus pseustes* is known from Brasil, Colombia, Guayana Francesa, and Panamá.

5. *Colonus pallidus* (C. L. Koch 1846)

Alcmena pallida C. L. Koch 1846; *Dendryphantes pallida* Simon 1864; *Maevia stellifera* Holmberg 1876; *Maevia viridis* Holmberg 1876; *Thiodina pallida* Simon 1901a; Mello-Leitão 1944; Crane 1945; Caporiacco 1954; *Colonus pallidus* Bustamante, Maddison & Ruiz, 2015; Rubio & Baigorria 2016; Prószyński 2017; Bedoya-Róqueme & Lopez-Villada 2020.

Type material deposited in the BMNH, MCZ, MNHNP, NHMW, NMB, RMNH not examined.

Distribution. *Colonus pallidus* is known from Argentina, Brasil, Colombia, El Salvador, Guayana Francesa, Guyana, Nicaragua, Perú, Paraguay, Surinam, Trinidad, Tobago and Venezuela.

Ecological Comments

Jumping spiders have a wide distribution, from tropical to temperate areas including boreal areas. This family of spiders is frequently found on vegetation. Some of its species live associated with specific plants with a certain type of structure (Romero & Vasconcellos-Neto 2005). Salticid species in the Department of Córdoba were found in specific microhabitats (Figures 48-50), to include swamp areas dominated by *Eichhornia crassipes* (Mart.) Solms, 1883) and the mangrove ecosystems dominated by *Rhizophora mangle* L. and *Avicennia germinans* L.) that we found to be the most diverse. However the salticid diversity of other continental and island environments in this Department is not known and should not be underestimated.



Figures 47-50. Microhabitats associated with the present study. **47**, Momíl swamp. **48**, Estuarine area, Cispatá Bay, San Antero. **49**, Dry forest, Cerro Grande Mohan. **50**, Fragment of coastal mangrove forest, San Antero.

Discussion

A total of 16 species were collected in association with different microhabitats in different subregions of the department. The genera *Acragas*, *Gastromicans* and *Tittanatus*, and the species *Corythalia brevispina*, *Frigga crocuta*, and *Jollas pompatus* are reported for the first time in Colombia. According to Cumming & Wesołowska (2004) and Rubio et al. (2018), jumping spiders are strongly influenced by the type of habitat or environment. In this sense, their abundance and species composition are affected by the structural complexity of the vegetation, giving preference to the site and microhabitat to catch and consume their prey (Hatley & MacMahon 1980; Cumming & Wesołowska 2004; Tews et al. 2004; Rubio et al. 2018).

The Department of Córdoba is located in the north of Colombia, which represents 2.1% of the national territory, with influence from the Caribbean plain and the foothills of the western mountain range and framed in the biogeographic regions of Norandina, Chocó, Magdalena and the Pericaribbean Barren Belt (Vásquez-V 2005; Palencia-Severiche et al. 2006). Despite the few registered species collected in the present study, it becomes the first approximation of Salticids in the department, based on the records made for both the department and Colombia. However, most areas and habitats in this department remain to be explored and until more extensive studies can be completed we will have a limited knowledge of the diversity of its salticid fauna.

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